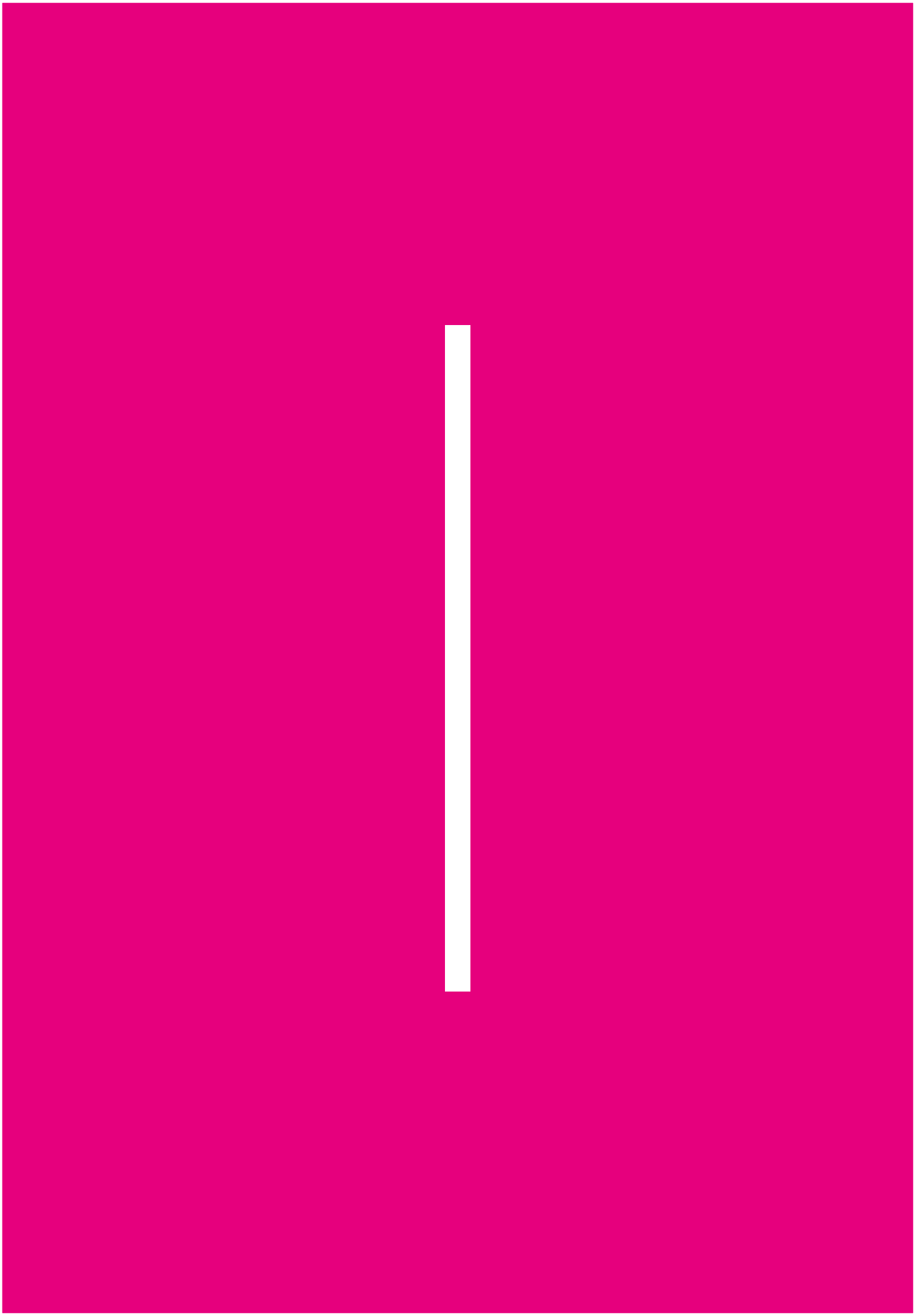

EDITED by critic|all PRESS + Departamento de Proyectos Arquitectónicos (ETSAM-UPM)
ISBN: 978-84-09-81684-2
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critic|all

VI International Conference
on Architecture Design & Criticism

grapho-logics

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Turin 29-30 January

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01 Presentation

This 6th edition of the Critic|all Conference, titled Grapho-Logics: Deepening into Architecture's Visual Research Methods, consolidates the initiative launched more than a decade ago by the Architectural Design Department of the Madrid School of Architecture at the Universidad Politécnica de Madrid (ETSAM–UPM) to provide an international forum for architectural criticism.

The conference expands its scope as a site of knowledge production, from which relevant voices are brought together around the topic proposed for each edition. This year, it takes the form of a joint event co-organized with the Department of Architecture and Design of the Politecnico di Torino (DAD–PoliTO), which hosts the conference at its facilities in the Castello del Valentino.

We would like to thank all participants for their work and trust, as well as the members of the Scientific Committee for their effort and commitment. We also wish to reinforce the idea contained in the conference's name: Critic|all is both a call for criticism and a call for all. An appointment that, beyond the scope of each edition, we hope will contribute to strengthening a broader debate on the role of architecture in the present context.

The Organizing Team

02 Call for Papers

grapho-logics
deepening into architecture's visual research methods

The growing fascination about visuality is a global trend that has no signs of slowing down in a context in which images are consumed and replaced at the same frenetic speed at which they are produced. The recent impact of AI on this continuous flow only reinforces it and, at the same time, presents the phenomenon as an inevitable fact, with hardly any mechanisms for critical evaluation of all this visual material.
The general shift from text to images could be read as withdrawal from criticality towards sheer visuality, contributing to generate an implied context of unspoken words and concepts that nevertheless determines research agendas.

Almost forty years have passed since Robin Evans' revindication of the distinctive power of drawings as a 'medium'. According to Evans, drawings work as translators between architectural ideas and their built result, even at the price of needing to be considered as an autonomous and sometimes contradictory outcome of the architect's work. The problems of translation multiply when the visual and other sensorial information embedded in drawing and architecture are processed by language, the primal critical tool. The image that opened Evans' famous 1986 article, a photograph of Jasper Jones' sculpture The Critic Sees (1961), stresses such problems by suggesting the ironical distortion of vision produced by linguistic anxiety. Critical vision, represented by plastic glasses, is ultimately blinded by words: two gesticulating mouths replace the eyes behind the glasses, the critic's speech replaces observation.

Observation together with the possibility of evaluating and processing visual information, are frequently inhibited by the need to verbalize, and thus to define, classify, categorize, also in architecture. The tendency, accelerated by communication technology and media since the 1960s, can be exemplified by the compulsive tagging of architectural forms, graphics and images in social media and the consequent abortion of critical analysis. In this context, it is urgent to put the visual-graphical information back at the core of architectural criticism, either as a source, as a tool or as a result of critical research.

Grapho-logics claims the power of graphical, and more generally visual materials to embed and unveil not only the hidden subjectivities and tacit features of architecture (similar to the ones the science of graphology investigates) but also the logics of design, its rational split into parts and processes, the kind of objectivation that allows explicit communication and the advancement of collective knowledge.

The recognition of the potential of any graphic document as beholder of a specific knowledge can be addressed in different ways. One of them leads to fetishization of the original and reinforcement of authorship, therefore aligning architecture with artistic activity. This could be exemplified by what happened in the late 1970's with the so called "paper architecture", that ended up entering the very circuits of the art market. Another completely different approach would be to confront these documents with the physical objects they supposedly represent, evaluating their efficiency as tools to envision realities that did not exist prior to them, what in Evan's terms would be labelled as the "principle of reversed directionality" of the architectural drawing. Of course, if we admit that the graphic condition is intrinsically more open to interpretation than language, we should also be prepared to accept some amount of fidelity loss. Such capacity to leave traces of hidden intentions, uncompleted hopes or simple mistakes is far more easily recognized in handmade drawings. Therefore, in a context where architecture's disciplinary toolbox is more and more digitalized, any of these two alternatives will need to deal with the role of archives as the privileged custodians of an almost closed set of research materials.
Finally, a third, perhaps more coherent, way of claiming the potentialities of drawing as a primary source of inquiry might be to recognize that visual research methods can generate evidence that other methods cannot. Critical evaluation of any architectural concern can involve genuine graphic results produced by the research itself, bringing new inquiries into the conversation. But is it possible to overcome the fever of the diagram, the routine of the genealogical scheme, or the uniform display for comparative purposes?

The 6th edition of the Critic|all Conference welcomes contributions that critically address the logics underlying the graphic material that revolves around architecture, either through the study of original drawings or the production of new ones that shed light on a work, specific project, building or author.

The most basic structure should present the document under scrutiny, explain the reasons that justify the choice, formulate new interpretations or perspectives stemming from it, support these with arguments or new graphic content and bring the paper to a conclusion.

03 Conference Program

THURSDAY 29·01·2026

All schedule indicates local time in Turin, IT (UTC/GMT +1 hour)

Registration	**08:30 - 09:00**	*Room 4V*
Introduction	**09:00 - 09:10**	
panel #1 ***Beyond the Diagram***	**09:10 - 10:35**	*Room 4V*
Mariapaola Michelotto *Università Iuav di Venezia, Venice, Italy*	**09:15**	Electric Dreams Rethinking wiring diagrams and their affordances
Joseph Smithard *Anhalt University of Applied Sciences, Dessau, Germany*	**09:30**	All Scales Considered How Solar Infrastructure Reorganises Space from German Fields to Global Networks
Zeila Tesoriere *Università degli Studi di Palermo, Palermo, Italy*	**09:45**	The Operative Atlas in Architecture An inchoative medium to elicit graphical forms of knowledge
Tomás Rodríguez *Universidad Politécnica de Madrid, Madrid, Spain*	**10:00**	Drawing on the Evolutionary Tree. The currency of the architectural chronogram today
Session Chair: Alessandro Armando *Politecnico di Torino, Italy*	**10:15 - 10:35**	Discussion
Coffee Break	**10:35 - 11:00**	*Bar Valentino (included)*
panel #2 ***Underneath the Urban***	**11:00 - 13:10**	*Room 4V*
Filippo Cattapan *EPFL, Lausanne, Switzerland*	**11:05**	Interwoven Economies between Visible and Verbal. The role of Urban Collages in Post-War Transatlantic Discourse
Valerio Della Scala *Politecnico di Torino, Turin, Italy*	**11:20**	The search for a *weak* legacy. Drawing as a tool to reorient readings of urban space in Tirana
Deborah Giunta & Gianluca Burgio *Università Kore di Enna, Enna, Italy*	**11:35**	Mapping as Inquiry: On Cartography, Data, and the Lives of Urban Lines
Aikaterini (Katerina) Antonopoulou (1) & Sebastián Aedo (2) *(1) University of Liverpool, UK (2) University of Portsmouth, UK*	**11:50**	Re-Writing the Ground through Environmental Collective Action: Glasgow and the COP26
Fernando Altozano García & Carmen Espegel Alonso *Universidad Politécnica de Madrid, Madrid, Spain*	**12:05**	Diagrams across the depth scale in urban housing
Cecilia Rosa, Flavio Graviglia & Flavia Sinibaldi *Roma Tre University, Rome, Italy*	**12:20**	Urban morpho-graphy. A methodology for interpreting and transforming collective spaces
Session Chair: Antonio Di Campli *Politecnico di Torino, italy*	**12:35 - 13:00**	Discussion
Lunch Break	**13:00 - 14:30**	*Free time for lunch*
panel #3 ***Around the Digital***	**14:30 - 16:20**	*Room 4V*
Alberto Álvarez-Agea *Universidad Rey Juan Carlos, Madrid, Spain*	**14:35**	The Digital Image in Architecture as an Autonomous Reality. A Comparative Reading of Dionisio González and Filip Dujardin
Franziska Kopf *Karlsruhe Institute of Technology, Karlsruhe, Germany*	**14:50**	Photorealistic Imagery in Architecture: Toward a Critical Vocabulary
Emma Larcelet *EPFL, Lausanne, Switzerland*	**15:05**	Lines in Dimensions. Models, Displays and Wireframe Visualizations

Maya Alam (1) & Daniele Profeta (2) *(1) Bergische University Wuppertal, Wuppertal, Germany* *(2) Syracuse University, Florence, Italy*	**15:20**	Il Disegno dei Punti
Miloš Kostić *Independent researcher, Munich, Germany*	**15:35**	Drawing the Erased. Speculative Detailing in Modernist Heritage Interpretation
Session Chair: Milena Farina *Università di Roma Tre, Italy*	**15:50 - 16:10**	Discussion
Coffee Break	**16:10 - 17:00**	*Bar Valentino (included)*
Key-note Lecture ***Helen Thomas***	**17:00 - 19:00**	***Room 1V*** ***The Dance of the Machine***
Cocktail	**19:00 - 21:00**	*Al Pero Imbarco sul Po (included)* *Viale Virgilio, 53 - 10126 Torino*

FRIDAY 30·01·2026

All schedule indicates local time in Turin, IT (UTC/GMT +1 hour)

panel #4 ***Into the Archive***	**09:00 - 10:40**	*Room 4V*
Caterina Padoa Schioppa *Sapienza University of Roma, Rome, Italy*	**09:05**	Operative visual practices. Chronicle of an experiment in critical thinking
Vincenzo Moschetti *Sapienza University of Rome, Rome, Italy*	**09:20**	Peter Märkli: Aphasia Error as a Method, Drawing as a Sentence
J. Igor Fardin (1) & Richard Lee Peragine (2) *(1) Woolf, Philosophy, GCAS, Dublin, Ireland* *(2) Università degli Studi di Ferrara, Ferrara, Italy*	**09:35**	An Architecture of Loss. Life, Nature and Politics in Giancarlo De Carlo's drawings
Gabriel Hernández *Universidad Politécnica de Madrid, Madrid, Spain*	**09:50**	From Research to Design: Analysis of Team 4 Architects' data visualisation strategies through Reports, Charts and Diagrams (1963-1967)
Alessandro Brunelli *Università degli Studi di Ferrara, Ferrara, Italy*	**10:05**	Redrawing Giotto's ambiguity. Luigi Moretti, other practices and the formative process
Session Chair: Edoardo Piccoli *Politecnico di Torino, Italy*	**10:20 - 10:40**	Discussion
Coffee Break	**10:40 - 11:10**	*Bar Valentino (included)*
panel #5 ***Behind Graphic Codes***	**11:10 - 13:10**	*Room 4V*
Oscar Andrade Castro & Raul Castro Vásquez *Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile*	**11:15**	Cutting and Fitting: Architectural Thinking through Photomontage at the UCV Institute of Architecture, Chile
Javier De Andrés *Universidad Politécnica de Madrid, Madrid, Spain*	**11:30**	Drawing as a Design and Research Tool from Energy and Environmental Perspectives
Juan José David Vásquez & Haitam Daoudi *Universidad Politécnica de Madrid, Madrid, Spain*	**11:45**	The Ideologies of Representation Cosmopolitical Assemblages and Absolute Forms in Architectural Drawing
Laura Mucciolo *University of Ferrara, Department of Architecture, Ferrara, Italy*	**12:00**	Drawing the Last Island. Unbuilt Architecture in Cedric Price's Two Tree Island
Emanuela Vassallo *Università degli Studi di Palermo, Palermo, Italy*	**12:15**	Drawing as an act of knowledge. The exploration of MAAM in Flores and Prats' Workshop
Nerma Cridge (1) & Peter Šenk (2) *(1) Architectural Association School of Architecture, London, UK (2) University of Maribor, Faculty of Civil Engineering, Transportation Engineering and Architecture, Department of Architecture, Maribor, Slovenia; University of Ljubljana, Faculty of Architecture, Slovenia*	**12:30**	Counter Representation Imageability in the age of representational turns
Session Chair: Francesca Frassoldati *Politecnico di Torino, Italy*	**12:45 - 13:10**	Discussion
Lunch Break	**13:10 - 14:30**	*Free time for lunch*
Round Table	**14:30 - 16:00**	*Room 4V*
Coffee Break	**16:00 - 17:00**	*Bar Valentino (included)*
Key-note Lecture ***Pippo Ciorra***	**17:00 - 19:00**	***Salone d'Onore*** ***Iconophobia. Architecture and the Politics of Representation***

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05 Papers

Drawing beyond the built
Symbolic space in Casa Miller

Addona, Marco
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Abstract

This paper explores the act of drawing as a form of spatial hypothesis, focusing on Carlo Mollino's interior Casa Miller and on a contemporary interpretive drawing produced as part of the PhD thesis *Ambientazioni Mollino*, conceived as a *medium* to visualize theoretical and symbolic ideas.
The plan of Casa Miller presents an intriguing paradox: it includes spaces that are neither built nor contiguous, yet are precisely positioned within the drawing. These phantom interiors are not borrowed from elsewhere, but rather dislocated fragments of the same apartment – spaces that truly exist, yet are repositioned as if the drawing were able to reassemble them according to a different spatial logic. This gesture, far from being a technical inaccuracy, operates as a manifesto: the drawing is not a record of reality, but a generative terrain where architecture is thought, remembered, and projected.
The paper argues that Casa Miller exemplifies Mollino's practice of *pensare con la carta* ("thinking with paper"), a method in which drawing is not subordinate to construction but functions as a critical and imaginative act in itself. Building upon Mollino's already imaginary spatial construct, the proposed drawing operates on a further symbolic and narrative level. Through graphic signs, it seeks to interpret the spatial and perceptual sensations experienced within Casa Miller, reconfiguring them into an affective and evocative architectural language.
By placing these two drawings in dialogue, the paper advances the autonomy and critical power of graphic thinking in architecture. Drawing emerges not only as a site of design, but also as a site of theory: a place where fragmented desires, dislocated memories, and spatial intuitions are orchestrated in ways the built environment might resist. In a context in which visual culture risks being flattened into communication, this paper reclaims drawing as a speculative tool – both analytical and projective – capable of articulating complex relationships between body, space, and imagination.

Key words: architectural drawing, spatiality, symbolism, interiority, Carlo Mollino

1.Architectural plan as manifesto

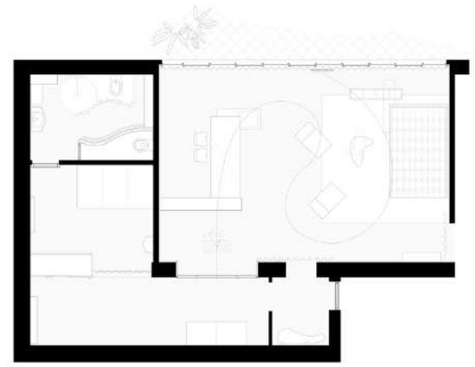

Fig. 1.

The research presented here approaches drawing as a hypothetical act – one that generates spatial possibilities rather than merely documenting built reality. As Robin Evans[1] has noted, architectural drawings do not simply represent; they produce architecture, opening up scenarios that exceed the limits of technical recording. When the generative capacity of drawing is considered in relation to interior space, interpretive redrawing could emerge as a form of posthumous reconnaissance, shifting the focus from documentary accuracy to the layering of spatial, perceptual, and corporeal concepts onto the built work. Following Rudolf Arnheim's intuition, interiors may be read as projections of bodily limits onto architectural boundaries[2]: drawing, then, becomes the means through which such invisible forces are translated into signs and figures. In this sense, the graphic act is not a mere illustrative corollary but a genuine tool of thought – a critical device which, as Jane Rendell suggests, produces not only representations but also spatial propositions[3].
The argument unfolds through the case study of Casa Miller, designed and completed in Turin in 1936 by Carlo Mollino. The specificity of this interior lies in the plan Mollino chose to publish (fig. 1), which presents a clear and orderly spatial configuration: a large central room around which the entrance vestibule, bedroom, and bathroom are arranged, forming a protective crown. Yet, in this very drawing, Mollino introduces a series of reinterpretations that diverge from the built reality, transforming representation into a selective and idealized reading of the space. As Enrico Moncalvo[4] has observed, the author employs "dépistages" in the presentation of the project, suggesting an effort to present the environment not as built reality, but as an idealized spatial construct. An analysis of the drawing reproduced in Moncalvo's article and of the still-existing building[5] reveals, for instance, that the bathroom indicated in the upper right could not in fact exist there, as the slope of the roof would make such a configuration impossible. Similarly, the glazed opening that appears to connect the main room to a terrace is, in reality, a simple window, and the terrace itself proves to be a deliberate invention by Mollino. This operation resonates with Evans's claim that architectural drawing exists independently of the realized building. In this case, Mollino's drawing may even have been produced after construction, functioning as a synthetic and schematic reworking of the spatial arrangement. More than a straightforward representation, the plan of Casa Miller operates as a declaration of intent – an unwritten manifesto through which the architect articulates the meaning that space held for him. In this sense, the drawing is not a definition but a form of interpretation, acquiring a symbolic dimension that can be recognized across many of Mollino's interiors.

2.Drawing as process

Mollino's interiors – and Casa Miller in particular – carry a strongly symbolic and narrative vocation. It was precisely in this sense that they were read and interpreted in the PhD thesis *Ambientazioni Mollino*[6]. That research approaches interiors as both a mirror and a refuge for their inhabitants, intertwining reflections on dwelling with the study of Mollino's *ambientazioni* (settings). The domestic interior was thus conceived as an extension of personal identity, a projection of the self beyond the boundaries of the body[7]. As Arnheim observed, this outward projection defines the "primary quality of interiors." Despite the small scale of the human body in relation to architectural space, perception generates invisible forces that saturate the environment[8]. Walls therefore acquire symbolic value, becoming projections of bodily limits; between the inhabitant and the boundaries of the house unfolds a relational field – a "space-between" that connects corporeal and architectural borders.
Within this framework, the analysis primarily focused on the body as an active agent in the shaping of interior space. Alongside this central perspective, the research also engaged with broader theoretical

interpretations that read domestic space through polarities such as interior and exterior, protection and exposure, introspection and action – sometimes articulated in the literature through the Jungian dichotomy of masculine and feminine.

The primary focus, however, concerns the centrality of the body in the conception of domestic space. For Mollino, interior architecture does not define a static shell but responds to the movements and needs of its occupants. His research was grounded in an almost anatomical attention to the human figure, evident both in the design of his furniture – such as the celebrated seats inspired by the spinal column[9] – and in the configuration of rooms conceived to follow posture and gesture. In his interiors, space is not merely "inhabited"; it inhabits the body in return, shaping itself in response to its dynamics.

Within this broader interpretive horizon, the dialectic often described as masculine and feminine may be understood as one possible framework for articulating the tension between an active exterior and an interior conceived as a space of protection and retreat. Drawing on Jung's theory of *Animus and Anima*[10], as well as on architectural interpretations such as those proposed by Coppola Pignatelli, this polarity describes two contrasting modes of spatial relation: one abstract, geometric, and oriented toward control; the other relational, participatory, and grounded in lived experience[11]. Rather than functioning as a symbolic key in itself, this framework helps situate Mollino's interiors within a wider cultural discourse on domesticity, intimacy, and spatial mediation.

From this perspective, the act of redrawing acquires a specific necessity: not to provide another technical document, but to overlay a perceptual layer onto the architectural drawing, translating theoretical concepts into graphic form. Read in this sense, Casa Miller becomes a privileged laboratory, revealing how drawing can register not only spatial configurations but also symbolic and sensory tensions.

Installed in 1936 as Mollino's personal studio on Via Talucchi, Casa Miller was not conceived as a conventional home but as a theatre for experimentation, photography, and self-representation. Referring to Casa Miller as a "house" already invokes a broader reflection on dwelling on dwelling as a form of protection, embodied in Mollino's metaphor of the shell: an envelope grown from within, simultaneously a protective device and an aesthetic object. Casa Miller was at once a house, a *garçonnière*, and a stage – an intimate dwelling and a performative set.

The spatial organization revolves around the large central studio, the symbolic and physical heart of the house, around which subsidiary rooms gather as protective filters. Yet space is defined not by walls alone, but by furniture and decoration: armchairs and sofas shaped to accommodate the body; glass tables and shelves designed to guide movement; plaster casts that fragment and multiply the human figure. Heavy curtains envelop and suspend the rooms, amplifying their dreamlike atmosphere. Mirrors – most notably the *Venus* mirror – act as immaterial thresholds that reflect and distort the environment, intensifying the fragmentation of the body suggested by the anatomical casts. Finally, the sliding track lamp that cuts across the living room, with its mobile curved trajectory, introduces a theatrical dimension: the interior becomes a stage, constantly reconfigured between technical precision and expressive freedom.

Casa Miller thus emerges as a synthesis of plastic gesture and narrative construction. The body is not merely hosted but staged: welcomed by furniture, multiplied in mirrors, fragmented in casts, dissolved in fabrics. The interior becomes a sensory theatre in which dwelling is experienced as a symbolic and psychological condition as much as a functional one. It is precisely this density of meaning that makes Casa Miller the ideal ground for interpretive redrawing – a drawing that, layered upon the original, translates corporeal, perceptual, and narrative dynamics into graphic form.

3.Layers of Meaning in Casa Miller

The interpretive redrawing proposed is developed through a sequence of graphic transformations, articulated in successive stages that progressively translate spatial, perceptual, and symbolic tensions into graphic form (figs. 2–3). Rather than presenting a single, finished image, the process unfolds through intermediate drawings that isolate and recompose specific spatial conditions before converging into a synthetic configuration.

One of these operations focuses on the identification of an interior core, organized around the *Venus* mirror as a pivotal element of the composition. Through a series of curvilinear and concentric graphic iterations, the drawing explores inward-oriented spatial dynamics, translating centrality, enclosure, and perceptual intensity into a continuous field. These curvilinear traces are not conceived as abstract symbols, but originate from the existing forms of furniture and fixtures within Casa Miller – armchairs, sofas, and movable elements whose profiles already suggest bodily postures and trajectories.

In parallel, a second sequence of drawings isolates the condition of the exterior as a pressure exerted on the domestic space. Here, a system of parallel transverse lines gradually articulates a graphic field that registers the presence of an outside kept at bay – filtered, contained, and mediated by the devices Mollino employed to insulate the interior realm. These linear traces originate from the heavy velvet

curtains that envelop the living space: their folds, initially readable in plan as soft, undulating contours, are progressively stretched and regularized into stronger, more rigid lines.

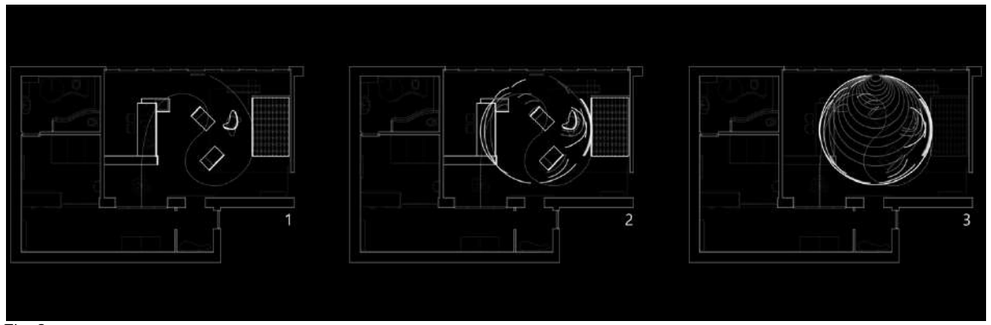

Fig. 2

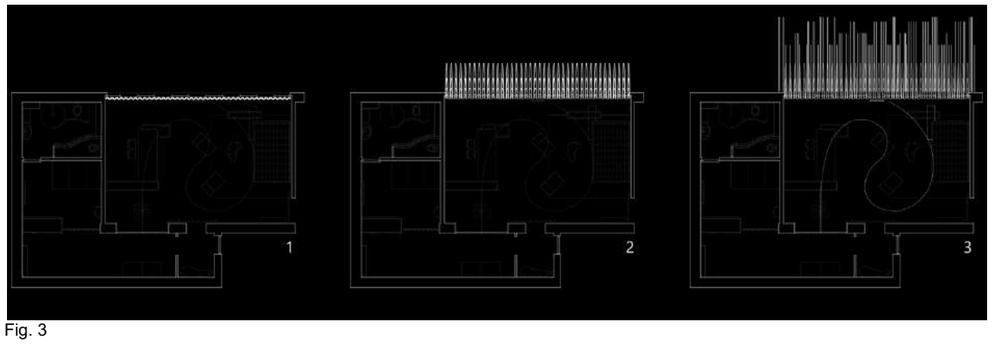

Fig. 3

Through this graphic transformation, the curtains shift from a material and atmospheric element to a spatial device, becoming a visible threshold that both separates and protects the interior. The resulting linear field simultaneously evokes the geometric order of the exterior and its containment, set in contrast to the fluid, curvilinear dynamics of the interior core. These two graphic trajectories – one centripetal, the other oppositional – are finally superimposed in the synthetic interpretive redrawing (fig. 4), where spatial tensions are no longer described through technical construction but translated into a symbolic and perceptual graphic language.

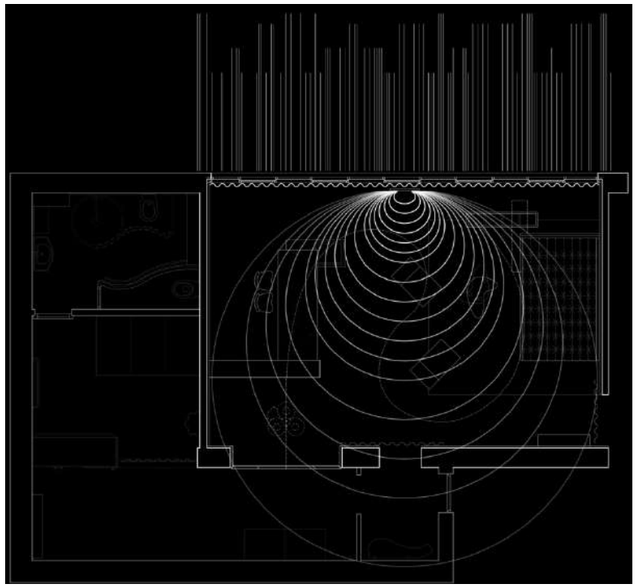

Fig. 4

By extending and amplifying these embedded curves, the redrawing further investigates their potential interaction with the human body, imagining how movement, proximity, and gesture might activate and deform the spatial field. The *Venus* mirror – flattening the sinuosity of the female figure into a two-dimensional surface – is thus reinterpreted as a concave device that gathers space into itself, holding movements and reflections within. Interior life is constructed not through outward projection but through a folding back into the inner domain, as a field that rebounds, refracts, and accumulates.

The nature of this graphic operation resonates with what Beatriz Colomina defines as the «shadow image», described as «a "ghostly trace" hanging before the viewer and offering a deep gaze into the secret of a body or even the cosmos itself»[12]. This shadow image – suspended between visibility and invisibility, between architecture and body – aptly defines the operation undertaken here. Interpretive redrawing does not record reality; it traverses it, making perceptible what space conceals of the hidden and the irreducible. Colomina refers to the first X-ray images, which revealed a new level of reality through transparency and the technological penetration of vision. In an analogous way, the interpretive redrawing of Casa Miller operates as an X-ray of space: not a copy of its built form but a device that discloses tensions, symbolisms, and perceptual strata invisible to technical survey. The graphic act becomes a tool of crossing, a critical lens that – like the X-ray – brings to the surface what usually remains hidden behind walls, coverings, and the conventions of architectural representation.

The idea of using drawing as an interpretive and communicative tool reconnects to Mollino's own methods, for whom graphic practice constituted a genuine laboratory of thought: a medium to elaborate hypotheses, clarify intuitions, and give visible form to the deeper dynamics of space. This approach was theorized by Mollino himself in the notion of "pensare con la carta" ("thinking with paper")[13]: a process in which drawing enables dispersed thoughts to be gathered and ordered, transforming formless intuitions into clear and communicable images, before they ever become built architecture.

As Roberto Gabetti[14] observed: «His blackboard sketches – beautiful but inimitable – were not simply signs of happy graphic expression, but illustrations of cultural itineraries, of critical proposals»[15]. Mollino himself emphasized the value of preparatory sketches as the first graphic "attack" on the resolution. «I believe that architecture must, in its subsequent development, always hold firm to the validity of this first sketch which, *in nuce*, represents the unconscious labor of research of the spirit»[16]. He further noted his «habit of presenting projects as complete, rather than improvising or developing them through discussion on site. This habit […] of working on site with verbal indications and a preliminary sketch has always led to mediocre results and disastrous economic consequences»[17].

Archival drawings, however, reveal a more complex and less linear practice. His sketches, filled with corrections, erasures, and superimpositions, expose an iterative and experimental process in which ideas and solutions are layered on the same sheet. Mollino did not simply refine lines; he used drawing as a laboratory of thought where trials and revisions unfolded through continuous re-elaboration. This approach explains the fragmentary and incomplete nature of many drawings, often populated with evocative elements apparently unrelated to the project, yet testifying to the architect's fluid imagination. Alongside suggestive sketches appear highly precise technical details, evidence of a design practice that wove together conceptual vision and practical construction. Idea and method evolved together, without one prevailing over the other.

This fluidity was particularly evident in his interior projects[18], which often constituted a "free field" where Mollino could exercise greater creative freedom, even at the expense of his own principles. Interiors were a privileged testing ground where experimentation took precedence, made possible by the trust of close friends or by projects designed for himself. Freed from the constraints of formal commissions, Mollino explored a looser, sometimes chaotic approach in which fragmentation and layering became tools for imagining alternative solutions.

If Mollino's drawing of Casa Miller was itself a declaration of intent rather than a faithful record, then today's interpretive redrawing situates itself within the same trajectory: it does not reproduce what was built but opens a field of possibility. As Marco Frascari[19] argued, architectural drawing is never neutral – it is always a construction of meaning. In this sense, interpretive redrawing becomes a speculative act, one capable of layering and rendering visible the symbolic and psychological dimensions of space.

This understanding of drawing as an active construction of meaning also finds resonance in earlier theoretical reflections. Evans[20] had already highlighted the generative power of drawing, producing architecture rather than merely reflecting it. But if, as in the case of Casa Miller, the original drawing was itself a redrawing – an image that invents and manipulates reality – then the critical act of redrawing today introduces yet another level: a drawing "after architecture," one that operates not on the building but on its interpretation. This approach resonates with what Rendell[21] defines as *critical spatial practice*: practices that employ the tools of the discipline not to reinforce its boundaries but to interrogate them, opening up alternative narratives and meanings. The interpretive redrawing of Casa Miller thus participates in this trajectory, transforming the plan into a symbolic field, a device for both reading and writing space.

4.Beyond the Built

In conclusion, the interpretive redrawing of Casa Miller is not a mere graphic exercise but a genuine research methodology. Drawing, in this perspective, is no longer simply a preliminary tool for construction or a means of documentation; it becomes an autonomous epistemic medium, capable of producing knowledge. Through its hypothetical and layered nature, redrawing does not merely reproduce what once existed but opens new possibilities, bringing to light dimensions that the built space alone cannot express.

This autonomy rests on a particular quality of drawing: its capacity to make visible those aspects of space that escape measurement and objective description. Mollino's interiors, and Casa Miller in particular, reveal how dwelling can be understood as the site of symbolic tensions, psychological dialectics, and bodily projections. Such dimensions find no direct equivalent in technical drawings or surveys, but they can be translated and interrogated through interpretive graphic language. Redrawing thus emerges as a device mediating between theory and project, between critical reflection and disciplinary practice.

The most significant dimension of this approach lies in its ability to render interiority. If, as Arnheim suggests, the body projects its own limits onto the walls of dwelling, then interpretive redrawing can be seen as a cartography of this "in-between" space – the relational field that binds subject to environment. Through marks, overlays, and translations, drawing becomes a map of invisible forces: not a representation of the object but of the lived experience that animates it. In Casa Miller, this means recognizing the central salon as an energetic core, curtains as protective membranes, mirrors as thresholds of passage. Reassembled through drawing, these elements narrate a mode of inhabiting in which body and space reflect one another.

Looking toward the present, this perspective suggests a broader reflection on the role of drawing within architectural practice and research. At a time when representation is dominated by digital precision and visual hyperrealism, interpretive redrawing reasserts the value of drawing as a space of imagination, hypothesis, and narrative. The point is not to oppose technological tools – indeed, the redrawing presented here is itself a digital drawing – but to acknowledge that drawing retains an irreplaceable capacity to hold together rigor and invention, reality and possibility.

Read through this lens, Casa Miller is not merely a fragment of Italian architectural history but a living laboratory for rethinking the very act of drawing. Its redrawing reveals not just the form of an interior but the potential of a methodology that combines critical analysis, symbolic translation, and graphic experimentation. From this perspective, interpretive redrawing emerges not as derivative representation but as a fully-fledged cognitive practice: one that transforms architecture into drawn thought, generating new narratives and opening unforeseen horizons for the discipline.

Notes

1. Robin Evans, *Translations from Drawing to Building* (London: Architectural Association, 1986).
2. Rudolf Arnheim, *The Dynamics of Architectural Form* (Berkeley: University of California Press, 1977).
3. Jane Rendell, *Art and Architecture: A Place Between* (London: I. B. Tauris, 2006).
4. Enrico Moncalvo, “Carlo Mollino: La Casa Miller ritrovata”, *Domus*, no. 1421 (November 1990): 14.
5. The building that once housed Casa Miller still stands in Turin, on Via Talucchi. The apartment occupied the top floor within the attic, a location that emphasized its dual role as a retreat and as an experimental space for Mollino’s research.
6. Marco Addona, *Ambientazioni Mollino. Materie, trame e dimensioni negli spazi dell’interno*, PhD dissertation, Sapienza University of Rome, PhD Programme in Architectural Theory and Design, defended 22 May 2025.
7. Tommaso Filighera and Alessandra Micalizzi, *Psicologia dell’abitare* (Milan: FrancoAngeli, 2018).
8. Rudolf Arnheim, *The Dynamics of Architectural Form* (Berkeley: University of California Press, 1977).
9. For example, the *Fenis* chair (1959), the chairs designed for the Lattes publishing house in 1951, the seating created for the traveling exhibition *Italy at Work* in 1950, and the early prototype chair in shaped wood. For further reference, see Lisa Licitra Ponti, “Nuovi mobili di Mollino”, *Domus*, no. 270 (May 1952).
10. To designate the archetype of the feminine being within the totality of the psyche, Jung employs not only the German term *Seele* but also the Latin *Anima*, which in his writings is capitalized. See Carl Gustav Jung, *Gli archetipi dell’inconscio collettivo* (Turin: Bollati Boringhieri, 1977).
11. Paola Coppola Pignatelli, *Spazio e immaginario. Maschile e femminile in architettura* (Rome: Officina Edizioni, 1982).
12. Beatriz Colomina, *X-Ray Architecture* (Zurich: Lars Müller Publishers, 2019).
13. The expression “pensare con la carta” recurs in Mollino’s writings to describe drawing as a primary mode of architectural thinking, preceding and often exceeding verbal formulation. The concept is articulated most clearly in *Vita di Oberon*, where drawing is presented as a cognitive and imaginative device capable of organizing complex spatial intuitions beyond metric or proportional systems. See Carlo Mollino, “Vita di Oberon”, *Casabella,* anno VI, nos. 7–11 (July-October 1933).
14. During his apprenticeship, Roberto Gabetti was one of Mollino’s closest collaborators at the chair of Decoration at the Politecnico di Torino, which Mollino assumed in 1949.
15. Roberto Gabetti, “Per Carlo Mollino”, *L’insegnamento di Carlo Mollino*, edited by M. Montuori, 9–14 (Venice: Cluva Università, 1984).
16. Carlo Mollino, letter to Maurizio Mazzocchi, December 15, 1953, cited in Fulvio Irace, “Incanto e volontà di Carlo Mollino,” in *1905–1973 Carlo Mollino*, edited by Roberto Gabetti, 38 (Milan: Electa, 1989).
17. Carlo Mollino, letter to Attilio Lutrario, April 17, 1959, cited in Fulvio Irace, “Incanto e volontà di Carlo Mollino,” in *1905–1973 Carlo Mollino*, edited by Roberto Gabetti, 39 (Milan: Electa, 1989).
18. In the drawings for the interior of Casa Miller, one can find, alongside sketches of furniture and fittings, studies of trajectories – probably of airplanes – as well as images of angels and winged figures placed next to sketches of the track lamp.
19. Marco Frascari, *Eleven Exercises in the Art of Architectural Drawing: Slow Food for the Architect’s Imagination* (London: Routledge, 2011).
20. Robin Evans, *Translations from Drawing to Building and Other Essays* (London: Architectural Association, 1986).
21. Jane Rendell, *Art and Architecture: A Place Between* (London: I. B. Tauris, 2006).

Image Captions

Fig. 1. Casa Miller, plan, as published in *Domus* n. 129, September 1938.
Fig. 2. Casa Miller, interpretive redrawing – curvilinear sequence. Intermediate stage of the redrawing process, focused on the interior core. Curvilinear traces derive from the forms of furniture and fixtures, extending bodily postures and trajectories into an inward-oriented spatial field.
Fig. 3. Casa Miller, interpretive redrawing – linear sequence. Intermediate stage isolating the exterior as spatial pressure. Parallel lines originate from the folds of the heavy curtains, transformed into a graphic device of filtering, mediation, and protection.
Fig. 4. Casa Miller, synthetic interpretive redrawing. Final drawing superimposing curvilinear and linear graphic fields, translating interior–exterior tensions into a symbolic and perceptual configuration
(Drawings by the author)

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Biography

Marco Addona graduated in Architecture in 2016 and earned his PhD in Architecture at Sapienza University of Rome in 2025. His doctoral research focuses on the work of Carlo Mollino, with particular attention to his interior designs and their theoretical implications. Since 2014, he has been involved in teaching as a tutor in architectural design and theory courses at university level, combining academic practice with critical investigation. His research interests include domestic, residential, and social space, explored as environments deeply intertwined with the lives of their inhabitants and considered through philosophical, psychological, and queer theoretical lenses, with a focus on identity, relationality, and modes of inhabitation. More broadly, his work engages with contemporary debates on ecology and posthumanism, investigating how architecture can foster forms of cohabitation that decenter the human and acknowledge the agency of other species, materials, and ecologies.

Il Disegno dei Punti

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Abstract

Visuality has always been closely entangled with mechanisms of power. Today, when images are so intertwined in a network of activations moving seamlessly between human and non-human agents, articulating a critical reading of this digital imagination and its influence on how designers engage with the built environment has never been more urgent.

We will focus on LiDAR 3D Scanning technology alongside a long lineage of modeling and production tools, placing points as anchors of their understanding of reality. Connecting Canova’s 3d sampling of sculptural forms (18th-c.) through a ‘sparse cloud’ of lead points, together with Ed Catmull and Fred Parke’s early experiments with physical to digital asset translations (early ‘70s), we set the stage for an understanding of points as instruments of abstraction aimed to streamline concepts of authorship, material (and digital) efficiency and, ultimately, categorical thinking.

Against this backdrop, referring to projects ranging from Liam Young’s ‘Where the city can’t see,’ the 2025 Danish Pavilion by Søren Pihlmann, and the authors’ adaptive reuse housing project in Wuppertal, we attempt to redeem ‘il disegno dei punti’ (*drawing with points*) as a strategic occupation of the digital realm, as well as a form of observation and engagement with the world enabling collaborative workflows between human and non-human agencies. To dislodge the ‘surveyor tools’ from the ‘surveillance outpost,’ we present strategies to ground 3d scanning and its imaging procedures in the messy, ad-hoc, fragmentary, and often incomplete traces of material reuse of existing conditions.

Data acquisition, sampling, classification, and visualization in digital surveys should not be seen as neutral procedures; instead, we will present them as tactical propositions to suggest nuanced design sensibilities able to unpack the site's complex material archive, render its compounded parts legible without reducing them to bare forms, and stimulate thick aesthetics of reuse.

Key words: 3D Scanning, LiDAR, machine vision, material reuse, survey aesthetics.

1. Introduction

Historically, visuality has always been intricately linked with mechanisms of power, structuring relationships among the viewer, the viewed, the view maker, and their apparatus. It is not coincidental that Matila Ghyka's triangulation of Helen Wills's face is employed to demonstrate the foundational aspects of beauty, a notion critically examined in Robin Evans's seminal 1986 essay, "Translations from Drawings to Buildings."[1] The network of points and triangles drawn over a two-dimensional photograph of the woman's face could never truly capture her multidimensional identity, and the belief that one could is a clear demonstration of a hubristic display of power. Nevertheless, the discrepancy between the information acquired and that which is lost in this form of 'disegno dei punti', or drawing with points, captivates us within this biased act of translation. Today, when points are intertwined in a network of surveys and activations moving seamlessly between human and non-human agents, articulating a critical reading of this digital imagination and its influence on how designers engage with the built environment has never been more urgent.

When architects discuss surveys, they typically refer to the process of examining and measuring a site for future development. By broadening this concept, the survey becomes more closely linked to geography and mapping practices, which, by representing land, serve as tools to depict territory. It is here that the etymological origin of the word survey in medieval Latin *supervidere*, from *super-* 'over' and *videre* 'to see', exemplifies the conflation between survey and surveillance. This notion is deeply embedded in the 2D to 3D translations between abstraction and realism, as well as in our inherent need for self-orientation.

Long before we all had to find a blue point, marking our location on a digital map delivered directly to the screens of our smartphones, the entanglements between visuality and mechanisms of control had already been established. Matters of land use and agency are much older than GIS and GPS technologies. They are intertwined with the history of humanity. From the knots in the Andean quipus in pre-colonial Peru[2] to the early mathematical triangulation techniques of astronomy during the Song dynasty[3], points, represented through various forms of materialization, played a central role in constructing an understanding of our environment. They defined worldviews together with an understanding of landscapes, commons, and communities.

Throughout colonial and post-colonial times, mapping and its associated viewing practices were deployed to exert control over territories and their inhabitants.[4] For example, during the Great Trigonometric Survey, the East India Company demarcated its claim to territory through triangulation, fixing points in the landscape and in relationship to one another. Ultimately, they visualized the transformation of the so-called *terra incognita* — or rather, unknown to the colonizer — into the map of the known. These multiple points constructed not an image of India as a whole but rather a British-India with limited and biased political interpretations of the territory. This endeavour was masked by scientific ideology, promising a unifying truth, but was instead a construct of their own imagination.[5]

Today, in the era of machine vision, the boundaries between the algorithms initially developed for land control, military strategies, and everyday habits are becoming increasingly blurred. For example, LiDAR 3D Scanning technology, which evolved from being used to map the moon's surface by Apollo 15 in the 1970s[6] to an ubiquitous tool on construction sites, represents the ideal embodiment of this lineage. While there is a tendency to assume that this technology can provide representations of absolute truth[7] and objectivity, it is paramount to recognize that this constitutes a fallacy comparable to the notion that a map can provide a neutral representation of space.

2. LiDAR: a (non-exhaustive) lineage of surveying with points

LiDAR scanning is a technology that uses laser wavelengths in the optical and near-infrared domains to record spaces with an unprecedented level of detail. Deployed in multiple systems, including air- and space-borne, terrestrial, and more recently small handheld and mobile devices, it operates as an active sensor, emitting thousands of laser pulses per second to measure the relative location in space of the targets[8]. These measurements generate millions of data points—known as a "point cloud" that together form a highly accurate three-dimensional record of vast landscapes, entire buildings, or objects, each with varying degrees of resolution. Looking through the eyes of these machines, the world is described as a numerical list containing the XYZ coordinates of the landing point of each laser pulse, expressed in a coordinate system relative to the scanner's location. It is only through planned lines of flight, sequentially adding stationary scanning locations, or choreographed hand movements, that the partial spatial record captured by each of the LiDAR systems described above can be *stitched* together to build the desired survey model. Depending on the scanner at hand, each of the measured points found in the survey is also associated with varying sets of attributes ranging from the RGB color value of the target to the relative intensity of the return wave expressed as a single greyscale channel.

2.1 On flat Databases

All the individual data points acquired are stored in a *flat database*, a list of text-based items ordered exclusively by the timestamp of their return to the sensor. Borrowing from Manovic's early studies on New Media[9], one finds a certain inherent resistance to an ordering principle in this form of representation. Vaporizing any semiotic system through which these points can be aggregated into clusters of identifiable figures[10], LiDAR scanners deliver us enormous databases of machine-readable data, challenging our ability to activate them. Bypassing the medium of drawing, the recording methodology of this device resonates with the revolutionary system of 3D design developed by Leon Battista Alberti in his treatise *De Statua*. Preoccupied with the early manifestations of coordinated labor distribution across distant locations, he described an analog scanning device with uncanny similarities to contemporary Terrestrial LiDAR Scanning (TLS). Elaborating on his previous work on the Descriptio urbis Romae, the *definitor* was composed of three distinct parts to describe the position of any point of the statue: a direct-reading dial (*horizon*) located on the vertical axis of the statue's head, a straight ruler (*radius*) fixed to the center of the horizon so as to allow it to rotate, and a plumb-line (*perpendiculum)* hanging from the radius to guide precise vertical measurements. Using a central reference system, each sampled point would be numerically described by three components: a horizontal angle, distance along the radius, and a distance along the Z-axis. The reduction of the figure to a list of angular and linear measurements transcribed in written format underpinned an epistemological shift towards the primacy of a mathematical view of the world[11], one that is well documented in his perspectival structure of space[12]. Setting aside the incredibly laborious nature of this process, the primary shortcoming in this surveying technique was that it completely abstracted the analyzed form into an alphanumeric table without providing a set of operative translations to execute the physical reproduction of the statue with the tools available at the time. However immutable and mobile[13], Alberti's point system ended up vacuuming out all their connections to the material artifact they set out to record, delivering a seemingly uneditable image of the world in the form of absolute data.

2.2 The space between the points

The *pointing* method, refined by Antonio Canova at the end of the 18th Century, becomes a valuable reference to ground surveying practices in the specificities of material production and in the systematic distribution of tasks across multiple specialists. His workflow moved between small-scale clay models capturing the immediacy of the master's hand, the process of enlargement to 1:1 plaster models, and their approximation to low-resolution marble blocks. These steps were delegated to his assistants before finally returning to Canova's final treatment of the marble surfaces. Counter to Alberti's text-based coordinate system, in the Venetian artist's process, the materialization of the sampled points — embedded nails on the surface of the intermediary models — becomes a fundamental link across material supports, allowing for strict authorial hierarchies. Built upon cost efficiency relative to the availability of materials — affordable and reusable plaster against expensive and difficult to acquire large marble blocks — *pointing* as a surveying logic acts devoid of a dedicated notational system, and it capitalizes on the direct juxtaposition of the model with its final product. We observe the disavowal of an absolute center to describe its parts, in favor of a sequential structuring of the materialized database through mechanical triangulation. Canova managed his team in the same way he refined his sculptures: focusing on the space between the points.

2.3 Between craft and points

The logic of mediation between points as samples of complex material assemblies, and their notational counterpart — this time in a digital/electronic format — might be best summarized in the short animated video *"A Computer Animated Hand"* by Ed Catmull and Fred Parke (1972). The animated video showcases a series of groundbreaking technological advancements in CGI (Computer-Generated Imagery) technologies developed at the University of Utah in the late 1960s and early 1970s, with support from a growing military-industrial complex that further expanded into academia[14]. In what is considered the first fully digitally animated video, they present the process of digitalization of the plaster cast of one of the author's hands into a digital mesh. Following a sequence of camera turntables and the demonstration of rudimentary animated gestures, the hand suddenly rotates around the wrist to reveal its hollow interior for a final interior fly-through. Notably, the animated sequence is cut together with a series of documentary scenes that highlight the manual labor-intensive work required to make the digital sequence possible. In the choreographed performance, points become fundamental connectors of different paradigms of production and visualization, from graphic markers used to draw a low-resolution tessellation of the physical cast, to electric constraints leveraged by a man-machine graphical communication system — the *Sketchpad*[15] — to build its corresponding digital wireframe. Connecting physical and digital space, they abstract information-rich artifacts — the textured cast as well as the *imprecise* drawing movement of the *light pen*[16] — in the binary system of its electronic counterpart. This time, substituting the *hand of the master*, the space in

between the points is rendered visible by an algorithmic agent — the Gouraud Shading[17]. Notably, the closing scene leads the viewer into the hollow interior of the animation's subject: Catmull's hand. Once the topos of *creative power,* this topological shift foregrounds the unrelenting surface-deep focus of contemporary imaging technologies.

In the five decades following this short animation, we have witnessed an exponential advancement in computing capacity, portability, and accessibility. Spearheaded by this relentless growth in processing speed and visualization capabilities, the number of data points captured by digital surveying methods has reached unprecedented levels. Inevitably, the space of mediation between *sensed* points and *speculative* interpolation highlighted so far is giving way to a paradigm of total data. Today, the survey asserts its legibility through the glossy surface of a point-based realism, one in which *all* is measurable. *All* is rendered visible. And yet, ironically, our agency to edit, transform, or interpret it seems to be paralyzed by the very notion of its infallible completeness.

3. An(other) point system

There are many things that make us uncomfortable about the proliferation of these large datasets, from their claim to *objectivity* directly transposed from the photographic medium to their seemingly inherent uneditable nature, as if the weight of the ever-growing set of atomized information they accumulate could render their content immune to any kind of change.

To dislodge the *surveyor tools* from the *surveillance outpost*, we will present a few strategies to ground 3d scanning and its imaging procedures in the messy, ad-hoc, fragmentary, and often incomplete traces of material reuse in existing conditions. The aim is to redeem *il disegno dei punti* — drawing with points — as a strategic occupation of the digital realm[18], as well as a form of observation that enables collaborative workflows between human and non-human agencies. By delaminating their parts, layering their archival structure, and multiplying their frayed edges, our ambition is to extend their operative possibilities. What is at stake is the possibility of working with them as volatile devices — as we believe they are — not to remove them from reality, but to broaden their reach of intervention.

3.1 Disrupting Surveillance

LiDAR's ability to capture large-scale environments and their material textures becomes a valuable asset when thinking about world-building strategies. In the 2016 short film '*Where the city can't see*,' speculative architect Liam Young and writer Tim Maughan transpose this mode of vision from a surveying instrument to an immersive storytelling device. Shot entirely using LiDAR data gathered from locations across the globe, they leverage the interoperability of these datasets to assemble a fictional landscape that confronts the viewer with the pervasiveness of data surveillance in the contemporary city. If '*A Computer Animated Hand*' presented a reassuring world in which handcrafted labour was necessary to fuel the spectacle of novel digital procedures, here we navigate a cautionary tale — one that doesn't feel so distant anymore — of a city fully surveyed by machines and whose operation has been overtaken by artificial intelligence. Far from being a narrative of acceptance, it is by looking through the eyes of the machine that we can begin to imagine bottom-up counter-tactics of camouflage and visual sabotage. The director's search for resistance beyond the machine exploits the biases embedded in this mode of vision to problematize the uncritical reception of these representations as objective and neutral. He begins by introducing the possibility of time-based recording within the context of LiDAR scans, a medium that, not unlike Daguerreotypes, due to its slow *sensing* time, delivers three-dimensional snapshots of an environment frozen in time. With this ambition, aerial LiDAR data gathered by the USGS is forced to coexist with live-action LiDAR sequences collected by hacking gaming consoles. Together with their database form, what is flattened here are the hierarchies of power structuring visuality in the city.

Fig. 1

Furthermore, to challenge the point clouds acquired by these territorial scans, the VFX team converted their data structure into dynamic states of a particle system as found in commercial simulation and visualization engines. In this way, the isolated spatial coordinates of LiDAR points are subsumed into particle voxels, acquiring the ability to *see* their neighboring components and, consequently, interact with them through an algorithmic procedure scripted alongside the director's storyline (Fig. 1). Although rendered as a fully digital animation, the short movie reminds us of the material entanglements of these modes of vision. Leveraging LiDAR sensitivity to reflective surfaces — contributing to an oversaturation of its sensor — the actors performed wearing camouflage costumes designed specifically to infiltrate the logic of the machine vision. Weaving reflective silk threads across glittering textile patterns rendered the moving bodies as a distortion in the dataset.[19] The ambition is to articulate an aesthetic field in which the space between the points of the scans can be agitated and deployed to communicate worldviews of collective resistance. A timely reminder to locate the space of *imagination* where one can not see.

3.2 Material Depths

At the 2025 Architecture Biennale, the Danish Pavilion, curated by Søren Pihlmann, offers a timely reflection on the role of reuse, regeneration, and repair in contemporary forms of architectural practice. Instead of offering an extemporary intervention in the national pavilion, Søren proposed to put on display strategies of maintenance for the building itself, exhibiting the multiple temporal scales unfolding in the design process.[20] Søren's work focuses on an attentive analysis of existing structures and their ability to store traces of their own history in the dynamic material properties of the architectural artifact.[21] *"What should we call it? Is it curiosity? There's a sort of insatiable desire to gather as much information as possible."*[22] In conversation with the poet Adam Dickinson, Pihlmann articulates the image of such a creative process as "*interoceptive,"*[23] alluding to the potentiality of sensing through the guts of one's body, in this case, an *architectural body*. The project, titled *Build of Site*, launches its investigation with an extensive LiDAR survey of the existing site to document the current state of the pavilion. This will also serve as a geolocalized anchor for a series of non-destructive tests (NDT) carried out on the foundations, expanding their analysis beyond the visible surface of the structure. Moving past the points-thin interpolated surface presented in Catmull's narrative, they deployed Ground Penetrating Radar (GPR) and Ultrasonic Pulse Velocity (UPV) to test the material composition of the concrete slabs of the pavilion[24]. The result is a three-dimensional matrix of reflectance values describing the varying returning strength of the emitted energy pulse as it penetrates the depth of the concrete floor (Fig. 2).

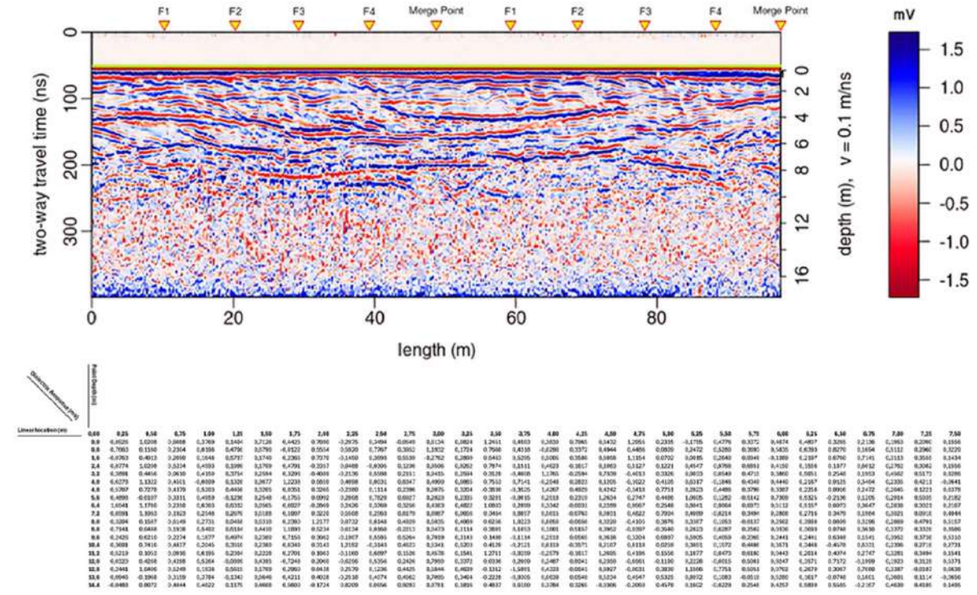

Fig. 2

The recorded data points extend the possibilities of human perception and, when translated into legible subsurface maps, they serve as a system of orientation to draw specific excavation lines on the ground of the pavilion. If Canova's ambition was to minimize material waste by leading the subtraction

process through known sample points, here the GPR surveying machine multiplies the LiDAR's point cloud to determine the location of the rebars in the concrete elements and, in turn, maximizes the efficiency of material reuse across the pavilion. Ultimately, refusing passive pictorialism as a mode of engagement towards these data clouds, Søren suggests a *stubbornly realist attitude*[25] to transform their points from a *matter of fact* to a *matter of concern*, making visible "the fact that they have been metabolized anew"[26].

3.3 Between Material and Memory

The act of drawing can be understood as operating on two temporalities at once: it enacts the instantiation of an idea into form, while simultaneously opening up space for new structures of thought. In between, we recognize a negotiation between the authors' ambitions and their site of production. When working in existing conditions, these exchanges are enriched by the specific material assemblages they encounter: living archives where materiality and memory collide.

From this perspective, working in a German city heavily affected by WWII is peculiar, as the memory of reconstruction appears to have dissipated. However, while the debris is no longer visible, traces of destruction still persist, as if they were scabbed-over scars. Wuppertal, located near Cologne, is especially interesting because its city building archive, containing official documentation of construction and repair dating back to 1945, was lost at the end of the war. In this context, tracing the material transformation of a housing unit dating back to the late 1800s becomes particularly arduous. An orthographic drawing set, dating to the post-war era, and stored with the deed of the unit, became a helpful starting point for our investigation. Titled "Wiederaufbau des Wohn- und Geschäftshauses in Wuppertal-Elberfeld für Herrn August Niepmann" (Reconstruction of the residential and commercial building in Wuppertal-Elberfeld for Mr. August Niepmann), we can assume it is an attempt to redraw the structure from memory.

Unlike the plan for reconstruction, the current state presented a complex collage of pre-war and post-war construction methods. The upper floors, destroyed during the war, were never rebuilt; instead, a flat roof was added, resulting in an unintended bungalow-like appearance (Fig. 3). In contrast with the affluent West German fascination with the modernist bungalow, imported from overseas as an aspiration for a new American Way of Life[27], this one emerged from an urgent need for repair and the immediate demand for housing. Our design process set out to extend this form of homemaking, one grounded in attentive observation and care for the layered materiality of the existing.

Fig. 3

A pamphlet published in 1946 titled "Wuppertal Lebt - Aufbau Alphabet" (Wuppertal Lives - Construction Alphabet) became an invaluable reference in guiding the process of excavation of the site. Describing the systematic logic for the reuse of rubble and debris established to remedy the scarcity of construction materials, this set of guidelines helped us discern the provenance of the various building components found beneath the layers. For example, the suggested mixture of ground-down bricks, burned ashes, and medium-sized rubble was recognized in the filler material of the

flooring system. Additionally, the visibly bent steel beams connecting the 19th-century brick vaults to the rebuilt flooring were identified as recycled rails deriving from the dismantling of the temporary local rail system initially installed to distribute rubble across the valley. In these, as in many other cases, rather than encountering standardized assemblies, we were confronted with a patchwork of ingenious ad-hoc material solutions (Fig. 4).

Fig. 4

In an effort to celebrate the richness of this history, we initiated our material discovery with a comprehensive LiDAR scan, which enabled us to better understand the unit's overall structural arrangement and identify areas where further physical excavation of the material layers was necessary. It is important to note that, at this stage, no design proposal had been developed, both to support our ambition to let the existing structure present itself more directly, and because of the obvious impossibility of knowing what one would find behind the visible surface mapped by the scanner. The design process moved through several phases of partial subtraction, and at each stage, we produced partial LiDAR surveys to record the material stratification that was revealed. Rather than a live-action shot, as in Liam Young's movie, we thickened the initial survey with the various timestamps of the excavation process to render visible the forgotten memories embedded in the material layers. It was during this discovery phase that we began intervening within these overlapping point clouds to imagine both new programmatic distributions as well as their material manifestations. Ultimately, the information-rich survey built through this process was instrumental in navigating the inherently abstract nature of planning by engaging with the detailed surface of the existing, thereby fostering complex aesthetics of reuse (Fig. 5).

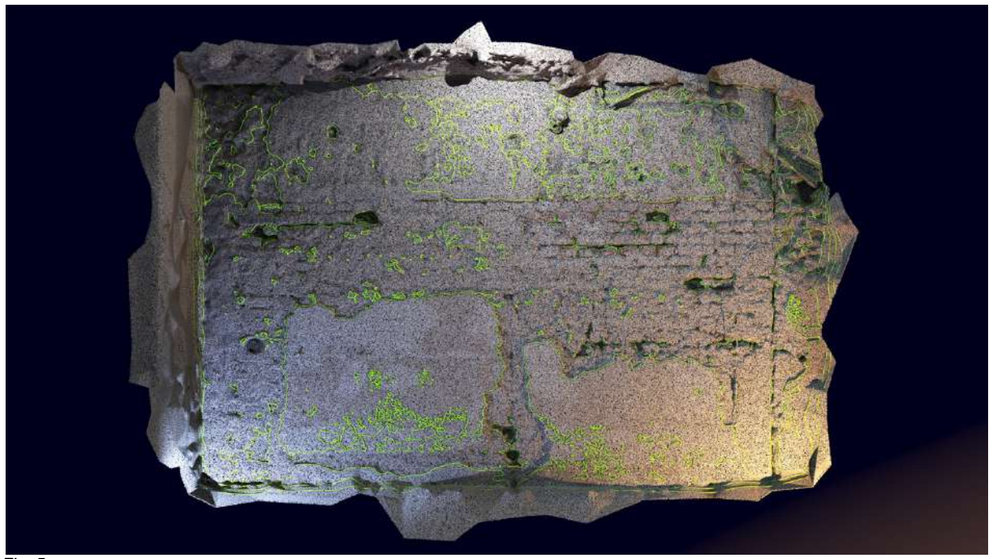

Fig. 5

4. Conclusion

Stitching together the various components of this research is the notion that a critical analysis of the way we, as designers and architects, observe and document the world, inevitably influences the framework of practice through which we intervene within it. As highlighted, this has enormous consequences when considering the power structures established trans-historically between the viewer, the viewed, and the view-maker. Interwoven across these relationships, we can find the construction of specific worldviews, shaping politics, notions of identity, and the cognitive processes that position us in space-time.

Today, contemporary imaging technologies are placing points as central elements in the construction of our visual language, and as such, it is crucial to recognize their role as instruments of abstraction aimed to streamline concepts of authorship, material (and digital) efficiency, and ultimately, categorical thinking.

Our research and field experience with LiDAR scanning warn us of the perils of treating the ever-growing datasets of survey data as static, objective representations of space. On the contrary, we insist that data acquisition, sampling, classification, and visualization in digital surveys should not be seen as neutral workflows. Engaging critically with these procedures creates space to disrupt paradigms of surveillance as well as to thicken their datasets both spatially and temporally. What is at stake is the possibility of developing nuanced design sensibilities capable of unpacking architecture's complex material archive, rendering its interconnected parts visible without reducing them to bare form, and stimulating thick aesthetics of reuse.

Notes

1. Robin Evans, *Translations from Drawing to Building and Other Essays* (London: Architectural Association, 1986), 183–185.
2. Quipus were not maps in the way we understand mapping today, but an intricate logosyllabic system that defined space deeply ingrained in its ecosystem. Research on this ancient practice is still ongoing, and it would be presumptuous to assume that one could also cover this in the format of a paper. However, it is an important example of non-Western, pre-colonial communication style that merges land, materiality, and abstracted points. See: Sabine Hyland, "Writing with Twisted Cords," *Current Anthropology*. Vol. 58, No. 3 (2017): 412-419, https://doi.org/10.1086/691682
3. Kazuhiko Miyajima, "Projection Methods in East Asian Star Maps," in: *History of Oriental Astronomy, ed.* Ansari, S. M. Razaullah (New York: Springer, 2002), 59-65
4. Nicholas Mirzoeff, *The Right to Look: A Counterhistory of Visuality* (Durham: Duke University Press, 2011), 2.
5. Matthew H. Edney, *Mapping an Empire: The Geographical Construction of British India, 1765-1843* (Chicago: University of Chicago Press, 1997), 19-51
6. Contemporary literature from the early 1970s usually calls the Apollo devices *"laser altimeters"* rather than *LiDAR*, because the term only became widespread in the 1980s–1990s in Earth remote sensing. For more information, see: W. L. Sjogren & W. R. Wollenhaupt, "Lunar Shape via the Apollo Laser Altimeter," *Science* Vol 179, Issue 4070 (1973): 275-278. https://www.science.org/doi/10.1126/science.179.4070.275. and A.Wehr & U. Lohr, "Airborne Laser Scanning—An Introduction and Overview," *ISPRS Journal of Photogrammetry and Remote Sensing* 54, no. 2–3 (1999): 68–82. http://dx.doi.org/10.1016/S0924-2716(99)00011-8
7. Hito Steyerl, "Ripping Reality," in *Duty Free Art: Art in the Age of Planetary Civil War* (London: Verso, 2017), 201-216
8. We are deliberately using military-associated language here to underscore the military-industrial complex that developed technology such as LiDAR and graphic visualization platforms, as we will encounter below. For a brief history of LiDAR development see: Paul F. McManamon, *Lidar Technologies and Systems*, (Bellingham, Washington State: Society of Photo-Optical Instrumentation Engineers, 2019)
9. Lev Manovich, *The Language of New Media*, (Cambridge Mass: MIT Press, 2002)
10. For an expanded analysis of the entanglements between scanning, points, and the principles of Gestalt psychology, see Zeynep Çelik Alexander, "Scanning," in Design Technics, ed. Zeynep Çelik Alexander and John May (Minneapolis: Univ. of Minnesota Press, 2020), 71-95.
11. Mario Carpo, *The Second Digital Turn* (Cambridge: The MIT Press, 2017), 117-120.
12. Leon Battista Alberti, *De Pictura* (1540)
13. Bruno Latour, "Visualization and Cognition," in *Knowledge and Society Studies in the Sociology of Cultural Past and Present*, ed. Henrika Kuklick (Greenwich: Jai Press, 1986), 7-13.
14. Tom Sito, *Moving Innovation* (Cambridge, MA: MIT Press, 2013), 53-72.
15. Ivan E. Sutherland, "Sketchpad: A man-machine graphical communication system," (PhD diss., Massachusetts Institute of Technology, Cambridge, 1963), 508.
16. Ivan E. Sutherland, "Sketchpad," 512.
17. Huw Jones, *Computer Graphics through Key Mathematics* (London: Springer London, 2001), 16.
18. Legacy Russell, *Glitch Feminism* (London: Verso, 2020), 23.
19. Tim Maughan, "No One's Driving," *Machine Landscapes: Architectures of the Post-Anthropocene*, ed. Liam Young, (Oxford: John Wiley & Sons, 2019) 96.
20. Urszula Kozminska, "Tales of Material Flow," in *Time Matters*, ed. Urszula Kozminska and Nacho Ruiz Allen (Berlin: Ruby Press,2024), 9.
21. Eyal Weizman. "Introduction: Forensis," in *Forensis : The Architecture of Public Truth*, ed. Ansel Franke and Eyal Weizman (Berlin: Sternberg Press, 2014), 14.
22. Adam Dickinson and Søren Pihlmann, *Making Matter What Too Often Does Not Matter* (Köln: Verlag der Buchhandlung Walther und Franz König, 2025), 76.
23. Dickinson and Pihlmann, *Making Matter*, 36.
24. Lisbeth Ottosen, M. Wolfgang Kunther, Thomas Ingeman-Nielsen, and Serkan Karatosun. "Non-Destructive Testing for Documenting Properties of Structural Concrete for Reuse in New Buildings: A Review," *Materials* 17, no. 15 (2024): 3814. https://doi.org/10.3390/ma17153814
25. Bruno Latour, "Why Has Critique run out of Steam? From Matters of Fact to Matters of Concern," *Critical Inquiry* 30, no. 2 (Winter 2004): 231, https://doi.org/10.1086/421123.
26. Dickinson and Pihlmann, *Making Matter*, 97
27. Carola Ebert, "Into the great wide open: The West-German modernist bungalow of the 1960s as a psycho-political re-creation of home," *Multi: The RIT Journal of Plurality and Diversity in Design*. Volume 2 Number 1 (Winter 2008): 35 -51.

Image Captions

Fig. 1. Liam Young, WIP images & Behind the Scenes, "Where the City Can't See," 2016. © courtesy of the Artist
Fig. 2. Ground Penetrating Radar sample, showing its numerical matrix alongside its graphic visualization. Creative Commons Attribution
Fig. 3. Initial Scan of as-is condition, © Authors
Fig. 4. Partial Scan and construction work, © Authors
Fig. 5. Partial Scan for material analysis, © Authors

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Biography

Maya Alam is an architect, educator, and artist of Indian and German descent. She explores space, visuality, and power, using imaging technologies to navigate multivalent identities and viewpoints. Alam holds a Dipl.-Ing. from the Peter Behrens School of Arts and a Master of Architecture with Distinction from SCI-Arc, earning the AIA Henry Adams Certificate and a Best Thesis Award. She received the 2024/25 Schloss Solitude Fellowship and the 2022 Dekoloniale Berlin Residency, and was the inaugural Harry der Boghosian Fellow (2016/17). With work experience in Switzerland, China, Italy, and the US, she has also taught at the University of Pennsylvania, Yale University, SCI-Arc, and Syracuse University. Currently, she's a Junior Professor and chair of 'Theory and Discourse in Design' at the University of Wuppertal and a founding partner of AP Practice.

Daniele Profeta is an Italian architect and designer. He is the Architecture Program Director of Syracuse University in Florence. Previously, he taught at the Southern California Institute of Architecture, the University of California, and Yale University. He received a Master of Architecture from Princeton University, and completed his undergraduate degree between LaSapienza University in Rome & KTH School of Architecture in Stockholm, where he graduated with honors.

Diagrams across the depth scale in urban housing.

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Abstract

The design of urban housing proposes a consistent framework of metric, spatial, and formal similarities, allowing it to be approached as a continuous formulation adaptable to diverse cultural, environmental, or physical contexts.

This common framework is not external to the buildings but can be inferred from their design experience. By shifting focus from individual solutions to this shared structure, buildings can be understood in terms of their relative position within a broader analytical field. This relationship becomes visible through diagrams and charts that map the buildings according to specific parameters, descriptors, or factors. Although these data may be simple, their graphic combination generates more complex fields of inquiry.

The present study begins with a cumulative diagram based on a depth scale applied to a sample of 250 buildings considered either masterpieces or paradigmatic examples of urban housing. For analytical purposes, these works are treated collectively, allowing them to be manipulated as a dataset from which to extract meaningful insights.

The initial diagram organizes the sample along a building depth scale, revealing significant patterns such as voids, clusters, extremes, and alignments. These abstract units often group together buildings that would not typically be studied in relation to one another from a traditional design standpoint.

This foundational diagram can then be superimposed with descriptors of interest. When favorable cases are overlaid, trajectories emerge that trace specific behaviors or characteristics across the depth scale. These intersections open up new, more complex questions and help define factors of interest, suggesting a layered method of investigation that moves from simple metrics to richer, more nuanced interpretations.

Key words: urban housing, housing depth, housing morphometry, housing diagrams, housing design.

1. Introduction

Architectural design is traditionally rooted in trained intuition, developed through experience and critical awareness. The process unfolds by moving from general concepts into detail, and then back to the whole in a continuous cycle. Each return to the broader scope allows the designer to reformulate, refine and redefine the proposal in a process of progressive improvement or decreasing errors.
The set of technical, metrical, and morphological decisions often come into conflict and must be coordinated, negotiated, and adapted in favour of the whole.

1.1. Specific nature of urban housing projects

Urban housing is the most common building type, yet paradoxically, its program—among those reserved for the realm of architecture—is the one that must respond to the most diverse and numerous constraints, within a limited space and almost always under tight economic conditions. This protects its design from any kind of arbitrariness. Nevertheless, there exists a slow but continuous evolution of its forms, driven either by the search for opportunities for improvement or by external factors (such as social change, industrial progress, or the physical and formal conditions of the environment). These opportunities rarely belong to a single layer of the system, and even if they did, the interwoven and compact nature of its balance would cause any action on the part to react in the whole.

1.2. From the 20th century housing laboratory to a new paradigm of quality in the 21st century

Most contemporary urban housing typologies were developed during the last century. This period was defined by radical social changes, diverse ideological approaches, and the implementation of new techniques and materials, which collectively led to a vast array of dwelling solutions. Technological evolution introduced new ways of inhabiting cities across all layers of the urban system, resulting in an enormous number of projects of all scales, developed from vastly different standpoints.
In parallel to the physical development of this extensive collection, architectural publications and journals emerged to document and disseminate the most compelling examples.
Today, the new challenges are well-known. The social contract that binds us together in cities is constantly evolving. Climate change, the need to curb financial speculation, urban saturation, and gentrification are among the most pressing issues. While urban transformation remains linked to technical progress, material innovations and social shifts, the information age demands a new paradigm for innovation.
In this century, genuine advancement must be rooted (as well) in a critical capitalization of the past—a crucial step toward a radical evolution into new systems of quality— based in natural access to information that may lead us into a kind of advanced contemporary knowledge.

1.3. Building depth

In urban housing design, building depth is a critical parameter. It defines the built footprint within the city while setting the game board where housing units and accessibility systems are formulated. This measurement powerfully shapes both public and private realms.
However, not all urban housing conforms to this parameter in a straightforward manner. A brief examination of Giambattista Nolli's renowned map of Rome (Fig.01) reveals that this complexity is often tied to irregular floor plans, typically found in ancient cities whose growth was based on the fragmented colonization of the territory. In contrast, more easily recognizable or interpretable building depths are generally associated with planned cities. We bring as an example the Otto Haesler Siedlung Friedrich-Ebert-Rin in Rather, planed in 1928 (Fig.01). Consequently, the difficulty in precisely reading this parameter is usually linked to those higher values.

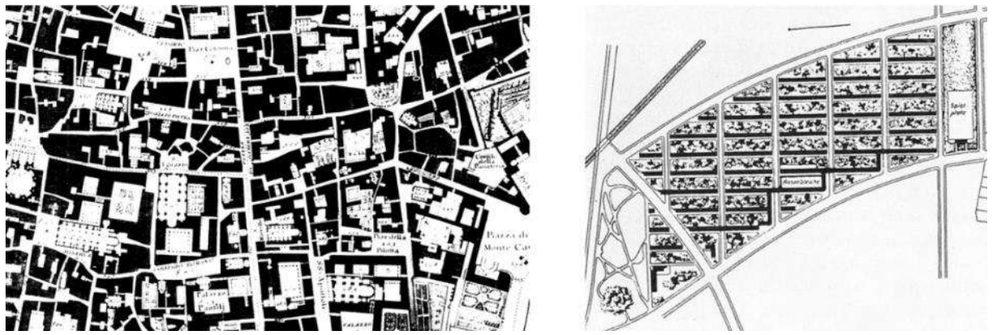

Fig.1

1.4 Proposal

In this context, this work aims to establish an experimental reference framework, based on which a more advanced and informed starting point can be defined at the initial stages of housing projects, allowing related cases to be revealed and unsuitable solutions to be discarded.
To this end, diagrams are developed that can highlight coordinates or regions in morphometrical spaces of thought and decision-making that would otherwise be difficult to determine.
The framework evolves and gains precision as new examples are incorporated, operating through a process of mutual verification.

2. Methodology

2.1 Establishing a reference sample

To achieve our objective, it is essential to establish a collection of paradigmatic or exemplary references. The first step involved examining various housing repertoires, particularly books that compile some of the most significant cases. These are typically organized according to specific typological definitions, geographical criteria, or chronotopic rules. The goal was to identify a set of cases whose quality is broadly recognized by housing experts. To simplify, the final selection was drawn primarily from three seminal works from three different countries: Het Woongebouw (Netherlands), Floor Plan Manual (Germany), and Vivienda Colectiva en España (Spain) (Fig.02). These volumes are highly regarded both for the quality of the examples they include and for the rigor of their methodological development and classification systems. To further validate the relevance of certain cases, additional influential references were consulted, such as Typology+: Innovative Residential Architecture and Roger Sherwood's classic Modern Housing Prototypes.

Fig.2

It is important to note that not all examples from these source books were included in the final sample. A key criterion for selection was the case's suitability for a clear interpretation of its depth parameter. Therefore, the nature of the selected sample is not random or accidental, but rather technical and intentional, containing the most relevant cases for recognizing opportunities in urban housing in relation with the depth parameter. Cases not included can always be included, resulting in adjustments to the data cross-referencing work.

2.2. Definition of depth parameter

To enable metrical comparison between cases, this research distinguishes between depth and wingspan. Depth refers to the internal distance between one façade and its opposite. Wingspan, conversely, denotes the external measurement, including façade elements that do not play a strict role in defining the internal layout, even if they are important in climate or urban contexts.

2.3. The depth scale

Simply by establishing a depth scale on the book's front page and plotting each case along this ruler, a series of immediate questions emerges (Fig.03). The distribution reveals clear minimum and maximum depths, clusters of varying intensity at certain measurements, a scarcity of examples in others, and specific voids. This patterning suggests there must be an underlying logic or reason for this organization within the Dutch context.
At the far end of the depth scale, beyond the highest values, lies the realm of mat-buildings. These are typically organized around patios and employ unique strategies to access every unit and introduce light into their deep plans, often by renouncing significant height—except for a few highly singular approaches.

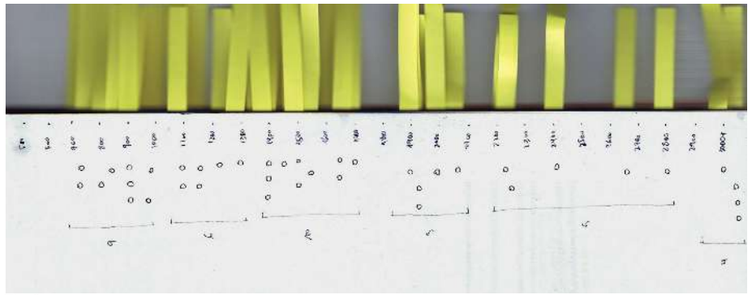

Fig.3

2.4. Cumulative diagram

As a result of mapping the cases onto the image of the closed, tagged book, a first cumulative diagram emerges from the complete sample across all three books. This diagram positions different examples along a horizontal depth scale with one meter interval according to their specific measurements, forming a distinct mountain-like silhouette or sequence.
This diagram no longer identifies specific cases. Instead, they are represented by a tag number, combining with others to create an impression of quantity.

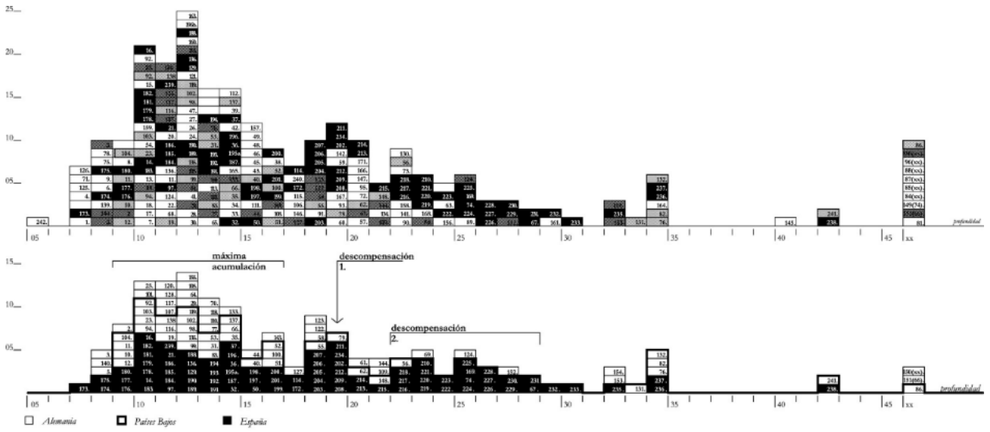

Fig.4

The first diagram presents the complete sample of the database, with examples from different countries distinctly color-coded. The second diagram visualizes the cumulative distribution of buildings specifically from Spain, the Netherlands, and Germany (Fig.04).
From here we could compare the proportion of cases on each depth (Fig.06) and draw cultural, climatic or typological preference conclusions. We may be surprised by some Nordic examples of a quite big depth, and we can speculate about the different standards of housing in the different countries.
Do similar metrics respond to the same typologies in different countries? The following comparisons of Spanish and Dutch cases suggest a complex answer (Fig.05). While the basic functional structure may be comparable, the spatial fragmentation differs significantly. The Dutch examples utilize the available depth for outward-stretching programs, free plans, and larger rooms, demonstrating a distinct approach to inhabitation despite similar depth measurements.

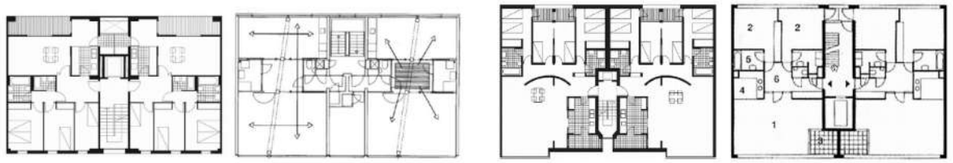

Fig.5

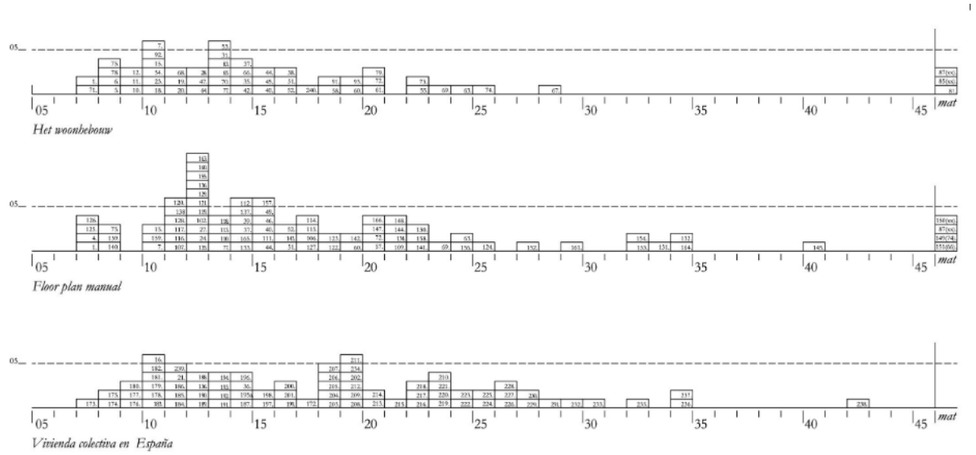

Fig.6

In this simple comparison of the cumulative diagrams from the three books, we can observe different distributions that may attract attention for various reasons. For instance, the highest accumulation point in the Floor Plan Manual is clearly from 12 to 13 meters deep. Meanwhile, in the Spanish book, we find maximum intensity at 10 and 19 meters, and in the Dutch one, the largest columns are set at 10 and 13 meters.
The reasons for the absence of dwellings in certain dimensions of depth raise the need to understand whether this is due to some type of incompatibility or a deficiency in the selected sample. An abrupt gap could point to the latter consideration; otherwise, when cases gradually disappear at a certain measure, it likely means a real limit exists that should be studied and mapped precisely. Any gap in the accumulation diagram already presents a challenge for the designer and would merit further investigation.

2.5 Factors and descriptors

In the second phase, the cases documented in the books were systematically processed into a digital database to facilitate rapid retrieval of information and the possibility of cross-referencing data. Each building was catalogued through a standardized template or file designed to ensure consistency across the corpus.
The upper section of each file contains fundamental information, including the geographical location, authorship, year, general views of the building, and access to architectural plans. On the upper left corner, we can find the correlative tag number (16 in the figure) and depth (1025cm). The lower section incorporates a set of search-sensitive keywords, functioning as descriptors or factors influencing the formulation and quality of housing (Fig.07). These descriptors are intended to support intuitive navigation while also enabling more profound interpretive analysis.
Is there a way to visualize the importance of each of these factors in relation to the depth scale?

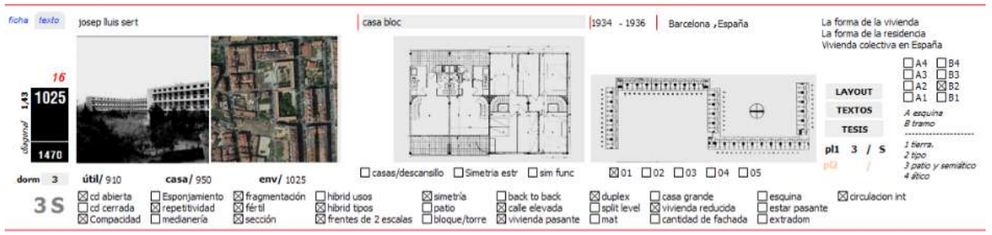

Fig.7

For this work three of these descriptors or factors have been considered:

"Symmetry" is one of the most frequent qualities in urban housing. In this study, it does not refer strictly to a geometrical issue. It is more of a compositive symmetry between two parallelly arranged fronts of similar conceptual weight.

*The **"Section"*** factor is marked in the files when the building in question is illegible unless the vertical section is considered.

*The **"Tower"*** descriptor refers to vertical buildings and to other structures whose primary growth formulation runs vertically, even if the result is not a tall building. For this reason, some block-shaped buildings may be marked as towers.

2.6 Trajectories across depth

By marking the number of cases in each column that respond to each descriptor, we can obtain the total cumulative count for each one. However, for a fairer comparison, the data in each interval can be improved by referencing it to the total number of cases in that column. This allows us to see the importance of each descriptor based on the percentage of cases in each depth interval, and to better understand their relevance trajectory.

The simple cumulative count of these characteristics provides a scope of activity but does not convey their relevance. For example, in an interval with a cumulative total of 5 cases, a descriptor that appears in three of them has a relevance of 60%, while the same cumulative count in an interval with a total of 15 cases has a reduced relevance of 20%.

In this way, we can map relevance trajectories for each descriptor across depth (Fig.08). It is important to note that these values are based on a limited sample. The trajectories have been interrupted where the data is excessively scarce or where a result might be misleading. Therefore, data extracted from intervals with higher accumulation should be considered more reliable.

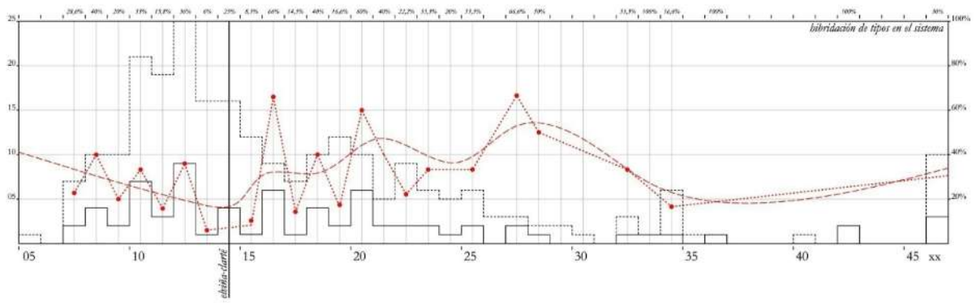

Fig.8

3. Analysis of results

Three diagrams of this kind were developed to visualize the relevance trajectories of the respective descriptors.

3.1 Symmetry across depth

Symmetry is a property that occurs across all dimensions of the depth scale, but it becomes clearer towards the larger measures.

A symmetrical distribution balances its two fronts in a measured way, generating a gradient that unfolds toward the central spaces. This gradient can be defined as an increment of intimacy or be part of natural lighting systems into the central bays. In examples with greater depth, it is easier to position the access point centrally, which reinforces the functional symmetry. Furthermore, this spatial gradient can integrate multiple dwelling units, extending from one facade to the other. In simple back-to-back orientation cases, symmetrical solutions can be achieved either with or without a centrally hybridized space dedicated to other uses.

96 cases have been identified as structurally symmetrical. The accumulation diagram shows a distribution across the depth interval running between 7 and 35 meters.

The total sample accumulation is represented by a dotted line.

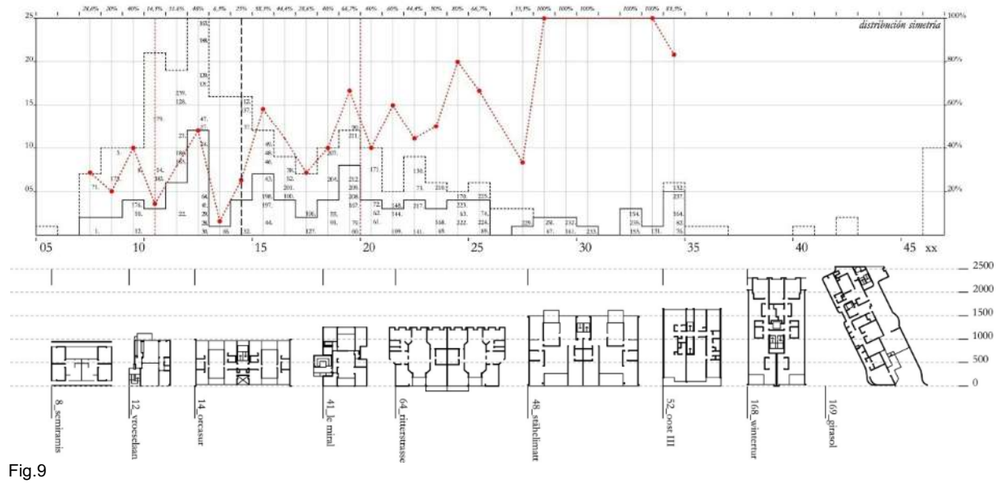

Fig.9

The accumulation per 100 cm intervals for the symmetry attribute is shown with a thick line, based on an accumulation scale located on the left side of the diagram ranging from 0 to 25 cases.

The irregular red line that crosses the diagram represents the percentage of cases responding to the symmetry descriptor out of the total number of cases existing in each 100cm increment interval.

The extension of this irregular line is restricted to the zone where symmetrical cases is largest: in this case, between 7 and 35 meters.

This line shows a continuous, oscillating growth towards the larger measures, reaching practically 100% of the cases from a depth of 2800 cm onwards (Fig.09).

In the initial zone of the diagram, the most extreme case is Gifu housing complex by SANAA. It is a case of strong structural symmetry, marked by the constant rhythm of its load-bearing walls perpendicular to the facade.

However, it is nevertheless singular that a case with eccentric access from a gallery can constitute a symmetrical case. The reason is the double gallery and the summation of equivalent rooms on the floor plan with exits to both frontages: the first to a public gallery and the opposite one, to a private gallery.

Evidently, this differing condition of both galleries is a trait of functional asymmetry that, however, is not apparent in the final formalization.

3.2 Section factor across depth

In the right extreme, mat buildings and other extensive growing systems –like terrace buildings-- have been tagged with the "section" descriptor.

Paradoxically, the maximum accumulation of cases is around the depth index 10 m. However, when plotting the percentage distribution line (relevance per interval), a certain constant of around 25% of the cases in each interval is observed.

The reason for this constant is evident: working with the section does not serve exclusively to bring light into the interior zones in cases of greater depth; rather, it is a feature with a changing utility throughout the diagram, which therefore must be studied and organized in its multiple, distinct zones of accumulation.

One of the reasons why the analyzed publications show clusters within certain intervals, considering the wide span of repertoire they seek, could be the significant variations in types that certain dimensions allow. Analyzing the three largest total clusters on the depth scale, we find that the application of spatial distributions in section—which is, after all, a case of particular architectural interest—proves to be logical. In these three intervals ((10,12), (14,15), (19,20)), important examples emerge that contain in their vertical cut essential topics such as the split house; some kind of hybridization with other types or uses; deep lighting organizations or systems of accessibility only clearly understandable in section.

The section descriptor is present in all the cases over 25 meters in the depth scale whose do not present patio or façade bending. The most important ones could be the "mat" buildings of undefined extension and the hybrids. The legibility of both typologies rely in trans-sectional views in the scale of the building or unit.

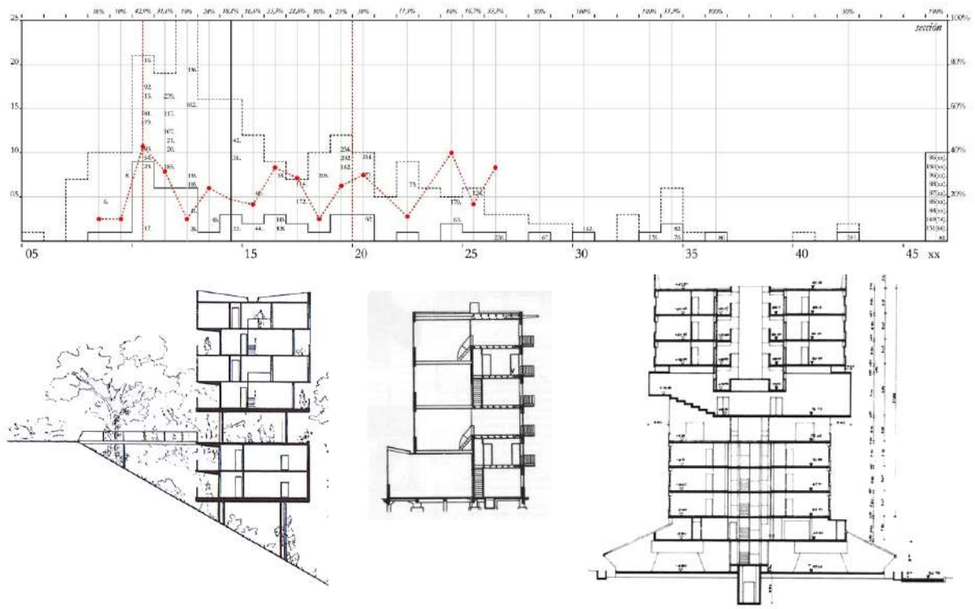

Fig.10

3.3 Tower descriptor across depth

It may seem counterintuitive to employ the term "depth" in the analysis of tower systems. A tower is not conceptualized within a paradigm of depth emanating from a single or double front; rather, strictly speaking, its two or more plan dimensions are of equal significance. Technically a tower should not have a back and a front nor end walls. The term "depth" also stimulates an image associated with a particular progression toward an interior, a characteristic that most compact tower typologies generally do not exhibit.

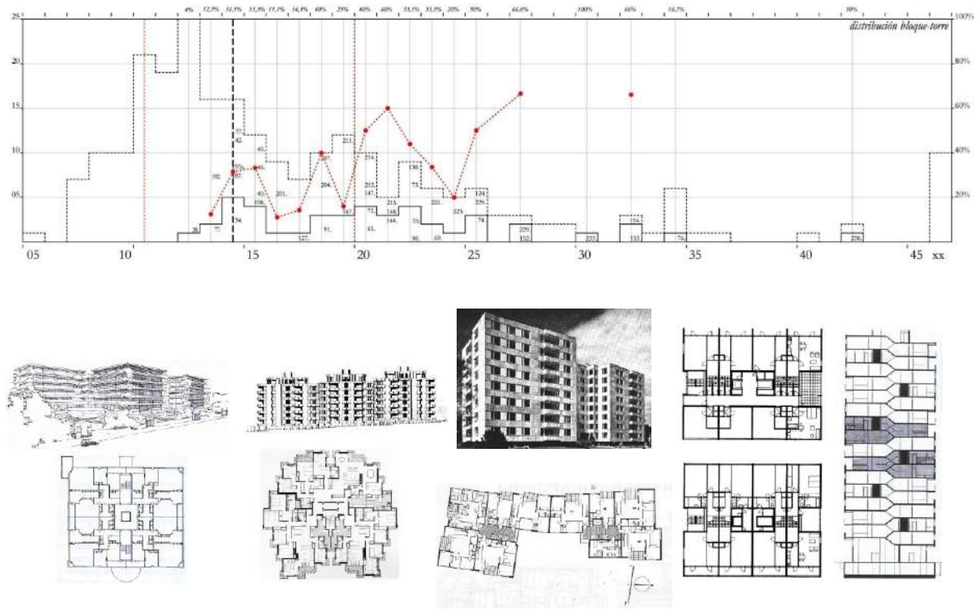

Fig.11

Upon closer examination, however, the range of measures for which it is challenging to designate a primary metric dimension as "depth" in the context of towers is not particularly extensive. This ambiguity is confined to specific configurations with precise depths proximate to the described threshold of 20 meters. For the remaining dimensions, a certain convergence with the linear block typology occurs, and the attribution of a "depth" dimension becomes increasingly unambiguous.

It could be argued that for a pure tower typology, in which there is no horizontal growth, the concept of *wingspan* could be redefined as the diameter of the circle within which the plan is inscribed and may serve as a more useful descriptive and metric tool than *depth*.

It could furthermore be justified that when a specific configuration is readily adaptable across significantly varying depth magnitudes, it becomes difficult to identify a sufficient degree of compacity to establish a distinct typology. This is exemplified by tower formulations that employ fundamentally divergent approaches contingent upon their depth.

All buildings identifiable as towers—whether by their formal slenderness or by a pronounced vertical growth order—have been plotted on the distribution diagram (Fig.11). The cases encompassed under these criteria are highly varied, as are the wingspan dimensions in which they are developed.

Those buildings within the sample designated as towers, for which it has been determined that no correspondence exists between their internal configuration and their vertical growth—being identified as towers solely based on their final form, height, or slenderness—are classified as singular cases and are largely removed from the sample.

Thus, although Denys Lasdun's Keeling House has been classified as a tower with a depth of 870 cm, this building is not studied as such in this section, as this minimum measurement corresponds to the four blocks of duplexes with galleries, more akin to a linear block broken down into four vertical elements that share accessibility and evacuation systems.

The same could be said of Ignazio Gardella's Casa Borsalino, where its fragmented appearance towards the avenue, like slender towers crowned by an equally fragmented sloping plane, produces a view as if it were a series of four narrow towers. This view contrasts with the linear shape of the block with cross-ventilated dwellings, which can be seen in the plan view.

This gives us a range covering 34 cases, from the Torre de Vista Alegre (Peña Ganchegui) at 1120 cm to Bertrand Goldberg's Marina Towers at around 40 metres.

In almost all of them, the measurement of the wingspan is unambiguous. However,

areas of interpretation of this type can be perceived as we move away in both directions from the 20-meter axis.

Towards the more limited depth measures, towers show pronounced slenderness, characterized by a high ratio of envelope surface area to contained volume. In some instances, these may be recognized as forms of pure vertical growth, while in others they constitute blocks configured into slender figures.

The first configuration would be exemplified by Peña Ganchegui's tower, at 1120 cm, or the Jaraguá Building by Mendes da Rocha, with 1240 cm. With a single dwelling per floor, the latter presents a shape factor adapted to the tropical climate of São Paulo.

In contrast, the towers of Sert's Peabody Terrace represent, in their manner of growth, a gallery-access block adapted to a vertical orientation.

All these examples of minimum wingspan and low core efficiency represent exceptional cases.

Beginning at 1460 cm, we can find configurations in small-scale villas that are organized around a central core system with four corner units per floor, a typology that is distinctly different from the concept of a tall and short linear block. However, these villas (or palazzine) are developed with greater frequence starting from 1840 cm, where we find the case of Baumschlager & Eberle in St. Gallen, Switzerland. The compacity of this type forms the basis of its efficacy in steep topographies and historic contexts, as exemplified by the Block D of Zucchi in Venice.

It is only beyond the 20-meter depth that the low-rise “palazzina” typology converges most decisively with that of the tower. At this scale, the residential units in both types are analogous in size and configuration, and their primary distinction resides merely in the degree of vertical repetition or height.

Towards major depth values and higher densities, towers and villas become interlinked, forming large clusters. The Nirwana Building by Jan Duiker, which was conceived as a complex of several distinct pieces, was interconnected by means of large corner terraces, providing continuity to the building facades and to the vegetation on the terraces. Analogously, Coderch's "Las Cocheras" in Barcelona are linked with an apparent fragility into an arrangement characterized by minimal surface contact.

Deeper than that, maximized developments dislocate their configuration into branches serviced from a central core in order to concatenate into large, cluster-based urban structures. These complexes complete the circle, once again presenting an appearance of great slenderness. This effect arises from the reduced apparent size of their residential units, which are articulated within complexes of enormous wingspan. Within these macro-structures, the built depth becomes interpretable only intuitively and partially, and typically exceeds 30 meters.

In this divergence of the tower typology towards maximum wingspans, Torres Blancas—with its depth of over 35 meters—emerges as a case that is difficult to categorize, though its organic irregularity

renders it readily comparable to these large complexes. Like Oiza's building, such structures leverage their formal dislocations to better illuminate generously-sized dwellings, ventilate their service cores, and adapt to the specific conditions of the terrain and surrounding context.

4. Conclusions

The analysis carried out reveals that depth is a fundamental metric parameter intrinsically linked to the form of housing. It defines the spatial framework within which urban housing is conceived. Its dimensional variation directly influences natural lighting, accessibility systems, and structural configuration. The proper metric balance among these three elements supports the development of any urban housing system.

Diagrams serve as an ideal medium for contrasting large datasets. In particular, the cumulative depth diagram distinctly highlights the significance of this parameter and prompts a series of interrelated questions that would be difficult to formulate without its visual trace.

Each column within the diagram deserves closer examination to understand the metrical impact of individual values on form and shape, as well as the relationships between cases exhibiting notable similarities or divergences within each depth interval.

A direct reading of the diagram reveals zones of accumulation and voids, both of which hold specific relevance in the study of housing metrics. A more detailed view allows for the identification of margins and intervals, offering further analytical refinement.

When the diagram is geographically segmented, it brings to light climatic and cultural variations that shape local morphometric preferences.

In the next step the cumulative diagram can act as a referential framework for addressing targeted topics.

Moreover, the distribution of cases within the diagram can be superimposed with performance indicators or descriptors of interest. This superposition functions as the system’s second derivative, where abstract and concrete aspects of housing are amplified through the metrical matrix of depth—tracing trajectories of architectural relevance.

All these tools bring us closer to a holistic understanding of urban housing as a morphometric framework governed by rules.

Diagrammatic abstraction opens latent possibilities that take on specificity through the design or research process.

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Image Captions

Fig. 1. Left. Gian Battista Nolli, Mappa di Roma. 1748. Right. Otto Haesler, Siedlung Friedrich-Ebert-Rin, Rather. 1928
Fig. 2. Left. Floor Plan Manual. Center. Het woongebouw. Right. Vivienda Colectiva en España.
Fig. 3. Depth scale in front page of the book Het woongebouw. Own elaboration
Fig. 4. Mixed cummulative depth diagram by countries : Germany, The Netherlands and Spain. Own elaboration
Fig. 5. Left. Abalos & Herreros. M30 housing (Madrid) versus Lisbeth van der Pol (DOK). Vlamingstraat. (Amsterdam). Right. Carlos Ferrater. Housing at Villa Olímpica (Barcelona) versus Neutelings-Riedijk Prinsenhoek housing.
Fig. 6. Separated cummulative diagrams by country. Own elaboration
Fig. 7. File template. Own elaboration
Fig. 8. Generic example of trajectory of descriptor across depth. Own elaboration
Fig. 9. Up. Trajectory of Symmetry descriptor across depth. Down. Plan view of growing examples in a depth scale. Own elaboration
Fig. 10. Up. Trajectory of Section factor across depth. Own élaboration. Down. Trans sectional views of examples of different depths : Pedregulho (Reidy), Zomerdijkstraat (Zanstra-Giesen-Sijmons), Corviale (Fiorentino).
Fig. 11. Up. Trajectoriy of tower descriptor across depth. Own elaboration. Down. Nirwana (Duiker), Cotxeres (Coderch), Hansa Viertel (Aalto), Hansa Viertel (Bakema).

Biography

Carmen Espegel is a Doctor Architect, Full Professor and Director of the École d'Architecture at Université Laval in Quebec. Her career unfolds across three complementary domains: teaching, research, and professional practice.

In the academic sphere, she has taught at numerous prestigious institutions around the world. Her research focuses primarily on gender and housing studies, leading the research group of GIVCO.

Her intellectual work is reflected in an extensive body of publications that demonstrate a rigorous commitment and critical perspective. Among them are Housing Atlas Europe 20th Century, Amaneceres Domésticos/Domestic Dawns, Housetag: European Collective Housing 2000–2021, Collective Housing 1992–2015 Vol. II and I , and Heroínas del espacio, published in English as Women Architects in the Modern Movement, en Italian as Donne Architetto.

In the professional realm, she heads the architectural firm espegel arquitectos, whose work has been recognized on multiple occasions for its architectural quality and contemporary relevance.

Fernando Altozano Architect (2002) and PhD (2015, *cum laude*) from UPM. Expert in housing design, combining professional practice with academic research and teaching. He has taught at several Spanish universities (European University, ETSAM, UFV, ESNE) and has been a guest professor at ETH Zurich, the Architectural Association London, and Roma Tre.

Academic management roles include coordination of the MAS in Collective Housing (UPM, 2005–12), Master in Advanced Architectural Projects (ETSAM, 2010–15), and current directorship of the Housing Practice Specialty at the MAS in Collective Housing (ETH Zurich/ETSAM).

His research focuses on collective housing, participating in funded projects such as the "Atlas of 20th-Century European Collective Housing" and "Atlas of 21st-Century Spanish Collective Housing." He has authored three books and numerous articles and conference papers.

As a practitioner, he founded Dos Quijotes and Materia Activa SL (2008–2018), and now works independently, focusing on housing design and architectural competitions.

The Digital Image in Architecture as an Autonomous Reality
A Comparative Reading of Dionisio González and Filip Dujardin

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Abstract

Since antiquity, architectural images have mediated between the imagined and the materialized, acquiring value from their capacity to stand in for built form. At times, however, this subordinated relationship is suspended: the image acts not as a mere reflection but as an autonomous reality, generating architectural meaning irrespective of constructability. Historical precedents such as Giovanni Battista Piranesi's *Carceri* and Étienne-Louis Boullée's *Cenotaphs* already staged credible yet unbuilt architectures that shaped disciplinary imagination; in the twentieth century, John Hejduk and Lebbeus Woods extended this lineage with textual-visual constructions and speculative architectures that operated discursively without seeking material realization.

This paper approaches the conditions under which certain digital images can operate as autonomous realities, that is, produce architectural discourse without depending on constructability. Through a comparative analysis of two corpora—Dionisio González's *Cartografias para a remoção* and Filip Dujardin's *Fictions*—the paper introduces operational criteria (verisimilitude, coherence, operativity, and critical narrative) to discuss image autonomy and its limits. The analysis shows that, although autonomy manifests differentially—in González, as a critical device addressing the urban condition; in Dujardin, as formal exploration that tests disciplinary canons—high verisimilitude supports autonomy while decoupling value from possibility.

As a result, an epistemological shift in architectural evaluation emerges: validation moves from a regime anchored in constructability to one grounded in discursive coherence and operational efficacy of the image itself. This clarification suggests how digital images can inform pedagogy, competitions, and critical practice, while noting that autonomy here is conceptual-operational rather than a denial of built work. Although grounded in two authors, the proposed criteria are portable and invite further testing across other digital practices.

Key words: digital image, architecture, autonomy, representation, verisimilitude.

1. Representation and Reality: The Image as a Significant Reality

Since antiquity, systems of representation have been used to construct meaningful realities through images[1]. In this sense, images configure mediated worlds that refer to another reality by substitution[2]—as sign, icon, index, or symbol—so that drawings in plan or perspective conventionally stand in for a possible configuration of matter and operate on its behalf[3]. Images thereby acquire representational status[4], establishing a subordinating relation in which the image's reality is made subject to its referent through verisimilitude and possibility. They are, therefore, intermediate realities, dependent on a reality they in some way reflect.

At times, however, this correlation is overturned: the referred reality either does not exist or is not required, and the image is freed from reflection to act as an autonomous reality. Such is the case with the digital photomontages of Dionisio González and Filip Dujardin—representations of potential worlds whose material realization is nonessential; images in which what is represented and that which represents converge in form.

Genealogically, these practices continue a tradition evident in the drawings of Giovanni Battista Piranesi[5] and Étienne-Louis Boullée[6], whose fictive architectures, despite their simulated condition, function as constructions within the architectural imaginary[7], thereby attaining the status of independent, non-subordinate realities. This logic also sustains much competition imagery, where unawarded or unrealized projects become part of the discipline's effective repertoire of potential realities—visualizations that do not rely on construction to be consequential.

In the twentieth century, John Hejduk and Lebbeus Woods further consolidated this lineage of autonomous image-worlds: Hejduk's textual-visual constructions[8,9]—elaborate realities that operate discursively without seeking materialization, yet exhibit strong internal coherence and verisimilitude. In parallel, Woods's speculative[10,11]—advances critical devices for cities in crisis—architectures credible as thought and drawing, not contingent on constructability—that reframe operative criteria within the discipline.

This text advances a circumscribed claim: through a comparative reading of Dionisio González and Filip Dujardin, it elucidates how certain digital images can operate as autonomous realities—image-worlds validated by coherence, verisimilitude, and operative capacity rather than by constructability. While the proposed criteria may be portable beyond the two authors, any generalization to the broader field of "digital images in architecture" remains a working hypothesis requiring further testing. As a result, the article contributes a set of operational criteria and clarifies a shift in architectural validation from constructability to discursive efficacy.

2. A Comparative Reading of the Digital Images of Dionisio González and Filip Dujardin

This study deploys a mixed methodology, combining two complementary strands. First, an inductive reading of selected works by González and Dujardin examines digital images that operate as autonomous realities. Second, a deductive framework applies concepts of representation, autonomy, and simulation to interpret the observed traits. In practice, the inductive strand enables the extraction of salient features from each corpus, whereas the deductive strand grounds their interpretation in established theoretical discourse. This comparative analysis concentrates on five dimensions: (1) formal coherence (consistency of light, materiality, scale, and montage); (2) verisimilitude (perceptual credibility independent of feasibility); (3) critical intent (the capacity to articulate political or disciplinary stakes); (4) urban context (modes of insertion, address, and transformation of the city); and (5) discursive agency (the image's ability to produce architectural discourse without relying on constructability). Assessing both bodies of work against these dimensions allows the paper to clarify the cultural and epistemological implications of their visual practices and to specify the conditions under which digital images achieve conceptual-operational autonomy within the discipline.

3. The Image in Architectural Representation

3.1. From Mediation to Autonomy

Traditionally, representation has occupied a central place in architectural thought, operating as a practical instrument for anticipating, guiding, documenting, and communicating configurations of form. Within this economy of representation, images have conventionally mediated between plan and building, imagination and material realization. For centuries, the tacit maxim held: *what could be represented could be built, and what was built was first represented*. Accordingly, from classical treatises[12]and Renaissance doctrines[13] to nineteenth-century didactics[14] and contemporary accounts[15], the image has served as the principal vehicle for transmitting architecture, under a logic of subordination that presumes a direct accord between appearance and thing—the image is valid insofar as it reflects a referenced reality.

Within this mediated regime, Robin Evans[16] contends that architectural representation configures meaningful realities through signs, icons, and symbols. In this logic of substitution, the image accrues significance by referring beyond itself. Edward R. Tufte[17] and Stan Allen[18] further stress the image's

operational character: its value hinges on communicative efficacy—its capacity to stand in and to work as something else.
This representational logic, however, has been repeatedly unsettled by visual practices aimed less at depicting what is feasible than at conceiving what might be. Across heterogeneous approaches, a shared inflection emerges: the image is no longer subordinated to the world of things but acts as autonomous thought in the world of ideas. This shift marks an epistemological rupture: the image is not merely a medium but an entity capable of generating discourse. In the digital era, this condition is intensified by the image's capacities for credible simulation, immediate manipulation, and instantaneous generation, which together consolidate the image as a conceptual agent whose validity need not depend on empirical verification.
In line with this possibility, William John Thomas Mitchell[19] and Nicholas Mirzoeff[20] argue that images do more than represent; they produce knowledge. For Mitchell, images are cultural constructions that actively participate in meaning-making; for Mirzoeff, visual culture is the field that analyzes how images shape contemporary experience—a perspective that clarifies how digital images can legitimately operate beyond representation to constitute architectural discourse.
In order to avoid conflations, three analytical planes are distinguished in this text: (1) representation, the mediating regime in which images substitute for a referent and derive validity from correspondence; (2) operativity, the capacity of images to do work—setting criteria, prompting orientations, and framing problems; and (3) autonomy, a conceptual–operational condition whereby images produce architectural discourse on their own terms and are validated by internal coherence and efficacy rather than by constructability. In this paper, autonomy is argued as a comparative result, not posited as an a priori premise.

3.2. The Autonomy of the Image in Architecture

The architectural image as autonomous reality predates the digital era. In the eighteenth century, Giovanni Battista Piranesi[21]and Étienne-Louis Boullée[22] produced fictional architectures (Fig. 1, 2) that, although unbuilt, attained effective presence within the architectural imagination. Laden with symbolism and monumentality, these works did not require erection; their "construction" was conceptual and visual, yet sufficiently coherent to act upon design thought and practice as possible realities. Beyond Piranesi and Boullée, the twentieth century consolidated autonomous image-worlds through John Hejduk's textual–visual constructions and Lebbeus Woods's speculative architectures. Both produced credible, unbuilt realities that acted on the discipline, demonstrating that autonomy is neither a denial of building nor a mere fiction, but a distinct knowledge-form grounded in internal coherence and world-making.
As Carlos Sambricio[23] argues, such imaginary architectures function as conceptual devices that enlarge the field of design: the image, no longer subordinated to materialization, becomes autonomous thought. This logic extends to much competition imagery, where representations may never be realized, yet operate within disciplinary discourse.
Within the broader question of legitimation, Paul Ricoeur[24] identifies verisimilitude as a key criterion: images acquire reality-status insofar as they resemble a world legible to viewers—a regime that has guided visual production from Renaissance conical perspective to contemporary infographics. Complementarily, Nelson Goodman[25] contends that art's worlds attain the reality of their possibility; in the digital domain, this means images not only represent but world-make. The digital image is therefore not merely instrumental but a visual reality in its own right, whose autonomy rests on internal coherence and on the capacity to generate meaning independent of external referents—even as it evokes broader imaginaries.
The epistemological implications are substantial: What does it mean to know through images? Can images produce knowledge absent material referents? Alberto Pérez-Gómez and Louise Pelletier[26] and Juhani Pallasmaa[27] address these questions, foregrounding the poetic and phenomenological dimensions of images as criteria of validity.
In parallel, Laura Marks[28]and Jonathan Crary[29] examine the perceptual grounds of visual experience: Marks articulates the tactile image, engaging body and memory; Crary analyzes modernity's reconfiguration of vision, arguing for the image as active construction. Building on this, Lev Manovich[30] and Anne Friedberg[31] show how digital media reshape visual narrative and spatiality: Manovich's modularity, variability, and automation enable flexible image production, while Friedberg's virtual window reframes the viewer–space relation in contemporary visual culture.

3.3. The Digital Image as a Critical and Design Device

Over the last decades, the digital revolution has consolidated the image's autonomy. Through capacities for credible simulation, rapid manipulation, and instant generation, digital imagery fabricates worlds that do not exist materially yet remain coherent, believable, and operational. This condition is exemplified by the work of Dionisio González and Filip Dujardin, each of whom strategically blurs the line between representation and reality.

In *Cartografias para a remoção*[32] (Fig. 3), González deploys digital photography as a critical intervention in the city. Fictional architectures are inserted into recognizable urban landscapes to expose issues of precarity and marginalization. Though unbuilt, the structures exhibit formal coherence, plausible materiality, and contextual integration, securing verisimilitude and visual autonomy. Rather than representing what could be built, these images conceptualize what could be thought, operating as critical devices that contest the urban status quo and propose symbolic alternatives—thus granting the image a distinct political agency.
In *Fictions*[33], Dujardin (Fig. 4) composes photographic montages from fragments of real buildings to construct impossible assemblies. The images defy physical and tectonic logic while retaining a photographic credibility that sustains belief. This subversion of architectural codes opens new formal possibilities and tests canons. Dujardin's aim is not construction but imagination: visual fictions that expand the disciplinary horizon of the imaginable. In this sense, the image becomes a space of freedom, where the impossible is rendered visible and the seemingly absurd acquires methodological significance.
Taken together, these practices demonstrate how digital images can act as critical and design devices: they produce architectural discourse and orientation without relying on constructability, and they reposition the image as an autonomous conceptual agent within the discipline. Thus, contemporary digital media intensify autonomy through computational affordances that enhance verisimilitude—functioning as a truth condition internal to the image, enabling it to act as a critical and design device.

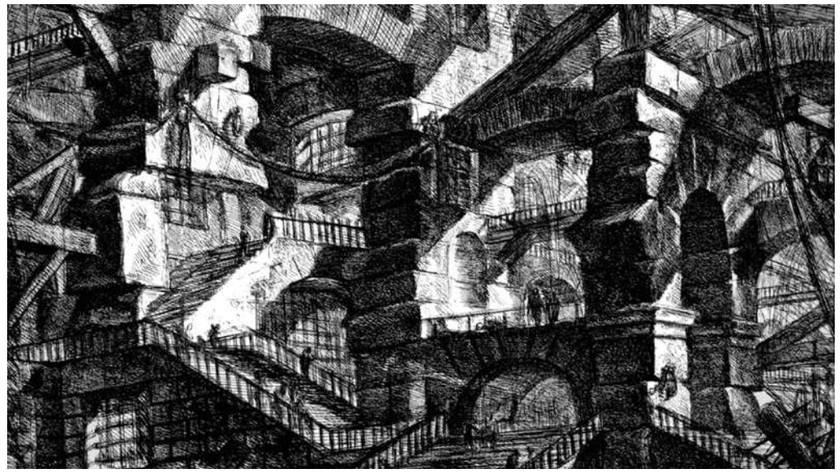

Fig. 1

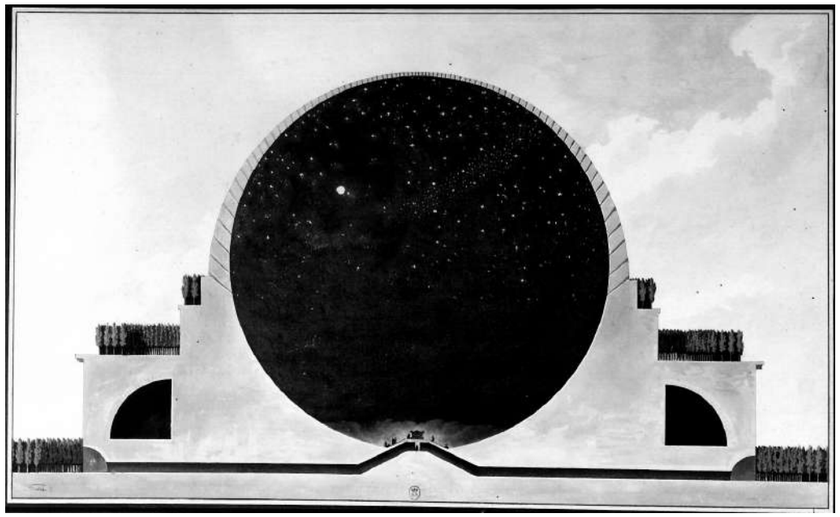

Fig. 2

Fig. 3

Fig. 4

4. The Digital Image in Architecture: Context and Contingency

González and Dujardin articulate two complementary paths toward the autonomy of the digital architectural image. Despite divergent formal and discursive strategies, their practices converge on a visual mode of thinking emancipated from materialization, enabling a substantive inquiry into the image's epistemic status, critical capacity, and design potential within the discipline.

This section deepens that inquiry by elaborating the conditions of conceptual autonomy and verisimilitude, the critical positions each author occupies, the notion of the operative image, the methodological hybridity underpinning their procedures, the phenomenological implications of reception, the image–context relation, and the disciplinary consequences, including risks and prospects for pedagogy and practice.

First, conceptual autonomy. In both bodies of work, autonomy exceeds technical or formal independence and appears as conceptual emancipation: images do not point to constructed—or even constructible—architecture but constitute discursive entities that generate meaning on their own. This condition resonates with Goodman's "realities of possibility," where fiction is not opposed to reality but

functions as an alternative knowledge-form. Within this horizon, verisimilitude is decisive: it need not guarantee feasibility, yet it must sustain a credible world—photometric consistency, scalar plausibility, material legibility, and coherent montage become truth conditions internal to the image. As a result, the test of value moves from correspondence (does it match a buildable referent?) to coherence (does it hold as a world?). In short, autonomy here is not an ontological claim about images "being real", but an operational claim about images doing architectural work without recourse to constructability.

Second, critical positions. González's interventions inhabit a tradition of political critique, turning the image into a device of denunciation and proposal. By inserting fictional architectures into recognizable urban fabrics, he intensifies contradictions already present (precarity, marginalization) and re-scales agency beyond the single building toward urban logics and infrastructural imaginaries. This aligns with a regime of aesthetic dissensus in which the sensible order is redistributed to make visible the "invisible," thereby enabling new figurations of urban life. Dujardin, by contrast, subverts architectural codes through simulation: his composites are often tectonically impossible yet photographically convincing. The friction between hyperreal appearance and structural implausibility exposes canons, typologies, and taxonomies of form to stress tests impossible in built reality. If González privileges critique as urban re-framing, Dujardin privileges formal research as disciplinary re-coding; both, however, operate inside a shared spectrum where credibility without feasibility is the enabling condition.

Third, operative imaging. For both authors, the digital image functions as thought, not mere representation. The operative image—an image that acts—is not content with illustrating a project; it institutes criteria, prompts design orientations, and reframes briefs. In González, the operative thrust lies in re-politicizing context: the montage is less an aesthetic flourish than a vehicle for articulating counter-proposals (symbolic infrastructures, alternative morphologies for collective life). In Dujardin, the operative dimension resides in re-canonization by exception: by staging limit-cases of symmetry, massing, stacking, and joinery, the images operate as typological hypotheses that back-propagate into studio and practice, refining what counts as admissible form. The shift is therefore from representation of the possible to manifestation of the thinkable—a move that re-centers images as sites of production rather than vehicles of transmission.

Fourth, methodological hybridity. Each practice is hybrid, combining photography, digital modeling, compositing/montage, and post-production. This technical hybridity translates into conceptual hybridity, where the boundaries among art, architecture, and criticism blur. The workflow matters: sourcing, cutting, scaling, and relighting fragments are not neutral steps but decision points that encode authorship. In González, the indexical residues of the host photograph (site cues, atmospheric haze, color temperature) anchor fiction to an identifiable milieu, intensifying the contextual ethics of the insertion. In Dujardin, the de-contextualized fragments retain an indexical memory (textures, weathering, construction logics) that is recombined into abstract assemblies—a "placeless" context produced by the archive of the real. In both cases, montage is not a breakdown of reality but a compositional logic of assembly that renders visible how architectural meaning is fabricated from parts (images, codes, conventions).

Fifth, phenomenology and reception. The autonomy argued here is not only conceptual but also experiential. The images solicit embodied responses—scale is felt through familiar affordances; materiality is read haptically via texture, sheen, and edge behavior; light models space as tactile visuality. Reception is temporally layered: disbelief flares at the edge of plausibility, then cognitive accommodation ensues as the viewer learns to inhabit the pictured world. Crucially, this phenomenological traction strengthens autonomy: the image teaches how to see its world, thereby constructing a disciplinary literacy that can travel across studios, juries, and critiques. The payoff is epistemic: what is learned is not the feasibility of a solution but the grammar of a problem—its categories, thresholds, and stakes.

Sixth, image–context relations. The comparison elucidates two modalities. In González, context is addressed directly: existing urban tissues are surfaces of inscription where fiction rescripts infrastructure, density, and adjacency. Context thus appears as transformable substrate, not as constraint, and the montage negotiates visibility (how much of the host must remain legible for critique to land?). In Dujardin, context is dissolved into a formal field: fragments are re-aggregated into ahistorical ensembles whose only "site" is the photographic regime that guarantees believability. Here, coherence substitutes for locale: shadows, occlusions, and alignments perform the "where" of the image. The upshot across both is that context is not determinant; it is reconfigured by the image. The image does not adapt to the world; it transforms it—either by counter-mapping a recognizable city or by re-typifying architecture through compositional research.

Seventh, limits and risks. Autonomy is productive but not unproblematic. Four risks deserve mention. (1) Credulity trap: when verisimilitude is so high that critique is read as proposal, the political charge may be neutralized by expectations of feasibility (the audience asks "can it be built?" instead of "what does it do?"). (2) Aestheticization of crisis: particularly in González, there is a tension between representing precarity and consuming it as imagery; the ethical stance depends on how the montage

redistributes attention and prompts consequences (debate, policy, pedagogy). (3) Instrumental capture: competitions and marketing may co-opt autonomous images as symbolic capital, flattening their discursive edge into mood or brand. (4) Image fatigue: the abundance of credible composites can normalize the extraordinary, dulling the shock that autonomy initially leveraged. These limits do not invalidate autonomy; they specify conditions for its responsible use (crediting sources, declaring manipulations, articulating stakes, and coupling images to forums where they can act).

Eighth, implications for pedagogy and practice. In the studio, autonomous images can scaffold research-by-imaging: students learn to formulate criteria (coherence, operativity, narrative force) and to evaluate proposals by how well images perform discursively. In competitions, autonomy invites briefs that test typologies and programs not yet buildable but thinkable—expanding the repertoire of options evaluable by juries. In offices, autonomous imagery functions as decision support: not renderings of a single scheme but families of plausible worlds that clarify trade-offs before committing to constructability. Across these arenas, the autonomy of the image does not replace building; it re-sequences design labor so that conceptual production informs material decisions instead of merely representing them after the fact.

Ninth, synthesis. The disciplinary impact is significant. Operating from autonomy, these works challenge conventional validation—functionality, constructability, economy—and advance alternative criteria: symbolic coherence, critical potency, evocative capacity, and disciplinary operativity. The result is not a rejection of architecture but an expansion of its horizons: the digital image becomes a space of freedom where the impossible is rendered visible and the absurd acquires methodological meaning. In González, autonomy is oriented toward urban critique; in Dujardin, toward formal exploration—yet both culminate in a shared claim: images can produce architectural knowledge. Accordingly, the evaluation shifts from constructive possibility to discursive efficacy and world-making. This does not negate construction; it re-positions it as one regime among others for validating architecture. In sum, the comparison shows that the digital architectural image can be autonomous reality not by denying matter, but by enlarging what architecture can question, propose, and make thinkable—and, in doing so, by transforming the contexts in which architecture is imagined, debated, and ultimately made.

5. Expanding Architecture through Autonomous Images: Image as Architecture

In the contemporary context, the digital architectural image has moved beyond its traditional representational role to assume an autonomous status that redefines the horizon of design. This shift constitutes an epistemological break: no longer a reflection subordinated to construction, the digital image emerges as a discursive agent capable of producing knowledge in its own right. Under this paradigm, verisimilitude, internal coherence, and symbolic force displace materialization as primary criteria of validation.

This autonomy enables the exploration of architectures that need not be built to be meaningful. It broadens the design repertoire, enriches creative processes, and recasts the architect as a producer of spatial fictions. Accordingly, architectural practice extends into visual culture, incorporating narrative and phenomenological strategies that traverse—and at times exceed—conventional design boundaries.

The work of Dionisio González and Filip Dujardin exemplifies this transformation. Their images operate in the domain of the imagined possible, not as proxies for a future building but as proposals—entities to be conceived, interrogated, and debated. In doing so, the digital image becomes an operative modality in the immediate context: exploring alternative forms, testing disciplinary canons, and engaging questions that lie beyond the single building. It is therefore not a mere instrument but a material of thought, whose autonomy signals reconfiguration rather than severance from reality.

Within this framework, the digital architectural image must be understood as critical and conceptual practice. It does not simply represent the project; it constitutes it—setting out discursive grounds upon which design can act. Recognizing this status consolidates the image's role in contemporary architectural knowledge: as visual reality and operative discourse, it expands what architecture can question, propose, and make thinkable. Thus, the legitimation shifts from feasibility to world-coherence.

While the proposed criteria appear portable, their generalization remains a working hypothesis requiring further testing across other practices. Future research should broaden the genealogy, refine criteria in diverse digital corpora, and address ethical risks of aestheticization and instrumental capture. In this sense, the autonomous—yet accountable—digital image enlarges the field of the thinkable.

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31. Anne Friedberg, *The Virtual Window: From Alberti to Microsoft* (Cambridge, MA: MIT Press, 2006).
32. Dionisio González, "Cartografias para a remoção," photographic series, exhibition at Max Estrella Gallery, Madrid, January 25–March 3, 2007.
33. Filip Dujardin, *Filip Dujardin: Fictions* (Ostfildern: Hatje Cantz, 2014).

Image Caption

Fig. 1. *Carcere XIV*. (Piranesi, 1745. Public domain.)
Fig. 2. *Cenotaph for Newton. Section, daytime rendering with interior nocturnal effect.* (Boullée, 1784. Public domain.)
Fig. 3. *Marginal I, Cartografias para a remoção, 2007. Digital photomontage.* (© Dionisio González, 2007. Courtesy of the artist. Reproduced by permission.)
Fig. 4. *Untitled, Fictions series, 2009. Digital photomontage.* (© Filip Dujardin, 2009. Reproduced from Filip Dujardin: Fictions (Hatje Cantz, 2014) with permission.)

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Biography

Alberto Álvarez-Agea Architect and PhD in Advanced Architectural Design, ETSAM, Polytechnic University of Madrid.
The understanding of architecture as an integral discipline that is, at the same time, practical and theoretical, has guided the development of a mixed profile. Both professionally in the academic field (as director of a postgraduate professional program and as a professor of architectural design and graphic representation) and academically in the practice (in the built projects, in the awarded international and national competitions, and in the long-term collaboration with architectural firms based in more than 10 different countries). The configuration of a chronotopic architecture, in which time and space acquire equal importance and are inextricably linked in form, guides one of the lines of my research. And in this form, that defined by protogeometries. The other line focuses on the role of graphical constructions in the communication and representation of architecture and their impact on a collective visual culture.

Cutting and Fitting: Architectural Thinking through Photomontage at the UCV Institute of Architecture, Chile

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Abstract

This paper examines the potential of photomontage as a tool for material and spatial thinking at the UCV Institute of Architecture (Universidad Católica de Valparaíso, Chile). While photomontage occupied a central place in early twentieth-century architectural representation, this study argues that at the UCV Institute, it functioned not only as a representational device but as a graphic operation consistent with the Institute's architectural position, characterised by attention to lived experience and the observation of place.

The research combines historical and graphic analysis of archival material through four case studies developed between the 1950s and the 1970s: the Santa Clara Church (1954), the Naval School (1956–57), the Avenida del Mar urban project (1969), and the San Luis Urban Development (1969–74). Particular attention is given to the role of architect José Vial Armstrong in consolidating photomontage as a methodological practice within the Institute.

The results indicate that photomontage fostered distinctive forms of spatial awareness by activating specific graphic logics of cutting and fitting. Through these operations, architectural reasoning was structured around relationships between building, site, geography, and acts of inhabitation. Rather than depicting finished solutions, photomontage enabled the testing and clarification of spatial intentions within a sequential process combining photographic recording, model-making, and calibrated recomposition.

The discussion concludes that photomontage at the UCV Institute of Architecture operated simultaneously as a device for architectural thinking, a pedagogical platform grounded in collective studio work, and a persuasive medium. As a pedagogical practice, its production mobilised students and professors across different studios, making representation inseparable from design learning. As a persuasive tool, photomontage made architectural positions publicly legible and inserted them into broader debates about the city and its destiny. In this sense, photomontage emerges as a critical architectural medium that bridges design reasoning, education, and public engagement through the construction of images.

Key words: photomontage, graphic logics, José Vial Armstrong, architectural pedagogy, design reasoning.

1.The UCV institute of Architecture

Founded in 1952, the UCV Institute of Architecture was an autonomous research and creation unit at the Catholic University of Valparaíso. The Institute emerged through the initiative of poet Godofredo Iommi, along with architects Alberto Cruz, Miguel Eyquem, Francisco Méndez, José Vial, Arturo Baeza, Fabio Cruz, and Jaime Bellalta, who arrived as a group at the UCV School of Architecture in Valparaíso.[1] Their project explored the relationship between architecture and poetry, building an academic and artistic milieu defined by interdisciplinarity and collective action. Through the UCV Institute of Architecture, the group conveyed their distinctive artistic stance to the UCV School of Architecture, distinguishing it from other Chilean and Latin American schools. This transformation was marked by the pursuit of a new pedagogical approach, one that grounded architectural thinking in the experience of the place through the practice of observing space and urban life.

Three traits defined the Institute in its first decades. The first was its interdisciplinary encounters, integrating poetry, painting, sculpture, and architecture into shared creative processes. The second was project-based experimentation, in which competitions, public commissions, and private projects served as laboratories for testing ideas and shaping their architectural position. The third was its collective approach to studying and working, structured around studios where professors and students collaborated on the design and construction of projects.[2] The UCV Institute of Architecture established a format of collective study and work that the group later referred to as the ronda (round).[3] In practice, this meant that every project—whether a small-scale construction, a competition entry, or a large urban commission—was undertaken by groups of professors and students working side by side. Such collective formats blurred the traditional boundaries between academia and professional practice: projects became classrooms, and classrooms became projects.[4] These organisational and pedagogical conditions informed the graphic practices developed within the Institute. The emphasis on collective work, project-based experimentation, and attention to lived space provided a fertile ground in which photomontage operated not as an isolated technique, but as part of a broader visual culture.

2. Photomontage and Visual Culture

Photomontage occupies a peculiar position within the broader history of collage. While collage encompasses heterogeneous material assemblages, photomontage distinguishes itself by constructing an image exclusively from photographs, thereby staging a paradoxical relation with reality. As Sontag has noted, “Photographs furnish evidence.”[5] The photograph is conventionally bound to the real, to that which has been seen and thus bears the weight of existence. Photomontage, however, unsettles this epistemological framework: it is at once nothing but photographs, yet its object is precisely that which does not—or does not yet—exist. It should therefore be approached not as photography per se, but as a graphic composition whose epistemological value lies in its power to propose. From the perspective of representation, philosopher Max Black distinguishes between showing and portraying. He argues that something that has actually occurred is portrayed, whereas something that lacks evidence of existence can only be shown.[6] This displacement can be reflected in the distinction between a photograph and a photomontage. Whereas the photograph portrays, grounding itself in an event that has occurred, the photomontage shows: it presents an image without empirical referent, disclosing a reality that is virtual or projective. The status of the photomontage, then, lies less in documentation than in speculation, operating in a liminal zone between representation and projection. Because of its intrinsically projective character, photomontage offers architecture a particularly fertile operative medium. Assembling photographic fragments enables architects to speculate on spatial relations and modes of inhabitation, anticipating possible futures as images that mediate between what exists and what is yet to come.

Since the mid-20th century, photomontage operated within a broader visual culture shaped by the expansion of mass media and magazines. In architectural culture, the increasing circulation of photographic images transformed the relationship between project, image, and audience. This shift intensified during the Second World War, when United States publications such as Life and Time consolidated photojournalism as a dominant mode of visual communication. The prominence of image-based content in these magazines directly influenced architectural periodicals, including Architectural Forum, which Time Inc also published. The expansion of visual culture within architectural publishing is explicitly acknowledged in a 1951 report from an editors’ meeting of Architectural Record, which states: “Since our subscribers are trained in graphic arts and seldom in literary expression, they are more interested by the picture, building or example than by the word, article or principle”.[7] This statement reflects a broader cultural condition in which images increasingly mediated architectural knowledge and discourse. Within this context, photomontage acquired a particular ambivalence. On the one hand, they could serve as a persuasive tool for presenting a project in pursuit of its understanding or acceptance; on the other hand, they could function as a graphic operation within the design process. The photomontages developed at the UCV Institute of Architecture should be situated within this tension.

3. The Use of Photomontage at the UCV Institute of Architecture

Since the founding of the UCV Institute of Architecture, photography was present as a means of documentation under the care of architect José Vial.[8] Alongside the keeping of logbooks of the Institute’s actions, as well as records and written minutes of meetings and lectures, Vial also carried out the photographic documentation of events and projects.[9] The Institute acquired the necessary photographic equipment, including cameras and facilities for developing and enlarging prints, which made it possible not only to register activities but also to begin using photographic techniques in relation to architectural languages such as drawing and model-making. Photography was thus incorporated as a graphic resource within the Institute’s processes of study and architectural projection. Examples of this include the use of photographic test strips as the basis for constructing contextual perspective drawings, as in the case of the Chapel Pajaritos; the overlapping of photographs to generate panoramic views, as in the Churches of the South; and double exposure techniques used to reveal the constructive inner workings of a project, as in the Santa Clara Church. In the course of these experiments, Vial began to work with photomontage, learning through practice and, across various projects, developing a method for its construction that granted graphic presence to the Institute’s ideas on urban space. (Fig. 1)

Fig. 1

This expansion of photographic practices unfolded within the Valparaíso School’s broader pedagogical framework, structured around the triad of observation, act, and form.[10] Observation was conceived as an attentive engagement with place, initiating architectural inquiry through drawing as a mode of questioning rather than recording. The act condensed this lived experience into an intelligible formulation of inhabitation, from which form emerged as a spatial void shaped by that understanding. In this sense, the project's origin lay in the relationship between act and form, rather than in formal or functional derivation.

Photomontage operated in resonance with the School’s broader mode of architectural thinking, functioning as a parallel field in which design reasoning could be tested, adjusted, and made visible.
In this capacity, photomontage served as a medium through which architectural intentions were negotiated and refined. Rather than solely depicting form, it participated in its conception by situating architecture within a network of spatial relations and lived conditions. Falbel, Pousin, and Urlberger touch on photomontage as an image used for design, reminding James Corner’s proposal of photomontage as an eidetic image that “would represent an appropriate technique for supporting the design process, insofar as the suggestive image accompanies the act of creation, which is an intellectual act.”[11] Photomontage thus provided a space in which observation could be transformed into projective relationships, allowing architectural or urban form to be explored as an open and situated proposition. Its value lay precisely in its capacity to hold together inquiry, decision-making, and projection within a single operative image.

Within the Institute, photomontage was accompanied by other graphic instruments, most notably a sketched perspective view, which the group referred to as *inhabited croquis*. These were hand-drawn perspectives populated with inhabitants and their everyday gestures, used to communicate the spatial qualities of a project in relation to the acts of living it would host, a tool capable of giving a direct account of that relationship between act and form. Unlike technical renderings, these croquis were integral to the design process itself, serving as moments of elucidation—images created to think through the project rather than to present it as finished. If the *inhabited croquis* was a quick, hand-drawn meditation on the inhabited space, the photomontage was a slow elaboration, a crafted image whose richness derived precisely from the time it took to prepare. Both, however, were complementary. Together, they demonstrate how representation at the Institute was inseparable from thought: images were never neutral depictions, but tools for reasoning about space, place, and inhabitation.

4. Case Studies

Between the 1950s and the 1970s, the UCV Institute of Architecture set the rhythm of the Valparaíso School of Architecture through the development of urban and architectural projects, many of which involved the production of photomontages. The following section analyses the photomontages of four projects: the Santa Clara Church (1954), the Naval School (1956–57), the Avenida del Mar urban project (1969), and San Luis Urban Development (1969–1974). The purpose is to establish a methodological framework for understanding the composition of these photomontages.[12] Such an approach clarifies the compositional complexity of the work and evidences the precision required in its production.

Each case provides a distinctive characteristic of how the UCV Institute of Architecture approached the production of a photomontage, revealing that this technique did not constitute an isolated graphic act but formed part of a chain of procedures. Photomontage was characterised by a material, sequential, and physically mediated process of composition, in which spatial site analysis, model making, photographing, and re-photographing operated as discrete acts of design reasoning. Typically, this sequence began with the photographic register of the urban context and photographs of urban life scenes, followed by the construction of physical models at various scales. Once the models were carefully built, José Vial installed an easel next to them, displaying either aerial photographs or urban views of the site, adjusting the framing and perspective in his camera to capture the model's perspective. The montage thus emerged from a double translation: from the three-dimensional model to the photograph, and from the photograph to the cityscape in which the project was inserted. The decisions involved in aligning the model, site, and inhabitation made of these graphic acts an exercise in design reasoning.

4.1 The Santa Clara Church (1954): Photomontage as Integration of Layers

In 1954, Miguel Eyquem and other members of the UCV Institute of Architecture began designing the Santa Clara Church, a project commissioned by the Archdiocese of Santiago. The project started with an exchange of letters between Father Mario Rojas, the newly established parish committee, and the architects. These letters discussed the early stages of the project, including its initial presentation and the means of representation for the community and potential investors. In one of these exchanges, Miguel Eyquem suggested to Rojas the idea of preparing “large-scale, more realistic perspectives” to help the community envision the future church.[13] Using photographs of the site and a model of the project, the architects produced three photomontages in 1955, which acted as a persuasive tool, mediating the introduction of a modern architectural language to a community accustomed to other typologies of sacred space by presenting the proposal within the familiar urban and social contexts.

The selected image corresponds to one of the photomontages the architects presented to the parishioners. It depicts a street-level perspective from across the parish, incorporating pedestrians, parked vehicles, public lighting, and elements of the surrounding urban environment. These components demonstrate how the project was situated within its context and how everyday urban conditions were integrated into its representation. By identifying the most visible cuts in the photomontage and searching the original photographs that composed it, it is possible to dissect the image and reconstruct its original elements. (Fig. 2) From this analysis, it is possible to recognise three main layers, which provide an index for understanding the photomontage: model, site, and inhabitants. The model serves as the central element, standing out through the photographic composition of the final photomontage. Materiality, lighting, and the choice of angle from which the model is photographed play a fundamental role in achieving coherence between the different layers. The site layer not only situates the project but also conveys a sense of scale. The cuts and fittings between photographs are subtle enough not to cause visual disruption. The figures of inhabitants inserted into the scene complete the contextual framework of the project—like the layer of the site—providing a sense of scale to the building, while also adding depth to the composition. There is also a practical use: the cyclist and the man crossing the street are strategically placed over the seams of the photographs.

The analysis of the Santa Clara photomontage demonstrates how this technique functioned as an instrument that integrated model, site, and inhabitation into an image that served as a medium for testing and clarifying spatial intentions through graphic acts. At the same time, a close reading of the image makes explicit the sequence of operations and gestures involved in its production: the photographic capture of the urban context, the selection of everyday scenes of neighbourhood life, the construction and careful photographing of the model, and the subsequent acts of scaling, cutting, fitting, and composing these elements into a coherent visual field. This procedure required a laborious study of angles, the calculation of perspectives, the alignment of light sources, and the careful adjustment of scales. The precision of these operations allowed the built volume to be meaningfully adjusted to the physical conditions of the place. The gesture of fitting implied more than technical accuracy. It required an understanding of the spatial qualities of the place and the acts of living in urban space. The photomontage thus became a device for anticipating how architecture might transform and be transformed by its context. Only after this series of operations did the photomontage emerge as a composite image.

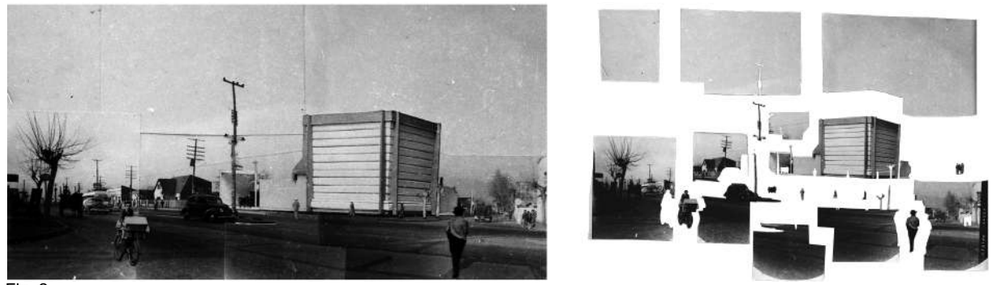

Fig. 2

4.2 Naval School Competition (1956–57): Photomontage as Design Reasoning

The project for the Naval School in Valparaíso marked a pivotal moment in the Institute’s design exploration and research. Following the competition call to design the school on the peninsula of Playa Ancha, the site’s topography was carefully analysed, with particular attention to the prevailing southwest winds—the project’s primary concern. The proposal envisioned an architecture conceived as a windbreak, drawing on principles from aeronautical design to create public spaces sheltered from strong gusts. In this way, the design sought to provide comfortable living and learning conditions for the cadets. A sequence of roofs based on undulating vaults was developed to resist the area’s intense winds while simultaneously shaping the project’s open-air spaces.

The photomontages articulated the relationship between the ensemble of buildings and the site’s specific conditions: a cliff promontory facing the Pacific Ocean (Fig. 3). The images highlighted how architecture could be composed so that the layout and form of the various building volumes protected the project’s exterior spaces, generating a wind shadow. These sheltered areas, protected from direct wind flow, were conceived to accommodate the cadets’ daily life. Beyond illustrating the project’s insertion into the landscape, the Naval School photomontages articulate three operative layers: the photographed site, the model-derived architectural volumes, and the atmospheric conditions associated with wind. For example, in the photographic fragments corresponding to the sea, it is possible to identify the southwest wave train that signals the prevailing winds, aligned parallel to the most significant building volume, which curves away from the wind to form a system of courtyards along the slope.

The different photomontages produced for the project reveal variations in the design, particularly in the relationship between building volumes and exterior courtyards. These differences in the project’s spatial organisation indicate that photomontage was not used to represent a finalised solution, but rather to explore design decisions. It functioned as an open graphic resource, allowing formal variations to be tested and design questions to be reasoned through. Thereby, photomontage served as an instrument of architectural thinking, capable of articulating, within a single image, environmental conditions and formal decisions, enabling design reasoning to emerge from the relationship among wind, topography, and built form.

In the Naval School competition, students worked alongside professors on geographical and climatic site analysis, the production of large-scale drawings, and the construction of models, which served as the base material for the photomontages. This mode of work, in which different studios associated with the project developed distinct layers of the proposal using complementary architectural languages, converged in the photomontage. In other words, the various resources produced across the studios were ultimately articulated within the image as a unifying graphic language that brought together all prior

work. In this context, photomontage can be understood as a privileged site of convergence for the work produced across multiple studios, condensing diverse lines of inquiry into a shared graphic field. Beyond documenting the proposal, the photomontage made the collective nature of the School's studio-based production visible.

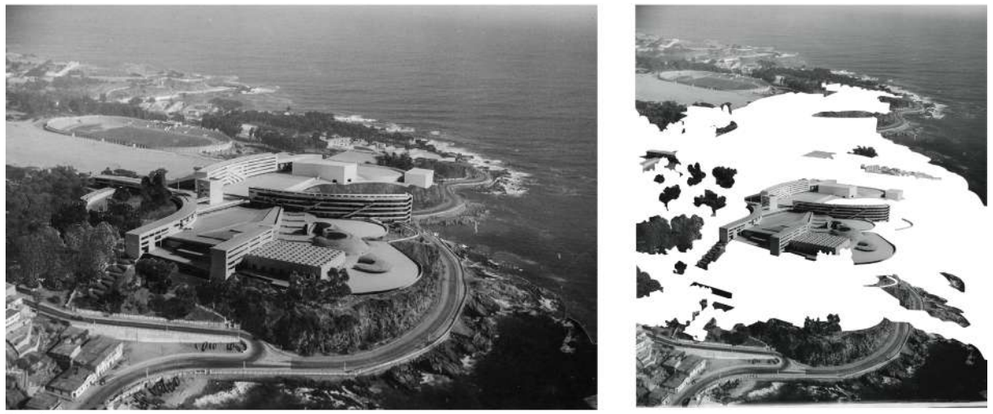

Fig. 3

4.3 Avenida del Mar Project (1969): Photomontage as an Image of the City's Destiny
In 1969, the Ministry of Public Works (MOP, Ministerio de Obras Públicas) announced the Vía Elevada, an urban infrastructure project aimed at consolidating the coastal stretch between Viña del Mar and Valparaíso. The proposal, however, eliminated free access to the beach by appropriating the entire shoreline for vehicular and railway transit through elevated viaducts. In response, the UCV Institute of Architecture developed the Avenida del Mar project as a counterproposal to the Vía Elevada. This alternative emphasised that "Valparaíso fulfils its mission of pointing to the country's maritime destiny by caring for, not abandoning, the seashore with its port. Viña del Mar fulfils the same mission by caring for, not abandoning, the seashore with its beaches."[14] Accordingly, a fundamental phase in the development of the Avenida del Mar proposal was the study of coastal flows, particularly pedestrian movement between the city and the urban beaches.

A detailed photographic survey of the beaches was carried out, recording the spatial manifestations of everyday life along the seashore. These photographic studies were then used to produce photomontages at the level of human vision—distinct from the aerial views employed to reveal the urban scale—to illustrate the project's spatial response to the continuity between the city and the waterfront. In contrast to the Vía Elevada project, described as "made only for the law of the automobile and not for the law of man," the Avenida del Mar photomontages expressed a clear intention to construct the city's edge as public space and to ensure access to the sea at a human scale.[15] Here, photomontage functioned as an operative medium for projecting the continuity between city and coastline through scalar sequences from the urban fabric to the shore.

Like the Naval School project, Avenida del Mar became an experience in which students' contributions directly shaped the photomontage. Architecture studios produced large-scale drawings of the project, which served as the basis for constructing a model of the entire coastal stretch from Viña del Mar to Valparaíso. Using this model, a further series of photomontages was produced to convey the city's scale by superimposing infrastructural elements along the coastline (Fig. 4). Segments of the model were photographed and assembled from repeated images, ranging from distant views of the city on the horizon to progressively incorporating urban layers until reaching the immediate edge of the project. Through this process, the technique enabled a layered negotiation between natural geography, road infrastructure, and public space, visualising the temporal coexistence of acts of inhabitation along the seaside.
The photomontages of Avenida del Mar made the UCV Institute of Architecture's position about the city publicly legible. Within the Institute, the city was conceived not as a neutral container of functions but as the spatial manifestation of a collective destiny. This position, articulated in the 1967 text *Arquitectura*, framed architectural practice as an act of orientation rather than mere problem-solving, stating that the architect's task is "to work for [the] destiny" of the city.[16] In this sense, the Avenida del Mar photomontages played a significant argumentative role as an active tool for urban public debate, presenting to the citizens an alternative vision of the city in which life along the waterfront and the beaches as public space constituted the central motive of the image.

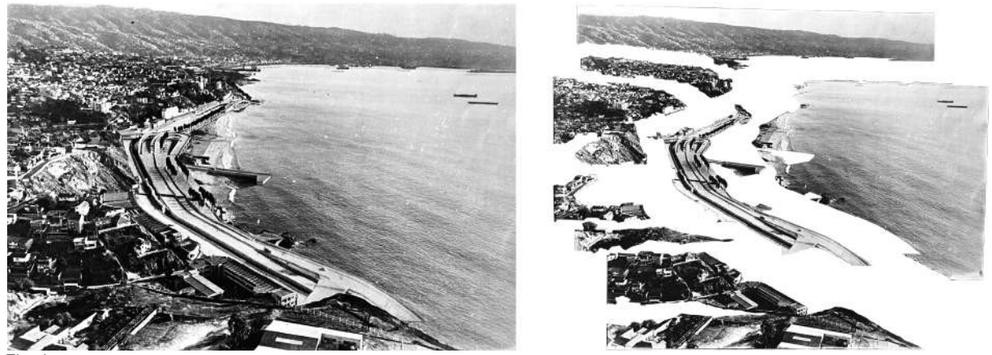

Fig. 4

4.4 San Luis Urban Development (1969–1974): Photomontage as a Mediator between City and Territory
Conceived by Miguel Eyquem under the commission of CORMU (Corporación de Mejoramiento Urbano), the San Luís Urban Project was an ambitious plan to create a new urban centre in the eastern sector of Santiago. Envisioned for over 150 hectares in Las Condes, the project aimed to accommodate approximately 70,000 inhabitants through around 13,000 housing units, supported by a robust network of civic, cultural, and recreational facilities.[17] At the heart of the proposal was a commitment to read Santiago's geography as a structuring agent for urban form. Eyquem approached the Mapocho Valley, enclosed by the Andes and the Coastal Range, as a territorial frame that should be made present in daily urban experience.[18] The project's guiding axes were drawn from an aerial reading of the territory, aligning the urban fabric with emblematic landmarks such as El Plomo Mountain and San Cristóbal Hill. This cartographic logic tethered local spaces to a continental horizon, embedding the new district within broader cultural and geographic scales. By ensuring that the skyline and the Andean ridges remained visible through the civic centre and residential corridors, the plan inscribed the mountain range as an active participant in urban meaning.

The photomontage produced for the San Luís Urban Project was assembled from images of the physical model of the new urban centre against the real backdrop of the Andes Mountains. Given the scale of the proposal, this case does not rely on an aerial photograph to contain the project; instead, from within the proposal, the image engages with the farthest reaches of the surrounding environment. This procedure sought to capture the relationship between the projected civic axes and the horizon of the cordillera. (Fig. 5) By composing this image, the architects explored perspectives, scales, and orientations. The images thus recorded a direct dialogue between urban form and geography, making the mountain range an operative datum rather than a scenic afterthought. These studies reveal that San Luís investigated the fit between urban order and landscape through an inventive synthesis of model-making, photography, and territorial reading.

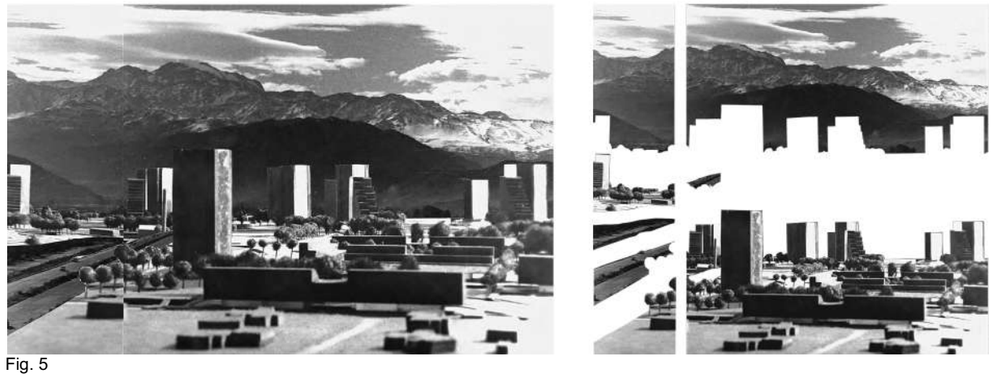

Fig. 5

5. Photomontage as Thinking Device, Pedagogical Action and Persuasive Tool.
The examination of photomontage at the UCV Institute of Architecture reveals its operation as a graphic instrument that exceeds the limits of representation. As demonstrated across the analysed cases, photomontage was not conceived in pursuit of strict realism, but functioned as a thinking device capable

of articulating architectural reasoning through graphic operations that activate critical judgment by situating the designer in direct dialogue with space, place, and the conditions of inhabitation. By layering model, site, geography, atmosphere, and inhabitation within a single image, photomontage enabled the testing and clarification of spatial intentions, allowing design decisions to emerge from the confrontation between project and context, as in the case of the Naval School. In this sense, photomontage structured a form of design reasoning in which architecture was conceived as a situated response to place and lived conditions, an operation consistent with the Institute's architectural position.

At the same time, photomontage operated as a pedagogical platform deeply embedded in the Institute's collective mode of teaching and practising. As exemplified by the Avenida del Mar proposal, the making of photomontages constituted a learning space in itself, where architectural thinking was cultivated through collaborative work. Representation was thus inseparable from education: images were not final illustrations but operative moments in which students learned to observe, decide, and project collectively. This pedagogical use of photomontage reflects the broader educational project of the Valparaíso School, grounded in shared study, experience of place, and the construction of knowledge in common. In this sense, what distinguishes these images from a broader genealogy of photomontage is their reorientation of the medium toward an operative pedagogy of architecture.

Beyond its design and pedagogical roles, photomontage at the UCV Institute also served as a persuasive medium for communicating architectural and urban ideas to broader audiences. By situating projects within familiar urban scenes and everyday contexts, photomontages mediated the introduction of modern architectural language to communities accustomed to other spatial and symbolic traditions, as in the case of the Santa Clara Church. At an urban scale, projects such as Avenida del Mar demonstrate how photomontage was used to present a vision of the city to the public. In these instances, photomontage did not merely communicate spatial proposals but actively engaged civic imagination.

Taken together, the photomontages produced at the UCV Institute of Architecture register a specific moment in the history of the Valparaíso School, preserving within their layered construction the pedagogical, disciplinary, and cultural conditions under which architectural thinking was produced. These images constitute a body of work whose significance lies in demonstrating how graphic practices can operate simultaneously as instruments of design reasoning, platforms for collective learning, and vehicles for public engagement. In this sense, photomontage emerges as a critical architectural medium, capable of bridging project, education, and society through the gestures of cutting and fitting.

Notes

1. Sculptor Claudio Girola joined the Institute shortly after.
2. Throughout the history of the Valparaíso school, this collective approach has acquired various versions, such as the *Bottegas*, the *Taller de Obras* at *Ciudad Abierta*, or the *Travesías de Amereida*.
3. Oscar Andrade, "Ronda: Architectural education and practice from the construction of a milieu in common" (PhD diss., Delft University of Technology, Delft, 2021), 222.
4. Many architectural studios focused on projects where the construction site became a learning space, and similarly, the school building was spatially transformed by studios through various projects.
5. Susan Sontag, *On Photography* (New York: Farrar, Straus and Giroux, 1977), 5.
6. E. H. Gombrich, J. Hochberg, and M. Black, *Arte, percepción y realidad*, trans. Rafael Grasa (Barcelona: Grupo Planeta, 2007), 128.
7. Phoebus Panigyrakis, "Architectural Record: 1942-1967; Chapters from the history of an architectural magazine" (PhD diss., Delft University of Technology, Delft, 2020), 171.
8. José Vial Armstrong (1926–1983) was a Chilean architect, professor, and co-founder of the UCV Institute of Architecture. A member of the Ciudad Abierta de Amereida, he also maintained the photographic and documentary record of the Institute's actions and projects, which is why the School's historical archive bears his name: the Archivo Histórico José Vial Armstrong. His knowledge of photography led him to produce and supervise many of the photomontages developed within the Institute.
9. Around 1967, photographer Juan Hernández was hired to take charge of the Valparaíso School's general photographic work, producing a large portion of the material that today forms part of the José Vial Armstrong Historical Archive.
10. The pedagogical triad of observation, act, and form was central to the educational project of the Valparaíso School of Architecture. Observation involved a deliberate pause and a sensitive reading of place, often mediated through freehand drawing understood as an instrument of inquiry. The act did not refer to action but to an intelligible formulation of inhabitation, articulated through a brief textual naming. Form was conceived as the architectural void arising from this act, encoding the project's generative principle in the relationship between lived experience and spatial configuration.
11. Anat Falbel, Frédéric Pousin, and Andrea Urlberger, "Photomontage Practices: Introduction," *Cahiers de la recherche architecturale, urbaine et paysagère* 18 (2023): 15.
12. The graphic disassembly of the original photomontages was carried out by Raúl Castro within the framework of the research project Fondecyt No. 11231173, "The Tacit Dimension of Natural Light in Architectural Practice and Education: Cases of Modern Religious Architecture in Chile." The Santa Clara case is developed in greater detail in his graduation thesis, titled "Analogue photomontage in architecture: A technique of representation and knowledge generation," funded by the same research project.
13. Miguel Eyquem to Mario Rojas Ramírez, August 8, 1955, Letter. Archivo Histórico José Vial Armstrong, Viña del Mar.
14. Escuela de Arquitectura Universidad Católica de Valparaíso, "Avenida del Mar," in *Fundamentos de la Escuela de Arquitectura, Universidad Católica de Valparaíso*. (Viña del Mar: Taller de Ediciones Gráficas, 1971).
15. Escuela de Arquitectura Universidad Católica de Valparaíso. "Avenida del Mar."
16. Instituto de Arquitectura UCV, "Arquitectura," *Dilemas*, no. 2 (1967): 13.
17. Miguel Eyquem, *El proyecto de la obra: de la gravedad a la levedad* (Santiago: Ediciones ARQ; Valparaíso: Ediciones Universitarias, 2016): 149.
18. Miguel Eyquem, "Centro Oriente según la CORMU 1970-1974," *Revista ARQ* 40 (1998): 42-49.

Image Captions

Fig. 1. Members of the UCV Institute of Architecture working on the photomontage for the Santa Clara Church, 1955. Archivo Histórico José Vial Armstrong, e[ad] PUCV.
Fig. 2. Santa Clara Church photomontage, 1955. Archivo Histórico José Vial Armstrong, e[ad] PUCV.
Fig. 3. Naval School photomontage, 1957. Archivo Histórico José Vial Armstrong, e[ad] PUCV.
Fig. 4. Avenida del Mar photomontage, 1969. Archivo Histórico José Vial Armstrong, e[ad] PUCV.
Fig. 5. San Luis Urban Development photomontage, ca. 1972. Archivo Histórico José Vial Armstrong, e[ad] PUCV.

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Biography

Óscar Andrade Castro is Professor at the Pontificia Universidad Católica de Valparaíso, where he teaches, conducts research, and leads creative projects at the School of Architecture and Design. He earned his PhD in Architecture from Delft University of Technology (2021) with the dissertation *Ronda: Architectural Education and Practice from the Construction of a Milieu in Common*. His research examines how architectural knowledge is collectively produced within communities of practice. He currently directs the ANID-funded project *The Tacit Dimension of Natural Light in Architectural Practice and Education: Cases of Modern Religious Architecture in Chile*, focusing on practice-based learning in projects developed by the Valparaíso School since 1954. A guest at Ciudad Abierta de Amereida, Andrade has contributed to its construction works and participated in over thirteen Travesías across Latin America with the Valparaíso School. He has also co-organised workshops and exhibitions in Chile, Brazil, Switzerland, Belgium, Germany, Sweden, and Norway.

Raul Castro Vásquez, graduated in Architecture in 2025, with a background that combines the development of design skills with a sustained interest in visual representation and graphic media. Throughout his studies, both in Chile and in Germany, he has had the opportunity to participate in academic and research activities that have allowed him to understand architecture as a discipline open to dialogue with art, photography, and contemporary visual culture. He is also interested in investigating how manual and experimental processes can contribute to the construction of contemporary discourses on architectural representation. He believes that these approaches offer the possibility of reflecting on architecture not only as a built object, but also as a cultural practice and, in particular, as a space for experimentation.

Re-Writing the Ground through Environmental Collective Action Glasgow and the COP26

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Abstract

The 2021 United Nations Climate Change Conference (COP26), a convention that brings together world governments to devise a global response to the climate crisis, was held at the Scottish Event Campus (SEC) in Glasgow, Scotland, from the 31October to the 12 November 2021. As world leaders, government negotiators, businesspeople, climate activists, and cultural leaders gathered at the conference centre, people from all over the world took to the streets of Glasgow in the form of protest, collective action, and pop-up events. The people's concerns on climate and social justice, and on the future of the Earth were manifested in Glasgow and beyond via the mass dissemination of the events on social media; hundreds of marches for the environment took place elsewhere in the UK and abroad. In this context, we ask: can the spatial disruption of collective action produce new graphic representations of the city?

Through a series of notations, mapping drawings, and physical models, this paper re-draws Glasgow's urban fabric as contested political surface. These representations function as instruments for analysing the temporal transformation of the city due to the agency of collective action. Central to this project is the abstraction of protest imagery into alternative notational systems. In this process the 'street,' the 'square,' and the 'border,' are re-presented and re-imagined to convey the contrasting scales, interests, and consequences as manifested inside and outside the site of the conference. Ultimately, the ground of the city is re-written in a way that captures both how we act upon the Earth and how we act for its preservation.

The project is informed by the post-digital condition, translating digital traces of collective action — live stream images, video recordings, and photographs — into hybrid analogue-digital representations. These mappings re-scale the spatial and political impact of protest onto the city of Glasgow. This process offers a critical reflection on the ways in which the urban ground intersects with climate anxiety, collective action, and digital information.

Key words: drawing, mapping, notation, protest, urban representation.

1. Mapping the urban ground

The 2021 United Nations Climate Change Conference (COP26),[1] a convention that brings together world governments – almost every year since 1992 to devise a global response to the climate crisis, was held at the Scottish Event Campus (SEC) in Glasgow, Scotland, from 31 October to 12 November 2021. For the duration of the summit, the venue and its surrounding grounds, the 'Blue Zone,' were declared a United Nations (UN) territory and was therefore highly fenced and patrolled by armed UN officers.[2] This meant that all officials, representatives, and experts who participated had diplomatic immunity on the site; at the same time, this created highly guarded boundaries and a hard border between the conference and the city. As world leaders, government negotiators, businesspeople, climate activists, and cultural leaders gathered at the conference centre; people from different parts of the world took to the streets of Glasgow in the form of protest, collective action, and pop-up events.[3] During the days of the convention, the people's concerns on co-existence, on climate and social justice, and on the future of the Earth were manifested in the city of Glasgow and beyond via the mass dissemination of the events on social media; consequently, hundreds of marches for the environment took place elsewhere in the UK and abroad.

The COP conferences illustrate the paradoxical world that we live in: the climate crisis is a trans-scalar phenomenon that runs beyond the traditional state borders, across populations,[4] and against linear time; yet the 'solutions' discussed there, are often limited by the decisions of the sovereign states that take part, each with its own interests and agendas, creating a contradiction between the global scale of the phenomenon and the form in which it is addressed. Is it possible for a conference to address the contradictory spatial and temporal scales at play,[5] while all relevant matters take place within separate, politically divided borders? In this context, we ask: can collective action, in its physical and digital manifestations, develop into a political instrument to bridge such divisions and hierarchies?

This study forms part of a larger research project, where we explore, via cartography, how the body of the protesting crowd interacts with its urban environment, with the media having entered the very constitution of 'people.'[6] In the last two decades, the emergence of social platforms and new technologies of visual mediation has transformed the collective body into a complex entanglement of physical and digital conditions, intensifying the protest's performative character as well as its field of operation. In the context of the climate emergency, this political body, present on the streets but also online, spans across territories and scales and visualises a collective discontent with the ways in which the future of the planet and its population are speculated and debated.

Using a design-led research methodology, therefore, this study explores the body of the crowd as a condition that is grounded and embedded locally, within Glasgow's urban fabric during the COP26 conference, but also globally, as manifested in multiple images and videos disseminated online and viewed worldwide. Through a series of notations, mapping drawings, and physical models, we unpack the spatial qualities of the imagery of the protesting crowd to re-draw Glasgow as a contested political surface and as a meeting point for the contrasting scales and interests. By re-drawing *the border*, *the street*, and *the square* as animated by the events, we draw attention to the antithesis between the world of state leaders, government negotiators, and businesspeople (inside the conference) and that of the 'people' (on the streets) as expressed by climate activists and cultural leaders. The process is informed by the post-digital condition, translating digital traces of collective action — live stream images, video recordings, photographs — into hybrid analogue-digital representations. The mappings re-scale the spatial and political impact of protest onto the city of Glasgow. The aim is to reconstruct the ground of the city as it emerges from the political action of the people expressing their anxiety about the future of the planet. This process offers a critical reflection on the ways in which the urban ground intersects with climate anxiety, collective action, and digital information. Ultimately, the ground of the city is re-written in a way that captures both how we act upon the Earth and how we act for its preservation. The work presented here is work in progress and still in the making, progressively developing towards an exhibition of the models as projection devices in the spring of 2026.

1. New forms of protest and their mediation

Although protest as the expression of public dissent has been an inextricable part of societies for centuries, and certainly from modernity onwards, environmental protest has more recently taken new forms and experiments with new practices of collective action. It is mediatic (in the way it is set up, recorded, and communicated via social media), provocative, and inconclusive (raising questions instead of offering ready-made answers about the future).[7] The 'crisis' becomes an opportunity for self-reflection and the re-evaluation of anything fixed and established, urging for change at all scales for the survival of the planet.

During the COP26, people from all over the world gathered in Glasgow to express their despair; to be found with others; and to call for action. Apart from the two 'traditional' marches (5th and 6th of November 2021), which were very populous, the streets of Glasgow became the platform for shorter processions, small group action, and performances. To be able to register the events that took place outside the conference, the point of departure for this study was a YouTube-based channel, specifically created for this time and space. COP26.tv[8] was a news platform developed by a group of climate activists, who broadcasted live for 12 hours every day a comprehensive coverage of what was happening inside and outside the conference. The daily broadcasts[9] followed the same thematic sections every day covering the proceedings of the conference; the action on the streets of Glasgow and around the world; interviews with scientists; responses to the developments from activists around the world; critical commentaries from environmental columnists; and music performances in support of the movement. The "word on the street," from 12.30pm to 5.30pm every day featured the protest movements spread around the city: the broadcasters would cover the actions in key spaces, such as the entrance to the Blue Zone or George Square, but they would also track and attend many of the one-off events organised and even react on the spot if there was information that something was happening somewhere in the city. Very often the broadcast shifted from the one place to the other, conveying much of the atmosphere on the streets. When there are too many actions taking place, some are recorded and shown later or the following day. Naturally, the 14-day broadcast does not cover every single event (a few others were sourced from newspapers and news websites), but the great majority of them.

The live broadcasting of the event — the media coverage of official meetings of world leaders, and the reactions to it on the streets of Glasgow and beyond — demonstrates how media infrastructures are coupled with visual devices, protesters, spectators, and the city. The counternarrative constructed by climate activists through the live broadcast heightened the sense of urgency and immediacy, counterbalancing the long timescales of climate-change discourse. At the same time, this real-time coverage stitches together spatially dispersed protest events across the city into a unified and accessible public narrative, consolidating and intensifying the climate-activist message. The productivity of using COP26.tv as the main source of information to map climate change protest, lay precisely in the agency of collective action, to deploy and distribute material resources and media infrastructure that supports the manifestation of bodies and performative practices on the streets. Via COP26.tv, collective action reshapes the ground of the city and reorganises its political boundaries. In this context, mapping becomes a projective instrument rather than a documentary one. Mapping and the artefact that emerges from it generate new knowledge about the spatial, temporal, and mediatic conditions of climate activism by visualising what usually remains hidden, and by reassembling what the live broadcast captures only in fragments.

The activist broadcast is not treated as a neutral or exhaustive record but as a mediatic infrastructure that actively shapes the perception of the protest. Its selective, situated vantage point is methodologically productive as it foregrounds certain actions, rhythms, and spatial relationships that official media or static maps would overlook.

2. Animating Glasgow: mapping the city in new ways

Fig. 1

For this study we watched and transcribed all the events covered in the videos, initially by text (Fig. 1) and then by notation, focusing on their location, the type of action, the set up in relation to the urban context, and the pattern of performance. More than 70 events were recorded. The process-driven work that departs from these aims at figuring how the environmental protest situates the concern about the planet in the city and how drawing, as a projective instrument, registers this and creates new urban representations. We focus on four acts through this cartographic process: from video to text and drawing to hand-drawn notation; from hand-drawn notation to CAD-drawn notation; from notation to model; and from model to projection and back to drawing. In this paper, emphasis is given to the transformative stages and their capacity to construct new graphic representations of the city.

This exploration is underpinned by Bruno Latour's formulation of the *Terrestrial*. To break from established notions of the earth and the world as well as those of territory, land, soil, and landscape,

Latour formulates the “Terrestrial” as a new political actor and as an entity that is found in continuous negotiation between the earth and new ways of making worlds.[10] He identifies a dissociation between the two lands we inhabit today: the one where we live in (the nation-state) and the one that we live from (where we get our resources).[11] Such contradictory territories make the ‘ground’ an abstract condition, a non-place [‘Where to Land? He asks in the original French book title]. The Terrestrial, instead, becomes a way to transcend borders and identities, a new way of making worlds.[12] Ultimately, it is an active agent in human action; it highlights the discontinuity and heterogeneity of the world; and, opposing the ‘view from nowhere,’ calls for embedded and embodied readings of things at all scales. This becomes an uncharted territory, “to be mapped out anew, at new costs.”[13] Latour’s concept suggests seeing the crowd as a complex body, part of a larger system that includes the human and non-human agents like the environment, media technologies, and digital infrastructures. But how to draw the Terrestrial with its tensions, struggles, and contradictions as different to both the ‘natural world’ and the ‘human world’?

The abstraction in this project then, is not a reduction of meaning; instead, it becomes a tool for assembling the interactions, frictions, and reciprocal dependencies that emerge across multiple human and non-human agents. This abstraction is the consequence of political dissent and people’s concern for the environment manifested in the streets of Glasgow. By the use of notations, we allow new relationships to surface between bodies, infrastructures, and the urban environment in which they take place. The aim, is to propose a new visual language that represent these interactions, creating a new configuration of the city that is politically grounded. Diagrammatic inscriptions establish “threshold conditions, links, urban masques.”[14] They have the capacity to extract and even condense the form of dynamic conditions and to implement change, to dissolve and reconfigure the ground, in a process that challenges the traditional role of cartography and the order it imposes on territory.[15]

3.. Transcription one: Video – text – notational drawing

After locating all the events (diagrams) on the map of Glasgow we worked with notation (initially hand drawn) to explore how they were performed in the city, one by one (Fig. 2). These events play out at different scales, from actions concentrated in key public spaces or targeting specific buildings in the city (banks or other global corporations) to processions that traverse the city and weave together several places. The notations visualise how the actions are choreographed in the space of the city; how certain buildings or other urban conditions become part of the protest itself; how other buildings become targets of the protesters as symbols of the corporations they house; the relationship between the action and the cameraperson who is recording it; the makeshift constructions that appear and disappear in the city; and the interface with the police, when there is one. Between the diagrams and the notations, Glasgow is animated based on the collective action; and as the day-by-day notations accumulate, certain spaces become more prominent and busier than others.

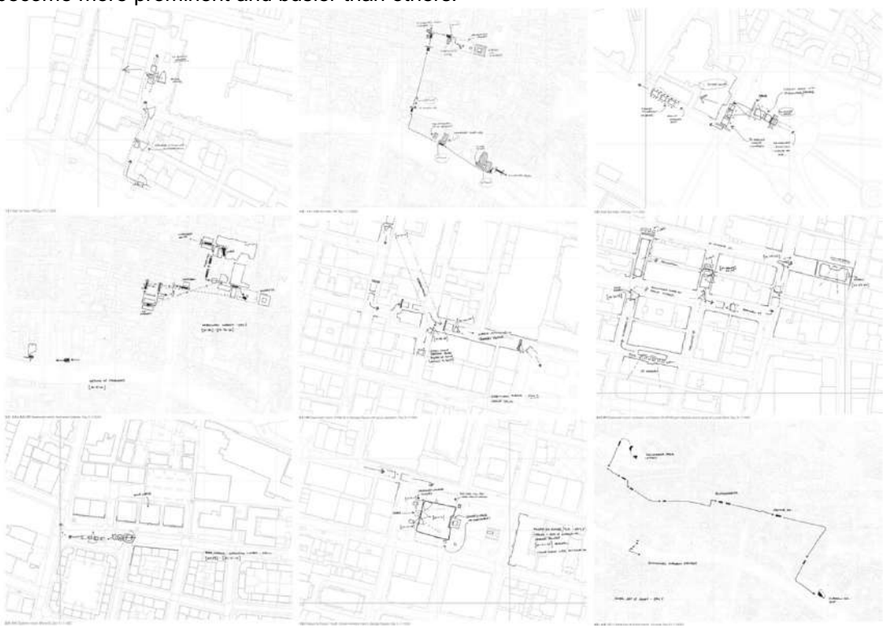

Fig. 2

The individual notations were then drawn via CAD over the map of Glasgow so that the superposition of events could be worked out more effectively. Movement and stasis, marches and stationary protests, camera movements and staged performances, the movement of police officers, horses, and cars, all take different line weights and colours. The layering of the distinctive events made some places in the city more prominent than others, allowing for a typology of urban spaces to emerge: Finnieston Street, as the interface between the conference and the city as well as the ‘border’ between the UN territory and Scotland, where numerous actions were organised targeting both the participants entering the site as well as the overall institution; George Square (a space with a long history of collective action) as a thoroughfare for every march and often a stop, as well as a destination for impromptu events; St Vincent Street, where the headquarters for Scottish Power and Santander Bank are found, gathering activists who protested against the companies’ greenwashing practices; and Waterloo Street, where the headquarters of JP Morgan became the backdrop for daily actions against the company’s investment in fossil fuels and their greenwashing practices (Fig. 3). Outside these key spaces, there were several pop-up events around the city. The big marches stitch together many of the above spaces and link them to other important public spaces such as Kelvingrove Park and Glasgow Green.

Fig. 3

4 Transcription 2: notational drawing to physical model

Following from the CAD-based notation, we embarked on a process of reworking these into digital 3D models to be then transformed into a series of physical models fabricated in acrylic via laser cutting. The layered notation for each of the spaces of focus is drawn and redrawn to develop into a model (Fig. 4, 5, and 6). In this process, the notation breaks from its two-dimensional surface and takes new forms

and eventually becomes tectonic objects – pieces that had to be slotted into one another and assembled into new constructions, inevitably modifying the original drawing from which they came.

This set-up, of which the acrylic model is part of, aims to intensify the very nature of notation as performative.[16] The abstraction of the notation here is not a means of simplification, but rather a way of transferring the coded information across the media. Discussing the function of drawing in architectural representation, Stan Allen defines notations as 'abstract machines'[17] that anticipate new relationships. Notations hold the potential for the modification and alteration of reality as they remain open to multiple interpretations. In our acrylic physical models, notation is not just a transposition of collective action (which itself is already performative) but a redefinition of its spatial agency,

In moving from 2D drawing to 3D objects, we aimed to give the notations a material and spatial presence. The physical models that emerge from this process function as new drawing devices. Using a spotlight and a surface of projection, the original notations are reinscribed and rescaled as shadows, acting upon the urban plan and the conference grounds — transforming the scale of the city through the projection of shadows. Scaling is used here as a process to break with the hierarchies set up by the geographical map and to give the collective action the disruptive power to suspend the boundaries established by the urban fabric.

As an ongoing work and unfinished process, the acrylic physical models function as projection devices. The models cast shadows onto the original drawing exacerbating the action of the street over the hierarchies embedded in the urban plan. In Finnieston St, the border between the conference and the city in the first model is no longer visible as the two sides are stitched together by the projected notation (Fig. 7).

This is where the new representations of the ground begin to emerge: where the natural and the social can no longer be separated; and where the political ecology shapes the public sphere.[18] According to Latour, activism constitutes a new form of belonging to a land and re-politicises the question about the ground and the territory,[19] in other words, there is no political position if one cannot describe one's place, their territory and ground; the view from nowhere does not exist, instead there are only specifically situated perspectives.[20] The people protesting outside the COP26 conference bring with them their own partial perspectives of the world (from all over the world) and compose a political body that makes new ground through meaningful negotiations.

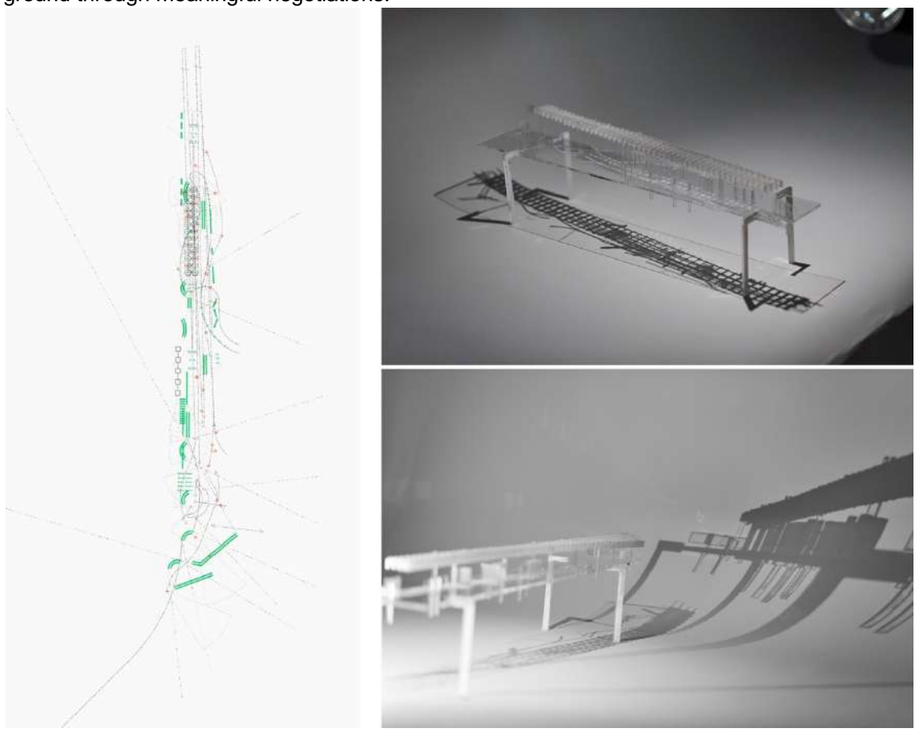

Fig. 4

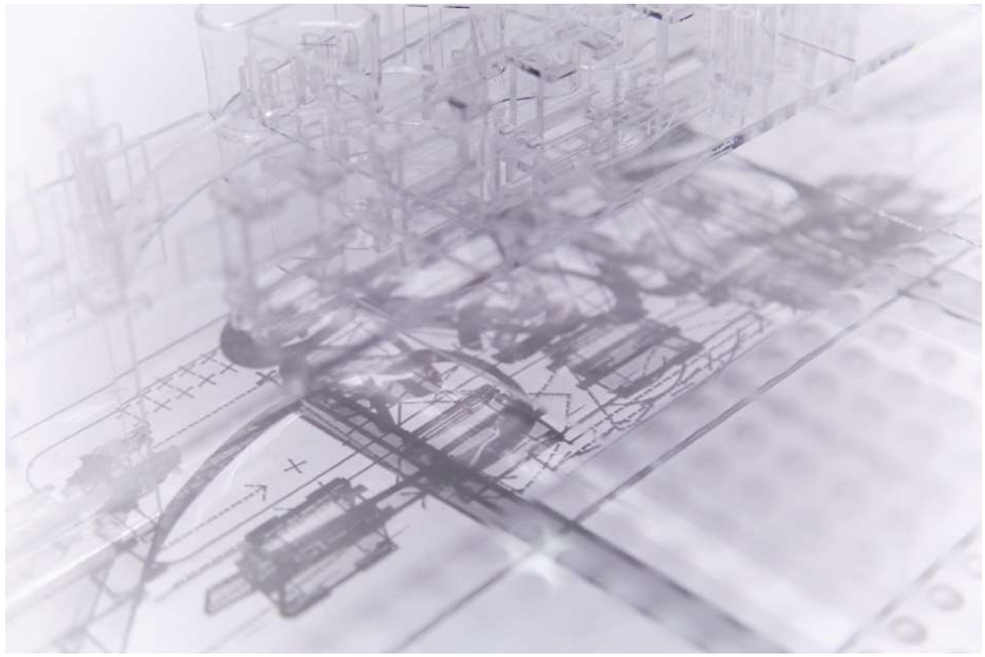

Fig. 5

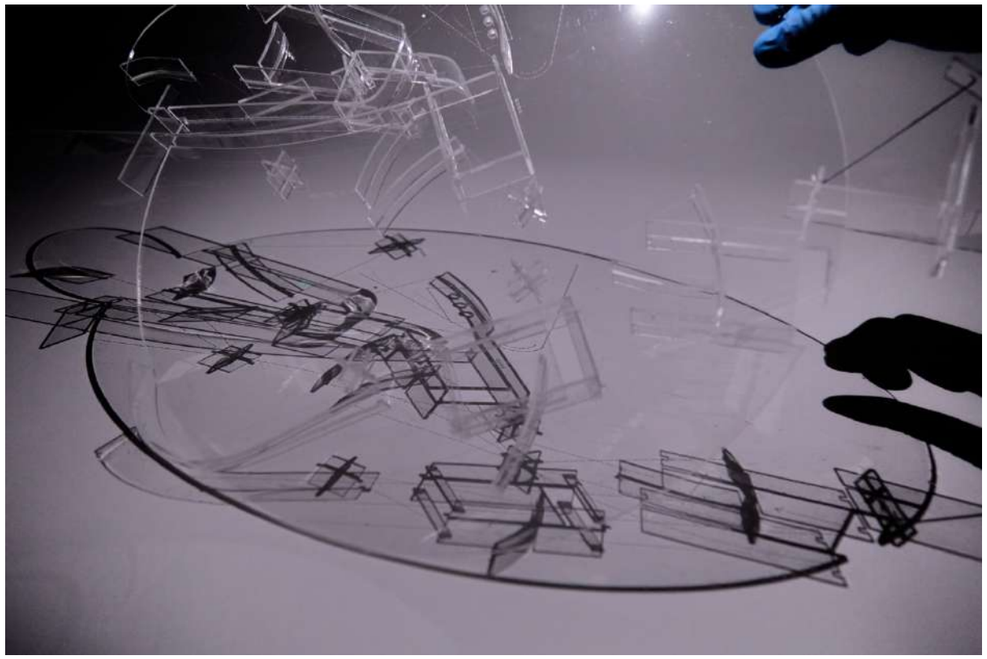

Fig. 6

5. Conclusion

This mapping process and the representations that began to emerge from it, prepossess new graphic representations of the city that are embodied in the multiple events. It replaces the cartographic convention that depict the city as a stable and finished space. In place of the view from nowhere, the mapping articulates a view from a multiplicity of perspectives — a ground constructed through situated recordings and political action.

“By the way, it is perhaps time to stop using the word ‘ecology’ except to designate a scientific field. There are only questions of dwelling places inhabited with or defended against other terrestrials that share the same stakes. The adjective ‘political’ ought to suffice from now on to designate these terrestrials, once the meaning of *polis*, which has for too long restrained the term ‘political,’ has been expanded.”[21]

Latour calls for a shift from the system of production (which carries within itself a certain perception of nature, of materialism, and of politics based on the division between humans and their resources) to a system of engendering (which brings together a confrontation but also a co-dependence of different actors, not seeking agreement but a possibility of acting together to be able to live together). But how to expand the political beyond the polis?

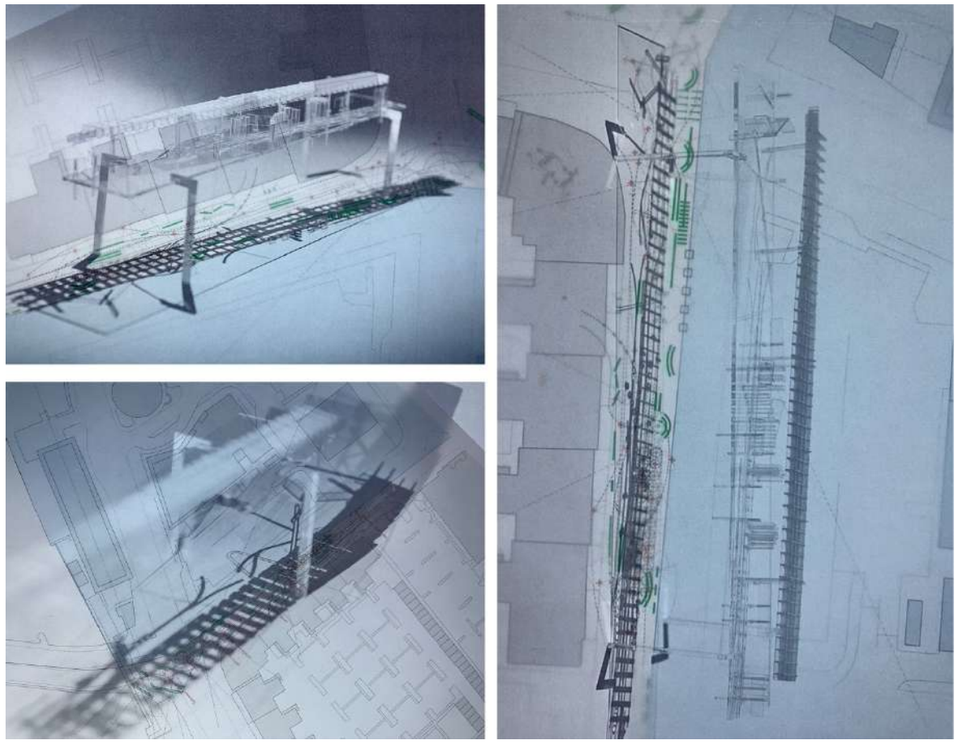

Fig. 7

This project has focused on how the city of Glasgow has been animated by activists who came from all over the world to defend ecosystems, populations, and changing landscapes. This is why their trajectories matter, and why – on the streets and on the drawing – they have the power to distort and to disrupt the city. Although two seemingly abstract entities act upon each other here (the city as an urban plan and the activism as notation), they carry different weights. The shadows cast by the notation-turned-model bring with them new spaces of commons and project new urban ‘creatures.’ In this capacity, they break and distort the city as we know it (as an abstract and uniform artifact), in pursuit of a new urban condition, which acknowledges the labour, and the resources embedded in it, and which considers all the agents involved in its making and maintaining.

The city is exposed therefore in its fragmentation, making room for new spatial negotiations, contradictions, and tensions. These representations break from the view from above (or from nowhere) and bring in more actors in the system too: “not only points of view, but also points of life proliferate.”[22] Ultimately, drawing the *polis* differently means to draw the world differently too. Drawing the Terrestrial sets up a new relationship between the political body and its (natural, urban, political) environment by drawing together the synergy between ground and human action; the fragmentation of the world because of the uneven development of cities, countries, landscapes; and the break from the single and ‘objective’ view from above.

Notes

1. “UN Climate Change Conference,” The National Archives, https://ukcop26.org.
2. “COP26: Climate summit venue becomes UN territory,” BBC, 29 October, 2021, https://www.bbc.co.uk/news/uk-scotland-glasgow-west-59089946 .
3. The *Youth March*, organised by Greta Thunberg’s *Fridays for Future* movement, attracted thousands of people of all ages who marched from Kelvingrove Park through the city towards George Square on the 5th of November. On the following day, *Global Day of Action for Climate Justice*, marched from Kelvingrove Park to Glasgow Green against the inadequate action at the conference and became the largest protest in Glasgow since the anti-Iraq War marches in 2003, with more than 100,000 people according to the BBC, see: “COP26: Thousands march for Glasgow's biggest protest,” BBC, 6 November, 2021, https://www.bbc.co.uk/news/uk-scotland-59185007. Alongside, activist groups, among others *Scientist Rebellion* and *Extinction Rebellion,* organised public events and acts of resistance.
4. Irene Straccuzi, “Climate Justice,” in *Free the Map: From Atlas to Hermes: a New Cartography of borders and Migration*, ed. Henk van Houtum (nai010 publishers, 2024), 163.
5. Saskia van Stein, “It’s about Time: The Architecture of Climate Change,’ in (preface) to *It’s about Time: The Architecture of Climate Change*, ed. Derk Loorbach, Véronique Patteeuw, Léa-Catherine Szack, and Peter Veenstra (nai010 publishers, 2024), 11.
6. Judith Butler, *Notes Toward a Performative Theory of Assembly* (Harvard University Press, 2015), 20.
7. See: Mark Engler and Paul Engler, *This is an Uprising: How Nonviolent Revolt is Shaping the Twenty-first Century* (Nation Books, 2016); Oscar Berglund and Daniel Schmidt, *Extinction Rebellion and Climate Change Activism: Breaking the Law to Change the World* (Palgrave Macmillan, 2020).
8. https://www.cop26.tv
9. “Daily Schedule,” COP26.tv, https://www.cop26.tv/schedule.
10. Bruno Latour, *Down to Earth: Politics in the New Climatic Regime* (Cambridge: Polity Press, 2018), 40.
11. Bruno Latour, “Moving Earths,” in *Connectedness: An Incomplete Encyclopedia of the Anthropocene*, ed. Marianne Krogh (Strandberg Publishing, 2020), 256.
12. Bruno Latour, *Down to Earth*, 54, referencing Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Duke University Press, 2015).
13. Bruno Latour, *Down to Earth*, 33.
14. Raoul Bunschoten, “‘Stirring the City:’ CHORA’s diagrammatics,” *OASE*, No. 48 (1998), 79.
15. Raoul Bunschoten, “The Skin of the Earth,” *AA Files*, No.21 (Spring 1991), 57.
16. Stan Allen, *Essays : Practice Architecture, Technique and Representation* (G & B Arts International, 2000).
17. Ibid. p, 32
18. Bruno Latour, *Down to Earth*, 46.
19. Bruno Latour, *Down to Earth*, 54.
20. Donna Haraway,“Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” *Feminist Studies* 14, no. 3 (1988).
21. Bruno Latour, *Down to Earth*, 90, emphasis in original.
22. Bruno Latour, *Down to Earth*, 88.

Image Captions

Fig. 1. Screenshots from transcription notes, credit: authors.
Fig. 2. Street action via notation, credit: authors with Sam Beckwith Flint.
Fig. 3. Clockwise from the top: Finnieston St, George Square, Waterloo S, and St Vincent St, credit: authors.
Fig. 4. Finnieston St: notation transformed to model, acrylic, and 3d-printed resin, credit: authors.
Fig. 5. Waterloo St: notation transformed to model, acrylic, and 3d-printed resin, credit: authors.
Fig. 6. George Sq: notation transformed to model, acrylic, and 3d-printed resin, credit: authors.
Fig. 7. Finnieston St: the model as a projection device, acrylic model, tracing paper, credit: authors.
Fig. 8. Finnieston St: folding the ground, tracing paper, credit: authors.

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Biography

Aikaterini (Katerina) Antonopoulou is a Lecturer in Architectural Design at the Liverpool School of Architecture, University of Liverpool, and the director of the Master of Architecture programme. She holds a Diploma in Architecture from the School of Architecture of the National Technical University of Athens, an MSc in Advanced Architectural Design from the University of Edinburgh, and a PhD in Architecture by Newcastle University. Her research focuses on mediated representations of the urban and the politics of the image: how representations of the public space of the city shape the perception of the place itself and attribute new meanings to its physical entities; how the architecture of the displaced and the way this is represented becomes a city-making activity and a laboratory for alternative forms of living and working together; how the multiple recordings of the protesting crowd reveal the space of politics in the city.

Sebastián Aedo is a Senior Lecturer in Architecture at the University of Portsmouth, where he coordinates the first year of the architecture programme and the MArch1 design module. He holds a PhD in Architecture by Design from the University of Edinburgh and an MA in Architectural Design Research from the University of Newcastle. His research interests lie at the intersection of architecture, media, and visuality, with a focus on how visual representations and media practices shape the production of architecture and the city. Sebastian is a permanent editor of DRAWING ON Journal of Architectural Research by Design, and he also serves as a peer reviewer for AJAR (Architectural Design Research). His work has been published in Architectural Research Quarterly (ARQ), and The Journal of Architecture, and has professional experience in architectural practice in Chile and China.

Visual Residues of a Delta:
Waterfowl, Surface Politics, and a Stratigraphic Montage

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Abstract

This paper examines the Gediz Delta in Western Anatolia as a stratified surface where visual, ecological, and territorial inscriptions overlap and unsettle one another. Engaging with ancient, state-authored, and contemporary visual materials, it proposes stratigraphic montage as a method for tracing discontinuous spatial formations and more-than-human temporalities. The first section explores ancient visual residues from the city of Leukai, focusing on Hellenistic coins and ceramics bearing the image of a waterfowl. These objects are not approached as symbolic artifacts alone, but as situated surfaces that encode ecological affiliations and territorial claims. The second section turns to early Republican infrastructure and its visual regimes: the redirection of the Gediz River, irrigation diagrams, and a 1937 documentary on the Çamaltı Saltworks. These works articulate a form of surface governance; seeking to stabilize, normalize, and render legible a volatile terrain. The third section engages with contemporary residues: video stills, photographs, and field recordings that register what persists across degraded wetlands, abandoned structures, and seasonal labor. Here, the method of gleaning drawn from feminist and ecological thought, foregrounds fragments that escape mastery, control, or archival containment. Rather than reconstructing a singular narrative of the delta’s transformation, the paper assembles an atlas of incongruent images and durations. Drawing is employed not as representation but as spatial critique: a way to hold together residues that do not align but collide. By attending to coins, salt grids, birds, and brackish margins, the study extends architectural criticism beyond the built form, toward geographies shaped by extraction, regulation, and ecological memory. In doing so, it situates the delta as a contested visual and material field; one that resists linear historiography and calls instead for a surface-based mode of inquiry.

Key words: stratigraphic montage, gleaning, more-than-human agency, surface politics, material histories.

1. Introduction – Visualizing the Delta Otherwise: Stratigraphic Montage and the Epistemology of Fragments

In architectural discourse, deltas are often represented through frameworks of cartography and infrastructure: maps, lines, projections, and coordinates that lend legibility to otherwise indeterminate terrains. These logics render deltas governable and measurable, but they also tend to flatten their temporal and symbolic complexities. The Gediz Delta, located along the Aegean coast of Western Anatolia, resists such simplifications. Rather than presenting itself as a fixed natural landscape, it emerges as a stratified field of visual residues that disturb the neat legibility imposed by spatial and temporal regimes. This paper approaches the delta not as a coherent object of knowledge but as a site of discontinuous image-making, where ecological memory, infrastructural violence, and symbolic forms sediment unevenly across time. The central question that drives this study is: how can a geography like the Gediz Delta be read not through maps or masterplans, but through the incomplete, fragile, and often discontinuous visual traces left behind? This approach seeks not to reconstruct a singular historical narrative of the delta but to read it as a graphic surface where images do not illustrate territory but act as operative forces in its making. Ancient coins, mid-century state films, hydraulic infrastructures, amateur photographs, and field recordings are treated here not as documentary evidence but as fragmentary inscriptions that participate in the spatial production of the delta. Their modes of visuality (symbolic, technical, anecdotal) overlap, interrupt, or bypass one another, generating what I call surface frictions: points of encounter where aesthetic, political, and ecological orders collide. These surface frictions are not merely stylistic effects, but epistemological operations.

Drawing from Timothy C. Baker's environmental theory, this study approaches fragmentation not as a deficiency but as a condition of knowledge production in the Anthropocene. Baker insists that environmental crises cannot be apprehended through homogeneous temporalities or coherent narratives, as their material realities unfold through loss, excess, and discontinuity[1]. In such conditions, the fragment ceases to be a symptom of incompleteness and becomes a deliberate epistemic position; a mode of thinking with waste, rupture, and what remains[2]. The *stratigraphic montage* presented here does not simply reflect that condition; it operates within it, using visual remnants not as representations of the delta but as compositional agents in a fractured spatial grammar. The relation between a bird engraved on a coin and the frame of a state-engineered documentary is not causal or developmental but, in Benjaminian terms, *constellational*; a critical alignment where fragments flash up, resonate, and refract one another across disjointed temporal fields[3]. In Baker's formulation, *constellation* extends beyond the visual to include terrain, temporality, and political agency. It is not a relation of synthesis but of proximity, dissonance, and echo; a mode of reading that does not seek coherence but instead listens for friction[4]. In this way, the surface of the delta becomes not a representational ground but a contested field where images, infrastructures, and ecological signs fold into each other without resolution. Baker's notion of *gleaning* further deepens this method: it is not the act of choosing or framing, but of carrying what one encounters, staying with that which is incomplete, peripheral, or discarded[5]. Gleaning refuses the visual mastery of surveying or collecting; it enacts a different graphic ethics, one of receptivity, residue, and bearing-with. In this sense, gleaning can be read in parallel with Nicholas Mirzoeff's theorization of Anthropocene visuality. For Mirzoeff, the dominant aesthetic regimes of modernity function as *anesthetics*. They aestheticize ecological violence to render it tolerable, even invisible[6]. Countering this anaesthetizing gaze requires what he terms *counter visuality*: practices that fracture the coherence of official images and insist on the visibility of what is usually marginalized or repressed[7]. To position gleaning within this debate is to understand it not merely as an ethical disposition toward fragments, but as a *counter visual practice* that interrupts the smooth surface of Anthropocene representation and makes perceptible its residues, violences, and exclusions. This study adopts that ethics through its method of working with discarded images, broken sequences, and ambiguous frames; not as deficiencies but as vital forms of spatial knowledge.

This conceptual framework draws on montage not simply as a compositional technique, but as a mode of epistemological and spatial inquiry. Martino Stierli's understanding of montage, particularly in relation to architectural imagery, highlights how visual fragments resist synthesis and instead assert their critical capacity through juxtaposition. In *Montage and the Metropolis*, he foregrounds the atlas not as a cartographic instrument of order, but as a visual matrix of fragments, interruptions, and counterpoints[8]. The montage atlas thus becomes a tool for organizing not continuity but disjunction, for visualizing the simultaneity of disparate spatial and temporal regimes. In the context of this study, the Gediz Delta is not mapped but atlased: its images are arranged not to represent totality but to expose contradiction, tension, and rupture. Drawing from this logic, stratigraphic montage emerges as a method for assembling images across different strata[9] (ancient, national, vernacular) without collapsing their heterogeneity. Irmgard Emmelheinz's account of visuality in the Anthropocene further reinforces this approach. In her analysis of Godard and Miéville's *The Old Place*, she describes a cinematic method that constructs meaning not through continuity or resolution, but *through the tension between fragments, absences, and temporal disjunctions*. Montage here functions less as an aesthetic technique than as a mode of thought; one that engages the conditions of visuality under communicative capitalism while resisting their tautological logic[10]. Rather than representing reality, the image becomes a site of latency and contradiction, dislocating the viewer and foregrounding the instability of vision itself. In this sense, Emmelheinz outlines a visual epistemology attuned to rupture, affect, and ontological uncertainty; one that resonates with the aims of stratigraphic montage as a critical practice. In this light, the Gediz Delta is not approached as a continuous landscape but as a stratified field of temporal collisions and visual sedimentations. Here, images are not illustrative of ecological transformation, they are the strata themselves. A Klazomenian black figure amphora bearing the image of a water fowl is not merely symbolic, but a sedimented claim to territory; a mid-century irrigation film does not simply document infrastructure but performs a visual regime of control; a contemporary video of samphire collectors is not anecdotal but an ecological remainder, lingering on the surface of a terrain shaped by extraction and regulation. These fragments do not cohere into a unified story but instead operate within a broken now. A temporality marked by rupture and simultaneity, in which the task of visual and spatial criticism is not to restore order, but to register disjunction. In this context, montage becomes not only a formal strategy but an epistemological and ethical commitment to the incomplete, the residual, and the co-present.

Central to this methodology is a refusal to treat architectural drawing as the primary graphic mode of spatial knowledge. Drawing is expanded, displaced by a broader graphic sensibility that includes montage, constellation, caption, and diagram. Through these tools, the delta is not rendered in orthographic drawings but constructed through collisions in visual regimes. For example, the waterfowl (a recurring figure in coinage, ceramics, monuments, and biodiversity) does not function as a stable icon but as a flickering residue. Its meanings shift as it migrates across media and time. Graphic surfaces, in this light, are not representational supports but terrains of sedimentation and contestation. Thus, the Gediz Delta is read not through chronological development but through stratigraphic juxtaposition. Rather than narrating its transformation from antiquity to the present, this study composes an atlas of discontinuity; where visual fragments act not as documentation but as spatial propositions. These fragments expose how different regimes of image-making (mythographic, modernist, vernacular) have sought to inscribe, control, or remember the shifting ground of the delta. The paper unfolds in three episodic sections, each corresponding to a distinct visual and temporal stratum. The first examines ancient iconographies of the waterfowls, exploring how territorial and mythological claims were rendered on surfaces. The second analyzes mid-twentieth-century representations of the delta as a productive and governable landscape, through state films, irrigation diagrams, and hydraulic infrastructures. The third engages contemporary residues (field recordings, ecological observations, and traces of extraction) to reflect the fragility of the present terrain. These episodes do not compose a complete story but construct a field of tensions and echoes; an atlas of incongruent times and surfaces. Ultimately, this study reframes architectural criticism as a way of working with visual and material fragments. It argues that methods like montage and gleaning offer powerful tools for working with the temporal and material discontinuities of ecologically damaged geographies. By attending to what remains, rather than what was planned, it calls for a spatial practice grounded in rupture, residue, and encounter.

2. Episode I – Leuke, Waterfowls, and Echoing Surfaces

This first episode begins the stratigraphic montage of the Gediz Delta by reading ancient surfaces; coins, ceramics, etymologies as sites where image, matter, and meaning sediment. The point of departure is the city of Leukai, whose name derives from *leukos,* Greek for *white place*[11]. Whether this whiteness refers to geological features (chalky soils, salt crusts, or pale clays) is less important than its function as a chromatic anchor: a placename tied to a visual-material register. Naming here is not symbolic but sedimentary. Among the surviving fragments from Leukai, Hellenistic silver coins bearing the image of a swan stand out[12]. While the swan has long been associated with Apollo who is linked to light, music, and prophecy, its role in the cultic practice of Apollo was marginal. The repetition of the swan on these coins thus seems less an affirmation of divine affiliation than a localized claim; inscribing place through animal, surface, and metal. In this reading, the swan is not a universal icon but a territorial residue, embedded in the delta's visual economy. This resonance becomes more layered when the neighboring city of Klazomenai is brought into view. The name *Klazomenai* is etymologically rooted in *klazo*, a Greek onomatopoeic verb imitating the cry of birds; a sonic residue embedded into the very act of place-naming[13]. Situated across the gulf from Leukai, Klazomenai was a prominent center of ceramic production and maritime trade. Historical and numismatic evidence suggests that after Klazomenai seized control of Leukai in the early 4th century BCE, the entanglement of power, place, and image intensified. A particularly striking artifact from this period is a black-glazed cup-skyphos, fragments of which were found in both Klazomenai and Smyrna. Stamped is the figure of a swan, wings spread, standing upright, closely echoing the reverse imagery of contemporary silver and gold coins from Klazomenai and bronze coinage from Leukai[14]. Around the swan, the inscription ΚΛΑΖΟΜΕΝΙΩΝ marks the collective identity of the polis, transforming the vessel into a civic emblem. This pairing of image

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and *ethnikon* aligns the object with the category of *parasemon*; a visual insignia of statehood often reserved for coins or official seals, but here extended to symposium vessels likely commissioned for a public feast celebrating Klazomenai's victory over Leukai[15].

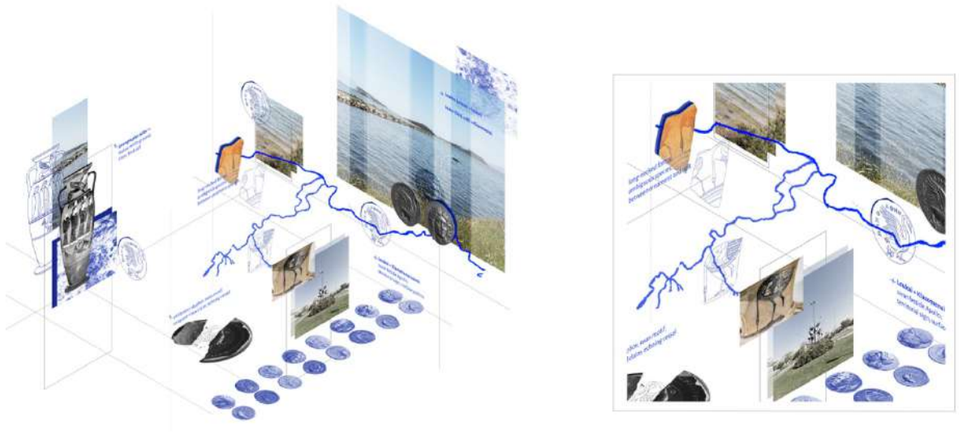

Fig. 1

The swan's visual afterlife does not stabilize into a fixed iconographic system; rather, it disperses across media, surfaces, and symbolic registers in fragmented, unstable ways. Klazomenai-produced amphorae from the same period frequently depict long-necked aquatic birds like geese, herons, perhaps egrets[16]. They resist easy legibility. Their anonymity interrupts the clarity that the swan, as parasemon, seems to momentarily assert. What emerges is not a coherent visual grammar but a stratified visual field: a palimpsest of avian forms where figuration mutates, refracts, and withdraws. In this sense, the delta's ancient imagery does not function through symbolic consistency but through residue. These residues (coin, skyphos, amphora) do not accumulate into a canonical representation of place, but generate a method that foregrounds discontinuity, friction, and cross-scalar entanglements in visual and material culture. Here, the image of the waterfowl becomes a diagrammatic device, one that traverses both geographic and graphic terrain. As it moves from metal to clay, from coinage to vessel, from parasemon to ambiguous motif, its meaning flickers; neither fully symbolic nor fully material, but suspended in between. The figure does not merely illustrate deltaic identity; it mediates a relation between matter, memory, and territory.

To draw out these layered resonances, the project turns to a visual method: an iconography atlas composed of ancient fragments. This atlas does not seek to reconstruct a continuous iconographic lineage, but rather to juxtapose fragments in a way that foregrounds their dissonance. The swan on the coin does not clarify the bird on the amphora; the skyphos does not resolve the ambiguity of other avian figures (Fig. 1). Instead, their proximity generates contrast. Montage here becomes a method not of synthesis, but of difference; what Stierli describes as a spatial critique enacted through the juxtaposition of heterogeneous elements and the non-coincidence of their graphic relations[17]. The fragment is not a partial element of a whole, but a discrete site of interpretation. This refusal of visual and semantic coherence aligns with the material condition of the delta itself. The Gediz Delta, shaped by sedimentation, erosion, and hydrological shifts, resists fixed outlines or stable identities. Its temporality is layered; marked by alluvial flows, imperial claims, and infrastructural interventions. Approaching its visual culture through montage mirrors this stratified logic: a method that privileges accumulation, displacement, and interruption over linear coherence. Within this framework, the recurring figure of the waterfowl emerges as a topo-ecological trace, an imprint where water, voice, and place intersect. This bird does not transcend its medium; it saturates it, drawing attention to the ecological and political labor of surfaces. Metal, ceramic, and soil become not neutral grounds but active substrates of memory and meaning.

3. Episode II — Engineering Vision: Temporal/Ecological Techniques of Control

This section examines how the Gediz Delta was reorganized through techniques that targeted not only hydraulics but also temporality: the pacing of floods, the calendaring of irrigation, the sequencing of extraction, and the normalization of surfaces. From late Ottoman crisis management to early Republican planning, state projects framed the delta as a governable field by aligning visual regimes (maps, films, diagrams) with material infrastructures (canals, regulators, bridges, salt pans). The emphasis here is on *temporal/ecological control* and on the frictions that appear when official images meet local, contingent and more-than-human histories (Fig. 2). An initial precedent is the 1885 diversion of the Gediz River, undertaken to prevent the progressive silting of the İzmir Gulf and the consequent loss of port capacity[18]. Beyond its hydraulic efficacy, the diversion produced a temporal cut: it interrupted a long sedimentary relay and re-scripted the delta's future accumulation and deposition cycles. Drawing and earthworks were thus coupled; the plan and the channel co-constituted a new time for the river. Under the early Republic, this logic crystallized in a lattice of regulators and canals designed to stabilize agricultural production and reduce flood volatility. The *Emiralem regulator* and associated irrigation works (mid-1930s) redistributed discharge across the Menemen plain, translating seasonal irregularity into programmable flows. In parallel, the Gediz Bridge (constructed in the 1930s) materialized a state promise of connection and safety, and staged infrastructural visibility in a flood-prone corridor[19]. Such works did not merely respond to hydrology; they inscribed a regime of intervals and thresholds into the landscape, rendering river time legible to management.

The same period saw the consolidation of a visual epistemology of control and intervention. A 1937 state documentary on the Çamaltı Saltworks, *İzmir Çamaltı Tuzlası'nda Bir Gezinti* (16 minutes 35 seconds), shot by Kenan Reşit and preserved in the archive of the Ministry of Culture and Tourism, Directorate General of Cinema presents the delta as a rationalized surface: aerial pans over rectilinear evaporation ponds, close framings of intake gates and crystallization beds, and sequences of synchronized labor[20]. The film organizes perception into ordered blocks (survey, measure, produce) so that salt appears as a predictable output of disciplined surfaces. In doing so, it converts contingent phenomena (wind, humidity, seasonal heat) into a linear narrative of extraction. This is not only representation; it is operational visuality aligned with planning. The Çamaltı Saltworks itself, situated on the delta's fringe, exemplifies the coupling of surface engineering and property regimes. Expanded and modernized from the late Ottoman period and subsequently integrated into Republican Tekel administration, the complex became the largest sea-salt operation in Turkey, active to the present and linked to export circuits[21]. Warehouses, roads, and distribution lines embedded extraction in logistical space; ownership and circulation were, in effect, written onto the ground. The whiteness of the pans; highly reflective, planar, repetitive, does more than signify productivity; it visualizes a governance that privileges surface metrics over subsurface or seasonal complexity.

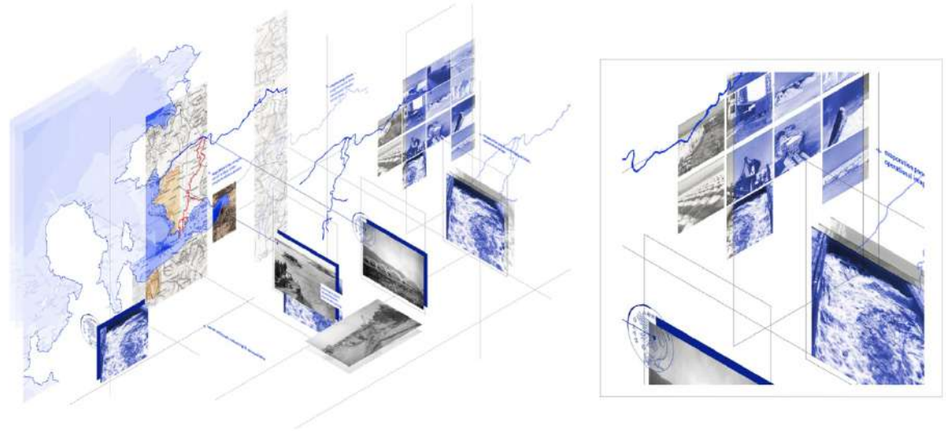

Fig. 2

In the subsequent postwar moment, flood control and irrigation expanded upriver. A 1955 documentary on the Demirköprü Dam on Gediz River articulated the promise succinctly: once completed, *floods will be restrained and hectares irrigated*[22]. The dam extended the same temporal project retiming the basin by storing, releasing, and apportioning flows. Thereby reinforcing the managerial conversion of river variability into agricultural calendars and energy logics. Read together, the 1937 and 1955 films teach the delta to appear as a sequence of tasks, causes, and effects; montage makes this pedagogy visible. Yet these regimes coexist with persistent ecological rhythms that neither maps nor films fully contain. The delta continued to host migratory waterfowl along wetland corridors and samphire (*denizbörülcesi* in local) on brackish flats, even as canals, embankments, and salt grids multiplied. Such presences are not marginal footnotes to modernization; they are topo-ecological traces that register a different chrono politics; phenomena keyed to salinity, wind, and tidal pulse, rather than to regulatory schedules. In the field, gleaning makes this legible: samphire gatherers along levees, or a following flight calls across

evaporation beds, does not restore a pre-engineered nature; it attends to residual agencies that persist within and despite engineered time.

These films exemplify what Mirzoeff calls *the anaesthetizing function of modern aesthetics*[23]: a mode of visuality that organizes perception into legible sequences while suppressing contingency, friction, and ecological volatility. By transforming unstable processes such as flood, salinity, humidity into the linear temporality of progress, they enact not only representation but governance. Aesthetic form here coincides with infrastructural power: visibility becomes an instrument of temporal discipline. Set against this visual regime, however, lived delta time remained discontinuous. The seventeenth-century traveler Evliya Çelebi's account of crossing the Gediz at its gulfward mouth by raft (sal) records a mobility attuned to silted channels and shifting banks rather than fixed infrastructures[24]. Archival records note that between 1860 and 1901 the river flooded sixteen times, with further major floods documented in 1940 and 1945, underscoring the continuity of events irreducible to regulatory control; newspaper reports of the 28 December 1940 flood document submerged roads, collapsed crossings, evacuations, and a rising river in Menemen[25]. Even the saltworks, sequenced to harvest cycles, periodically leaked this unruly temporality: off-schedule crystallization, wind-borne brine, or bird congregations that disregarded cadastral grids. It is in this juxtaposition that Mirzoeff's *counter visuality* becomes operative: fragments of discontinuous time that interrupt the anaesthetizing order of official images, forcing recognition of what cannot be subsumed by the visual economy of regulation[26]. Counter visuality does not merely oppose dominant representations but unsettles their claim to completeness, staging a conflict between surfaces engineered to signify order and residues that insist on dissonance. In montage, these temporalities collide without resolution, exposing the epistemic limits of both infrastructural vision and its aestheticization.

Methodologically, approaching this material through montage allows these chronologies to be read together without reconciliation. A still from the 1937 salt film placed next to a 1940 flood photograph[27] suspends the viewer between a surface calibrated to production and a surface overwhelmed by water. A regulator plan juxtaposed with a field video of samphire gleaning renders legible the difference between temporal inscription (channels, gates, schedules) and situated attunement (seasonal labor, multispecies occupancy). Introducing the 1955 dam film alongside pre-1885 cartography[28] traces a longer arc of retiming: diversion of sediment futures, securitization of port time, banking of irrigation time. Montage here is an analytic procedure that holds contradiction in view and reveals how governance is written with water through canals, regulators, and filmed surfaces (while other ecologies continue to write back through salt blooms misaligned with harvest cycles, migratory paths that cut across engineered grids, and seasonal labor practices like salicornia gathering that persist outside of formal schedules. These counter-writings are not oppositional scripts but interruptions; traces of temporalities and agencies that exceed managerial inscription. Finally, the delta's surface can be read as an archive of techniques. Regulators, canals, bridges, salt pans, warehouses, and films operate simultaneously as hydraulics, property instruments, and semiotic devices; each indexing a facet of temporal/ecological control. The same surfaces also register limits: silted channels, breached embankments, off-schedule crystallization, avian movement intersecting salt grids, and omissions in the official record. Attending to these residues (through gleaned images, field recordings, and archival fragments) does not restore a pre-engineered nature; it specifies how the delta has been synchronized to state time and where that synchronization frays.

4. Episode III – Gleaning the Present: Ecological Time and Visual Residues

In contrast to the rationalized images of the delta shaped by infrastructural interventions and state-authored visualities, the present-day Gediz Delta emerges as a fragmented and porous terrain. This final episode does not seek to compose a totalizing view but approaches the delta as a stratigraphic surface of residues; partial presences, overlooked rhythms, and ecological interruptions. The method of *gleaning*, drawn from feminist and ecological traditions[29], frames this section both as a mode of field engagement and a graphic strategy. Rather than aiming for visual completion, gleaning directs attention toward what remains: gestures, traces, and materials that escape extraction or representation. The method of gleaning, as articulated by Baker and others, frames this engagement not as documentation but as a spatial and graphic practice: a way of staying with fragments and bearing witness to what is peripheral, partial, or discarded. In this regard, gleaning aligns with what Mirzoeff terms counter visuality: a practice that refuses the mastery of the survey and instead makes visible the residues and violences that dominant visual regimes seek to suppress[30].

The fieldwork conducted across multiple visits via photography, video recordings, sound notes, and on-site observation reveals a set of visual and spatial figures that defy categorical mapping. Among them: women collecting *deniz börülcesi* (salicornia) at the marsh edge; flocks of birds cutting diagonal lines across sky and surface; polluted water patches carrying oily reflections; remnants of the saltworks, rusted depot structures, crumbling regulators, and fenced-off concrete edges; and a monumental

waterfowl statue installed at a highway junction. These images are not representative of *the delta today* but rather mark its fractured and layered condition (Fig. 3). They register what might be called an ecological sediment; durational traces that materialize the uneven effects of extraction, regulation, and environmental loss. The glossy fiberglass waterfowl statue, positioned within the logic of traffic circulation, operates as an icon. Replacing the once-abundant living swans that shaped the delta's biodiversity and mythic imagery. As a stand-in, it reduces ecological memory to domesticated kitsch, aestheticizing loss through a consumable symbol. Yet what surrounds it like degraded wetlands, bird movements, and infrastructural remnants, evokes a different temporality: one of sediment and survival rather than monumentality. The statue, the birds, and the salicornia gleaners inhabit the same surface without forming a coherent scene. Their co-presence resists synthesis, producing not a unified representation but a fragmented and unresolved visual regime. The graphic strategy deployed here operates through montage; still images from videos are fragmented and recomposed alongside photographs and captioned details, constructing a stratigraphic mapping that resists linear sequencing. Rather than narrating loss or resilience, this method assembles an incongruent atlas of ecological presentness, where temporal frictions replace territorial continuity. A blurred video of wind sweeping through the reedbed is set against a close-up of a bird in flight; a rusted irrigation pipe is paired with its season and location; the curved motion of a gleaner's hand reaching for salicornia visually echoes the fiberglass wing of the swan statue. These arrangements do not aim for visual coherence or completion. Each fragment interrupts the next, holding together incompatible times without resolving them. This fragmentation is not a formal device, but a spatial and temporal critique.

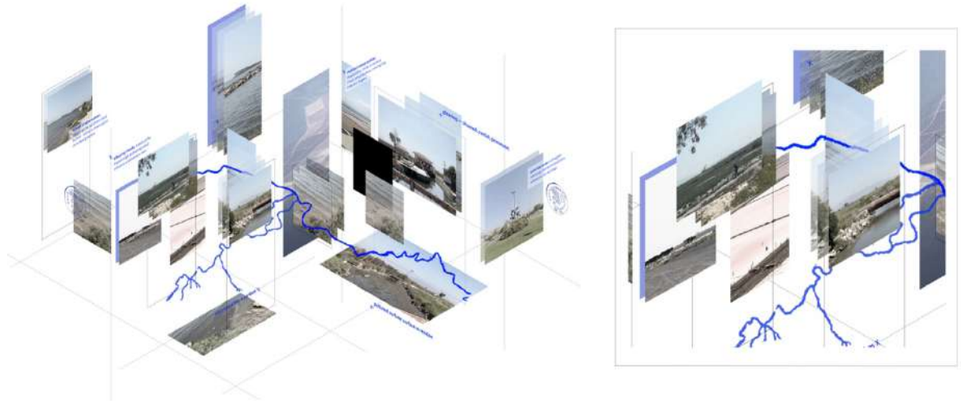

Fig. 3

This visual strategy resonates with an *epistemic montage*[31], a method that attends to the discontinuities of damaged landscapes and treats fragments not as remnants of the past but as inscriptions of an unresolved present. In this framework, images are not illustrative but sedimented: the rust-streaked wall of a salt depot, the eroded canal edge, the water-stained concrete, or drying bundles of marsh plants mark durational frictions rather than discrete events. They reveal how regulation inscribes itself not only in infrastructure but on the surface itself through stains, refusals, and material reuses. The photographic and video-based gleaning practiced here does not aim to document or complete; it holds time in fragments, staying with residue rather than assembling a coherent whole. As such, the present delta cannot be captured through a static image. It is approached through collision and interruption; between species and image, memory and substitution, presence and withdrawal. The materials gathered in this episode (field recordings, video stills, annotated fragments) compose not a representational field but a spatial method grounded in non-alignment, where drawing occurs not through lines but through visual friction. The Gediz Delta's present is not a coherent figure but an ecology of remains gleaned, gathered, and held together in discontinuity. Ultimately, the present delta cannot be drawn in orthographic. It must be gleaned. The images gathered in this episode as dispersed, incongruent, annotated, compose a graphic field where representation gives way to interruption, and knowledge emerges not through mastery but through staying with the residue. In this sense, the gleaned present echoes the surface politics of the ancient and engineered strata explored in the previous episodes. If Episode I traced symbolic inscriptions of territory through mythographic iconography, and Episode II unpacked the visual regimes of state rationality and infrastructural control, this final stratum resists both monumentalization and legibility. Together, the three episodes form a stratigraphic montage; not of temporal succession, but of critical proximity, where visual residues across time interrupt, refract, and inform one another.

5. Conclusion: Writing with Surfaces – Stratigraphic Montage as Method

This study has unfolded across three visual and temporal strata, each corresponding to a distinct way the Gediz Delta has been inscribed, mediated, and known. From ancient coinage and ceramic surfaces to modern infrastructural images and documentary film, to contemporary fragments gathered through field-based image-making, the delta emerges not as a coherent territory but as a stratified graphic surface. Each episode isolates a set of visual residues, not to form a linear account of deltaic transformation, but to build a montage of discontinuity. These residues (mythographic, state-authored, vernacular) resist narrative coherence and instead accumulate into a fragmented epistemology grounded in friction, juxtaposition, and sedimentation. Montage and gleaning operate here as complementary graphic methods. Montage arranges visual materials not to create a seamless continuity, but to foreground interruption, contradiction, and critical proximity. Gleaning, by contrast, attends to the overlooked, the marginal, and the residual, what remains after extraction or visual mastery. Together, they form an approach that does not illustrate the delta but assembles it, refusing to flatten its ecological and temporal complexity into singular representations. This is not a drawing in the traditional architectural sense; a layered assemblage of images, fragments, and inscriptions where surfaces do not support representation but generate frictional knowledge.

In this sense, the delta becomes not an object of depiction, but a method of reading. Episode I approached ancient visual inscriptions not for their symbolic fixity but for their migratory resonance: the waterfowl shifting between coin, cup, and amphora without stabilizing into iconography. Episode II unpacked state-led visual regimes that engineered the delta through hydraulics, salt grids, and documentary framing, revealing how surface engineering was always accompanied by a regime of visual control. Episode III, in contrast, lingered on the residual present: video stills, gleaned images, and field recordings that together constituted a stratigraphic surface of fragile presences. Each episode worked through an *epistemic montage*; a method that assembles incompatible times and image regimes without resolving their tension. Rather than advancing a singular thesis about the Gediz Delta, this paper offers a method for thinking with fragmented geographies shaped by temporal layering, ecological damage, and symbolic complexity. Stratigraphic montage enables fragments to remain in constellational tension, generating knowledge that is partial, discontinuous, and situated. This is particularly apt for deltas, which are never temporally or territorially singular. They are made and remade through sedimentation, diversion, reclamation, and regulation. Each act leaving visual residues that refuse alignment and interfere with one another.

This approach reframes architectural criticism as an engagement with surfaces, rather than as a representational practice. It asks what images can do when they are treated not as tools for depiction but as sites of epistemic friction. Montage and gleaning (working through interruption and remainder) offer a method of graphic thinking that does not seek visual coherence but holds together discontinuous traces of time, matter, and meaning. It becomes possible to draw without drawing: to understand space through the collection, juxtaposition, and annotation of residues. This article does not present a comprehensive account of the Gediz Delta. Rather, it proposes a critical method for engaging with territories shaped by temporal layering, ecological violence, and contested visibility. Places like the delta (where nature, infrastructure, and image are inseparably entangled) demand graphic practices that can remain open to contradiction, fragmentation, and partial presence. Stratigraphic montage, as developed here, is offered not as a representational model but as a situated method: one that foregrounds discontinuity, attends to the surface, and repositions architectural thought within the visual and material conditions of the Anthropocene.

Notes

1. Timothy C. Baker, *New Forms of Environmental Writing: Gleaning and Fragmentation* (London: Bloomsbury Academic, 2022), 20-21.
2. Ibid., 20.
3. Walter Benjamin, *The Origin of German Tragic Drama*, trans. John Osborne (London: Verso, 1977), esp. 34–36. See also Andrea Krauß, “Constellations: A Brief Introduction,” *MLN* 126, no. 3 (2011): 457–72.
4. Baker, *New Forms of Environmental Writing*, xvii.
5. Ibid., 2–4.
6. Nicholas Mirzoeff, “Visualizing the Anthropocene,” *Public Culture* 26, no. 2 (2014): 222.
7. Ibid., 228-230.
8. Martino Stierli, *Montage and the Metropolis: Architecture, Modernity, and the Representation of Space* (New Haven: Yale University Press, 2018), 4-15.
9. I use *strata* following Deleuze and Guattari’s account of stratification (double articulation, capture) in the plateau “10,000 B.C.: The Geology of Morals”; see Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987), esp. 40–74. I adopt *stratigraphic montage* to bring this notion of layered formation to montage/atlas practice in architectural image-work.
10. Irmgard Emmelheinz, “Images Do Not Show: The Desire to See in the Anthropocene,” in *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*, ed. Heather Davis and Etienne Turpin (London: Open Humanities Press, 2015), 132.
11. On the toponym *Leukai/Leuke* (Λευκαί/Λεύκη) from *leukos* “white,” see Henry George Liddell and Robert Scott, *A Greek–English Lexicon*, rev. Henry Stuart Jones and Roderick McKenzie, 9th ed. (Oxford: Clarendon Press, 1940), 886, s.v. “λευκός.” For a local archaeological account that relates the name to *bright salt formations and the long-standing sea-salt production*, see Numan Tuna, “Leukai Arkeolojik Sit Alanında Araştırmalar [Research at the Archaeological Site of Leukai]” in *III.-IV. Ulusal Arkeolojik Araştırmalar Sempozyumu*, ed. Zeynep Çizmeli (Ankara: Ankara Üniversitesi Basımevi, 2008), pp. 301-327.
12. See the Hellenistic silver swan coin from Leukai, British Museum. Accessed September 14, 2025. https://www.britishmuseum.org/collection/term/x47258; Hümeyra Sağırkaya, *Zeki Karaoğlu Özel Koleksiyonundan Ionia Bölgesi Yunan ve Roma Dönemi Sikkeleri* (MA thesis, Dokuz Eylül University, Institute of Social Sciences, Department of Archaeology, 2020); and Philip Kinns, “The Coinage of Leukai,” in *Onomatologos: Studies in Greek Personal Names Presented to Elaine Matthews*, ed. Richard Catling and Fabienne Marchand (Oxford, 2010), 479–505. See also studies on the coinage of Klazomenai and its political and economic entanglements with Leukai, e.g., Andrew R. Meadows, “The Hellenistic Silver Coinage of Clazomenae,” in *Ancient History, Numismatics and Epigraphy in the Mediterranean World: Studies in Memory of Clemens E. Bosch and Sabahat Atlan and in Honour of Nezahat Baydur* (Istanbul, 2009), 247–62.
13. Homer, *Iliad* 16.249; see İlkan Hasdağlı, “Klazomenai Parasemonu Taşıyan Seramik Buluntular Işığında 4. Yüzyılda Klazomenai ve Leukai İlişkisi [The relationship between Klazomenai and Leukai in the fourth century in light of ceramic finds bearing the Klazomenai *parasemon*],” *Trakya Üniversitesi Edebiyat Fakültesi Dergisi* 8, no. 16 (July 2018): 5.
14. Hasdağlı, “Klazomenai ve Leukai İlişkisi,” 4-7.
15. Ibid., 9-11.
16. These vessels demonstrate how avian figures circulated beyond coinage into ceramic iconography, often occupying ambiguous registers between ornament and symbolic figuration. For visual examples of such motifs in Klazomenian ceramic production, see: Klazomenian black-figure neck-amphora (Tübingen Group), depicting birds and dancing women; Tübingen, Schloss Hohentübingen, Museum der Universität, Museum Alte Kulturen, inv. no. S./12 2656. See photograph in Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Klazomenian_black_figure_amphora_-_T%C3%BCbingen_Group_-_birds_-_dancing_women_-_T%C3%BCbingen_MUT_2656_-_03.jpg; *Black-figure amphora: dancing women and birds*, British Museum, object G.1952.0505.4, https://www.britishmuseum.org/collection/object/G_1952-0505-4; *Black-figure amphora*, British Museum, object G.1888.0208.68, https://www.britishmuseum.org/collection/object/G_1888-0208-68; *Clazomenian neck-amphora*, British Museum, object X.5118, https://www.britishmuseum.org/collection/object/X__5118.
17. Martino Stierli, *Montage and the Metropolis: Architecture, Modernity, and the Representation of Space*, 4–6.
18. Selahattin Satılmış and Keziban Acar Kaplan, “Gediz Nehri’nde Taşkınlar, Islah Çalışmaları ve Afet Yönetimi (1860–1901) [Floods, Rehabilitation Works, and Disaster Management in the Gediz River (1860–1901)],” *Tarih İncelemeleri Dergisi* 38, no. 1 (2023): 279–300, https://doi.org/10.18513/egetid.1333303.
19. For photographic documentation of the bridge's construction, see *Menemen Gediz Köprüsü inşaatı – Construction of Menemen Gediz Bridge*, SALT Research Archive: https://archives.saltresearch.org/handle/123456789/196962?mode=full; See also Hülya Sönmez-Schaap, *Köpriyet: Republican Heritage Bridges of Turkey*, which offers rich documentation on early Republican-era bridges in Turkey.
20. *İzmir Çamaltı Tuzlasında Bir Gezinti* [*A Stroll through the Çamaltı Saltworks in İzmir*], directed by Kenan Reşit, 1937, 16 min. 35 sec., archived by the Republic of Türkiye Ministry of Culture and Tourism, Directorate General of Cinema. Accessed September 14, 2025. https://filmmirasim.ktb.gov.tr/tr/film/izmir-amalt-tuzlasnda-bir-gezinti.
21. *İzmir Çamaltı Tuzlasında Bir Gezinti*, dir. Reşit.
22. *Yurdumuzu Tanıyalım: İzmir-02* [*Let’s Get to Know Our Homeland: İzmir-02*], 1955, segment 4:50–6:15, Republic of Türkiye Ministry of Culture and Tourism, Directorate General of Cinema. Accessed September 14, 2025. https://filmmirasim.ktb.gov.tr/tr/film/yurdumuzu-tanyalm-izmir-02.
23. Mirzoeff, “Visualizing the Anthropocene,” 220-222.
24. Evliya Çelebi, *Seyahatname*, vol. 9, 84–87.
25. Satılmış and Acar Kaplan, “Gediz Nehri’nde Taşkınlar,” 279–300, which documents sixteen floods between 1860 and 1901. For later events, see newspaper reports on major floods in Menemen in *Yeni Asır*, December 29, 1940, and February 3, 1945; and *Gediz Havzası Taşkın Yönetim Planı [Gediz Basin Flood Management Plan]* (Ankara: T.C. Tarım ve Orman Bakanlığı, Su Yönetimi Genel Müdürlüğü, 2019), 84–90.
26. Mirzoeff, “Visualizing the Anthropocene,” 226-230.
27. Archival photograph from Oktay Özengin’s personal collection, provided to the author in 2025; used with permission (Fig. 2). Also posted at Instagram (photos from 1930, 1945, and 2000), accessed 15 September 2025: <https://www.instagram.com/p/CSj5S1ZDIye/>\; <https://www.instagram.com/p/C3-plbzt84d/>\; <https://www.instagram.com/p/CxnxrfotsKr/>. Archival copies on file with the author.
28. See *Asia, Lydia and Caria*, William Shawe, Royal Geographical Society, London, 1890, 24 × 29 cm, Institut français d’études byzantines, Carte_R_V_33.3. — note the legend “bed of termos till 1886” and the marking of Leukai indicating the coastline. Accessed September 14, 2025. https://incipit.icp.fr/idurl/1/8135; see also *Carte du Monastère de Lembos et de ses dépendances auprès de Smyrne au XIIIe siècle*, Institut français d’études byzantines, Carte_R_V_2.1 — which depicts the Hermos (Gediz) in its natural bed prior to the 1886 redirection. Accessed September 14, 2025. https://incipit.icp.fr/idurl/1/8093.
29. Baker, *New Forms of Environmental Writing*, 29-32. Baker develops gleaning not merely as a metaphor of collecting residues but as a model of critical practice shaped by contingency, partiality, and situated encounters. His discussion draws together

diverse feminist and ecological writers such as Juliana Spahr, Kathy Jetñil-Kijiner, Ursula K. Le Guin, and Olga Tokarczuk, situating gleaning as both a literary and environmental method. This resonates with Agnès Varda's *The Gleaners and I* (*Les glaneurs et la glaneuse*, 2000), where gleaning is refigured cinematically as an ethics of attention to leftovers, waste, and marginal figures. Hélène Frichot expands on Varda's gesture, reading the glaneuse as a feminist and ecological figure whose embodied, stooping practice enacts humble technologies of care and resistance. See Hélène Frichot, *Creative Ecologies: Theorizing the Practice of Architecture* (London: Bloomsbury, 2018), 81–86.

30. Mirzoeff, "Visualizing the Anthropocene," 226-230.

31. Here I use *epistemic montage* to name the methodological and cognitive dimension of *stratigraphic montage*. While stratigraphic montage foregrounds the material and temporal layering of images, epistemic montage designates how such layered arrangements work to produce knowledge through juxtaposition, friction, and the maintenance of unresolved tensions between heterogeneous visual regimes.

Image Captions

Fig. 1. Across coinage, ceramics, and salt-white terrains, the waterfowl emerges not as a fixed icon but as a visual residue; anchored in toponymy (*leukos*, white) and inscribed on eco-mythic surfaces. *Sources and credits:* Base drawing, blue river trace, and background photographs of the Gediz Delta and zoom-ins by the author (2024). Clazomenian black-figure neck-amphora with procession of women and sphinx, British Museum, London, inv. 1888,0208.81.b, asset 1087221001. Clazomenian neck-amphora with birds and dancing women, Museum der Universität Tübingen, Museum Alte Kulturen, inv. S./12 2656; photograph by ArchaiOptix, via Wikimedia Commons (CC BY-SA 4.0). Cup-skyphos base drawing adapted after İlkan Hasdağlı, "Klazomenai parasemonu taşıyan seramik buluntular ışığında 4. yüzyılda Klazomenai ve Leukai ilişkisi," *Trakya Üniversitesi Edebiyat Fakültesi Dergisi* 8(16), 2018, fig. 5. Clazomenian black-figure amphora sherd, Fitzwilliam Museum, Cambridge, inv. X.5118; © The Fitzwilliam Museum, Cambridge. Photography by British Museum staff. Silver tetradrachm of Klazomenai with facing head of Apollo and swan, Berlin, Münzkabinett der Staatlichen Museen zu Berlin, inv. 18216497; photo by Dirk Sonnenwald, via IKMK. Gold and copper-alloy coins of Klazomenai and Leukai from the British Museum collections (asset nos. 1613855384, 1613855424, 1613856537, 1613856538, 1613856553, 1613856554, 1613856555, 1613856556, 1613856557, 1613856558). © The Trustees of the British Museum. Shared under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) licence.

Fig. 2. Cartographic diagrams and filmic operational images render the delta calculable and governable, while flood reports and raft crossings reintroduce hydrology of discontinuity, volatility, and lived adaptation. *Sources and credits:* Base drawing and blue river trace by the author (2024). Topographic base map adapted from Alfred Philippson, *Topographische Karte des westlichen Kleinasien*, sheets 1–6 (Gotha: Justus Perthes, 1910–1913), Princeton University Library, Digital Maps Collection. Map of the Gulf of İzmir adapted from "Planche 15, Carte No. 29, Port de Smyrne," in *Atlas du Pilote Côete, Mer de Marmara et Archipel*, David Rumsey Map Collection. Superimposed 1:25,000 maps "Tuzçilli, İzmir" (1925) and "Tuzla Burnu, İzmir" (1925), Müdaafa-i Milliye Vekaleti Harita Müdüriyet-i Umumiyesi, İstanbul Matbaası; SALT Araştırma Arşivleri. Three archival photographs of Gediz River floods in the Menemen plain, construction of irrigation channels, and the Menemen Gediz bridge, *Oktay Özengin* Archive, used with permission. Thirteen film stills from Reşit Kenan, *İzmir Çamaltı Tuzlasında Bir Gezinti* [*A Stroll through the Çamaltı Saltworks in İzmir*], 1937, Republic of Türkiye Ministry of Culture and Tourism, Directorate General of Cinema.

Fig. 3. Hands in motion, migratory birds, kitsch monuments, and industrial remnants coalesce into a fragmentary atlas; one that privileges residue, interruption, and persistence over seamless representation. *Sources and credits:* Base drawing, blue river trace, and field photographs (general views of the delta, gleaning woman, zoom-ins to water surfaces, regulation building, and polluted channels) by the author (2024). Oblique aerial photograph of the salt pans at Tuzla near İzmir by Jürgen-Wolfgang Berg, 9 October 2014, (site: *Tuzla-Salinen bei Izmir*), licensed under CC BY-SA 4.0. Photo credit: © Jürgen-Wolfgang Berg / NABU-naturgucker.de.

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Klazomenian Black Figure Amphora – Tübingen Group – Birds – Dancing Women. Photograph. Wikimedia Commons. Uploaded June 13, 2020. Accessed September 14, 2025. https://commons.wikimedia.org/wiki/File:Klazomenian_black_figure_amphora_-_T%C3%BCbingen_Group_-_birds_-_dancing_women_-_T%C3%BCbingen_MUT_2656_-_03.jpg.

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Biography

Oya Yesim Armagan Atacan is a Research Assistant and PhD candidate at the Department of Architecture, Istanbul Technical University. In 2022, she completed her master's degree at ITU with a thesis titled *Gendered Spatial Mobilities: Negotiating Spaces of Home and Work*. She has been co-conducting and researching within the architectural design studio *Rural & Future: Alternative Life and Architectures*, which explores the countryside geographies of Turkey and investigates the trans-scalar relationships between rural practices, geologies, territories, agencies, materialities, and narratives of inhabited spaces. Her research interests focus on how time, matter, and architectural agency are entangled with modern capitalist thought and nature.

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Drawing behind Rituals.
The conflict of the self in relation to the multitude within space.

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Abstract

In *The Disappearance of Rituals: A Topology of the Present*, Byung-Chul Han writes that “rituals stabilize life,” much like things stabilize space, paraphrasing Antoine de Saint-Exupéry. Extending this idea, one could argue that rituals stabilize life as people stabilize space, through their active or passive presence. Yet what occurs when the enactment of a ritual that gathers a massive crowd within a specific place leads to the erosion of the self’s boundaries in relation to both context and multitude? How can one adequately describe this spatial and psychological tension, and what tools can capture its ambiguous character?

This study approaches such questions through the recurring ritual of attending events at the San Siro stadium in Milan. Being immersed in a crowd of more than 70,000 spectators, whether during football matches or concerts, produces an experience marked by density, proximity, and collective emotion. These conditions generate a tension between individuality and collectivity, between personal perception and the overwhelming presence of the mass.

Developed within the PhD workshop *Studio Anatomy* at the Politecnico di Milano, this contribution explores drawing as a situated practice of inquiry. Rather than functioning as neutral representation, drawing operates as a critical tool that translates the experience of crowd participation into visual form. Through layering, accumulation, and absence, drawing reveals both what can be shown, namely the progressive densification of bodies, and what resists representation, the moment of collective eruption in which the individual merges into the crowd.

By situating drawing as an embodied epistemological act, the study resonates with Donna Haraway’s notion of situated knowledge, rejecting the illusion of a neutral or universal vision. What emerges instead is a partial and embodied account in which the act of drawing becomes a means to acknowledge positionality and to open space for a shared yet never totalizing experience. In this light, drawing allows us to interrogate the fragile boundaries between self, ritual, and collective space, exposing their tensions while also rendering their transformative potential.

Key words: rituals, drawings, conflictuality, mass, self.

1. Premise
The following discussion is intended as an inquiry into a very specific situation, one that is deeply conditioned by my personal experience and sensibility. It does not claim universality, nor does it attempt to establish a general theory of crowds or collective experiences. What I aim to offer here is a reflection situated within the immediacy of my own lived reality. I am fully aware that some of the observations I will share may well be extended to other contexts, and perhaps they inevitably are. Yet I resist the temptation to generalize or to suggest an abstract model detached from concrete experience. Instead, I seek to remain anchored to what I know directly, to the event I have experienced and attempted to explore through drawing.

The experiment at the center of this inquiry was conducted within a workshop organized by the PhD School of the Politecnico di Milano, *Studio Anatomy – The Drawing and the Detail*. The workshop was led by Professors Inge Vinck, Jo Van Den Berghe, Mikel van Gelderen, Christoph Grafe, Sabina Jallow, Jesus Mateo, Gennaro Postiglione, and Jurjen Zeinstra. The reflections presented in this text were especially developed through dialogue with Professors Christoph Grafe and Gennaro Postiglione, whose contributions have helped me to frame the inquiry in both theoretical and methodological terms.

I approach this work with a twofold awareness. On the one hand, I see it as a personal exploration, tied to my own relationship with the stadium and with the experience of being part of a crowd. On the other hand, I see it as an analytical exercise, a step toward formulating a methodology of drawing that does not simply reproduce appearances but engages with embodied knowledge and subjective perception. To investigate through drawing is not to claim objectivity. It is to acknowledge one’s position, to translate an experience into visual traces, and to construct knowledge that is at once partial, situated, and reflective.

2. Introduction
The overarching intention of this research is to employ drawing as a tool of experiential inquiry. By drawing, I do not mean merely representing what is seen but rather engaging in an act of translation: a way of making sense of lived experience, of recording its intensity and ambiguity, and of opening it up for reflection.

To explain the conditions of this experiment, I must situate myself within a specific context. That context is the stadium. More precisely, the Giuseppe Meazza Stadium[1] in Milan, universally known as San Siro. This stadium is not just a building or a sports facility. It is a place that has shaped my life and my imagination since childhood. I have always attended it as a fan, entering its stands not as a neutral observer but as someone immersed in the collective rituals of football.

Among the many aspects of this experience, one has always struck me with particular force: the dissolution of the self in relation to the mass. It is one thing to read about crowds in theoretical texts; it is another to find oneself physically present among 75,817 spectators, to feel one’s body compressed, one’s voice absorbed, one’s emotions amplified and multiplied by thousands of others. The encounter with such a multitude challenges the very idea of individuality. It calls into question the boundaries of perception, autonomy, and agency.

This experience is neither entirely exhilarating nor entirely terrifying. It is ambiguous. It oscillates between the fear of losing oneself and the joy of belonging to something larger. The stadium becomes the stage for this oscillation, for the tension between individuality and collectivity.

Of course, similar dynamics can be observed in other contexts: concerts, religious gatherings, political demonstrations, festivals. However, my aim is not to survey them all. I wish instead to remain faithful to the specificity of my own experience, to recount what I have lived and attempted to investigate through drawing. The question that guides this inquiry is therefore precise: what can drawing reveal about the experience of losing oneself in the collective, and how can the act of drawing mediate our understanding of this process?

3. Theoretical Framework
To frame this inquiry, I draw upon several theoretical traditions that illuminate the dynamics of crowds, embodiment, and knowledge production. The convergence of these perspectives helps to situate drawing as both a methodological tool and an epistemological practice.
Elias Canetti, in *Crowds and Power*[2], describes the crowd as an entity in which the individual loses personal boundaries and merges into a collective body animated by impulses that no longer belong to each participant alone. For Canetti, the crowd is both liberating and threatening: liberating in its capacity to dissolve isolation, threatening in its power to erase difference and impose uniformity. In the stadium,

this dynamic is palpable. The density of bodies, the synchronization of chants, the simultaneous eruption of emotions, these all contribute to the sense of being absorbed into something larger than oneself.

Maurice Merleau-Ponty's *Phenomenology of Perception*[3] offers another essential perspective. For Merleau-Ponty, the body is not a closed container but a porous threshold, always already open to the world and to others. In the stadium, this openness is radicalized. One's body is not simply adjacent to others; it is entangled with them, caught in a network of sensory and emotional exchanges that transcend personal boundaries. Smells, sounds, movements, vibrations—all circulate through the collective body of the crowd.

Victor Turner's anthropological concept of liminality provides yet another key. In *The Ritual Process*[4], Turner interprets rites as transitional moments in which ordinary structures are suspended, and individuals enter into a state of communitas. Even though a football match is not a religious ritual, the practices of the stadium—chants, synchronized gestures, collective eruptions—produce a liminal condition in which the individual crosses a threshold into collective belonging. As Byung-Chul Han argues in *The Disappearance of Ritual*[5], contemporary society is marked by the erosion of ritual. Yet in the stadium, one encounters a distorted or transformed return of ritual, enacted through the repetition of chants, the raising of scarves, the rhythmic clapping of thousands. The stadium becomes a secular temple where rituals persist, though in altered form.

Finally, Donna Haraway's concept of situated knowledge[6] challenges the illusion of neutrality and universality in representation. For Haraway, all knowledge is embodied, partial, and located within a specific perspective. Drawing, in this sense, cannot pretend to objectivity. It is always the product of a body that observes, participates, and records from a specific position. In the stadium, the act of drawing becomes not only a representation of the crowd but an expression of a situated experience. Each line, each layer, is a trace of perception, attention, and emotional engagement.

These theoretical perspectives converge in the recognition that the stadium is not merely a physical site but a space of transformation. It is a space where the self is destabilized, where knowledge is embodied, and where rituals of collectivity are enacted. Drawing becomes a way to engage with these dynamics, to render visible what is otherwise elusive, and to reflect critically on the dissolution of boundaries between self and crowd.

4. Methodology
The methodology adopted in this research positions drawing as an epistemological tool rather than a purely representational one. Drawing is here understood as a practice of inquiry, a means of translating the ephemeral experience of being in a crowd into visual form.

A key aspect of this methodology is the recognition of temporality. The act of drawing is always belated with respect to the moment of experience. The intensity of the crowd, the eruption of a goal, the sensation of being swept into collective movement—these cannot be captured in real time. What drawing offers instead is a sedimented memory, a layering of traces that both recall and transform the immediacy of the event. This temporal displacement is not a limitation but a condition of reflection.

The technical process reflects this logic. The base consists of paper on which the spatial framework of the stadium—seats, steps, architectural margins—is drawn in colored oil pastels. On top of this skeleton, multiple layers of tracing paper are added. Each layer introduces new elements: spectators viewed from above, details of clothing, scarves, hats, bags, the small traces of individuality that, when accumulated, reduce the interstitial spaces until they almost vanish. The technique is therefore cumulative, layering space and time in order to investigate the progressive dissolution of boundaries.

Negative space, rendered in black, plays a crucial role. It is not simply background but an active indicator of saturation, of the compression of bodies and the erosion of individuality. As the drawings progress, the black expands, signaling the loss of distance and the transformation of space into density.
This methodology is therefore not only visual but conceptual. It stages the tension between individual detail and collective saturation, between presence and absence, between what can be shown and what exceeds representation.

5. The Drawing
The sequence of large-format sheets (50 × 70 cm) constitutes the material outcome of the experiment. The first sheet functions as a reference grid (Fig.01), depicting seats and architectural margins. It anchors the process to a concrete space, providing the skeleton for the subsequent layers.

As the sequence progresses, layers accumulate. Spectators appear, first as dispersed figures (Fig.02), then as a denser crowd. Details multiply: scarves, jackets, bags, hats (Fig.03). What begins as individual traces becomes a collective density. The interstitial spaces between bodies diminish until they almost disappear. The drawing thus enacts the very process it seeks to investigate: the loss of self in the crowd.

The negative space rendered in black emerges as the true protagonist (Fig.04). It marks the saturation of space, the compression of bodies, the erosion of individuality (Fig.05). The drawing does not depict the climax of the event—the collective explosion of a goal. Instead, it gestures toward it through absence. The ineffable moment in which the crowd becomes one body is left unrepresented, inviting the observer to imagine it, to feel its absence as presence.

This absence is not a failure but a strategy. It acknowledges the limits of representation and underscores the idea that some experiences exceed depiction. The drawing becomes a space of reflection rather than a mirror. It stages the ambiguity of the crowd, oscillating between threat and possibility, alienation and community.

In this sense, the drawing resonates with Canetti's description of the crowd as both liberating and menacing, and with Haraway's insistence on the partiality of knowledge. The drawing is not a neutral representation but a situated act, born of a specific experience, and addressed to an observer who is invited to reflect on their own position.

6. Drawing as Situated Knowledge
The sequence of drawings is not only a visual experiment but an epistemological gesture. It engages both the position of the drawer and that of the observer, making explicit the embodied and partial nature of knowledge.

Donna Haraway's critique of objectivity is central here. In *Situated Knowledges*[6], she rejects the idea of unmediated vision, emphasizing instead that every act of seeing is conditioned by position, embodiment, and power. Drawing functions in precisely this way. It cannot claim neutrality; it always emerges from a perspective, from a body that observes, participates, and records.

In the stadium experiment, drawing does not attempt to represent the crowd in general. It conveys this crowd, in this stadium, as experienced by this subject. Its partiality is not a weakness but a resource. It acknowledges the impossibility of total representation and instead embraces the fragmentary, layered, and situated nature of knowledge.

The drawings reveal both what can be shown—the progressive densification of bodies—and what exceeds representation—the collective eruption of a goal. The absence of the climax becomes a form of presence, marking the limits of representation and the excess of lived experience.

This partiality becomes metaphorical. Just as the boundaries of the self dissolve in the crowd, so too the boundaries of knowledge dissolve in the drawing. No vision is uncontaminated; no line remains unaffected by others. Knowledge, like the crowd, is always relational, entangled, and porous.

7. Conclusions
This research has explored drawing as an embodied and situated practice for engaging with conditions of collective density and spatial saturation. While grounded in a specific experience, the inquiry does not aim to generalize that experience as a model. Instead, it proposes a methodological approach through which drawing can be employed to investigate how architectural space is perceived, inhabited, and transformed under conditions of intensified collective occupation.
Within this framework, drawing operates as a processual device rather than a descriptive one. Through layering, accumulation, and repetition, it traces the gradual shift of space from a legible architectural configuration to a condition of compression and proximity. The drawings record how spatial intervals, thresholds, and distances are progressively reduced, producing an experience in which individual perception is increasingly entangled with the presence of others.
This process brings the architectural object into focus as a spatial skeleton that both supports and constrains collective gathering. Architectural elements such as seats, steps, margins, and circulation systems initially provide orientation and structure, establishing a clear spatial order. As density increases, this skeletal framework does not disappear but becomes progressively obscured by the accumulation of bodies. Architecture remains present as an underlying structure, yet its legibility is temporarily altered, shifting from a system of articulated elements to a latent framework activated through ritualized occupation.

As the drawings progress, figurative detail gradually recedes and zones of visual saturation expand. The sequence stabilizes around a condition in which further differentiation becomes difficult, marking a threshold where spatial structure and individual perception approach their limit. Rather than resolving this condition, the drawings register it as an integral aspect of collective spatial experience, allowing the tension between form, use, and perception to remain visible.

In this sense, drawing proves particularly suited to engaging with architectural situations in which spatial legibility is challenged rather than reinforced. Its partial and layered character enables a reflection on how architecture operates when subjected to extreme or intensified modes of use, revealing the ways in which designed structures are negotiated, compressed, and temporarily reconfigured by collective practices.

The methodological approach developed through this work can be extended to other contexts characterized by collective density and ritualized occupation, such as demonstrations, concerts, religious gatherings, or transit infrastructures. In these situations, drawing may function as a means to interrogate how architectural space is not only formed but continuously redefined through embodied presence and shared action.

Ultimately, this research positions drawing as a critical practice within architectural inquiry, capable of addressing architecture as a lived and contingent condition rather than a fixed object. By operating at the intersection of space, ritual, and embodiment, drawing becomes a way of thinking through the fragile and shifting boundaries between architectural form, collective occupation, and subjective experience, without seeking their definitive resolution.

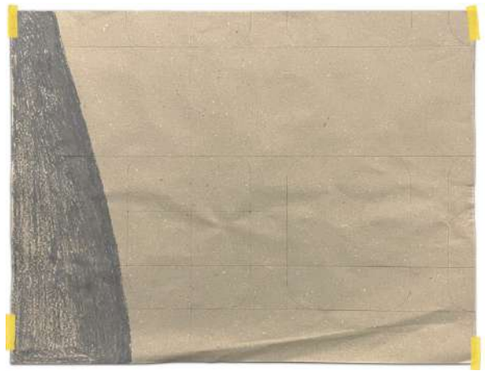

Fig.01

Fig.02

Fig.03

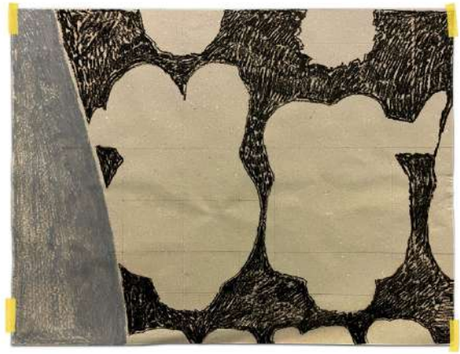

Fig.04

Fig.05

Notes

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Image Captions

Fig.01. Infrastructure, The Stadium.
Fig.02. Human Presence
Fig.03. Left. Space of Self. Right. Human Presence and Space of Self.
Fig.04. Left. Human Traces. Right. Human Presence and Human Traces.
Fig.05. Erosion of the self's boundaries.

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Biography

Simone Baccaglini first studied at the IUAV University of Venice and later at the Politecnico di Milano, where he graduated with honors in 2021 with the thesis "No-city. Towards a Decoded Rurality" – a research project on rural contexts and their potential future scenarios – developed together with Alessandro Coccioni and supervised by Professor Arnaldo Arnaldi. Since 2019, he has been a Teaching Assistant at the Politecnico di Milano, in the Interior Architecture Design Studio led by Professor Lola Ottolini. During his studies, he participated in architectural competitions, receiving several awards, including the 1st prize with Marco Agosti in the international competition "Reuse the Roman Ruin – Piscina Mirabilis" in 2020 for the restoration of the archaeological site Piscina Mirabilis in Bacoli (NA). Since 2020, he has collaborated with various studios, including ARUP Architecture, Salottobuono, and OASI Architects. In September 2024, he began his Ph.D. program at the Politecnico di Milano, conducting research on rural contexts supervised by Professor Sara Protasoni.

Black as Method.
The Void in the Work of Aires Mateus

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Abstract

The architecture of Aires Mateus is characterized by a mode of representation based on the systematic use of solid black fills, through which the project is conceived as a compact mass carved by white voids. This paper interprets such a graphic convention not as an authorial or stylistic choice, but as a genuine design method, here defined as Black as Method.
The central hypothesis is that this practice constitutes a contemporary reformulation of the concept of *poché*, understood not merely as a graphic convention or a planimetric residue, but as a conceptual device capable of assigning form, hierarchy, and spatial quality to architectural voids. The contribution investigates the disciplinary continuity of this approach by reconstructing a selective genealogy ranging from the historical tradition of *poché* to selected modern and contemporary reinterpretations, in order to clarify how the work of Aires Mateus represents an operative synthesis of this lineage.
Through the analysis of drawings and projects, the paper demonstrates how black representation operates as a heuristic tool: it allows the void to be controlled as a positive figure, defining its proportions, relationships, and conditions of light. In this sense, drawing is not merely descriptive, but an integral part of the design process.
Finally, the paper identifies three recurring modes of application of the method – monolithic carving, aggregation of voids, and inhabited wall – highlighting their transferability and critical value for contemporary architectural discourse. Black as Method is thus proposed as both an interpretative and operative framework that reasserts, against object-oriented design and construction practices, the role of the void as an active substance of architectural design.

Key words: Aires Mateus, black as method, *Poché*, figure and ground, operative void.

1. Introduction

The architectural practice of Francisco and Manuel Aires Mateus is distinguished by a rigorous and highly abstract mode of representation, in which built volumes and service spaces are systematically depicted as solid black masses, while architectural space emerges as white voids carved from within them. This graphic convention, recurrent in their project drawings, should not be interpreted merely as a communicative choice or as an authorial signature. On the contrary, it points to a precise conception of space and of the design process.
This paper proceeds on the working hypothesis that this representational mode constitutes a distinct design method, which can be defined as Black as Method (BaM), and is thus transferable and replicable. Through this method, architecture is not conceived as an assembly of elements or an articulation of objects, but as the formal definition of void, achieved through subtractive operations on a conceptual mass. The void is not understood as a residual element or as the result of juxtaposing parts, but as a positive figure endowed with specific form, dimension, and luminous quality.

This approach allows the architectural discourse to refocus on the concept of *poché*. Traditionally associated with the graphic representation of wall masses in plan drawings, *poché* has often been interpreted as a passive element: a silent thickness, functional or structural, lacking formal autonomy. In this paper, by contrast, *poché* is considered a conceptual device, capable of structuring the relationship between solid and void and guiding the compositional process.

It is important to clarify from the outset that the term *poché* is used here in a dual sense, which the paper seeks to maintain as distinct but related: on the one hand, as a graphic device linked to the historical conventions of architectural representation; on the other hand, as an operational principle through which the design attributes form and hierarchy to space. Confusion between these two levels – graphic and conceptual – has often weakened the critical use of the term; one of the aims of this contribution is precisely to reconstruct their connection without conflating them improperly.

Within this framework, Black as Method is not proposed as a general theory of space, nor as an all-encompassing category. Rather, it is a heuristic method, grounded in representation, that allows the verification and control of the design hypothesis through a limited set of operations linked to subtractive compositional strategies. The black drawing functions as an instrument of verification, making legible the relationship between masses – whether actually built or conceptual – and architectural void in proportional and relational terms, independent of scale or program.

The paper is structured in two main parts. The first selectively reconstructs a genealogy of *poché*, clarifying its transition from a graphic expedient to a compositional principle, and distinguishing it from related concepts such as space, spatial sequence, or the mere subtractive process. The second part is devoted to the analysis of several Aires Mateus projects, in which Black as Method is interpreted as an operational synthesis of this genealogy. In this section, three recurrent modes of applying the method are identified, demonstrating its transferability and internal consistency.

Through this reading, the paper aims to demonstrate that the work of Aires Mateus does not merely represent a recognizable authorial position, but provides a methodological framework capable of critically reactivating the theme of void as an active substance in contemporary architecture.

2. Drawing as Evidence: Architecture, Method, and the Operative Void

The hypothesis underpinning this paper stems from the specific graphic convention with which the Mateus brothers represent their projects. The systematic use of full black to delineate architectural mass, against which void emerges as a figure, constitutes a recurring visual language that allows one to infer a design principle of broad applicability, transcending place, author, and time.
In this sense, the drawing is understood not as a representation of a fully formed idea, but as an investigative tool and, consequently, as a design tool. It enables, in particular, the isolation and legibility of the spatial principles underlying the architectural project, transforming their specific design concerns into a broader critical indication.

This mode of reading aligns with an observational approach that privileges the observation of signs, traces, and formal recurrences to identify models or rules of broader significance. The underlying hypothesis is that, in architecture as in other interpretative disciplines, the understanding of complex processes, such as design, can proceed from the analysis of secondary or seemingly peripheral elements, which reveal a deeper operational logic.

In the case of Aires Mateus, *poché* – here primarily understood as a graphic device – functions as a clue. Its repetition in the drawings does not merely signal a representational convention or a visual identity; rather, it highlights a way of conceiving design as a relationship between a conceptual mass and the void it encloses. Black does not describe the architectural object mimetically; it defines, in contrast, the shape of architectural space.

From this perspective, the drawing operates as a test of the design hypothesis. Representation in black allows for the verification of the formal coherence of the void, its degree of autonomy, and its capacity to constitute itself as a figure. Through graphic abstraction, the project is reduced to a set of essential relations between solid and void, independent of materials, construction details, or stylistic characteristics.

It is important to emphasize that this approach does not imply an automatic identification of *poché* with architectural space. *Poché* does not coincide with space, nor with the sequence of rooms. Rather, it operates as a formal condition that enables the definition of space, establishing a field of tensions and interactions within which void can emerge as an active figure. In this sense, *poché* logically precedes space without being exhausted by it.

Understanding *poché* as an operative clue thus allows one to move from reading the drawing to formulating a more general compositional principle. Black as Method is configured as a heuristic device: a method that does not prescribe formal or linguistic solutions but guides the design process through rigorous control of the conceptual relationship between solid and void. Its effectiveness lies precisely in the simplicity of the operations it proposes and in the capacity of the drawing to make them readily verifiable.

3. The *Poché*: From Graphic Residue to Compositional Agent

The term *poché* emerged as a graphic convention within the tradition of architectural drawing, particularly in the academic and Beaux-Arts context, where the solid parts of a building were blackened to distinguish the built mass from the service spaces. In this original sense, *poché* performed a primarily representational function: it indicated wall thickness and organized the reading of the drawing, without attributing any autonomous conceptual role to the solid.
However, even in the phases preceding its theoretical codification, *poché* revealed a latent capacity that exceeded its purely graphic function. In some historical cases, the built mass does not merely contain space but begins to actively contribute to its formal definition. It is in this shift – from *poché* as residual to *poché* as agent – that the genealogy reconstructed here is located.

During the Renaissance, the work of Donato Bramante[1] provides an early significant example of this tension. In his mature projects, particularly for St. Peter's in the Vatican, the dimensions of wall masses often exceed structural necessity. Pillars and walls acquire a thickness such that they become substantial solids within which cavities, niches, and secondary spaces are generated. In these cases, the mass is not simply a support for the main space but contributes to defining its form and hierarchy. Although the concept of *poché* is not yet explicitly articulated, the idea that the solid can act as a matrix for void is already present.

This intuition is further radicalized in the work of Francesco Borromini[2], for whom the wall is no longer a neutral boundary but a dynamic field that shapes space. Wall surfaces curve, thicken, and articulate in ways that generate continuous shifts between solid and void. In Borromini, the built mass is never merely "given": it is constantly solicited to produce spatial effects. Even here, *poché* is not yet a codified category, but the compositional function of a solid mass absorbing spatial tensions between interior and exterior is already fully operational.

It is, however, with the Beaux-Arts tradition that *poché* is formalized as a graphic and pedagogical device. In academic drawings, the blackened solid becomes a neutral background against which the primary spaces are organized. *Poché* thus assumes a residual character: it accommodates service functions, secondary spaces, and circulation routes. Its importance lies in its ability to ensure compositional clarity, but it is not recognized as possessing formal or conceptual autonomy.

This reduction of *poché* to a mere filler paradoxically also lays the groundwork for its subsequent transformation. Precisely because it is relegated to the margins of the design, *poché* becomes the locus where latent capacities converge, destined to emerge in later phases of architectural reflection.

4. Modern Reconfigurations of the *Poché*: Space, Mass, and Operation

In the transition to modern architecture, the role of *poché* was radically rethought. It is important, however, to avoid anachronistic simplifications: modernism does not correspond to a single model, nor does it produce a linear transformation of the concept.
According to Alan Colquhoun's interpretation[3], Le Corbusier's free plan represents a decisive rupture with the *poché* tradition. The dissolution of wall thickness and the separation between load-bearing structure and partitions result in the diminished centrality of mass as a compositional device. Modern space is defined by continuity and fluidity rather than by the contrast between solid and void. In this context, *poché* seems to lose relevance, superseded by a spatial logic of sequence and transparency.

It is precisely in this phase, however, that alternative interpretations emerge, capable of reactivating the potential of *poché* in new forms. Luigi Moretti[4], for example, emphasizes not *poché* in the strict sense but the configuration of internal volumes as positive figures. His analyses of sequences of spaces highlight the possibility of attributing autonomous form to the void. Moretti contributes to shifting attention from wall mass to space as a formal entity. A decisive step occurs with Louis Kahn[5], who reintroduces thickness as a generative element of design. His thickened walls, which accommodate service functions, revive the principle of *poché*, endowing it with renewed significance. In Kahn, solid is no longer residual but an active structure shaping light, proportions, and spatial hierarchies – a device capable of consciously articulating the relationship between served and service spaces.

In subsequent debates, the concept is further expanded. Rowe[6], through reflections on figure and ground, extends the principle to the relationship between built form and urban space. Venturi[7] identifies in ambiguities and interstitial layers a compositional resource, while Ungers and Koolhaas[8] reflect on the role of solid and void in the contemporary city. In these cases, the idea of solid progressively loses its strictly material connotation and assumes a broader conceptual character.

It is important to emphasize, however, that in these elaborations, the solid does not correspond to a homogeneous or inert mass. Rather, it is conceived as an organizational principle that uses mass as a tool to make the void legible and to attribute hierarchy to spaces.

In other words, architectural space cannot be designed directly but only through the definition of its boundaries – a principle explicitly stated by Peter Zumthor[9], a figure to whom Manuel and Francisco Mateus attribute a significant and revealing role[10].

5. Aires Mateus: Subtractive Composition

The architecture of Aires Mateus can thus be interpreted as one of the contemporary results of a “genetic” operational tension activated by the dialectic between solid and void. In this context, Black as Method does not signal a poetics of black or a recognizable aesthetic choice, but rather a compositional strategy based on the control of void via masses, whether physical or conceptual.
The starting point of the design is not the organization of a functional sequence or program, nor the assembly of construction elements, but the definition of architectural spaces that emerge through the delineation of defining masses, which become counterforms. Although void cannot be directly defined, it remains the primary objective of the design process. In this sense, it can be defined as operative void: not a residual space, but an intentional figure, against which the black of solids and service spaces acquires a compositional role as background.

Graphic representation plays a decisive role in this process. The solid black of Aires Mateus’s drawings does not describe the materiality of the building but establishes an abstract control field within which architectural void can be measured and verified. Drawing functions as a reductive device: by eliminating all superfluous reference, it allows attention to focus on the essential relationships between solid and void. In this sense, Black as Method operates as a heuristic filter guiding and limiting design decisions.

Within this framework, at least three recurring modes of application of the method can be identified. These should not be understood as architectural typologies, but as compositional operations that can be combined or adapted according to context and program.

5.1. Excavation of the Monolith: Hypotactic Composition

The first mode, and perhaps the most paradigmatic, is that of the excavation of the monolith. In projects such as the Centre for the Arts in Sines or the Meeting Centre in Grândola, the architecture presents itself as a compact, almost abstract volume, progressively incised and excavated to generate internal space.
In these cases, the primary figure is the solid: a unitary body that establishes a clear boundary between interior and exterior. Void emerges exclusively through subtractive operations that define its form and hierarchy. The composition is hypotactic: the external volume governs the internal organization, delimiting the field of spatial possibilities.

Although entirely subordinated to the solid, the void acquires strong formal autonomy. Internal cavities are not the result of functional distribution but of a geometric and proportional logic that controls their perception and light. In this sense, *poché* does not coincide with wall thickness but with the volume of the building perceived as a whole, which becomes both a device and raw material through which space is made legible (Fig.1).

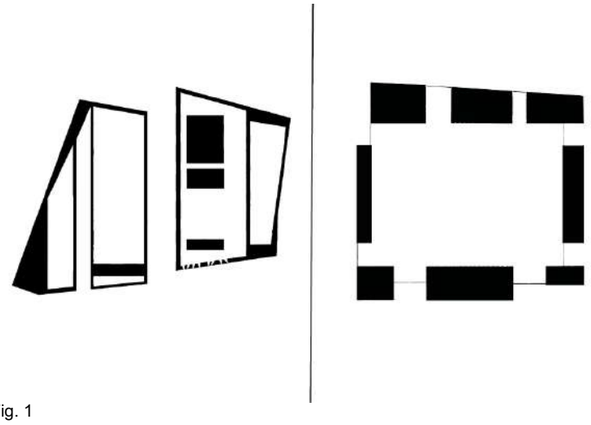

Fig. 1

5.2. Aggregation of Voids and Territorial Subtraction: Paratactic Composition

A second, more complex and less immediate mode is the aggregation of voids. Here, the project does not start from a clearly defined unitary volume but from a constellation of cavities distributed within a continuous mass. Architecture is constructed through the relationship between these voids rather than through the definition of a recognizable external envelope.
In projects such as the AL House or the House in Monsaraz, the solid progressively loses its figurative character, while void becomes the primary compositional element. The logic is no longer hypotactic but paratactic: spaces are juxtaposed by proximity, resonance, and continuity, without being subordinated to a dominant figure of higher order.

This mode highlights a crucial characteristic of Black as Method: without strong graphic control, the risk is the dissolution of the architectural figure. For this reason, such projects often develop in direct relation to the ground, assuming a hypogeal and chthonic character. Subtraction no longer concerns only the built mass but the terrain itself, which becomes an integral part of *poché* and evokes archetypal and primordial figures (Fig.2).

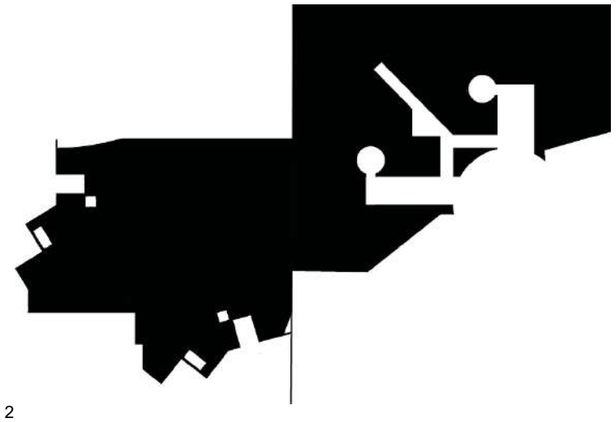

Fig. 2

5.3. Inhabited Wall Composition: Thickness as Spatial Infrastructure

The third mode is the inhabited wall, in which *poché* converges into a primary, linear architectural element. In projects such as the Retirement Home in Alcácer do Sal or the Quinta de Santo António, the wall does not serve merely a separating function but becomes a generative device that integrates functions, circulation, and interstitial spaces.
In these cases, the thickened mass functions as a spatial infrastructure, organizing the relationship between building and landscape. Void emerges as cavities, incisions, or loggias, always in direct relation to the continuity of the solid. The inhabited wall represents a peculiar declination of Black as Method, as it allows, starting from the configuration of the linear architectural component, the modulation of exterior spaces and the relationship with the site in a more complex manner than in the first two modes (Fig. 3).

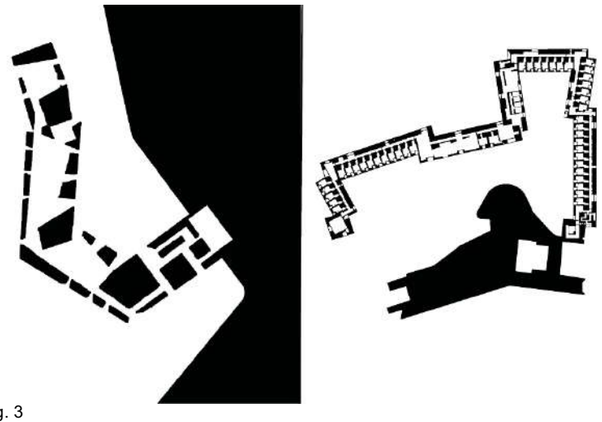

Fig. 3

6. Black as Method: A Heuristic of the Void

The analysis of Aires Mateus's projects allows us to clarify in what sense Black as Method can be understood as a method rather than simply a mode specific to a single author. Its methodological character does not reside in the repetition of recognizable forms but in the adoption of a design heuristic grounded in a limited, controllable set of compositional operations.
Black representation plays a central role in this process. Graphic abstraction removes contingent references – materials, construction details, figurative elements – and reduces the project to a fundamental relationship between figure and ground. In this way, drawing becomes an instrument of verification: it allows the assessment of the formal coherence of the void, its proportion relative to the architectural artifact, and above all its capacity to constitute itself as an autonomous figure.

This abstraction does not imply a distancing from built reality; on the contrary, it reinforces design control. In this sense, Black as Method operates according to a relational framework: what matters is not the dimension in itself, but the relationship between mass and cavity.
It is precisely this approach that makes the method transferable. The three identified modes – excavation of the monolith, aggregation of voids, and inhabited wall – are not tied to a specific program or context but constitute a finite repertoire, though not exhaustive, of operations that can be activated in different situations. The method does not prescribe solutions but establishes a field of possibilities within which the project can develop coherently.

Void thus becomes the true object of the project, while the material – or the conceptual mass of service spaces – serves as a continuous, homogeneous, and intentionally non-expressive field.

This choice has significant consequences for architectural language. Emphasis on spatial form presupposes a suspension of traditional tectonic and construction paradigms, privileging a stereometric conception of architecture in which the building is not conceived as an assemblage of parts. In this sense, Black as Method positions itself as a critical alternative to design models based on the juxtaposition of elements or on strictly programmatic articulation.

7. Conclusion

This paper has interpreted the design practice of Aires Mateus through the concept of Black as Method, understood as a design method grounded in the definition of architectural space through the modulation of its background. The systematic use of black in the drawings is not read as a stylistic device but as a heuristic tool capable of guiding a compositional process that is transferable and reproducible. Through a selective review of the genealogy of *poché*, the study has clarified the distinction between *poché* as a graphic convention and *poché* as a conceptual principle, showing how the work of Aires Mateus constitutes a contemporary outcome. In this framework, void is not conceived as residual space but as a positive, intentional, and regulated figure.
The identification of at least three recurring modes – excavation of the monolith, aggregation of voids, and inhabited wall – demonstrates that the general principle can produce diverse compositional solutions. These operations, applicable at different scales and programs, render Black as Method a critical and operational instrument.

More broadly, the work of Aires Mateus offers a reflection on the role of representation in architectural design. Drawing, reduced to a binary system of black and white areas, does not rely on graphic virtuosity or realistic depiction but serves as a site of design and verification. In this sense, Black as Method reaffirms the significance of void as an architectural material and design as the art of space.

Notes

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10. Carvalho, "Sobre la permanencia de las ideas," 18.

Image Captions

Fig. 1. Excavation of the Monolith. Left. *Sines Art Center*. Right. *Meeting Centre in Grandola*.
Fig. 2. Aggregation of Voids and Territorial Subtraction. Left. *AL House*. Right. *House in Monsaraz*.
Fig. 3. Inhabited Wall Composition. Left. *Home for the Elderly in Alcacer do Sal*. Right. *Quinta de Santo António*.

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Biography

Thomas Bisiani, architect and PhD, is Researcher in Architectural and Urban Composition at the University of Trieste. He graduated with honors from IUAV under Valeriano Pastor, received an honorable mention at the Venice Biennale (2000) and a special prize (2008), and earned his PhD in Architectural and Urban Design at Trieste with Giovanni Fraziano (2010). His research and theoretical reflections on architecture are closely connected to operational practice. Current investigations focus on lagoon landscapes, reclaimed land, and the adaptive reuse of former military infrastructures in north-eastern Italy. Recent publications include *Rewritings between grasslands, rural villages and history for the former powder magazine in Romans d'Isonzo* (2024) and *Rewritings between river, city and history for the former Francescatto barracks in Cividale del Friuli* (2023). He serves on the Editorial Board of the *Masterplan Series. Quaderni di progettazione architettonica e urbana* and on the *Pamphlet Series – On teaching architecture. Words, ideas, methods and projects*.

Between Hunch and Abstraction

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Abstract

It is impossible to objectively and universally categorise architectural drawings. One may, however, consider their process and its implications for architectural thinking – a theme that is scarcely addressed in theoretical bibliography. Often, the method for producing a drawing loosely falls under two categories: one does it and then thinks about it, or one thinks about it and then does it. The first case is about tangibility, effect, hunch, and immediacy. The second case is about abstraction, measurability, awareness, and mediation. The first is invented spontaneously to suit specific purposes, and the second developed systematically over time. There are conceptual and methodological differences between these two types of drawings. They are opposed but not necessarily incompatible.

Operating between these two methods of production was a group of participants during a summer course, organized by the Architectural Association, across ten days in Rio de Janeiro. Their question was: how to draw the ground? Each participant chose a different 4x4m urban plot. Initial, on-site rubbing of charcoal onto sheets of paper over physical surfaces allowed participants to get close to their chosen plot. This was followed by the production of digital axonometric line drawings of the same plot. These were produced by first drawing a plan to scale and then tilting it at a 45-degree angle to provide a third dimension, in this case the depth below the surface, which was drawn to the same scale as the plan.

Addressing the histories and qualities of these modes of representation, from Lygia Pape, Richard Long, Francois Auguste Choisy, Pierre Patte to Giovanni Battista Piranesi, as well as collective production methodologies, the paper examines how such drawing types have enabled the exploration of themes in the architecture of the tropical, post-colonial, urban context of Rio de Janeiro and Brazil.

Key words: drawing, charcoal, axonometric, ground, Rio de Janeiro.

Often, the method by which we deploy the tools commonly associated with producing architecture, such as drawing, loosely falls under two categories: one does it and then thinks about it, or one thinks about it and then does it. The first case is about tangibility, effect, hunch, and immediacy. The second case is about abstraction, measurability, awareness, and mediation. The risk to the first is to overdo and to the second is to overthink. Each architect secretly finds better comfort in one of the two, even if seasonally. It is remarkable that any specialist library will contain a myriad of theoretical texts describing architectural drawings, but surprisingly few describing their process and its implications for architectural thinking.

Operating between these two methods of production was a group of participants during a summer course, organized by the Architectural Association,[1] across ten days in Rio de Janeiro, Brazil. Their question was: how to draw the ground? A single, guiding vector was set across the beachside neighbourhood of Copacabana, stemming from the ocean to the hillside, passing through the boardwalk and dense urban fabric. Along this axis, each participant chose a different 4x4m plot. Initial, on-site rubbing of charcoal onto sheets of paper over physical surfaces allowed participants to get close to their chosen plot. This was followed by the production of digital axonometric line drawings of the same plot. These were produced by first drawing a plan to scale and then tilting it at a 45-degree angle to provide a third dimension, in this case the depth below the surface, which was drawn to the same scale as the plan.

To use the analogy of Robin Evans' seminal text, *Translations from Drawings to Buildings*, the authorial drawings described here aim at, reversely, translating buildings to drawings.[2] As with any translation, things get bent, broken or lost on the way. Meaning is transferred to the perks of modulation and this, too, can be a form of knowledge. Methodologies are contaminated by other forms of art. The architectural drawing is produced to be consumed by the viewer as the final work, and not for its instructive and determinative powers in relation to the building. Thus, the generative role of the drawing is not to provide a set of instructions for construction, but to serve as a repository of active and imagined aspects of the constructed. As such, we leave social analyses of labour hierarchies imposed by drawings, well described by Segio Ferro, for another occasion. Finally, there are conceptual and methodological differences between the charcoal and axonometric drawings. They may be opposed but they are not necessarily incompatible.

Hunch

Charcoal rubbing is about learning through making, about friction rather than resolution. This is not dissimilar to Lygia Pape's *Tecelares* series (1952-60), woodblock prints composed of overlapping geometries which, as historian Paulo Herkenhoff has suggested, aimed for an optical-effect regime rather than a predictable mathematical form.[3] There are many ways to read these prints. At times, shapes hover both in front and behind other shapes, avoiding the association with perspectival viewpoints. White areas of the paper without printed ink may appear as positive or negative spaces. Closed-grain woodblocks create solid, shadow-like shapes. Offset parallel lines may be interrupted by a subtle change in their rhythm, revealing hidden, ghostly shapes. Finally, the use of thin, translucent Japanese paper allows light and surfaces behind to play a role in their composition, and the prints never look the same for each display. The sheer number of *Tecelares* produced, over one hundred, indicates how experimental and intuitive this process was. Pape would only entitle these pieces *Tecelares* decades after their creation, as she looked back and recognized how formative they had been to her career.

More recently, Carlos Vergara's monotype series (1990s-current), on the other hand, are geometric shapes directly linked to a particular site. These rubbings of charcoal and pigments on raw canvas, such as *Pelourinho* (2009) and *Trilhos de Santa Teresa* (2019), are imbued with memory, scale, and anthropology. Like a geologist, Vergara makes the rubbings bent over, crouched, or kneeling on various pavements. Graphic representations of the ground take shape by calibrated chance and, at times, are further constructed using a variety of painterly procedures.[4] Each piece describes a territory and an occupation. Vergara's piece *Cais do Valongo* (2019), for instance, captures that which may have been the ground touched by the fleeting sole of a foot as an African enslaved person jumped off a boat for the first time since crossing the Atlantic and reaching Rio.

On the topic of touching the ground, there are Richard Long's various rubbing pieces, such as *Rock Drawings* (1994), produced with graphite rubbings on paper from textured pieces of rocks, cut out in circles and converted into screenprints. These were based on an eight-day walk in the Mojave Desert, Southern California.[5] In line with Long's career-long exploration of 'walking as art,'[6] the drawings become intermittent markers of an experience that involves scales and the senses. The circle cut-out

serves as a device for deliberately framing the otherwise-endless textures, and it connects the drawings to Long's other work in other media which often carry the circular motif and its variants.

The participants' drawings for Copacabana – produced during an afternoon with black compressed charcoal bars, fixative spray, and cartridge and tracing paper – are equally defined by improvisation and place. First is the context onto which the sheet of paper is placed. Whether a surface is hard, soft, fixed, movable, planar, or curved will affect what is captured. Second is the medium, working with the imperfection of the burnt timber and using the A2 paper size to frame the composition. Third is the technique, expressed by the individual qualities of each participant's hand. The speed, orientation, and applied pressure one conducts the piece of charcoal affects how thick, dark, or detailed the marking will be. The resulting work is a process of impregnating experience.

Ultimately all drawings were combined into a single, massive composition. These were laid on the floor of an exhibition space and held together by cobblestones placed on their vertices. The charcoal 'quilt' absorbed the individual location of each plot to create an unlabelled atlas of effects. There are traces of cities, like manhole covers and cobblestones, and only by deduction can one maintain the depth of the rubbed elements or the uniformity of their patterns. The drawings reveal complexities of the ground and question the purpose of each stroke of charcoal.

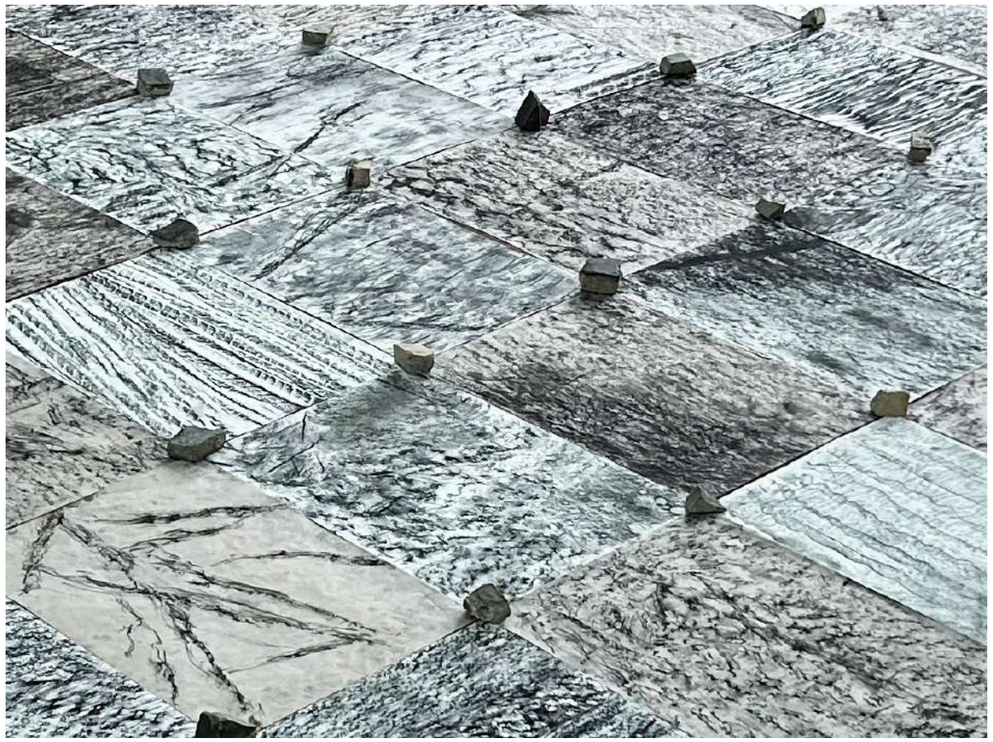

Fig. 1

Abstraction

In axonometric drawings, objects are pushed into the realm of ideas. This type of parallel projection can be traced back to classical Greek vases, Pompeiian frescoes, and Byzantine mosaics; in the Middle Ages, it was employed by the designers of fortifications and machines; in the Renaissance, after the 'rediscovery' of perspectival views, it was seen as a lesser means of representation; it returned in the works of the Western avant-garde; and it has long been the dominant form of representation in China.[7] In the 16th century, from observing shadows of the human body produced by the sun's (almost) parallel rays, observers theorised how projections are indissolubly linked to measurement.[8] In technical terminology, the oblique 45-degree axonometric representation of a human shadow is an isometry, which is the notation chosen for redrawing Copacabana.
In axonometry, or so-called "eye of the sun," the lines are infinite to all directions. This is different from other forms of three-dimensional representation such as Euclidean perspectival views, where the lines converge to create an idea of a fixed point of view. As Martino Tattara has eloquently suggested, this "tends to present space in a non-hierarchical manner, without emphasising any specific element or preferred point of view. It removes the subjective gaze of the viewer, avoiding decisions about what to highlight or prioritise in the representation. It offers a common, abstract, and impersonal view, illuminating the organisational logic of architecture. It does not differentiate between foreground and background… focusing on broader spatial conditions rather than singular points of exception."[9]
As such, axonometry has often been historically used as a tool for control and organization of space, including applications in urban planning and military structures. Beyond an artistic exercise, it has been a tool of knowledge and power, capable of structuring perception and action in space.

Of particular interest here is the use of axonometric projections which have been 'cut' or 'sliced' to reveal information about an object's section. Early examples of this are some of Andrea Palladio's drawings of Roman antiquity, such as his detail of the *Pons Nomentanus* in Rome, (1500's).[10] This is a drawing of three doric columns supporting trabeation. The choice of cavalier axonometric allows a frontal cut through the entablature which reveals the profiles of the architrave, frieze and cornice. The view from below reveals details of the cornice, and a cut through the column shaft accentuates the fluting profile. Any willing stonemason could use this set of graphic instructions to carve out a copy. More exhaustively detailed examples are found in Francois Auguste Choisy's book *L'art de bâtir chez les Romains* (1873). Choisy analysed ancient constructions by producing axonometric drawings that cut structural elements and reduced the complexities of architecture to simple line drawings, such as "Plate VIII: Palatin."[11] Although technical in intent, the drawing is rendered with shadow that enhances its three-dimensional quality, and the textured surfaces contrast with the white, exposed cut plan forms. Within the drawings, there is often a scale with three axes to indicate the rotational space of the representation. These representations show an equal interest in both the material and formal qualities of the buildings.

Perspectival three-dimensional sections, especially when the subject is the ground, are also relevant here. Giovanni Battista Piranesi's etchings of Rome often reconstruct in painstaking detail the remains of the ancient city. Some objects are shown in sections created by the casual ruinous quality of the object. Such is the case of *Veduta dell'antica Via Appia* (1756).[12] The stone pieces that make up the road pavement are revealed from their side and their depth becomes apparent. We also become aware of the subsequent rubble substrate. Another seminal set of drawings are Pierre Patte's *Mémoires sur les objets les plus importants de l'architecture* (1769). Plates I and II "Profile of a Street," for instance, show a section through a typical proto-Haussmann street including buildings, sewage, water, road, all drawn with the build-up of materials. This has been attributed to be one of the very first sections of a street.[13] Through the drawing, we understand the ground as a layered machine destined to the regulation of technical networks.

Back to Copacabana, as the participants of the summer course witnessed, an axonometric drawing is in no way spontaneous but rather takes a few days of thinking and a few days of execution. One participant's drawing for instance, focuses on the boardwalk and its threshold to the beach. We can see the iconic pattern and build-up of the cobblestones that evoke the postcard-friendly, Burle Marx-designed images of Copacabana. But here we can also find objects that hint to the social and urban contradictions of Brazil's most iconic public space. On one hand, the ground allows the democratic coexistence of sunbathing wealthy residents alongside families on the breadline. On the other hand, not all are here for leisure, as one quickly becomes aware when vendors walk by selling coconut water, towels, sunglasses, prawn skewers, or renting chairs, loudly announcing their product. Copacabana is also a place of labour.

Other drawings focus on infrastructure, and we learn that Copacabana is not the pristine natural landscape most think it to be. One of these drawings captures planted palm trees and tall, stadium-like light posts. These serve events that bring millions to the site, such as Pride parades on some days, and far-right demonstrations on other days – a considerable portion of the neighbourhood's residents is made up of conservative military personnel and public servants who did not move to Brasilia once it took over Rio's role as the capital city. Another drawing makes visible a hidden infrastructure tunnel built in the 1970's, wide enough for two trucks, located below the boardwalk's road to collect sewage.[14] Part of these works were also the widening of the strip of sand to solve the problem of storm surges, and the widening of the boardwalk for pedestrians. Another drawing represents an extrusion of self-built urbanisation on the hillside, the 'favelas.' It shows how steps and buildings must negotiate their presence with the shallow soil surface on top of the granite massif below.

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Notes from the ground

The focus of the drawings was the ‘ground.’ Floor, pavement, deck, platform, levelled surface, terrace, earth, terra firma, tabula rasa, base, foundation – the ground can take many forms and meanings as it is the physical support of architecture as its quintessential subject. Systematic demarcations and levelling of the ground have historically defined how spaces and buildings in a city are appropriated, produced, exchanged, and used. Participants critically observed these processes by drawing and redrawing the grounds of several urban spaces around the city. This led to the production of experimental charcoal and axonometric drawings. Addressing the histories and qualities of these two modes of representation, as well as collective production methodologies, one may reflect on how such drawing types have enabled the exploration of themes in the architecture of the tropical, post-colonial, urban context of Rio de Janeiro and Brazil.

The intent for the charcoal and axonometric drawings here is to serve as pedagogical tools. In both cases, the drawings were produced by a controlled methodology which let participants with varying skillsets focus entirely on their own experimentation. This was supported by individual tutorials, lectures by invited speakers, site visits, group reviews, and exhibition making. The choice of the ‘sliced’ axonometric representation is motivated by the comparative nature of the exercise and the ambition to look at each individual plot with the same level of precision. The choice of the charcoal rubbing is motivated by the speediness and uninhibition of results. The digitalised version of the drawings is what survives, and the superior physical presence of the vast charcoal ‘quilt’ is overpowered by the finger-scroll-in-and-out endurance of the line drawing. One drawing type was invented spontaneously to suit specific purposes, and the other developed systematically throughout history to be adopted for the occasion. The course’s exercises conceivably combine, in such a way as to enhance both, the corporeal and the abstract aspects of their work.

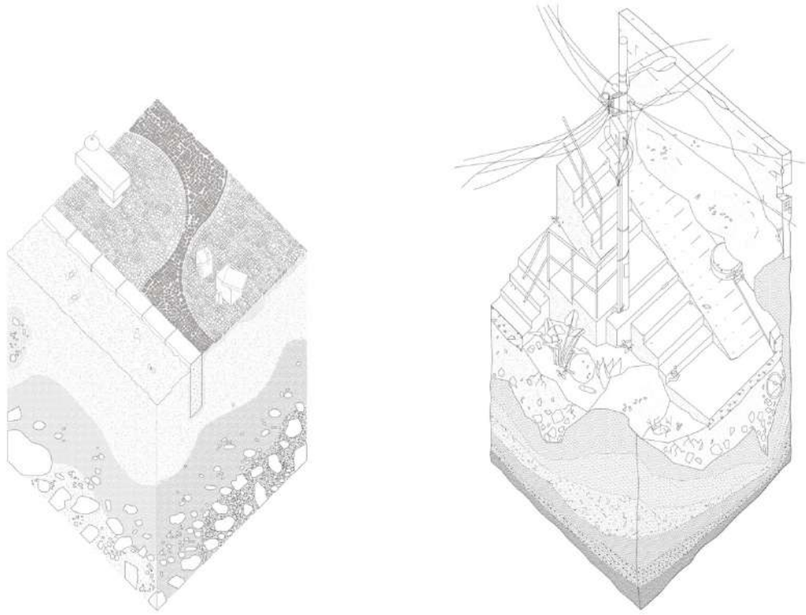

Fig. 2

Fig. 3

Fig. 4

Notes

1. The course was led by Roberto Boettger and Olivia Marra and took place in July 2024, Rio de Janeiro, as part of the Architectural Association's Visiting School programme, and it was hosted by Instituto Inclusartiz.
2. Evans, 154
3. Mark Pascale, *Lygia Pape: Tecelares* (New Haven: Yale University Press, 2023), 18.
4. Gloria Ferreira, "Risks and Opportunities" in Paulo Sergio Duarte (org.), *Carlos Vergara Pinturas* (Rio de Janeiro: Automática Edições, 2011), 253.
5. Richard Long, *Rock Drawings* (London: Paragon Press, 1994).
6. Anne Seymour, *Richard Long: Walking the Line* (London: Thames and Hudson, 2002), 7.
7. Massimo Scolari, *Oblique Drawing: A History of Anti-Perspective* (Cambridge: The MIT Press, 2012), 1-3.
8. Scolari, *Oblique*, 12.
9. Martino Tattara, 2025, "On Axonometric Drawing" in Drawing Matter. https://drawingmatter.org/on-axonometric-drawing/
10. Scolari, *Oblique*, 5.
11. Auguste Choisy, *L'art de bâtir chez les Romains* (Paris: Ducher et cie, 1873), Plate VIII.
12. Giovanni Battista Piranesi, *Le Antichità Romane*, *Divisa In Quattro Tomi. T. 3: Contenente Gli Avanzi De' Monvmenti Sepolcrali Di Roma E Dell'Agro Romano* (Rome: Nella Stamperia Salomoni, 1756), 11.
13. Antoine Picon, *French Architects and Engineers: In the Age of Enlightment* (Cambridge: Cambriudge University Press, 1992), 198.
14. Perrotta-Bosch Francesco, "Revisit: Copacabana beach in Rio de Janeiro, Brazil by Roberto Burle Marx" in The Architectural Review (Issue 1513, July/August 2024), 64.

Image Captions

Fig. 1. Charcoal drawings produced during the AA summer course led by Roberto Boettger and Olivia Marra. Drawing authors: Lia Balassiano, Eren Caglar, Jack Clancy, Vit Madle, Luiza Meyrelles, Maria Morena, João Pina, Noorie Sadarangani, Arthur Santos, Charlotte Schaller, Maria Svab, Jean Zampier. Course assistants: Joss Cueto, Lucas Marques. Guest lecturers: Pier Vittorio Aureli, Caio Calafate, Pablo Lafuente, Isabela Ono, Francesco Perrotta-Bosch, Pedro Varella.
Fig. 2. Left. Copacabana boardwalk, by Lia Balassiano. Right. Urbanisation on the hillside, by Vit Madle. Drawings supported by Roberto Boettger and Olivia Marra.
Fig. 3. Left. Urban forest, by Eren Caglar. Right. Cobblestone road, by Charlotte Schaller. Drawings supported by Roberto Boettger and Olivia Marra.
Fig. 4. Left. Beach infrastructure, by Arthur Santos. Right. Atlantic Ocean, by Jean Zampier. Drawings supported by Roberto Boettger and Olivia Marra.

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Biography

Roberto Boettger is an architect and educator based in London and Rio de Janeiro. He trained at the Architectural Association (AA) where he is programme co-head of the AA Visiting School Rio de Janeiro. As a practicing architect, Roberto has led high profile cultural projects such as Tate Liverpool and Whitechapel Gallery. His texts have been featured in the Avery Review, AR, AU, Domus, and other journals. Boettger has been awarded the RIBA Wren Scholarship, Valentiny Foundation Award, AA Bursary, and nominated for the RIBA President's Medal.

Redrawing Giotto's ambiguity

Luigi Moretti, other practices and the formative process

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Abstract

Drawing as a tool of investigation has almost always been used to study the formal and spatial qualities of an architectural work, whether built or remaining on paper. Only rarely, however, drawing has been used to reinterpret certain architectural works belonging exclusively to the domain of painting. This is the case with Giotto's illustrations reinterpreted by Luigi Moretti in 1928. The architectural works painted by Giotto, conceived outside the weight of matter (to paraphrase Moretti), are capable of arousing no less interest than works designed to be actually built. Moretti studied Giotto's painted architecture, abstracting and stylizing the forms in the knowledge that, except for the partial construction of the bell tower in Florence, the Tuscan painter's only architectural legacy survives exclusively in his paintings.
Moretti's redrawings of Giotto are based on the teachings of his mentor Fasolo, who taught students at the faculty in Rome to reinterpret the architecture of the past through hand-drawn transcriptions. Moretti's art of redrawing is therefore not a mere literal reproduction of Giotto's painted architecture, but an interpretative graphic-design exercise capable of educating the eye and refining the hand.
Moretti's graphic investigations of Giotto's architecture, also conducted during the 20th century by Fasolo (1939) and art historian Pešina (1945), not only testify to an understanding of the artist's architectures, but can also be interpreted for their abstract value, that is, as autonomous figurative units from which to draw inspiration for new creations.
More than ninety years after Moretti's drawings on Giotto, An Fonteyne's students still use the Florentine painter's representations in the *Ambiguity. Building Giotto* atelier at ETH Zurich as a pretext for reflecting on contemporary design. For An Fonteyne, Giotto's architecture is ambiguous, elusive, mysterious, and anti-real: a figurative resource that awaits infinite decodings through the art of redrawing.
The Giottesque exercises of the Fonteyne atelier, as well as the graphic reflections of Moretti and Fasolo, can be critically interpreted in the light of Luigi Pareyson's *Theory of Formativity,* according to which art is the result of attempts at creation based on the study of good forms.
The practice of redrawing, mediated by manual sensitivity, is therefore one of the most effective methods for reinterpreting architectural forms codified in the past, including those painted forms ignored by architectural history which Moretti was the first to reinterpret, reaffirming the place of architecture within the domain of the arts.

Key words: Giotto, Moretti, redrawing, ambiguity, painting.

1. Coordinates

In December 2022, the National Museum of 21st Century Arts (MAXXI) in Rome will inaugurate an exhibition dedicated to four Italian studios that played a leading role in the history of national and international architecture in the 20th century. *Architetture a regola d'arte. From the archives BBPR, Dardi, Monaco Luccichenti, Moretti*[1] (Fig. 1) is the title of the exhibition that reinterprets the work of the four practices (through recently acquired archives), highlighting the particular dialogue between their architecture and works of art. Among the artists on display, Luigi Moretti is perhaps the figure who was able to forge the most intense link between the art of building and other artistic disciplines.

A refined collector and promoter of dialogue between the different arts, Luigi Moretti founded the *Galleria Spazio* together with French critic Michel Tapié and, in 1950, the magazine of the same name*, Spazio – Rassegna delle arti e dell'architettura* (published until 1953), where he promoted a cross-disciplinary dialogue between artistic practices.

As historian Federico Bucci states: "For Moretti, the unified language of new Italian architecture after the tragedy of war is one that brings together the numerous artistic – pictorial, musical, literary – and scientific tensions embedded in the country's historical tradition".[2] For Luigi Moretti, however, the tensions announced by Bucci do not belong exclusively to the past, but also extend to the present, according to a conception of temporal horizontality that places all artistic expressions on the same level, from Michelangelo to Burri, passing through Caravaggio, Borromini, Capogrossi, and Fontana.

While Moretti's reflections on the masters of the sixteenth and seventeenth centuries on *Space* – with drawings, models, and photographs – are well known, his interpretations of Giotto, exhibited for the first time at the recent exhibition *Architetture a regola d'arte* are less well known.

The fourteen panels exhibited at MAXXI, from the Magnifico-Moretti Archive (recently acquired by the museum and now being catalogued[3]), illustrate some of Giotto's architecture, which Luigi Moretti extrapolated from the artist's paintings and redraws in wireframe.

Why did the Roman architect attempt to redraw medieval art? What is the origin of the Giotto architectural fragments on display at MAXXI?

While the first question can be answered by looking back at the Roman architect's formative years and the relationship between Luigi Moretti and his mentor Vincenzo Fasolo, the second question can be answered by hypothesizing a connection between Moretti's undated drawings on Giotto and the drawings published by Moretti himself in the article *Giotto architetto* that appeared in the magazine *Quadrivio*[4] on March 7, 1937.

The figurative-spatial sensitivity that Moretti developed through his redrawing of ancient works was based on the courses in *history and styles of architecture* that Vincenzo Fasolo taught at the School of Architecture in Rome between 1925 and 1961. Luigi Moretti attended these courses first as a student and then as an assistant between 1931 and 1934.

Fig. 1

As explained in *Guida metodica per lo studio della storia dell'architettura*, published by Fasolo in 1954, some thirty years after he was appointed to his professorship, the aim of *the History and Styles* course was to provide students with a method for meticulously understanding historical artifacts in order to extrapolate the distinctive features that determined their form. In addition to reading Fasolo's writings, young students were required to translate "the characteristic and essential elements or factors of architecture"[5] into graphic signs according to certain interpretative categories identified by Fasolo himself; these included *linear values, two-dimensional values (solid-void), three-dimensional values (volumes-masses)* and the *fourth dimension (time)*.[6] It is no coincidence that some of the parameters set out by Fasolo were later reinterpreted by Moretti himself in his famous essay *Strutture e sequenze di spazi*, published in the 1950s.[7]

While Vincenzo Fasolo reserved his *History and Styles* courses exclusively for the architecture built and catalogued in books, his personal research went much further, extending to the architecture painted by famous artists. This practice is demonstrated by the small pamphlet published in 1928 entitled *L'architettura nelle pitture del Rinascimento*.[8] In particular, Fasolo's study focused on the redesign of classical architecture depicted in some famous paintings; among the many that appeared in the publication is also the naturalist reinterpretation of a central-plan building extrapolated from Giotto's frescoes in the Scrovegni Chapel in Padua.

"Conducted in this way, this study can satisfy a partial historical curiosity, pointing out some architectural types to be grafted onto the series of well-known monuments, but it can also create a vision of forms and artistic aspects that are not entirely foreign to the particular ways of feeling and researching favoured by modernity; altering the architectural relationships consecrated by long experience, stylizing by deforming rhythms and modules, naively creating archaic forms almost to make more evident the effort of will or feeling that strives to realize their revelation, all these "ways" that contemporary taste enjoys can find in this field a source of ideas and, in any case, a certain resonance".[9]

When Fasolo wrote these words, Moretti was still a student, an ambitious pupil who had produced over three hundred drawings[10] for the *History and Styles* course and, shortly thereafter, would fully understand the lesson on stylization described by his teacher in the 1928 pamphlet. In fact, it took only nine years to move away from Vincenzo Fasolo's naturalistic Giottesque redrawings, which appeared in *L'architettura nelle pitture del Rinascimento,* and arrive at the wireframe Giottesque interpretations published in the 1937 article *Giotto architetto.*

2. The art of redrawing by Luigi Moretti: an aside

The young Luigi Moretti's aptitude for redrawing was a practice that took root at the School of Architecture in Rome, directed by Gustavo Giovannoni, who defined its guidelines from 1927 to 1933. Giovannoni promoted an "operational study of history that fits into a sort of conceptual, but also spiritual, algorithm that leads from antiquity to contemporary composition. However, Giovannoni's drawing is not limited to Roman horizons, but is critically extended to the entire European panorama".[11]

Fasolo's *History and Styles* course followed the same line of thought, requiring students to produce "freehand drawings [...] accompanied by very brief notes and personal observations [...] with the aim of schematically highlighting external volumes, frameworks and structural organizations, compositional schemes and formal characteristics".[12] Among the cultural references in Vincenzo Fasolo's exercises were Auguste Choisy's axonometric projections in *Histoire de l'architecture* (1899) and Paul Frankl's representations in *Die Entwicklungsphasen der neueren Baukunst* (1914).[13]

Drawing at the Rome School was therefore the central activity that intersected all disciplines because, through their hands, students were educated to reinterpret the forms of the past while at the same time refining their sensitivity and forming their own figurative taste. Redrawing, understood as the graphic art of reinterpreting the signs that shape architectural space, was therefore both a tool for understanding the past and a way of training the hand by seeking tensions and proportions between the parts. On this subject, the words of Ludovico Quaroni are significant. Trained three years later at Moretti's school, as a professor at the same faculty in Rome, he addressed his students in the end of the eighties, stating that the act of drawing:

"must [...] be taken out of the project that is to be done: because in order to design a building, it is necessary to have a wealth of ideas, conceptual, structural, and formal, which must be acquired from other ancient or modern architects [...]. It is not possible to master a 'linguistic system' in architecture without analyzing the drawings and photographs of the chosen subject, drawing everything and polishing it well; polishing does not mean making a quick photocopy: it means analyzing the building line by line, surface by surface, in order to grasp its functioning, space, and plastic values".[14]

Luigi Moretti's "linguistic system" was thus formed through numerous reinterpretations and graphic interpretations, some of the best known dating back to his youth, such as the sketches of Villa Adriana, the axonometric projection from below of the Basilica of Maxentius, and that of the Tepidarium of the Baths of Diocletian. As Tommaso Magnifico (Moretti's nephew and heir) states, reinterpretations of works from the past allowed the young Moretti to:

"refine his knowledge of the ancient world [...] in an extremely free manner, unbound by stylistic concepts, [...], thus developing his capacity for observation and visual measurement, his knowledge of the vitality of matter [...] to read the sense of weight, the instinct of construction, the sense of structure, concepts that would constitute the dominant linguistic constant of his work". [15]

The interpretative activity of architecture through drawing, but also through the modeling of plastic models, is therefore a constant that accompanies the work of Luigi Moretti, who constructs his architectural code by stylizing and simplifying the forms of history. This transition to modernity, which saw the end of the historicist *partì* of the residential projects in Ostia and Rome in the early 1930s, was accompanied by the rediscovery of Giotto, master of the stylized figure.

3. Redrawing Giotto's ambiguity: Luigi Moretti

Founded in Rome in 1933 by journalist Telesio Interlandi, *Quadrivio. Grande settimanale letterario illustrato* was part of the collaboration between fascism and literature. In addition to numerous articles of a literary nature, the magazine also featured contributions dedicated to the arts, including Luigi Moretti's *Giotto architetto* (Fig. 2). Written in 1937, when he was only thirty-one years old, the article testifies to the eclectic sensibility of the young architect, who divided his work between theoretical reflections and prestigious commissions for the regime in Rome, such as the House of Balilla in Trastevere (1933-36), the experimental House of Balilla at the Foro Italico (1933-36, later the Fencing Academy), the urban project for the Foro Mussolini between Ponte Milvio and Viale Angelico (1934-36), and the Duce's gym at the Foro Italico (1936-37).

Moretti's interest in Giotto as an architect is stated in the first lines of the article, in which Moretti explains the modern character of Giotto's architecture, referring not so much to his only partially constructed work (the bell tower in Florence) but to the painted buildings governed by what he calls "graphic laws".[16] In describing the modern features of Giotto's architecture, Moretti alludes to a cultural sensibility[17], already widespread in the country during the 1930s, which studied ancient art in order to draw out those timeless characteristics rooted in the collective consciousness and necessary for the foundation of modern art in the making.

A clear sign of this cultural shift can be seen in the *Museo* section of *Domus*, curated by Gio Ponti, and in Giovanni Michelucci's article in issue 51 of the same magazine. Both reflect a renewed interest in rediscovering ancient art. Starting with issue 49 in 1932, *Domus* introduced a column entitled *Museo* with the aim of reviving certain fragments of paintings from the past. It was precisely the detail of the hand of Giotto's *Madonna and Child Enthroned* (preserved in the Uffizi) that inaugurated the section of the magazine with the following text.

"This page, entitled 'Museum', is dedicated to the ancients: here, famous and lesser-known works will return [...]. The journey into the past will never be without discoveries: looking at and understanding a work of art cannot be taught, but the study of a detail, a small part of the whole, is always a fruitful study for both the initiate and the layman. Giotto's hand, which we show here today, reveals the rhythm of the entire work in its supreme formal simplicity".[18]

Along the same lines of thought, focused on exalting ancient stylized forms, is Michelucci's article that appeared in *Domus* in 1932, entitled *Contatti fra architetture antiche e moderne.*[19] In the article, Michelucci initiates a critical comparison between some drawings by the young architects Mario Ridolfi and Adalberto Libera and some details of Giotto's architecture taken from the frescoes in Assisi and Padua.

In this climate of rediscovery of the ancient, Luigi Moretti's interpretation of Giotto, similar to the *Museum* section in *Domus*, begins with a study of the details of the Tuscan master's pictorial compositions in order to extract the modern qualities most akin to his sensibility. Moretti's article in *Quadrivio* is divided into two vertical sections that alternate text, selected details from Giotto's paintings, graphic reinterpretations by Luigi Moretti, and, in the center, a focus on Giotto's Bell Tower with a drawing by the painter and a photograph on a black background. In the article, the Roman architect puts into practice the lesson of his master Fasolo, defined by Moretti himself as "reading and graphic transcription [...] – with the aim of revealing – the qualities and values"[20] of Giotto's architecture.

Moretti's writing accompanying the images therefore emphasizes the plastic values of Giotto's painted architecture, starting with its a-tectonic quality. According to Moretti, the Tuscan painter's buildings are conceived, in fact, "as an ideal play on the eternal and generic patterns of building outside the weight and effort and pain of walling. An anti-real form". [21]

Giotto's architecture, conceived "outside [...] the constraints of matter"[22] are statically ambiguous structures that defy gravity by bending the rules of tectonics. In the painter's buildings, the "beam is always tense [...] whatever weight hangs above it. The material is nothing more than a strip of gray or ocher [...] that ends only where the laws of painting dictate".[23] Moretti compares Giotto's statically anti-realistic forms to those of modern architects who often erred in designing projects that were too ambitious for the construction technologies available.

Moretti's essay continues by focusing on other qualities that characterize Giotto's works, such as rhythm, "nakedness", and foreshortened vision. In particular, concerning to rhythm, the Roman architect investigates the harmonic relationships adopted by Giotto, who often proportions his pictorial compositions, but also his painted architecture, according to the measurements of 1:1/2, 1:1, and 1:2. In support of this interpretation, Moretti cites two significant examples: the building of *St. Francis renouncing his robes* (Bardi Chapel, Santa Croce, Florence), which he himself redrew in the margin of the journal article, and the house with loggias depicted in the Homage of the Simple Man (Stories of St. Francis, Upper Basilica of Assisi), reproduced as a detail in the article below on the right.

Another aspect of Giotto's ambiguity that *Quadrivio's* article focuses on is the "parallel perspective"[24] representation, which Luigi Moretti interprets as a "temporal vision"[25], according to which some of Giotto's architecture presents different proportions between the base and the sky.

For Moretti, in fact, "the compositional element close to the figures and the ground has a human scale [...] but the overlaid element, separated from the underlying one even by a simple frame, suddenly changes scale. [...] It is a temporally conceived perspective, realized as in rapid and precise sequences." [26]

This temporal character of Giotto's architecture can be deduced by comparing the stone blocks of the base of the building in *St. Francis Renounces His Clothes* with the upper part of the same building, but also by observing *St. Francis Frees the Heretic Pietro di Alife* (Stories of St. Francis, Upper Basilica of Assisi). Moretti redraws the latter fresco, isolating the kneeling prelate of Tivoli and the architectural backdrop to highlight the disproportion of the human figure in relation to the ground and the upper orders of the building.

Quadrivio's writing ends with the story of the Bell Tower of Florence and a digression on Giotto's stylistic evolution, traced by Moretti starting from the observation of Giotto's *aedicules*, which transform from Gothic to "an almost Renaissance romanticism through three typical moments; [...] «St. Gregory» in Assisi [...] «Birth of the Virgin» in Padua [...] «Herod's Feast» in the Peruzzi Chapel in Florence". [27]

Fig. 2

Analyzing Moretti's redrawings, it emerges that Luigi Moretti interprets the study of the proportions and architectural qualities of Giotto's works, characterized by structural and perspective ambiguities, through two graphic methods: conical projection and orthogonal projection. With the former, he redraws Giotto's aberrant architecture, thus recalibrating the foreshortened-temporal vision of the Tuscan master's buildings according to perspective rules that reproduce a perception from below; with the second, however, Moretti chooses to represent only some of the elevations of Giotto's works, such as those extrapolated from the building of *St. Francis renouncing his robes* and one of the houses in *The Expulsion of the Devils from Arezzo* (Stories of St. Francis, Upper Basilica of Assisi).
At first look, both graphic transcriptions (conical and orthogonal) seem to reproduce Giotto's painted architecture objectively, but a closer analysis reveals that Moretti's redrawings are actually further stretched and stylized, as if to further accentuate the proportional tensions already present in Giotto's work. This thesis can be easily demonstrated by carefully comparing Giotto's architecture with that redrawn by Luigi Moretti. In the building of *St. Francis frees the heretic Pietro di Alife* (Fig. 3)*,* Moretti lengthens the proportions upwards in a similar way to the elevation extracted from *St. Francis renounces the robes* of Padua. Even in *The Dream of the Palace with Weapons* (Stories of St. Francis*,* Upper Basilica of Assisi), the redesigned architecture reveals greater verticality, a characteristic that is also found in the house extrapolated from *The Renunciation of Possessions* (Stories of St. Francis, Upper Basilica of Assisi), in the tower with the tree of *the Crucifixion* (*Stefaneschi Triptych,* Vatican Pinacoteca in Rome) and, finally, in the lighthouse *of the Landing at Marseille* (*Maddalena Chapel,* Lower Basilica of Assisi).

In addition to the redrawings published in *Quadrivio*, there are also those preserved at the MAXXI in Rome, which reveal the same Morettian tendency to verticalize Giotto's architecture toward the sky. In fact, the archive panels contain other graphic transcriptions that Moretti seems to have deliberately excluded from the *Quadrivio* article in order to favour the original extracts from the frescoes. Among the redrawings at the MAXXI, the most interesting are undoubtedly the rotated perspective view of the house with loggias extrapolated from the *Homage to the Simple Man,* the interpretation from below of the building depicted in the *Apparition of St. Francis on a Chariot of Fire* (Stories of St. Francis, Upper Basilica of Assisi) and, finally, the revisited architecture of *St. Francis in Ecstasy* (Stories of St. Francis, Upper Basilica of Assisi).

Moretti's redrawings highlight not only his profound knowledge of Giotto's work (from Assisi to Padua via Florence), but also the young architect's ability to rework the ambiguities of Giotto's architecture through the art of graphic transcription. These transcriptions are therefore not mere replicas of the artifacts imagined by the Tuscan painter, but true graphic-design exercises capable of educating the eye and refining the hand, contributing to the construction of an architectural sensibility that would be reflected in Moretti's works.

4. Dissecting Giotto's ambiguity, creating fragments
A few months after the publication of *Quadrivio*'s article, Vincenzo Fasolo, Moretti's teacher, also ventured into a reflection on Giotto's architecture, using graphic interpretations on the occasion of the *Second National Conference on the History of Architecture* held in Assisi in October 1937. In his speech entitled *Architettura giottesca (*published in 1939), Fasolo explained how understanding Giotto's works requires a process of selection and abstraction of the buildings from the pictorial context in which they are inserted.

"In addition to the more general architectural aspects of Giotto's work that we have considered here in terms of overall composition, there is another aspect that attracts our interest, namely the architectural style of the buildings or architectural elements that animate Giotto's world. To do this, we need to measure the architectural elements, detach them from the complex, and examine them with the eye of an architect. Given the premises, the process is undoubtedly partial and unilateral from the point of view of critical analysis, but, limited to the assumption, it is useful for teaching and observation". [28]

The mentor Fasolo therefore argues that graphic transcription, mediated by the sensitivity of the hand, represents the way to abstract Giotto's forms from the naturalistic pictorial universe. Fasolo and Moretti's redrawings are thus transformed into stylized, achromatic fragments, ready to be reinterpreted in the projects of the two Roman architects. Thanks to the *medium* of the hand, Giotto's artifacts – characterized by the composition of realistic architectural elements, reassembled by the artist – are reconfigured as autonomous units; that is, abstract forms from which to draw inspiration to conceive the new.

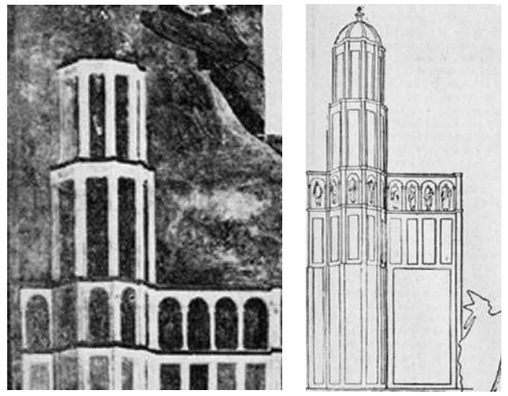

Fig. 3

As Pier Paolo Tamburelli states, with regard to Giotto's architectural fragments in the text *Giotto: or, beauty in space*, Giotto's architecture is a device that forces the performance of gesture[29] and is "composed architecturally, from recombined fragments of reality. [...] Giotto picked architectural fragments, usually quite generic ones, and reassembled them".[30]
Tamburelli documents and illustrates the recompositions of the Tuscan artist's fragments, not only through images of the frescoes, but also by using the planimetric redrawings made by the Czech art historian Jaroslav Pešina. These representations are extrapolated from the text *Spazio tettonico e architettura in Giotto* written in 1945.
To describe the character of Giotto's architecture, Pešina, like Moretti, emphasizes the nature of perspective ambiguity "which simultaneously represents the interior and exterior [...] –since– its conception is not static, but kinetic; it does not correspond to the fixed observation point of the camera, but to the mobile one of the cinematographic apparatus, which moves with the lens in every direction along the surface".[31] The historian Pešina uses graphic transcriptions to analyze the spatial articulation of Giotto's architecture and, with regard to Giotto's representational ambiguity, deduces the following points.

"1. There is no fixed viewing point and therefore no fixed rule for the shortening of depth lines; 2. The main perspective point is generally missing; 3. For Giotto, the optical construction problem always lies in the tangible upper part of the painting (ceiling) [...]; 4. The horizontals converge in depth in the lower part, [...]; 5. Giotto does not use symmetrical horizontal planes; 6. The horizon is not strictly respected; 7. Distance was not known to Giotto; 8. The dividing construction appears only exceptionally". [32]

Unlike Moretti and Fasolo, Pešina's redrawings are orthogonal planimetric projections that attempt to reconstruct the architectural assembly which, as with Tamburelli, is characterized by recompositions of different stylistic elements.

"The path from visual sensation to the depicted form is long, and therefore the architecture often appears in a state of transformation that has very weak links to reality. Careful analysis shows that the character of style in Giotto's architecture is by no means uniform. Giotto draws in part on ancient Roman and Christian art, in part on Romanesque and Gothic models; elsewhere he combines these different stylistic elements simultaneously". [33] Giotto "breaks down – architecture – and then recomposes it, does violence to its form, breaks its cohesion, resorts to the fusion of two scenic spaces when he wants to present two contemporary dramatic times". [34]

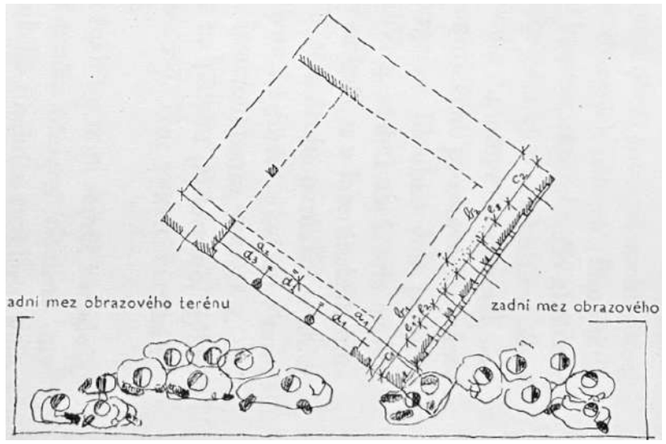

Fig. 4

For Pešina, too, the hand becomes the *medium* for transcribing and abstracting Giotto's architecture, which, extrapolated from the pictorial universe, arrives at the nominal universe of the numerical dimension, as demonstrated by the study of the building of *St. Francis renouncing his robes* (Bardi Chapel, Santa Croce, Florence) (Fig. 4).
Pešina's study, aimed at understanding the optical-spatial relationships of Giotto's compositions, is undoubtedly of great interest not only for its interpretative value but also as a graphic reading in itself, regardless of the objective that the historian had set himself. The plans redrawn by Pešina in fact restore a partial architectural project by Giotto (lacking sections and elevations) which itself becomes an abstract fragment; that is, a source of inspiration for those who imagine space.

5. The importance of redrawing in the formativity process
The study of Giotto's architecture by the authors cited demonstrates how the art of redrawing is, on the one hand, a useful tool for understanding the relationships between the forms that define space and, on the other, how it itself is transformed into an autonomous graphic fragment, that is, an independent figurative resource from which to draw. This interpretation, which values the fragment as a unit in its own right, is at the heart of modern and contemporary aesthetic culture, in which, with the explosion of the naturalistic figure, it is no longer the subject itself that counts, but the figurative balance between abstract forms.[35] It was precisely for this purpose that the *Museo* column in *Domus* was created, presenting fragments of ancient art with the aim of abstracting their formal values from their naturalistic context.

More than ninety years after Moretti's redrawings, interest in Giotto's architectural compositions is still alive today, as is the practice of isolating their figurative-spatial qualities through the graphic signs mediated by the hand. This persistence finds significant confirmation in An Fonteyne's studio at ETH Zurich, where the Tuscan master's architecture becomes the suggestion for reflecting on contemporary design.
Giotto's ambiguity, "a status which can be seen as unclear and confusing, or as valuable in its complexity and richness"[36] , is the starting point for Fonteyne's 2019 studio, entitled *Ambiguity. Building Giotto*. The ETH design atelier begins with a trip to Italy, between Florence and Assisi, with the aim of experiencing Giotto's frescoes directly under the guidance of Belgian painter Benoit van Innis. An Fonteyne summarizes the course objective with these words:

"these painted buildings will follow us throughout the semester, and their spatial qualities will be drawn from and translated into a contemporary setting, guiding the design of small-scale architectures for a collection of sites in Zurich. The scale of those interventions will allow for an in-depth and detailed reflection on their spatial qualities, proportions, structural characteristics, and chromatic strategies. Throughout the semester, with Giotto's help, ambiguity will be embraced and celebrated as a way of generating a different understanding and conception of architectural practice". [37]

Giotto's architectural ambiguities were reinterpreted by the atelier's students through manual operations that transformed the Tuscan master's buildings into graphic works and physical models[38] , isolating them from the pictorial compositions. In particular, the numerous redrawings by the students, coordinated by artist Benoit van Innis (Fig. 5), document the process of formal abstraction: from the

wireframe interpretation of Giotto's artifacts to the investigation of architectural masses through the use of chromatic backgrounds. The final result is a graphic work in itself, an autonomous figurative unit, or rather a pretext for reflecting on a new architecture.

The Giottesque exercises of the Fonteyne studio, as well as the graphic reflections of Moretti and Fasolo, can be critically interpreted in the light of Luigi Pareyson's *Theory of Formativity,* according to which art is the result of attempts to create based on the study of good forms. For the Piemontese philosopher, "art is pure formativity [...] – and – to form means to make"[39], that is to invent the way of working while producing the art itself. The invention of the way of working is therefore found in the course of the artistic practice itself, and the "successful form [...] is the result of attempts". [40]
Applying this principle to architecture, it is clear that the success of a high-quality project depends on a series of trials, errors, and subsequent corrections. In this process, the "thinking hand"[41], as defined by critic Pallasmaa, plays a fundamental role both in attempts to understand the architecture of the past and in the conceptualization phase of the design process.
According to Pareyson, learning about "successful" forms that have become established in history is a necessary condition for developing a new artistic product, since: "exemplarity is an essential characteristic of success – and – the – good – form [...] inspires and stimulates further formations that draw inspiration from it, take suggestions and advice from it, and seek to equal its perfection by using it as a criterion and guideline".[42]

Pareyson's *Theory of Formativity* demonstrates how the necessity to reinterpret the forms of the past of Moretti, Fasolo, and Fonteyne's students arises from the need to draw inspiration for designing the new. In this context, the practice of redrawing is one of the most effective methods for reinterpreting architectural forms codified in the past, including those painted forms that have been ignored by architectural history.[43]

Moretti's interpretative talent is still highly significant and evocative today, not only because he was the first to reinterpret Giotto's ambiguities[44], but also because he reaffirmed architecture's place within the artistic disciplines and, consequently, its trial-and-error approach based on graphic transcriptions of the past that transfigure into abstract fragments and inspirations for the future.

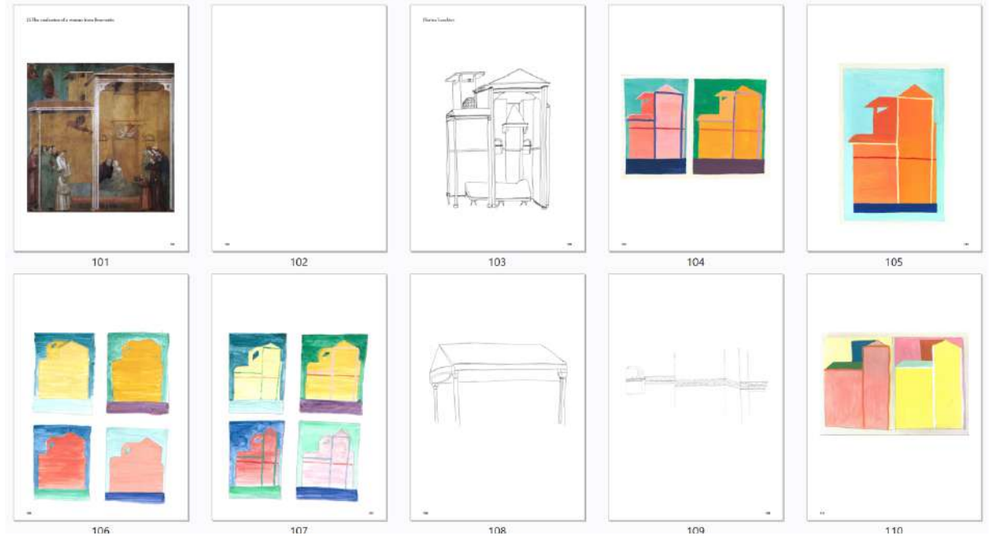

Fig. 5

Notes

1. Luca Galofaro with Pippo Ciorra, Laura Felci, Elena Tinacci (edited by), *Architetture a regola d'arte. From the BBPR, Dardi, Monaco Luccichenti,* and *Moretti archives*, December 7, 2022-November 2023, MAXXI, Rome. https://www.maxxi.art/en/events/architetture-a-regola-darte/
2. Federico Bucci, "Automorfismi e 'unità di linguaggio': la teoria architettonica di Luigi Moretti," *Studi e Ricerche di Storia dell'Architettura*, no. 10 (2021): 110.
3. The drawings on display at the exhibition *Architetture a regola d'arte* are part of MAXXI archival unit number 023, Moretti-Magnifico archive.
4. Luigi Moretti, "Giotto architetto," *Quadrivio. Grande settimanale letterario illustrato di Roma*, no. 19 (1937): 6.
5. Vincenzo Fasolo, *Guida metodica per lo studio della storia dell'architettura* (Rome: Edizioni dell'Ateneo, 1954), 11.
6. Fasolo, *Guida metodica per lo studio della storia dell'architettura*, 10-11.
7. Luigi Moretti, "Strutture e sequenze di spazi," *Spazio*, no. 7 (December 1952-April 1953): 9-20.
8. Vincenzo Fasolo, *L'architettura nelle pitture del rinascimento*, extract from "Architettura e Arti Decorative," no. V-VI (1928).
9. Fasolo, *L'architettura nelle pitture del rinascimento*, 2.
10. Cecilia Rostagni, *Luigi Moretti 1907-1973* (Milan: Electa, 2008), 13.
11. Marco Carpiceci and Marco Schiavo, "Il Disegno di Luigi Moretti: dall'analisi dell'antico alla composizione del moderno," in *Forme dell'abitare a Roma. Echi dell'antico nell'architettura del primo Novecento*, ed. Simona Benedetti, Flavia Benfante, Iacopo Benincampi, Daniele Bigi and Lorenzo Kosmopoulos (Roma: Gangemi, 2023), 344.
12. Rostagni, *Luigi Moretti 1907-1973*, 13.
13. Bruno Reichlin, "Figure della spazialità," in *Luigi Moretti. Razionalismo e trasgressività tra barocco e informale*, ed. Bruno Reichlin and Letizia Tedeschi (Milano: Electa, 2010), 27-32.
14. Ludovico Quaroni, "Sistemazioni degli interni", *Domus*, no. 689 (December 1987): 20.
15. Tommaso Magnifico, "Testimonianza. Per la conoscenza di Luigi Moretti", *Luigi Moretti. Razionalismo e trasgressività tra barocco e informale*, ed. Bruno Reichlin and Letizia Tedeschi (Milano: Electa, 2010), 67.
16. Moretti, "Giotto architetto," 6.
17. "modernamente si parlò di architettura giottesca" [modernly speaking of Giotto's architecture], in "Giotto architetto," 6.
18. Editorial staff, "Museo," *Domus*, no. 49 (1932): 24.
19. Giovanni Michelucci, "Contatti fra architetture antiche e moderne," *Domus*, no. 51 (1932): 134–136.
20. Moretti, "Giotto architetto," 6.
21. Moretti, "Giotto architetto," 6.
22. Moretti, "Giotto architetto," 6.
23. Moretti, "Giotto architetto," 6.
24. Moretti, "Giotto architetto," 6.
25. Moretti, "Giotto architetto," 6.
26. Moretti, "Giotto architetto," 6.
27. Moretti, "Giotto architetto," 6.
28. Vincenzo Fasolo, "Architettura Giottesca," in *II Convegno nazionale di storia dell'architettura Assisi - Ottobre 1-4,* 1937-(Rome: Carlo Colombo casa editrice*,* 1939), 67.
29. Pier Paolo Tamburelli, *"Giotto: or, beauty in space*," *San Rocco*, no. 13 (2017): 32–53.
30. Tamburelli, *"Giotto: or, beauty in space*," 45.
31. Jaroslav Pešina, *Tektonicky prostor a architektura u Giotta* (Prague: Ceska Akademie ved a umeni v Praze, 1945) 351, 353.
32. Pešina, *Tektonicky prostor a architektura u Giotta*, 352.
33. Pešina, *Tektonicky prostor a architektura u Giotta*, 358.
34. Jaroslav Pešina, *Giotto* (Praga: Quaderni dell'Istituto di cultura italiana di Praga, 1949), 11.
35. See Ernst Hans Gombrich, *La storia dell'arte* (Londra: Phaidon, 2014), 578.
36. See https://www.fonteyne.arch.ethz.ch/en/periods/163-ambiguity-building-giotto#top
37. See https://www.fonteyne.arch.ethz.ch/en/periods/163-ambiguity-building-giotto#top
38. See Luigiemanuele Amabile, "Fare e pensare il modello, il Dipartimento di Architettura dell'ETHZ, Anne Holtrop, An Fonteyne, Annette Spiro," *Stoà*, no. 1 (2021): 208.
39. Luigi Pareyson, *Estetica e metafisica* (Brescia: Editrice Morcelliana, 2022), 178.
40. Pareyson, *Estetica e metafisica*, 171.
41. See Juhani Pallasmaa, *The Thinking Hands* (Chichester: Wiley, 2009).
42. Pareyson, *Estetica e metafisica*, 175.
43. Sabine Frommel and Gerhard Wolf, ed., *Architectura picta nell'arte italiana da Giotto a Veronese* (Modena: Panini, 2016), 11.
44. Valerio Paolo Mosco, *Stilizzazione* (Syracuse: LetteraVentidue, 2024), 41.

Image Captions

Fig. 1. Luca Galofaro with Pippo Ciorra, Laura Felci, Elena Tinacci (eds.), *Architetture a regola d'arte. From the archives BBPR, Dardi, Monaco Luccichenti, Moretti*, December 7, 2022–November 2023, MAXXI, Rome.
Fig. 2. Moretti, Luigi. 1937. "Giotto architetto", *Quadrivio. Grande settimanale letterario illustrato di Roma*, no. 19.
Fig. 3. Detail of the fresco of *St. Francis freeing the heretic Pietro di Alife* (*Stories of St. Francis*, Upper Basilica of Assisi) with redrawing by Luigi Moretti. Detail from: Moretti, Luigi. 1937. "Giotto architetto", *Quadrivio. Grande settimanale letterario illustrato di Roma*, no. 19.
Fig. 4. Detail of table 11 from: Pešina, Jaroslav. *Tektonicky prostor a architektura u Giotta*, Prague: Ceska Akademie ved a umeni v Praze, 1945.
Fig. 5. Extract from the *Sketchbook for Benoit*, drawings of Flurina Leuchter from: *Ambiguity. Building Giotto* - Chair of Affective Architectures, atelier An Fonteyne, 2019, ETH Zurich.

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Biography

Alessandro Brunelli, graduated from the Department of Architecture - University of Bologna (supervisors Alessandro Anselmi, Maristella Casciato, Gino Malacarne), is a PhD in Architecture Theories and Design at DiAP - Sapienza University of Rome (supervisors Orazio Carpenzano, Valerio Palmieri). He carries out research activities in the field of modern and contemporary architecture. He has collaborated with the practices of Alessandro Anselmi, Cino Zucchi, STARTT, ARX Portugal Arquitectos, and C+S Architects, in Rome, Milan, Lisbon, and Treviso. In 2016, he founded Brunelli Ann Minciacchi with architect Ph.D. Lavinia Ann Minciacchi. From 2021 to 2024 he was an adjunct professor of architectural design at the Department of Engineering and Architecture (DIA) of the University of Parma. From June 2023 to June 2024, he was a research fellow at the Department of Architecture of the University of Roma Tre. Since October 2024, he has been RTT (Researcher Tenure Track - CEAR-09/A) at the Department of Architecture, University of Ferrara.

Butterfly Effect

Masieri Memorial's Drawings from New York to Venice, from Wright to Scarpa.

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Abstract

The *palazzina* Masieri is located at a significant point along the Grand Canal. Between the Foscari and Balbi palaces, this minor architecture is part of Venice's historic urban fabric.

In the 1950s, the *palazzina* belonged to the Masieri family. Angelo Masieri –a disciple of Carlo Scarpa– and his wife commissioned Frank Lloyd Wright to design a house and studio at the *palazzina*'s location. After Masieri's death, his widow decided to turn the project into a memorial –a residence for architecture students.

In May 1953, while the project was still in an early stage, Wright was awarded a gold medal by the Academy of Arts and Letters in New York. For the exhibition organised to honour the medal recipients, Wright himself included the Masieri memorial along with other projects, showing publicly its drawings for the first time (perhaps hastily?). One of the drawings was subsequently published in Italy, and controversy was sparked off by the alarmism generated by the press even though only one view of the façade was circulated, being yet another example of the distortion of drawing through language, well before current misinformation spreading.

The *palazzina* ended up being listed while Wright's project was rejected because of the impact of its contemporary façade on a historical context. Subsequently, other proposals with varying degrees of intervention on the pre-existent building followed, up to the partial execution of Carlo Scarpa's project, which preserved only the façade, and even transformed it according to a sketch attributed to Canaletto. Venice's historical image prevailed.

The paper analyses the proposals of Wright, Valeriano Pastor and Scarpa from their drawings to their reception (based on documents from Archivio Progetti IUAV, Venice's municipality and Soprintendenza archives) to reveal the existing contradictions between the rejection of Wright's "new VS old" project and the later praise of Scarpa's one.

Key words: architectural conservation, historic urban landscape, value assessment, public opinion, contemporary heritage.

1. "*Veni etiam*"[1]

Venice is characterised by its unique urban image: a small fabric set within a lagoon and interwoven with it through an intricate system of canals. The city provides the framework for the case of the Masieri Memorial, now Fondazione or *palazzina* Masieri, a project by Frank Lloyd Wright that was never realised, ultimately replaced by a design by Carlo Scarpa. Its history cannot be understood without first being contextualised in relation to certain aspects of Venice.

The history of Venice, a naval and commercial empire during the Middle Ages, is closely connected to its morphological evolution. The city began to take shape as a grouping of small islands, which grew through drainage techniques and whose urban fabric became denser, until it had practically acquired its current form by the early fifteenth century[2], near the peak of the empire. Since then, the urban configuration has undergone few significant changes, with the exception of some areas of expansion, again through drainage of the terrain. Beyond its relationship with the lagoon, the city's construction is also deeply tied to the *terraferma* territory that made up the ancient republic: "precisely above a forest of piles Venice rises [...]. The city's foundational structure here is a fact that links the lagoon with the Alps, that recalls the sense of the Serenissima's forest's growing, which puts back into play the ecology of territories: the relationship that bonds two places that are distant but interdependent"[3].

The formation of the city and its image became firmly embedded in the collective imaginary not only of the citizens of Venice and other territories of the *Serenissima Repubblica*, but also of the wider world, through the paintings of *vedute* (with those of Canaletto as their highest expression) and later also through the descriptions in accounts from the Grand Tour period.

Thus, the identity of Venice was strongly tied to its appearance already in the Middle Ages and still is. The subsequent economic decline that had taken place may have reinforced the desire to preserve, at least on an aesthetic level, the grandeur that had been lost. Georg Simmel described the city in 1907: "[...] here, where all that was radiant and serene, unburdened and light, served merely as the façade for the sombre violence of a life inexorably functional, its twilight has left behind nothing but a soulless scene, the mendacious beauty of the mask"[4]. This "empty" image was further accentuated by the prioritisation of tourism as Venice's primary economic activity after the Second World War, which by then had already turned it into a "picture-post-card of itself"[5].

In this context, during the 1950s, the process that led to the present-day Fondazione Masieri began, with Frank Lloyd Wright's visit to Venice in 1951.

2. "This Venice affair"[6]

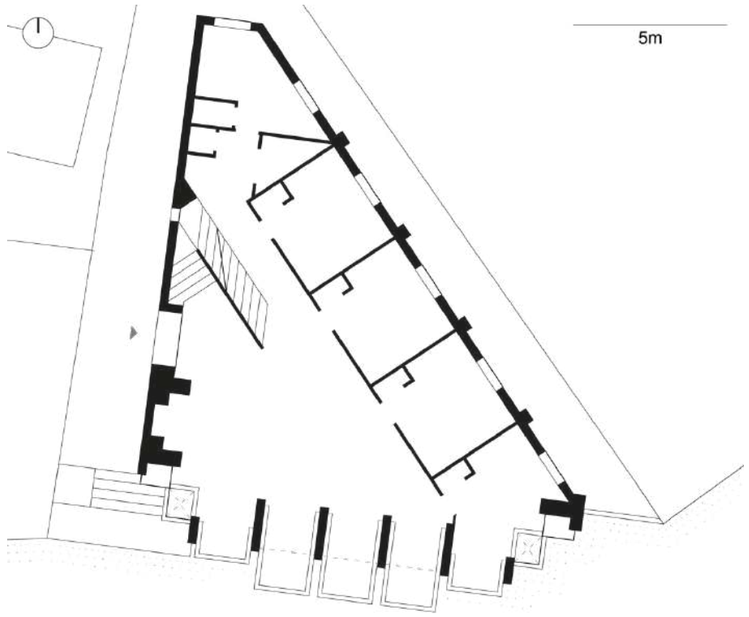

Fig. 1

After Wright's visit to Venice, in 1952 the architect Angelo Masieri –a disciple of Carlo Scarpa– together with his wife Savina Masieri, wished to commission him a project for a family house and studio on the site of a building owned by the family between the Rio Foscari and the Grand Canal, annexed to Palazzo

Balbi and facing Palazzo Foscari, both monumental. While they were travelling in the United States to meet him, they suffered an accident in which Angelo Masieri died. His then widow and his family decided to transform the initial commission idea into a memorial in his honour, so the project became a residence for architecture students, with a programme of rooms, common areas, and a small library (Fig. 1).
Savina Masieri contacted Wright in December 1952. A month later Wright had developed the preliminary drawings, which were sent to the family and reproduced to be presented to the Venetian City Council in May 1953[7]. However, the "Venetian affair" would begin its controversial history in New York. At the end of the same month in which the building permit was requested from the City Council, at the American Academy of Arts and Letters in New York, the group exhibition on the gold medal awardees granted by the institution was inaugurated, among whom was Frank Lloyd Wright, awarded in architecture.
In the exhibition there were the drawings of the Masieri Memorial, shown for the first time to the public. Perhaps because it was a novelty, a perspective of the project was included in a piece of the New York Times of May 31, 1953, on the exhibition of Wright's work (Fig. 2), where it was noted "How enchantingly Venetian the little building designed for the Grand Canal looks!"[8].

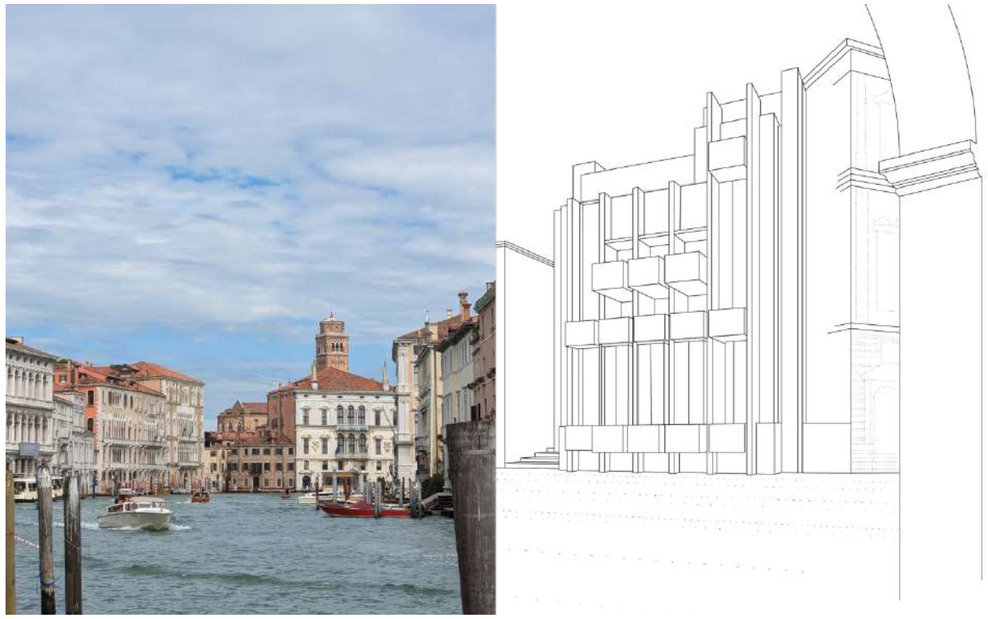

Fig. 2

The selection of projects and materials to be exhibited was carefully chosen by Frank Lloyd Wright himself. In fact, a former archivist of the Academy detailed that "[his] involvement was carried to the extreme", and that "with a characteristic lack of modesty"[9] he wanted to differentiate himself from the rest of the awardees, having prepared an independent catalogue of which he sent draft's corrections to the Academy[10].
As a result of the exhibition, news of the existence of a project by Wright reached Europe indirectly, generating expectation and, due to lack of information, also great controversy. This would be picked up in the press –and probably also fuelled by it[11]–, giving voice to numerous opinions based mainly on prejudice, and not on true knowledge of the project.
Carmen Díez Medina provides a summarised chronology of the controversy[12], while Troy Michael Ainsworth recounts in greater detail the development of Wright's project[13]. Both accounts show that there were positions both in favour and against the project, but opposing voices were an overwhelming majority. Some of the headlines, mainly present in the local press and reflecting the tone of the controversy, are:

"Polemics at the lagoon caused by a 'heretic' building by Wright"[14].

"Frank Lloyd Wright looks out over the Grand Canal. Big battle between 'innovators' and 'traditionalists'. [...] many are alarmed by its *revolutionary* spirit"[15].

"Monster-house"[16].

"Unjustified alarm in Venice because of the new house at the Grand Canal designed by famous architect Wright"[17].

"Wright has kept Venetians awake. The construction of a building at the Grand Canal following a project by the American architect has generated a wave of protests that does not seem to end"[18].

"Don't touch Venice! Don't destroy it!!"[19].

"Hemingway votes against his friend Wright's building. 'I hate everything modern that has been built in Venice after WWII - Erect also this building, but only if it can be burned down right after'"[20].

"Venetians shout loudly: 'Don't deface the Grand Canal!'"[21].

"For the salvation of the City, unique in the world, our Venice!"[22].

"Venetians unite to defend our city. Freakish incursions must end" [23].

The news coverage of the case includes current affairs pieces with statements from figures regarded as experts (or with a certain recognition), while opinion pieces and letters to the editor can also be found. Part of the controversy stemmed from the fact that the project was exhibited in New York and that in the New York Times there was commentary on it while in Venice nothing was yet known[24]. Díez Medina[25] emphasises the fact that the scarce data about the project initially available generated misinformation which caused distrust and rejection among the public.
Nevertheless, one must also take into account the strong link between the image of the city and the identity of its inhabitants, as mentioned earlier. To this identity-related aspect of the city's appearance, it must be added one of the contextual elements of the case referred to by Ainsworth, namely American cultural colonialism/imperialism after the Second World War[25]. The rejection of American influence emerges in some headlines that mention Wright's nationality such as "The project by the American Wright asks for citizenship in the Grand Canal"[26], in some of the texts such as a letter from a reader who shows reservations about Wright's work despite his fame because "from the Lagoon to America... there is an ocean in between"[27], and it is even palpable in citizens' letters addressed to the mayor asking him to intervene in the matter so the project was stopped: "Americans have the American spirit, and Italians have the Italian one, which is more worthy"[28].
Media and civic pressure influenced the management of the project by the administration, whose mayor at that time, Angelo Spanio, declared that "while he's the mayor, that "thingy" [...] will never be built"[29].

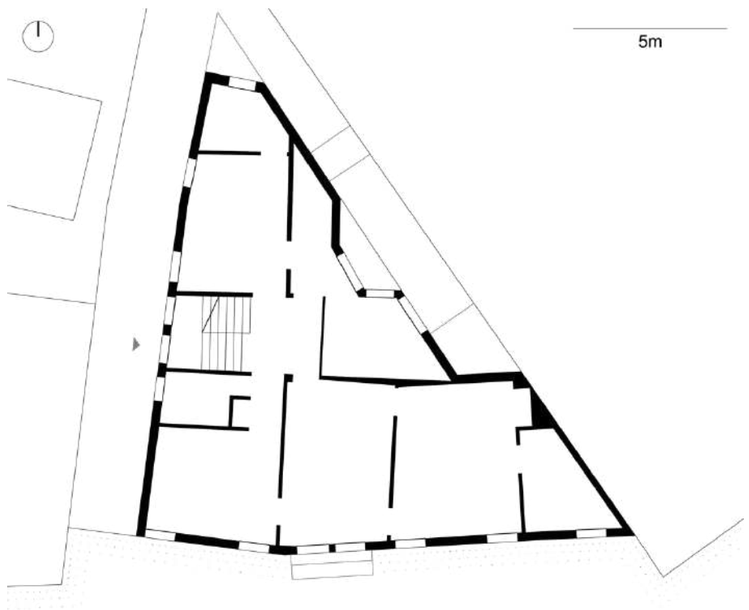

Fig. 3

Despite the limited information available in the municipal and *soprintendenza* archives in Venice about the protection of the building at that time, it is noteworthy that coinciding with the period in which the controversy over the project arose, a Ministerial Decree was issued laying down prescriptions on the building as a buffer zone of Palazzo Balbi[30], dated 11 July 1953, so presumably the proximity to the monumental palace was used to limit possible actions on the building, and specifically Wright's project. One of the restrictions concerned the height of the building and the possibility that it might have blocked views of the church of the Frari, visible from Campo dell'Accademia[31]. Although according to Díez Medina the height relation between the *fondazione* and Palazzo Balbi in the published perspective was inaccurate[32], it is true that Wright's building was taller than the existing one.
In addition to the aforementioned prescriptions, in order for the project to be approved by the authorities, the approval of the neighbours for the project's execution was required. The owner of Palazzo Balbi, in turn, made his approval conditional on that of the City Council[33], so the deadlock ultimately led the Masieri family to give up in their attempt to carry out the project.
The pre-existing building consisted of a minor three-storey construction presumably erected as an auxiliary structure to Palazzo Balbi (from the late 16th century) (Fig. 3). It had an unadorned façade, with a double balcony on the first and second floors marking the centre of the façade. With a triangular plan, it bordered on the east side with the Palazzo, on the south side with the canal, and on the west side with a small street where the pedestrian access was located. To reach the building on foot one had to pass through a private passage through other buildings, so the only visible façade of the building is the southern one, facing the Grand Canal. Once inside, near the entrance there was the staircase, while the rest of the space on all floors was divided into small rooms, many of them passageways. On top of the roof there was an *altana*, a typical Venetian wooden terrace.

3. "*Serenissimi* sono gli abitanti di Venezia" [34]

Years after the controversy, in 1962, an intervention project for the existing building was proposed by Valeriano Pastor, keeping the idea of the *fondazione* as a student residence. However, the *palazzina* was in such a state of conservation that the intervention was not carried out[35] despite having obtained the approval of the *soprintendenza*[36].

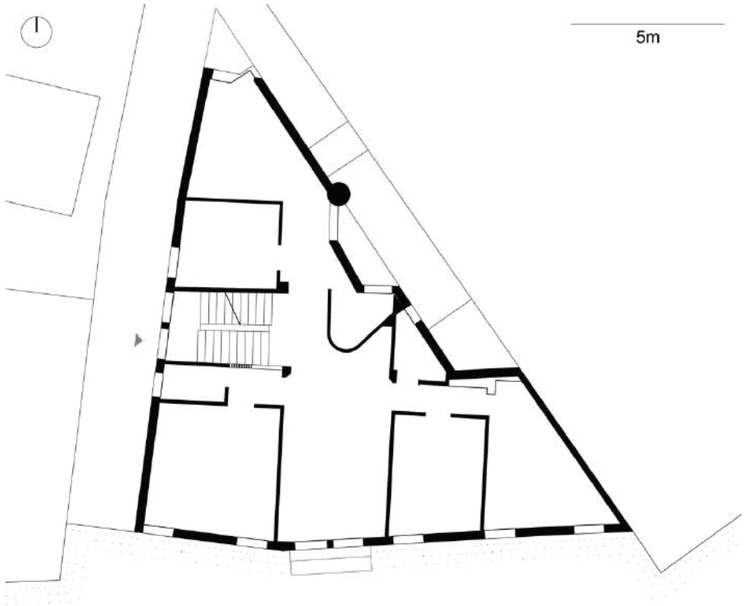

Fig. 4

The project sought to adapt the pre-existing façades and internal layout, although it introduced modifications in both (Fig. 4). The staircase was maintained in its original position, with the greatest differences between pre-existence and intervention project occurring on the ground floor.
The project retained the main façade on the canal, adding only a parapet to the balcony present on the second floor. On the other façades, the dimensions of some windows were altered while others were bricked up. Perhaps since the façade facing Palazzo Balbi is practically hidden, the northern tip (where the pedestrian access passageway ends) was the one that changed most notably, enlarging and angling the windows of the upper floors.
In 1968 Masieri's widow once again commissioned a project for the building with the same programme, this time to Carlo Scarpa. In this case there was also initial rejection on the part of the administration, but because Scarpa, trying to gain an extra floor without increasing the building's volume, had proposed ceiling heights that were too low.
Eventually the project went ahead (Fig. 5). In it, Scarpa completely redid the interior, placing the entrance at the northern end. On entering, the staircase was found along the side adjacent to Palazzo Balbi, while on the right-hand side an elevator was planned. Continuing through a central corridor, one arrived at a large hall occupying the entire front of the building. Here, the *porta d'acqua* makes the space come together with the water in a way reminiscent of that at the Fondazione Querini Stampalia, although with a different outcome given the available space. On the upper floors, the slab was set back from the main façade, accentuating the contrast between new and old. In an organisation similar to Wright's, one side of the floor was designated as a common area while the other one hosted the bedrooms. In Scarpa's standard floor, the bathrooms (one per bedroom) were circular in plan, bringing contemporary language and Scarpa's personal one into the composition and affecting the spatiality of both the bedrooms and the common area.

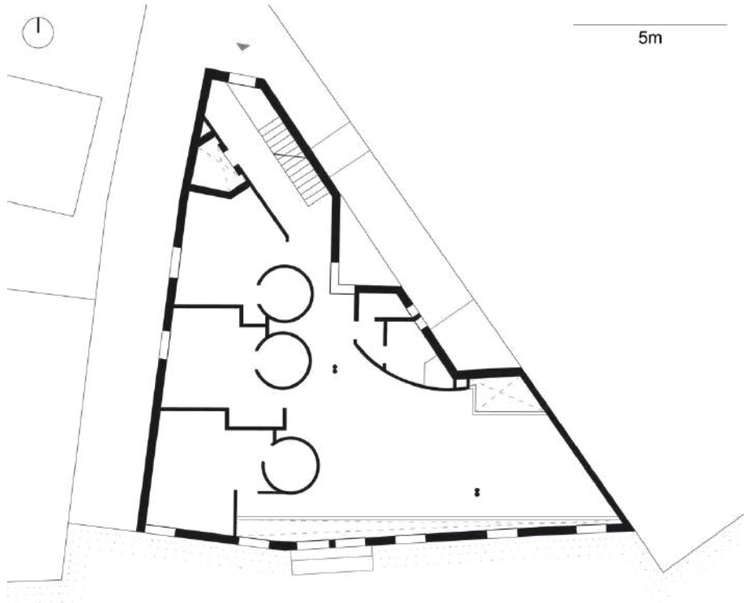

Fig. 5

As for the façade, Scarpa altered the northern tip with a new stone entrance door with circular perforations and with a kind of lattice embedded in the upper part of the wall. On the main façade, unlike Pastor, who just added a parapet to the second floor's balcony and changed the window frames, the large openings on the second floor were modified, turning them into windows and eliminating the balcony. On the first floor, a new traditional-style wrought-iron railing was installed on the balcony. On either side of the central part, two large Venetian-style bell-shaped chimneys were added, taken from a sketch attributed to Canaletto. The pre-existing *altana* that Pastor had maintained disappeared in the new proposal.
Savina Masieri declared that Scarpa, a great admirer of Wright, had not intended to design a new façade in order not to compete with his design[37]. However, it is remarkable that a kind of stylistic *restauro* was proposed based on a drawing instead of conserving what was there, given that, for example, the balcony railing that existed was replaced with another similar to that in the sketch, as if, after having designed an entirely new interior, he had intended to contribute to the stereotypical Venice that had prevented the realisation of Wright's Fondazione Masieri.
Carlo Scarpa died before the works on the *fondazione* were completed, with many elements of the project still to be defined. His disciple Franca Semi and the engineer Carlo Maschietto continued the work, although some parts could not be completed, partly due to lack of funds. For example, the first floor, which consisted of rooms and a common area in the project, was left empty.

The building has had several uses, always connected with the activity of the IUAV university, to which its management was entrusted, while today it houses an art gallery. In 2007, the “verifica del interesse culturale” of the building took place[38], which confirms or annuls the automatic protection granted by Italian law to buildings over 70 years old. In the case of Fondazione Masieri this interest was confirmed, derived from the controversy of Wright’s project and the subsequent execution of a work by Scarpa, according to the report on historical-artistic interest that justifies the ratification.

4. “The tourists win” [39]

“A tear can be shed in this place on several occasions. Assuming that beauty is the distribution of light in the fashion most congenial to one's retina, a tear is an acknowledgment of the retina's, as well as the tear's, failure to retain beauty. On the whole, love comes with the speed of light; separation, with that of sound. It is the deterioration of the greater speed to the lesser that moistens one's eye. Because one is finite, a departure from this place always feels final; leaving it behind is leaving it forever. For leaving is a banishment of the eye to the provinces of the other senses; at best, to the crevices and crevasses of the brain. For the eye identifies itself not with the body it belongs to but with the object of its attention. And to the eye, for purely optical reasons, departure is not the body leaving the city but the city abandoning the pupil. Likewise, disappearance of the beloved, especially a gradual one, causes grief no matter who, and for what peripatetic reason, is actually in motion. As the world goes, this city is the eye's beloved. After it, everything is a letdown”[40].

With these words Joseph Brodsky illustrates the strong relationship between the beauty of Venice and its identity. Probably, in the same way that ceasing to see Venice causes pain for Brodsky, seeing its appearance change –that is, ceasing to see it as it is established in the collective imagination– is the reason why so many reactions arose against Wright’s project and in relation to the debate on the introduction of contemporary architecture on the island. A debate that in recent years has proven to be still relevant with cases such as Punta della Dogana or Fondaco dei Tedeschi, against which legal actions were brought. For Tiziano Scarpa “Venice is not a city. It is a place of the spirit, a symbol, a theme, a mental and emotional space in which to place dreams, projections, flights of the imagination.”[41]. The emotional factor intensified the debate, since the attachment of Venetians to the city’s heritage and its appearance is evident.

Thus, Roberto Pane’s reflection on the integration of contemporary architecture as yet another layer in the city’s palimpsest, which today may seem logical[42], is still not clearly applicable in Venice: “It must be recognised that the integral preservation of the whole environment is a historical absurdity [...]; indeed, the surest ruin of what one would most wish to save is brought about precisely by that intransigence which, being unable to demand perpetual immobility, is forced to turn a blind eye to the falsifications that have arisen, because they 'do not disturb' or are, in any case, considered a lesser evil”[43].

In the case of the Fondazione Masieri, while it is true that rejection of the Memorial designed by Wright began without knowledge of the project and even with erroneous information, the debate soon focused on the introduction of contemporary architecture into the historic urban fabric (with the precedents of the Danieli and Bauer hotels as arguments against it in the eyes of most Venetians), so the image of the façade disseminated in the drawing exhibited in New York and published in the press was being judged. Scarpa’s project for the *palazzina* is part of a long process that began with Wright’s project (and with the hasty exhibition of his drawings in New York). The development of a completely new interior within an envelope that we could call historicist, and its subsequent valorisation as heritage, confirm that the main concern was the appearance of the city, to the detriment of a contemporary architecture as an expression of its time which, in Pane’s words, may “disturb”.

Notes

1. Francesco Sansovino wrote in 1581 that the name Venice came from latin *veni etiam*, meaning “come again, and again, for however many times you come you will always see new and beautiful things”, which reflects the allure of the city as a destination already in the sixteenth century, in Francesco Sansovino, *Venezia città nobilissima e singolare* (Venezia, 1581), 4.
2. Sophia Psarra, *The Venice Variations: Tracing the Architectural Imagination* (London: UCL Press, 2018), 33.
3. “Sopra un bosco di pali sorge appunto Venezia [...] La struttura fondativa della città è qui un dato che collega la laguna con le Alpi, che ricorda il senso della coltivazione del bosco della Serenissima, che rimette in campo l’ecologia dei territori: la relazione che lega due luoghi tra loro distanti ma dipendenti”. Sara Marini, “Sopra un bosco di chiodi. Il disegno della selva e la sua ombra veneziana”, in *Sopra un bosco di chiodi*, ed. Sara Marini (Milano: Mimesis, 2023), 8.
4. “[...] qui dove tutti gli elementi luminosi e sereni, liberi e leggeri, servivano solo da facciata alla fosca violenza di una vita inesorabilmente funzionale, il suo tramonto non ha lasciato dietro di sé nient’altro che uno scenario senz’anima, la bellezza mendace della maschera”. Georg Simmel, “Venezia”, in *Venezia nelle grandi pagine della letteratura*, eds. Riccardo Calimani and Giorgio Orsoni (Verona: Cierre Edizioni, 2022), 89.
5. Mary McCarthy, *Venice Observed* (New York: Harcourt, Brace & World, 1963), 8 (First published in 1956).
6. “This Venice Affair”, is the title of letter sent to the Mayor of Venice, Michele Spanio, by Frank Lloyd Wright in 1953. Archivio Generale del Comune di Venezia, AMV - Dorsoduro 3900 - 1948/55 X/7/7 - 1954-14569.
7. Troy Michael Ainsworth, “Modernism Contested: Frank Lloyd Wright in Venice and the Masieri Memorial Debate” (PhD diss., Texas Tech University, Lubbock, 2005), x, TTU DSpace Repository.
8. A. B. L. “Individual Architect. Frank Lloyd Wright Show Reveals Many Facets”, *New York Times*, May 31, 1953, 7.
9. Nancy Malloy. “The Artist as Curator: Working with the Artistic Temperament”. Text for the exhibition “Showing Off: An Exhibition about Exhibitions". Museum of Staten Island, New York (Sept. 27 - Oct. 28, 1990). Courtesy of the American Academy of Arts and Letters Archives.
10. Letter and revised draft sent from Frank Lloyd Wright to Mr. Marc Connelly - President of the American Academy of Arts and Letters, 20 April 1953. Courtesy of the American Academy of Arts and Letters Archives.
11. Carmen Díez Medina, “The Masieri Memorial on the Grand Canal. Story of the Project” in *Wright. Memorial Masieri, Venecia, 1953*, Rafael Moneo (Alcorcón: Editorial Rueda, 2004).
12. *Ibid.*
13. Ainsworth, “Modernism Contested”.
14. Gino Aspes, “Polemiche sulla laguna per un ‘eretico’ palazzo di Wright, *Settimana nuova - Incom*, July, 9, 1953, 45.
15. Alberto Lenti. “Franck (sic.) Lloyd Wright si affaccia sul Canal Grande”, *Orizzonti*, April 2 (or August written in handwriting), 1953. Archivio Generale del Comune di Venezia, AMV - Dorsoduro 3900 - 1948/55 X/7/7 - 1954-14569.
16. “Casa-mostro”, *Candido*, December 13, 1953, 4.
17. Elio Zorzi, “Ingiustificato allarme a Venezia per la nuova casa sul Canal Grande progettata dal famoso architetto Wright”, *La domenica del* corriere, December, 1953 (date unknown), 10.
18. Toni Cibotto, “Ha tolto il sonno Wright ai veneziani”, *Firenze,* February 24, 1954.
19. Carlo Francini, “Non toccate Venezia! Non distruggetela!!”, *Minosse,* March 13, 1954.
20. “Hemingway vota contro la palazzina del suo amico Wright”, *La Patria,* March 25, 1954.
21. GIVI, “I veneziani gridano a gran voce: Non deturpate il Canal Grande,,!”, *Minosse,* March 27, 1954.
22. Pier Sandro Orsi, “Per la salvezza della Città, unica al mondo, la nostra Venezia!”, *Minosse,* April 3, 1954.
23. “Veneziani uniamoci per difendere la nostra città. Devono finire le cervellotiche incursioni”, *Minosse*, April, 15, 1954.
24. Lenti, “Franck Lloyd Wright”; Carlo Lotti, “Wright: zero a Michelangelo. Venezia: dieci a Wright”, *Minosse*, December 19, 1953; P. O. “L’opposizione dei veneziani al progetto di Wright”, *Corriere della Sera*, February 9, 1954. Archivio Generale del Comune di Venezia, AMV - Dorsoduro 3900 - 1948/55 X/7/7 - 1954-14569.
25. Díez Medina, “The Masieri Memorial”.
26. “Il progetto dell’americano Wright chiede cittadinanza in Canal Grande”, *Il Gazzettino*, March 24, 1954. Archivio Generale del Comune di Venezia, AMV - Dorsoduro 3900 - 1948/55 X/7/7 - 1954-14569.
27. “[...] dalla Laguna all’America... c’è di mezzo l’oceano”, “Noterelle. Nuove costruzioni e voce di Venezia”, *Il Gazzettino*, October 9, 1953. Archivio Generale del Comune di Venezia, AMV - Dorsoduro 3900 - 1948/55 X/7/7 - 1954-14569.
28. “Gli americani hanno lo spirito americano e gli italiani hanno quello italiano che vale di più”. Letter from a citizen (painter Francesco Nonni) to the Mayor of Venice, March 24, 1954. Archivio Generale del Comune di Venezia, AMV - Dorsoduro 3900 - 1948/55 X/7/7 - 1954-14569.
29. “sino a quando egli sarà Primo Cittadino di Venezia, quel “coso” [...] mai sarà costruito”, “Case per gli sfrattati e palazzina di Wright”, *Gazzettino Sera*, December 14-15, 1953. Archivio Generale del Comune di Venezia, AMV - Dorsoduro 3900 - 1948/55 X/7/7 - 1954-14569.
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31. Ainsworth, “Modernism Contested”.
32. Díez Medina, “The Masieri Memorial”, 40.
33. *Ibid.*
34. “*The Most Serene* are the inhabitants of Venice, not just serene. [...] The most serene: that is like saying biochemically static, endemically stuporous”. Tiziano Scarpa, “Istruzioni per difendersi dalla bellezza”, in *Venezia è un pesce. Una guida nuova* (Milano: Feltrinelli, 2020), 169.
35. Prot. 3192. “RISANAMENTO IGIENICO – EDILIZIO – ARCHITETTONICO DEL FABBRICATO EDILIZIO SITO IN VENEZIA – SESTIERE D.D. – n. 3900 mapp.li n. 675 2969 foglio 14 all. A 6 DEL COMUNE DI VENEZIA SEZIONE DI VENEZIA DI PROPRIETÀ DELLA ‘FONDAZIONE ARCH. ANGELO MASIERI’” - Relazione tecnica, May 10, 1974 (1981), Archivio Storico della Soprintendenza Archeologica, belle arti e paesaggio di Venezia; Andrea De Eccher, “Fondazione Masieri” in *Venezia e il Veneto: l’opera di Carlo Scarpa* (Milano: Clupguide, 1994), p. 19.
36. The drawings of the project at the Soprintendenza’s Archives show that it was accepted on August 8, 1967.
37. Carmen Díez Medina and Valerio Canals Revilla, “Conversation with Savina Zetner” in *Wright. Memorial Masieri, Venecia, 1953*, Rafael Moneo (Alcorcón: Editorial Rueda, 2004), 119.
38. “Comune di Venezia – Palazzo Masieri – Dorsoduro 3900. Dichiarazione dell’interesse artistico e storico”.
39. Extract from a declaration by Wright when asked for a reaction to the news of the final rejection of the project. “Associated Press Release”, November 15, 1955. Frank Lloyd Wright Papers, Getty Research Institute, Los Angeles, quoted by Ainsworth, “Modernism contested”, 281.
40. Joseph Brodsky, *Watermark: An Essay on Venice* (London: Penguin Classics, 2013), 109-110 (First published in 1992).
41. Tiziano Scarpa, “Fatalità, a Venezia”, in *Venezia è un pesce*, 185.
42. As Laurajane Smith argues, the protection of heritage from a rigid conservation optic, without taking into consideration heritage’s original purpose, may risk leading it to its fossilisation. Laurajane Smith, *Uses of Heritage,* (Abingdon: Routledge, 2006).

43. “Occorre riconoscere che la integrale conservazione di tutto l'ambiente è un assurdo storico [...] e che anzi la più sicura rovina di quanto maggiormente si vorrebbe salvare è realizzata proprio da quella intransigenza che, non potendo esigere una perpetua immobilità, è costretta a chiudere un occhio sulle sopraggiunte falsificazioni perchè esse "non disturbano" o sono, ad ogni modo, ritenute come un male minore”. Roberto Pane, “La Laguna ‘organica’”, *Il Mondo*, February 2, 1954, 11.

Image Captions

Fig. 1. Second floor of Wright’s Fondazione Masieri project. The front part exceeds the original façade, issue that was one of the first problems of the project and that was made present to Wright by Savina Masieri already in an early phase. Elaboration based on the reproduction of the plans from 1954 available at Archivio Progetti IUAV and Archivio Generale del Comune di Venezia. Scale 1:200.
Fig. 2. Left. View of Fondazione Masieri from Campo dell’Accademia. It can be seen between Palazzo Balbi and Palazzo Foscari, with the Frari behind. Own work. April 2025. Right. Sketch of the view of Wright’s project that was exhibited at the American Academy of Arts and Letters and later published in the press. Elaboration based on the reproduction of the drawing from 1954 available at Archivio Progetti IUAV and Archivio Generale del Comune di Venezia.
Fig. 3. Second floor plan of the *palazzina* before the interventions. Elaboration based on the drawings presented by Valeriano Pastor to the Soprintendenza in the 1960s. Scale 1:200.
Fig. 4. Second floor plan of Pastor’s Fondazione Masieri project. Elaboration based on the drawings presented by Valeriano Pastor to the Soprintendenza in the 1960s. Scale 1:200.
Fig. 5. Second floor plan of Scarpa’s Fondazione Masieri project. Elaboration based on the reproduction of the plans available at Archivio Progetti IUAV. Scale 1:200.

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Biography

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Abstraction As Representation
La Ville Tentaculaire as a Paradigm of Design Against Nature

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Abstract

In a present dominated by the frenetic proliferation of images – in which the rhythm of visual production and consumption far exceeds the possibility of critical elaboration – the question of the legitimacy of visuality as a cognitive tool arises with increasing urgency. The work of Maria Helena Vieira da Silva – and in particular her persistent questioning of the city, understood not as a recognisable visual object but as a mental and perceptive structure – offers a privileged field of investigation for exploring the critical potential of the graphic sign.

The present research is based on the hypothesis that the painting of the artist constitutes a complex constructed visual system, capable of restoring a form of spatial thought akin to that of architecture, but expressed through the language of painting.

Vieira da Silva's works do not limit themselves to evoking environments or spatial situations, but operate a veritable construction of space, through optical grids and rhythmic superimpositions that disorient and at the same time guide the vision. The city is never represented according to mimetic codes, but relies on the power of abstraction starting from an internal visual logic, which allows us to unveil the invisible, the implicit, the unspoken of the built space. In her urban grids, there is an awareness that the city does not have to be what it is, but can change and be reformulated.

Vieira da Silva's painting does not function as an illustration of an external world, but rather as a generative space in which form becomes thought, and perception becomes a creative act. Her works exemplify how the graphic dimension can still constitute an epistemic platform capable of interrogating architectural space. Her research restores representation to its full theoretical dignity, showing its capacity to generate knowledge, to give form to the inexpressible.

Key words: epistemic visuality, urban grid, spatial abstraction, graphic thought, constructed space.

1. Introduction

The present contribution situates itself within the contemporary debate on visual research methods in architecture, within a cultural condition marked by a pervasive and seemingly inexhaustible proliferation of images. The centrality of visuality, intensified by the acceleration of digital media and, more recently, by the widespread diffusion of Artificial Intelligence systems, has profoundly transformed the processes of image production, circulation, and consumption. Images today are generated, disseminated, and replaced at unprecedented speed, becoming simultaneously ubiquitous and ephemeral. Embedded within an uninterrupted visual flow, the contemporary image struggles to achieve critical sedimentation, and its epistemic potential is progressively weakened.

Within this scenario, the image tends to emancipate itself from any stable critical apparatus. Visuality increasingly substitutes textual elaboration and conceptual reflection, presenting itself as a self-sufficient field of meaning that often lacks shared criteria for evaluation and interpretation. This condition, widely discussed within visual culture and art theory, assumes particular relevance in architecture, a discipline in which drawing and representation have historically functioned not merely as operational instruments, but as genuine cognitive devices – capable of structuring thought, organising knowledge, and articulating critical positions with respect to reality. During the exhibition *Perfect Acts of Architecture* (2001), held at the Museum of Modern Art in New York, the curators affirmed that “the history of architectural drawing as an end in itself, as a fully realised, self-sufficient work of architecture rather than a subordinate representation, is well settled”[1]. This assertion foregrounds a crucial shift: representation is no longer conceived solely as a means of translation between idea and construction, but as an autonomous field of inquiry in which architecture reflects upon its own conditions of possibility. It is within this theoretical framework that abstraction emerges as a critical response to the contemporary saturation of images.

In the present paper, abstraction is not understood as a stylistic or formal outcome, nor as a reductive simplification of reality, but rather as a cognitive and representational operation. Through abstraction, the image resists immediate consumption and opacity, suspending literal reference in order to activate processes of interpretation, imagination, and conceptual reconfiguration. Imagination, in this sense, allows abstract representation to acquire phenomenological density: it becomes a concrete anticipation of a space that does not yet exist, but which can nevertheless be conceived, interrogated, and ultimately constructed. The hypothesis advanced here is that abstraction constitutes one of the fundamental tools through which architecture restores critical agency to representation. By withdrawing from mimetic immediacy, abstraction reintroduces distance, making visible the mental constructs through which reality is appropriated, reorganised, and transformed. In a context dominated by an excess of images that tend to neutralise critical judgement, abstraction operates as a counterstrategy: it slows down perception, demands active engagement, and reopens the image as a site of knowledge production rather than mere visual consumption.

In order to explore this hypothesis, the paper adopts a methodological approach that assumes visual material as a primary source of theoretical inquiry. More specifically, the analysis of Maria Helena Vieira da Silva’s abstract pictorial work, *La Ville tentaculaire*, is proposed as an epistemic laboratory through which architectural questions can be articulated. Vieira da Silva’s painting does not depict the city as a recognisable object but constructs an abstract spatial matrix in which urban density, expansion, and disorientation are reconfigured through mental and perceptual structures. The city is not represented as it appears, but as it is cognitively apprehended and internally reorganised.

In this sense, *La Ville tentaculaire* exemplifies a process of appropriation of reality followed by its re-elaboration through abstract constructs. The work transforms urban space into a field of tensions, rhythms, and relational forces, anticipating architectural concerns related to growth, complexity, and the antagonistic relationship between built form and nature. By analysing this painting through the lens of abstraction as representation, the paper argues that such visual works can produce forms of knowledge that other, more literal or discursive methods struggle to articulate.

The argumentative trajectory thus moves from the particular to the general, grounded in the conviction that only through abstraction can drawing and representation be restored to their role as critical instruments – capable not merely of describing the world, but of questioning the conceptual frameworks through which the world itself becomes thinkable and transformable.

2. Maria Helena Vieira da Silva: Cultural Background and the Formation of an Abstract Spatial Language

The pictorial research of Maria Helena Vieira da Silva (Lisbon, 1908 – Paris, 1992) unfolds within a historical and cultural context marked by profound urban, political, and perceptual transformations. Her work develops in close dialogue with the crisis of representation produced by the accelerated modernisation of the city and by the upheavals of the first half of the twentieth century. A privileged corpus of her production has recently been brought together in the exhibition *Anatomy of a Space. Vieira da Silva*, hosted at the Peggy Guggenheim Collection in Venice, at Palazzo Venier dei Leoni. Focusing primarily on works produced between 1930 and 1950, the exhibition allows for a particularly in-depth exploration of the formation and consolidation of her abstract language. Within this body of work, space unfolds through a constellation of recurring themes and visual strategies. Her paintings offer a fertile field of analysis in which visual abstraction enters into a profound dialogue with architectural issues related to the urban grid, spatial organisation, and planning logics. The decision to focus on Vieira da Silva is therefore not illustrative, but methodological: her work constitutes a privileged laboratory for observing the processes of abstraction and spatial translation that connect painting and architecture at a cognitive level.

Now recognised as one of the most authoritative and original voices in European abstract art, Vieira da Silva developed a pictorial language constantly suspended between abstraction and figuration, maintaining an unstable equilibrium that deliberately blurs traditional boundaries. This instability opens new perceptual perspectives, resisting immediate legibility and inviting prolonged visual engagement. The distinctive feature of her language lies in the use of dense chromatic grids, subtle textures, and rhythmic modulations that orchestrate the depth of the pictorial space. These elements generate effects of visual vertigo while simultaneously sustaining a rigorous compositional order.

Her artistic formation emerged from a convergence of diverse experiences. After completing her studies in Lisbon, Vieira da Silva moved to Paris in 1928, at that time the nerve centre of the European *avant-garde*. There she immersed herself in the cultural ferment of Cubism and Futurism, absorbing their compositional logic and dynamic tensions. From Cézanne she derived a structural awareness of form, while from Matisse she assimilated an understanding of colour as an active spatial force. Yet her artistic identity was not defined solely by her engagement with the Parisian *avant-garde*. Her Portuguese background remained an essential component of her visual matrix: the ornamental patterns of Portuguese *calçadas* and the modular geometries of Lisbon’s *azulejos* nourished a sensibility inclined towards rhythmic modulation and geometric fragmentation. These reminiscences resurface in her canvases as visual patterns, textured surfaces, and chromatic mosaics. The ability to interweave regional memory with metropolitan stimuli allowed Vieira da Silva to transcend national tradition, developing a highly personal abstract language capable of negotiating roots and modernity.

A decisive shift occurred in the years following the Second World War. After returning to Paris in 1947, Vieira da Silva definitively abandoned residual naturalistic elements, embarking on a fully abstract trajectory. It was during this period that she engaged most intensely with the theme of space, addressing not only the city but also the ambiguity between interior and exterior conditions. Urban space is no longer depicted as a recognisable ensemble of buildings; rather, it is reconstructed as a mental field structured by memory, movement, and perceptual instability.

Within this framework, the concept of the *situationist city* developed by Constant Nieuwenhuys from the mid-1950s onward can be productively integrated, adding a further layer of theoretical depth to his engagement with the urban question. The *situationist city*, as it emerges from Constant’s early writings and from the visual elaborations that would later converge in the *New Babylon* project, is not conceived as a finished urban form but rather as an open device aimed at the production of situations and the activation of creative behaviours. In explicit opposition to functionalist urbanism and to the notion of a city governed by stable programmes, Constant envisions a continuous, mutable, and labyrinthine space, intended for a humanity emancipated from labour and capable of ludic appropriation of the built environment. The *situationist city* thus takes shape as a field of possibilities in which urban experience is defined by *dérive*, improvisation, and collective interaction, rather than by permanence or function.

In this sense, the parallel with Vieira da Silva’s work becomes even more compelling. If, in her paintings, the dissolution of the city into dense, proliferating networks undermines any fixed point of orientation, Constant’s *situationist city* similarly abolishes spatial hierarchies and predetermined paths, replacing them with an environment designed to intensify perception and to render the subject an active agent in the continuous reconfiguration of space. In both cases, the city is no longer apprehended as a stable object to be represented or regulated, but as a dynamic cognitive and experiential construct, whose meaning emerges through movement, memory, and participation. The *situationist city* thus crystallises, in theoretical terms, the same critical operation enacted pictorially by Vieira da Silva: the dismantling of the visible city in order to expose and reactivate its latent structures, opening urban space to indeterminacy, play, and collective imagination.

3. From the Pictorial Grid to a Generative Architectural Representation

The canvases of Vieira da Silva are populated by visionary architectures, intricate and labyrinthine structures in which urban space, whether real or imagined, is transformed into a veritable mental architecture. The spaces, already explored in previous years, are now reduced to a skeletal structure where planes multiply and interpenetrate, generating an almost anatomical effect of depth. It is no longer a question of depicting recognisable environments, but of reinterpreting space as an interweaving of lines, squares and overlapping surfaces. What distinguishes her work, however, is not so much the adoption of the grid as a formal motif, but rather the way in which it is charged with a spatial and mental density that exceeds the mere rational organisation of the pictorial surface. Jacques Lassaigne, a French art historian, art critic and museum curator, and Guy Weelen, writer, art critic and close friend of

Vieira da Silva, in their analysis of the painter's work, the subjects that emerge in her paintings “may be things seen, they are things that are possible or dreamed. But they exist only as seized by the imagination, which draws from them all the combinations they contain”[2]. This statement captures a central aspect of her practice: pictorial space is never a transcription of reality, but an imaginative construction that takes experience as its point of departure in order to transform it into a complex system of visual relations. In *La Ville tentaculaire*, painted in the aftermath of the Second World War, the city is not represented as a recognisable ensemble of buildings or infrastructures, but as an expanded organism, traversed by tensions, flows, and superimpositions. The grid, seemingly regular, multiplies and folds, progressively losing its orienting function and generating a space that is at once ordered and vertiginous. “In this work, the city is seen as an organism that extends its tentacles in every direction, dominated by the frenzy of movement”[3]. The visual experience conveyed is that of a city that eludes any attempt at total control: the gaze finds no stable points of anchorage but is compelled to move incessantly within a spatial field that continuously regenerates itself. “The canvas thus conveys the perception of an urban environment that can no longer be contained, that expands and multiplies”[4]. This pictorial space may be defined as generative, not because it produces architectural forms directly transferable to design, but because it destabilises the very idea of space as a neutral and measurable container.

Vieira da Silva’s grid does not merely subdivide; it produces depth, ambiguity, and temporal superimpositions. “In fact, this painting is always discovering things. It provides that their truth often resides in their unknown aspect and is best caught by surprise. The artist needs direct contact with a naked and defenceless world”[5]. It functions as a map of urban memory, a device capable of condensing lived experiences, internalised images, and imaginary projections. “The painter's gaze is shaped by the constant relationship between lines, squares and tiles: it is the grids that constitute the filter through which reality is perceived and reworked, until it becomes pure visual structure. The city, a visual equivalent of conscious and unconscious memories, is not presented as a representation of specific places. The artist does not intend to illustrate concrete cities, but to convey abstract impressions, inner evocations of spaces that have been experienced or imagined: “everything amazes me, and I paint my amazement which is at the same time wonder, terror, laughter. I would exclude none of my amazement. I desire to make pictures with many different things, with every contradiction, with the unexpected”[6]. The grids that innervate her works are therefore not descriptive schemes, but maps of memory, devices capable of condensing the urban experience into rhythmic and geometric forms. Thus, each painting becomes an imaginary urban plan, in which the city dissolves into its own abstract representation. Drawing is therefore not just a set of instructions, but a conceptual operation that involves the ability to translate the world into geometric forms.

Seemingly neutral, the urban grid is in fact a device of appropriation and domination: dividing the land into lots means removing it from its organic continuity and transforming it into calculable space. It is in this dialogue between painting and the city that the methodological meaning of this work lies. Architectural drawing is never a mere transcription of reality; rather, it operates through selection, subtraction, and abstraction – an act that precedes and orients construction. In this sense, abstraction does not constitute a withdrawal from the world, but a specific mode of intervention within it. Through plans, perspectives, and axonometries, architecture produces spaces that do not yet exist but become thinkable and, therefore, realisable. Viewed from this perspective, the pictorial work renders visible what often remains implicit in architectural representation: the non-neutral character of abstraction. Every grid implies a choice, a point of view, an act of power.

4. From Abstraction to Design: Drawing as an Epistemic Operation

To abstract means to pull something out from the totality of which it is a part. It comes from the Latin verb *trahere*, which means to draw or drag out. Abstraction designates a process through which reality is rendered intelligible by means of selection and reduction. Rather than addressing singular conditions, abstraction produces generic frameworks capable of organising complexity. In this sense, geometry constitutes one of its earliest and most concrete manifestations. Originating in the act of measuring land, geometry transformed continuous and indeterminate ground into structured, comparable, and economically legible space.

This understanding of abstraction allows a direct continuity to be drawn from the pictorial grids analysed in the previous section to architectural representation. Abstraction is not a purely mental or speculative act, but an operative practice that historically enabled the transition from lived space to conceived space. In architecture, this transition acquires a decisive significance. Far from constituting a formal exercise detached from reality, abstraction operates as a cultural and political mechanism through which space is actively produced and controlled. It does not imply withdrawal from the world, but rather a specific mode of intervention within it. Architectural representation exercises this operation through drawing. Plans, sections, perspectives, and models are not neutral tools of transcription, but epistemic devices that structure thought and orient action. As in Vieira da Silva’s grids, drawing does not reproduce reality;

it reorganises it. Through abstraction, architecture constructs spaces *in absentia*[7]: spaces that do not yet exist, but that become conceivable, testable, and therefore projectable.

Seen from this perspective, the architectural grid appears not as a technical instrument, but as a dispositif of appropriation. By dividing, measuring, and ordering space, it transforms continuous territory into a field of possible interventions. This operation, seemingly neutral, is in fact charged with ideological implications, as every act of abstraction implies a choice, a hierarchy, and a point of view. The non-neutral character of abstraction, already made visible in the pictorial field, thus becomes explicit in architectural practice.

In this sense, abstraction does not mark a distance from reality, but the condition through which reality becomes operative for design. The generative character of drawing lies precisely in this capacity to translate the complexity of the world into abstract systems that precede and guide construction. As Pier Vittorio Aureli has argued in his work *Architecture and Abstraction* (2023), “through reasoning, architecture becomes a way of contemplating the world, where, as a form of rhetoric, what is created is not simply an object but discourse itself”[8]. Abstraction therefore emerges as the critical medium through which architecture negotiates the relationship between imagination and construction, opening the field for a broader reconsideration of representation as a generative act.

5. Design Against Nature

Drawing practice thus expands into a comprehensive mechanism for the reconfiguration of the environment as a whole. Under these conditions, it is no longer nature that delineates the limits of human action; rather, design itself – through abstraction and representation – asserts its authority as the primary organising principle of space. It is within this framework that the notion of *Design against Nature* emerges, not as a polemical slogan or an ideological provocation, but as an analytical category capable of describing a long-term transformation in the relationship between human agency, representational practices, and the natural world. As such, it offers a theoretical alternative to dominant interpretative models of contemporary architectural practice, shifting attention from reconciliation and balance to the operative role of abstraction in shaping reality.

The terrestrial landscape increasingly takes shape as an extension of human design: a continuous, cumulative construction that replaces the spontaneous, heterogeneous complexity of nature with an artificial order that is ever more pervasive and systematised. This transformation does not unfold through isolated acts of domination, but through the gradual sedimentation of abstract operations – measurement, zoning, gridding, and mapping – that render space legible, calculable, and therefore operable. To design, in this sense, is to introduce a discontinuity: to extract space from the indeterminacy of natural processes in order to find an artificial order structured by cultural, economic, and technical logics. The design act does not originate in a symmetrical dialogue with the natural world, but in a gesture of selection, reduction, and recomposition, through which complexity is filtered and reorganised according to abstract principles. Modernity radicalises this logic by extending abstraction across all scales of design, from the architectural object to territorial and even planetary dimensions. As Hans Jonas argues in the work *Das Prinzip Verantwortung* (1979), nature increasingly survives not as an autonomous counterpart to the artificial, but as a fragment, residue, simulacrum, or managed resource: “it can be noted how the boundary between polis and nature has been erased. The city of men, which was once an enclosed space in the natural world, has now taken the place of nature, reduced to an enclosed space in the artificial world of the city. The difference between the artificial and the natural has disappeared; the natural has been swallowed up by the artificial sphere. At the same time, the totality of artefacts, the works of man, produce a new type of nature”[9]. Within this condition, the distinction between natural and artificial environments becomes unstable, as the latter absorbs, translates, and reprograms the former through design. Drawing and representation play a decisive role in this shift, enabling the anticipation, simulation, and projection of spatial orders before their material realisation. The critical relevance of *Design against Nature* lies precisely in its capacity to foreground the epistemic and operative implications of representation. If drawings and images are understood not merely as neutral vehicles of communication, but as active agents in the construction of spatial reality, then abstraction must be recognised as a force that shapes what can be perceived, measured, and transformed. In this sense, abstraction functions simultaneously as a tool of knowledge and as a structuring device that orients action. It defines the horizon of what is conceivable, and, by extension, what is projectable.

Within this scenario, the long-standing ideal of a harmonious mediation between artifice and nature appears increasingly fragile. Rather than resolving the asymmetry between design and the natural world, such narratives risk obscuring the extent to which abstraction has become the dominant mode through which space is conceived and produced. *Design against Nature* thus names not an exceptional or transgressive condition, but the prevailing logic of contemporary spatial production, a retroactive manifesto of contemporary design practices. To draw is to anticipate and impose an order that privileges constructed rationalities over biological processes, transforming territory into a fully designed space. As the example of the urban grid makes evident, abstraction is not simply a representational strategy, but

the operative medium through which the world is continuously reimagined, reorganised, and transformed.

6. The City as Mental Space

Considering these reflections, the work of Vieira da Silva acquires a significance that extends well beyond the field of art history. *La Ville tentaculaire* is not merely a metaphorical evocation of urban modernity, but a critical representation of the abstract devices through which the modern city becomes conceivable. Rather than depicting the city as a physical ensemble of buildings and infrastructures, the painting renders visible the cognitive and representational structures that underlie its formation. “She learned the lesson of simplifying each element to reduce it to its structure, and thus came to create a kind of personal alphabet from the external aspect of the world around her. Objects become signs, and with the repetition of these words, she wants to build her own language”[10]. From this perspective, the city exists before its materialisation as a mental space: an internalised image shaped by memory, experience, and abstraction. Painting, like drawing in architecture, attempts to stabilise this image without ever fully exhausting its complexity. “The problem of representation is closely linked with the process of making (*poiesis*) and with creative imitation (*mimesis*). […] In the original Greek sense, making as *poiesis* is the bringing into being of something that did not previously exist. This bringing into being is a creative step that transforms the open field of creative possibilities into a representation articulated by gesture, word, image, or concept”[11]. Abstraction, therefore, cannot be reduced to a stylistic strategy or a mode of visual simplification. It constitutes a specific form of reasoning through which the experience of the world is translated into communicable and reproducible structures. In Vieira da Silva’s work, abstraction functions as a cognitive device that anticipates spatial transformation by organising perception into logical and relational systems. The city, understood as a mental construct, is thus not opposed to its physical reality, but precedes and conditions it. By revealing the abstract foundations of urban form, *La Ville tentaculaire* exposes the extent to which modern space is produced not only through construction, but through representation itself.

7. Conclusions

Through the analysis of *La Ville tentaculaire*, this contribution has argued that abstraction operates simultaneously as a mode of knowledge and as a dispositif of control. Far from constituting a purely formal or stylistic category, abstraction emerges as a foundational operation of architectural thinking, one that enables the transformation of the world into space that can be conceived, represented, and ultimately constructed. As noted by the curators of the catalogue *Vieira da Silva*, “to the immobility of death, the indifference of nature, she opposes rhythms and movements that are the foundation of life”[12]. This opposition does not take the form of mimetic representation, but of an abstract reorganisation of reality that renders its internal dynamics visible.

From this perspective, drawing can be understood as an epistemic practice. It is not simply a medium through which architectural ideas are communicated, but a site in which spatial knowledge is actively produced. The generative quality of Vieira da Silva’s work lies in its capacity to suspend closure: the city remains open, continuously reconfigured by the movement of the gaze and by the internal logic of the grid. Such openness does not undermine representation; it strengthens its critical potential by resisting definitive resolution.

In conclusion, this contribution argues that abstraction retains a decisive role in restoring to representation its capacity for thought. By foregrounding abstraction as a mode of reasoning embedded within visual practice, the paper proposes a way of engaging with images that does not rely on immediacy or recognition, but on interpretation and construction. In doing so, it reaffirms drawing as a space where architecture does not simply anticipate form but reflects on the conditions under which space becomes imaginable, articulable, and ultimately transformable.

Notes

1. Jeffrey Kipnis and Laura Morris, eds., *Perfect Acts of Architecture: Six Series of Drawings Created between 1972 and 1987 by Rem Koolhaas and Elia Zenghelis, Peter Eisenman, Bernard Tschumi, Daniel Libeskind, and Thom Mayne* (New York: The Museum of Modern Art, 2001), 12.
2. Jacques Lassaigne and Guy Weelen, *Vieira da Silva* (New York: Rizzoli International Publications, 1979), 14-15.
3. Flavia Frigeri, *Maria Helena Vieira da Silva: Anatomia di uno spazio* (Venezia: Peggy Guggenheim Collection; Venezia: Marsilio Arte, 2025), 29.
4. Ibid., 30.
5. Lassaigne and Weelen, *Vieira da Silva*, 108.
6. *The New Decade: 22 European Painters and Sculptors*, ed. Andrew Carnduff Ritchie (New York: The Museum of Modern Art, n.d.), 102.
7. Marco Frascari *et al.*, *From Models to Drawings: Imagination and Representation in Architecture* (New York: Routledge, 2007), 36.
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9. Hans Jonas, *Il principio responsabilità: un’etica per la civiltà tecnológica* (Torino: Einaudi, 2014), 14.
10. Lassaigne and Weelen, *Vieira da Silva*, 141.
11. Dalibor Vesely, *Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production* (Cambridge, MA: The MIT Press, 2004), 21.
12. Lassaigne and Weelen, *Vieira da Silva*, 146.

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Biography

Claudia Caccin (28 April 1998) is an Italian architect and a PhD student. She studied at Politecnico di Milano, where she obtained a Bachelor's Degree in Architectural Design (2020) and a Master's Degree in Architecture - Built Environment - Interiors (2022), with a grade of 110 *cum laude*. Qualified to practise and registered with the Venice Order of Architects, she works as a freelancer in the field of architectural design. Since 2024, she has been a PhD student at the C.SCARPA Advanced Research Centre at the IUAV University of Venice, where she participates in projects aimed at innovating the approach to research management focused on future issues.

Beyond the Line:
Representations and Evolution of Linear Cities, 1880s-present

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Abstract

Linear planning has been a fertile testing ground for urban design and graphic representation. The line, with its morphological and technological implications, has shaped diverse urban imaginaries, acting both as a link and a barrier in the physical and conceptual realms of metropolitan and regional plans. This paper examines the role of visual language in shaping and communicating linear planning proposals from the late 19th century to the present, revealing their social, economic, political, and environmental implications.

Beginning with the first historical articulation of linear planning theory, Arturo Soria's *Ciudad Lineal* of Madrid exemplifies the duality between tradition and modernity, juxtaposing tram and infrastructure lines with provincially styled houses in its main cross-section. This dualism can also be observed in Edgar Chambless's Roadtown, which, five decades ahead of its time, prefigured the avant-garde proposals of the 1960s, such as Archigram's Plug-in City, Paul Rudolph's proposal for the Lower Manhattan Expressway, or Kenzo Tange's Plan for Tokyo, where the graphical depiction of fixed mega-infrastructures and temporary modules played a crucial role in their conceptualization. At the other end of the ideological spectrum, Soviet urbanists like Nikolai Milyutin employed highly schematic diagrams akin to production line layouts, reinforcing the industrial and collective ethos of Soviet planning. Michael Graves and Peter Eisenman's New Jersey linear proposal introduced human figures and hand-drawn elements, emphasizing walkability and bridging abstraction with tangible experience. Encompassing different ideals and scales, Le Corbusier's transition from human-scale to territorial 'establishments' in his linear planning proposals exemplifies the evolution of graphical methodologies in conveying design intent. His master plans oscillated between free hand-drawn depictions of human activity and vast territorial projections, reflecting shifts in modernist urbanism.

By tracing these representational approaches, this paper aims to contribute to the historiography of linear planning, illustrating how graphic methodologies have shaped urban discourse and practice.

Key words: linear planning, representation, urban theory, socio-politics, avant-garde.

Categorizing the Graphic Representation of the Line(ar): Introduction

Linear settlements and urban forms have existed since the earliest stages of civilization. Shaped by geographical features such as rivers, mountain ranges, or coastlines, many cities naturally adopted a linear configuration.[1] As networks of communication and transportation expanded, urban growth increasingly aligned with key infrastructural corridors—roads, canals, and railways—serving commercial, administrative, and even religious functions. Pilgrimage routes, for instance, gave rise to urban forms that integrated all these dimensions, combining economic exchange, governance, and spiritual movement within a single linear framework.

The concept of the linear city as a theoretical and planning construct, however, can be traced to Arturo Soria, who in 1882 published his first written ideas for a *Ciudad Lineal* [linear city] in the Spanish newspaper *El Progreso*.[2] Soria's vision marked a pivotal moment in the history of urban planning—though not always fully acknowledged—representing the transformation of a recurring spatial form into a design strategy articulated along contemporary means of transportation. Since then, linear planning has served as a fertile ground for urban experimentation, albeit more in the theoretical and representational realms than in practice. The line, with its morphological and technological implications, has shaped diverse urban imaginaries, acting both as a link and a barrier in the physical and conceptual realms of metropolitan, regional and intercontinental-scale plans.

These early stages of linear planning were defined by Soria's hyperbolic prose. His writings oscillated between the local scale of Madrid and grandiose visions of "infinite" megaregional linear cities connecting Madrid with Beijing, Moscow, or Brussels.[3] When Soria established his private enterprise in 1894, the *Compañía Madrileña de Urbanización*, to implement his ideas in Madrid, his representational strategies remained relatively conventional, serving both practical and commercial purposes: watercolor perspectives and sectional drawings that highlighted only the most privileged residential types along the main linear corridor—his Ciudad Lineal was to host the three social classes—(Fig. 1). These images juxtaposed traditional architectural forms with emerging technological infrastructures, such as tramways, revealing a duality between past and future. Soria engaged with this dualism in some of his writings, most notably in *La Línea Recta* [The Straight Line], where he celebrated the line as a metaphor for progress and "the republic", contrasting it with the irregular street networks of "absolutist monarchies", which he equated with political stagnation.[4]

Fig. 1

Throughout the 20th and 21st centuries, tensions between modernity and tradition, humanism and rationalism, and local versus megaregional scales persisted particularly in linear planning,

reinterpreted across diverse political and theoretical contexts. Le Corbusier's trajectory is especially paradigmatic in this regard. While his projects and writings often referred to the human scale—as exemplified in his graphic analysis of the Modulor—his urban proposals expanded to territorial and even continental dimensions, evident in his industrial linear plans, the three urban "establishments," and his European corridors. [56] This evolution was paralleled by shifts in his graphic languages, moving from the more evocative hand-drawn perspectives showcasing green open areas accompanied by text, to abstract, highly schematic territorial diagrams and the zoning of master plans in the representations of his *Ville Radieuse*.[7] These oscillations between casual depictions of human activity and rigorous territorial projections, reflect the changing scales and styles of modernist urbanism, capturing the tension between the spiritual and humanistic "*l'esprit*" and the progressive, technological, and modern "le *nouveau*".[8]

When classifying the sections of this paper, several questions arise: should it be based on spatial logic (transport, industrial, symbolic), graphic vocabulary or representation medium, scale (urban, metropolitan-regional, megaregional), or underlying ideology (rational functionalism, technocratic, or humanist utopian)? The principal historian of linear urban planning, George Collins, examined Soria's *Ciudad Lineal* in Madrid and traced its spread and interpretations throughout the 20th century up to the 1960s.[9] [10] He categorized linear planning according to form and function, identifying types such as: linear cities along a single axis; linear planning for production; mixed linear planning; regional grids, linear sprawl or decentralization; and megastructures.[11]

In this article, sections will be organized according to representation techniques and their relationship to ideological/political connotations, proposing three overarching currents:

Rationalist Functionalism: Rooted in the Western modernist tradition, a current that begins with Arturo Soria, whose work, though pioneering, was tentative and unsystematic. It later developed through the more academically grounded projects of Tony Garnier, Le Corbusier's Radiant City, and the evolving CIAM movement, from the Athens Charter (1932) through the MARS Group and the critical rethinking of modernist principles by Team X and some proposals for British New Towns.[12] These ideas were exported and translated into the American suburban context, most notably in Ludwig Hilberseimer's schemes for urban decentralization. At its most extreme, this tradition culminated in megastructural visions, such as Kenzo Tange's Plan for Tokyo or Paul Rudolph's Lower Manhattan Expressway.

Technocratic Industrial Planning: Exemplified by Soviet urbanists in the early 1930s, such as Nikolai Milyutin.[13] This current employs highly schematic, production-line-inspired diagrams emphasizing industrial efficiency and collective organization. Similar techniques appear in Le Corbusier's own industrial city proposals. A pragmatic approach to visual language continues to evolve today in global-scale infrastructural initiatives, such as China's Belt and Road Initiative, which extends linear planning to megaregional and geopolitical scales, often represented in media through maps and diagrams that connect to the language of finance and statistics.

Utopian Proposals: Often visually striking yet operationally unrealistic, this approach foregrounds ideals of transport revolutions, ecological balance, human experience or sociopolitical contestations. Examples include Peter Cook and Archigram's Plug-in City (1964), or Paolo Soleri's Lean Linear City as a linear contemporary vision of his Arcosanti. Other proposals, such as Michael Graves and Peter Eisenman's linear plan for New Jersey, emphasized walkability and human scale, reintroducing hand-drawn figures and narrative elements. Yona Friedman's sketches for his Ville Spatiale (1958-59), Superstudio's Continuous Monument (1969), or Exodus (1972) by Rem Koolhaas, together with Madelon Vreisendorp, Elia Zenghelis, and Zoe Zenghelis.

The paper concludes by reflecting on the latest linear planning proposal by Saudi Arabia's current megaproject, The Line. This unprecedented initiative synthesizes elements of totalitarian rationalism, technocracy, and (dys)utopianism in both its design and its promotional strategies. Its representations—combining sci-fi-inspired sectional drawings with sleek corporate branding—offer a revealing case study of how 21st-century urbanism merges ideology, spectacle, and geopolitical ambition. By tracing these representational traditions from Soria to contemporary global megaprojects, this paper aims to contribute to the historiography of linear planning, showing how visual methods have shaped not only the graphic language of urban ideas, but also the political, social, and economic visions embedded within them.

Rationalism and the Linear City: Form, Function, and Early Modernist Visions

The Modern Movement in architecture and urban planning was animated by an optimistic promise: rationality, standardization, hygiene and efficiency: "form follows function" applied to all scales of design, from a chair to a city.[14] Modern urbanism emerged as a reaction to the congestion, insalubrity, and social inequities in older urban structures exacerbated by the demographic consequences of the industrial revolution.

Françoise Choay, in her history of 19th century planning, distinguishes two paradigms in the modern city: the progressist models and the culturalist ones.[15] Progressist urbanism privileges universal rules, functionality, hygiene, and social rationalization; culturalist urbanism privileges local identity, aesthetics, picturesque form, artistic composition. Choay places Soria's Ciudad Lineal and Tony Garnier's Cité Industrielle in the progressist camp; Camillo Sitte's writings and Ebenezer Howard's Garden City are closer to the culturalist tradition. Paradoxically, Howard's representations of his ideas offered a much more efficient and diagrammatic character in its graphic formulation. Howard's model was expressed in simple, powerful diagrams (radial plan with concentric function-based belts, satellite garden towns, three magnets), which have been adapted—often by real-estate interests—in diverse geographic and cultural contexts.[16] In contrast, Soria's proposal was delivered with rhetorical flourish and conventional drawing—presenting his linear city in a less systematic fashion.

Le Corbusier drew from progressist precedents like Garnier and, to some extent, from Soria—often via secondary sources like Benoît Lévy.[17] His early proposals such as *Ville Contemporaine* (1922) and Plan Voisin for Paris (1925) were provocatively disruptive, rejecting much of the existing urban fabric. Iconic is the picture of the master's hand over Plan Voisin's diorama. These preliminary proposals laid groundwork for his later *Ville Radieuse* moving from a radio-centric to a linear configuration. The Radiant City was a more developed vision: high towers and blocks set in green spaces with a strict separation of functions (working, living, leisure, circulation and, additionally, central administration) are distributed in parallel ribbons in a linear fashion that could be replicated over territory. Le Corbusier's master plans often contrast cold, schematic, repeating grids (or sectional diagrams) with more idealized pictorial perspectives showing generous greenery, open skies, and ideal human activity. A closer look to these perspectives, nonetheless, often obscure the monotony of the underlying functional plan.

The CIAM congresses illustrate the evolution of these ideas.[18] CIAM IV (1933, Athens) produced the Athens Charter, which enshrined strict functional segregation: separating housing, work, recreation, and circulation; promoting high-rise housing blocks widely spaced; preserving open green belts; emphasizing standards of sunlight, hygiene, health. These prescriptions were visually expressed through diagrams, plans, cross-sections, and typological studies. Representatives are Walter Gropius' sunlight schemes and Ernst May plans for *Siedlungen*—housing estates—that embodied functionalism, standardization, and mass housing. Ludwig Hilberseimer and others would translate the urban precepts of the Bauhaus in the United States addressing the rise of the automobile, city decentralization, and suburban expansion. Hilberseimer's work explored linear or networked forms of suburban growth, combining functional zoning in settlement units with rigorous linear planning of circulations.[19]

After World War II, renewed debates about urban form, scale, and growth appeared. The MARS Group in their Plan for London (1933-1944) proposed that urban sprawl be channeled along linear corridors aligned with transportation networks and into neighborhood units—whose isolated residential and leisure blocks were a continuation of the typological studies of Gropius. Maxwell Fry's personal schemes of the project, despite being represented mostly in plan, depict an increasing implicit domesticity in the drawing of the spaces, overlapping red and green color over stylographic lines, from the city/district scale to the neighborhood unit.[20]

Also in Britain, important examples of linear schemes in the 1960s proliferated within New Towns, such as Hook New Town by the London County Council (1958-61), where linearity employed to create civic axis of commerce and leisure in the heart of these new cities.[21] Combining diagrammatic plans with hand-drawn perspectives made with pencil and markers that display a dense mixed-use atmosphere, the designers aimed to present a new model of a town, far from the dull and monotonous suburban developments, with an emphasis on the culture of consumption.

With his personal picturesque and symbolic approach, Gordon Cullen, working with Richard Matthews, developed proposals for linear settlements, including the New Town of Alcan (1964) and 4 Circuit Linear Towns (1965).[22] [23] While limited graphic material of these projects is available, a few aerial perspective drawings reveal Cullen's distinctive pictorial language, animated by scenes of daily life, movement, and human interaction. Cullen devised a notation system to analyze urban elements such as connectors, landmarks, vistas, and spatial enclosures, highlighting how places are perceived and navigated rather than simply how they function.

These methods reflected a shift in planning culture during the early 1960s, as Britain, shaped by Keynesian modernization policies, began to question purely technical and functionalist approaches to urban growth (Fig. 2).[24] In this regard, Cullen's work marked a turning point, emphasizing serial vision—the sequence of views experienced while moving through space—and the symbolic and aesthetic dimensions of urban form (identity, memory and human scale) represented in magnificent drawings and watercolors.[25] His work can be read alongside other contemporary, and in some ways subliminal, texts such as Kevin Lynch's *The Image of the City* (1960) or Aldo Rossi's *The Architecture of the City* (1966), which similarly foregrounded the experiential and interpretive aspects of urban space. [26] [27]

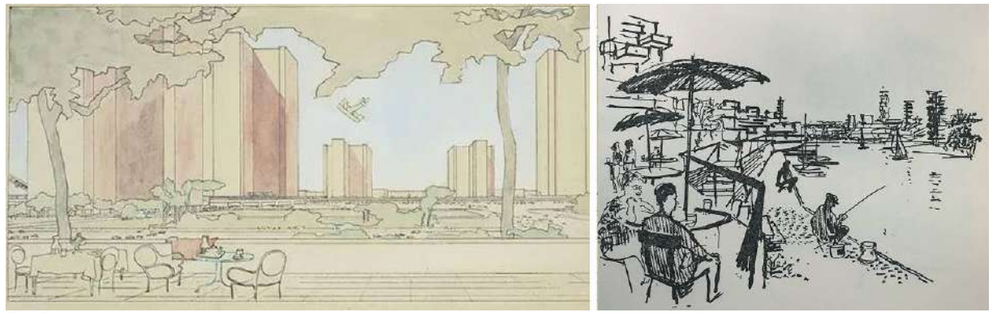

Fig. 2

Similar concepts, appeared in metropolitan-scale plans such as the Copenhagen Finger Plan (1947) which channeled growth along rail corridors "fingers" separated by green wedges, combining transit-oriented development with protection of natural landscapes. The most recognizable image of this proposal overlaps the sketch of a hand, with the fingers being linear extensions of the city through public transportation.[28] Despite the diagrammatic color zoning of the master plan, the symbolic connotations of the line drawn hand over imposed to the map make it more readable for the population.

In the later CIAM congresses—CIAM VIII (1951), IX (1953), and X (1956)—a clear paradigm shift began to emerge. The younger generation of architects, soon to form Team X, openly criticized the rigidity, monotony, and abstraction of orthodox modernist zoning. In contrast to the functional segregation and uniformity promoted by earlier CIAM doctrines, they advocated for flexibility, contextual sensitivity, and a focus on everyday life. Central to their vision were pedestrian activity, vibrant public spaces, and the human experience of urban environments. This shift was reflected in their representational techniques. Instead of purely analytical diagrams isolating functions, Team X incorporated collages, lively perspective drawings, and photographs of people using space, as well as dynamic diagrams of flows and movements, emphasizing urban complexity and social interaction.

A significant example of linear planning from Team X members—highlighted by Collins—was the Plan Pampus (1965) by Jaap Bakema and Jo van den Broek. Conceived for a reclaimed area near Amsterdam, the project sought to combine density with a rich mixture of activities, integrating housing, work, and leisure along infrastructural corridors. Its perspective-sections are particularly evocative, depicting inhabitants looking both inward toward communal spaces and outward toward the surrounding landscape—a powerful expression of Bakema's socially driven approach to urbanism.

Another strand of linear modernism took the shape of megastructures—massive infrastructural frameworks and bold technical visions. While this typology fits better in the realm of utopia, there are some examples that were conceived for real situations. Paul Rudolph's Lower Manhattan Expressway (LOMEX), never built but influential, expanded the possibilities of brutalism to propose a linear expressway to razor lower Manhattan. The iconic perspectives of the repeated concrete arches made with graphite and colored pencil are technical, yet expressive, as can be seen in the cover of the famous book of Reyner Banham *Megastructure: Urban Futures of the Recent Past*.[29]

Kenzo Tange's Plan for Tokyo (1960) is representative of the metabolist technological imagery, a Japanese evolution of avant-garde modern languages. Rigorous and carefully articulated representations characterized this ambitious project, Tange used large-scale sectional drawings and plans, aerial photomontages of Tokyo Bay, and photographs of a superb physical model. Also in Asia, influenced by the Harvard Urban Design curriculum of the mid-1950s—including the Japanese metabolists Fumihiko Maki—and by the 'social' Brutalist ideals of the British Team X, the Singaporean

group SPUR (Singapore Planning and Urban Research Group) presented a visionary proposal for the Asian City of Tomorrow.[30] This vision was later refined to emphasize commercial activity at multiple scales, integrating global and local functions within a cohesive urban framework. The most prominent element to emerge from this planning effort was the linear Golden Mile District, though ultimately only the Golden Mile Complex (1969–1973) was realized. Designed as a stepped concrete megastructure, the complex combined residential, commercial, and civic spaces into a single form, embodying both the utopian ambition and the pragmatic constraints of Singapore's rapid modernization.[31]

Technocracy and the Industrial City of Production

The interpretations of linear urban planning in the early 1930s in the Soviet Union took on a much more pragmatic and ideological dimension, shaped by the ideals of the planned economy within the context of Stalin's First Five-Year Plan (1928–1932). The goal was to "use capitalism's accumulated knowledge" to match and ultimately surpass capitalist economies in productivity and organization.[32] The linear city model was selected for its efficiency, explicitly referencing Henry Ford's moving assembly line. Along these industrial linear layouts, "social condensers" were strategically inserted to reshape social behavior and promote collective ideology, opposing individualistic, family-centered living patterns. In the late 1950s, the NER Group (Scientific Research Institute for Urban Design) revisited the idea of linear planning while searching for the optimal spatial organization for the *Ideal Communist City* of the future.[33]

The most illustrative case of this early period is found in the proposals by Nikolai Milyutin, published in his book *Sotsgorod: The Planning of Socialist Cities* (1930).[34] Milyutin critically examines different designs for the industrial city of Magnitogorsk, including the linear competition proposal by the avant-garde group OSA (Organization of Contemporary Architects), led by Ivan Leonidov, as well as the later commissioned scheme developed by the German guest architect Ernst May, also linear in nature. The representations produced by Leonidov were highly abstract, employing cavalier projections, schematic perspectives, and a striking photomontage influenced by Soviet graphic designers such as Alexander Rodchenko, where an airship is superimposed over the central perspective of the project to evoke the vision of a technologically advanced socialist future.

Building on these proposals, Milyutin developed his own ideal plan for Magnitogorsk, creating a purely linear configuration organized into six clearly defined parallel zones: park, residential, highway, green buffer, industrial area, and railroad (Fig. 3). Extending this logic further, he proposed variations for other industrial complexes, including an "assembly-line" city plan for the Nizhny Novgorod auto plant. His representations were deliberately schematic, resembling electrical circuit diagrams, where functions were spatially segregated and abstracted, with only major geographical features like rivers acknowledged, while topography and existing settlements were entirely disregarded.

Milyutin texts referred to, yet critiqued, Henry Ford, who, despite pioneering the linear production process, never applied the same logic to urban planning. Urban historian George Collins later argued, however, that Ford did, in fact, attempt to scale up his factory-based linear principles to the regional level, particularly in his hydroelectric development plans for Muscle Shoals, Alabama in the 1920s. These regional proposals, however, were never realized.

Also in the United States, Arthur Comey explored a different approach to territorial organization through his progressive regional grid city (1923).[35] Comey's visionary schemes featured macro-triangular and hexagonal, beehive-like networks that abstracted the landscape into a rational geometric framework. While less directly tied to the production line metaphor than Miliutin's or Ford's visions, Comey's grids shared a similar ambition of totalizing spatial order, dividing the nation into hexagonal city-regions. His proposals were primarily theoretical, emphasizing efficiency in the distribution of settlements, infrastructure, and open space at the regional scale. In this sense, they prefigured later systems-thinking approaches to metropolitan planning, offering a stark contrast to the more linear and industrially determined models emerging from the Soviet Union.

Milyutin's book was not only a manifesto but also a compendium of statistical data, meticulously analyzing space requirements for different activities in line with the *Existenzminimum* principles that were prevalent among European modernists at the time. He tabulated numbers, functions, and spatial ratios, creating a systematic approach to socialist urbanism. Milyutin was influenced by Le Corbusier, and vice versa, when developing his proposal for the *Cité Industrielle* (1942).[36] Le Corbusier shifted towards regional planning in the 1930s, influenced by his contacts with Soviet planners and intellectuals during a period when many European architects looked to the USSR for bold, experimental urban ideas.

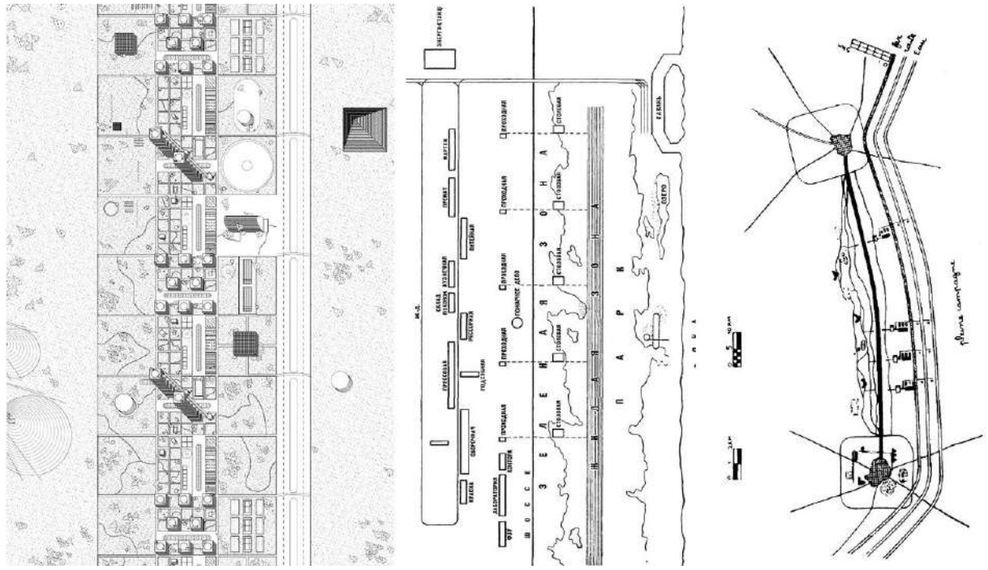

Fig. 3

The technocratic approach to socialism, the triumphalism and the economic power of China in the past decades, have provided the right conditions for the development in the country of megaregional planned corridors linked to high-speed train and car infrastructures. Recent General Plans for Beijing (1993 and 2005) have aimed to link satellite towns through “planned urban corridors”, extending connections to nearby urban centers such as Tianjin and Tangshan.[37] In a similar vein, China’s Belt and Road Initiative (BRI) can be seen as a contemporary, global-scale extension of linear planning, echoing Soria’s early dream of linking Madrid to Brussels, Moscow, or even Beijing through a continuous urban axis.

The way the BRI is visually represented reveals two distinct narratives. Chinese state propaganda employs a triumphalist aesthetic, using radiant reds, golds, and blues, with glowing lines radiating outward from China, positioning it as the center of global connectivity. These spectacular images, seen in state media and Belt and Road Forums, transform infrastructure into a symbol of national strength and shared prosperity, much like earlier Soviet plans. Conversely, academic and financial institutions, such as the Green Finance and Development Center or major universities, depict the BRI through neutral, schematic graphics. Their maps and charts use muted colors and standardized icons to track flows of capital, environmental impacts, and risk, presenting the BRI as a technical and economic system rather than an ideological project.

Drawing Utopias: Transportation, Humanism, Ecology and Hypothetical Futures

Utopian approaches to linear planning are normally represented with fantastic language in form of megastructures, emphasizing the role of technology to cope with transport revolutions, ecological balance, human experience, and socio-political critique. Utopian linear planning, rarely built, oscillates between visionary optimism and radical critique, serving as a powerful framework for reimagining urban futures, whether through technological dreams, ecological imperatives, or challenges to the status quo. They have been crucial in pushing the boundaries of urban imagination, often manifesting as megastructures or visionary megacities that provoke debate and challenge conventional planning practices (Fig. 4).

A premature megastructure was Edgar Chambless’s *Roadtown* (1910), which envisioned a multi-level, reinforced concrete infrastructure that integrated transportation and housing, with the aim to promote an agrarian society.[38] Chambless’s representation of his *Roadtown* presents a sectional perspective of his unlimited structure surrounded by agricultural fields. Though never realized, Chambless introduced the concept of movement and infrastructure as the fundamental framework of urban form, a vision later echoed by Le Corbusier in his Obus Plan (1931) and Plan for Rio de Janeiro (1929–30), both of which explored megastructural, linear configurations at the metropolitan scale.

On the ecological side, utopian linear planning took on new relevance in the late 20th and early 21st centuries. Paolo Soleri, known for his concept of “*arcology*” (architecture + ecology), introduced the

Lean Linear City in 2005.[39] This project aimed to “produce more sustainable, equitable, and robust urban forms” by concentrating development along narrow, elongated urban strips while preserving surrounding landscapes. Its imagery relied heavily on high-resolution renders and photorealistic visualizations, emphasizing a futuristic yet pragmatic aesthetic. Some examples, however, embraced an even more monumental and provocative scale. Alan Boutwell and Mike Mitchell’s Continuous City (1965) envisioned a single, uninterrupted urban strip crossing the entire United States from east to west, designed to house one million people. Influenced by Soleri’s earlier experiments at Arcosanti (begun in 1970 in Arizona), the Continuous City was presented through bold maps and sectional drawings, dramatically cutting across the American landscape.

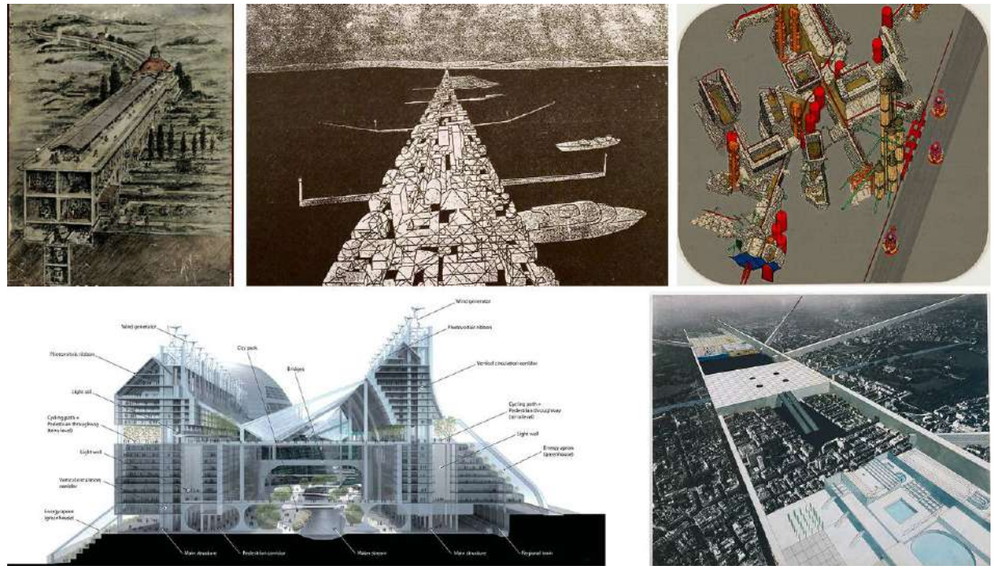

Fig. 4

The 1960s also saw avant-garde groups exploring linear planning through the lens of technology, culture, and lived experience. Peter Cook’s Plug-In City (1964), developed within the radical collective Archigram, proposed a vast infrastructural skeleton into which modular living units and service pods could be “plugged” and replaced over time. While not strictly linear, the project’s central circulation spine functioned as a kind of urban artery, distributing energy, transport, and communications. Archigram’s graphics drew inspiration from comic books and pop culture, incorporating bright colors, dynamic layouts, and references to superheroes, which challenged the sober visual language of traditional urban planning.

In 1965, architects Peter Eisenman and Paul Rudolph presented the Jersey Corridor, a proposal for a 22-mile regional development in New Jersey, published in *Life* magazine.[40] The scheme consisted of two parallel belts: one for residential, commercial, and service functions, and another exclusively for industry and logistics. Highways were placed underground, leaving the surface free for pedestrians and public spaces. The presentation combined architectural drawings with playful wax crayon annotations, indicating activities, flows, and notes, which conveyed both technical rigor and human scale.

Some utopian linear projects took on a more overtly critical or political dimension. Yona Friedman’s *Ville Spatiale* (1958) imagined elevated, lightweight structures spanning over existing cities, offering flexibility and adaptability. Similarly, Constant Nieuwenhuys’s New Babylon (1959–74) envisioned a world for “*homo ludens*,” the playing human, with sprawling, interconnected structures designed to liberate individuals from traditional work and societal constraints. These projects were documented through expressive hand-drawings and conceptual models, emphasizing the freedom and creativity of future urban life.

This lineage of critical linearity directly influenced Rem Koolhaas, who, together with Madelon Vreisendorp, Elia Zenghelis, and Zoe Zenghelis, created Exodus, or the Voluntary Prisoners of Architecture (1972). Superimposed on central London, Exodus proposed a linear walled zone,

simultaneously a refuge and a prison, raising provocative questions about social exclusion, desire, and control. Its richly detailed collages blurred the line between fantasy and reality, echoing Superstudio's photomontage techniques in their Continuous Monument (1969), combining photographs of real landscapes and people with abstract geometric grids.

The Line Today: A Synthesis

In his seminal monograph on megastructure, Reyner Banham concludes with a reflection on the ideological and symbolic weight of monumental urban proposals. In the epilogue, he notes how the megastructure generation "had their eyes on North America," while also referring to their nostalgia for the "heroic age of Modern Architecture", using as a final example Mike Mitchell and Dave Boutwell's linear project, the Comprehensive City.[41] In a similar spirit, this paper attempts to conclude by revisiting Banham's epilogue, in light of contemporary materializations of linear planning. The historical trajectory of linear planning now appears to converge in one of today's most ambitious and controversial projects: The Line in Saudi Arabia, which incorporates many established characteristics of linear planning but on an exponentially amplified scale. While traces of nostalgia seem to remain here—with a touch of the political connotations of Futurism—the geopolitical focus has shifted.

Throughout this study, a range of graphic strategies used to represent linear urbanism has been examined—from Soria's watercolor perspectives to Soviet hyper-schematic diagrams, modernist zoning plans, and the provocative photomontages of the 1960s avant-garde groups. Each of these visual languages was developed for specific audiences and purposes: from construction to persuasion, critique, mobilization, or spectacle. In the past decades, linear planning has re-emerged in the context of megaregional corridors, linked to the forces of globalization, resource extraction, and geopolitical competition. Initiatives such as China's Belt and Road Initiative or Saudi Arabia's Vision 2030 operate at a scale unprecedented in the history of regional planning, reshaping territorial relationships and economic hierarchies on a global level.

The Line bluntly exemplifies this shift of scale, proposing a 170-kilometer-long urban form contained within a narrow, continuous strip. Its representations oscillate between sleek corporate branding and sci-fi-like dystopian imagery: colossal sectional perspectives reveal stacked layers of infrastructure, housing, and services—mostly underground—while photorealistic renderings depict pristine, hyper-controlled environments (Fig. 5).[42] These images are designed not only to communicate a design proposal but also to generate "hype," positioning Saudi Arabia as a leader in technological and ecological innovation. In this sense, The Line functions as a large-scale project of international legitimation.

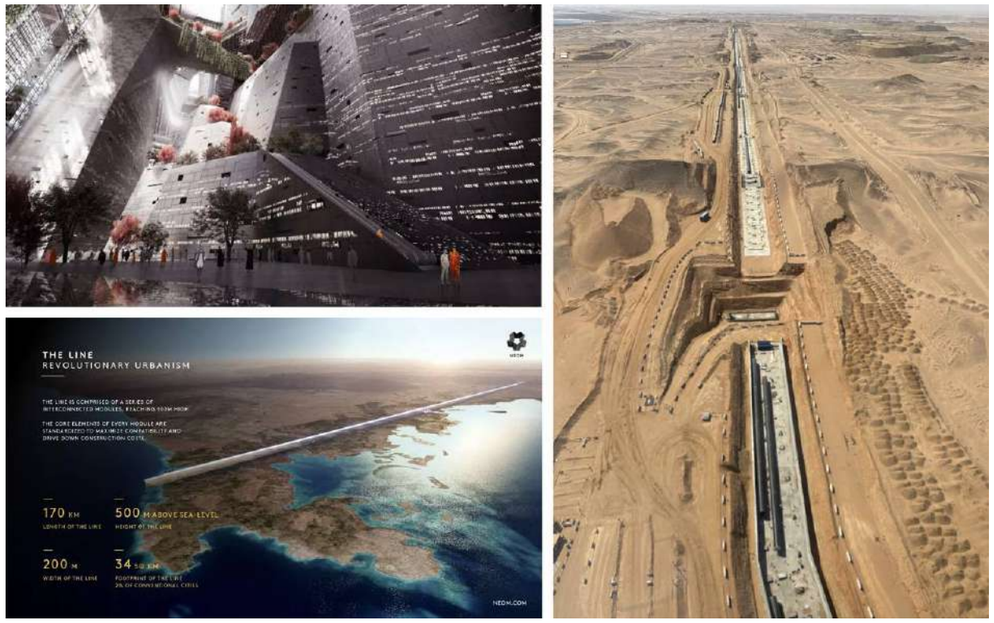

Fig. 5

Yet behind this seductive imagery lie profound tensions. While these linear corridors promise to facilitate trade and connectivity, they also amplify and reinforce both global and local inequalities. Within The Line itself, its rigid geometry risks reinforcing segregation by compartmentalizing social groups and spatial functions, minimizing chance encounters and informal interactions that are vital to urban life. Nature, meanwhile, is framed as an aesthetic backdrop—or a reflection in its massive specular sectional walls—rather than a lived environment, commodified through monumental (vertical) parks and vast green belts that are seen rather than inhabited. Moreover, the construction of the project has raised serious concerns regarding labor conditions for migrant workers from countries such as Nepal, Bangladesh, and India, as documented by organizations including Human Rights Watch.[43] These dynamics suggest that The Line functions not only as an urban project but also as a mechanism of control—over territory, populations, and narratives.

Looking across the history traced in this paper, a recurring tension in linear planning becomes evident: between systematic rationalization—with its emphasis on functional zoning, standardization, and universal order—and humanistic or ecological approaches, which foreground context, diversity, and lived experience. Representations through visual techniques have embodied these ideological positions: the clean lines of a diagram promise efficiency; the vibrant chaos of a hand-drawn perspective evokes vitality and community; photomontages of endless megastructures inspire both awe and unease.

From Soria's modest *Ciudad Lineal* to Saudi Arabia's monumental Line, the graphic language of linear planning has shaped how these visions are imagined, materialized, debated, and ultimately judged. By examining these visual traditions, we can better understand how contemporary megaprojects merge design, spectacle, and geopolitics, and how the simple act of drawing a line across a landscape continues to carry profound political and social consequences.

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Image Captions

Fig. 1. *Ciudad Lineal* project, main street section, 1914. Source: Compañía Madrileña de Urbanización, S.A.

Fig. 2. Left: Perspective of the *Ville Contemporaine* by Le Corbusier, 1922. Right: Drawings of *Hook New Town* presenting major open space contrasted with compact housing. Sources: Fondation Le Corbusier; London County Council.

Fig. 3. Left: OSA proposal for Magnitogorsk, 1930. Center: Nicolai Milyutin, proposal for assembly line city for the Nizhny Novgorod auto plant, 1930. Right: Le Corbusier, *Cité Industrielle*, 1942. Sources: Le Corbusier, *Œuvres Complètes*, vol. IV, 1938–1946, 2nd ed. (Zurich: Girsberger, 1950).

Fig. 4. Above left: Edgar Chambless, Roadtown, 1910. Above center: Yona Friedman, *Ville Spatiale*, c. 1925–30. Above right: Peter Cook and Archigram, *Plug-in City*, 1964. Below left: Paolo Soleri, *Lean Linear City*, 2005. Below right: Rem Koolhaas et al., Exodus, or the Voluntary Prisoners of Architecture: The Strip (Aerial Perspective), 1972. Sources: Chambless, *Roadtown; Archdaily*; Museum of Modern Art (MoMA); Arcosanti.

Fig. 5. Left: Renderings of The Line. Source : NEOM. Right: Construction works of The Line as of April 2025. Source: Giles Pendleton/NEOM

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Biography

Diego Caro holds a Ph.D. in Architecture from the University of Hong Kong and a Master of Architecture from the University of Navarra, where he currently teaches Modern Art and Culture, Contemporary Architecture, and Design Studio. His interdisciplinary practice bridges architectural design, urban research, and artistic experimentation, with a focus on the cultural and political dimensions of space.

His research interests include the history and theory of modern architecture, global urbanism, and contemporary cultural and spatial phenomena in Spain and Hong Kong. His doctoral thesis offered a historiographical study of linear urban planning, focusing on Arturo Soria’s Ciudad Lineal and its long-lasting impact on Madrid’s urban development from the 1880s to the 2000s. His work integrates critical theory, historiography, and urban sociology. Alongside his scholarly pursuits, he has gained international experience in renowned architectural practices, including Kengo Kuma, Vector Architects, and Neri & Hu.

Interwoven Economies between Visible and Verbal. The role of Urban Collages in Post-War Transatlantic Discourse.

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Abstract

The kind of representation addressed by Evans in *Translations*, a medium between project and building, is not the only visual tool involved in the architectural process. Drawings and images play a decisive role also in the construction of disciplinary theory. This aspect is difficult to frame precisely and has so far remained largely neglected.
The urban collages that spread after the Second World War are an emblematic example of these 'theoretical' drawings. The *città analoghe* by Rossi and his collaborators, the *City of Composite Presence* by Kollhoff and Griffin as well as many lesser-known coeval representations all refer to the same idea: an architecture in continuity with that of the past that is conceived through the assemblage of references. These are not just illustrations accompanying the text but theoretical statements that complement its meaning through forms and compositional strategies. Urban metaphors convey ideas and establish networks between more or less distant communities of practice.
Understanding how these hybrid processes work requires a perspective that considers visual and verbal as two aspects of a single cognitive experience. Polanyi's notion of tacit knowledge, which challenges the separation between what is formalisable and what is not, the theory of embodied cognition, which sees knowledge as inseparably linked to perception and action, and Goodman's symbolic systems, which address the interplay between different forms of expression, offer an effective framework for analysing these materials and their horizons. these materials and their horizons.
As Evans points out in the wake of Baxandall, Clark and Bryson, there is no war between the verbal and the visual, but instead a form of economy full of exchanges, frictions and compromises. Such an analysis seems to finally lead towards a history of the discipline which is not based on styles or meanings but on the same modes of its production.

Key words: composite representations, post-war architecture, tacit knowledge, embodied cognition, symbolic systems.

1. Introduction: Beyond Evans' *Translations*

The kind of representation addressed by Robin Evans in his *Translations from Drawing to Building*, i.e. a medium between project and building, is not the only visual tool involved in the architectural process[1]. Drawings and images also play a decisive role in the construction of architectural theory and in its parallel transposition into design forms and practices. This disciplinary as well as epistemological aspect has remained largely neglected and seems to require new consideration.

When drawing a conventional architectural representation, the architect has the project in mind and translate it on an externalised support—a sheet of paper but also a digital screen—to verify it, develop it in detail and then to communicate it to the other figures involved in the process of its conception and construction, from engineers and experts up to artisans, contractors and builders. This is Robin Evans' phase of translation from drawing to building. Indeed, only by seeing it properly scaled and dimensioned, fixed in its entirety outside of her/his mental simulation, the architect can be capable of thoroughly understanding the overall spatial and technical complexity of the project. But how was this project conceived up to this point? How was it operatively put in connection with the wider landscape of disciplinary ideas?

Despite their undeniable usefulness, the cliché of drawings on restaurant napkins and sketches on the phone, does not seem to cover the entire complexity of this mental but also graphic process, at least not always and not everywhere. The present contribution addresses a rather specific example of graphic objects which come into play at this level: the *urban collages* that proliferated after the Second World War and in particular in the 1970s and 1980s in between Europe and United States. Starting from the legendary *plan game* of the so called *Texas Rangers* (Fig. 1), composite theoretical drawings played a key role of visual mediation in the redefinition of postwar design practices, establishing and diffusing a wide set of new ideas, forms and references[2].

The *città analoghe* by Aldo Rossi and his collaborators (Fig. 2 and 4), the *City of Composite Presence* by Hans Kollhoff and David Griffin (Fig. 3), the coral collage *Roma interrotta* as well as many lesser-known coeval representations, all refer to the same fundamental horizon: an architecture in continuity with that of the past, conceived through the assemblage of references, both in plan as well as in perspective. These fictional urban representations are not mere illustrations accompanying the text but substantial statements that complement and often determine meaning through specific formal content and operative compositional strategies.

The paper argues that these graphic objects function as disciplinary media in their own right, though not in the same sense proposed by Evans. Rather than mediating between project and construction, they mediate between theoretical ideas, that is general, constitutive principles about the discipline, and their effective translation into form. More precisely: not from drawing to building, but from drawing to overall disciplinary ideas, understood not merely as abstract concepts but as *Gestalt structures* that simultaneously encapsulate general theoretical attitudes and rules of formal composition.

2. Collages, Atlases and Collections of References

Postwar urban collages show in turn a deep affinity with several graphic manifestations that developed in parallel with a complex ecosystem of visual supports and practices. These manifestations include different forms of *bricoleur* additive compositions or visual *montages*[3]: illustrated books such as those by Venturi, Rossi and Rowe[4], image panels reminiscent of Warburg's *Mnemosyne Atlas*[5], personal collections of images assembled by individual architects and institutions, in particular slide sequences that become central to the production and dissemination of coeval architectural discourse[6].

In postwar years, the slide lecture emerged as a crucial pedagogical and academic format, allowing for the rapid juxtaposition and comparison of architectural examples across different times and contexts. Collections of slides became then personal archives of references, atlases of possibilities and formal solutions that architects curated and reorganised for different purposes and audiences. Similarly, exhibition panels and wall-mounted image sequences enabled the simultaneous visualization of multiple objects, artworks and architectures, creating spatial fields of comparison and dialogue.

In the postwar period, the overall proliferation of these visual techniques and practices fundamentally reshaped how architectural knowledge was not only stored and transmitted but also effectively produced. All these diverse manifestations had a common main feature: they implied forms of composition that brought together heterogeneous fragments in order to construct new spatial and theoretical meanings. The various supports and their related operative modalities share with urban

collages the fundamental operation of bringing disciplinary references into productive relationships, though each medium affords different possibilities for arrangement, comparison, and argument.

3. Visual and Verbal as Complementary Systems

Despite their essentially visual nature, the disciplinary knowledge of these collages and compositions is often interwoven with a verbal, written or spoken, counterpart: the textual apparatuses of books and exhibitions, or the oral commentary of lectures and presentations. Sometimes these two aspects are conceived and arranged together, some others they relate to each other in a more open way, simply by belonging to the same cultural framework and being used within the same communities of practice. In both cases, verbal contents establish with the images a rather peculiar kind of relationship, decisive but at the same time characterised by a certain degree of autonomy. Images in fact do not only illustrate the text, nor the text merely describes the images, as in a traditional rhetorical exercise of *ekphrasis*. Instead, they reciprocally complement each other with additional, more or less implicit levels of meaning, inner organisational principles as well as with their overall atmosphere, or *aura*.

In the case of *Collage City*, images determine the fragmentary structure of the book and of its chapters. The tight visual sequence of pairs of opposites, of ancient and contemporary architectures and cities, punctuates but at the same time substantially completes the discourse[11]. Kollhoff and Griffin's *City of Composite Presence* represents an ideal synthesis of the authors' theoretical approach but also its fundamental connection with the practice of the discipline. Rossi and his collaborators' *città analoghe*, as well as the twelve panels of the collage *Roma interrotta*, were created as autonomous images in the context of exhibitions but can and should be anyway considered in relation to their authors and to their parallel production of books, projects and speeches. On this basis, it is possible to understand better the way of thinking of the people who inspired, conceived and phisically produced them, but also their own specific meanings and horizons.

Understanding how the related processes of disciplinary mediation work and which kind of impact they can produce requires first of all a scientific perspective that considers visual and verbal dimensions as two aspects of a single cognitive experience. Among these possible perspectives, Michael Polanyi's notion of tacit knowledge[7] challenges the separation between what is formalisable into language and what is not, revealing how much architectural knowledge operates below the threshold of explicit articulation. The theory of embodied cognition[8] sees knowledge as inseparably linked to perception and action, suggesting that visual representations provide operative, spatial understanding that directly engages the body and its *situatedness* in space. Finally, Nelson Goodman's symbolic systems, by addressing the interplay between different forms of expression in the construction of *worlds*, could be useful in showing how visual and verbal modes relate and overlap between each other[9].

As Evans himself points out, following Michael Baxandall, T.J. Clark, and Norman Bryson[10], there is no war between the verbal and the visual, but rather a form of economy full of exchanges, frictions, and compromises. Images and texts work together to communicate and produce disciplinary knowledge, though their balance and effects change significantly on the basis of available technical supports, reproduction possibilities, and diffusion capacities. The unified study of these different materials becomes crucial for understanding which kind of knowledge but also which kind of cultural landscape[11] we are dealing with, beyond the explicit contents of communication.

4. The Urban Archetype of the Composite City

As their same titles explicitly state, the main idea of city and of architecture which lies behind all these drawings can be defined essentially as *composite* and *analogue*: composite because it is made out of more or less independent components, analogue because these components are ready made, pre-existing fragments. This spatial conception corresponds both to a clear approach towards the historical city and to a possible way of designing the city of tomorrow: the rediscovery of a heterogeneous urban context at a moment when modernist planning privileged *tabula rasa* interventions and the possibility of inserting new fragments within the existing city while respecting its intrinsic compositional nature.

Composite and analogue cities are not real cities composed of real fragments but more plausible, possible or *virtual* cities constituted of heterogeneous fragments coming from different times and contexts. The operation is then neither to portray the city as it is nor to invent an entirely fantastic one, but rather to grasp the deep, underlying architectural and spatial structure of the real, existing city and thus to show how one can work within it, not necessarily mimicking its past developments but anyway starting from them and establishing meaningful relationships with their formal as well as material presence.

By means of their virtuality, these theoretical representation work as *metaphors* that embody disciplinary concepts about architecture and the city while simultaneously offering an operative, visual knowledge through which design can be approached. These metaphors provide spatial thinking made visible and establish a substantial bridge between ideas and project that can be crossed on both ways, from ideas to design but also, perhaps more significantly, from design to ideas. It is important to notice that this knowledge does not pass through explicit *principles* but rather through the imitation of tacit *examples*.

Additive compositions operate on two main levels: on the one hand as atlases of references, on the other as operative demonstrations of how these references can be composed and structured together according to a certain idea of architecture and of city. Interestingly enough, the compositional modalities at play are substantially *transcalar*: they work at the scale of the single object and building as well as at the one of the city. The main common aspect of these strategies can be identified as a form of *autonomy in relation*: the graphic and geometric individuation of single elements that nevertheless position themselves in dialogue with others, within the overall fragmentary system of which they are part.

This spatial aspect is again highly metaphorical and embodies a clear political dimension: contrary to the previous modernist city, the composite or analogue city does not correspond to a single truth, rationality or financial power but to a multiplicity of different and often contrasting figures, actors, citizens. It is a city of democratic inspiration, where composed fragmentation stands for the aesthetic and architectural representation of the dialogue between a variety of different voices. The reference to Karl Popper in *Collage City* constitute an explicit confirmation of this political dimension. For Rowe and Koetter as well as for Rossi, social complexity corresponds in turn to historical stratification and its continuous re-signification. In this respect, composite cities oppose the permanence of form, architectural as well as urban, to functionalism and modernist zoning. Further interpretations of the same urban model or archetype are also Oswald Mathias Ungers' *Berlin Green Archipelago,* and Rem Koolhaas' *Delirious New York*, almost coeval, which also stem from the intense disciplinary debate of the 1970s at Cornell university[11].

From a more general perspective, the *collage city* of postwar urban representation is not only a metaphor but also a real urban *archetype* with roots stretching back centuries, cyclically re-emerging and bringing with it the resurfacing of related themes, forms and images. As Rowe and Koetter visually argue, its historical counterpart is the *ideal city*, perfectly planned and completely detached from any form of pre-existence. The absolute clarity of the Greek Acropolis in opposition to the vivid density of the Roman Forum. The model of the composite city, certainly less acknowledged, seems to be equally if not even more diffused and influential. It has long been demonstrated that even the three mysterious panels of the *città ideali* of Urbino, Baltimore, and Berlin are more composite than ideal cities. From this perspective, the literary, classic and then proto-modernist utopia of the ideal city contrasts with the humanist ideal of the *Renovatio Urbis* proposed by Leon Battista Alberti, i.e. with the continuous renovation of the existing city from the inside.

The two urban archetypes, emblematically correspond in turn to two opposing ways of knowing, which are respectively verbal and visual, logical-rational and analogue, explicit and implicit. Such parallel and alternating epistemological systems produce substantially different kinds of documents, of texts and images but also of architectures and cities.

5. Horizons of Postwar Urban Collages

Till now, we considered the overall nature of postwar urban representations, their common structure, shared affinities and cultural framework. But how do they operatively act? Or, in W. J. T. Mitchell's terms: what do these images want[12]? What are their specific horizons and agendas? As media objects, these drawings are first of all responsible for transmitting specific disciplinary knowledge across different geographical contexts and communities of practice. They travel in multiple ways, through the pages of books and magazines but also through exhibitions and slide projections. In this way, they act as crucial binding agents for scholars and professionals who find in them a possible approach to the city and more in general to the discipline, not only in theoretical terms but first of all in the form of operative vocabularies, syntaxes, grammars. Their substantial visual component, much more immediate than the mere textual one, further facilitate their diffusion and efficacy among a wider public.

In the postwar period, the most relevant disciplinary route was the transatlantic connection between the main Italian schools of the time (Venezia, Milano and Roma) and the American institutions (Cornell, MIT, Cooper Union). Soon, however, especially in Europe, a denser network emerged between minor centers that gradually assumed new disciplinary relevance: Switzerland, Spain, Portugal and then Belgium. As we can see in the collage *Roma memoria* by Christian Kieckens (Fig. 5), composite

drawings played a crucial role of cultural mediation also and perhaps in particular within this wider cultural network, where sometimes they managed to disclose and convey deeper levels of meaning by way of reacting with the specificities and urgencies of local contexts.

More specifically, the common overall horizon of all these materials is to define a possible alternative to modernism, a substantial, operative, theoretical but also epistemological revision of its essential premises. From this perspective, collage urban representation manage to effectively combine all these three layers of meaning: they propose a different aesthetics, they insert it within a wider urban but also political conception, they convey it in a mainly tacit and visual way. The resulting outcome is a substantial graphic as well as spatial reversal: in opposition to the city of modernism, an increasingly generic city made up of increasingly iconic buildings, the city that emerges from these composite representation is a collection of traditional, somehow ordinary buildings producing a rich and varied urban space. A city of dense tissue then versus a city of isolated objects.

In this interwoven process of knowledge transmission and production, a set of rather precise representational choices determine significant variations of meanings. The first of these variations concerns the element of the background, which is so relevant in 1976 *città analoga* as it is completely absent in the *City of Composite Presence*. Indeed, the background set the overall context of the related additive compositions, defining their specific frameworks and therefore their ultimate horizons.

The *città analoga*, inspired by Aldo Rossi and realised in collaboration with his Swiss assistants Bruno Reichlin, Fabio Reinhart, and Eraldo Consolascio for the Biennale di Venezia of 1976, deploy fragments from different times within a rather specific cartographic settings. The engraved background alludes to a precise landscape, that of the lakes north of Milano, which was particularly dear to the architect for personal as well as professional reasons. This geographic context becomes the final subject of the representation and the main rationale for the montage of its fragments, in a continuous exchange between autobiographical and collective memory of the places.

Through the selection and composition of a specific set of buildings and projects, not necessarily realised, the fictional cartography of the *città analoga* displays the cultural depth of the places, their characteristic features, typological and morphological, but also their unfulfilled paths and missed opportunities, that shape anyway the memory and identity of the landscape. According to Rossi, this is precisely the field of knowledge in which the architect should consciously work and act. Rossi's *Scientific Autobiography*, almost coeval, constitutes the ideal counterpart of the *città analoga*, by integrating a more personal, autobiographical dimension to the previous urban typological research proposed with *L'architettura della città*[13].

On the other side, the white background of Hans Kollhoff and David Griffin's *City of Composite Presence* suggests detachment and abstraction from any recognisable, real place. The absence of localisation emphasizes the theoretical nature of the composition, focusing the attention on how diverse architectural fragments can coexist and generate urban space through their reciprocal juxtaposition. In contrast to Rossi's contextualism, this representation explores the operative modalities of urban composition theorised by Rowe and Koetter in *Collage City.*

The framework of the representation is more cultural than geographical and corresponds to the overall heritage of European historical city and Western classical architecture, a long lasting tradition that the authors try to import and diffuse in American disciplinary culture. By way of its abstraction, the city becomes a field of formal possibilities, an operative laboratory for investigating how architectural objects relate to each other and to urban void.

These representational techniques are not anyway strict categories and the same authors widely experiment collage in multiple and overlapping ways: the first *città analoga* by Rossi and Cantafora exhibited at the Triennale di Milano in 1973, shows in fact an abstract background which closely resembles the one of the *City of Composite Presence*, while the central panel of *Roma Interrotta* curated by Rowe appears as an interesting attempt of applying the idea of *Collage City* to the specific urban tissue of Roma, that is one of its main historical references, in opposition to the Greek acropolis.

6. Historical Oscillations between Visual and Verbal

Although architecture and urban lasndscape have always played an important role in the history of visual representations, the Italian context sof early modernity seems to be a particularly significant moment when this role assumed new relevance and depth. Among the multiple overlapping factors that can be identified, we find the first diffusion of movable type printing and therefore of books, the need for identity redefinition by new figures of economic and political power, and the refoundation of architecture as an autonomous, logical and rational discipline.

In this context, images and texts of cities and architectures multiplied rapidly, while their horizons became denser and more sophisticated. Indeed, they are often instrumental tools operating at multiple levels. New princely patrons use architecture to display their status, refinement, and modernity. Architects use treatises and engravings to reflect on ancient texts, particularly Vitruvius, for redefining a possible classical language as well as conferring a new status of scientific exactitude to their profession. Painters and artists compose together but also further reinterpret all these different instances and influences.

In order to understand the documents produced by these overlapping intentions, it is first of all necessary to address their nature as means of communication that transmit messages between authors and recipients. The diffusion of printing establishes conditions for the first significant association of texts and images and for their reciprocal interplay. In this duality, which has perpetuated to our days, text assumes the role of the logical-rational component of communication, while the visual assumes that of the freer, imaginal, and narrative counterpart. These are respectively the explicit and tacit components of a single, unified nucleus of knowledge, whose balance is constantly changing throughout history in relation to the possibilities, occasions, and necessities that emerge on the horizon of the discipline.

In the fifteenth and sixteenth-century context, the linguistic, logical-rational component seems to have priority over the visual, narrative component, but this rapidly changes in the following centuries. The oscillation between the two cognitive polarities of linguistic and visual corresponds also to the clash between two different ways of understanding architecture and the city, which alternate and contend for predominance. The same epistemological duality can be found between the *architectura picta* of early modern Italian paintings and the written architecture described and illustrated in treatises. The former is much broader, inventive, and imaginative, showing fantastic architectural ensembles, while the latter is more normative and rigorous, sometimes more rigid, and substantially more essential in terms of forms and colors.

Despite its substantial simplification, it is this second, verbal and written notion of classical architecture that prevailed and finally reached us, shaping the very idea of ancient architecture rediscovered from the fifteenth century onward. This was also due to the impossibility of including the overall complexity of antiquity into explicit norms or prescriptions. The painted backgrounds end up being considered light diversions hardly consistent with the serious process of linguistic innovation and disciplinary refoundation of those years.

It is fundamental to consider the impact that this prejudice has had on subsequent epochs, on how scholars and architects have continued to think and idealize the architecture of fifteenth and sixteenth-century Italy up to the twentieth century. In this way, Burckhardt's influential narration of *the* Renaissance, privileged its rational, geometric, and rule-based aspects, i.e. the verbal one of treatises, largely ignoring the more extravagant aspects present in painted representations. This oriented, partial perspective towards the past substantially influenced the following definition and developments of modern architecture, both in aesthetical as well as in theoretical terms.

The ideal city of words thus confronts the composite city of images across centuries. Different conditions produce equally different images of the same classical heritage as well as of the envisioned architecture of the present. In turn, these images encounter greater or lesser fortune depending on their overall efficacy, on the ideologies they embody but also on their technical possibilities of diffusion. Jumping over an interval of about four centuries and setting aside several other crucial moments of change, it is interesting to notice how in the postwar period we witness an opposite phenomenon: there occurs a clear shift towards visual and tacit forms of knowledge, following a new diffusion of illustrated books and slides but also the will to bring architecture back within more disciplinary and artistic boundaries.

Even in this moment, however, texts do not disappear entirely: they continuously accompany images as in the previously commented works by Rossi, Rowe and Koetter, but they start to follow images, commenting on visual insights, rather than being illustrated by them. Compared to what happened in the sixteenth century, but also to the absolute priority of logical-rational principles in Le Corbusier's work, in the postwar period it is images and iconographic apparatuses that determine their related verbal contents together with the overall directions and boundaries of theoretical reflection.

The text therefore takes on the role of commentary, systematisation, and sometimes even filler for a body of knowledge that is predominantly visual and tacit. This phenomenon can be clearly observed in Robert Venturi's *Complexity and Contradiction in Architecture*, where dense photographic documentation drives arguments that the text elaborates but does not originate. We see it also in Aldo Rossi's *The Architecture of the City* and *Scientific Autobiography*, where drawings and photographs carry a theoretical weight that is equal to or exceeding the one of verbal propositions. And then we find it in Rowe and Koetter's *Collage City*, where figure-ground diagrams and urban collages embody arguments about urban form that the prose accompanies but cannot fully capture.

The texts itself change character and style in this postwar period. From assertive and structured, confidently proposing principles and rules, they become more uncertain, narrative and digressive, often more obscure. Meanwhile, images and their compositions tacitly display forms and atmospheres that must be taken as references, creating visual canons that operate through examples rather than through explicit rules. Architecture becomes less a matter of following principles than of positioning oneself within fields of references. Within this epistemological dynamic, the unearthed image of the composite city significantly re-emerges, almost as if intimately linked to the more general visual dimension of their surrounding context.

7. A Visual Perspective for Architecture

The increasing diffusion of *visuality* is a widely noted phenomenon, what W.J.T. Mitchell has influentially termed *pictorial turn*[14]. In architectural terms, the corresponding process should not necessarily be read as a withdrawal of critical will or an abandonment of rigorous thought. This easy interpretation is in fact again the result of a long lasting prejudice against the visual. On the contrary, as previously described, such shift represents more a modification of balance, a shift in priority between two fundamental components of cognitive and communicative process that have always coexisted in the architectural discourse and that should be considered and understood in its overall context and historical moment.

This recurring oscillation between knowledge modalities does not seem to have any definitive character. Rather than moving teleologically from word to image or image to word, architectural culture oscillates between these poles in response to changing technical possibilities, institutional contexts, and disciplinary agendas. What seems fundamental is then to properly consider these factors and their overall framework in order to better understand the rhythm and the meaning of such oscillations.

In the postwar period, contrary to what happened in the sixteenth century, architecture seeks to distance itself from modern claims to scientificity and aspirations to ground its reflection in objective functional analysis. The discipline tends therefore to retreat into a more autonomous dimension, reasserting its status as an independent, cultural and artistic practice.

From structuralism and semiotics to phenomenology and critical theory, heteronomous influences continue anyway to challenge coeval architectural discourse and to substantially transform it in different ways, always within a more cultural and humanistic process of disciplinary redefinition that was heavily influenced by images and their visual processes of spatial accumulation, composition and analogy.

In this analysis, it becomes important to be precise about the type of visual material one wants to consider and the mediating role it assumes within architectural discourse. The theoretical images we have identified as objects of study become significant because they allow us to traverse a broad historical trajectory transversally and reveal its subterranean connections and transformations up to nowadays, in particular to the emergence of digital media and to their new forms of visual accumulation and dissemination. Indeed, understanding this process remains crucial for comprehending not only historical architectural discourse but also our contemporary condition, where new technical supports are once again reconfiguring the delicate balance between visual and verbal, but also between tacit and explicit.

8. Conclusions: Towards a Disciplinary History of Knowledge Modalities

The figure of the *composite city* that has been delineated, both historical archetype cyclically re-emerging across centuries and specific postwar theme responding to particular disciplinary needs, exemplifies how visual representations can embody complex theoretical positions, transmit operative knowledge resistant to verbal codification, and bind communities of practice across geographical and institutional boundaries. In this way, composite cities shape how architects think, see, remember, and ultimately design.

This study and its first findings not only shed new light on post-war architecture and some of its most important figures, but also open up more general historiographical perspectives. In particular, they seem to finally lead towards an alternative historical investigation based not primarily on categories of style or form, but on the very knowledge modalities involved in its construction and self-reflection. This approach necessarily pays attention to the media and technical apparatus involved, but also to the overall contextual reasons that determine certain forms of architectural thought and production.

In this respect, post-war urban collages prove to be meaningful and fascinating objects of study because they reveal disciplinary processes that generally remain implicit, situated at the intersection between design and theoretical elaboration. They reveal the development of architectural thinking through the medium of drawing, and thus theory taking spatial form and disciplinary history becoming operational within a broad landscape of social interactions between communities of practice.

More precisely, with regard to the epistemological aspect, this attempt also suggests further reflection: the most productive approach to architectural knowledge may not lie in the final resolution of the tension between the visual and the verbal, or between the tacit and the explicit, but rather in maintaining and exploring the productive friction between these complementary modalities of knowing, thinking and designing. It is precisely in this problematic junction that we can grasp the full complexity and stratification of the discipline in its making.

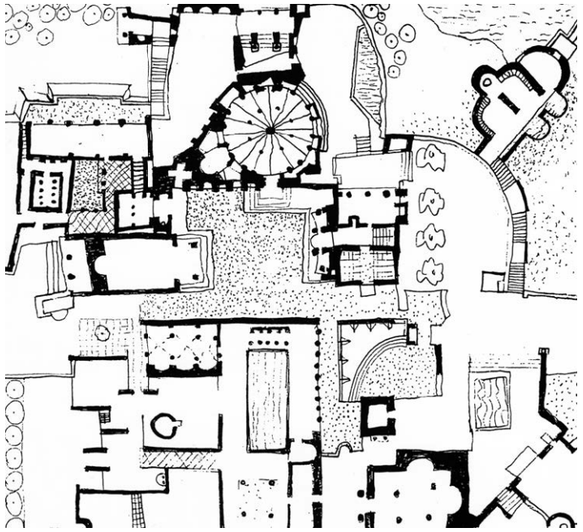

Fig. 1

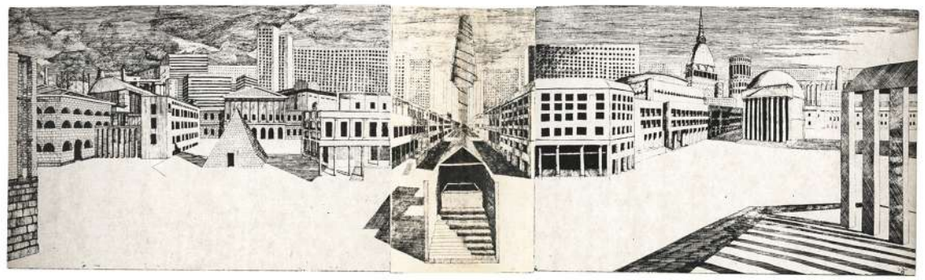

Fig. 2

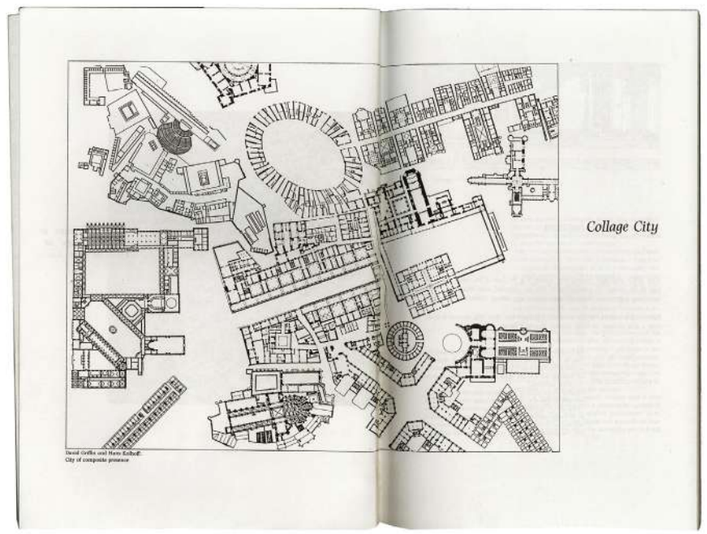

Fig. 3

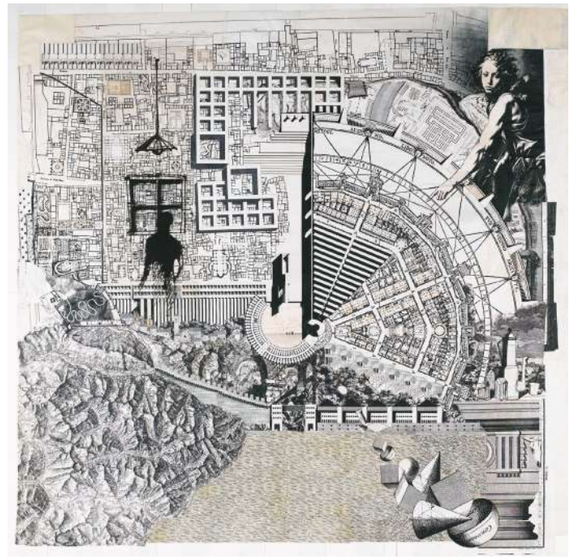

Fig. 4

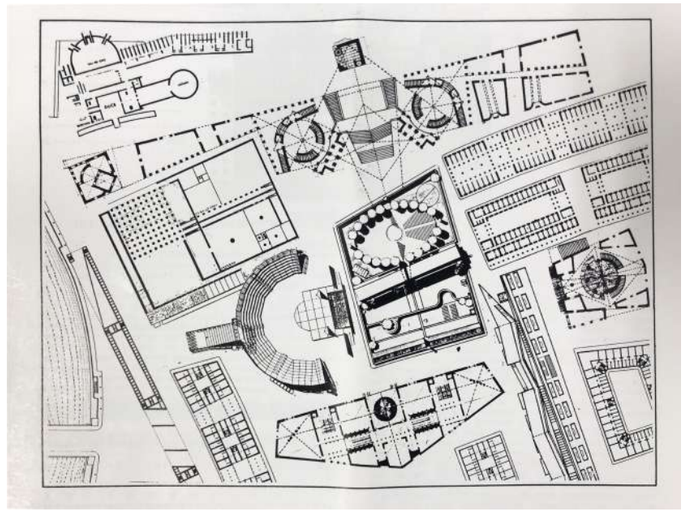

Fig. 5

Notes

1. See: Evans, Robin, “Translations from Drawing to Building”, in: Evans, Robin, *Translations from Drawing to Building and Other Essays,* Cambridge, MA and London: MIT Press, 1997. It should be noted that, beyond any specific aspect, this fundamental text by Evans was one of the first attempts to adequately address the aspect of visuality in relation to the disciplinary field of architecture.
2. See: Caragonne, Alexander, *The Texas rangers: Notes from the Architectural Underground*, Cambridge, MA and London: MIT Press, 1993. As described by Caragonne, the *plan game* was an evening entertainment of the international professors teaching in Austin, Texas during the 1950s and 1960s: Colin Rowe, John Hejduk, Robert Slutzky, Werner Seligmann, Lee Hirsche, Bernard Hoesli, Lee Hodgden and John Shaw. The playful activity was inspired by the surrealist practice of *cadavre exquis* and have strongly influenced subsequent developments in composite urban representations, particularly those perpetuated by Colin Rowe and his collaborators.
3. In respect to these notions and definitions, rather diffused in twentieth century art criticism, see: Lévi-Strauss, Claude, *La pensée sauvage,* Paris: Librairie Plon, 1962, and then Benjamin, Walter, *The Work of Art in the Age of Mechanical Reproduction*, in Arendt, Hannah, ed., *Illuminations*, New York: Schocken Books, 1968. They were both part of the shared constellation of references frequently employed by the authors of urban collages. In particular Rowe and Koetter explicitly quote the notion of bricoleur by Lévi-Strauss in his Collage City. See: Rowe, Colin, Koetter, Fred, *Collage City,* Cambridge, MA and London: MIT Press, 1978.
4. Among these postwar visual books, see in particular the publications of Rowe, Ungers and Venturi: Rowe, Colin, *The Mathematics of the Ideal Villa and Other Essays,* Cambridge, MA and London: MIT Press, 1976, Rowe, Colin, Koetter, Fred, *Collage City,* Cambridge, MA and London: MIT Press, 1978, Ungers, Oswald Mathias, *Morphologie / City Metaphors*, Köln, Walther König, 1982, Venturi, Robert, *Complexity and Contradiction in Architecture,* New York: Museum of Modern Art, 1966.
5. See for example the visual panels by Christian Kieckens documented in his archive at the Flanders Architecture Institute VAi in Antwerp. More in general, on Warburg's *Mnemosyne Atlas and on its operative horizons,* see: Didi-Huberman, Georges, *Atlas, or the Anxious Gay Science,* Chicago: University of Chicago Press, 2018.
6. In respect to the crucial role of slides, see in particular: Reichle, Ingeborg, "Medienbruche”, in *Kritische Berichte,* no. 1/2002: 4-56.
7. See: Polanyi, Michael, *The Tacit Dimension,* Chicago: University of Chicago Press, 1966, but also: Was ist ein Bild?” In: Boehm, Gottfried, ed., *Was ist ein Bild?*, München: Fink, 1994.
8. See: Lakoff, George and Johnson, Mark, *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought,* New York: Basic Books, 1999, and Varela, Francisco, Thompson, Evan, and Rosch, Eleanor, *The Embodied Mind: Cognitive Science and Human Experience,* Cambridge, MA and London: MIT Press, 1991.
9. See: Goodman, Nelson, *Languages of Art: An Approach to a Theory of Symbols,* Indianapolis: Hackett Publishing, 1968, but also: *Ways of Worldmaking*, Indianapolis: Hackett Publishing, 1978.
10. See in particular: Baxandall, Michael, *Patterns of Intention: On the Historical Explanation of Pictures,* New Haven: Yale University Press, 1985; and Bryson, Norman, *Word and Image: French Painting of the Ancien Régime,* Cambridge: Cambridge University Press, 1981.
11. See: Ungers, Oswald Mathias, with Koolhaas, Rem, Riemann, Peter, Kollhoff, Hans, Ovaska, Arthur, *Die Stadt in der Stadt: Berlin, das Grüne Archipel*, Köln: Studioverlag für Architecktur, 1977, and “La città nella città. Proposte della Sommer Akademie per Berlino”, in: *Lotus International*, no. 19, 1978; and: Koolhaas, Rem, *Delirious New York: A Retroactive Manifesto for Manhattan*, New York: Oxford University Press, 1978.
12. In respect to the notion of pictorial turn, see for example: Mitchell, W.J.T., *Picture Theory: Essays on Verbal and Visual Representation,* Chicago: University of Chicago Press, 1994.
13. In this respect, it is interesting to compare the two books by Rossi and their textual as well as visual apparatuses: Rossi, Aldo, *L'architettura della città*, Venezia: Marsilio, 1966, and: *A Scientific Autobiography*, Cambridge, MA and London: MIT Press, 1981.
14. See: Mitchell, W.J.T., “What do pictures want?”, in: Mitchell, W.J.T., *What Do Pictures Want? The Lives and Loves of Images*, Chicago and London: The University of Chicago Press, 2005.

Image Captions

Fig. 1. Colin Rowe, John Hejduk, Robert Slutzky, Werner Seligmann, Lee Hirsche, Bernard Hoesli, Lee Hodgden and John Shaw, *Plan game*, Austin, Texas ca 1955
Fig. 2. Arduino Cantafora, *La città analoga*, engraving, Milano 1973, private collection
Fig. 3. Hans Kollhoff and David Griffin, *City of Composite Presence*, Ithaca, New York 1976, from: Colin Rowe and Fred Koetter, *Collage City,* Boston: MIT Press 1978
Fig. 4. Aldo Rossi, Bruno Reichlin, Fabio Reinhart, Eraldo Consolascio, *La città analoga*, 1976, Centre Pompidou Collection Paris
Fig. 5. Christian Kieckens, “Roma Memoria”, 1986 in: *S/AM Stichting Architektuur Museum Bullettin* no. 3, 1986

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Biography

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The Visual Argument: Michael Sorkin's socio-aesthetic approach to design

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Abstract

The establishment of Urban Design as a graduate program in the United States in the late 1950s marked a disciplinary convergence of fields that, in many other national contexts, were becoming increasingly segregated as either architecture or urbanism. Michael Sorkin—activist, architect, educator, and critic—sought to preserve the unity of these two domains. His voice as an architecture critic was characterized by a sophisticated literary expertise that brought together the multiple demands of the city, its epoch, and the imagination of the worldly community it encompasses. Through various mediums of expression, he pioneered the conception of urban agendas that shaped the practical and theoretical environment of design disciplines in the last two decades in the United States.
Utilizing the Michael Sorkin Reading Room archive at The City College of New York as a primary source, this article reviews Sorkin's collective pedagogical approach to reveal his tactics of approximation between representation—the aesthetic and visual domains of architecture—and urban advocacy—the alignment of political and cultural expression with ethical agendas that defend publicness and shared spatialities. This study incorporates perspectives from Bruno Bosteels, Charles Waldheim, and Neil Brenner as a framework to analyze Sorkin's socio-aesthetic approach to design practice. Sorkin's Ground Zero proposals are used as a case study to illustrate his resistance to corporate urban development models through critical visualizations. By examining the intersection of pedagogy and practice, the article demonstrates Sorkin's work as a singular reinforcement of the social dimension of urban design, where the visual and the political converge to define inclusive and ecologically committed urban agendas.

Key words: Michael Sorkin, urban advocacy, visualization, pedagogy, criticism.

Fig.1

On the wall of the third-floor mezzanine of the Spitzer School of Architecture of The City College of New York (CCNY) hangs a wood model titled *Urbanagram* (Fig.1). It was the product of a collaboration of students of the Masters in Urban Design Program, directed for almost two decades by Michael Sorkin (1948-2020). The work is an assemblage of models produced by multiple students, following a few common directions. The methodology was inspired by the surrealist entertainment called *Exquisite Corpse*, which also titles one of Sorkin's books. Andre Breton describes it as "a game of folded paper played by several people who compose a sentence or a drawing without anyone seeing the preceding collaboration or collaborations […] we had at our command an infallible way of holding the critical intellect in abeyance and of fully liberating the mind's metaphorical activity."[1] In Sorkin's view, like the *Exquisite Corpse*, "cities are made by many players, with varying degrees of autonomy, within a complicit framework." A sense of order is set by the creation of certain rules that regulate the scope of individual invention. The size of the sheet of paper and the sequence of its folding - in the case of the game - politics, planning, economics, history, and culture in the case of the city.[2]

1. The activist – architect – educator - critic

Michael Sorkin - activist, architect, educator, and critic - was one of the most influential of urbanists of his era in New York. His discourse, always provocative and critical, generously brought together the multiple demands of the city, its epoch, and the projective imagination of the worldly community it contains. Sorkin's voice was characterized by a sophisticated literary expertise. His writing meandered intuitively, interweaving viewpoints dynamically as in the composition of a sketch. He was the author of more than twenty books and a prolific writer for the Village Voice in the 1980s, The Nation and Architectural Record, among others. He was on the board of several civic and professional organizations such as Urban Design Forum and the Architectural League of New York.
The establishment of Urban Design as a graduate program in the United States in the late 1950s marked a disciplinary convergence of fields that, in many countries, were gradually being segregated as either *architecture* or *urbanism*. Michael Sorkin sought to preserve the unity of these two domains.[3] Through various media of expression, he exercised a critical engagement with the discourses of the late twentieth century and pioneered the conception of urban agendas that came to define the practical and theoretical environment of design disciplines in the last two decades in the United States.
Sorkin's method, while teaching and directing the Graduate Program in Urban Design of The City College of New York, was along the lines of Guy Debord's *Theory of the Drift*, or *Dérive*, a framework which he shared with students at the start of each semester. Premised by the conviction that being lost is essential to original, creative discovery, much of the vibrancy of Sorkin's contribution was a matter of presence. Stories, tales and quotidian practices created the *ambiance* of studio work.
Manuscripts of Sorkin's pedagogic experiments are currently being catalogued as part of the recently inaugurated Michael Sorkin Reading Room in New York City.[4] One of the sketches in his 2015 teaching folder, a working drawing reveal strategies which are similar to the *urbanagram* model. A digital base drawing is explained and reshaped by hand strokes. A polycentric approach, recurring in his theoretical and practical investigations, dissolves socio-spatial hierarchies through the reinforcement of singular identities and unique geometries. Accommodating irregularities and integrating exceptions, the drawing seems to be one of multiple hands.

Another didactic approach Sorkin used as a starting point for many of his studios is the *Exquisite Corpse* exercise. Since the 1980s the directions of the exercise evolved, but some foundational parameters were employed consistently. A set of initial directives are given to students and subsequently complemented by exercises not initially disclosed called “enhancements,” through which students continue to work collectively to elaborate on the initial outcome. It begins by a few very specific parameters: “the area of the model is 150 square feet; the material is wood; the shape is *squarish* (the shape of pieces is undetermined); a plywood base should be understood to be grade.” A few more operations are then prescribed: “the model is divided into 2X (x=number of students) pieces and a Tectonic Vector; the pieces are of two types: Sites and Nabes; they are to be approximately equal in area and may be of any shape but may not exceed one square meter; sites may not adjoin. The Tectonic Vector (TV) is an additional element or area where no construction is permitted (of up to 15% the area of the city).” It is continuous in form, as a void, that touches each of the Nabes (Sorkin’s word for “neighborhood” in the assignment). “What it is (mountain, minefield, river, zone of altered consciousness, etc.) is not, for the moment clear.” A few more directions are given to regulate heights and density. At the start of the exercise there is no scale or program, which marks a direct departure from a traditionally modern approach to academic design problems.

In the same bin where a printout of the Exquisite Corpse exercise is found, a letter addressed to Sorkin in 1992, signed by Bernard Tschumi (then Dean of Columbia University’s Graduate School of Architecture Planning and Preservation) with a note “cc: Kenneth Frampton” at the bottom, states the following: “We would like you to articulate your studio project in such a way that the work of students can be presented individually (models and drawings), as opposed to previous semesters where one large “communal” construction became the ultimate goal of the studio.”[5] The collective methodology of Sorkin’s pedagogy was challenged with the explanation that these demands stemmed from the accreditation boards.[6] This exchange reveals one of the many forms of resistance through which Michael Sorkin defended a plural, collective and inclusive agenda. Teaching in his lens was understood as a form of activism, especially within public institutions.

In terms of professional practice, *Michael Sorkin Studio* operated in two registers: a traditional architecture practice, responsive to clients, and an inquisitive research practice, which formulated its own intervention targets. This dual agenda was made more explicit in 2005 with the foundation of *Terreform*, an organization clearly separate from the studio’s commercial work. Terreform was a medium to make viable the exposure of ascending critical voices, an anti-mainstream storefront that promoted non-conforming, provocative thought. Despite the formal separation, a synergic exchange between the two entities was always maintained.[7] Sorkin sought to establish a mode of professional practice that was transparent with regards to non-commercial projects and could remain provocative or utopian. In his Studio’s online portfolio, some of these projects can be distinguished by the location “anywhere”, such as the *House of the Future and Retirement Community 2030*. Others are deeply rooted in a locality, such as *South Side Stories* and *Open Gaza*. The predominance of commercial projects developed in China is notable between 2010 and 2020. Sorkin actively collaborated on a series of commercial calls to formulate visions for cities, buildings and regions.[8]

2. Critical Visualization

Much of what has recently been discussed in the fields of architecture and urban design gravitates towards generating more *inclusive systems* of exchange and facilitating convergences among various civic groups and formal city governance. This can be understood as a compensation for, or overcoming, of the gradual distancing of architecture from its political dimension, which established a sharp polarization between professional practice and its social function in the second half of the twentieth century in the United States.

As the debates about the social responsibility of professional practice and the search for an ethical and political meaning in design intensified, the role of drawings in architecture culture seems to have gradually lost protagonism. Architectural imagination through tangible, projective visualizations are often displaced to a secondary role. In some contexts, this process resulted in a gradual technical and aesthetic weakening, which can be recognized in community, or "engaged," projects that often operate at a reduced “minimum possible." Paradoxically, this leads to a further suppression of the experimental and critical dimensions of the design disciplines.

Visual representations, the way in which information is gathered on a drawing field (whether two-dimensional or three-dimensional), are central to our interpretation and transformation of the urban environment. They reconcile and potentially integrate complex and divergent desires from multiple stakeholders. The urban theorist Neil Brenner introduces the term "counter-visualizations" to define representations that seek to dissolve urban ideologies and question prevailing paradigms and hierarchies. *Counter-visualizations* are meant to destabilize the hegemonic structures of globalized urban ideology and can be understood as a critical work aimed at opening new horizons for the imagination of emerging patterns and paths of urbanization across the diverse geographies of our planet.[9] Socio-spatial hierarchies, often underlying and implicit, taken for granted and unquestioned,

tend to reiterate dynamics of power and exclusion. According to Brenner, the dissolution of visual orders, both on a territorial and architectural scale, is a project of representation. He argues that drawings may be a critical tool to inform the processes that govern contemporary city making.

In the field of cartographic representation, a few theoretical investigations at the turn of the twentieth century point to a movement towards a *"general politics of spatiality"*[10] and to the cultural study of literary, artistic, and ideological forms of mapping. One of the most important dimensions of cartography, argues Bruno Bosteels, lies in its capacity to order existential territories, and reveal these worlds over the irregular surface of the earth. At the end of the 20th century, maps were often valued according to their referential and scientific accuracy and are not considered works of art. According to Bosteels, cartography should explain the multiple articulations of the social and subjective and seek models capable of revealing how “desire and production, madness and work,” may intersect in the territory.[11] In his view, the cartographic project is an undoing of a stabilized social through the legibility of (yet to be revealed) relations identified in a two-dimensional representation. "A map, then, is never just a mirror of nature. It is neither an adequate imitation nor a transparent reflection of a stable territory already existing elsewhere."[12]

This approach is more widespread in the fields of literary criticism and philosophy and has only recently become common knowledge among cartographic theorists and historians. As a cartographer, the architect acts in the representational field on the threshold between scientific registers and fiction, as an interpretative actor destined to engage subjectively with their historical present. Charles Waldheim, architect, urban planner, and landscape theorist, presented a viewpoint similar to Bosteels’ in *Aerial Representation and the Recovery of Landscape* (1999), explaining the relationship between landscape design and landscape representation as one of co-dependency: “The world is visually prefabricated through its potential for being seen. Perhaps even more than in any other field or cultural endeavor, the picturing of the landscape has become synonymous with the discipline itself, as if landscape only existed through its picturing.”[13] According to Waldheim, with the advent of aerial photography, the scenic and pictorial images were replaced by the perception of a vast, managed surface. It established a reference for what was previously unattainable. Aerial photography inaugurated a new era of imagining the surface of the world, which changed the meaning and status of the practice of landscape drawing. Waldheim uses the term *aerial subjectivity* to explain this shift enabled by photography,[14] which differed from the use of metric cartographic references at the time. Aerial subjectivity travels beyond a direct optical experience. It neither begins nor ends where the eye can see but involves all the means of constructing our imagination. The question of representation, as presented by Waldheim, is not only a theoretical discussion, but also a practical one—relating to our ability to imagine and design new spatialities.

These authors argue for the importance of representation in formulating new cultural imaginaries. Experimentation in drawing can be understood not only as a technical and documental resource, but as a tool for bridging the fields of architecture, visual arts, politics, and literature. Critical drawing, as the starting point of the design process, implies that reality is not understood "a priori" but rather visually deconstructed. Thus, it can be reformulated through design responses capable of bringing subjectivity and aesthetics closer to the collective realm, where ethics and the environment meet.

3. Ground Zero

In the 60s, 70s and 80s a series of radical architectural languages emerged in the context of the United States and Europe. The work of Cedric Prize, Archigram, Yona Friedman, Archizoom, Site, Lebbeus Woods and Superstudio, among others, opened new inquisitive potentials for design. They formulated architectural and urban visions that radically challenged mainstream post-war modernism and were sometimes referred to as “neo-futurist.”[15] The work of Michael Sorkin, especially during the last three decades of the 20th century, may be placed alongside this current. This insertion may lead to an interpretation of his radical drawings as *provocations.* Yet Sorkin’s intensified political project, manifested through pedagogy, writing and practice, underpinned by an aesthetic commitment to subjectivity and the expression of cultural identity, positions him at a unique, distinguished gateway to contemporary practices. Far from retreating into the speculative silos of fiction or fantasy, his work advances as it maintains proximity to the social and material exigencies of city-making. Consequently, his oeuvre functions as a critical locus where the visual and the political, the subjective and the collective, converge. His proposals for Ground Zero in New York City offer us a clear example of these approximations.

A series of drawings, diagrams and texts developed between 2001 and 2003 were assembled in the book *Starting from Zero: Reconstructing Downtown New York* (2003). Various techniques build a diverse representation lexicon, which alternate in the employment of digital and analog tools. They include photographic collages, sketches, aerial perspectives, plans, sections, and ground perspectives. *The Lotus* (Fig.2 and Fig.3) is one of Sorkin’s iterations for the reconstruction of Ground Zero. In it, a sequence of visual representations is intermingled with articles published in various forms of media between 2001 and 2003. The occurrence of the 9/11 attack on the Twin Towers (2001) in New York

City opened an opportunity for reimagining another form of urbanity in that area. *The Lotus* can be understood as an evolution from *First Response* (Fig.4), one of Sorkin's earliest visualizations for the future of the site.

Fig.2

Fig.3

First Response delineates an open circular space – the total clearing of the site. Memory is expressed as emptiness. The void holds the potential for conviviality and new forms of social exchange. It radically turns its back on corporate footprints, as it doesn't include any commercial space to replace what was on the site prior to the tragedy. The proposals gradually dissolve the hegemonic hierarchies of lower Manhattan, operating as *counter-visualizations* in Neil Brenner's terms. They employ at the scale of a neighborhood what Brenner articulates at a planetary level. The dissolution of the established urban orders of lower Manhattan are further explained through Sorkin's new masterplan (Fig.5). In this plan, we see the circular void as the articulator of a network of new public green spaces. The viability of the proposals was backed up by a tangible step-by-step roadmap for the reconstruction of the city. He enforces the coexistence of "expressive singularities," which should be envisioned as semi-autonomous instead of ancillary.[16] Sorkin intended for this new network of spaces to alleviate the density of the existing vertical city, which took shape from an 18th century Dutch medieval grid. One of Sorkin's foundational premises was an ecologically committed urbanistic approach. His use of the terms *sustainability* and *ecology* included principles of conviviality and sociability.[17]

The Lotus, arguably Sorkin's most radical visualization for the future of the site, is also conciliatory. The formal answer may be understood as a *provocation*, through a new-futuristic lens. A more nuanced reading may open an alternative interpretation, in which the sketch is meant to be understood literally.
It investigates the convergence of the central void-memorial with vertical towers that could respond to real-state pressures on the site. The gestural, sinuous, colorful expression of the proposal is dressed by ambiguity. The buildings' silhouettes dissolve towards the sky, skewing, and collapsing a traditional understanding of the vertical. In doing that, Sorkin both adheres and contests. He mediates, acknowledging a city made by many players, as in his *urbanagram* academic exercises. And extrapolates, reinforcing a vision of a city composed by individual imaginaries, of particular identities, subjectivities, and expressions. Sorkin employs radical form to reinforce the emergence of a vibrant, non-neutral city. The Lotus is a clear articulation of the social and the subjective – the ordering of "existential territories" in Bosteels' terms. It brings together the cartography of lower Manhattan, establishing footprints of metric precision, with an open-ended, uncontrolled building mass.
This intensification of the subjective seeing in these drawings also aligns with Sorkin's critique of *smart-cities*. The role of technology and the manipulation of information about individuals and their behavior in the city was a central concern to Sorkin. In his view, the obscure performance of a "big brother" – his reference to Google – replaced the possibility of a technology "socially produced" in the daily life of the cities. He attacked the concept of *smart cities*, appealing to what he called the *wise city*,[18] as a resistance to technologically driven, anonymous corporate urban models. In his words, "the truly wise city must begin with a deep appreciation of its immemorial, individual, fundamentals, with the specifics of its cultural and bio-climatic situations and look critically to technology to reinforce and extend them."[19]

Fig.4

Fig.5

4. Conclusion

The proposals for the reconstruction of Ground Zero and lower Manhattan were developed while Sorkin published texts in mainstream media, such as the *Village Voice*. His legacy is more widely established through his writing, an incisive literary mix of erudite knowledge and wit from the sidewalks. His role in organizing a view of the present was comparable to that of Lewis Mumford in the context of New York City. His trajectory, bridging practice, pedagogy, and criticism, offers us a unique model for the intersection of the aesthetic and the political realms in the field of urban design. The Ground Zero Visualizations were used as a tool to engage with multiple stakeholders at the time following the tragedy and to propel discussions that could enable processes of transformation that prioritized shared spatialities and collective agendas of a city historically entrenched by private investments.
Along the lines of Neil Brenner's theory of for a counter-visual project that may dissolve urban ideologies and question established socio-spatial hierarchies, Sorkin's proposals for lower Manhattan turned away from corporate footprints to prioritize public memory, social exchange, and the environment. Representation itself is a form of resistance and, in Sorkin's case, it is paired with criticism in writing. Through Bosteels' reflections on cartography as a means of ordering existential territories, *The Lotus*, can also be understood as an intersection of desire, production, and the subjective within a territory. Sorkin reveals subjacent relations within the urban fabric that may reconcile the city's past (the 9/11 tragedy and its 18th century grid) towards a new model of growth and prosperity, centered on pedestrian life and the possibility of social encounter. Sorkin's proposals refer to the social and the subjective simultaneously, bringing individual imagination into the collective realm. Charles Waldheim's observation that the picturing of a landscape is often synonymous with the discipline itself, reinstates the importance of the visual realm in reaffirming the insertion of design into politics. Waldheim's concept of aerial subjectivity highlights a shift in imagination that goes beyond direct optical experience to involve all means of constructing the built environment. In Sorkin's practice, written arguments and spatial depictions were co-dependent; his polemical critiques were formulated while a visual decoding was taking place through his drawings.
Sorkin advanced from the experimental languages of design developed at the turn of the century to formulate a new model of engaged practice that both posed the questions and proposed the answers. His Ground Zero responses were among many other critical narratives he elaborated through the collaborative ethos of his practice and pedagogy, such as *New York (Steady) State, South Side Stories* and *Open Gaza*. More than merely provocative or open-ended, his drawings reconciled formal anxieties with political purpose, teaching generations of urban designers, theorists, and educators that citizenship can only be exercised in these fields through the pairing of inquisitive, critical thinking with spatial imagination. As he often noted, the right to the city is predicated upon the right to imagine the city.[20]

Notes

1. Michael Sorkin, "Carleton University Winter 1994 Studio 4b Brief," 1994, Michael Sorkin Reading Room Archive, Spitzer School of Architecture, City College of New York.
2. Sorkin, "Carleton University Brief."
3. Michael Sorkin, *Exquisite Corpse*,1.
4. The Michael Sorkin Reading Room is located inside the library of the Spitzer School of Architecture of CCNY. It was designed by his colleague and friend Elizabetta Terragni and inaugurated in 2024. His book collection is available for consultation.
5. Sorkin, Letter, 1992, Box 01, Folder "Columbia University GSAPP 1992," Michael Sorkin Reading Room Archive.
6. This tension is not an uncommon reality of architecture schools in the United States and in many places in the world: entities that control licensure also control pedagogies. They inform and enforce, in very explicit and sometimes exclusive ways, common denominators that are sometimes obsolete by the time they are established.
7. Sorkin, “Sao Paulo.”
8. The Wuhan region in China (where the COVID-19 2020 epidemic started), appears in Michael Sorkin Studio's portfolio 3 times: Houguan Lake Ecological City (2010), Wei River Ecological Corridor (2011) and Wuhan Qingtan Lake Ecological Tech Park (2014).
9. Brenner, “Congresso Observatório 20 anos.”
10. Bosteels, “From Text to Territory,” 146.
11. Bosteels, “From Text to Territory,” 146.
12. Bosteels, “From Text to Territory,” 147.
13. Waldheim, “Aerial Representation,” 127.
14. Waldheim, “Aerial Representation,” 125.
15. Foster, “New-Futurism,” 25.
16. Sorkin, *Starting from Zero,* 31. Sorkin’s proposal includes: (1) Burial of West Street/South Street from the Holland Tunnel to the Manhattan Bridge and the use of the newly created ground above for public green and recreational space. (2) Rerouting of cross-town traffic from the Holland Tunnel to the Manhattan Bridge through the new tunnel. (3) Burial of the approaches to the Brooklyn Battery Tunnel and the use of newly created ground above for development and a greensward linked to Battery Park. (4) Creation of an academic campus comprising Borough of Manhattan Community College, St. John's University, Stuyvesant High School, the new lower Manhattan High School, PS/IS 89, and PS 284. (5) Use of Ground Zero as a point of dissemination for widespread pedestrianization and greening in lower Manhattan. (6) Replacement of lost space by the build-out of soft and vacant sites for mixed use, including the possibility of constructing housing on piers. (7) An intermodal World Transportation Center at and around Ground Zero, including new lines for the LIRR and Second Avenue Subway, a light-rail system running north to the Javits Center, Penn Station, Port Authority, and Grand Central, a commuter bus terminal, and direct rail and ferry connections to JFK and Newark. (8) Additional landfill north of Battery Park City to solve existing hydrological problems and to create additional park and recreational space.
17. Sorkin, “Sao Paulo.” Sorkin explains that the “too general reduction of “sustainability” to a series of physical problems to be solved by technical means” needs to be refocused towards a “structural role in reinforcing and expanding the human community.”
18. Sorkin, “Sao Paulo.”
19. Sorkin, “Sao Paulo.”
20. Sorkin, “Why Public Spapce Belongs to People.”

Image Captions

Fig. 1. Urbanagram - Urban Design Studio led by Michael Sorkin at The City College of New York. Approximately 2010. Source: photograph by author.
Fig. 2. The Lotus – Plan. Michael Sorkin, 2002. Source: Starting From Zero: Reconstructing Downtown New York.
Fig. 3. The Lotus – Perspective. Michael Sorkin, 2002. Source: Starting From Zero: Reconstructing Downtown New York.
Fig. 4. First Response. Michael Sorkin, 2001. Source: Starting From Zero: Reconstructing Downtown New York.
Fig. 5. Lower Manhattan Plan. Michael Sorkin, 2002. Source: Starting From Zero: Reconstructing Downtown New York.

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Biography

Marina Correia is a practicing architect and professor of design, history, and theory. She holds an architecture degree from The City University of New York (2006), a Master in Architecture from Harvard University Graduate School of Design (2013) and a Ph.D. in History of Architecture and Urbanism from the University of Sao Paulo (2018). She established her practice – Atelier of Architecture and Urban Design - in 2013, which has been dedicated to public architecture, exhibition design, interior design and non-profit partnerships in the United States, Brazil and Europe. She taught at The City College of New York, Columbia University, the Federal University of Rio de Janeiro, Harvard GSD, RISD, Pratt Institute and Cal Poly. Her publications include the articles *Watchful Solitude: John Hejduk and Venice* (Drawing Matter 2024), *John Hejduk's Bye House: An Object in the Landscape* (with Stan Allen, Drawing Matter 2023), *Ecological Urbanism in Latin America* (co-edited with M. Mostafavi, G. Doherty, A. Duran and L. Valenzuela - Harvard GSD and GG, 2019), *The National Museum beyond the Palace* (Cultural Preservation Center Magazine of the University of Sao Paulo, 2022) and *Tales of Invisibility: Exhibition Design between Architectures* (P.M. Bardi Institute, 2022).

Counter Representation
Imageability in the age of representational turns

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Abstract

This paper explores the methodologies, content, focal points and modes of expression employed in a selection of contemporary gallery/museum projects. While contemporary practices may yield various architectural outputs, presented in competition entries, conceptual drawings and diagrams, as well as built, their intentions and manifestations are manifold.

The theoretical discourse of the 'iconic' or 'pictorial' turn is understood as a reference point following W. J. T. Mitchell's work. Taken together with the 'digital' turn(s) by Mario Carpo, in particular his notion of beyond the digital, the paper argues against simplistic representation and beyond the conventional notion of architectural drawing. We aim to question whether in some cases digital turn is nothing of sorts, but a continuation, without any meaningful shift and why according to Carpo there is and will not be 3rd digital turn.

The underlying suggestion is that when subjected to the process of othering, the consideration of unforeseen and untold elements within a project, the interpretation of built architecture in its multiple contexts can become more open. In order to unravel the illusory curtain of the flattened photographic image of a project presented alongside the explanatory text, these multiple contexts require historical and theoretical reflections. Through the Reyner Banham's concept of image and imageability, the representational shift or the counter-representational turn from object focused representation to the imageable system or performance focused representation will be discussed.

The multiple 'turns' refer to the contemporary reflections on the visuals in everyday life, attracting our attention through images that have a strong effect on society. Through examples as diverse as the Maxxi Museum in Rome, and the Central part of the National Gallery in Ljubljana, we will suggest how our obsession with the images could be distilled and assist better understanding of transient city environments which offer intimate interior experience in midst of the visual oversaturation.

Key words: architectural drawing**,** imageability, othering, pictorial turn, digital turn, beyond the digital.

1. Introduction

Architects use varied range of graphic representation as a tool for communicating their proposals. This may include the presentation of core ideas, structural, atmospheric or circulation concepts, their ultimate intentions, and other ideas.

Architectural analysis and criticism tend to follow observation, reflection and interpretation of the object of study. Depending on the approach and perspective chosen, the focus can range from a comprehensive contextualisation of the cultural environment and physical setting to an analysis of the technical solutions and details. While presentations in the press or critiques tend to point out the specifics, references, strengths and weaknesses, conventionally they are accompanied by photographs of realized architecture and most commonly plans.

This paper focuses on an important communication layer: the one related to architects' initial graphic representation, which may incorporate but importantly often surpasses purely material contextuality. Physical context is not always directly visible in the photographs of built architecture (as presented in the media or otherwise), deepening an understanding of the project's initial graphic representation can be a valuable method of study of built architecture, understood in its multiple contexts and starting with its least compromised form, in order to suggest a more meaningful insight into an individual architectural project. The importance of deeper understanding and avoiding oversimplification is particularly important in the current age of AI, marked by the over-production of architectural visuals and saturation with imagery produced without any criticality often discarded and/or repeatedly used lacking proper scrutiny. Following W. J. T. Mitchel's work and the visual culture studies development, the theoretical discourse of the 'iconic' or 'pictorial' turn is taken as a reference point. Carpo's later digital turns 1.0 and 2.0, are considered additional markers of shift in the understanding of the transition from hand drawing or analogue image production to the digital and even beyond.

The 'iconic' or 'pictorial' turn refers to the contemporary consideration of the visual, either in art or in everyday life, which expresses itself and attracts our attention through and with images, thereby reinforcing the role such images play in society. According to modern studies, images are understood as a kind of language. There is also a distinction between different kinds of images, presented in a family tree by Mitchell in which different kinds of images correspond to imagery of different intellectual disciplines including graphic, optical, perceptual, mental and verbal images. The *graphic images* include pictures, statues and designs; *optical images* are related to mirrors and projections; *perceptual images* designate sense data "species" and appearances; *mental images* include dreams, memories, ideas and fantasmata; and *verbal images* relate to metaphors and descriptions.[1]

Although architectural representation is primarily considered to belong to the *graphic images* category, its conceptualisations overlap with several other categories. When Brunelleschi demonstrated, or rediscovered according to some authors, the powerful tool of linear perspective in the 15th century, he nevertheless used an *optical image* – mirror reflection - to depict the infinite expanse of the sky above the Florence Baptistery. This was subsequently used to denote Brunelleschi as an architect, as he drew the building – which can be measured and precisely represented, and left the sky within the domain of the art. While Brunelleschi and Archizoom used reflective surfaces to represent infinity in a different ways, contemporary optical images include digital projections that capture the essence of ever-changing, transformable environments, as shown, for example, in the work of Refik Anadol.[2] They also embody a paradox, at least initially, the options seem to be multiple offering infinite possibilities, yet the final result often perpetuates repetition and sameness, lacking distinctiveness and unique qualities of an individual hand-drawing.

Furthermore, *perceptual images* take the in-between state between the material and the immaterial images according to Mitchell's taxonomy. They are experienced through our senses, but "occupy a kind of border region where physiologists, neurologists, psychologists, art historians, and students of optics find themselves collaborating with philosophers and literary critics".[3] On the border between physical and psychological, these are internalised bodily experiences. In architecture they are grounded and evoked through perception of external, materialised built environment. In contemporary visually rich animations, such as in Anadol's opus – the imagery production often by far surpasses what can actually be perceived by human eye. Technological capabilities are used to display 16 million colours at resolution the great majority of which is wasted; and impossible to register by the humans.

Mitchell's two remaining categories, very much part of architectural conceptual development, can be considered comprehensive and image - related. *Mental images* have been thoroughly discussed by Kevin Lynch[4] and used as a tool for architectural and urban analysis and conceptualisation ever since, while *verbal images* have been a tool of architectural discourse throughout history. Discussions on *mimesis* and *poiesis*, the search for analogy and metaphor in architecture, and the level of technicality of the discourse have influenced theorists from Vitruvius onwards.

According to this distinction, graphic images that represent pictures, sculptural, and architectural imagery are subject to the history of art discourse – or, when talking about architecture either built or designed, to architectural historians and theorists. Mitchell is aware of the complicated and complex relationship between the images, words, verbal and pictorial representations, because "the relationship between words and images reflects, within the realm of representation, signification, and communication, the relations we posit between symbols and the world, signs and their meanings."[5] Mitchell's distinction between the "natural, mimetic image, which looks like or 'captures' what it represents, and its pictorial rival, the artificial, expressive image which cannot 'look like' what it represents because that thing can only be conveyed in words" [6] relates to our special focus to the latter, non-mimetic images, that should be considered as signs and offer an open, creative reading of the represented subject matter.

Furthermore, the open field of graphic representation is related to digital turns as being discussed by Mario Carpo. Digital turns 1.0 and 2.0 are designated as the changes in architectural production (including architectural representation) which are enabled and driven by digital technologies. While in the first period (1.0) the digital tools mainly supported or enabled the production of architecture (and architectural representations, the latter (2.0) marks a shift towards conceptualising/conceiving architecture by using algorithms and big data for simulations, optimisations and also visual representations that transcend human-led processes and appearances.[7]

Although in the course of historical development, with Gaspard Monge's descriptive geometry and Durand's typological opus, the graphic representation gave an illusion "of drawing as a neutral tool that communicates unambiguous information, like scientific prose"[8], contemporary architects use graphic representation that communicates beyond its technical information. Alberto Perez-Gomez exposed this issue stating that: "The true architect's concern for meaning cannot be properly embodied in a drawing whose explicit or implicit role is the reduction or 'picture' of a building. Drawing must serve as the expression of a symbolic intention in the form of architectural ideas."[9] In this sense, following the "turns" described above, one could question, whether drawing or graphic representation, is still understood as the embodiment of complexity of architectural ideas. Importantly, Perez-Gomez suggests the deceptive possibility of architectural drawing, particularly perspective which is why he calls it "perspective hinge" which can alter/exaggerate/obscure the perception and ultimately how is a drawing perceived.[10] With digital turns, the deception of the image powered by the "intelligent" machines becomes openly present or even the product itself.

2. Othering and imageability

In order to demonstrate the potential of images to transcend mere representation, this paper will examine the concept of othering, as initially theorised by Reyner Banham, in the context of *architecture autre* and *imageability*.[11] Banham related both concepts to then emerging New Brutalism pioneered by Alison and Peter Smithson's early projects in Britain, but also in relation to the artistic endeavours of Jean Dubuffet, Jackson Pollock and Karel Appel, as well as Eduardo Paolozzi and Nigel Henderson from the Independent Group in the 1950s. Through their work Banham recognised the features of the New Brutalism, namely the direct *brutality* of expression; the integrity of the *image*, and radical *otherness*. Banham's definition of the concept of *image* was taken also as a criterion to differentiate between a *good building* and *important architecture.* For Banham, the *image* or imageability is a feature of a building, that makes it immediately apprehensible and memorable, but he did not stop here. In search of defining architecture 'autre', he relied on Tapié's concept of *art autre* with all its radical otherness of 'architectural expression', such as Dubuffet's transcending the norms of pictorial art, 'architectural composition'. For example Pollock's works are devoid of classical painterly composition, roughness of materiality similar to the directness of sounds of 'musique concrète' and even its abandonment of classical harmony or melody as well as a plea towards the intangibility or abandoning architect's conception of structure and space.[12] Banham also related the topological appreciation in the image in contrast to geometrical composition of beauty.[13] In this sense the relationality of parts, their connectivity and possible operability are characteristics that show the representational shift or the counter-representational turn from object focused representation to the imageable system or performance focused representation. The whole concept is never completely exclusive but pertinently can be utilised to transcend the question of mere appearance and next to its visuality encompass its operability. We suggest this is related to predating the 'diagram fever' of the 1990' as well as other counter-representational features such as contemporary multi-sensory representations and mappings, such as Filip Rahm's heat maps, soundscapes, post-Situationist process-based mappings and critical cartographies, such as James Corner's mapping, Raoul Bunschoten Chora's imaginative and projective diagrams, Laura Kurgan' maps or Eyal Weizman's Forensic Architecture, to mention a few prominent examples.

In this sense, Banham's quest for *otherness* provides a wider understanding of the pictorial and the digital/AI turn relevant for architecture discourse - images of architectural concepts operating beyond traditional representation mark the change of focus from object-related representation to the operability representation of *structures/programmes*, *systems/flows* and *performances/effects*. While it is impossible to predict what the realised architecture will look like through such an approach, it is possible to imagine how it will work.

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We will argue that such an imagery works in two main ways. The first through a guiding principle in the design process: following the conceptual operability of the image. The second one to aid the observer's experience of the built artefact/edifice through the image and its imageability - revealing the intention and operability
In this sense, the conceptual image gets closer to a true representative of the age of the *pictorial and digital turn(s)*, replacing a verbal explanation.

3. Case studie
The concept of imageability will be refined in relation to the experienced otherness of built architecture through a selection of exposed and well publicised architectural projects. The initial selection of the projects is based on them being produced around the turn of the millennium, which coincided also with the age of pictorial and first digital turn. This means that the concepts and the built architecture could be seen from a time distance of approximately 25 years and follows on the suggestion that the time-shift coincides with the fundamental changes in architectural production, which go beyond merely acquiring more sophisticated software tools. Next criteria for some of the examples was to choose a building, which with the architectural - tourist repercussions of Bilbao Effect put a certain demand on the designs of the subsequent period. The selection of drawings includes graphic material by the authors of selected architectural works to present the work, mainly as an initial idea or the initial conceptual sketch. They are structured according to their operability representation in the following categories: *structures/programmes, systems/flows* and *performances/effects* and indicating the nature of the graphic approach or tools used, namely relating to the image-making techniques: the (traditionally) analogue or (clearly enabled or driven by) the digital technology. The images were chosen in accordance to the intelligibility of the initial concept through its initial representation to the final realisations.

3.1 Structures/programmes
The structural and programmatic diagram evident in the conceptual sketches of the Caixa Forum in Madrid by Herzog and de Meuron shows a bold morphological gesture.[14] The sketch of its section clearly shows how the plinth has been erased in order to extend the plaza under the building, while adding the necessary structures and programme below and above.
Beyond the pragmatic nature of its design, the sketch's freely scribbled interior leaves room for interpretation and suggests the fluid transformation of the former power station, extending an interior organisation of the horizontal plaza vertically through the unfolded staircase.
On the other hand, Gregg Lynn's seminal Embriological House[15] digitally enabled project that profited from software developments making complex curvature to draw more quickly and easily. The diagram clearly indicates form in constant motion, consistently curved and fluid, with seamless joints and appearance that seems distinctly formal yet formless at the same time. The concept follows the investigation of the possibilities of mass customisation, which is not based on a modernist modularity but rather on digitally enabled unlimited iterations that produce formal, structural and programmatic variants.

3.2 Systems/flows
The initial sketches and the structural/programmatic diagrams of Kunsthal by OMA clearly respond to its site conditions between a highly motorised road and the cultural and green area known as the Museum Park.[16] Ramps, visual connections and perforations in the structure of the building create a complex spatial design, with a series of sections that enable different programmes: exhibition spaces, an auditorium and a restaurant. The concept expressed in the drawings refers to the importance of mobility and the flow of visitors throughout the entire building, which is complemented by the concept of external traffic movements that extends beyond the initial longitudinal direction of the artery.
While Kunsthal sketches expose the flow of the visitors through a series of sections, the digital tools enabled paintings of the MAXXI Museum in Rome by Zaha Hadid Architects.[17] Here the urban web of the surrounding city is knotted together and resolved through the building interior. The painting demonstrates a multiplicity of perspectives within the urban context, thus illustrating how the amalgamation of analogue and digital tools enables the conception, direction and extension of urban flow within edifices. Moreover, it instigates the notion of seamlessness and fluidity, which is made operative and functional, transcending the mere aesthetics of exterior appearance.

3.3 Performances/effects
Sadar+Vuga have collaged Issey Miyake's folded tubes as an interface between the two existing wings of the National Gallery in Ljubljana. While the colourful folded tubes may evoke the imagery of a dynamic accordion stretching and contracting to offer diverse atmospheres in the void between the two buildings, they have been translated into a representational image of rhythmic, additive structural frames that compose a 'cinematic structure'. This structure has been designed to create a parallax impression when moving through the interior space, while minimising obstruction to the view from the city centre or the Tivoli Park, which the structure divides.
The imageability of the initial image offers a variety of structural, spatial and programmatic solutions. The proposed tweaking with the cinematic structure both related to the initial image and expands its potential of an architectural spatial effect. While moving through the edifice, the parallactic impressions may relate to the imageability of the folded tubes interior. This is not in a simplistic translation however, but an architectural gesture apprehended more vividly.

Fig. 1

Interestingly, the NOX's Water Pavilion on Neeltje Jans Island was conceived manually through the use of hand drawings and models, yet represented and enabled for realisation through digital technologies. The temporary fluid interior space of the temporary pavilion functioned as an experiential environment, enhanced by the materiality, projections, lighting and sounds. This experiential environment was characterised by a merging of the virtual and the material essence of water, both physically and metaphorically.

4. Discussion
The initial question of this paper, which sought to explore ways in which the initial conceptual sketch (graphic representation) can be made evident and articulated in built architectural work, has been addressed by a variety of examples, yielding a range of findings. In the case of MAXII, the concept is communicated through all the different stages of the representational process – starting with the sketches, through to paintings and physical models, and finally to the building itself. It has been demonstrated that there is a wealth of information to be unearthed that extends beyond what can be discerned through a mere examination of photographs or an encounter with the physical structures. In numerous instances, our comprehension of architecture evolves beyond the scope of the initial conceptual sketches, encompassing a more nuanced and profound understanding of the design intentions. Similarly in some of these cases, the workings of the pictorial turn and the digital turns 1.0 and 2.0 could be closely linked to the proposed categories and the selected analysed projects.
We argue that such projects possess the imageability and an intrinsic otherness. Both characteristics are manifested in the boldness of the architectural concept. The comparisons of the analogue-digital approaches shows that the strength of the concept matters most. Any tools, regardless of how sophisticated, remain mere tools. When used uncritically, they do little more than contributing to the sense of superficiality and lack of deeper thinking and of providing meaning behind the design.
At the same time the comparisons of the approaches within the categories (*structures/programmes, systems/flows* and *performances/effects*) suggest that certain ideas are worth exploring further through different representational means. In that way different architects across a wide range of media as well as through a long period of time, can be connected and understood developing interesting and even at times surprising conceptual developments across time.
For instance, when discussing digital-analogous approaches, Gregg Lynn's work can be regarded as a pertinent reference point. Additionally, Frederich Kiesler's Endless House, a much older antecedent, is particularly salient in this context.[18] However, Kiesler's immediate environment was characterised by the absence of advanced technological resources, with only rudimentary manual tools available to him. So, the assertion is that, whilst digital tools certainly made some processes quicker and cheaper, the intrinsically digital way of thinking and design is independent from mere tools. Similar suggestion appears to be valid in relation to the AI, as it harvests already existing material. The possibility for the novelty, as opposed to a mere repetition, exists in smaller more precise and specific archives, and should not be generalised, as it tends to be in the current highly-commercialised environments.
Embryological House employs animation and curvilinear design to depict architecture, which is arguably intrinsically digital and would have been impossible to produce without developed software tools. Could we assert that the Endless House despite being drawn through hand sketches and physical models, contains, equally or perhaps even more sophisticated ideas than the much more recent and smoother one? Both Endless and Embryological house projects remained conceptual only and were never realised in physical form. Unlike another Lynn's project for Korean presbyterian church in New York[19] –

which, curiously, became straightened out and much more subdued formally; in stark contrast to the fluidity and seamlessness of the initial diagrams.
An interesting example is provided also by Bernard Tschumi's series of drawings based on Laban notation.[20] These drawings far surpass the functional requirements of mere instructions and become artworks in themselves. Tschumi later acknowledged that one of the seminal photographs had been skilfully cropped to exaggerate the size of the fireworks, despite the fact that in reality, the endeavour was much more modest. In the past, there was a problem with the accurate recording or visualisation of the richness of fireworks and other colourful animations. At present, however, the opposite challenge is being faced. A limited conceptual idea can now be quickly and realistically represented, whereas in the past, such images would have taken much more time and expense to produce.
In his arguments for the Digital Turns 1.0 and 2.0, Carpo tends to revert all the way back to Alberti, which seems far too general. Instead, much more genuinely connected to the true power of computational architecture, made possible complex geometries, extremely high image resolution and apparently infinite number of subtle variations. The unnecessary detail – huge range of colours and pixels impossible to be experienced by the human eye; creates waste. This unnecessary loss of energy and time, whilst might be invisible, is a waste nonetheless. An appropriate example in relation to this is Anadol's opus, through which our discussion shifts from the limitation of images - architectural drawing to the oversaturation by the visual. Definite otherness of the images with high resolution in Anadol's work animate buildings. Any discussion connected to AI – needs to address Neil Leich's assertions in his recent publication Architecture in the Age of Artificial Intelligence: An Introduction to AI for Architects. Whilst there are some compelling agreements especially in his initial approach to the study of AI, the main issue lies in producing yet again, more images without much criticality. Such visuals cannot be defined as architecture in any proper sense and should not be confused with architectural drawings; despite how powerful and rich visually it may be.

5. Conclusion

A significant research finding relates to the notions of otherness, beauty, image and imageability, which we propose is in the tension between the conceptual representation and/or its physical realisations.
A comparison of the selected case studies and their analog or digital approaches to the initial representation of the design concept shows that the strength of the concept is the most important factor. Its evaluation is suggested through the quest of the conceptual operability of the image and its suggestive experience of the built artefact/edifice through the image and its imageability, which reveals the intention and operability. Regardless of their sophistication, it is important to note that any tools must be regarded as mere tools. Without critical scrutiny, these tools perpetuate superficiality and a lack of profound reflection, failing to imbue design with substantial meaning. In conclusion, this paper calls for restraint and resistance to the seductive nature of superficial representations that lack meaningful development.
Another pertinent occurrence should be noted – despite very sophisticated technology, imagery that tends to be produced might be initially intriguing but is ultimately repetitive. Not only that, but so much energy is being wasted to produce images and videos at a resolution which is imperceptible for the human eye and then uses up even more energy for its storage.

Notes

1. Mitchell, W. J. Thomas. *Iconology: image, text, ideology.* Chicago, London: The University of Chicago, 1986.
2. See: https://refikanadol.com. Accessed December 22, 2025.
3. Ibid. 10.
4. Lynch, Kevin. *The Image of the City*. Cambridge MA: MIT Press, 1960.
5. Ibid. 43.
6. Ibid. 44.
7. See: Carpo, Mario, ed. *The Digital Turn in Architecture 1992–2012.* Chichester: John Wiley & Sons, 2013, and Carpo, Mario. The Second Digital Turn: Design Beyond Intelligence. Cambridge, MA: MIT Press, 2017.
8. Alberto Perez-Gomez puts architectural drawing and image in historical context: "The" image" was the architectural idea (from the root Iδ, to see) in the strict etymological sense, implying "look," "semblance," and "form". The "image" was also analogous in derivation and original sense to "species" (from specere, to behold), which alludes to the original perception of the apriori order of reality. Thus the architect used images to embody a transcendental, abstract (geometrical) order, in accordance with the traditional Aristotelian hierarchy of places." Perez-Gomez, Alberto. 1982. "Architecture as Drawing". *JAE*, 36, no. 2: 5.
9. Ibid.
10. cf. Perez-Gomez, Alberto, and Louise Pelletier. *Architectural Representation and the Perspective Hinge*. Cambridge,MA, London: MIT Press, 2000.
11. See Whiteley, Nigel. *Reyner Banham: Historian of the Immediate Future.* Cambridge, MA: MIT Press, 2002: 138–139.
12. Banham, Reyner. *The New Brutalism: Ethic or Aesthetic?* Stuttgart, Karl Krämer Verlag, 1966:68.
13. Ibid., 361. He compared the use of *topology* instead of *geometry* as a composition tool, in this project with the replacement of Thomistic *beauty* with Brutalist *image.*
14. See: https://www.herzogdemeuron.com/projects/201-caixaforum-madrid/lightbox/19411/. Accessed December 22, 2025.
15. See: https://glform.com/exhibits/sfmoma-embryological-house/. Accessed December 22, 2025.
16. See: https://www.oma.com/projects/kunsthal. Accessed December 22, 2025.
17. See: https://www.zaha-hadid.com/architecture/maxxi/. Accessed December 22, 2025.
18. See: https://www.kiesler.org/en/friedrich-kiesler-endless-house-2024/. Accessed December 22, 2025.
19. See: https://glform.com/buildings/korean-presbyterian-church-of-new-york/. Accessed December 22, 2025.
20. See: https://www.tschumi.com/projects/47. Accessed December 22, 2025.

Image Captions

Fig. 1. Right, Sadar+Vuga National Gallery addition, Ljubljana. Folded tubes collage and the 'cinematic structure' drawing. (https://www.sadarvuga.com). Courtesy of Sadar+Vuga. Right. NOX, H2Oexpo [Waterpavilion], Neeltje Jans Island. Hand drawing and digital representation. (https://hiddenarchitecture.net). Courtesy of Lars Spuybroek, NOX.

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Biography

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The Ideologies of Representation
Cosmopolitical Assemblages and Absolute Forms in Architectural Drawing

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Abstract

The act of drawing has never been a neutral gesture. In architecture, it constitutes a field where discourse, ideology and disciplinary identity are negotiated. This article examines two graphic logics that, while seemingly opposed, reveal the multiplicity of ways in which representation structures architecture knowledge today: the cosmopolitical and the absolute.
Cosmopolitical graphics shift attention from the object to the relations that sustain it. They integrate heterogeneous elements—ecological, social, technological—into visual assemblages that depict architecture as an open and contingent process. Absolute graphics, by contrast, reinforce form as an autonomous operation, articulating boundaries and hierarchies that project order through self-contained compositions. If the first expands the discipline by incorporating external actors, the second reaffirms its autonomy by confronting the instability of context with the inertia of form.
The study focuses on a selection of drawings and models where these logics are most clearly articulated. By grouping images according to their graphic strategies and connecting them with the discourses of their authors, the analysis reveals how representation operates simultaneously at the level of design and at that of ideology. Architecture here is understood not only as a set of material practices but as a representational regime that translates political, cultural and economic conditions into form.
What emerges is a dual movement. On one hand, the cosmopolitical and the absolute reflect different strategies of engagement with contemporary urbanization—whether through networks of actors or through formal grammars. On the other, their coexistence signals that the discipline today negotiates its position by oscillating between openness and autonomy. Representation, rather than a mirror of reality, becomes a critical instrument for producing plausible truths, articulating situated knowledges, and rehearsing alternative roles for architecture.

Key words: political, cosmopolitical, absolute, dialectic, dialogic.

"In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it."[1]
Los oficios del rigor (1946) – Jorge Luis Borges

Architectural drawing has never been a neutral act of translation from idea to form. It is a site where discourse, ideology and disciplinary self-understanding are articulated. From the perspectival systems of the Renaissance to the diagrams of modernism, modes of representation have shaped not only how buildings are conceived, but also how architecture positions itself within broader cultural, political and economic frameworks. As Robin Evans argued, drawings do not simply depict buildings; they project the terms of their possible existence[2]. They operate as instruments through which architecture positions itself in relation to politics, economy, regulation and culture. In this sense, drawing is both a representational device and a critical arena where competing visions of the discipline are negotiated.
Underlying many of these debates is a long-standing conceptual opposition between absolute and relational conceptions of space. Since antiquity, philosophical thought has oscillated between understanding space as an empty, geometric extension and conceiving it as a physical field constituted by relations. Early intuitions of this tension can already be traced in presocratic thought, and later found explicit formulation in the contrasting positions of Newton and Leibniz[3], among many others. While this discussion has traversed more than two millennia of philosophy and formal sciences, architecture occupies a singular position within it by making them coexist materially and graphically.
Moving back to the present, scholars and practitioners alike have shown how architectural representation is inseparable from broader ideological positions. Rather than treating drawings as transparent translations of spatial intent, recent debates emphasize their role as instruments that frame how architecture is imagined, situated and legitimized. In one trajectory, representation is mobilized to trace networks, relations, processes, aligning with cosmopolitical accounts that situate architecture within a heterogeneous field of actors. In another, drawing operates as a gesture of autonomy, foregrounding clear limits, boundaries and forms that assert the project's and the profession's self-sufficiency. These representational strategies, though seemingly opposed, both respond to the pressures of contemporary urbanization and the need to define architecture's role within it.
The tension between these two approaches, the cosmopolitical and the absolute, forms the context of the present article. While much of the existing production contrasts openness against closure, hybridity against autonomy, this article seeks to complicate such dichotomies by focusing on how representation itself participates in constructing these categories. Design, understood through its representational practices, becomes the space where frameworks of production are negotiated and where narratives of context are configured. In this sense, architectural drawings do not merely respond to political, cultural or ecologic conditions, they treat them as materials for contextual reinterpretation. The act of drawing thus operates at the boundary between architecture as a material practice and as a social mediator, bridging the external world with internal disciplinary languages.
The methodology adopted in this research relies on grouping images according to their graphic logic, identifying their strategy of representation. Rather than treating drawings as autonomous artifacts, the analysis connects their visual content—the way forms, boundaries or relations are depicted—with the discourses articulated by the architects who produce them.
Today, the coexistence of cosmopolitical and absolute[4] modes of representation does not signal an irreconcilable contradiction. Rather, it testifies to the ways in which architectural discourse articulates, simultaneously and pluralistically, responses to a shared historical horizon. Each drawing can be read as part of an ongoing dialectical adjustment between modes of production and the role of the architect, between social demands and spatial forms. The hypothesis of this article is that to study architectural drawing is to uncover how ideology is inscribed in representation, and how the discipline redefines its own role through representational choices.

1. The cosmopolitical graphics
The graphic logic that we refer to here as cosmopolitical represents a way of designing that shifts the focus from the building's objecthood to its relational condition. It is cosmopolitical in the sense that it introduces the cosmos into its process of production, considering it not as a totality but as a plurality[5]. In this way, an architectural project is represented as an open process, involving heterogeneous actors—both human and non-human—that can vary, reorganize, or even multiply according to internal or external factors.
Through its techniques of representation, this architecture manifests as a system of relationships that strategically produces both the project and its context. Architects and their interdisciplinary teams do not merely design a building or object; they participate in the constitution of a fragment of reality by

representing it and endowing it with agency. Within these fragments, the different components of the project become indistinguishable from other elements—various plants, water flows, soil strata, or animal species—which are incorporated dialogically into the intervention as new design elements. The complexity of this practice lies in the visual heterogeneity it integrates and the de-hierarchization it produces among the elements of the image itself, making canonical formal analysis difficult.
However, understood as a graphic assemblage, the image becomes a powerful tool to communicate, both discursively and programmatically, the procedural relationships among seemingly disparate elements. Thus, although static images are generally used, they function as dynamic media suggesting movement, interactions, and, ultimately, implicit processes in both the production and construction of the project and its subsequent occupation or use.
In the 2022 project “The Transspecies Kitchen”, The Office for Political Innovation accompanies the drawing of an open-air kitchen with images of various plants, fungi, and a human digestive system, situating the design within a broader ecological and political framework through the graphic medium (Fig. 1). Through the association of the parts that make up the image, the project—whose material operation consists in minimally intervening and assembling discarded marble fragments from the extraction industry—effectively communicates its core objective: to strategically reactivate the material value of these remnants with minimal transformation, reconfiguring relationships among bodies, communities, and territories beyond industrialized systems of production and disposal. In this way, each marble fragment is assembled with another fragment, progressively forming a natural kitchen that highlights metabolic and digestive processes present in organic life. As the authors note:

“Kitchening is less physical than ecological and political. Kitchening is the realm of collective living. It is evidence for the impossibility of individual life. As such, the ultimate form of kitchening is zymology (bacteria and fungi-based fermentation). The “Transspecies Kitchen” is an outing of digestion, as an infrastructure where the politics of life-making are intervened by post-carbon cooking”[6].

Fig. 1

In the cosmopolitical graphic logic, the image helps communicate the relationship between the designed objects and the new contextual variables taken into them, making the process and the overall vision explicit. In this way, cosmopolitical architecture uses graphic representation to expand disciplinary boundaries and create a new “parliament of things”[7], where architects, together with professionals from diverse disciplines, give “voice and vote” to actors who would normally remain silent.
Moreover, the dialogical relationships internally produced among the components of a cosmopolitical graphic are trans-scalar, continually relating actors and seeking to expand the networks in which they partake. In the “Neko House” project, for example, elii presents a family house on the outskirts of Madrid at the center of a series of orbits graphically representing the processes activated with its

construction (Fig. 2). These processes, which constitute a new fragment of reality, are essentially composed of heterogeneous processes—technical, ecological, programmatic, etc.—and it is this plurality that characterizes the project within the cosmopolitical graphic logic. According to the architects:

“The design is organised around two main strategies. On one hand, in plan view, the project is laid out in modules, following a flexible functional arrangement that can accommodate both domestic spaces and remote work. On the other hand, in section view, it is configured from two overlaying bodies that offer different ways of engaging with the surroundings and the environment. [...] The inhabitants’ participation will prove crucial to fine-tuning the ecological behaviour of the house based on daily rituals that range from raising and lowering the venetian blind to habits in recycling, composting, making efficient use of water, etc”[8].

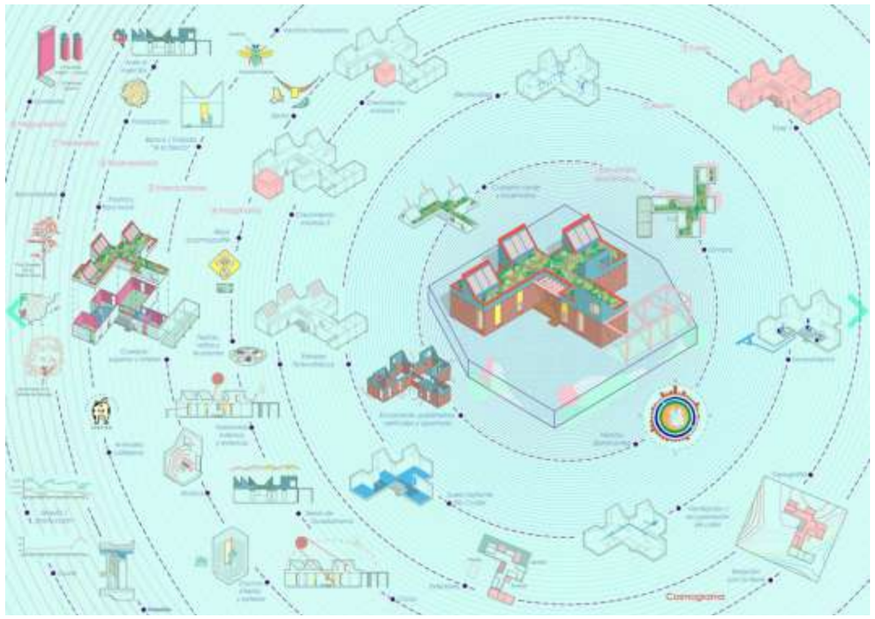

Fig. 2

In addition to representing the implicit processes activated during project development, such as territorial negotiations or ecological relationships, the image also represents explicit processes—those that can be considered architectural strategies—such as modularity structuring the space or the programmatic progression it enables. In this way, the production logic of cosmopolitical graphics relies on indeterminacy, not only due to the difficulty of precisely tracking the implicit processes it suggests, but also because the explicit processes it represents, such as modularity and progression, ensure that the project remains open to change and, therefore, to contingency from a strictly architectural perspective.[9]
The processual intent driving a cosmopolitical project, typically represented through static images, also permeates the productive logic of physical scale models. From the model, suggestive images are generated that, again, reference the processes activated by the architecture itself, processes that would be difficult to represent without the relational composition provided by the graphic, particularly when these processes operate in ecological or metabolic terms. In the “Aegean Paradise” project by amid.cero9, for instance, the model is presented as a series of transparent objects at different scales, where drops of paint expand metaphorically like a fungus colonizing another form of organic life (Fig. 1). While the fungal metaphor might seem excessive, the architects’ own descriptions emphasize the transformation, ecosystem and nature:

“It is a large communal house, an extensive public space and augmented landscape confined between curtains and veils. The white extension of silk is taken over by large clouds of flowers and vines that grow over the weird and pleasant rug of oniric fields and forests, transforming the existing ecosystem into an unfamiliar extraordinary flora and fauna. Instead of walls, privacy is achieved with the distance between them, unusually big. In this strange induced Third Nature, filled with intoxicated air of new

and unexpected forms of beauty and pleasure, a series of artificial, bizarre and excessive pieces, are intended for the other part of life, the contrar-routine, a hallucinatory and temporal compensation for the everyday life, the gray and unsatisfactory reality. These small wonders are made out of blends, shifts and unexpected combinations for hedonistic pleasures and vacation, this period of suspension of time and return to small or big pleasure and delights"[10].

In all three cases, the projects act as initial instruments of critical colonization of the existing landscape, eventually resulting in built spaces that manifest simultaneously as premeditated and spontaneous. They are premeditated because they stem from conscious decisions made by the architects and their teams—selection of relationships, hierarchy definition, and articulation of reality fragments—which define a disciplinary horizon; and spontaneous because, once materialized, the projects open to the action of multiple unforeseen actors—plants that grow unexpectedly, diverted water flows, social appropriations that transform space use—reorganizing the initial composition.
These drawings, representing architecture as a decentralized process, reflect a contemporary interest in ecology, understood as the consideration of relationships among elements within a given ecosystem. They establish a network of relationships among multiple project participants; otherwise, the ecological dimension would be immeasurable[11]. The complexity of cosmopolitical drawing exceeds its own contents: it introduces new interests into disciplinary debate and distributes social and ecological responsibility among all actors involved. Sustainability and adaptability, therefore, do not rely solely on the architect but emerge collectively, recognizing the agency of all involved elements.
Crucially, this relational understanding of the world also produces a specific relation to scale, as it is not only anchored to the dimensional coherence of the architectural object, but to the extension and density of the networks engaged. As a result, the drawing no longer stabilizes scale through proportion or typological hierarchy, but through the capacity to articulate connections, regardless of their physical magnitude. A marble fragment, a fungal culture, a metabolic process or a planetary ecosystem may coexist within the same representational field because they participate in a shared relational structure.
It is through this relational scaling that architecture is framed as a mediator within broader ecological, social and political assemblages. The project creates a continuous plane of relevance among all the elements, rendering visible the conditions under which disparate scales become temporarily commensurable through representation. In this sense, the term is more closely related to density, shifting according to the processes activated rather than the size of the architectural intervention
Finally, only through graphic representation do elements traditionally considered "non-architectural" acquire political agency. Their participation in the system of relationships established by the project should be understood primarily as a technical matter, since only through drawing techniques can these agencies be represented and gain operativity during the design stage. Nevertheless, although these drawings clearly frame the potential of the relationships they depict, they remain an architectural translation of reality, limited by the interpretation of those producing them and by graphic conventions, always leaving room for indeterminacy and contingency in the materialization of the project.

2. The absolute graphics

The graphic logic that we designate as absolute is built around confrontation. Forms are conceived as autonomous parts set in dialectical tension. Its political dimension emerges precisely from this confrontation, which highlights the individuality of each part and its distance from others. As Pier Vittorio Aureli argues, "it is in the process of separation inherent in the act of constructing the architectural form where the political in architecture resides, and with it the agonistic relationship between architecture and its context"[12]. In this mode of representation, the drawing affirms architecture's autonomy: it defines limits and produces meaning through the construction of form itself.
Whereas cosmopolitical drawings emphasize the indeterminacy of relations, the absolute drawing treats architecture as an abstract operation on space. The drawing does not explicitly register the multiplicity of actors or contexts but instead systematizes the internal organization of forms, their confrontation, hierarchy, composition. Its complexity lies not in openness toward the heterogeneous but in the rigor with which it organizes its own system.
The project "A Grammar for the City" by Dogma and Office KGDVS articulates a case of absolute drawing (Fig. 3). Conceived for 500,000 residents, the city is structured as a sequence of "rooms" contained by cruciform "city walls". The drawings reduce the city to its bare architectural aspects: walls and voids. As the authors state:

"The plan seeks to define the form of the city in a rigid manner, without lapsing into the naïve modernistic ideal of the city as a fixed, predetermined organisation of buildings. The city walls and city rooms form the 'genesis' of the city, its bare facts. In this manner they fulfil the only role that can be ascribed to architecture: providing a specific inertia against the instability of life itself"[13].

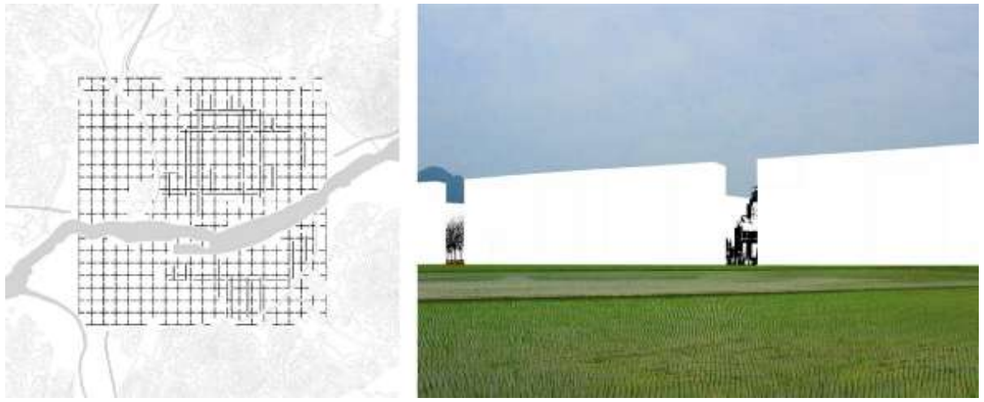

Fig. 3

The representational strategy asserts a formal grammar, a dialectical confrontation between solids and voids. The city walls impose order through their mass; the rooms are left empty, to leave space open for the contingencies of everyday life. Their very indeterminacy is circumscribed by the rigid frame of the walls. Agency is thus displaced from actors to morphology, the power to define space resides, on the one hand, in the confrontation of forms and voids, and on the other, on the separations of the disciplinary from the contingent.
This reveals the absolute condition of the drawing, that the representation addresses the formal problem of limits, defining the solid and the contingent apart from each other. Boundaries, once drawn, acquire political weight, becoming the condition of possible conflict. As Aureli has argued, separation itself is where the political in architecture resides[14]. The graphic act of demarcating the line is where the absolute ideology is evidenced, the drawing is the affirmation of a disciplinary position that separates architecture knowledge from all else.
Additionally, "A Grammar for the City" demonstrates how the absolute drawing works as a formal and autonomous operation. The project could just as well be a villa, a house or a city, the underlying grammar is the same. Its complexity lies not in responding to external heterogeneity but in sustaining an internally coherent system where the sum of architectural operations constitutes the constructed world.
The "Casa da Música" in Porto, designed by OMA, offers another manifestation of the absolute perspective, this time through the scale of the object within the city. Its geometry presents the building as a closed, self-sufficient whole, articulated in confrontation with both formal tradition and urban context (Fig. 4). As described by them:

"The past thirty years have seen frantic attempts by architects to escape the domination of the 'shoe-box' concert hall. Rather than struggle with the inescapable acoustic superiority of this traditional shape, the "Casa da Musica" attempts to reinvigorate the traditional concert hall in another way: by redefining the relationship between the hollowed interior and the general public outside"[15].

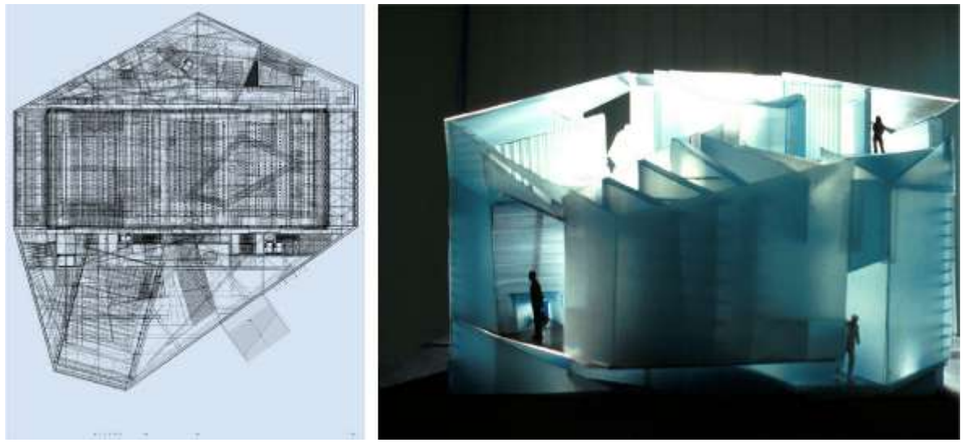

Fig. 4

Here, the absolute quality of the drawing emerges in the dialectical tension between interior and exterior. The conventional shoebox concert hall is hollowed out and encapsulated within an iconic envelope and circulation. The drawings present the building as a stable and coherent object from the outset. Its materiality and spatial organization form a totality designed to deliver a carefully curated experience. The representation is specifically centered around representing the building, consolidating it as an emblem, an architectural, cultural and institutional artifact that reinforces disciplinary autonomy. Even the gestures toward the city—openings, foyers, glazed cuts—are framed as part of the object's self-definition.
The "Appia" project by Dogma distills the absolute approach into its most minimal expression (Fig. 5). Conceived as a continuous platform, it is represented as an abstract ground, stripped of symbolism and institutional determination. As the authors describe:

"The platform became an abstract form, an ostensible artificial ground devoid of any symbolism and institutional control. Ready to enable unforeseen ways to live and move together in a collective experience. As in the rhythmic spaces of "Appia", the platform should be perceived as a landscape composed of steps, stairs and a low wall—an architecture reduced to its simplest volumetric expression"[16].

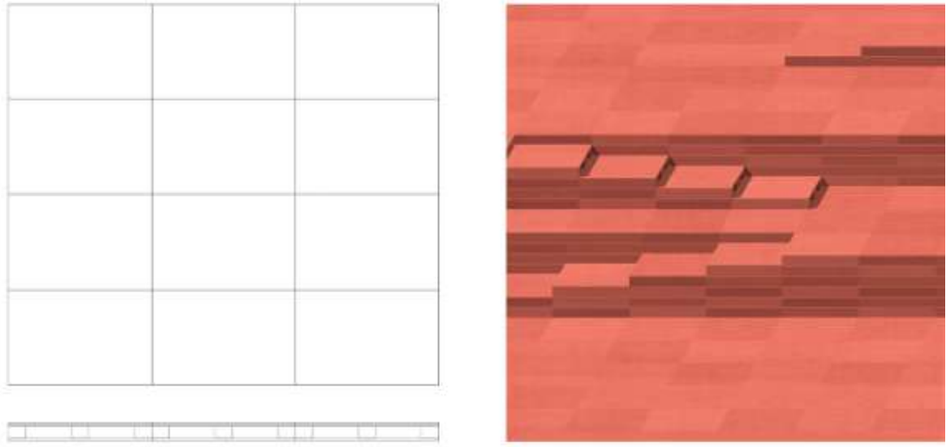

Fig. 5

Here, the drawing reduces architecture to a bare volumetric grammar: steps, stairs, low walls. The operation is absolute in the sense that it seeks autonomy through radical simplification. By eliminating ornament, programmatic specificity and representational excess, the drawing emphasizes architecture's disciplinary core: its capacity to define spatial order through the most elementary forms. The project resonates with Aureli's claim that "the construction of form is the necessary, real and effective program of architecture"[17]; form itself, not symbolic meaning or contextual negotiation, becomes the carrier of political significance.
Yet the abstraction of "Appia" does not render it inert. Paradoxically, although it is withdrawn into formal reduction, the project creates a platform for collective experience. The drawing does not script specific activities but establishes a spatial field where movement and inhabitation can occur in unforeseen ways. This tension between determinacy and openness is characteristic of the absolute perspective: the autonomy of form asserts itself, but in doing so, it also frames a space where contingency unfolds.
Representationally, "Appia" exemplifies the dialectical nature of the absolute drawing. The confrontation here is not between object and context ("A Grammar for the City"), or between interior and exterior ("Casa da Musica"), but between the extreme abstraction of form and the indeterminacy of its possible uses. The drawing isolates architecture from symbolic and institutional overlays, presenting it as an autonomous ground, while simultaneously acknowledging that this autonomy can host heterogeneous practices. The political condition of the project resides not in representing actors or networks, but in demonstrating how separation—between architecture and non-architecture, between form and meaning—creates the possibility of collective life.
What unites these three cases is not a shared aesthetic but an organizational logic: one that attributes agency to form itself rather than to the "cosmos". The absolute drawing thus presents a political condition opposed to that of the cosmopolitical drawing. First, the relationships it establishes are between parts not actors. In this sense, relevance is attributed solely to the form of space, that is, to the morphological operations that constitute the object. Second, the project is represented as autonomous, by separating it graphically from the surroundings or even omitting the context. The drawing becomes both a technical and ideological act, categorizing the field of architecture and differentiating it from other practices. In this framework, the house and the city, the concert hall and the villa, are all variations of the same operation. Absolute representation thus reasserts the disciplinary core of architecture while simultaneously revealing how form constitutes a particular vision of society: one where architecture projects order through their own language, even as that order is reinterpreted and inhabited in multiple ways.

3. Conclusions

Both forms of graphic representation respond to a relational logic that operates simultaneously at both the discursive and the design levels. However, while the cosmopolitical graphic logic establishes dialogical relations, the absolute establishes dialectical ones. Graphic representation, in this way, is clearly conceived as a medium of ideological transmission, employed differently to attribute specific political connotations to architecture. In both cases, drawing is revealed as more than a neutral technical tool, it is an ideological medium that articulates positions about what architecture is, and what it ought to do.
Each logic also produces a distinctive relation to scale. Cosmopolitical representation operates through trans-scalar networks, linking the smallest material fragments to planetary ecologies. Absolute representation, conversely, develops trans-scalar languages of form, where the same geometric operations can generate a room, a building or an entire city. As Marshall McLuhan observed, "the message of any medium or technology is the change of scale, pace, or pattern that it introduces into human affairs"[18]. In both graphic logics, this shift of scope is precisely where ideology becomes operative, from the network that becomes all-inclusive or from the interior that becomes expansive.
Nevertheless, while absolute representation may initially appear leaning towards the formal and the abstract, its insistence on containing the drawing within the limits of disciplinary techniques and its refusal to speculate about actors or processes beyond the field, can be understood as a form of grounding the project, because it confines itself to what architecture can effectively operate upon: form, boundary, separation and internal organization. Conversely, cosmopolitical representation, which often presents itself as more holistic due to its attribution of agency to a multiplicity of actors, operates through a speculative expansion of the drawing's representational capacities. In attempting to visualize ecological, social and metabolic processes that exceed direct verification, it necessarily relies on conjectural associations and inferred relations that cannot be fully traced, measured or stabilized through the drawing alone.
Despite these apparent contradictions, what ultimately binds the two modes of representation is a tactical awareness of contemporary times. Both operate as interpretive frameworks that transform indeterminacy, discontinuity and ambiguity into platforms for critique and experimentation. Their disruptive potential lies not in providing objective truths but in producing plausible ones, situated knowledges that allow architecture to reframe its role in society. As Kersten Geers describes it, "a model is a rebuilt version of a reality, a transformed reality, but a new one nevertheless. As such, it does not require the thing to which it refers. It can exist perfectly and perform on its own"[19]. In this sense, architectural drawings, as much as constructed buildings, do not merely mirror the world but fabricate it anew.

Notes

1. Jorge Luis Borges, *El hacedor* (Buenos Aires: Editorial Losada, 1961).
2. Robin Evans, “Translations from Drawings to Building,” in *Translations from Drawings to Building and Other Essays* (Cambridge: MIT Press, 1997), 165–193.
3. fgbuenotv. “Salvador Centeno Prieto – La Idea de Espacio en Demócrito.” Lecture video, YouTube, May 4, 2015. https://www.youtube.com/watch?v=Fq7jxc3t7PI
4. In *The Possibility of an Absolute Architecture* (2019), Pier Vittorio Aureli understands the “absolute” not as a closed totality or formal perfection, but as a critical position towards contemporary urbanism. The “absolute” designates the autonomy of the architectural project, its capacity to assert itself as a delimited and self-sufficient form in the face of the external forces of the capitalist city. See: Pier Vittorio Aureli, *The Possibility of an Absolute Architecture* (Madrid: Puente Editores, 2019), 7.
5. Cosmopolitics is a proposal developed by Isabelle Stengers in dialogue with various authors, among whom stand out Ilya Prigogine, in the field of science and thermodynamics; Bruno Latour, with his notion of the “parliament of things”; and Donna Haraway, through her critique of anthropocentrism and defense of plural worlds. See: Isabelle Stengers, “The Cosmopolitical Proposal,” in *Making Things Public: Atmospheres of Democracy*, ed. Bruno Latour and Peter Weibel (Cambridge, MA: MIT Press, 2005), 994–1003.
6. “The Transspecies Kitchen – An Antwerp(h)agia,” Office for Political Innovation, accessed September 11, 2025, https://officeforpoliticalinnovation.com/work/the-transspecies-kitchen-an-antwerphagia/.
7. Bruno Latour, *Políticas de la naturaleza*, trans. Enric Puig (Barcelona: Arpa Editores, 2024), 45.
8. “Neko – An Urban Pet House,” elii [architecture office], accessed September 8, 2025, https://elii.es/en/portfolio/neko-eng/.
9. Isabelle Stengers articulated her cosmopolitical proposal based on the scientific and philosophical developments of her time, particularly in collaboration with Ilya Prigogine, whose theory of dissipative structures introduced the notion of contingency in physical and chemical systems. This perspective profoundly challenged the traditional determinism of science and opened a conceptual framework that allowed for thinking about plurality and unpredictability in processes of reality organization. See: Ilya Prigogine and Isabelle Stengers, *La Nouvelle Alliance. Métamorphose de la science* (Paris: Gallimard, 1979); Spanish trans.: *La nueva alianza: Metamorfosis de la ciencia* (Madrid: Alianza Editorial, 1983).
10. “Aegean Paradise – Tourist Accommodation in a Garden,” Cero9, accessed September 11, 2025, https://www.cero9.com/project/aegean-paradise-turist-accomodation-in-a-garden/.
11. As Timothy Morton points out, concepts such as ecology exceed the anthropic scale, making it necessary to analyze their components in order to fully understand them. See: Timothy Morton, *Reciclar la ecología: Pensar el mundo tras el fin de la naturaleza*, trans. Juan Bosco García Rodríguez (Barcelona: Reservoir Books, 2021).
12. Pier Vittorio Aureli, *The Possibility of an Absolute Architecture* (Madrid: Puente Editores, 2019), 7.
13. “A Grammar for the City,” Office KGDVS and Dogma, accessed September 15, 2025, https://officekgdvs.com/projects/19.
14. Pier Vittorio Aureli, *The Possibility of an Absolute Architecture* (Madrid: Puente Editores, 2019), 15.
15. “Casa da Música,” OMA, accessed September 15, 2025, https://www.oma.com/projects/casa-da-musica/.
16. “Appia,” DOGMA, accessed September 15, 2025, https://www.dogma.name/project/appia/.
17. Pier Vittorio Aureli, *The Possibility of an Absolute Architecture* (Madrid: Puente Editores, 2019), 13.
18. Marshall McLuhan, *Understanding Media: The Extensions of Man*, trans. Patrick Ducher (Barcelona: Paidós Ibérica, 1996), 30.
19. Kersten Geers, “Model Architecture,” *San Rocco* no. 0 (Summer 2010), 68.

Image Captions

Fig. 1. Upper left: Office for Political Innovation, “The Transspecies Kitchen,” Antwerp, 2022. Image of the fungi kingdom, used to represent the metabolic character of their operation. Upper right: amid.cero9, “Aegean Paradise: Tourist Accommodation in a Garden,” Symi Island, 2014. The model is presented as a metabolic space progressively colonized. Below: “Transspecies Kitchen” by Office for Political Innovation, depicted amid plants and a human digestive system, referring to the metabolic processes characteristic of organic life.
Fig. 2. elii, “Neko House,” Madrid, 2024. The drawing presents a constellation of heterogeneous actors and processes orbiting around the figure of the house.
Fig. 3. Office KGDVS and Dogma, “A Grammar for the City,” Daejeon, 2005. Plan and image.
Fig. 4. Left: Domus d’Autore, *Post-Occupancy*, 2006. Center: OMA, *Anatomy of a Rock*, “Casa da Música,” CAD-scan. Right: OMA, “Y2K House,” 1998.
Fig. 5. Dogma, “Appia,” 2025. Representation of the module and collage of the aggregation of units.

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Biography

Juan José David is an architect currently pursuing a PhD in Advanced Architectural Projects at ETSAM. In 2019, he obtained a Master’s degree in Collective Housing from ETSAM and ETH Zurich, and in 2023, a Master’s degree in Advanced Architectural Projects from ETSAM. His research interests focus on the involvement of media and information systems in urban space.

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Drawing as a Design and Research Tool from Energy and Environmental Perspectives

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Abstract

As John Berger observed, our ways of seeing shape how we interpret reality. The lens through which we look—depending on the concerns to which we attend—transforms our perception of specific issues. In this sense, the growing environmental concerns derived from global awareness of the devastating consequences of climate change have recently come to occupy a central place in architectural discourse, situating environmental questions in their full scope—from the thermodynamic to the heritage-related—at the very core of the debate.
From this perspective, thermodynamics and environmental interests reveal that buildings are in permanent transformation through their energetic and material exchanges with the environment, in contrast to the traditional vision that architecture is materially organized around gravity as a fixed and constant variable. This article reflects on the graphic tools available to architects to conceive, represent, and communicate these energetic flows, understanding drawing both as a design instrument and as a means of critical research. It builds on the work of authors such as Philippe Rahm, Silvia Benedito, and Ábalos+Sentkiewicz, among others, who have developed distinctive graphic languages to address these issues.
A comparative analysis of representational strategies highlights the central role of the section—and, to a lesser extent, axonometric drawings—as fundamental tools for both analysis and design. These are the graphic documents in which energetic and immaterial interactions within buildings can most effectively be identified. Their use opens new ways of understanding both the past and the future of the discipline, allowing us to reinterpret existing architectures as well as to design new works from environmental perspectives. Whether applied to new projects or to interventions on built heritage, these tools position architecture as a mediating device between space, climate, and body. Sections and axonometric drawings, from an environmentally engaged perspective, thus emerge as dynamic and essential instruments for rethinking architecture today.

Key words: energy, environment, heritage, section, thermodynamics.

1. An Approach to the Discipline Engaged with the Energy and Environmental Concerns of Our Time

As John Berger noted in the BBC program *Ways of Seeing*[1], our ways of seeing shape how we interpret reality. The lens through which we observe—attentive to certain concerns over others—transforms our perception of specific issues. If we understand architecture as a living discipline attuned to the challenges of its time, it must be capable of playing a significant role in the current climate crisis, placing environmental concerns in their full scope at the very center of the debate.
The responses to these concerns within the discipline are multiple and diverse, depending on epistemological and scientific frameworks that assign different values to the roles of thermodynamics, energy, or the environment in the architectural landscape. To understand them, it is particularly useful to introduce the concept of entropy[2], inherent to the second law of thermodynamics. As Luis Fernández-Galiano points out, entropy reveals the profound link between the visible and the invisible, between the degradation of energy and the degradation of matter, thereby directing attention both to the energy consumption of a building throughout its life cycle and to the energetic cost of constructing—or repairing—the building itself[3]. This approach promotes an understanding of architectural projects in relation to the flows of energy and matter that traverse them.
In contrast to the more classical and deeply rooted vision that sees architecture as materially organized around gravity—a fixed and constant variable—this thermodynamic and environmental perspective reveals that a building is in continuous transformation through its energetic and material exchanges with the environment, which itself—from geosphere to atmosphere—is also in constant flux. Put differently, buildings, when understood through the notion of entropy as spatial and material organisms forming open thermodynamic systems, are subject to constant bidirectional energy flows with the surrounding geosphere and atmosphere.
On this basis, Eric D. Schneider and James J. Kay identify three alternatives available to a system for surviving in a changing environment[4]. First, the system may attempt to control its environment—something impossible in the case of buildings. Second, the system may insulate itself from that changing environment, a strategy widely adopted by modern architecture through the general use of insulation, air conditioning, and artificial climate control—an approach that continues to dominate much of architectural practice today.
Third, Schneider and Kay argue, the system may adapt to a changing environment through three operations: altering the behavior and role of its elements, changing the elements themselves, or modifying the interconnections among them. This threefold adaptive path defines a new qualitative energy model for architecture grounded in mutability and adaptability, as inferred from the work of leading authors such as Kiel Moe[5] or Ábalos + Sentkiewicz and their notion of 'thermodynamic materialism'[6]. As Moe observes, "buildings as a whole may appear static, but only from a short and anthropocentric perspective." By contrast, "buildings must be understood as having variable velocities of matter and energy (...). As Lotka has argued in relation to natural selection, the rates of energy and matter are fundamental in defining the energy paradigm of our time"[7].
The key to engaging with these changing flows of energy and matter, as Moe explains, lies in defining the architectural qualities of buildings—material, space (dimension, form, sequence), ventilation regimes, program, and so on—in order to modulate the spontaneous flow of energy between any building and its exterior environment. The challenge, then, is to discern where flows should be accelerated, slowed, or stopped, acknowledging that some energy transfers occur over short time spans (solar radiation, thermal conductivity, thermal diffusivity, etc.), while others unfold over longer periods (the storage of energy in matter, maximum entropy production, exergy consumption[8], the residence time of energy flows within a system and their subsequent adaptive feedback, etc.), as Moe describes in detail[9]. To address only one of these parameters is insufficient for grasping the real complexity of the system, as it neglects the simultaneous forms of energy dissipation that occur between the built form and its environment.
It is important to note that this complexity of adaptation and energy dissipation should not be confused with technical or formal complexity. Complexity is a measure of the adaptive energetic feedback capacity of a system, which may arise in forms that are either intricate or simple. Thermodynamic complexity, at the formal level, can manifest pragmatically through very basic geometries, without implying poorer performance than more elaborate forms (or vice versa).
In either case—whether in its most intricate or simplest form—thermodynamic complexity, or what Kiel Moe calls 'thermodynamic depth', is defined by the diversity of energy exchanges considered: both between short- and long-response energy transfers, and across the smallest and largest spatial scales of the system.

2. Drawing as a Design Tool and Instrument of Architectural Research from Energy and Environmental Perspectives

Building on the discussion above, it becomes pertinent to ask what graphic tools architects have at their disposal to design, represent, and communicate the energetic and material flows between the

external environment and architecture. Drawing can be understood both as a tool for projecting and envisioning future designs, and as an instrument for the research and analysis of past works—or even as a hybrid practice that combines both, serving as a means of intervention in built heritage and the existing urban fabric.
This article seeks to address that question by examining the representational methods employed by various authors who, in one way or another, have placed these concerns at the center of their agenda. The aim is to reveal different approaches and sensibilities in the representation of energy and environment, while also identifying within these processes certain shared qualities or recurring aspects that may contribute to advancing the discipline in this field.

2.1. Early Approaches to Energy Flow Management through Drawing in the Nineteenth Century

The work of several pioneering nineteenth-century authors deserves attention at the outset. Although their interests were not shaped by environmental concerns as we understand them today, they were deeply influenced by the hygienist movement, as Eduardo Prieto examines in detail in his *Historia Medioambiental de la Arquitectura*[10].
In an effort to combat the unhealthy conditions of overcrowded housing in many industrial cities, two fundamental currents emerged within hygienism. While they shared the common goal of improving health, they pursued it from entirely opposite standpoints.
On one side were those who advocated opening buildings to air and sunlight, such as Elizabeth McCormick with her 'Open Air Schools', or naturopaths like Arnold Rikli, the Central European bourgeoisie's celebrated guru and father of modern heliotherapy. Rikli argued that of all natural remedies, sunlight was the most effective, turning solar exposure into a form of curative therapy[11].
On the other side stood those who championed the artificial control of interior climates, made possible by a newfound faith in emerging technologies of heating, ventilation, and climate control. This approach generated an extensive body of publications on what came to be known as '*heating and ventilation'* technologies, especially prolific in the United States, and to a lesser extent in Britain and France.
Jean-Baptiste de Chabannes can be considered one of the great pioneers of this field. In his 1818 treatise, he described central heating and forced ventilation systems—the term itself coined by him—that he had applied in projects such as the Covent Garden Theatre and the Lloyd's headquarters[12]. His work was followed by many others: Charles Sylvester's *The Philosophy of Domestic Economy* (1819), Thomas Tredgold's *Principles of Warming and Ventilation* (1825), George H. Hawthorne's 1830 handbook on ventilation in public buildings, and the physician-engineer David Boswell Reid's *Illustrations of the Theory and Practice of Ventilation, with Remarks on Warming, Exclusive Lighting, and the Communication of Sound*. While these studies initially focused on public buildings, as the nineteenth century advanced their scope broadened to include bourgeois housing as well as social housing.
All these works promoted—and progressively refined—the application of forced-air renewal as an efficient mechanism to counter the feared contagion of miasmas. Their drawings and analyses, often presented through sectional representations, made visible the operation of air currents and flows within buildings. The publications of this period reveal how these authors—without digital tools and relying primarily on experience, intuition, and a nascent scientific knowledge—were nonetheless able to produce visual treatises of remarkable technical precision and rigor in quantifying and describing environmental phenomena.

2.2. Alternative Paths within Modernity: Energy Concerns during the Twentieth Century

This second branch of hygienism clearly prevailed in the development of twentieth-century architectural modernity, characterized by the absolute and artificial control of interior climates through all available technological means of the time—air-conditioning systems, improved insulation, and the airtightness of buildings. In contrast with the traditional architectural paradigm of heterothermic spaces, the modern ideal was that of homothermic interiors: uniformly heated throughout by central heating systems and insulated envelopes, while ventilation and humidity were relegated to artificial systems. The continuous refinement of technology and the growing sophistication of mechanical systems meant that the didactic and innovative graphic documents produced by earlier authors gradually faded into oblivion, giving way instead to a merely technical and quantitative form of documentation concerned with environmental control.
Yet, as so often in history, alongside the dominant current there emerged alternative trajectories that embraced different interests. Modernity, as an architectural period, thus contained within it more than the sealed, hermetic, and technocratic paradigm that became hegemonic. Already in the 1930s and 1940s, a slow but steady concern with energy, as well as with the novel notion of comfort—born in the wake of hygienist theories and the advent of *heating and ventilation* systems—began to take shape. These alternative approaches displayed an acute sensitivity to climate and local contexts, advocating strategies that were more attentive and respectful toward the environment.

In this regard, the pioneering theoretical work of Patrick Geddes and his disciple Lewis Mumford should be acknowledged, as both reflected on the link between energy and social systems[13], even if their graphic contributions were limited. More directly relevant was the work of Rudolf Geiger, *The Climate Near the Ground*, which revealed a profound interest in the physiological responses of the human body to the environmental conditions of buildings, to construction materials, and to systems of heating and cooling. His drawings clearly anticipate the centrality of the human body as a reference in this emerging line of inquiry.
Equally important were the contributions of Sibyl Moholy-Nagy (*Native Genius in Anonymous Architecture*, 1957) and Bernard Rudofsky with his celebrated MoMA exhibition (*Architecture without Architects*, 1964), alongside a wide and heterogeneous group of authors who reclaimed attention to context, history, climate, and materiality in opposition to the hegemony of the International Style. This movement would later be theorized by Kenneth Frampton as *Critical Regionalism*[14]. No less significant was the shift in interest also evident in the work of established architects such as Le Corbusier.
In relation to these latter observations, it is worth highlighting the environmental intent of the housing projects designed by the Egyptian architect Hassan Fathy. By employing the section as an analytical document, it becomes clear how wind is captured and channeled through wind towers and directed into interior spaces, thus harnessing the natural force of airflow to cool domestic environments (Fig.1). Likewise, the sectional drawings of Le Corbusier's housing project for the workers of Chandigarh (1951) are of particular interest; they incorporate multiple bioclimatic strategies explicitly represented in the drawings, together with the use of what he termed the "climatic grid" as a design tool. Through the sectional analysis of both projects, one can learn intelligent and effective ways of directing wind flows and of protecting buildings from solar radiation, with both cases underscoring the importance of selecting favorable orientations as a key design premise.

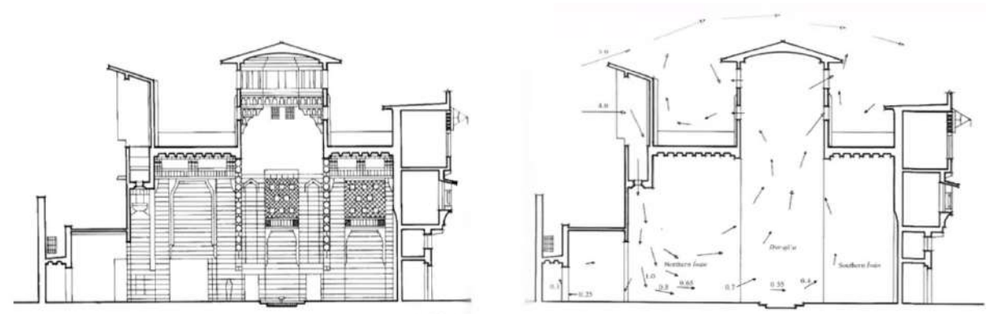

Fig.1

A special mention must be given to the contribution of brothers Victor and Aladar Olgyay during the 1960s and 1970s. Their research synthesized earlier concerns about energy and comfort, shaping what came to be known as *bioclimatism*. With refined sensitivity, they systematically examined the interaction between human beings, architecture, and climate, producing numerous graphic documents in which, as with Geiger, the human body plays a central role. Their work culminated in the influential book *Design with Climate: Bioclimatic Approach to Architectural Regionalism* (1962)—published two years before Rudofsky's MoMA exhibition. As Olgyay himself explained, his aim was "to build bridges between disciplines by combining creative aspects with analytical ones in a unifying architectural concept"[15]. For some, the ultimate purpose of Olgyay's work was "to demonstrate the influence of climate on construction criteria and to propose a unified design method based on a new architectural principle capable of combining traditional solutions with modern technologies"[16].
The ideas and rigorous methods developed by the Olgyays found continuity in related manuals, most notably Baruch Givoni's *Climate, Man and Architecture*, which emphasized achieving thermal comfort in architecture through bioclimatic strategies. These were defined by the relationship between a set of fixed parameters—such as human physiology and standard comfort thresholds—and a series of variable hygrothermal conditions dependent on climate, location, and season. Such ideas were expressed through numerous drawings and diagrams, including the well-known 'Givoni chart'[17].
In Spain, the work of Francisco Javier Sáenz de Oiza and his *Apuntes de salubridad e higiene* (1958)[18] —to which Eduardo Mangada also contributed—deserves mention. Pioneering within the context of an isolated and autarkic Spain, Oiza's teaching departed from the conventional focus on designing and calculating mechanical systems, placing instead great importance on air, ventilation, sunlight, hygiene, and comfort. His rigorous and technical approach was illustrated with abundant drawings and diagrams, establishing clear parallels with the work of Geiger, Olgyay, and Givoni.

Almost simultaneously to all those authors, though from a distinctly quantitative approach closer to the postulates of artificial-climate utopias, it is also important to acknowledge the influence of Reyner Banham's work, with some iconic drawings such as *The Environmental Bubble*[19] and key writings for understanding the development of interest in energy during the twentieth century—most notably *The Architecture of the Well-Tempered Environment* (1969)[20].

The graphic documents accompanying these works reveals the increasingly prominent role of the human body, understood in terms of its energetic exchanges with the immediate environment. Architecture was thus conceived as a mediating device capable of regulating such exchanges. Whereas the nineteenth-century pioneers had focused primarily on artificial systems of heating and ventilation, these twentieth-century approaches—often through sectional drawings at multiple scales—demonstrated how passive architectural means (spatial form, material choices, solar protection devices, natural ventilation regimes, etc.) could operate as effective tools for environmental and bioclimatic control.

Ultimately, retracing architectural modernity through these alternative paths—closer to vernacular architecture, climate, and the timeless qualities of history—proves to be a stimulating and even liberating endeavor, one that helps to cut through the formal, stylistic, and environmental constraints imposed by the paradigm of the International Style.

2.3. The Rise of Environmental Concerns in the Twenty-First Century and Contemporary Approaches to Representing Energy Flows in Architecture

Whereas during the nineteenth and twentieth centuries environmental and energy-related issues remained secondary for much of the discipline—except in specific moments of crisis, such as the oil shocks of the 1970s and 1980s—the accelerating climate emergency and global warming, with their devastating consequences, have placed environmental concerns at the very center of the debate in the twenty-first century.

Architecture, as suggested at the outset, has not remained indifferent to these questions, incorporating energy and environmental considerations into its agenda. In this sense, it is particularly relevant to review the work of several contemporary authors who have developed significant theoretical and practical approaches to these issues, illustrating in different ways how energy and environmental variables can be integrated both into the design of new projects and into the rereading or reinterpretation of past architectures.

For its pioneering character, Luis Fernández-Galiano's *El fuego y la memoria* (1991) deserves mention. Although the book does not include drawings that explicitly represent energy flows, the graphic dimension of its more than two hundred images is remarkable. Many of these, drawn from classical treatises or contemporary scientific works, succeed in evoking and reinforcing the theoretical arguments of a book that decisively brought questions of thermodynamics, biology, and ecology into architectural debate. At its core lies the thesis, already recalled at the beginning of this article, that buildings and the atmosphere constitute an open thermodynamic system, constantly exchanging energy and matter with the external environment.

Following Fernández-Galiano's lead, Eduardo Prieto has produced an exhaustive and innovative environmental rereading of architectural history in his *Historia medioambiental de la arquitectura*, as well as in other works such as *Los laberintos del aire*[21]. Taken together, these writings offer a complex and fascinating narrative of architecture's relationship with nature and the environment through the life of matter and the exchanges of energy—light, wind, air—that permeate it, thus providing fresh interpretations of past architectures. Graphically, beyond the evocative use of images from classical treatises and artworks—similar to Fernández-Galiano—Prieto's work also assembles a rich collection of drawings of diverse origins that help us understand how a wide range of historical architectures operated energetically and environmentally.

Along similar lines to Prieto, in terms of revisiting the history of architecture through the lens of energy and environmental concerns—though with a particular focus on the period of modernity—the work of the previously mentioned Kiel Moe deserves special attention. Moe goes a step further by articulating new approaches to energy management in contemporary architecture, such as his *Massivhaus Paradigm*, in which he argues for the relevance of mass, mono-materiality, and the use of natural ventilation as alternatives to the sealed, hermetic, and artificially controlled paradigm that characterized modern architecture[22]. To convey these and other ideas, Moe presents an effective and pragmatic set of drawings ranging from energy simulation outputs to conceptual diagrams that help to intuitively explain the energetic exchanges occurring between massive building elements and the voids through which air flows circulate. Along similar lines, the work of Professor Salmaan Craig—who has collaborated with Moe on several research projects—should also be noted. Taken together, the graphic documents produced by these authors reveal a close relationship between thermal inertia and ventilation as environmental design tools, particularly within temperate climate contexts.

In a more speculative but also built-oriented line of work, Iñaki Ábalos and Renata Sentkiewicz have developed one of the most ambitious and comprehensive theoretical-practical proposals in relation to energy in architecture: their '*thermodynamic materialism*'[23]. Their homonymous essay, together with many others, is collected in *Essays on Thermodynamics, Architecture and Beauty*. The volume articulates their proposal in a polyhedral, multi-scalar way, alternating diagrams and conceptual schemes with drawings of their own built works. With a wide range of graphic resources—from diagrams centered on the human body to sectional or axonometric drawings of airflow combined with solar paths and other variables (Fig.2)—the book unfolds from theoretical concepts of energy transmission to the thermodynamic behavior of their buildings.

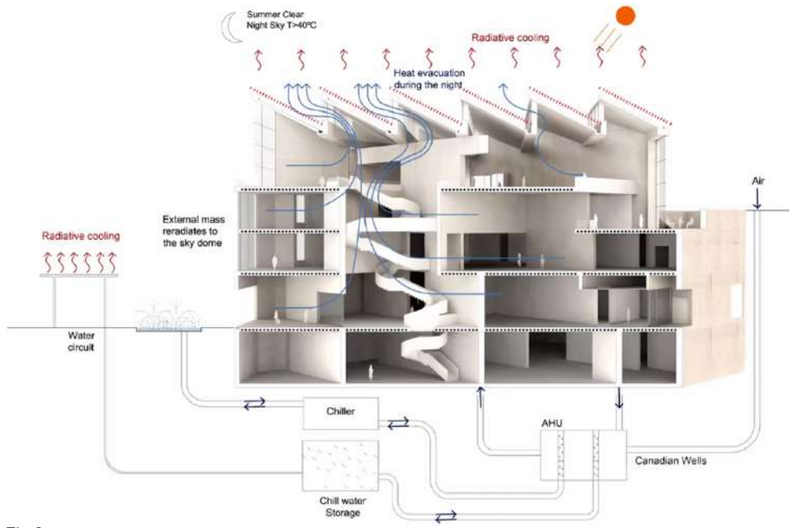

Fig.2

Along lines analogous to those of Ábalos, the work of Javier García-Germán is also worth highlighting. Of particular graphic interest is his series of analyses on the thermodynamic behavior of different climatic types understood as recurring spatial practices within the architectural tradition. His research encompasses a range of traditional typologies—such as the Sevillian courtyard house, the cave dwellings of Paterna, the Galician glazed galleries, or the *casa montañesa*—which he systematically and rigorously dissects through axonometric drawings, plans, and sections. These graphic documents effectively reveal the various variables involved in regulating the thermodynamic performance of these vernacular archetypes, including heat sources and sinks represented through an intuitive color code, airflow patterns, and the human body understood as an additional element engaged in heat exchange (Fig.3). Together, they convey the thermodynamic behavior of these architectures with great clarity. This distinctive graphic language has likewise been transferred to García-Germán's professional practice.

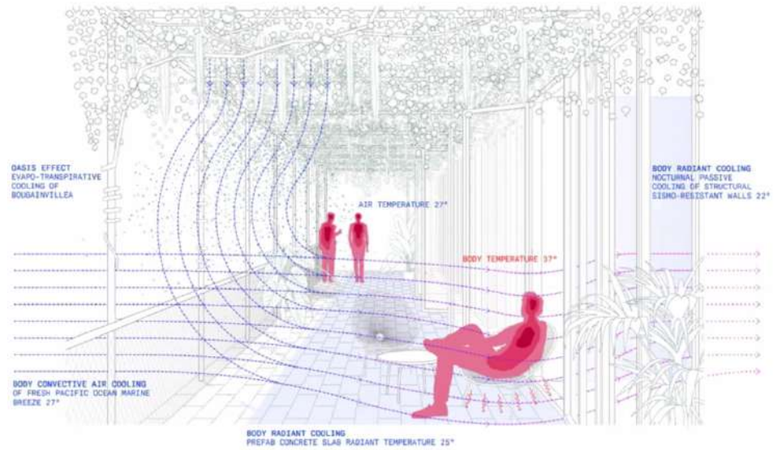

Fig.3

Another author who has developed a highly distinctive graphic language around the management of energy is the Swiss architect Philippe Rahm. For him, architecture must be able to soften, mitigate, intensify, or otherwise regulate natural climate, rendering it inhabitable. His monograph *Climatic Architecture*[24] reads as a manifesto for a climate-conscious architecture able to confront the challenges of climate change, functioning as a theoretical-practical treatise on the art of constructing atmospheres. The book is structured through a consistent graphic language—particularly evident in its opening chapters—with more than four hundred illustrations ranging from diagrams, tables, and data to figurative and intuitive drawings, including his now-characteristic thermodynamic sections (Fig.4). The systematic use of a unified color code across all illustrations helps establish relationships between the diverse concepts presented. In this way, the book can itself be read as a research project on architectural drawing, proposing a personal yet methodical visual language capable of expressing invisible variables—temperature, radiation or evaporation —so often resistant to representation.

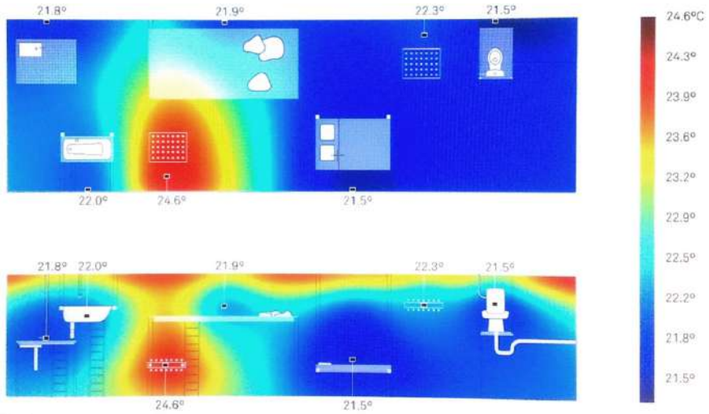

Fig.4

Equally distinctive is Silvia Benedito's *Atmosphere Anatomies: On Design, Weather, and Sensation*[25]. From an interdisciplinary and cross-scalar perspective—ranging from Renaissance gardens (Fig.5) to works of "the other modernity," such as Lina Bo Bardi's SESC Pompeia or Carlos Raúl Villanueva's Universidad Central de Venezuela—Benedito employs delicate and evocative pastel-toned axonometric drawings to show how weather conditions—light, wind, temperature, humidity—shape spatial experience. Her proposal, which at times recalls Lisa Heschong's poetic *Thermal Delight in Architecture*[26], transcends a technical vision of climate control to assert the cultural, bodily, and aesthetic dimensions of inhabitation, conceiving atmosphere as an architectural material capable of generating both comfort and emotion.

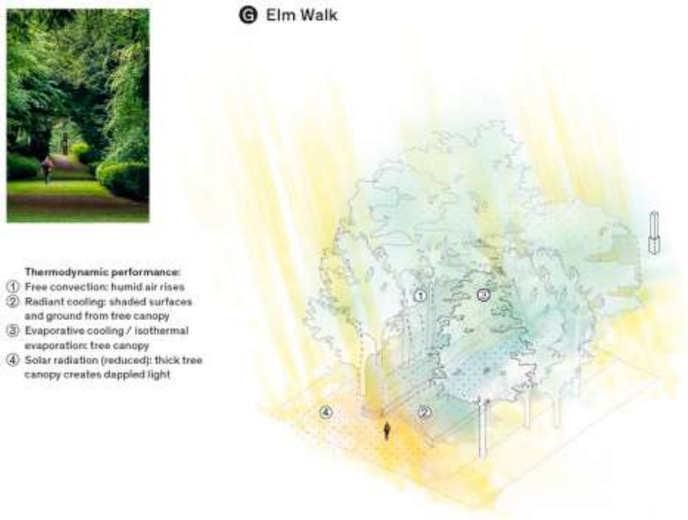

Fig.5

What distinguishes all these authors is their ability to convey energy exchanges didactically through drawing—whether by developing personal graphic languages or through the meticulous study and compilation of historical documentary sources—always combining graphic exploration with expansive theoretical reflection.

At the same time, it should be emphasized that energy and environmental issues have now taken on such prominence in contemporary architecture that they also permeate the graphic work of many practitioners who, without articulating theoretical approaches as comprehensive as those cited above, nonetheless integrate environmental and energy variables into their professional projects. Among the many possible examples, one might highlight the sectional drawings of practices such as H Arquitectes, datAE, Peris+Toral, or Baumschlager Eberle, which illustrate the thermodynamic performance of their works. Increasingly, built projects also incorporate diagrams or axonometric drawings that represent not only energy exchanges with the environment but also material flows, referencing the global ecological footprint of the project—as in the proposal for the Spanish Pavilion at the latest Venice Biennale ('Internalities'), or in the works of Andrés Jaque or Lydia Kallipoliti, among others.

Finally, the role of specialists in energy simulation must be acknowledged, as for example Societat Orgànica. Their complex modeling tools, although not always as communicative or didactic, are essential for refining architects' intuitions and hypotheses with quantitative rigor. These graphic outputs should be understood as complementary to the other approaches discussed: just as structural design requires precise calculation and modeling, so too should energy and environmental design be supported by such exacting simulation processes.

3. Sections and Axonometric Drawings as Fundamental Instruments for Energy and Environmental Concerns in Contemporary Architecture

The drawings discussed above succeed in illustrating, with varying degrees of clarity, complex environmental situations and diverse forms of energy exchange. A comparative analysis of these works reveals the predominance of certain types of graphic documents when incorporating environmental and energy parameters into architecture.

First and foremost, the section emerges as the protagonist across all the cases reviewed. It proves to be a fundamental instrument, since it is the drawing in which the intangible energetic interactions within a building can most effectively be identified. Many of these involve the upward movement of air currents or the incidence of solar rays on a building—phenomena that would be far more difficult to represent in plan.

Equally significant is the usefulness of axonometric drawings as working documents. While they do not occupy the same central role as sections in the works presented, they provide valuable thermodynamic insights by virtue of their three-dimensionality. Moreover, their proximity to perceptual reality often endows them with a poetic or evocative quality, as is evident in the axonometric drawings of Philippe Rahm or Silvia Benedito.

Although not a type of drawing in itself, the recurring presence of the human body across much of the documentation reviewed should also be emphasized. After all, human beings actively participate in the thermodynamic exchanges of architecture—releasing and storing heat, sensing breezes, and so forth. Accordingly, the body appears as a reference across virtually all scales and drawing types, and in some cases entire series of diagrams focus explicitly on the body and its energetic processes (from Geiger to the Olgyays, Ábalos, Moe, and others).

It can therefore be concluded that, despite the diversity of languages and sensibilities displayed, these graphic tools collectively succeed in revealing the interactions between space, climate, and body, offering a reading that is simultaneously scientific and sensitive. Their graphic precision transforms the intangible—airflows, thermal gradients, heat exchanges, light densities—into visual structures, opening a dual pathway for understanding and designing architecture as a mediating device between the physical and the atmospheric.

This duality lies, on the one hand, in their capacity to (re)read the past, as suggested by the works of Prieto, García-Germán, Moe, and others, thereby revealing new qualities in historical architectures. Their use also highlights traditional architecture as a reference model for energy- and environmentally-conscious design. Indeed, until the advent of fossil fuels, vernacular architecture should be understood as the first paradigm of self-regulated hygrothermal modulation, and therefore as a source of autonomous and sustainable strategies.

On the other hand, by making visible the invisible phenomena that shape architectural environments, these graphic tools can directly influence design decisions. In the conception of new projects, they serve as instruments through which architects reveal, manipulate, and integrate such processes into the formal and material articulation of their designs.

There is also considerable potential in hybridizing both approaches. The environmental analysis of past architectures, carried out with a projective lens, opens new avenues for interventions in built heritage from environmental perspectives. This is exemplified by the notion of "thermodynamic

recharge," developed in relation to works by H Arquitectes, Lacaton & Vassal, and other authors who have addressed existing structures with environmental priorities in mind[27].

This line of work demonstrates the central importance of the section in interventions on heritage through thermodynamic premises. Its use opens new ways of seeing and acting upon historical preexistences, which have traditionally been understood primarily through plan and elevation—as evidenced in the documents with which architectural history has been written and through which existing buildings have often been analyzed. In contrast, the works of the aforementioned authors—from theoretical essays to practical projects—reflect the growing prominence of the section[28].

In a sense, this shift is linked to the fact that architectural history up to the twenty-first century was largely written by historians of art or theory-oriented architects, often more concerned with identifying the formal characteristics of styles in order to compare them with others. While such an approach may be acceptable in other disciplines (though not without limitations, as sculpture and painting also operate through technique, material, and time), it is clearly reductive when applied to architecture. Shifting the analytical focus changes the relevance of the documents used to understand past architectures and, in turn, alters the ways in which we intervene in them.

It should also be noted that while the section already played a crucial role for many modern architects (Loos, Le Corbusier, among others), it did so mainly for spatial and formal reasons. What is emphasized here, however, is its role in relation to the management of energy flows.

In this regard, the analysis of the graphic documentation accompanying these different architectural approaches grounded in environmental premises allows for the identification of a series of shared design considerations present in many of the works examined. In particular, sectional drawings reveal the prominence of vertical spaces in a significant number of these projects: forms that encourage convective air currents, enabling the dissipation of warm air and the cooling of interior spaces, emerge—through sectional analysis—as a recurring resource within these architectural strategies.

Likewise, the recurrent use of sections and axonometric drawings highlights the central role played by the rich sequences of filters that mediate between interior and exterior conditions. Of particular relevance are intermediate spaces, understood as transitional zones that arise from the decomposition of façades and roofs and are interposed between them to operate as thermal buffers. It is through these graphic documents that one can understand how, from an environmental perspective, the building envelope is no longer conceived as a precise and definitive boundary—as was often the case in much of the architecture associated with the International Style—but rather as dynamic, variable, and transitory. In this sense, architecture mirrors thermodynamic principles, in which boundaries continuously negotiate and balance differences, understanding instability as a condition of equilibrium. Architecture similarly embraces such boundaries by incorporating regions in which energy transformations take place: from the almost immediate transfer of solar radiation through greenhouse effects, to the slow accumulation of energy associated with mass over extended periods of time, including, among other processes, the resistance of certain materials, the insulation provided by others, or the regulation of ventilation velocities through the manipulation of architectural form.

In light of the above, it can be concluded that the section—and, to a lesser extent, axonometric drawings—constitute the fundamental operative graphic instruments for understanding, communicating, and working with the thermodynamic and environmental behavior of architecture, insofar as it is through these documents that the invisible flows which also construct architecture can be apprehended. Through the study of sections and axonometries, it becomes possible to assimilate a range of design tactics such as those presented throughout this paper, thereby revealing the qualitative value of drawing as a driver of the design process within an architectural approach concerned with energy and the environment. Sections and axonometric drawings should therefore be understood as dynamic, process-oriented, and necessary tools for generating architectural projects and for rereading existing architectures.

Notes

1. John Berger and Mike Dibb. *Ways of Seeing*. Television program. BBC, 1972.
2. Entropy: "Thermodynamic quantity that indicates the degree of molecular disorder in a system (...). In physics, entropy refers to the degree of irreversibility that a thermodynamic system reaches after a process involving the transformation of energy." (*Oxford Languages Dictionary*)
3. Luis Fernández-Galiano. *El fuego y la memoria*. Madrid: Alianza Forma, 1991, 127.
4. Eric D. Schneider and James J. Kay. "Complexity and Thermodynamics: Toward a New Ecology." *Futures* 26, no. 6 (1994): 626–647.
5. Kiel Moe. *Insulating Modernism: Isolated and Non-Isolated Thermodynamics in Architecture*. Basel: Birkhäuser, 2014, 241–243.
6. Iñaki Ábalos and Renata Sentkiewicz. "Materialismo Termodinámico." In *Ensayos sobre Termodinámica, Arquitectura y Belleza*, edited by Iñaki Ábalos and Renata Sentkiewicz, 243–261. Barcelona: Actar, 2015.
7. Kiel Moe, *Insulating Modernism*, 244.
8. Author's note: Exergy is a thermodynamic property of a substance in a given environment that determines the potential for useful work from a given quantity of energy through the spontaneous interaction between a system and its surroundings. It indicates the potential usefulness of the system as a source of work. Being a thermodynamic property, it is a quantity whose variation depends only on the initial and final states of the process, not on its specific details, but it does depend on environmental conditions (ambient pressure and temperature) in which the substance is situated. In other words, exergy is the portion of energy that can be transformed into mechanical work. In essence, exergy quantitatively defines the thermodynamic value of any resource, and provides a rigorous means of analyzing resource waste in human activities, establishing guidelines for conservation and efficient use. For further discussion, see: Ibrahim Dincer and Marc A. Rosen. "Exergy — Energy, Environment and Sustainable Development." *Entropy* 3, no. 3 (2001): 116–149.
9. Kiel Moe, *Insulating Modernism*, 234.
10. Eduardo Prieto. *Historia medioambiental de la arquitectura*. Madrid: Cátedra, 2019, 349–374.
11. Friedhelm Kirchfeld and Wade Boyle. *Nature Doctors: Pioneers in Naturopathic Medicine*. Portland: Medicina Biológica, 1994, 6–12.
12. Jean-Baptiste de Chabannes. *On Conductor Air by Forced Ventilation and Regulating the Temperatures in Dwellings, with a Description of the Application of the Principles as Established in Covent Garden Theatre and Lloyd's*. London: Subscription Rooms, 1818.
13. Patrick Geddes. "Paleotécnico y neotécnico." In *Ciudades en evolución*. Buenos Aires: Ediciones Infinito, 1968. / Lewis Mumford. *Técnica y civilización*. Madrid: Alianza Editorial, 1998.
14. Author's note: Within this group we might include, among others, the pioneering work in the Nordic countries of figures such as Alvar Aalto and Arne Jacobsen; Charles Correa and Balkrishna Doshi in India; Mendes da Rocha and Oscar Niemeyer in Brazil; Luis Barragán in Mexico; Carlos Raúl Villanueva in Venezuela; Wladimiro Acosta in Argentina; Hassan Fathy in Egypt; Ralph Erskine in Great Britain; José Antonio Coderch and Josep Lluís Sert in Spain; or Alberto Sartoris in Greece. Kenneth Frampton. "Towards a Critical Regionalism: Six Points for an Architecture of Resistance." *The Yale Architecture Journal* 20 (1983): 147–162.
15. Victor Olgyay. *Arquitectura y clima*. Barcelona: Gustavo Gili, 1998, 9.
16. Eduardo Prieto, *Historia medioambiental de la arquitectura*, 347.
17. Author's note: The Givoni diagram is a psychrometric chart that allows the determination of the appropriate bioclimatic strategy according to the hygrothermal conditions of a building during a given period of the year. It identifies zones associated with specific bioclimatic techniques that enable the achievement of thermal comfort.
18. César Martín, ed. *Apuntes de salubridad e higiene* by Francisco Javier Sáenz de Oíza. Madrid: T6 Ediciones, 2010.
19. Reyner Banham and François Dallegret. "A Home Is Not a House." *Art in America* 2 (1965): 70–79.
20. Reyner Banham, *The Architecture of the Well-Tempered Environment*. Chicago: University of Chicago Press, 1969.
21. Eduardo Prieto. *Los laberintos del aire: Vientos, miasmas y arquitectura en el Renacimiento*. Madrid: Ediciones Asimétricas, 2024.
22. Kiel Moe, *Insulating Modernism*, 251-253.
23. Iñaki Ábalos and Renata Sentkiewicz. "Materialismo Termodinámico." In *Ensayos sobre Termodinámica, Arquitectura y Belleza*, edited by Iñaki Ábalos and Renata Sentkiewicz, 243–261. Barcelona: Actar, 2015.
24. Philippe Rahm. *Climatic Architecture*. Barcelona: Actar, 2023.
25. Silvia Benedito. *Atmosphere Anatomies: On Design, Weather, and Sensation*. Zurich: Lars Müller Publishers, 2021.
26. Lisa Heschong. *Thermal Delight in Architecture*. Cambridge, MA: MIT Press, 1979.
27. Javier De Andrés. *Recargas Termodinámicas: Estrategias de intervención sobre el patrimonio industrial desde criterios termodinámicos*. Madrid: Doctoral dissertation, ETSAM-UPM, 2024.
28. Author's note: This statement is based on the analysis of several works by influential authors who have reviewed the history of architecture, consistently revealing the predominance of plans and elevations as the primary graphic documents used to explain different works and historical periods. As evidence, the following data summarizes the relative number of plans/elevations on the one hand, and sections on the other, identified in selected classic and contemporary works that survey architectural history. The percentages indicate the proportion of sections in relation to the total. For clarity, this comparative review has been limited exclusively to two-dimensional planimetric drawings, leaving aside axonometric projections, perspectives, sketches, or construction details included in these publications, as well as their photographic material. S. XX. Leonardo Benevolo, *Introducción a la arquitectura*. Plans/Elevations: 67 // Sections: 6 (8.2%); William Curtis, *La arquitectura moderna desde 1900*. Plans/Elevations: 144 // Sections: 27 (15.8%); Sigfried Giedion, *Espacio, tiempo y arquitectura*. Plans/Elevations: 56 // Sections: 15 (21.1%) — Parts VII, VIII, and IX were not included, as they are specifically focused on urbanism—; Christian Norberg-Schulz, *Arquitectura Occidental*. Plans/Elevations: 94 // Sections: 16 (14.5%); Nikolaus Pevsner, *Panorama da Arquitectura Occidental*. Plans/Elevations: 93 // Sections: 5 (5.1%): Bruno Zevi, *Saber ver la arquitectura*. Plans/Elevations: 40 // Sections: 5 (11.1%).
S.XXI: Iñaki Ábalos and Renata Sentkiewicz, *Ensayos sobre Termodinámica, Arquitectura y Belleza*. Plans/Elevations: 88 // Sections: 58 (39.7%); Kiel Moe, *Insulating Modernism: Isolated and Non-Isolated Thermodynamics in Architecture*. Plans/Elevations: 17 // Sections: 11 (39.3%); Eduardo Prieto, *Historia medioambiental de la arquitectura*. Plans/Elevations: 64 // Sections: 72 (52.9%).

Image Captions

Fig. 1. Muhib Ad-Din Ash-Shaf I Al-Muwaqqui, Cairo (Egypt), aprox. 1350. In *Natural and Vernacular Architecture*, Hassan Fathy, 1986.
Fig. 2. Fundación Sorigues (project), Ábalos + Sentkiewicz. Lleida (Spain), 2014.
Fig. 3. Physiological process on man under bouganville shadow. Concytec Competition, TAAS & Javier García Germán. Lima (Perú), 2015.

Fig. 4. Domestic astronomy, Philippe Rahm architects, 2009
Fig. 5. Elm Walk, Rousham Garden, William Kent, Oxfordshire (England), 1741. In *Atmosphere Anatomies: On Design, Weather, and Sensation*, Silvia Benedito, 2021.

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Biography

Javier De Andrés. PhD Architect *cum laude*, Associate Professor in the Department of Architectural Design at ETSAM (Universidad Politécnica de Madrid) and member of the GIVCO Collective Housing Research Group since 2019. He is co-founding partner of AYLLÓN PARADELA DE ANDRÉS Arquitectos (est. 2017). His professional work has received several awards, including the COAM Award (2017, 2020), the MATCOAM Award (2022), finalist at the BigMat Awards (2023), the XV BEAU Award (2021), and selection for the FAD Awards (2020), among others. In the field of research, he has been awarded the 10th Arquia Foundation and RABASF Research Grant (2024), the Humanities and Arts Prize of the Royal Academy of Doctors of Spain (2024), and the XVI BEAU Award (2023), among others. He is also the author of *El Dilema Ambiental* (Ediciones Asimétricas, 2025) and had been Visiting Researcher at the Columbia Climate School – Center for Sustainable Urban Development, Columbia University, New York (2025).

Drawing from memories.
An intuition for precision.

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Abstract

Since antiquity, the iconography of the abyss has implied a surrender to the subtraction of sight and a complete abandonment to darkness. The density of the waters, the absence of light, and the distance from known lands make the site resistant to comprehension, transforming it into a space of imagination (Garbin, 2008).

When studies on the depths of the seas began in the 1850s, the lack of information and the invisibility of the sea's bottom filled the void of knowledge with fictional representations. Imagination played a pivotal role in the absence of sight, where vision couldn't breach, drawings of the imaginary realm became tools to envision.

During the PhD Workshop, *The Drawing and the Detail*, carried out at Politecnico di Milano, I addressed the theme of drawing from memories. Side by side, the essay will unravel the development of the scientific discipline of Oceanography and the drawing process carried out during the workshop.

Similarly to the process of describing the scientific qualities of a finite yet ungraspable space (the abyss), the methodology followed during the workshop through the redrawing of a space from memories, followed imagination, references, and allegories; embraced distortions, and allowed intuition the power it deserved when morphing spaces. The contribution will investigate the scientific reliability and design occasions that can arise from it, and how drawing can be a prosthesis of memory and sight.

Following the methodology of Oceanography that permitted the application of not-always-scientific drawings for the establishment of scientific theories, I will propose the redrawing of spaces from memories as a tool for investigation in architectural practices.

By questioning the relation between evocation and representation, error and the intuition for precision, pictorial restitution and its value in scientific reliability, this investigation will navigate between graphic and scientific elements.

The research aims at illustrating the personal experience of the Milanese workshops without aiming at reaching any generalization or construction of any theory. The contribution tells a story, shares an experience that could be of inspiration for other practitioners, and elaborates on that, following the thread of analogies in scientific and artistic works.

Key words: prosthesis of vision, intuition for precision, tools to envision, drawing from memories, blind drawings.

1. Drawing from memories

During the PhD Workshop *The Drawing and the Detail*, carried out at Politecnico di Milano in 2025 as part of the Doctoral Program in Architecture and Urban Studies, I addressed the theme of drawing from memories. For the first assignment, we were asked to select a favorite architectural object and to describe it using drawings and text. I immediately thought about the Mae D'agua water reservoir in Lisbon, of which I had vivid and wonderful memories. While I drew and wrote, I resisted the urge to go look for photographs, or to go check online whether the names, the spaces, and the topography I remembered were true, and therefore, *real*. For some weeks before the assignment deadline, I would sketch the space in my hand-sized notebook, insistently drawing in metros and at bus stops, during lunch time and coffee breaks, or while waiting for appointments. I tried to overcome the notions of error and truth, and instead allowed my hand to follow the intricate maze of memories I had of the space, careless of appropriate scale or spatial logic. This implied a complete surrender to the subtraction of sight and an abandonment to analogies, images, and recollections. The action of drawing transformed and morphed spaces into rooms of imagination, describing a realm in which visual memory was soon substituted by the other senses. Words quickly came in handy to connect the spaces that were hard to figure out by drawing. In the next paragraph, I propose an excerpt of the text that accompanied the drawings of the exercise.

On top of one of Lisbon's hills lies the reservoir of the aqueduct of the city. In my memories often linger in this space; when I lived there, I would often walk to the square of the reservoir and from there follow the aqueduct and the arches, the tanks, the high bridge, and all these spaces that follow one another, that span between hills and roads and above the red tile rooftops of the outskirts of the city. I would patiently follow the rows of round arches, imagining the stream of water where the arches disappear underground or in the new urban fabric. I remember taking photographs of the square, of the dark reservoir, of the view from the top of the aqueduct that connects the hills of Campolide and Monsanto. The reservoir's name is Mãe D'água, water's mother. The square is surrounded by the tall arches on the longer side and by the entrance to the reservoir on the other. The proportions, the geometry of the space and the tension recall the churches and cathedrals in Tuscany. While the space among them lies in the shade of orange trees and holm oaks, the chalky, bright stone glares in the sun and blinds my eyes. I would start my walk always from the same point, reaching the square by climbing the few steps from the road underneath. When I daydream about this space, I am no longer sure which road I used to follow, and my mind creates a map of streams and hills and steps, there are sometimes to be followed underground, others to reach up on a bridge. By drawing it, the space arises from the lines, from the bright lights and the shadows, the breeze and the hot sun that blinded my eyes, the sounds of the surfaces I walked on. Morphed and altered by other daydreams, merged with other memories[1].

Drawing from memories requires a complete abandonment to darkness. It is somehow similar to opening the eyes in a foreign bedroom, in the middle of the night. Immersed in thick shadows and dark corners, the room appears to swallow your figure. Slowly, the eyes begin to grasp the materiality of the surfaces, a rustle, some light from the window or from the crack under the door. From these details and imagination, one can build up the extreme landscape that surrounds her, or him. The crack of light under the door constructs the image of the pavement and the surrounding surface of the room, drawing a limit line between what one can comprehend and what one can imagine.

Fig. 1

This text will unravel the potential of drawing as a speculative and scientific method by unfolding the example of bathygraphy (the depiction of the underwater terrain) as a scientific practice for the establishment of the discipline of Oceanography. Bridging between the used tools for at first imagining, and then measuring the depth of the seas and their translation in drawings and charts, it will become evident the correlation between methodology and representation, between darkness of the abyss and darkness of the mind when it comes to drawing from memories, following the hint of a glimmer of reminiscence, or a crack under the door that suddenly illuminates the darkest corners, allowing oneself to look beyond the surface. Similarly, Vija Celmin's drawings of the surface of the earth, moon and ocean are immersive, detailed and incredibly realistic: in *Untitled [Waves]* (1970), for example, the texture of the water is rendered with no visible depth, horizon lines, or other perspectival elements (Fig.1). The representation holds in all the matter of the ocean, mesmerizing and hypnotizing the viewer, letting one wonder the nature of matter behind the ripples of the waves.

The scientific studies of the depths of the seas started in the 1850s. During the first scientific discoveries, the necessity and curiosity of seeing through the depths of the waters found its depiction in drawing. Drawings of the abyss are often made of void, but since the imaginary of science struggles with emptiness[2], the tendency in bathygraphic drawings is rather a devotion to completeness: analyzing the chart *Sea drifts and whales: on which the movements of the sea as indicated by the thermometer are shown* (Fig. 2, Tavola IX, Matthew F. Maury, *The Physical Geography of the Sea*) the tendency is to disguise the void - of knowledge, of sight, of informations - with sharp and close strokes. In this chart, the areas of the oceans are represented by depicting the streams and currents on the surface, rendered with dense and wavy lines. The contrast between the heavy, impenetrable pattern of the waters and the blank areas of the lands disguises the void, hiding it behind the heavy texture.

Cartographic material was the first scientific representation of the body of study, since it was easier to "fill in" maps rather than develop written elaborations that would be based on the absence of visible proofs. In the maps produced for the first studies, the coastline plays a pivotal role in rendering the limit line between the known and unknown. Similar to the crack of light appearing in a pitch dark room, or to the frayed glimpse of the memory of an architecture in landscape, the land surface renders the limit line between knowledge and imagination.

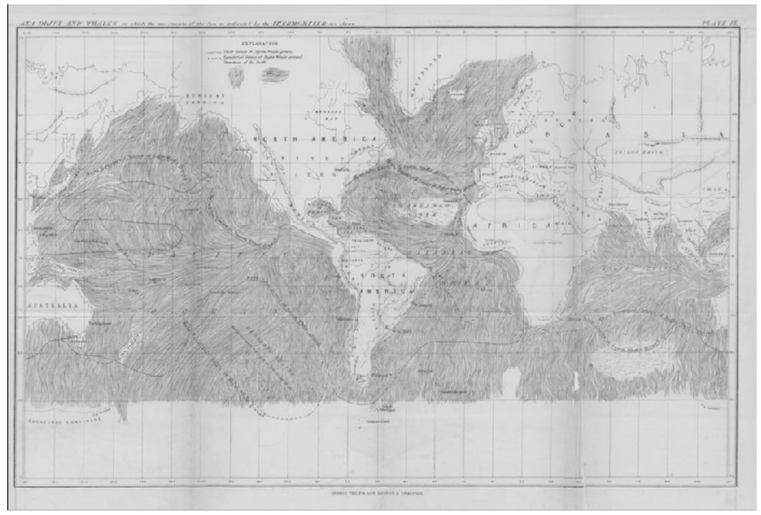

Fig. 2

If in the drawings of the abyss the space of void and of the unknowable is filled by strokes, in the drawings of memories, voids are filled with imaginary efforts to link glimpses of reminiscences between them. Memories like dreams spurn voids, morph space and time, creating new bridges between elements of reality.

Similarly to the process of describing the scientific qualities of a finite yet ungraspable space (the abyss), starting from drawing, the methodology followed during the workshop through the redrawing of a space from memories, followed imagination, references, and allegories, embraced distortions, and allowed

intuition the power of morphing spaces. I will investigate the scientific reliability and design occasions that can arise from this practice, and how drawing can be a prosthesis of memory and sight.
This essay describes the potential of drawing as a speculative as well as a scientific method. Drawing from memories will be promoted as an investigative tool for architectural research. The complex implications of the topic will be explained through the example of bathygraphic drawings in oceanography. Elaborating on the notions of truth and fiction, sight, vision, and darkness, precision and error, the essay will unravel potential design and imaginative tools for architectural practices. I will linger in particular on the notion of error, imagining and engaging with the possibilities the new configurations of error suggest in the architectural practice.

2. Dark
Since antiquity, the iconography of the abyss has implied a surrender to the subtraction of sight and a complete abandonment to darkness. The density of the waters, the absence of light, and the distance from known lands make the site resistant to comprehension, transforming it into a space of imagination. Even if the scientific community conceives the site as a defined and finite space to research, the abyss remains a metaphor in the imaginary collective (a cliff from where to look down, a reverie of a supernatural place, a “voyage extraordinaire”[3], but also a space of no return lost in the dark, in the bowels of the Earth). When, in the 1850s, studies on the depths of the sea began, the lack of information and the invisibility of the sea's bottom filled the void of knowledge with fictional representations. Sunken cities, sea monsters, and haunted relics populated the gloom of the sea.

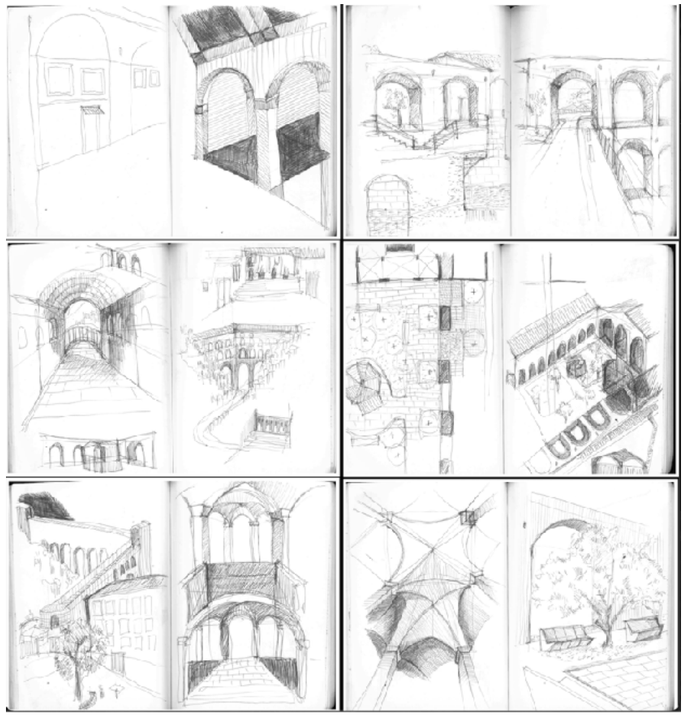

Fig.3

In the practice of drawing from memories, the abyss constitutes a metaphor, becoming the transition space between traveling beyond closed eyes and knowledge, and connecting these two with the space of imagination.

Observing the drawings (Fig. 3), it is possible to observe several elements that appear in an almost redundant way. The arches, the pillars, and the vaults constitute the “base” of the memory, the elements I was certain existed and were real. The articulation of fixed elements shapes the space that surrounds them, often holding on to these, beginning to compose the space in proximity, emerging from the dark bowels of memory, casting a light that could reach recollections that were almost lost and bringing them into knowledge. The vivid remembrance of the space anchors itself onto the paper, while the blank

spaces drive us down into the depths, where perspective and scales distort, linking imaginary territories with a line. Following a sequence of marks and traces, it is possible to pay a visit to the improbable world that developed following the projective power of thought, and its capacity to penetrate the domain of the unknown and of the unforeseen.

In the illustration of the *Nautilus* (Fig. 4), the imaginary submarine designed and led by Nemo, the captain protagonist of the novels by Jules Verne, *Vingt mille lieues sous les mers*, 1870, and *L'île mystérieuse*, 1874, the sharp light in the surroundings of the engine functions like an eye that puts in focus the creatures in the shadow, and distinguishes them from the darkness in which they drift. The sharp limit line defines what is real from what might not be, as the reality of what becomes visible to our eyes suggests what could be found where the light does not reach.
It is hard to contain the abyss, inexplicable and undetermined as it is, across a limit line, a border depicting the starting point of the lands of exactitude and precision. The next chapter will unravel the qualities of the limit line between known and unknowns, from the earth of the shore to the abyss of memories.

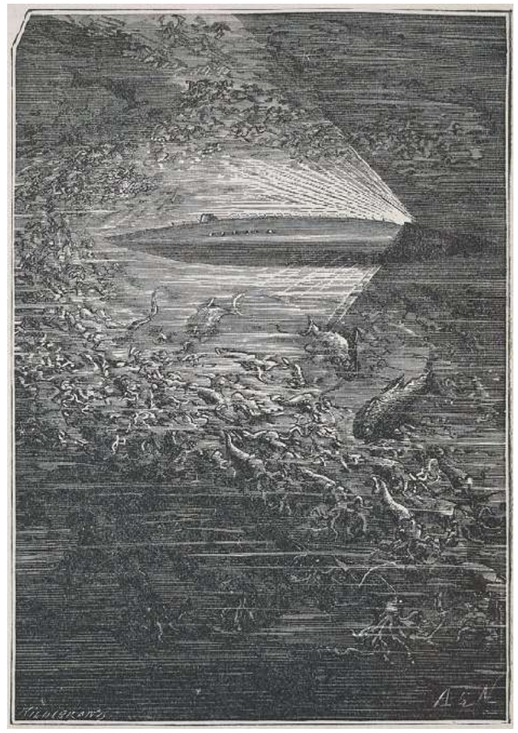

Fig. 4

3. Limit
The first attempts to measure the depths relied on sets of data that refer to the surface condition of the sea (streams, wind charts, temperature and navigation routes) rather than on metric measurements that would compute the depth of the ground under the water (fig.2). These superficial and surface researches fill the void of maps with lines and marks showing the streams in the sea and ocean and the most taken trade routes, filling the white areas beyond the coastline of the emerged lands.

To collect information about the depth of the seabed during the first explorations, a cable with a heavy load was immersed in water from a ship navigating towards different coordinates along the coast. Once the measurements were collected at the particular points where the cable was immersed, the dots were drawn on a map, and the ones at the same depth were connected, drawing out level lines. The few measurement points were not enough to offer a complete and accurate representation of the altimetry of the bottom of the sea, but the lines were nonetheless completed, showing a dedication to graphic completeness rather than to exactitude.

The years follow, and in 1922, the development of an echo sounder facilitates the operations of investigating the bottom of the oceans. A new graphic possibility opens up: the one of not understanding the ground through level lines, but to actually see the pattern of the bottom of the sea: the sound impulse that the machine is emitting is directed horizontally towards the lands underwater. The result is the formulation of the profile (or a cross-section) of the seabed. In the following years, the research crew will measure 67.000 points of depth in the Atlantic Ocean. The information collected sounding the sea (that, even if more reliable than in the previous research, is still not even far from being complete) is once again collected in a drawing, a map, that represents the emblem of the contrast between the visible and the invisible, the factual and the latent, the mobile and the immobile. The echo sounder works as follows: the time passing from the transmission of the sonar impulse until the reception of its reflected echo is measured, and after applying a formula, the depth of the sea bottom is calculated. Now, what is needed is a survey technique that can translate the data of time into a map that shows the height of the terrestrial formation on the ocean floor. The realism of the shapes of the bottom of the sea that the new tool gives back leaves the scientific community speechless. Instead of having to interpret and, only after, understand a schematic representation, it is now possible to see the landscape lying under the turbid waters. The first scientists to draw a relief of the sunken landscape will be Marie Tharp and Heezen, two geologists of the scientific community, that will deal with the problematics of analysing and translating the information into a drawing that deals with the contradiction of depicting realistically the truth, being witness and proof, and at the same time reducing it to a schematization, a diagram to not only see but to understand and acknowledge.

The development of progressively more accurate and reliable tools, that could serve as a “haptic prosthesis” of sight (touch substitutes sight, when the first measurements are carried out with a contact cable that touches the sea bed; and sound substitutes all other senses when the first sound waves fathom the abyss) actively shape the constitution of a “net of rationality”[4].

The “net of rationality” described by Ivins is a metaphor for describing images and words as a fish net: when a fisherman complains about the lack of fish, what he really means is that his net couldn’t trap any. The smaller fish will escape from the voids in the net, and the bigger ones will not fit in it. So, from the fisherman’s point of view, the only fish present in the sea are the ones that are caught in the net he made. According to Ivins, words, images, and cultural constructs work in this same way: tools of knowledge can give back only the information for which they were established.

If we linger back again at the drawings carried out for Exercise 1 (Fig. 2), we could identify the “base” elements of the drawings - the vaults, arches, and pillars - as the bearing elements for the construction of the surrounding imaginative memory, or the tracks to follow to navigate this territory. They constitute some pivotal points of the representation, similar to the depth points that were measured offshore: even though they don’t offer enough accuracy to be a scientific representation of the imagined space, they emerge as precise and valid starting points for the completion of the vision.

The construction of space in memories holds on to particular elements, which we can refer to as that light under the crack of the door, and by connecting these traces, jumping from one detail to another, the creation of the imaginary space takes place. Not only does the mind linger on spatial architectural elements, but recollection of space involves the whole body: the recollection of light, temperature, sound, and haptic perception contribute to the vision itself. To linger on these “earth feelings”, a breeze under a tree, the shimmer of a ray of light on the white marble, the sound of a stream of water, and to reflect these elements in a drawing makes it possible to see the landscape through the “haptic prosthesis” of sight, hearing, and feeling before seeing.

For the second exercise of the workshop, I focused on the representation of a detail of the water reservoir to represent the whole. Since it would have been problematic to focus on a spatial or architectural detail of the space, my focus was directed towards the capture and representation of the feelings of warmth and cold, light and shade in the space.

I chose to work on small-sized, soft paper. I used pencils, pens, cutters, and other tools to engrave lines on the paper, in an attempt to capture the game of light and shadows I could recall. The force applied to the paper translated directly to the mark of the engraving: the stronger the touch, the darker the shadow. The result was observable under careful examination, in the right light conditions. The engraved papers could also be touched, lingering on the precious details hard to observe by sight. The set of engraved papers was accompanied by a parallel series made by frontage drawings on the previously engraved ones. The strokes that were first appearing as dark spots, shades, and textures in this set are now bright white and clear marks. The double process exposes the elements that were subtracted from sight in the first phase, and vice versa.

“From the first stroke,
there is a tacit agreement
with the pencil’s line
to dissect the paper,
to divide it into new forms,
with each mark explaining
its existence to the next:
it rejects, resumes, plays,
destroys, empties, leaps,
drives down into the depths,
spirals up towards the light,
catches fire, melts,
flies around like ash,
clasps hold of the fox star’s tail,
burns out in a brilliant red,
and descends deep down
into the roots of the paper.”[5]

4. Error, approximation and prediction

After the formal establishment of the scientific discipline of Oceanography, developed tools brought to the establishment of a study subject in which the final representation resembles the methods that were used to generate it. Methodology directly influences the representation of the known, or better, the illusion of the ownership of the known.

The pictorial restitution of the abyss investigations moves from the particular element to the general one, which verifies their accuracy reciprocally. It will be exactly this continuous exchange between information at different scales (the echo sounded track, translated first into a section and successively into a plan view and the global image of the mountain ranges along the globe) that will induce in Marie Tharp the idea of a fracture line that cuts the Atlantic in half and then connects to the other oceans: the mid-Atlantic rift.

We could argue that, without the strenuous experimentation on the mistaken, inaccurate representation of the abyss, both fictional and scientific, it would hardly been possible to imagine such a rapid escalation in the production of scientific knowledge of the latter, that nevertheless remains inaccessible. The unreliability of the first drawings concerning the depth of the oceans, even if erroneous, built a strong engagement with the environment they were attempting to represent. In the first experimentation in the representation of the terrain of the ocean, errors play a fundamental role: they allowed imagination to close the gaps between known information, triggering creativity in methods of representation and tools. The first drawings unravel approximation and mistakes, making space for errors and stretching the reality of the landscape.

In the practice of drawing by memory, the play of interaction between what is real and what is invented creates unpredictable environments, visions, and scenarios. This practice unfolds and resumes the primitive, earthly feelings that can constitute the pivot for further elaborations and design practices. It does so by creating a connection between the hand and the mind, overcoming the limit line of haptic senses. By drawing by hand, with closed eyes, the author overcomes the delusion of precision, creating more space for errors that not only arise by the mistaken sense of the memory, but also by the freedom of the line on the paper, the thickness of the stroke, the missed intersection of the lines, the tremor of the gesture and the unevenness of the paper.

In *The Architecture of Error. Matter, Measure and the Misadventures of Precision*, Francesca Hughes elaborates on the theme of error and precision in architecture. The effects of the digitization of architectural production have led architects and practitioners to believe that they could master the uniqueness and unevenness of the earthly materials of which architecture should be thought, designed, and built[6]. The degree of precision by which architecture is drawn, nowadays, is to a degree of precision that “is always redundant to the process of materialization”[7].

If, according to Ivins, the methodology followed for representation actively shapes the constitution of a “net of rationality”[8], a cultural construct of tools of knowledge that is only able to give back the information

it was established for, we should ask ourselves, as architects, which story digital, highly-precise drawings are able to tell.

In the previous chapters, we have seen the close link that exists between representation and knowledge, between vision and reality, between construction and project. Adolf Loos argues that the distance between design and construction is -already at his time- irreconcilable: the forms of architecture are not created by the tools on the construction site, but by the representation tools of the architect[9]. This phenomenon is nowadays more noticeable than ever: it is even possible to recognize the commands used by the architect to design a building, if one looks closely enough. Smooth, precise, and exact shapes are created by *extrude, offset, merge,* and, of course, *copy and paste.*

The Milanese workshop continued with a series of drawings that continued to chase the representation of the favorite architectural object chosen in the first place, drifting from the attempt to represent it in the "correct" way and letting other familiar memories fill in the dark voids of memory. Fig. 5 is the last drawing of the whole experiment. Unlike the other drawings carried out in the process, it follows the rules of perspective. It is carried out with rulers and a compass, and mines with different softnesses for construction lines and the *real* object. The aid of "technology" (or technical tools), even if still analogue, served for a final representation only after several drafts that had as protagonists the perception of the space, the recollections and remembrances that manipulated the imagination, filling the gaps with elastic -and erroneous, but intuitively correct- spatial elements. The result is a new space that emerges from the deep relation between hand and mind, between feeling and thought, rather than the reflection of the process of drafting digitally.

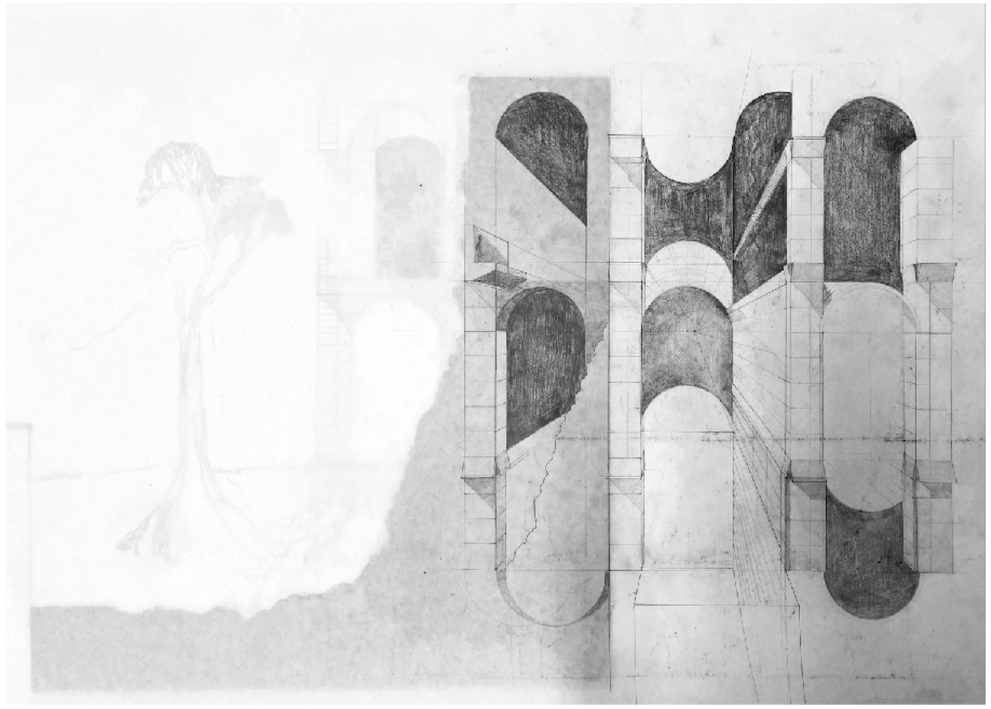

Fig. 5

This essay has proposed drawing from memory as a practice that inhabits the productive tension between darkness and knowledge, error and precision, fiction and scientific inquiry. Through the personal recollection of the Mãe D'água reservoir and its progressive transformation into drawings proposed in the PhD Workshop, memory emerges not as a defective substitute for sight, but as an active field of investigation. Like the abyss explored by early oceanographers, remembered space resists immediate comprehension: it is invisible, fragmentary, and defined by limits. Yet it is precisely within this opacity that drawing acquires its speculative power.

The parallel with bathygraphy reveal how scientific knowledge has historically advanced through incomplete, erroneous, and imaginative representations. Before precision instruments could "see" the seabed, drawing filled the void left by darkness, translating uncertainty into marks, lines, and textures. These early drawings did not simply record data; they shaped hypotheses, directed inquiry, foster imagination, and made possible future discoveries. In a similar way, drawing from memory constructs a provisional terrain where fragments of certainty—spatial elements, sensations of light, heat, sound—act as anchors from which imagination can expand.

By embracing approximation and error, this practice challenges the contemporary obsession with exactitude in architectural representation. Hand drawing, detached from visual verification, exposes the limits of precision and reclaims intuition, bodily perception, and uncertainty as legitimate tools of knowledge. Error here is not a failure, but a generative force: it opens unforeseen connections, allows space to morph, and reveals latent design potentials.

Drawing from memory operates as a prosthesis of sight and recollection. It does not seek to reconstruct architecture as it "really is", but to understand how space is perceived, remembered, and transformed by the body and the mind. In doing so, it repositions drawing as both a scientific and poetic method—capable of navigating the abyss of the unknown and of imagining new architectures from the depths of darkness.

Notes

1. Text from the PhD Workshop exercise 0, Saskia De Fabritiis, 2025.
2. Garbin, Emanuele, *Bathygraphica, Disegni e visioni degli abissi (*Macerata: Quodlibet, 2018), 15–37.
3. Garbin, *Bathygraphica*.
4. William M. Ivins, *Prints and Visual Communication* (Harvard University Press, Cambridge Mass, 1953).
5. Rebecca Horn, (n.d.) in *Drawing and Thinking. Confronting an Electronic Age*.
6. With contemporary CAD software, we draw brick walls (which we know will be built on muddy sites, by workers wearing thick gloves) to six decimal places. The wall drawn to several decimal places is an extraordinary methodological absurdity that, nonetheless, strangely does not seem to embarrass us. Quite the contrary - we exult in its exactitude". From Matter, Measure and the Misadventures of Precision, Hughes, 2014.
7. Hughes, *Matter, Measure, and the Misadventures of Precision* (Cambridge: The MIT Press, 2014).
8. William M. Ivins, *Prints and Visual Communication* (Harvard University Press, Cambridge Mass, 1953).
9. "Architectural forms are no longer created by the craftsman's tools, but by the pencil. From the elevation of a building, from the manner of a piece of ornamentation, one can tell whether the architect was using a no.1 or a no.5 pencil. And what a terrible havoc has the compass wreaked on our taste! Since architects have taken up the ruling pen, architectural drawings have come out in a rash of little squares and no window embrasure, no marble slab in uninfected. The tiniest details are drawn in on a scale of 1:100 and the bricklayer and stonemason have to chip out or build up the graphic nonsense by the sweat of their brow. If the draftsman happens to have colored ink in his pen, then the gilder has to be called in". From *On Architecture*, 1910.

Image Captions

Fig. 1 Vija Celmin, Untitled [Waves], 1970.
Fig. 2 Tavola IX, Matthew F. Maury, The Physical Geography of the Sea, 1855
Fig. 3. Exercise 1, PhD Workshop The Drawing and the Detail, Politecnico di Milano, 2025. Image by the author.
Fig. 4. I fari del Nautilus, in Jules Verne, Vingt mille lieues sous les mers, 1870.
Fig. 5. Exercise 5, PhD Workshop The Drawing and the Detail, Politecnico di Milano, 2025. Image by the author.

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Biography

Saskia De Fabritiis is an architect and currently a doctoral researcher at the Faculty of Architecture and Urban Planning (DAStU) at Politecnico di Milano. In her autonomous practice, she engages in building actions for community design, collective care of public spaces and the regeneration of broken ecosystems. She teaches architectural and landscape design in Mendrisio and Milan.

The search for a *weak* legacy.
Drawing as a tool to reorient the reading of urban space in Tirana

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Abstract

This contribution aims to explore the potential of drawing both as a tool for critical urban analysis and as a basis for transformative scenarios, through some visualisations extrapolated from a research in progress.
The work presented is part of an ongoing transnational project (called See:4 Cities) focused on the architectural socialist legacy in the Western Balkans (specifically in: Belgrade, Podgorica, Skopje, Tirane), aiming to rethink it as a partial countermeasure to the real estate speculative drifts that are affecting, albeit in a particular way, the aforementioned cities.
Within this framework, a portion of the city of Tirana become here the subject of an in-depth visual analysis based on the construction of a specific syntax: conventional modes of representation are combined to interrelate heterogeneous factors – such as land configuration, tenure regimes, proper and improper uses of the space, social and building density and architectural distribution – thus bringing out material and immaterial elements of the space.
Instead of a mere spatialisation of pre-tagged data, such approach primarily aim to reorient questions on particular urban areas and on their transformability. The output, in this sense, is conceived neither as a genealogical mapping nor as a basis for design in the strict sense. Rather, the scope is to identifying relationships which can only be grasped if visualised and thus defining a support for new urban reasoning. As a working method, the meaning of the proposed visualisations is never absolute or definitive: they are incremental, and will evolve further by integrating multiple dimensions depending on the different lens one chooses to adopt.
The work deliberately straddles the line between automation and analogic, in the belief that the inquiry phase cannot be delegated in its entirety to a specific software or product, especially if drawing is considered in an epistemological sense.

Key words: Tirana, dispositions, hybrid mapping, post-socialist urbanism, weak legacy.

1. Introduction

"Yet the ball does not have to roll down the incline to have the capacity to do so, and physical objects in spatial arrangements, however static, also possess an agency that resides in relative position. Disposition is immanent, not in the moving parts, but in the relationships between the components."[1]

I have been reflecting for some time on the concepts of "disposition" and "active forms of interplay" as they were introduced by Keller Easterling.[2] In particular, on their possible design and "visualisable" implications. Although these notions mainly refer to exceptional objects such as the so called 'zones' – in a broader sense, the infrastructural sphere – they challenge design skills, by offering particularly relevant insights into the architectural and urban fields. How and if, for instance, this form of spatial agency can be represented in a projective sense in order to identify its potential. The suggestion to observe the space by identifying possible transformative *lines*, understood neither as master plans nor as architectural prefiguration, but rather as "a set of instructions for an interplay between variables", explains what the American scholar means by using those two specific definitions: "not a thing but a means to craft a multitude of interdependent relationships and sequences: an updating platform for inflecting a stream of objects".[3]
However, this is not an isolated suggestion: claims about the urgency to reveal the opaqueness of urban environments – in the various forms it may presents itself – have been emerging for some time[4], leading to several experiments.[5]
This paper follows a similar line of thought by focusing on a critical mapping of an urban sample of the city of Tirana (I will return later to what is meant here by the term mapping) with a twofold objective: on the one hand, to analyse it in a deep and materialist way, unveiling relationships between tangible and intangible elements; on the other, to explore the potential for further transformation. Thus, apart from the descriptive goal, mapping is here intended as a "device that operates, more or less directly, towards an architectural intervention".[6] This enables a relative understanding of the existing urban fabric and its implicit capacity to orient and support interventions conceived as alternatives to the most common city-building vectors.

1.1 Background

The core of this article is a visual excerpt from the ongoing transnational project SEE:4C (South Eastern Europe: 4 Cities)[7], a research which involves different universities from Italy and the Western Balkans and focuses on the potential of the socialist architectural legacy in relation to the current transformative policies and the strong real estate developments that are affecting the region (specifically in: Belgrade, Podgorica, Skopje, Tirane). Within its framework, a team composed by scholars from Turin and Tirana[8] is exploring some issues related to the current urbanisation of the Albanian capital. Though the topics of that research are not the subject of this paper, it is worth mentioning them briefly for context.
Recent urban policies related to Tirana have put the city on the global architecture map, making it fertile ground for the impulses of many top firms in world design. It is a well-known story: BIG, MVRDV, innovation, acceleration, ARCHEA, futuristic, 51N4E are some of the tags of a growing narrative that, whether considered as a vector for economic growth and for redefining the political country's status[9], or as a counterproductive pursuit of a mirage[10], conceals much more.
Urban transformation is occurring at such an intense and rapid pace that it often creates problematic overlaps, making it very difficult to analyse its current and future effects. Though it has entered a different phase almost twenty years ago – once the illegal building practices have been curbed through the reinforcement of the regulatory framework – the city-building is still fuelling issues that emerged with the explosion of unregulated settlements that marked the 1990s, during the first post-socialist era; in particular, dramatic land consumption and the indiscriminate erasure of pre-existing traces, public space and permeable soil.[11]
These are mainly the effects of a real estate economy which, according to some analyses, appear to be a huge speculative bubble[12] with asymmetry between the rapid increase in housing supply and the related credit rates on the one hand, and the actual demand on the other.[13]
To give an idea of the current construction pace, 894 building permits were granted in 2024, corresponding to over 1.9 million square metres in a city of just over 40 km^2. Further complicating matters is the inefficiency of a planning system made by a sequence of media-resonant visions – once again, a field of engagement for global firms –, with little or no practical application.[14] Construction sites follow one another inexorably regardless of land use law and compensatory measures – often, even rules and codes -, contributing to a critical misalignment between the increase of the built surface and any planned strategy.[15] The intersection between post-socialist sprawl and ongoing interventions is resulting in an increasingly dense and fragmented urban agglomeration, in which nothing seems to exist outside of vertical market-driven dynamics.
This very brief overview aims to give an idea of the main mechanisms that are radically changing the urban face of Tirana. As things stand, the intensity and frequency of the transformations expose graphic analyses and mapping attempts to the constant risk of obsolescence. Yet, conversely, precisely because of the frenzy that accompanies urban development, without it being based on adequate spatial analysis, there remains much room for exploration. As anticipated, what is presented here is a partially speculative project, whose ultimate goal is to test some mapping methods that allow for a different approach to design.

1.2 Why talk about weak legacy? Notes on the case study

Legacy is intended here not as a value of physical objects itself, but rather as a form of interplay between tangible and intangible dispositions. Thus, the concept does not refer to heritage understood as something to be safeguarded for its intrinsic value; it is a vision that seeks to go beyond a mere inventory and capitalisation meaning. The prefix 'weak', instead, is an attempt to articulate the concept on a particular basis, referring to the marginalisation of the public sphere, and to the lowering of the social and spatial agency connected to Tirana's urbanisation.
Thus, what can the weak legacy as a lens allow us to grasp? Instead of starting from a clear issue, I let the observation of a particular space suggests which elements to focus on. Thus, reversing the approach underlying the current urbanisation processes.
The chosen sample for the analysis is an area of 1km by 1km surrounding the "Student City" [*Qyteti Studenti*], a public university dormitory that belongs to the socialist architecture period. Positioned between the defined urban and peri-urban zone of the city of Tirana, official traces of this district first appeared in the 1972 Regulatory Plan of the city of Tirana[16] – implemented until the end of the 70s.
Perhaps not much for the architectural value it carries, but rather for its intangible heritage and memory, it is known as the site of the student protests which became the catalyst for the fall of the regime. Its territory on most of the perimeter became then a destination for informal developments. These have densified year after year, changing its very destination from an end-zone to a transitional, intermediary, and connecting one between different stratifications, not only in terms of urban morphology but also at the socio-cultural level of its inhabitants.
With a total surface of 25ha – 8 of which occupied by informal buildings –, it hosts today approximately 13000 students[17], and represents one of the few areas with a high degree of porosity. Given these characteristics, this remains a place where it is still possible to consider integrating the socialist legacy into urban development strategies, making it a suitable case for the purpose of this work.

1.3 Structure of the article

The article is organised into four sections: after this first introductory part on the topic and objectives, the second addresses the theoretical and epistemological approach, illustrating the methodology adopted; the third, instead, represents the core of the paper, containing the graphic elaboration accompanied by a critical reflection on its features and usefulness. Lastly, the fourth section summarises considerations on critical issues and possible further developments.

2. Towards an operational mapping: a theoretical and methodological framework

Drawing is intrinsic to architectural design, but its sphere of relevance extends far beyond individual fields of study. Whether it is investigating human cognition through "knowledge cartography"[18], exploring schizoanalytic cartographies[19] or solving physic problems through a diagram[20], its practice permeates knowledge production in a broader sense. Moreover, as Arnheim stated, drawing – visual thinking, extensively – is always a transformative practice.[21] Therefore, it is essential to delimit the terms in which it is referred to or used. Here I will mainly rely on two concepts: operational mapping and active forms of interplay. Operational mapping is a reworking of Marc Schoonderbeek's reflection on the potential of maps not as an alternative but as an informative act of architectural production. The latter, instead, is an original concept already mentioned as a founding point of the paper, as this and other Easterling's theoretical notions were a trigger for the graphical investigation.
The aim is to critically combine these subjects of thoughts in order to define a specific mapping model. This is not a particularly original attempt: as already mentioned, several experiments in the field of mapping have been and are still being made to bring together heterogeneous dimensions in a transformative perspective. But precisely because they are exploratory trials based on hybrid practices, every contribution in this direction can be considered as a prototyping effort.
Considering this theoretical framework as the basis for operational reasoning, I will now try to delve deeper into its assumptions, examining the perspectives associated with it and how they converge into the graphical work.

2.1 Mapping as a container, spatial analysis as a project.

As mentioned above, mapping in this context should be understood as a device that works on the threshold between spatial analysis and design. Given the many intertwined modes of representation – including cartography, axonometric schemes, territorial sections, spatialisation of quantitative data and diachronic diagrams – the term mapping also seems the one that best lends itself to associating the various categories mentioned.[22] It will therefore be clear that I am not referring to the merely

back to index

cartographic meaning of this tool, but rather to the chance it provides to draw particular imaginaries, being a medium capable of orienting the perception of places and things by overlapping inscriptions.[23]
Without delving too deeply into critical cartographic thinking, I would like to emphasise the importance of viewing the map in the next chapter by detaching it “from an expectation of represented reality”,[24] and instead reading it as an informative act of architectural production.[25] By showing relationships such as the one between population density, soil coverage index and public services, for instance, one can provide a relevant transformative potential; but this requires the ability to spatialise things in order to reveal assemblages that are implicitly design-oriented.
This is undoubtedly a creative use of Easterling's reasoning, which, however, is not intended to be specious. In describing the characteristics of these active forms, she speaks of “constantly evolving elements [...] identifying just a few of the many active forms that could be manipulated, redesigned or rewritten means simply beginning to decipher the code, making the provisions that influence it more tangible and providing some tools for regulating the political character of the infrastructural space”.[26]

2.2 Method of inquiry

The approach adopted here can be defined as a critical spatial reading that integrates specific analysis – of the chosen sample – and more general reflections on the city and its urban development, based on both scientific literature, documentary sources and fieldworks.
The basis of the map is a reworking of official documents collected from both local and non-local databases – in particular geospatial agencies, geographical institutes, land registers and information systems –, which is integrated with quantitative and statistical data. On this “framework”, already oriented according to specific themes, different representations and scales are layered, defining the particular reading of the sample.
More specifically, the maps are a reworking of a base obtained by integrating the most up-to-date file provided by the local cadastral agency with satellite and fieldwork surveys and. This integration was necessary because, as is often the case in the Balkans, technical documentation can differ significantly from the actual situation. Geoportals and satellites were useful in surveying the morphology (both territorial and fabric), while only cadastral data allow us to understand the geography of the plots and properties, which are constantly evolving. The maps were therefore processed using GIS, CAD and Illustrator software. GIS was also used as a basic tool to extrapolate orography and volumes, even on an architectural scale, using polygonal meshes and architectural data meshes. In this case too, the designs were then refined using CAD and Adobe software.
Though the work is entirely digital, it is partially based on a quasi-analogic approach, especially for the three-dimensional visualisations and the more speculative ones. This stems from the intention to use the map in an *investigative* way. In this sense, the work aims more at the critical definition of the research objectives than on the search for possibilities offered by a specific software. This is an important point to emphasise, especially since the reflection on the potential of mapping seems today to be absorbed by an unbridled exploration of what technological implementation has to offer, resulting in an increasingly acritical application of this tool.[27]

3. Qyteti Studenti and the search for active *disposition*

What are the infrastructural metrics[28] that structure urban space as infrastructure – what it does rather than what it is – i.e. the set of performances that make the city an object comparable to an operating system?
This is a complex question that draws attention to the *hidden* or barely visible substrates that make up the built environment as an infrastructural device. It is not simply a matter of connections, networks or transport systems. There are other elements to consider: plot systems, property, interactions, uses of space, leftover areas, public-private thresholds, accessibility systems, ex-aptated buildings, cabling, parkings, road junctions, ATMs, playgrounds and regulations, to name a few. While at first glance these may not appear to be infrastructural objects, they should be viewed in a performative sense. Beyond its physical form, how does a boundary wall delimiting a private lot interact with other components? Does it conceal improper uses of space? Does it affect the mobility? Does it obstruct or facilitate the provision of basic urban services?
To intervene in this area – where there is a need for increased capacity and services, and an undervalued potential due to the disjointed sequences of thresholds between the informal areas and the Student City itself – more than a masterplan will be needed. It will take a lot of thought to understand what kind of actions need to be developed. Thus, instead of defining boundaries, it is crucial to investigate the forces that can be generated between the zone to be intervened upon and its surroundings. If in infrastructural space, discrepancy can be a better teacher than certainty[29], reading this space as a sequence of problematic but significant thresholds can be particularly revelatory from a design-oriented perspective.
This is the approach underlying the proposed map, conceived as a single visual that interconnects various cartographies, drawings and diagrams (Fig.1). In the following paragraphs, the map will be unpacked into four components, in order to explore how each portion responds to specific objectives, while still working together with the other ones through intersections between layers.

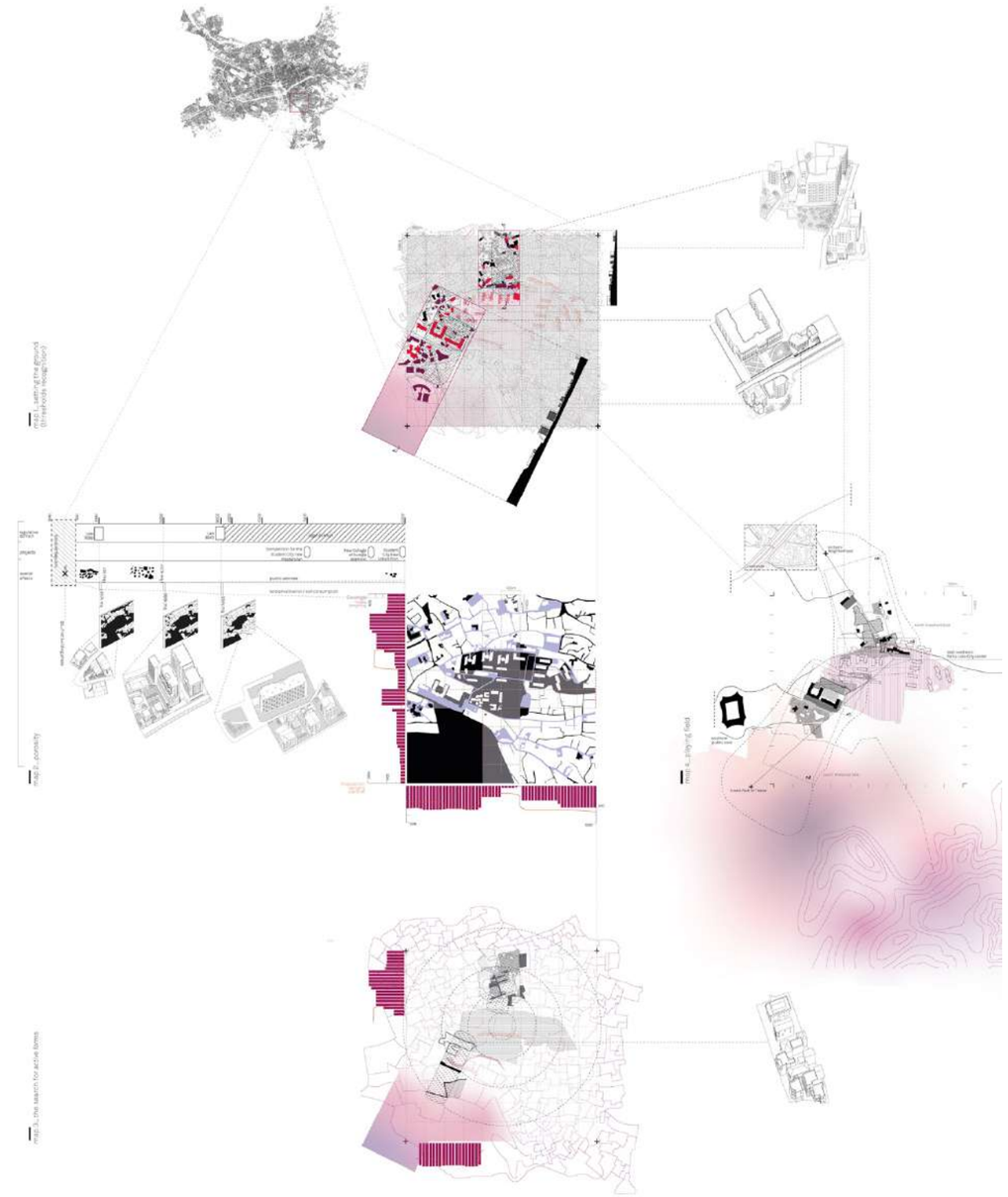


Fig.1

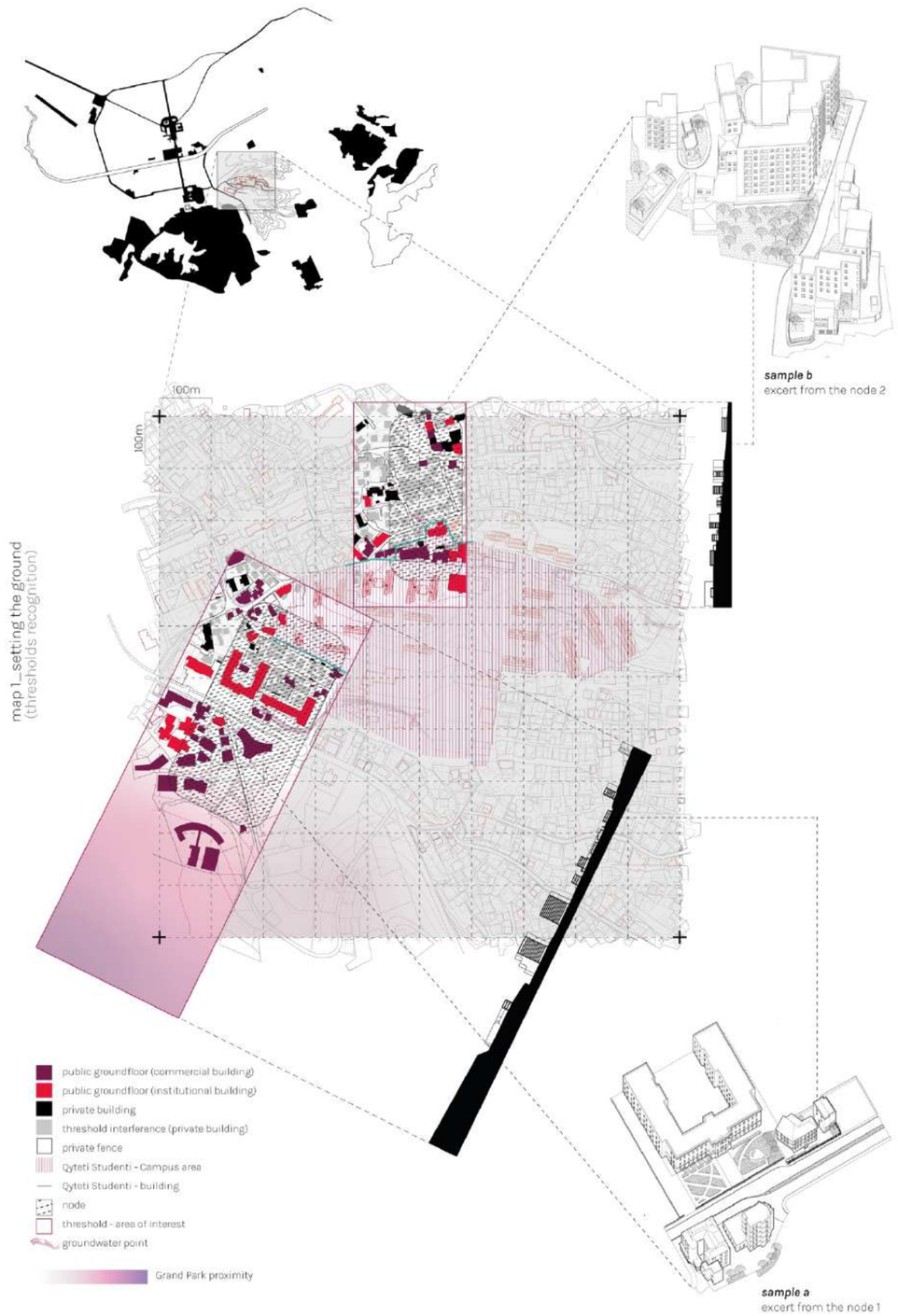
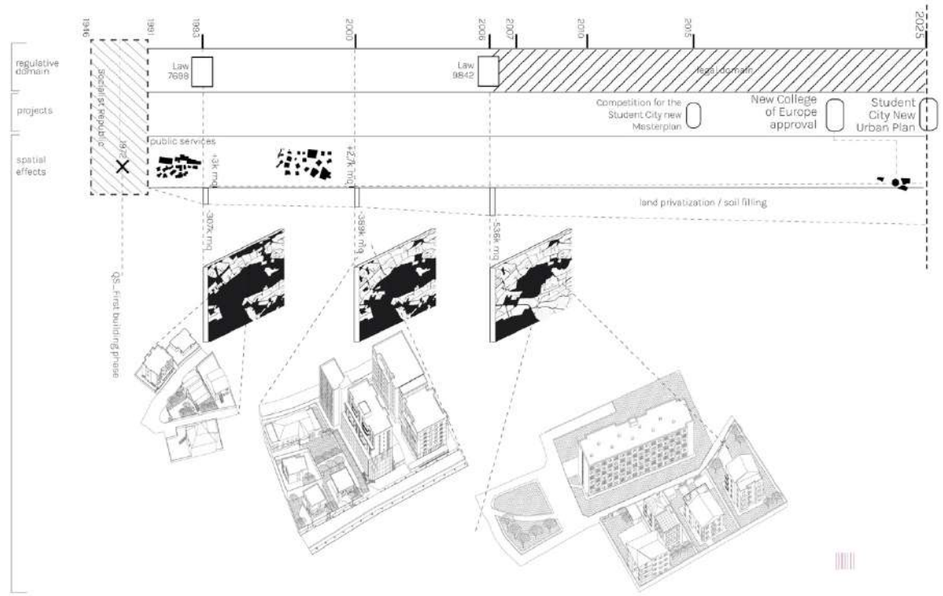

map 1_setting the ground
(thresholds recognition)
100m
100m
sample b
excert from the node 2
public groundfloor (commercial building)
public groundfloor (institutional building)
private building
threshold interferance (private building)
private fence
Qyteti Studenti - Campus area
Qyteti Studenti - building
node
threshold - area of interest
groundwater point
Grand Park proximity
sample a
excert from the node 1

Fig.2


regulative domain
projects
spatial effects
1946
1991
1993
2000
2006
2007
2010
2015
2022
Law 7698
Law 9842
Competition for the Student City new Mesterplan
New College of Europe approval
Student City New Urban Plan
public services
land privatization / soil filling
QS_First building phase

map 2_porosity and social density
Coverage index (mq/mq)
50%
100m
100m
public soil
urban voids and pathways with high potential
density vs coverage analysis: spatial portion
Population density (ab/Ha)
5000
500
50%
1000
500

Fig. 3

3.1 Layer 1: setting the ground

The first portion of the map (Fig. 2) aims to identify some of these thresholds in order to reveal nodes that simultaneously manifest a problematic fragmentation of space and potentialities for a different outcome. In order to grasp this potential, the spatial reading systematises and relates the following: the morphology of properties and how it affects space – for example in terms of accessibility and horizontal connections; public services; streets system; public-private relationships; elements that constitute the University District; underground water system; a plot clusterisation.

On this first cartographic level, other representations are layered reflecting the materiality of the highlighted thresholds – in this case, two – focusing on the urban objects that compose them in a three-dimensional key. Therefore, the analysis is already strongly oriented, even though the selected nodes does not necessarily coincide with the most relevant clots; rather, it seeks to suggest a replicable method.

Drawing helps to grasp the fragmented nature of space – which is the result of the radical redefinition of the relationship between public and private space that took place in the 1990s – clearly showing the frenzy that turned the city into a mosaic in which to insert one's own tile as soon as possible. The closer one gets to the perimeter of the Campus – the area of minor resistance, due to uncertainty regarding the actual boundaries of State property – the more evident is the erosion of public space and open areas, which are still substantial at the core of it.

Similar issues continue to arise in an isotropic manner, as shown by the map depicting current building developments adjacent to the Campus: elements that could potentially add value if included in an urban redefinition perspective – such as the large southern public park or the Ali Demi neighbourhood to the north – are compressed by an intense densification, in the lack of resonance between spatial components and of any organic reasoning about the potential of the territory as a system.

Conversely, the purpose of the proposed mapping is to shed light precisely on these nodes, even the most calcified ones, using drawing tools to evaluate how they can be part of a redefinition of the area, without resorting to a tabula rasa or a mere parcelling-out approach. This objective is achieved by highlighting those elements that can be considered organically: by superimposing different graphic codes, elements that can become “active forms” emerge, suggesting different urban assemblages. The plot clusterisation, for example, constitutes an overlay of the plot system that associates areas with certain similarities in terms of morphological characteristics, density, land use, and function. This analysis aims to identify areas suitable for compensation operations, in cases where partial replacement of buildings could lead to the implementation of the urban system, an aspect that will be explored through maps 3 and 4.

3.2 Layer 2: a dynamic sequence of stabilisations

For a better understanding of the case study – preparatory to projective reflections – the second layer provides a diachronic diagram on the evolution of the area over time (Fig. 3). The scope of this map portion is to associate certain inertia and resistance inherent in the space with the processes that determined them.

The time frames considered are only some of those that will actually be included in the final version, and refer to key moments in the development of the area, while also taking into account the information that can actually be mapped. Structurally, the diagram is divided into four different lines, summarised as follows:

1) *Spatial effects (land privatization vs public services)*: The lower part of the diagram spatialise the evolution of the illegal land occupation. It is an analysis of the form taken by the abusive land parcelling process – encouraged by the restitution of properties in 1993[30] – and how it has transformed the area, changing its very destination from an end-zone to a transitional, intermediary, and connecting one between different stratifications. This process has forced urban mechanisms, filling the space to such an extent that it has become almost impossible to change the current configuration without radical and particularly invasive interventions. In fact, after a phase of exponential increase in gross floor area and land occupation, the degree of “oscillation” of the space has rapidly decreased, approaching 0.
   Closely linked to the previous line, an abacus is then introduced showing the surface area of services and public buildings constructed during the same period, in order to comparatively analyse the exponential asymmetry that has characterised not only this area, but many areas of the capital with relation to this specific spatial relationship.

2) *Projects*: the massive scale of this sprawl and the invasion of surfaces with permanent reinforced concrete structures created another challenge for the city's functioning that is still present today, also due to the 2006 Law “On the Legalization, Urbanization, and Integration of Informal Constructions”. In the context of the concept of spatial infrastructure, this legalisation played a very significant role. On the one hand, the recognition of property status has changed the framework of rights, thereby strengthening the resilience of specific areas of space, i.e. redefining the balance of power in the relationship between the state and individual owners. On the other hand, this has consolidated the status quo of the physical space; and this, in conjunction with a fabric that has arisen in total deregulation, means fixing a configuration which is at the origin of the difficulty of adequately urbanising the territory.
   Today the pressure on the Campus is increasing. In recent years, the surrounding areas, especially in the southern part of the city, have been densified, redefining the boundary with the urban park. Today, some construction sites are beginning to reshape the area within the district itself. The new College of Europe and other adjacent construction sites (whose function and design are not always clearly specified) are examples of this.

3) *Regulative domain:* the upper and last section contains relevant moments in the regulative and legislative frame, with regards to the area under investigation. The scope is to show the relationships between the articulation of the formal framework and urbanisation. In this way, the material effects of these intersections could be highlighted, understanding how some of them have led to the decay of the urban structure, despite the aim of normalising building activity.

Eventually, the diagram converges into a second map, which provides additional information compared to the first one, such as the publicly accessible surface area and the social density in relation to the land use index.

In sum, what this second portion emphasises is the variation and variability of transformative potential. Taking into account this nature of the space, and the degrees of inertia it determines, can become decisive in approaching future transformations: the offer of flexibility in time and the possibility of adaptation over time is another way of arguing for a territory.[31]

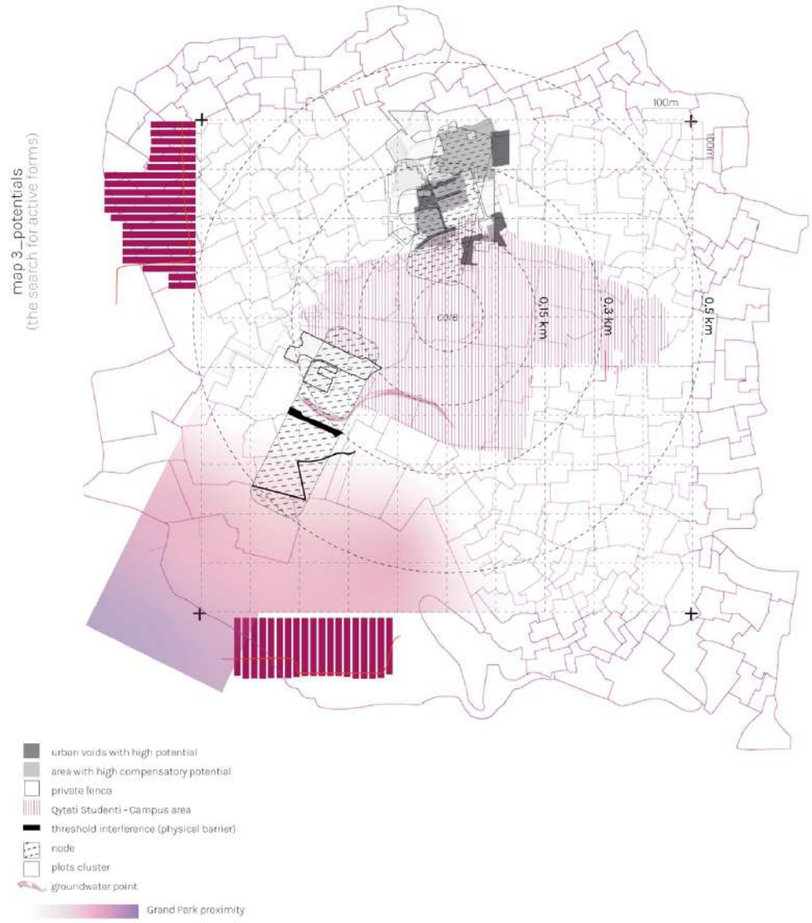


Fig. 4

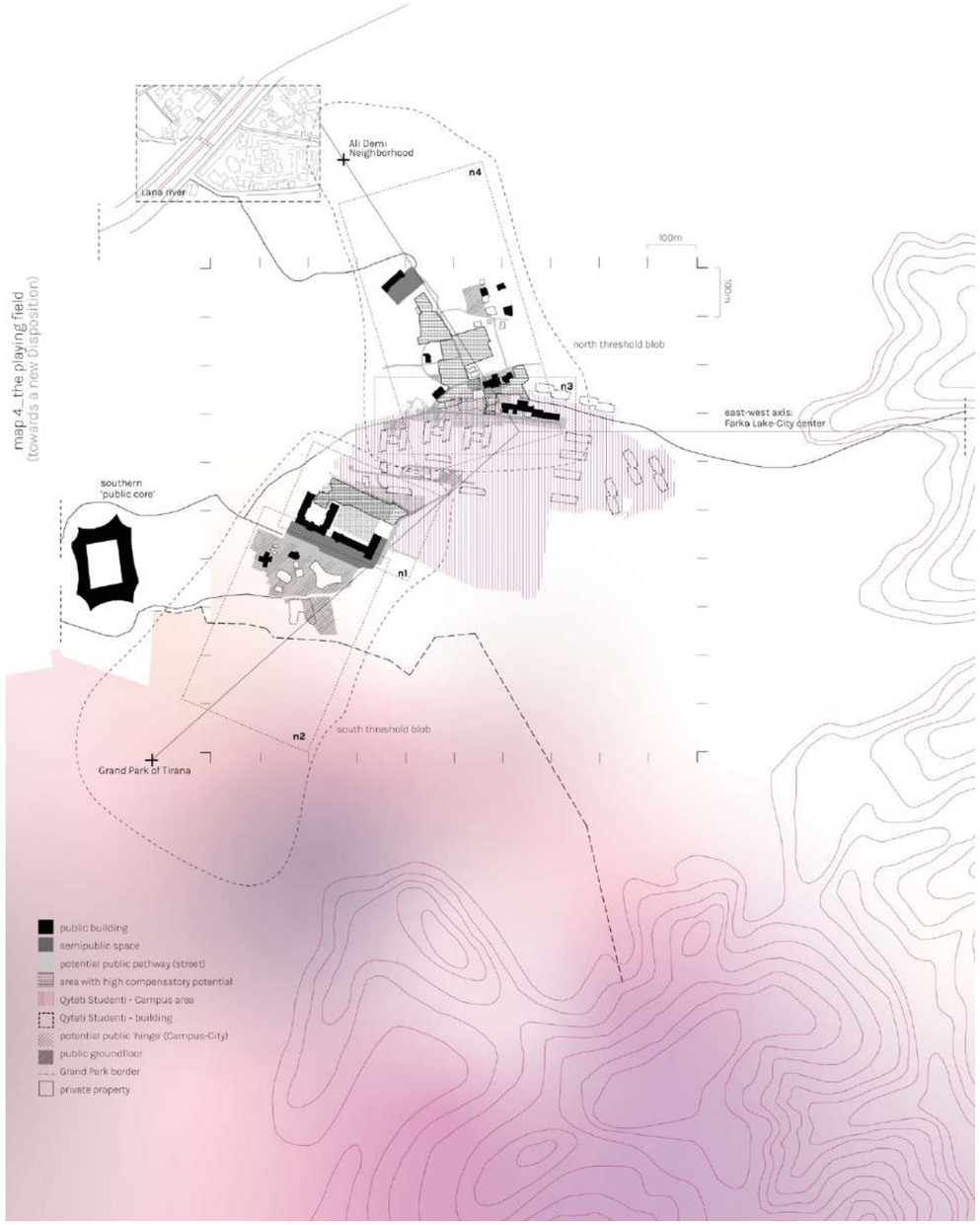


Fig. 5

3.3 Layer 3-4: the *playing field*

Physical space thus becomes the transformative material that enables a *playing field* which can only emerge through a careful observation and understanding of the territory. This approach shifts the view of space from being merely a generator of architectural form and real estate value, towards a field of unfolding relationships between potentials.[32]

The third map (Fig. 4) summarises the findings of the previous ones, highlighting only those areas – within the two selected thresholds – that can be considered as active forms: the drawing highlights the interference that exists in areas that could be particularly fertile for the reconfiguration of the relationship between the Campus and the surrounding city. It is, in fact, a preliminary basis for the last map, which ultimately aims to give materiality to this *playing field* (Fig. 5). Here the graphic code becomes more selective, less bound to an objective dimension. The image aims to emphasise some guiding principles in the definition of a possible intervention strategy; but this strategy is not conceived as a unified project or masterplan, rather as a series of intertwined spaces, transects, strips, paths that, configurable in a variable manner over time, can lead to a redefinition of the area based on the specific design *attitude* described so far.

These strategies can take various forms or – to use a widely used term – dispositions. To further simplify some of them, starting from existing urban materials: the path system as an opportunity to redefine open space and create an exchange threshold between public and private space; the ground floor as an opportunity to regenerate the relationship between building and public space and to create new urban pathways; the environmental system as an opportunity for the reconfiguration of permeable soil; the underground utility system (water, electricity, sewage, gas, etc.) as an opportunity for re-infrastructuring open spaces; the system of leftover spaces as an opportunity for the grafting of active urban elements; the analysis of the relationship between buildings, plot system and density index as a basis for compensation hypotheses leading to a redistribution of urban relationships.

Each of these strategies, regardless of the form they may take, is based on specific epistemological principles that also orient the modes of representation; in particular, the concept of “space as infrastructure” that underpins this research. Today, urbanisation in Tirana is entirely absorbed by real estate development, and this leads to continuous fragmentation, not only at the level of cartography but also in the various ways space is divided in terms of dimension, materiality, and legibility. This inevitably shapes perception and the information that can be deduced, influencing whether activities develop in restrictive or inviting ways, and whether transformation is perceived as gradual or abrupt. This is a crucial aspect, since “complexity in planning and policy implementation is not only determined by the number of actors involved, but by their nature, by the different views they have of the situation, and on the various interests that have developed”.[33]

Thus, reconfiguring analytical tools can be crucial for building a different approach to urban transformation. This is why concept such as “space as infrastructure” could make the difference, being itself an informative system.

4. Open issues and further considerations

As already pointed out, the work is still under development and based on an incremental approach. Therefore, no definitive assessments can be made regarding the actual usefulness and operability of the map, or the validity of the method. However, the modest aim of this article was not to provide definitive or established methodologies, but rather to use a particular object to condense critical reflections on the value of certain theoretical concepts that are particularly relevant with regard to the drawing sphere.

Speaking of the operational map itself, much remains to be done to enrich it, both in terms of content and data and possible layers to add. Furthermore, the more speculative portions are clearly still rough and partially cryptic, and require refinement of the graphic code. Another aspect must also be considered: as mentioned in the second chapter, this is a sort of meta-project, intended to critically define the objectives of the analysis itself. The possibility of integrating it into a broader work programme based on the capabilities of specific tools and software should therefore be explored.

However, these critical issues could also represent opportunities for further development if such an approach were actually considered as a possible aid in defining future urban strategies, not necessarily only in the case of Tirana.

Notes

1. Easterling Keller. *Extrastatecraft: The power of infrastructure space*. London: Verso Books, 2016: 72
2. *Idem*.
3. *Ibidem*: 80
4. Abrams, Janet., Hall Peter. *Else/Where Mapping*. Minneapolis: University of Minnesota Design Institute. 2016.
5. To quote some of the most notable examples in the scientific field: MACOSPOL (MApping COntroversies on Science for POLitics), a project led by the French university Science-Po and Bruno Latour in collaboration with sociologists, philosophers, architects, designers, and web experts., the work carried out by Eyal Weizman and Forensic Architecture; the Atlas of Uncertainty developed by the African Centre for Migration and Society; the mapping manual "Terra-Forma" edited by Frédérique Aït-Touati, Alexandra Arènes, Axelle Gregoire and Bruno Latour; Mapping Controversies.
6. Schoonderbeek, Marc. *Mapping in Architectural Discourse. Place-Time discontinuities*. London: Routledge. 2021: 5
7. An inter-university research funded under the PNRR TNE (Trans National Education) call for proposals promoted by the Italian Ministry of University and Research., which involves the Department of Architecture & Design of the Polytechnic of Turin, the Faculty of Architecture of Belgrade, the University of Montenegro, the Ss. Cyryl and Methodius University of Skopje and the Polytechnic of Tirana. The project focus on the complex relationship between the socialist urban legacy, the postwar transformation processes and the current phase of strong real estate pressure that the four capitals are facing.
8. In the case of Tirana, the project team include also (apart the author) Professors Roberto Dini (Polytechnic of Turin) and Irina Branko (Polytechnic of Tirana), and the work combines academic research and educational programmes focused on the analysis of certain areas of the city
9. Bornstein, Lisa. 2010. "Mega-Projects, City-Building and Community Benefits". *City, Culture and Society*, no. 1(4): 199–206.
10. Aly, Hend. 2020. "Global City Mirage: Depoliticising Urban Transformation in Belgrade and Tirana". *Annals of the Austrian Geographical Society*, no.162: 43–63.
11. Branko, Irina. "Preservation of a Porous City; Strategies for Tirana urban fabric" en (eds), AAVV, *Advanced Studies in Efficient Environmental Design and City-Planning*. Berlin: Springer: 279-290, 2021.
12. On these topic, see: Gjokutaj, Eduart. *Are we on the verge of a FINANCIAL BUBBLE*?. Tirana: Altax. 2025. + Kripa, Dorina., Korbi, Alban., Kufo, Andromahi. „Is there a bubble in the Albanian housing market?". Paper discussed at the *9th international ASECU conference on "systemic economic crisis: current issues and perspectives"*, University of Skopje. 2013.; Kripa, Dorina., Muriqi, Drijton. "The Impact of Real Estate Market in the Albanian Economy" en (eds.) AAVV, *EIRP Proceedings*, vol.10. Galati: Danubius University Press: 409-423. 2015.
13. Data on the real estate market can be consulted in the Financial Stability Reports provided by the Bank of Albania. In particular, the reports show the ratio of nonperforming loans for real estate, compared also to the house index price. See: https://www.bankofalbania.org/Financial_Stability/Financial_Stability_Reports/Financial_Stability_Reports/
14. Despite the many plans produced, from the so-called "French Plan" made in 2003 by Architecture Studio to the much-discussed 'Tirana 2030' (Boeri's green vision of 2016 strongly supported by Rama), through to the plan drawn up by Grimshaw in 2012, no instrument has been actually implemented. On the contrary, onto the green belt area – a key element of Boeri's project – which was supposed to provide a countermeasure to urban expansion by redefining the environmental system, totally different intervention are undergone, such as the massive residential developments near Lake Farka.
15 Data on construction are available on the website of Instat, Albania's main statistical institute; see: https://www.instat.gov.al/en/search/?query=urban+permits. In this case, reference is made to the following two reports: Sipërfaqja e lejeve të ndërtimit miratuar për ndërtesa të reja sipas bashkive, T1/2018 - T1/2025; Numri i lejeve të ndërtimit miratuar për ndërtesa të reja sipas bashkive, T1/2018 - T1/2025.
16. Arkivi Qëndror Teknik i Ndërtimit, Tirana (Central Technical Archive of Construction).
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21. A recurring statement in publications such as: *Art and Visual Perception*. Berkeley: Unoversity of California Press. 1974.; *Visual Thinking*. Berkeley: Unoversity of California Press. 1969.
22. Schoonderbeek, Marc. *op. cit.*
23. On this, see: Baudrillard, J. *Simulacra and Simulation*. Ann Arbor: University of Michigan Press. 1994; Pickles, John. *A History of Spaces: Cartographic Reason, Mapping, and the Geo-Coded World*. London: Routledge. 2004.
24. Lobo-Guerrero, Luis. "On the epistemology of maps and mapping. De la Cosa, Mercator and the making of spatial imaginaries" en (eds.) Bargues-Pedreny, Pol., Chandler, David., Simon, Elena. Mapping and Politics in the Digital Age. London: Routledge: 21-36. 2019.
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26. Schoonderbeek, Marc. 2017. A theory of "design by research"; Mapping experimentation in architecture and architectural design. *Ardeth*, no.1: 63-79.
27. Easterling, Keller. *op.cit.*
28. Schoonderbeek, Marc. *2021. op. cit.*
29. Easterling, Keller, *op.cit.*
30. The official restitution to former owners start in the 1993, with the Law 7698 "On the restitution and compensation of property", in a context of growing demographic movements, then stimulated the phenomenon of the right to development.
31. Rieniets, Tim., Kretschmann, Nicolas., Perret, Myriam., Christiaanse Kees. (eds). *The City as Resource.* Berlin: Jovis. 2014.
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Image Captions

Fig. 1. *Qyteti Studenti* crytical map: towards an active *Disposition.*
Fig. 2. Map 1_setting the ground: thresholds recognition. *The term "node" refers to areas where the intersection between the various layers is particularly significant, net of possible threshold transformations; **The clustering constitutes an overlay of the plot system, based on the association of areas that have certain similarities in terms of morphological characteristics, density, land use, and function.
Fig. 3. Diachronic diagram of urban development in the area in the post-socialist era; map 2_Porosity.
Fig. 4. Map 3_the search for *active forms of interplay.*
Fig. 5. Map 4_playing field: a new *Disposition.*

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Biography

Valerio Della Scala is an architect and Assistant Professor at the Polytechnic University of Turin (Department of Architecture & Design), where he teaches architectural and urban design. His research interest mainly concern the relationship between design and norm-making processes and innovation of architectural practices. Since 2018, he has been conducting research activities on Balkan territories, particularly Albania and Kosovo. Moreover, he work as a designer, both individually and as a freelancer.

An Architecture of Loss
Life, Nature and Politics in Giancarlo De Carlo's drawings

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Abstract

In an Interview, renowned Italian architect Giancarlo De Carlo underlined the importance of drawing for his architectural thought and practice by declaring "that without the closest complicity between the intellect and the hands […] one does not achieve architecture." (2018: 227). We wish to interrogate this complicity by focusing on De Carlo's somewhat understudied drawings like, for example, his sketches of Olympia and Bassae (Greece) or those for Siena's Outlook Tower. Our hypothesis is that De Carlo's sketches represent a peculiar locus to grasp the ways in which his ideas intertwine with his architectural practice. Following De Carlo's lead—who suggested that to understand his political ideas one would have to "superimpose" life with architecture (2018: 209)—we will read his sketches as the physical convergence between an idea of what life is (or should be) and architecture.

Our graphological study of De Carlo's sketches is aimed at understanding what this convergence meant for him. More precisely, we want to tackle three fundamental questions seldom addressed by commentators, like Manfredo Tafuri (1989) or John McKean (2004), who stress the importance of anarchism for De Carlo's oeuvre: what kind of anarchism was he affirming when he declared to be an anarchist? How exactly did this anarchism inform his understanding of architecture and its role with regards to the environment? Can we glean such an anarchist position from his drawings?

Our claim is that De Carlo's sketches reveal an architecture that strives to recompose a lost unity between humans and nature following the "catastrophe" of modern development (De Carlo 2010). In this regard, De Carlo's architecture participates in what we could call an *anarchism of loss*, one predicated on scientific rationalism and a form of vitalism, whose limits and potential might inform contemporary attempts to think life and nature, through architectural drawing.

Key words: Giancarlo De Carlo, anarchism, ecology, sketches, loss.

1. Introduction

In 2015, *Triennale Milano* organized a series of activities to commemorate the 10th anniversary of Giancarlo de Carlo's death. Among these initiatives, an exhibition—and accompanying catalogue—entitled *Schizzi Inediti* [*Unpublished Sketches*] was dedicated to De Carlo's freehand sketches. Giacomo Polin, co-curator of the exhibition, described these sketches as a way to approach "the most intimate and delicate part" of De Carlo's understanding of architecture.[1] Precisely due to this intimate character, and in line with De Carlo's statement "my life is mirrored in my way of doing architecture",[2] we argue that these sketches represent an exceptional archive to superimpose life and architecture in order to study De Carlo's practice. Moreover, we believe that his freehand sketches, along with the reflections jotted down in parallel to them,[3] are a privileged physical archive of the very "complicity between the intellect and the hands" which, for De Carlo, architecture could not do without.[4] More precisely, these sketches allow us to examine the intersection between De Carlo's idea of life (or how life should be) and architecture. Such an intersection, in De Carlo's oeuvre, takes the name of anarchism.

By intertwining (political) ideas and sketches, our theoretical framework situates itself within the scholarship that highlights the importance of anarchist thought for De Carlo's practice.[5] Moreover, this paper aims at remaining faithful to De Carlo's very own insistence that his architectural oeuvre should be read in relation to his politics, since architecture and ideas about (political) life—that is to say, collective life—for the architect, are "two overlapping planes that match and if you want to understand the evolution of my political ideas, I believe you should look at that overlapping in transparency".[6] However, given the limited space of this contribution, our investigation regarding De Carlo's anarchism and the way in which the latter informs his architecture will be guided by a specific focus, namely, ecology. Put differently, our main interest lies in bringing to the fore how De Carlo's sketches—which convey both his ideas about (political) life and architectural practice—depict the architect's thought regarding the relation between The Human and Nature. This focus on ecology also serves as the main criteria for selecting specific freehand sketches.

What follows will at first closely examine a series of De Carlo's freehand sketches and then suggest the latter constitute a privileged archive to consider the encounter between (political) life and architecture. As anticipated, in De Carlo's oeuvre, this encounter takes the name of anarchism. Or rather, anarchism is the *modality* chosen by De Carlo to articulate life and architecture, thought and practice, while interrogating our (humans) relation to nature. By homing in on this modality from the vantage point of the architectural language of his sketches, we will define De Carlo's anarchism against the background of 20th century anarchist currents, while focusing in particular on the way in which such a specific modality articulates our relation to the environment. This investigation of De Carlo sketches *qua* physical encounter of (political) life and architecture will then be mobilized to point to the limits and potential of the architect's anarchist perspective for contemporary architecture, in particular with regards to ecology. In this sense, we argue that De Carlo's freehand sketches are clear proof that, as put by De Carlo himself, "an architectural image can have relevant results even if it is not realized".[7]

2. Arrows, Luminous Trails and Trees: A Graphology of De Carlo's Sketches

When leafing through De Carlo's sketches, one is immediately struck by the complexity of their lines. De Carlo's stroke is hesitating, it retraces its steps and redoubles on itself, it branches off from initial lines and finally seems to refuse settling for one final form or the other. Arguably, De Carlo's hesitations, and his refusal to submit to a definitive line, account for the recurrence of arrows in his drawings; twirling arrows radically opposed to the straight arrows of liberal progressist ideology. In fact, arrows arguably allow De Carlo's sketches to remain undetermined, an aspect that is mirrored in the architect's interest in open-ended systems theory and,[8] more generally, in an architecture that remains open to use(s) and participation.[9] As De Carlo writes in *Architettura della Partecipazione* while mobilizing a combination of political thought and architecture, what is at stake in a participatory architecture is neither the planning of order nor the planning of a "disordered order", but "the conditions in which disorder could freely become manifest".[10]

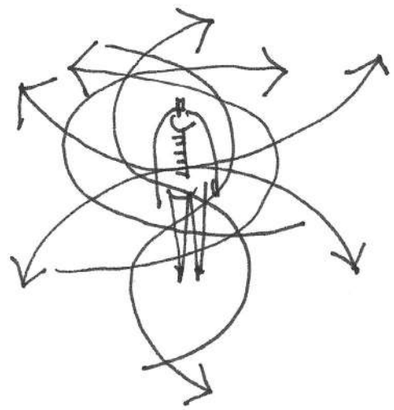

Fig. 1

A particularly striking example of De Carlo's use of arrows is probably one of his most famous freehand sketches: a headless human figure traversed and surrounded by curving arrows, part of the preparatory sketches for a theater in Salzburg (Fig. 1). We claim that this figure makes visible an open-ended understanding of human life. Indeed, De Carlo's headless human figure does not *know* where it is going (it is headless) and, contrary to Le Corbusier's *Modulor*, does not have enough stability to serve as the basic measure for the built environment. The headless figure cannot be the self-contained central measure of the world: the lines that compose it are too precarious and the arrows that traverse it and surround it might reconfigure it any moment, leaving it radically open to the "creative disorder" dear to De Carlo's intellectual and architectural project.[11] Moreover, these arrows also radically open the human figure to its surroundings. Indeed, the open-ended dimension suggested by the arrows in De Carlo's sketch is not only temporal but also spatial. The arrows are not only highlighting possible future reconfigurations, but also the figure's entanglement with its surroundings or, at least, the possibility of "establishing synergies" with it.[12] Human life is not only open towards the future but also to, and traversed by, forces (arrows) that connect it to its environment. This is why, in order to face both ecological and economic issues, the architect calls for a return to "a cosmogonic and universal vision" that embraces the universe as one organic unity comprising both humans and the environment.[13] In this sense, we can add that De Carlo arguably believed in a conjunction "between the energy of humanity and the secret impulses of the universe";[14] or, which is the same, between (human) life and nature. As we will discuss in section 3, this cosmogonic vision is also a central aspect of De Carlo's architecture, or at least of his late projects for the city of Catania, which the architect himself described as undergirded by "the limitless ambition to succeed in designing according to the arcane rhythms of nature".[15]

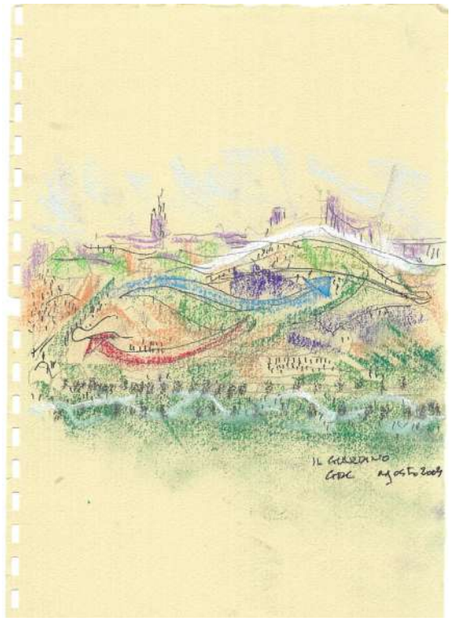

Fig. 2

A freehand sketch entitled *Il Giardino* [The Garden] (Fig. 2) aptly portrays De Carlo's cosmogonic and universal vision. De Carlo's Garden is not an enclosed space but part and parcel of the landscape. The garden's morphology is suggested by the familiar twirling, bifurcating trails and arrows that, with their luminous and bright colors, shoot across the sky over its features. De Carlo seems to be less concerned with the static shape of the territory he is sketching than with the forces and trails that traverse it. These hand-drawn lines foreground what De Carlo calls the "subtle infrastructure of existing territory, that which became stratified over the centuries and is partly erased, interrupted or forgotten but still congruous".[16] Moreover, the sketched lines turn De Carlo's cosmogonic vision into a design proposal that, through minimal intervention, revolves around the recuperation of a forgotten or lost territorial structure. This is the design hypothesis that, in 1993, De Carlo sees as "a way out that is worth exploring", insofar it would otherwise "become difficult to live, since the territory can no longer hold out against the methods and actions to which we have submitted it thus far".[17] Put differently, De Carlo seizes on the possibility of re-establishing the still congruous and yet forgotten infrastructure, the "frail apparatus […] still alive and powerfully ramified",[18] that his trails and arrows bring to the fore through "lightweight structures that techno-scientific progress is producing".[19]

Fig. 3

The vision of harmony between humans and nature that, as we have seen, characterizes both De Carlo's thought and architectural practice, surfaces in arrows but also in another recurring element of De Carlo's sketches—trees. Over the years, De Carlo became more and more interested in trees; so much that in one of the notes that compose his *Viaggi in Grecia* he states: "I look at trees, the more common and simple ones, and try to understand their secrets. Will it be useful for Siena's Tower? My curiosity goes beyond that—trees help me understand how miserable polemics about architecture are. I believe that in the few years I have left I should focus on trees—as Giuliana [his wife] says—and clear out the rest…"[20] While conveying a sense of De Carlo's cosmogonic and universal vision and its architectural outcome, trees in De Carlo's sketches also seem to be a way to articulate the relation between architecture and nature.[21] Three sketches from his *Viaggi in Grecia* clearly illustrate this point. In all sketches, trees become the (natural) extension of columns, the symbol of architecture *par excellence*. In the one presented above, De Carlo sketches the contours of a tree growing out of the ruins of a Greek temple (Fig. 3). In the other two sketches, the architect draws branches growing out of several ostensibly Greek capitals and trees emerging from the podium of the Temple of Zeus, in Olympia. In all sketches, trees are suggested rather than determined, as De Carlo remains faithful to the open-endedness of his stroke. Within this indetermination, however, we might locate the ambition to design accordingly to those arcane rhythms of nature mentioned above; rhythms that traverse human life and its practices and therefore open onto the possibility of a continuity between nature and architecture.

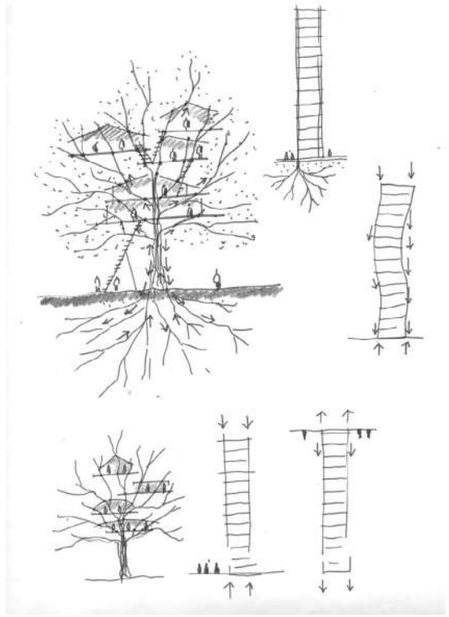

Fig. 4

Elsewhere, De Carlo draws a somewhat bare tree adorned by a number of tree-houses, the familiar arrows around its roots and trunk, and people both on its branches and under its crown (Fig. 4). In this freehand sketch—part of the preparatory sketches for Siena's Tower mentioned above—De Carlo's spatial and temporal open-endedness (the arrows pointing in different directions highlights the non-linearity of natural processes, their inherent interconnection, their open-endedness)[22] comes together with the architect's cosmogonic vision. Moreover, in this sketch De Carlo's cosmogonic vision translates once again into a specific design hypothesis. In fact, it calls attention to De Carlo's research for an architectural project capable of recuperating a fragile and forgotten infrastructure, whereby the tree serves as the infrastructure of human life and the (tree-)houses are minimal interventions that implement and live in harmony with the energetic forces that, in the form of arrows, traverse space.

These close readings suggest De Carlo's freehand sketches might be understood as physical traces of an encounter between a certain idea about (political) life, or about how life should be (i.e. open-ended and in harmony with nature), and architecture. Our claim is that, if we are to take seriously De Carlo's invitation to read his understanding of life and architecture as "two overlapping planes that match",[23] then such aspects cannot be understood as two separate planes that are *then* added together in freehand sketches. Rather, in De Carlo's oeuvre, life and architecture are *always already* superimposed, with sketches acting as an illustration of the specific *mode* in which De Carlo articulates these planes. We argue that this mode is what De Carlo has called a "*scorcio anarchico*" [anarchist glimpse].[24]

In his lengthy interviews with Franco Bunčuga, De Carlo seems to refrain from defining himself as an anarchist and notes: "I remember telling you that I am not sure whether I am an anarchist".[25] This reserve bears all its significance if we note that, for De Carlo, anarchy "is a limit that one must always pursue, but that is reached quite rarely".[26] In other words, De Carlo's reserve in attributing himself the qualification of anarchist lies in the fact that "anarchist" is not something that one *is* or something one can achieve; anarchy, for De Carlo, is rather a *modality*, a mode of being and a way of doing. In describing "almost all the anarchists of value I happened to meet" De Carlo notes that they believed "that means are more important than ends".[27] For anarchists, De Carlo insists, "means modify ends" and this, he continues, "seemed to be a good point also for urbanism and architecture, and so I adopted it as my keystone [*chiave delle mie volte*]".[28] De Carlo, by immediately overlapping political thought and architecture, thus understands anarchy as a *mode* of doing characterized by the predominance of means over ends. In these terms, anarchy cannot be constrained within one specific domain, whether architectural or other, but is rather a *disposition* toward praxis whereby thinking and doing are always already linked.

This disposition has specific consequences for De Carlo: "Anarchists, precisely because they give importance to means, end up suggesting complex and tortuous processes, described by curves, hesitant and itinerant".[29] It is hard not to see in these words a description of the freehand sketches studied above, which, in light of these words, emerge precisely as the physical archive of the modality that, for De Carlo, was anarchy. For the architect—and for the purpose of our contribution—the hesitant and itinerant curves are of crucial importance because the tortuous processes of anarchists "are processes of nature itself, the ones that should direct architectural and urban projects".[30] What we glimpse through De Carlo's "scorcio anarchico"—a way of designing that "is open but not wide-open, firm but not hierarchical, non-authoritarian"—[31] is nothing other than the processes of nature itself. According to De Carlo's cosmogonic and universal vision, in fact, nature itself is anarchist and the technological efforts of architecture should therefore strive towards the reconstitution or the facilitation of the natural (and open-ended) processes that are part of the collective and individual life of humans.

We argue that the specific association between nature and anarchy, as well as the goal to reconstitute a feeble and forgotten infrastructure through architecture, place De Carlo within a specific form of 20th century anarchism, which we will explore in the next section and will call "anarchism of loss". By positing the definition "anarchism of loss" we intend to expand on the broader theoretical context which De Carlo's anarchic mode of being, thinking and designing refers to, as a way to forward, at the same time, our graphological reading of his freehand sketches. However, this short contribution will not examine in detail all literary occurrences of De Carlo's anarchism, but will rather trade on scholars who have done so in great detail.[32] In doing so, we will focus on another close reading of one of De Carlo's sketches and pay particular attention to its ecological implications.

3. *Scorcio Anarchico*. De Carlo's Anarchism of Loss

A late sketch of De Carlo, dated January 2003, depicts a scene of gathering (Fig. 4). Under the vast and lush canopy of a tree, a score of human figures, both children and adults, is huddling around its wide trunk; at its base, bright colours indicate access to a hearth of some sort. The pitched rooves of simple architectures and wavy heaps of ground serve as a background to the scene and further the sense of a welcoming enclosed space for the assembly of this anonymous community. As mentioned above, the tree is a recurring figure in De Carlo's freehand sketches and, we argue, key to understanding De Carlo's anarchism. The tree at the centre of the sketch and its luminous hearth, along with the huddled human figures and their built surroundings, conjure up a scene of harmony, community and unity between humans and nature that points to the anarchist vision we have started to sketch out in the previous section. Reading his travel notes and sketches chronologically, one is able to detect the growing attention De Carlo paid towards the figure of the tree for the thought and practice of his architecture. The same attentiveness which, as described above, led him to think he should focus on trees and do away with all the rest. Students, he reflects while in Kosmas in June-July 1997, "should be encouraged to 'read' century-old plane trees".[33] In doing so, De Carlo continues, they would learn "to read the processes of living beings—humans and trees—in symbiotic relationship within space […] They [students] would not need to think of ecology because it would already be implied within architecture".[34] An architecture that would already imply ecology is what De Carlo was arguably tying to depict in sketches like those presented above (Fig. 3; Fig. 4; Fig. 5). In these sketches, in fact, trees and humans entertain a symbiotic relation which architecture is there to enhance.

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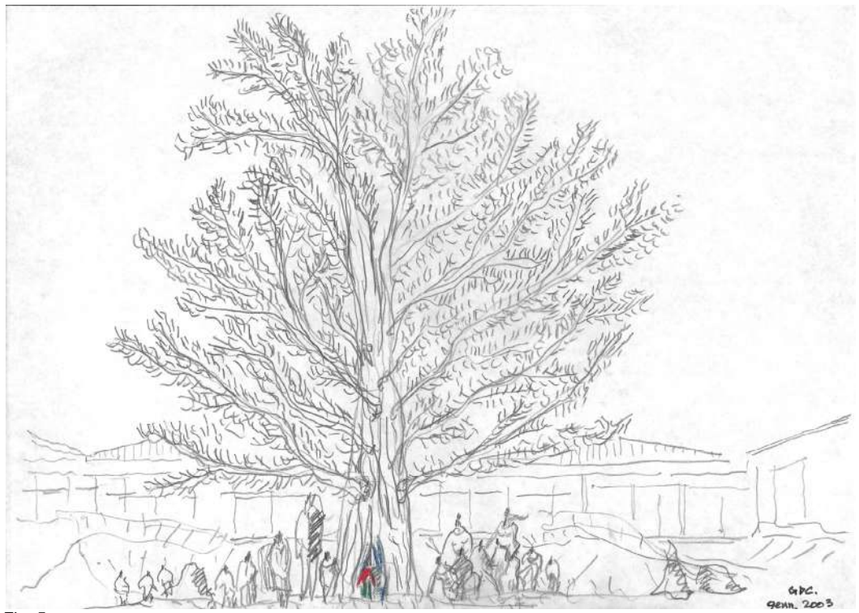

Fig. 5

The intimate relationship between ecology and architecture that surfaces in De Carlo's sketches reveals the proximity between the architect's cosmogonic vision of human-nature unity and Pëtr Kropotkin's thought on the relationship between natural science and anarchy. Associating De Carlo and Kropotkin is not a spurious argument. The ideas of the Russian anarchist and geographer were in fact cornerstone references for De Carlo and provided "the foundations of a libertarian urbanism"[35] (of the likes of Patrick Geddes' Colin Ward, and John Turner),[36] that dominant critique within the Modern Movement has sought to put to the side.[37] Indeed, influenced, as De Carlo,[38] by William Morris's utopian socialism, Kropotkin saw in architecture—"a social art above all"[39]—the material realisation of his evolutionary theory of mutual aid, according to which societal progress is inherent to human nature in the form of mutual cooperation and support, rather than capitalist competition.[40] In other words, Kropotkin understood society (and architecture) as an expression of (human) nature, symbiotically thinking nature with society rather than one against the other. In his *Mutual Aid* (1902), Medieval architecture, in particular, springs out of "a conception of brotherhood and unity fostered by the city", where lay and religious communal buildings "symbolized the grandeur of an organism of which every mason and stone-cutter was the builder".[41] Architecture, for Kropotkin, is thus the collective result of an "eminently social life",[42] which *naturally* fosters the emergence of decentralised "free groupings" of people, as opposed to the social constraints and metaphysical symbols imposed on human relationality by the "two ancient enemies of freedom", namely, the Church and the State.

Kropotkin's insistence on the *natural* dimension of societal progress rests on a scientific view of anarchism exposed with clarity in *Modern Science and Anarchism* (1903). Here Kropotkin brings together anarchism and 'life sciences' in order to claim that the societal progress proper to humans' collective life can ultimately be ascribed to nature. In other words, in attempting to bridge the natural sciences and human institutions, Kropotkin sees Anarchy—with a capital A—as the natural end of human progress, or, as put by his Italian friend (and critic) Errico Malatesta, for Kropotkin, "Anarchy is the mode of organisation exacted by Nature's laws".[43] It is worth quoting Kropotkin himself at length:

> "Anarchy is a conception of the universe based on the *mechanical* interpretation of phenomena which embraces the whole of nature, including the life of societies. Its method is that of the natural sciences; and every scientific conclusion must be verified by this method. Its tendency is to build a synthetic philosophy which will include all the facts of Nature—including the life of human societies and their economic, political and moral problems [...]".[44]

It is easy to see the echoes of Kropotkin's natural anarchy in Giancarlo De Carlo's architectural oeuvre. Either is based on the scientific presupposition of a harmonic relationship between humans and nature, whose ultimate goal is, of natural necessity, an (anarchic) organic unity. Within this framework, historically determined political and economic constraints cloak over and hold back an

innate commonality among humans, as much as between humans and nature. The goal of Kropotkin's Anarchy and De Carlo's architecture is to create the conditions that are necessary in order to free life from these constraints, or to put it in De Carlo's architectural terms quoted above: "to establish the conditions in which disorder could freely become manifest".[45] In turn, as put by Saul Newman *vis-à-vis* the theoretical followers of Kropotkin's theories, this liberation brings forward the prospect of: "a rationally ordered society embodied within a sort of social totality that is immanent within nature, and whose dialectical unfolding will produce a flowering of human freedom";[46]a harmonious totality between humans and nature, springing from and striving towards freedom. In this sense, we might argue that De Carlo's anarchism may be understood against the background of what Newman would call a positivist revolutionary anarchism.[47]

But proximity between Kropotkin and De Carlo does not necessarily entail identity. While, for both, anarchy, as the natural end of human progress and development, entails the cosmogonic and scientifically rational unity among humans and nature; the architect's position is marked by a painful awareness regarding the fact that we have *lost* this cosmogonic unity. De Carlo is profoundly absorbed in grappling with the separation provoked by the social and ecological "catastrophe" that is capitalism.[48] Our view, in fact, is that for De Carlo the originary unity between humans and nature is fundamentally lost. This is why his anarchism could also be understood as an *anarchism of loss*, an anarchism that nostalgically understands the organic unity between humans and nature as fundamentally corrupted in our capitalist present.

De Carlo's painful experience of this loss of harmony is particularly evident in his Greek travel notes and sketches. Over the span of almost 30 years, De Carlo travelled across both the country's mainland and islands. As years pass, De Carlo dismally notes down how mass tourism destroyed the Mediterranean landscapes and ecological balances of Chalkidiki, or the refined "admixture between nature and tumbledown artifact",[49] achieved by the ruins of ancient Greek architecture (Fig. 3).[50] The world, he observes, "is getting worse".[51] "Leaving the doors of the terrestrial paradise of Chalkidiki open", he adds, "was a mistake: they should have been barred up and humans should have been made not to return".[52] This ecological catastrophe befalls on social relations too: De Carlo reports on how consumerism and individualism have severed Greek communitarian bonds,[53] the symbol of which are large plane trees in public squares, such as the one sketched above (Fig. 5). Had this catastrophe not happened, "then relations between human beings and architecture, between architecture and nature, between nature and human beings, would have been different: pacific and creative, non-antagonistic, organic".[54] Greece *was and is no longer* De Carlo's paradise on Earth, the space of a free, bare and natural existence.

However, De Carlo's anarchism of loss is not a form of defeatism or of secular quietism. His nostalgia for a lost communitarian unity among humans and nature is arguably not a retreat, even if nature "cannot be rebuilt once it has been destroyed, burnt, polluted, consumed and—worse of all—revealed like a commodity bereft of mystery".[55] Indeed, while the ecological and social catastrophe produced by capitalist 'progress' in Greece, left him with an "indignation [that] by now has faded into resignation";[56] his architectural practice is never remissive: it seeks to oppose the unfettered development of capitalism. De Carlo's resistance passes through forms of (re)connection and (re)constitution that are capable of potentially recovering a form of organic unity between humans and nature. But this work of reconstitution does not entail a naïve call to a (reactionary) return to pre-modern and pre-capitalistic forms of life through the mediation of architecture. On the contrary, it is clear that for De Carlo our previous unity with nature is forever lost. However, it is still possible to constitute a unity that is both original and originary; that is to say, a unity that is both a new articulation *and* a reconstitution of humans and nature through specific architectural and urban practices. This is precisely what is at stake in the "new hypothesis" that De Carlo puts forward in *La Città e il Territorio*—an architectural and urban practice that sets out to reconstitute and recuperate the frail apparatus which still preserves the traces of an organic unity between humans and nature through the (newly available) means of scientific and technological progress.[57]

The freehand sketches studied above with their arrows, luminous trails and trees are emblematic figures of this work of original and originary reconstitution. They show the architect's attempt to highlight and bring to the fore the frail structure that organized our organic unity with nature. Yet, with their hesitations and turns, De Carlo's lines do not draw a fixed plan for restoring the past; they are stretched toward an open-ended future in which past traces of unity (the remnants of paradise) could be mobilized again. De Carlo's sketches visually render his design hypothesis for articulating life and architecture, and as such highlight how "an architectural image can have relevant results even if it is not realized".[58] In the last section of this contribution we will focus precisely on the relevance of De Carlo's design hypothesis for tackling contemporary ecological issues in architecture as well as its limits.

4. Conclusions: De Carlo's Architecture of Means and its Vitalism

In his interviews with Bunčuga, De Carlo asks himself whether it might possible "to have a project without holding down its ends" and immediately answers "I believe so".[59] De Carlo's freehand sketches visually articulate this belief. Indeed, their curved arrows and uncertain lines break with an architectural tradition according to which *ends* are architecture's main concern and architectural skill resides in "knowing how to choose the most suitable means to reach them quickly".[60] De Carlo's lines and arrows are not propelling us towards a pre-established end but linger on the *means*, as well as on the processes shaping (human) life.[61] This is admittedly an inefficient strategy and yet, De Carlo notes, "being inefficient leads to being effective […] it opens more possibilities to connect with other non-linear processes, like the ones of nature".[62]

In an historical conjuncture where the unpredictability, instability and non-linearity of both natural processes and human collective life have become painfully evident, we believe that De Carlo's architecture of means and its proposition of (re)constitution is of vital importance. De Carlo's precarious headless figure (Fig. 1) is a much more apt representation of contemporary (human) life than its predecessor, Le Corbusier's *Modulor*. Indeed, De Carlo's figure suggests an architecture that engages with human life, and life in general, without repressing its complexities in the name of an end; a crucial element to an architectural agenda that engages seriously with contemporary ecological and social issues.

For De Carlo, as we have seen, to focus on means and on the complexities of life opens a "*scorcio anarchico*", a fleeting glimpse of a life in which humans form an organic unity with nature. Indeed, like Kropotkin, De Carlo believed that the complexities of human life, architecture included, are nothing but an expression of nature. This "scorcio anarchico" frames human life as natural life; as part and parcel of the organic and cosmogonic unity which De Carlo's sketches for the Siena Tower or of Greek landscapes depict (Fig. 3, Fig. 4).

We argue that this is the main limit of De Carlo's design hypothesis and intellectual project. By positing human life as natural life and believing in the existence of an originary, organic unity that we have lost—but could (re)constitute through architecture—De Carlo falls into a vitalist (and therefore religious) trap. We understand vitalism as a theoretical position that defines life as an ensemble of forces that exceed, overflow, and cannot be reduced to any given historical articulation of life, and which thus affirms the primacy of these forces over historical conditions.[63] These vitalist forces cannot be reduced to the forces of physics or biology and, as Benjamin Noys has recently noted, "pose the powers of a living disproportion, of an immeasurable power of life, against the 'biometric proportion' of capitalist and state power".[64] This power of life is precisely what De Carlo's Kropotkian "scorcio anarchico" reveals. Human life, for De Carlo, must return to a natural life that exceeds and precedes the situatedness and political constraints of historical life and his open-ended strategy of (re)constitution is aimed precisely at freeing this vitalist overflow. This position is (involuntarily) undergirded by a religious structure insofar as it relies on the *belief* in an overflowing life which at the beginning of human history was supposedly free and has subsequently been trapped by institutions such as the Church and the State. To put it simply, the fact that De Carlo believed that we have lost paradise due to the catastrophe of capitalism also means that he believed in paradise.

In our view, this religious structure represents a limit of De Carlo's ecological concern. Indeed, it grounds De Carlo's strategy of (re)connection on the *belief* in a category of life—visually rendered by De Carlo's arrows and trails *qua* vital forces traversing both humans and non-humans—that abstracts material and historical specificities from collective and individual lives. By following this strategy, De Carlo runs the risk of relying too heavily on the existence of vital forces and the cosmogonic unity between humans and nature they entail. What if there were, on the contrary, no original unity and no excess of life? Would this entail that there can be no liberating and ecological horizon for architecture? This is not the case in our view and, to further De Carlo's project of liberation, we might need to disentangle his anarchism from the vitalist grounds which ultimately bound him to a religious belief in the mystery of nature.

Notes

1. Anna De Carlo and Giacomo Polin (eds.), *Giancarlo De Carlo. Schizzi inediti. Ediz. italiana e inglese* (Mantova: Corraini Editore, 2014), 21. Translation modified. Free translation from Italian into English by the authors,unless otherwise indicated.
2. Giancarlo De Carlo and Franco Bunčuga, *Conversazioni su architettura e libertà* (Milano: Elèuthera, 2018), 209.
3. We argue that De Carlo's notes are a continuation of his sketches and viceversa; his freehand sketches, in our view, cannot be set apart from his writing. The proximity of these two modes of exression emerge particularly from De Carlo's travel notes. See, Giancarlo De Carlo, *Viaggi in Grecia*, ed. Anna De Carlo (Macerata: Quodlibet, 2010), 33-41.
4. Ibid., 228.
5. See, for instance: Manfredo Tafuri, *History of Italian Architecture, 1944-1985*, tr. Jessica Levine (Cambridge, MA and London : The MIT Press, 1989), 120. John McKean, *Giancarlo De Carlo. Layered Places* (Stuttgart and London: Edition Axel Menges, 2004), 119 ; Carlo Olmo, *Architettura e Novecento. Diritti, Conflitti, Valori* (Roma: Donzelli Editore, 2010), 24, 79. Cristina Bianchetti, *Spazi che Contano. Il Progetto Urbanistico in Epoca Neo-liberale* (Roma : Donzelli Editore, 2016), 101.
6. De Carlo and Bunčuga, *Conversazioni*, 209.
7. Giancarlo De Carlo, *L'architettura della partecipazione*, ed. Sara Marini (Macerata: Quodlibet, 2015), 63.
8. Ibid., 74-76.
9. Ibid., 76-78.
10. Ibid., 74.
11. Ibid., 73.
12. De Carlo and Bunčuga, *Conversazioni*, 231.
13. Giancarlo De Carlo, *La città e il territorio. Quattro lezioni*, ed. Clelia Tuscano (Macerata: Quodlibet, 2019), 44.
14. De Carlo and Bunčuga, *Conversazioni*, 225.
15. Ibid., 244.
16. De Carlo, *La città e il territorio*, 193.
17. Ibid., 197.
18. Ibid., 31.
19. Ibid., 191.
20. De Carlo, *Viaggi in Grecia*, 135.
21. Ibid., 79.
22. On De Carlo's understanding of nature as non-linear and open-ended see e.g. De Carlo and Bunčuga, *Conversazioni*, 212-213.
23. De Carlo and Bunčuga, *Conversazioni*, 209.
24. Ibid., 232.
25. Ibid., 209.
26. Ibid., 238.
27. Ibid., 210.
28. Ibid., 210.
29. Ibid., 212.
30. Ibid., 212.
31. Ibid., 232.
32. The architectural specificities of De Carlo's goal to develop an anarchist or anti-authoritarian form of design and planning are often addressed starting from his personal experience, friendships and architectural training during and in the wake of War World II. In the 1940s in particular, De Carlo cultivates friendships and personal exchanges with Carlo Doglio and Delfino Insolera, who bring him to actively participate in the *Congresso Anarchico* in Carrara (1945) and Canosa di Puglia (1948). By meeting anarchist thinker Cesare Zaccaria, De Carlo would then access the intellectual and political environment surrounding the British journal *Freedom*, and thus, architects such as Colin Ward, John Turner e Patrick Crooke; this would later bring him even closer to the Anglophone world and US Advocacy Planning. On this, see, e.g. Francesco Samassa, *Giancarlo De Carlo* (Roma: Carocci Editore, 2024), 131-137; Alberto Terminio, "La Prospettiva Anarchica di Giancarlo De Carlo," *Op. Cit.* no. 169 (2020): 25-35.
33. De Carlo, *Viaggi in Grecia*, 165.
34. Ibid., 166
35. Giancarlo De Carlo, "L'architetto e il Potere," *A - Rivista Anarchica* 19, no. 161 (1989): Online. Available at: https://www.arivista.org/?nr=161&pag=161_12.html. (Accessed: 11.09.2025)
36. See Giancarlo De Carlo, "A Carrara senza i CC," *A - Rivista Anarchica* 28, no. 243 (1998): Online. Available at: https://www.arivista.org/?nr=243&pag=243_14.htm. (Accessed: 11.09.2025).
37. Terminio, "La Prospettiva Anarchica," 28.
38. On the importance of Morris for De Carlo, see, for instance, Samassa, *Giancarlo De Carlo*, 17-20; 123-124. Also, Giancarlo De Carlo, *William Morris*, Milano: Il Balcone, 1947.
39. Pëtr Kropotkin, *Mutual Aid. A Factor of Evolution* (New York: Dover Publications, 2012), 173.
40. "Kropotkin wished to correct its [Darwinism] capitalistically-determined one-sided interpretation, which saw only competition and not the far more important factor of mutual aid as the instrument of survival." Paul Mattick, "Kropotkin on Mutual Aid," *Western Socialist*, January-February, 1956, https://www.marxists.org/archive/mattick-paul/1956/kropotkin.htm
41. Kropotkin. *Mutual Aid*, 174.
42. Ibid.
43. Errico Malatesta, "Peter Kropotkin: Recollections and Criticisms by one of his old friends," *The Method of Freedom: An Errico Malatesta Reader*, ed. Davide Turcato (Oakland/Edinburgh: AK Press, 2014), 517.
44. Pëtr Kropotkin, *Modern Science and Anarchism* (London: Freedom Press, 1912), 38.
45. De Carlo, *L'architettura della partecipazione*, 74.
46. Saul Newman, *Postanarchism* (Cambridge: Polity Press, 2015), 6.
47. Ibid., passim.
48. De Carlo, *Viaggi in Grecia,* passim.
49. Ibid., 157.
50. Ibid., 158.
51. Ibid., 40.
52. Ibid., 27.
53. Ibid., *passim*.
54. Ibid., 62.
55. Ibid., 41.
56. Ibid., 131.
57. De Carlo, *La città e il territorio*,189-197.

58. De Carlo, *L'architettura della partecipazione*, 63.
59. De Carlo and Bunčuga, *Conversazioni*, 211.
60. Ibid.
61. The project of architecture is notably a process for De Carlo. See, e.g. De Carlo, *L'architettura della partecipazione*, 68-71.
62. Ibid.
63. This understanding of life is central to extremely influential thinkers like Friedrich Nietzche, Henry Bergson and Gilles Deleuze. See e.g. Henri Bergson, *Laughter ; an Essay on the Meaning of the Comic* (New York: Macmillan, 1911); Gilles Deleuze, *Bergsonism* (New York: Zone Books, 1990). Friedrich Nietzsche, *The Will to Power*, ed. Walter Kaufmann (New York: Vintage, 1968).
64. Benjamin Noys, *Envisioning the Good Life: The Limits of Contemporary Vitalism* (Edinburgh: Edinburgh University Press, 2025), 1.

Image Captions

Fig. 1. Giancarlo de Carlo. Schizzo per il concorso del teatro di Salisburgo, n.d. Courtesy of Archivio Privato Anna de Carlo.
Fig. 2. Giancarlo de Carlo. Schizzo per il concorso Giardini Garibaldi, 2003. Courtesy of Archivio Privato Anna de Carlo.
Fig. 3. Giancarlo de Carlo. Schizzo di rovine in Grecia, n.d. Courtesy of Archivio Privato Anna de Carlo.
Fig. 4. Giancarlo de Carlo. Schizzo per il progetto della torre di Siena, n.d. Courtesy of Archivio Privato Anna de Carlo.
Fig. 5. Giancarlo de Carlo. Schizzo libero, 2003. Courtesy of Archivio Privato Anna de Carlo.

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Drawing Ideas, Ideating Drawings
Grapho-logics of a Smuggler: Pancho Guedes' Drawings as Critical Resistance

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Abstract

Amidst the contemporary crisis of visual thinking – torn between the fetishization of drawing and its digital homogenization – the work of Pancho Guedes emerges as an *alternative* model. His cross-cultural practice, developed across Mozambique, South Africa and Portugal, transforms drawing into a critical medium: not mere representation, but a space of tension between art and architecture, construction and theory, reality and desire.
This paper explores how Guedes (1925-2015) developed what Purini calls Theoretical Landscapes (1996): drawings that synthesize architectural problems into autonomous forms.
We recognise three complementary approaches in Guedes drawings' corpus: Life sketches, that interpret reality through an ironic design lens; Classifications of heterogeneous elements (from construction details to mythological figures), organized into families of forms; Programmatic diagrams, that translate imagination into compositional logic. Guedes developed a unique grapho-logic where these three approaches are not separate categories but interconnected phases of a continuous critical process**,** from lived experience to build form.
Striving between "paper architecture" and Le Corbusier's Purism, Guedes' approach seems to deliberately sabotage disciplinary boundaries. His drawings are simultaneously notes, autonomous works and construction instructions. Between colonial influence, European modernism, and local tradition, Guedes developed a hybrid vocabulary that invites us to move beyond even a meta-historical narrative towards an analysis based on the image itself.

Guedes' legacy appears particularly stimulating today: in the age of digital standardization, his archives suggest drawing can still be a critical research tool, provided we accept its elusive, unclassifiable nature. His "theoretical landscapes" don't merely illustrate pre-existing ideas but generate knowledge through the graphic gesture itself – a challenge that might enrich reflection on visual methods in architecture.

Key words: Pancho Guedes, architectural families, hand-drawn ambiguity, unclassifiable drawing, drawing as critique.

1. Introduction. The Crisis of Visual Thought: An Alternative Proposal

In the scenario described by the call – characterized by the frenetic consumption of images, the impact of AI, and the tendency to replace criticism with pure visibility – the work of Amâncio d'Alpoim Miranda Guedes, also known as Pancho Guedes (Lisbon 1925 – Graaff-Reinet, South Africa, 2015) offers an exemplary case study. This contribution welcomes the invitation to "put visual-graphical information back at the core of architectural criticism," investigating how Guedes's drawings function as a *medium* (Evans 1986) capable not only of translating ideas into construction but, above all, of generating autonomous critical knowledge. The moment of construction is part of a self-critical process that is not exhausted with the satisfaction of the building site, which instead represents a juncture for subsequent elaborations. *The practice of architecture* is the title of a lecture delivered in 1964. On this occasion, Guedes presents himself as a *smuggler*, a fool, an exaggerator. Guedes is a Dadaist, he speaks of himself in the third person and through manifestos; here he stated: "I think nothing is more like an architect than another architect (…) Buildings grow out of each other." [1] Guedes looks at (and re-examines) his own work in a continuous tension between ideation and metaphor, between pretext and critical rationalism, between the real and the fantastic. His drawings are interconnected like nodes in a network, which Guedes delights in crumpling. He renders it alien – at times unbearable, sometimes *naïve*, at other times grotesque – only to meticulously unravel it again through his map-catalogues, using the device of "families. Guedes's network is in constant transformation: nodes (any form of representation) nourish others which are added to the network, changing its connections. This approach, far from irrational and based on the author's distinctive logic, inevitably produces a vast quantity of material (drawings, paintings, sculptures, murals, toys, jewelleries, embroideries), in addition to a dizzying sense of disorientation. This approach is, on one hand, profoundly generous, and on the other, intensely laborious. Within this armillary system, one recognizes "Theoretical Landscapes" (*Paesaggi teorici*, Purini 1996) guided by "The Thought of the Hand" (*Il pensiero della mano*, Carnevale 1991) and by the slow time of material culture.

In accordance with the call, drawing in architecture experiences a profound dichotomy in contemporaneity. On one hand, it is the object of a *fetishization* (call), reduced to a final product to be admired, often absorbed by the logics of the art market. On the other hand, it undergoes a process of digital homogenization, where the tool risks standardizing thought, flattening the linguistic specificities and the generative imperfections of the manual act. In this scenario, the work of Guedes proposes itself as an alternative and powerfully critical model. In the cross-cultural practice of the Luso-Mozambican architect, drawing is renovated from a simple instrument of representation into a critical medium: a space of fertile tension between art and architecture, construction and theory, reality and desire. A *prism*, as his son would describe it. Undoubtedly, the sequence of geo-temporal frameworks in which the author operates also contributes to developing such a personal practice**.**

These notes aim to explore the method developed by Guedes through the Purinian concept of Theoretical Landscape: drawings synthesizing architectural questions into autonomous forms, not illustrative rather knowledge-generative. Queries tied to the very essence of the discipline, for which the construction site is an epiphenomenon, necessary but not indispensable for the development of the authorial thought. Issues investigated by drawing, which act becomes both criticism and instrument. Through an on-going overview of the architect vast graphic archive, three cultural drawing attitudes are appointed: sketches from life, drawings for classification, and programmatic drawings. These graphic apparatuses are not exhausted with the *momentum* (be it a study, a client, a competition, a construction site, an exhibition). The practice falls within a dynamic hermeneutic project: a Warburgian practice of continuous reworking where Guedes corroborates, denies, and contradicts his own images, systematically sabotaging disciplinary boundaries and temporal finality. His legacy proves particularly stimulating today: in an age of digital standardization and forgetful replacement (where, at best, data is merely backed up), the Guedesian *oeuvre* posits drawing as an enduring instrument of critical research, provided one accepts its elusive and unclassifiable nature.

2. Biography of a Smuggler: Guedes's Critical Positioning

"I see myself as an architectural explorer; a smuggler, a fool, an exaggerator, an architectural gunrunner."[1]

Before delving into the theoretical foundations of his work, it is useful to briefly frame the figure of Amâncio d'Alpoim Miranda Guedes. This serves as a premise for interpreting the genesis of his critical approach to drawing and his peculiar generative idiom. Raised in a colonial context and trained in the post-Martienssen school, Guedes operated in an Africa profoundly different from the world of his European contemporaries. His peripheral positioning relative to the centres of Western architectural culture proved to be a strategic advantage[4]. Within this historical-political-economic context (colonial Mozambique), he authored and promoted a remarkable number of projects; some of his works were featured in the volume by Fry and Drew (1956) and exhibited at the VI São Paulo Art Biennial (1961). Like most of his contemporaries, Guedes also looked to Le Corbusier: studying (and perhaps emulating) those principles and

processes he recognized in the subversive freedoms of figurative interpretations. These biographical elements are taken as the condition that allowed him to be a "smuggler" (as he defined himself), free to blend languages without the judgment of the architectural establishment. This freedom is perhaps one of the roots of his eclecticism.

His distinctiveness was not lost on Alison Smithson when, in 1962, upon Guedes's presentation to Team X, she famously renamed the Mozambican capital Lourenço Marques (now Maputo) "Guedesburg"[2] – the site of most of his built work. Guedesburg is a dense lattice of clues, traces, notes, and images that populate, speak, narrate, organize and interpret an oneiric landscape juxtaposed with the mixture of forms and objects of the growing African city. "This reticulum was not only urban but, above all, graphic: an archive of signs that fuelled his personal design process through drawing. An arbitrary, "*necessary* language,"[3] recognizable in the multiple combinatorial variations of morphemes, and thus an itinerary to be pursued, from object to object, to reconnect the threads of a narrative still imbued with pathos.[4]

Guedesburg and Mozambique hosted about three hundred of Guedes' projects (out of a total of five hundred proposals); today, little more than a hundred remain.[5] In 1962, at the age of 37 and less than ten years after graduating, he joined Team X and presented a selection of twenty-five built works.[6] Over two decades, the Mozambican landscape was populated with Portuguese ultramarine houses in search of a Portuguese-African style, and the capital staged an important modernist repertoire with unexpected outcomes – the Guedesian "apparitions" (architect's definition). If we accept Vattimo's interpretation (1988) that identity is defined through differences, then heterogeneity defines the identity of Lourenço Marques, of which Guedesburg is an infra-ordinary whisper. Guedesburg transcends anecdote; it is the physical manifestation of the author method: the city as an archive of personal signs, a built theoretical landscape.

Fig. 1

The fantastic and magical architecture of Guedes springs from the stimulus of a vast network of artists and thinkers that he himself wove, drawing from multiple contexts. The Guedesian landscape hosts the Dadaism of Tzara and the Modern Movement – the South African declination of Martienssen and the Brazilian one of Costa and Niemeyer; the spatial research of Gaudí, Wright, Kahn, and Nervi; the activism of the magazine *Black Orpheus* and Ulli Beier; the Congresses of African Art and Frank McEwen; the movement of critical contestation of CIAM within Team X; and finally the new African artists he promoted (from Bettina Lopes to Malangatana). This heterogeneous network is not a simple list of influences, but the force-field from which Guedes "smuggled" elements for his personal graphic vocabulary. At the conference "Architectural Electives Affinities; correspondences, transfers, multi/interdisciplinarity" (São Paulo, Brazil, 20-23 March 2013), A. Tostões presented the paper "Correspondences by Pancho Guedes", where she stated that in the 1950s, in an apartheid-era Africa spanning Mozambique, Rhodesia, and South Africa, Guedes sensed the need to re-establish an authentic and primordial art, "art for authentic artists" – he put it. This heralded a personal dimension of research, focused on all formal dimensions and on the possibility for architectural elements to contain and express emotions. In this

sense the recall to the well-known manifesto: *I claim for architects the same rights and liberties that painters and poets have long held*.[7] "Guedes sought to appropriate the universal motifs of the primitive, compounding them with his own eclectic architectural culture. From the pages of *L'Architecture d'Aujourd'hui* (1962) – in the monographic issue *archi-fantastique* – he argued that architecture is not perceived as an intellectual experience but as sensation, emotion. Guedes devoted himself to the search for this quality, long lost among architects but capable of achieving a spontaneous architecture of magical intensity. As Tostões states: the dispassionate need to discover an *alternative*[8] modernity was "a response to an inner calling, but also to an Africa being born into contemporaneity, to a new world in ferment, traces of which still remain in today's Maputo, the Guedesburg of yesterday. Guedes witnesses and acts in an era where architecture was open to popular culture, where architecture without architects and the architecture of fantasy was accepted."[9]

3. A Spiral: from Observation to Construction to Re-elaboration

Guedes preferred to narrate his work through thematizations, collecting projects into families. He gathers and recounts his architectures as members of "families" – echoing Vitruvius's notion of "books" (*libri*) as thematic units of architectural knowledge**.** These realise "formal islands of signs", whose denominations represent the author's imaginary and how it changes depending on the occasion.[10] Far from being a caprice, the system of families (or books) appears more as a personal critical taxonomic system for organising the world. To exist, families require a name; some survive the author's continuous reworkings, others succumb. Among the former are: Stiloguedes, Spaces Twisting and Turning, The Genteel Art of Bending Space, Metamorphoses and Haunted Places, Boxes and People Shelves, Euclidian Palaces, Reinterpretations and Ruins. Each title is a clue to the architect's world. If, on the contrary, one scrolls through the projects in chronological order, especially during the Mozambican twenty-year period, recurring names appear. Guedes fostered a form of loyalty to his own evolving vocabulary, which adapted not only to function, context, and scale, but also to his current readings, rediscovered authors, and recent travels. Each project thus became a pre-text for reflecting on the human condition – a speculative exercise that transcended mere building. It is in this light that Alison Smithson's Guedesburg should be understood not as a reference to the physical geography of Lourenço Marques in the 1950s–70s, but as an apparatus for capturing the imaginary projected toward an indomitable *elsewhere*. Geography measures, but it also serves to imagine the invisible. Guedesburg operates as such a cartography of possibility. The miniaturization of the architect's cosmos into an artificial micro-landscape is the very essence of each map he – and the reader – can *compose*. The map not only organizes a world but presents us with a potential geography that has a generative force and projects us towards an unknown that can be filled by the imagination. Paraphrasing the anthropologist Meschiari (2025), the action of mapping "always does *Worldbuilding:* the cartographer seeing one world, invent many."[11] The geography of Guedesburg is an idiosyncratic drawing, it is a map organized by families, deliberately a-chronological, multiform, and looking forward to other reconfigurations. The map of the Luso-Mozambican's drawings is an archipelago of the oneiric dimension, leading to an unconscious and emotional dimension where space (and its objects) expands and acquires other dimensions. And while we Westerners would like to know our position in the world with absolute accuracy, here and now, the story-map, the ritual-map, the families-map serves to reach an elsewhere.

"Pancho's architecture is labyrinthine"[12] and his graphic production is vast: for this article, three types of apparatus have been identified, corresponding to as many modes of his thinking. Although categorising is useful for this purpose, it is crucial to emphasize that these categories do not represent separate phases. Rather, they represent fluid and recursive moments within a continuous process. This interconnectedness is explored through the project known as "Leão que Ri" (Smiling Lion), which provides the guiding thread for this paper's thesis.

3.1 Drawings from life: Deciphering and Reinterpreting Reality

Guedes sketches are not mere passive recordings of the real; they are interpretative acts that actively assign meaning. This is evident, for example, in his travels to Ndebele kraals, where he sketched and measured not so much the buildings themselves (which were little more than huts) but rather the vibrant murals conceived and painted onto them by the women. For him, drawing became a tool for dialogue and deep engagement with other material and visual cultures. It is worth noting that, at the time, such local art "had to be" erased, not studied, preserved, admired, or collected. Once again, distances of space and time allowed the architect to detach himself from the immediacy of prevailing ideas.
Guedes's mode of study was sketching: a continuous practice of absorption and transfiguration that nourished his creative process. As his son Pedro recalls how "one of the drawings he most cherished was the pen-and-ink sketch of the Einstein Tower made by Erich Mendelsohn (…) The sketch helped confirm the possibilities of form that Pancho brought to life."[13] Similarly, the drawings and sketches of Le Corbusier, Klee, and Picasso's studies for unrealised sculptures were particularly welcome in Guedes's *prism*, helping him generate the vocabulary of forms of stilo-guedes buildings. Sketching was not preliminary but constitutive: an active agent in an ongoing grapho-logical spiral, transfiguring inspiration into art and architecture, and vice versa.

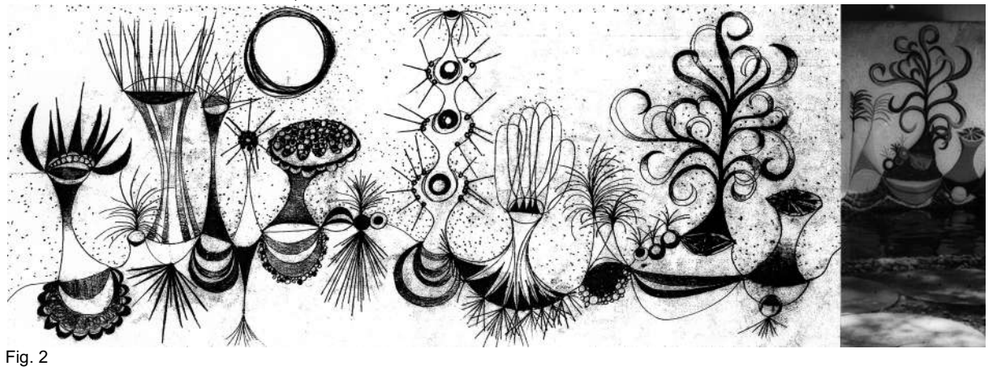

Fig. 2

3.2 Classification Drawings: Ordering the Heterogeneous

Guedes possessed a taxonomic drive. He organized the most heterogeneous elements – construction details, mythological figures, organic forms – into families of morphemes. These drawings are both collections and attempts to confer a legible order upon the wide heterogeneity of physical and imaginary worlds. They act as cognitive maps that reveal the deep connections of his creative universe.
In the preface to *Terre che non sono la mia* (2025), Meschiari, professor of Cultural Geography, alludes to the *ontological turn* and *perspectivism*: he suggests that there are not innumerable different representations of a single world but innumerable different worlds, each founded on the unique and unrepeatable perspective of the being that perceives it. Through the constant reorganization of his families and his patient search for *affiliations*, Guedes circumvents anthropocentric biases, allowing him to envision a much more complex reality – one in which architecture, as traditionally understood is only one of the actors.

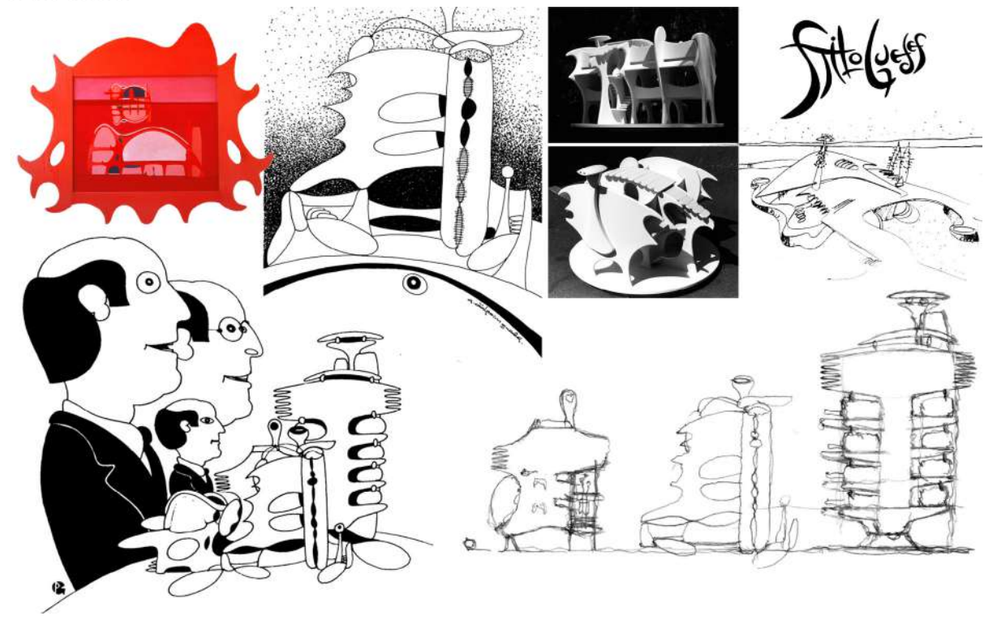

Fig. 3

The whimsy of the moment crystallizes families into maps-as-catalogues, to which Guedes gives a – perhaps debatable – name: *Vitruvius Mozambicanus*. Many versions of these catalogue-maps exist, and a strictly scientific approach does not always seem effective in identifying the architect's theoretical contribution. Quoting Bachelard, Meschiari notes how "the scientific method is based on a deliberate and systematic work of purging thought of imagination"; evoking Élisée Reclus, the anthropologist reiterates that "geography without imagination, without invisible contours, without desires and dreams is

not only an instrumental appendage of capitalist *business as usual*, but is a renunciation of itself as a cognitive power of the human."[14] The many versions of sorting and ordering the heterogeneous thus appear as a resistance against the control of memory, giving voice to the marginal. Each subsequent catalogue act as a counter-map of the previous one, hosting spaces for the elaboration of an alternative and plastically mutable imaginary.

3.3 Programmatic Drawings: Translating Imagination into Logic

Guedes stated: "Drawings are the language of our practices. (…) We draw to see what we are thinking. (…) Drawings of buildings never built (the best because they have not spent their promises). Drawings smelling of drawings for other buildings by others. Drawings of buildings done when they are being built. Drawings of buildings afterwards. (…) A drawing is the closest one can get to the idea of a building. (…) Buildings are not the same if they go through a staff – we have to draw them ourselves for them to get a little nearer to the truth. (…) But, do not understand me too soon."[15]

Plans, sections, elevations, axonometries, perspectives; detail drawings and overall views; dimensioned drawings and synoptic panel with brief explanatory texts – these programmatic drawings are perhaps his most surprising. With them, Guedes makes his theoretical landscape visible and operable, translating even the most eccentric imagination into a precise compositional logic. They demonstrate that his apparent bizarreness was underpinned by a pragmatic methodological rigor and a determination to systematize even the unsystematizable.

As his son Pedro who recalls: "When Pancho is urged to change something in a drawing, he simply makes another one, so the work continues to exist simultaneously in several of its states of becoming. (…) Pancho worked fast and drew in pencil with great precision. He could put together a complete set of drawings over a longish weekend and then move onto a building in an entirely different style without the need to warm up or catch his breath."[16]

In Portuguese colonial Mozambique, specialized master builders were scarce. The construction site itself became a place of drawing-in-progress: sketches on walls came to the rescue in the dialogue between the architect and the executants. "Under the paint and plaster of nearly every building built there are sketches that will never be seen again. They were made to clarify details or explain ways of resolving unforeseen problems."[16] Guedes programmatic drawings were thus instruments of adaptive creativity. They are double: the survivors, those bypassed by impulsive episodes, and the *variazioni sul tema*, the alternatives left for next futures. A crucial aspect that distinguishes the Luso-Mozambican is his overcoming of the dichotomy between autonomous drawing and executive drawing. His creativity lies in adapting the technical language to contingent needs of each unique building site.[17]

Drawing is, therefore, the guiding thread that connects without interruption the initial intuition, formal development, constructive realization, and critical re-elaboration.

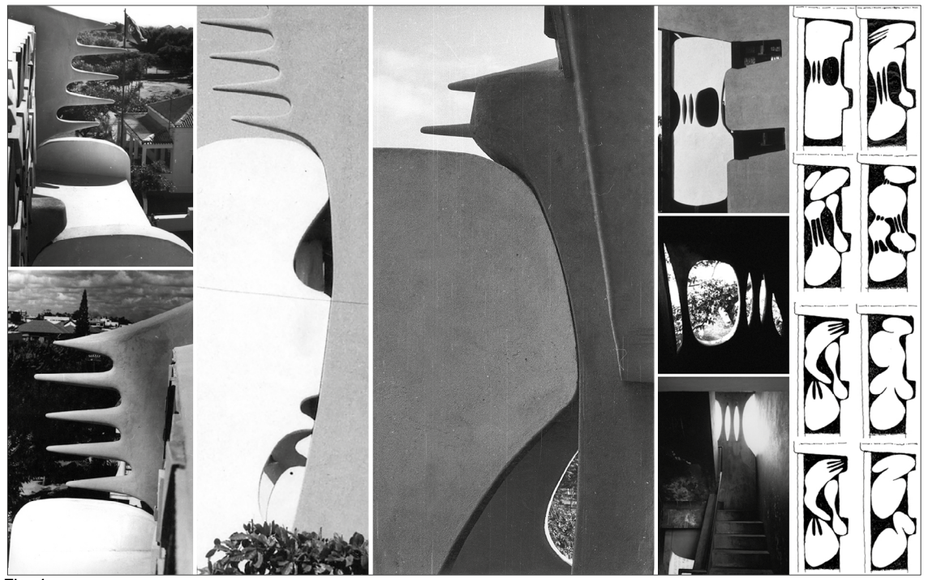

Fig. 4

3.4 The Smiling Lion

Guedes employed each drawing category as a toolkit to prefigure new realities: life sketches prefigure a mediated understanding of context, classifications prefigure a personal formal order, and programmatic drawings prefigure operational logic. In all cases, drawing does not follow the idea mechanically: it is the place where the idea takes shape (principle of reversed directionality). His communicative ability and persuasive power were key to his success, epitomized in the apartment building known as "Smiling Lion" (Leão que Ri, 1958), his most iconic work.[18] Initially planned for his family with rental units, it instead housed the vibrant Mozambican community from his studio (including artists like Malangatana and Honwana).[19] Never inhabited by the Guedes, and after periods of neglect following his exile, the building stands today as a National Heritage site (1988), in ruin. A ruin "celebrating the "power of ideas."[20]

The Leão is the cornerstone of the Stiloguedes family (Book I): "buildings with spikes and fangs (...) The floor plans are simple, quite linear and functional. It is the sections that are contorted, decorated and rich in exaggerations. It is the sections and their reflections on the façades that make them architecture (...) transforming these works into strange *apparitions.*"[21]

The Smiling Lion is, above all, a vast corpus of drawings, in which construction documents are only one phase. The project's drawings, like the paintings and sculptures that followed, synthesize the multiplicity of meanings drawing holds in the architect process: a generative act of formal and cultural experimentation. The Smiling Lion is a kaleidoscope generating infinite narratives – from pretext to idea, from "lusitan-ness" to "mozambique-ness" from matter to myth, from house to tomb. Drawing is the intimate calligraphy to translate the imaginary. Here, it becomes the vehicle for a zoomorphic metaphor, transforming the building into an animated, breathing, oneiric being – a sign bearing meaning beyond function, evoking a character and an idiom. Guedes revisited the Smiling Lion throughout his life, in paintings, sculptures, models, toys, tales.

In one key painting, Guedes condenses his Maputo life: the sculptural garden, a female "muse", domestic life, and waiting collaborators. The Leão que Ri appears on the cover of his first catalogue (London 1980) and serves as the manifesto for his last exhibition (Lisbon 2009). On that catalogue's front cover, a crocodile (Malangatana's totem animal) stands between the lion's paws; the first floor hosts the tomb of the architect and his wife; the second floor gathers some stiloguedes buildings (the built Saipal, the unbuilt Núcleo de Arte and in the background the Smiling Lion itself); the roof protects two faces in profile reminiscent of the "anatomy of thought" cycle. A single image stands as a narrative archive, condensing time, memory, and symbols – a microcosm of cultural and personal references.

Through its multiple drawings, the Leão embodies Guedes's grapho-logical spiral: from live sketch to classification, to programmatic resolution and subsequent re-elaboration. Each phase generates and nourishes the others.

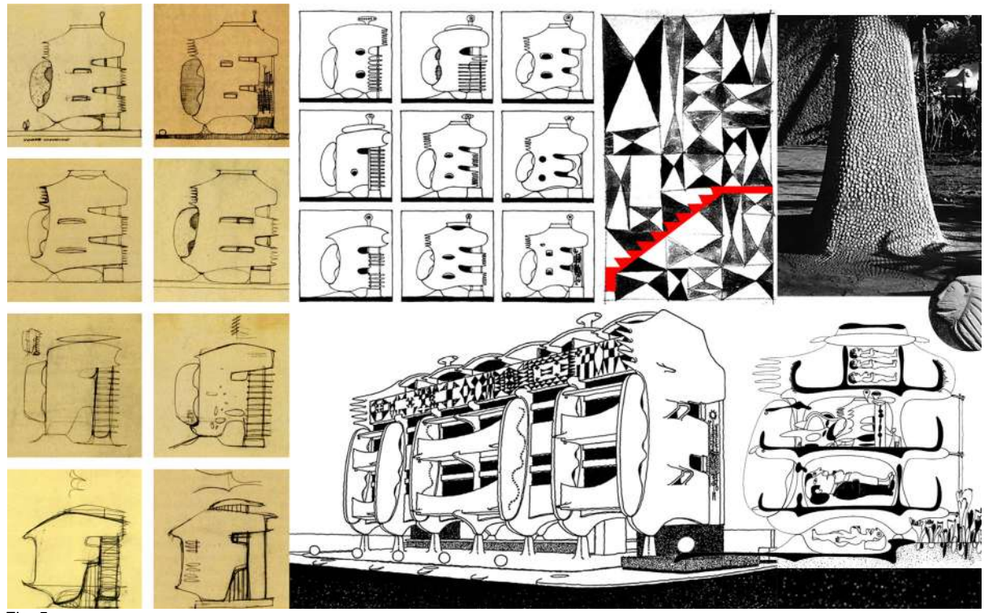

Fig. 5

4. Drawing between Form-Thought and Theoretical Landscapes

Against what Evans termed *linguistic anxiety* – the replacement of observation with compulsive verbalization – Guedes's practice does not stand in silent resistance but engages in a form of logo-graphic excess. His critical power is not mute; it simply refuses to prioritize the verbal over the visual. Instead, it operates through a symbiotic, often delirious, exchange between word and image, where manifestos, stories, and puns fuel the drawings, and the drawings, in turn, become a form of graphic speech (his projects). His critique is intrinsic to this hybrid grapho-logos, to the ambiguity of the gesture that preserves hidden intentions, and to a generative process where mistakes and words are equally fertile. As Purini asserts, drawing is a primary "form/thought" of architecture, alongside theory and construction. It is not a representational instrument but the "very place where the idea is formed."[22] It is a form of memory, but more crucially, it is the theoretical arena where the simulacrum invades the real, "contaminating it with its need to exist"[22]. This is the core of the theoretical landscape: "Unshackled from direct design concerns, such drawings often attain an autonomous value... theoretical landscapes constitute the highest realm of architectural research."[22] Guedes consistently practiced this elevated research. His work hybridizes "paper architecture" (without its self-referentiality) and Le Corbusier's Purism (surpassing its rigidity), achieving a grapho-logos where the ambiguity of the freehand line preserves mistakes and intentions.

5. Pancho Guedes: The Architect-Artist and his Method – A Summary

Guedes embodied an interdisciplinary design culture now in crisis, working in what has been called a "viscerally artistic condition"[23] – one "incapable of distinguishing between painting, sculpture, and architecture."[23] This attitude forged a personal methodology synthesizing the arts: "drawing is the prism through which Guedes understands and creates his worlds."[24]

His work metabolized heterogeneous influences becoming part of his "personal syncretic languages,"[24] an eclecticism that belonged to a time of "return to history," yet developed "behind the back of modern architecture". As Aldo van Eyck observed: "Pancho was an artist in his own way (...) The man's whole behaviour is that of an artist."[25] This artistic condition is key to understanding his practice – a constant reciprocity between the arts, where "Pancho Guedes admits to creating drawings by unveiling buildings, just as he creates buildings by unveiling drawings."[26]

6. Conclusion. The Relevance of an Unclassifiable Approach

It is from this distinctive artistic method that the work of Pancho Guedes is offered as both a warning and an inspiration for contemporary architectural culture. In a hyper-specialized academic and professional context that tends to relegate drawing to well-defined disciplinary corners – to the detriment of a virtuous *crossing* – his practice demonstrates the fertility of a polyphonic approach. The sheer volume of drawings, and especially the modes of their composition and display (the family-maps, the map-catalogues), render this practice elusive and unclassifiable. Guedesian theoretical landscapes do not illustrate pre-existing ideas: they generate them through the graphic gesture itself. Ideas are entrusted to pretexts of the most varied and capricious kinds.

The lesson is that drawing becomes an instrument of criticism and knowledge only if we accept its hybrid, porous, and ambiguous nature – only if we recognize that a histogram can be as poetic as a charcoal sketch, and that a construction detail can contain an entire mythological universe. The challenge Guedes poses is to embrace a new interculturality of design, where drawing acts as a prism for absorbing, distorting, and reinventing the most disparate influences – from high art to popular culture, from architectural history to local construction techniques – to generate an architecture that is, like his, simultaneously erudite and popular, rigorous and oneiric, rooted and universal. Herein lies the deepest potential of his graphic critique.

In conclusion, Guedes's practice shows that, alongside the "diagram fever" and "uniform visualization for comparative purposes" mentioned in the call, the move beyond the logic of the building in favour of the logic of the drawing that generated, narrated, and criticized it is inevitable in authorial thought. What remains transmissible, however, is the (graphic) logic underlying an author's own method – the core of the discipline. Guedes offers a model of operational criticism that uses drawing both as a primary source of research and as a heuristic tool. His archives are not crystallised into fetishes or art objects, but constitute a critical elsewhere – a *demain* to be interrogated as reservoirs of a visual thought that challenges the "tyranny" of verbalization. He shows how architectural criticism can be conducted through, and not just around, drawing.

Notes

1. Amancio Guedes, "The practice of architecture." In Proceedings of the ISAA 6th Conference of the Institute of South African Architects (Cape Town, 1964 April 27th- May 1st) and partially published in the magazine *South African Architectural Record* 49, no. 6 (June 1964): 58-62.
2. Alison Smithson, *Team 10 Meetings: 1953-1984* (Delft: Publikatieburo Bouwkunde, and New York: Rizzoli, 1991), 39.
3. "Projects are not abandoned once they have been built. Many come back to the drawing board for repairs and improvements and take up a separate life on paper. Some of his favourites return regularly for transformations while others are raided for useful parts and ideas that can enrich other works". Pedro Guedes. "Pancho's drawings," in *Pancho Guedes. Vitruvius Mozambicanus*, ed. Pedro Guedes (Lisbon: Museu Colecção Berardo, 2009), 265-266.
4. Zara Ferreira, "Local and Global Modern Thinking. Designing with Climate in Mozambique: School Buildings Production," *Docomomo* no. 48 (2013): 83-87.
5. During the exhibition titled *A Aventura da arquitectura, o desafio ao formalism* (Maputo, March-May 2010), Walter Tembe, a former student of Guedes, mapped and identified 112 buildings by Amancio Guedes on behalf of the Camões Institute, which was sponsoring the exhibition. Meanwhile another half a dozen buildings have been "rediscovered" (2023).
6. "For ten years Guedes has worked intensely at the development of a highly personal architectural expression which, in its variety and significant contribution to the environment, is probably unsurpassed in Africa": Julian Beinart, "Amancio Guedes: Architect of Lourenço Marques," *The Architectural Review* no. 144, (April 1961): 241.
7. *I claim for* architects *the rights and liberties that painters and poets have held for so long,* it is the introductory poster of Guedes's thesis (Johannesburg, 1952).
8. *Pancho Guedes An Alternative Modernist* is the exhibition at the Basel Swiss Architecture Museum (2007 September 30th – 2008 January 20th) edited by Pedro Gadanho.
9. Ana Tostões, "La fantasía debe ser devuelta a la arquitectura," *RA: Revista de Arquitectura* no. 19 (January 2019): 19-24.
10. Miguel Santiago, *Pancho Guedes. Metamorfoses Espaciais* (Lisbon: Caleidoscopio, 2007), 113.
11. "The cartographer always does *Worldbuilding:* by seeing one world, invent many" states Matteo Meschiari in the book *Terre che non sono la mia*, (Torino: Boringhieri, 2025), 177.
12. Jorge Figueira, "The hand that rocks the cradle. Pancho Guedes inside and outside the Team 10," in *Lisboscópio, ed.* Cláudia Taborda (Lisbon: Instituto das Artes, 2006): 106.
13. Guedes, "Pancho's Drawings," 263-264.
14. Meschiari, *Terre che non sono la mia*, 20.
15. Guedes, "The practice of architecture".
16. Guedes, "Pancho's Drawings," 265, 266
17. A moving example is recalled by his son Pedro: the system of drawings developed for the foreman Muchlanga. Drawings that could be interpreted without needing to read, based on counting cement blocks to determine heights and dimensions. In this case, drawing becomes a veritable political and ethical act, enabling and valorising local constructive knowledge (Pedro Guedes, 266).
18. *Leão que Ri* (1958) is a reinforced-concrete apartment building whose formal invention is fully integrated with its structural and climatic logic. The elongated plan, dual-aspect apartments, and deep cantilevers (reducing beam sections) respond to solar radiation and promote cross-ventilation. The expressive "paws" and "baleen" elements are both structural and shading devices. Listed as National Heritage in 1988, the building today suffers from severe decay; its social-housing tenancy and lack of public maintenance reflect the ambiguous status of Guedes's legacy in post-colonial Mozambique. Unlike his other well-preserved residential buildings in upscale areas, the *Leão* remains a poignant ruin – a "celebration of the power of ideas" in material fragility.
19. The d'Alpoim Miranda Guedes is an old and aristocratic Portuguese family. The family was anti-colonialist and worked to secure some rights for the local population through the only process then possible: *Assimilação* (Assimilation). The Guedes family provided work for many people, offering some of them accommodation, scholarships, and opportunities to travel and move abroad.
20. Guedes, "Reinterpretations and ruins," in *Pancho Guedes. Vitruvius Mozambicanus,* ed. Pedro Guedes, 257.
21. "Stiloguedes is my most idiosyncratic style – my royal family as it were. It is a bizarre and fantastic family of buildings with spikes and fangs, with beams tearing into the spaces around them, invented as if some parts are about to slip off and crashing down, with convulsive walls and armoured lights. (…) The plans of the Stiloguedes buildings are simple, quite straightforward and functional. It is the sections that are contorted, decorated and full of exaggerations. It is the sections and their reflections on the facades that are the architecture. They stretch the mysterious relationship between plan, section and facade and turn these works into strange apparitions" (Amâncio Guedes, "Stiloguedes," in *Pancho Guedes. Vitruvius Mozambicanus*, 79).
22. Franco Purini, "Autointervista sul Disegno," in *Il Disegno come idea,* ed. Renato Partenope (Rome: Gangemi Ed., 1996), 13, 16.
23. Figueira, "The hand that rocks the cradle," 100.
24. Guedes, "Pancho's Drawings," 262, 264.
25. Aldo van Eyck, "Everybody has his own history," in *TEAM 10 1953-81. In search of utopia of the present*, ed. Risselada, van den Heuvel (Rotterdam: Nai pub., 2005), 329.
26. Santiago, *Pancho Guedes. Metamorfoses Espaciais*, 168.

Image Captions

Fig. 1. Mapping the geography of Guedesburg: a redrawing of Pancho Guedes's original diagram (by Samuele Murgia, 2024).
Fig. 2. Pancho Guedes deciphering and reinterpreting reality: a study of exotic plants. This sketch would later inform the mural for the Zambi Restaurant (1954) in Lourenço Marques (still active and well-known in Maputo today). The project is part of the family "The gentle art of bending space" (Digital copy courtesy of Pancho Guedes, from his personal archive).
Fig. 3. Pancho Guedes ordering the heterogeneous: a synoptic view of some member of the Stiloguedes family. This collage assembles drawings, models, and photographs from different periods and for different purposes (studies, construction, exhibition, narrative, play), demonstrating the architect's continuous and non-linear process of re-elaboration – the core of his grapho-logical spiral. *Top row, L-R:* later Framed Saipal diagram (1952 project, built); Núcleo de Arte narrative drawing (1964, unbuilt); Deluxe Doll's House (1981); Architectural Study. *Bottom row, L-R:* The architect and his *variazioni* contemplating Stiloguedes drawings; study for a cover featuring the Smiling Lion, Núcleo de Arte, and Prometheus (apartment building). Collage by the author, using digital copies courtesy of Pancho Guedes, from his personal archive.
Fig. 4. Pancho Guedes translating imagination into logic: structural and formal details of the Smiling Lion apartment building (1958), showcasing his "most idiosyncratic style". Spikes and fangs; veranda walls appearing to slip off their planes; staircases with *pebble* murals and *asolas* to glimpse into worlds of imagination (Collage by the author, using digital copies courtesy of Pancho Guedes, from his personal archive).
Fig. 5. The Smiling Lion as a drawn archive. *Top-left:* Preliminary studies of the minor elevations (structurally the most relevant). *Center-left:* The building's later 'tomography' – elevations and sections – developed for lecture purposes. *Center-right:* The mural drawing for the staircase (marked in red). *Top-right:* A built detail of the "paw" clad with pebbles. *Bottom:* The architect's communicative tools: a persuasive perspective (typically used for clients) and the "inhabited section", later used for the 2009 exhibition

cover (a painted version), condensing the author's narrative (his biography: the city, the building, his muse, his tomb, his royal family – the stiloguedes architectures – and his collaborators). Collage by the author, using digital copies courtesy of Pancho Guedes, from his personal archive.

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Biography

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This theoretical work is intrinsically linked to her teaching in bachelor's and master's degrees, where she integrates design with technology and structure, and to her long-standing research on the didactics of architectural design. Her earlier work extensively addressed the transformation of Venice's industrial district. She understands architectural composition as a single intellectual practice that operates fluidly across different scales of representation and intervention.

The Art of Reconstructing the Past:
Dante Ferreti’s Drawings for *Gangs of New York*

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Abstract

At the heart of Cinecittà, the iconic Italian film studios, stands an unexpected remnant of New York’s past. In 2002, Martin Scorsese chose this site to film *Gangs of New York* immersing himself in the poverty, violence and degradation of Manhattan’s southern slums in the late 19th century.

One of the film’s most essential aspects was the production design by Dante Ferretti, the legendary designer who worked with auteurs like Pasolini and Fellini. Ferretti, a frequent collaborator of Scorsese since 1993, meticulously recreated Five Points Square, entire streets of Lower Manhattan and other period buildings at Cinecittà.

The sheer scale of the project made it one of the Italian designer’s greatest achievements, acknowledged by the Hollywood Academy with an exhibition that same year and later by the MoMA’s 2013 exhibition on Ferretti. This retrospective showcases images of the sets and a series of drawings made by Ferretti in the early stages of the project. These sketches transcended mere technical planning, capturing the social essence of the story told by Scorsese. Their expressive intensity evoked Goya’s *Black Paintings* or the stark realism of American painters like George Bellows.

This study analyses Dante Ferretti’s architectural journey for *Gangs of New York*, examining the links between initial sketches, construction processes and final cinematic images. It will also examine the value of the initial drawings as a research tool for reconstructing the architecture of a past era and the influence, through Ferretti’s work with Scorsese, of these drawings on the final aesthetics of the film. In short, *Gangs of New York* is a film fundamentally marked by the epic task of recalling a lost fragment of the city through drawings of diverse nature, both artistic and technical, until reaching its material and cinematic representation.

Key words: Dante Ferretti, production design, New York, nineteenth century, reconstruction drawings.

1. Introduction

Cinema is, par excellence, the art of ephemeral architectures which, nevertheless, manage to endure across time and within the collective memory. On many occasions, such architectures are not the exclusive outcome of imagination, but rather the result of a profound and rigorous investigation of the past and of the available documentary sources. At the beginning of the production of *Gangs of New York* (2002), the Italian production designer responsible for the project, Dante Ferretti, persuaded the film's director, Martin Scorsese, to reconstruct a vast fragment of mid-nineteenth-century New York on the outskirts of Rome, within the Cinecittà studios. This colossal enterprise included the construction of the Five Points Square —the very heart of the narrative recounted in the film and of the slums of Lower Manhattan at the time— together with three adjacent blocks of that same neighbourhood, a stretch of the southern end of Broadway, a brewery, an upper-class villa, a church, a theatre, a casino and even a section of the docks with two ships. All these spaces arose from a detailed study of the period, visually supported by engravings, which Ferretti absorbed and translated into sketches, expressive drawings and technical plans ultimately employed as instruments not only for the design process, but also for the analysis and comprehension of that historical era. In this manner, drawing becomes, in the work of this production designer, a strategy that mediates between the lived reality of the past and the materialization of the final scenography.

In 2002, the year of the film's release, the Academy of Motion Picture Arts and Sciences, together with Los Angeles County Museum of Art, organized a retrospective exhibition on the work of Dante Ferreti entitled *Drawing dreams: Dante Ferretti, production designer*. Within this exhibition, among other materials, were displayed the painterly drawings that the production design had executed for his most recent collaboration with Scorsese. The curator of the exhibition, Ellen Harrington, emphasized in an interview with *Los Angeles Times* on the occasion of the opening: "a lot of people these days are not necessarily fine artist even though they are in production design. They work on computers or they use illustrators. Dante Ferretti is a really sort of old-fashioned Renaissance man from Rome. He is very skilled in architecture, design and construction" (King 2002). The words of the experienced programmer underline Ferretti's role as one of the last artisans of production design, capable of grounding his work in drawings, scale models and physical construction of sets.

This essay will examine in depth the drawings produced by Dante Ferretti, and his team, during the making of *Gangs of New York*. Although drawing proves itself a constant tool throughout the oeuvre of the production designer —as attested by the large number of sheets generated for each individual project— in the course of this particular film it acquires a distinctive architectural value, transforming into an instrument not only of design but also of historical and urban research and analysis. Within the production design of the film, it is possible to identify two principal categories of drawings, whose exploration will structure the present study: on the one hand, a group of initial speculative sketches, created by the production designer himself and bearing close relation to the social pictorial works of the late nineteenth century; and, on the other hand, a series of technical plans with particular emphasis on architectural constructive and cinematographic detail. In conclusion, the aim of this work is to reveal the fundamental role of drawing in the production design process of this film, and to show how it transcends the purely projective to become an exercise of study and urban, architectural and social reconstruction of a vanished past that cinema aspires to reactivate within the collective memory.

2. Dante Ferretti: recovery of old New York

Dante Ferretti was trained cinematographically alongside Pier Paolo Pasolini and Federico Fellini, with whom he worked during the final stages of their respective careers.[1] However, it was a third professional relationship, the one he maintained with Martin Scorsese, that ultimately defined his years of professional maturity. Their collaboration, which has endured for more than twenty years, has been materialized in nine feature films.[2] The first of these, *The Age of Innocence* (1993), also involved a reconstruction of nineteenth-century New York; yet the work undertaken for *Gangs of New York* proved, if possible, an even more ambitious enterprise. The former was a film in which, although certain exterior urban spaces were depicted, most of the narrative unfolded in interior settings, generally of the upper classes, for which documentary traces were indeed located. Letters, legal texts, narrative writings, paintings or engravings described what those spaces and atmospheres in that part of the city were liked; indeed, even today, it is possible to trace certain buildings still standing that resemble those shown in the film. *Gangs of New York*, however, spoke of a very different city, one that developed south of Manhattan, in the marginal neighbourhoods where the criminal gangs that drive the story gathered. Of these neighbourhoods, because of their very nature, hardly any representations survived, apart from some rather imprecise and only partially reliable accounts from the time and, above all, engravings and paintings.

The urban study required by the period setting of *Gangs of New York* represented a new challenge that Ferretti had not previously faced. The neighbourhoods of Lower Manhattan, the product of uncontrolled and circumstantial construction, had been progressively erased —while the areas of New York represented in *The age of Innocence* already displayed the urban grid that characterizes the city in the era when its story unfolds— in order to supress crime, filth and marginality accumulated in that sector of the city and to impose, as much as possible, the orthogonal layout characteristic of the American metropolis. For this reason, the task of physically and atmospherically recovering the city in the two periods portrayed in the film, 1846 and 1862, demanded an extensive effort of recognition, analysis and interpretation of the urban, architectural and social configuration of New York.

Ferretti based his work for the film primarily on the few surviving engravings from the mid-nineteenth century that depicted the exteriors and the urban atmosphere of New York's underworld neighbourhoods (Fig. 1). Another significant source of inspiration for the production design was, for instance, Goya's *Black paintings*, slightly earlier than the story narrated, or the scenes represented by American painters of strong social orientation, such as George Bellows or John Sloan, who at the end of the nineteenth century and beginning of the twentieth captured in their works the harsh living conditions of the working classes. Although these works belonged to a period somewhat later than the one addressed in the film, they nevertheless conveyed an environment that, architecturally and socially speaking, was very similar.

Fig.1

3. Pictorial exploration: sketches for the recovery of memory

This series of drawings, scarcely studied —despite the already mentioned exhibition at the Academy of Motion Picture Arts and Sciences in 2002 and a later solo exhibition at MoMA, inaugurated in September 2013, under the curatorship of the museum's film expert Jytte Jensen, entitled *Dante Ferretti: design and construction for the cinema*— proves of great interest when examined as a point of historical and architectural mediation between the original material, in this case nineteenth-century engravings of New York's slums, and the final outcome: first, the scenography itself, which in an exceptional circumstance remains preserved at Cinecittà, and ultimately, the film.

In Dante Ferretti's work for *Gangs of New York*, drawing was transformed into a fundamental tool for comprehending the past. Although the production designer had already begun to develop this type of drawing since his early work in Italian cinema, the leap to American film multiplied the resources available for their execution and enhanced their value within the production process. Ferretti's drawings are, in this sense, particularly relevant because they explore artistic aspects beyond the strict limits of scenography, interweaving historical research, based on paintings and engravings, with the artistic development of the film in matters such as photography of frame composition.

Up until the period analysed, in which this film was produced, these drawings, almost like extracts of a storyboard, had been proposed by the Italian production designer for historical films, such as *The Age*

of Innocence or *Interview with the Vampire* (Neil Jordan, 1994). In all of them, Ferretti's drawings developed interior spaces and defined, together with the other key members of the production, the major artistic guidelines of the film. The case of *Gangs of New York* represents a further step along this path, since it is, in its first part, an eminently urban film requiring a realism extremely difficult to achieve due to the scarcity of graphic documentation on those neighbourhoods at the time. Nevertheless, this work, both evocative and projective, born of the necessity to produce material that could reinterpret the scant documentary fragments of the period, inaugurated a new line of urban-oriented work that would henceforth define Ferretti's professional career. From that moment, he employed such drawings not so much to configure interiors, but rather to structure exteriors, more complex to control in films such as *Hugo* (2011) —also directed by Scorsese— where traditional scenography was already intricately combined with digital effects.

Among the drawings of a more expressive nature, developed in the early stages of the project, two groups can be distinguished. The first corresponds to a series of sketches that mediate between the original engravings and Ferretti's more expressive proposals, executed in line and charcoal. Although the drawings of this type analysed in this text are only two, and it is understood that they form part of a larger series, they already constitute valuable and significant examples. The first of these (Fig. 2 top) is an aerial plan of the reinterpretation by the production design team of what the Five Points Square environment might have looked like; the drawing is not a representation of the scenography itself, but a detailed and at the same time expressive reconstruction of the original city.

Fig.2

In this sheet we observe how, through shading, a gradient is produced that distinguishes up to four planes of depth. In the foreground, the square's surroundings are volumetrically constructed through lines, while the detail completing the drawing is executed with charcoal masses, which also serve, by manipulating shadows, to highlight the "mission" building, an essential set in the film, also emphasized in other drawings. At this same level, Ferretti and his team enrich the drawing with pavement textures indicating its nature and use, scarce street furniture, and human figures that provide scale to the ensemble. The second level, at mid-height on the left side, depicts another square that continues from the main one, where façade details, rooflines and vegetation can still be discerned. On the right, these two initial planes are closed by an irregular charcoal mass suggesting a semi-wooded area, beyond which develops a final urban plane, essentially volumetric, nearly without detail, that fades, in the background, into the sea that closes the upper part of the drawing.

The second drawing of this type (Fig. 2 bottom) adopts a more horizontal format, evoking western scenography, mostly narratives contemporary with this film's story, rather than New York's urban environment, though in this case the urban setting is less civilized and more violent than many westerns themselves. In this sketch, human activity and greater architectural detail can already be distinguished, though still nothing singular. The drawing directs our gaze toward the central area where the film's main square lies; however, it is at the edges that we can perceive more clearly what

the typical constructions of the time might have looked like. The buildings flanking both sides are darkened with charcoal to redirect the gaze toward the central focus. Nevertheless, one can see details in the buildings at the right such as window frames, an entry gate or temporary roof repairs with boards. The apparently large dimensions of the sheet allow us to discern with clarity the details of more distant planes where, with firm and clear strokes, even the dilapidated roof structure of the main building and the facade elements of adjacent constructions are depicted.

The second type of drawings that can be found within this category are the more expressive ones whose main interest lies in the use of colour and the creation of atmospheres consistent with the nature of the film. These scenes are dominated by ochres, intense reds and blacks highlighting the dirty, dark and overloaded environments that would later materialize in the film's mise-en-scène. First, the urban scene (Fig. 3), clearly structured from the charcoal sketches, shows an environment dominated by ochre tones representing, on the one hand, the city's dirt, intensified by chimneys that darken the sky, and, on the other, the hues of wooden buildings, themselves blackened by time and smoke. The painting also explores urban configuration during winter, with snow and muddy streets; ultimately, this environment, with even more snow than Ferretti depicted, would become the catalyst for the film's opening scene.

Fig.3

Finally, the interior paintings show dark spaces with dense atmosphere, generally lit by lamps that lend an even gloomier tone to the ensemble. Analysing the details, in the brewery interior scene (Fig. 4 bottom), we observe how the light entering through the windows reveals the thickness of the air, presenting the space almost as a sacred place —which, in a sense, it is for the film's characters, since some of the most transcendental scenes of the narrative occur there, apart from the symbolic initial battle—. These scenes, resembling a storyboard yet not belonging to one, once analysed after viewing the final result of the film, reveal the importance of the environments created by Dante Ferretti and the cinematic value of his architectural and atmospheric proposals embodied in his drawings.

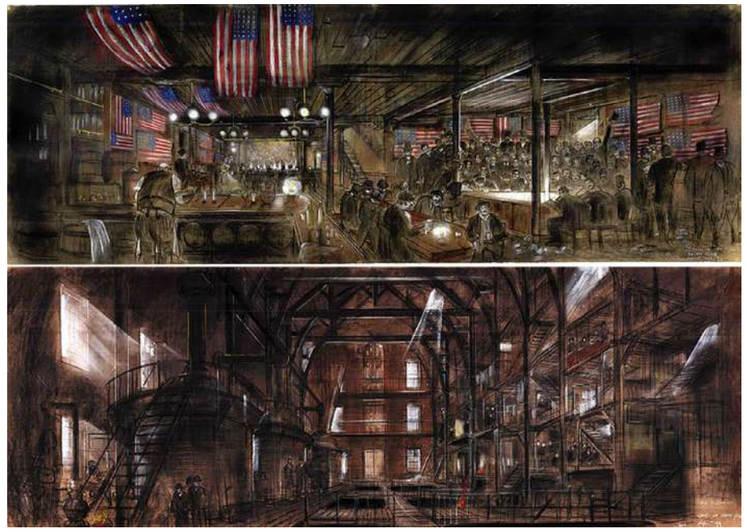

Fig.4

4. Technical reconstruction: the detail of the past

The technical project developed for *Gangs of New York* is, undoubtedly, less compelling in terms of graphic analysis than the pictorial proposals previously examined. Nevertheless, these drawings also deserve mention in a comprehensive study of Dante Ferretti's work, since the project itself and, therefore, the technical drawings executed by the production designer's team go beyond mere scenography and reconstruct an intriguing fragment of the city, surpassing the usual stage-set facades typical of such undertakings.

To speak of the graphic production of this part, we must inevitably address the project as it was finally constructed. Usually, production designers conceive the various film sets separately, without continuity, without spatial coherence, for editing will later provide it; yet *Gangs of New York* is, in this respect as well, a singular film. At least Five Points Square and the surrounding buildings were erected in their entirety, either because many of them hosted actions unfolding in continuity between interiors and exteriors, or because they formed an essential part of the realism demanded by the film's overhead and aerial shots. In scenes such as the opening battle between gangs, a spatial transition occurs from the interior of one of the square's buildings to the snow-covered, grimy exterior. This issue is, therefore, fundamental to understanding the technical and material deployment undertaken by the film's production at Cinecittà studios, for when it is said that a portion of nineteenth-century New York was reconstructed, this is practically a literal statement: it was not solely an atmospheric or spiritual reconstruction, but also, to a considerable degree, a material one.[3]

Focusing, then, on the technical project, the first assertion to be made is that it diverges little from a traditional architectural project, as it includes plans, elevations, sections, specific construction details of each component, material specifications, etc. In the general elevations (Fig. 5), we already observe special attention given to details, not only technical or constructive, but also those "errors" that bestow realism upon the scenography: for example, deformed roof eaves, sagging fences, misaligned or warped timbers, or poorly resolved facade junctions. On the other hand, the plans reveal precise control of spaces and of the geometry that structures the project. It is in these drawings that annotations are made and texts incorporated to ensure proper comprehension of the ensemble. Yet none of these drawings can be fully understood in isolation, and for this reason in each of Ferretti's sheets a proper correspondence is established between plan and elevation; in the former, the ensemble is structured, while in the latter, the realism, faithful to the period, that the film requires is introduced. We must not forget that the ultimate function of these technical drawings is to achieve the same expressive quality in the built sets that was originally sought in the pictorial sketches. Once again, drawing emerges as a mediating tool between reality and fiction.

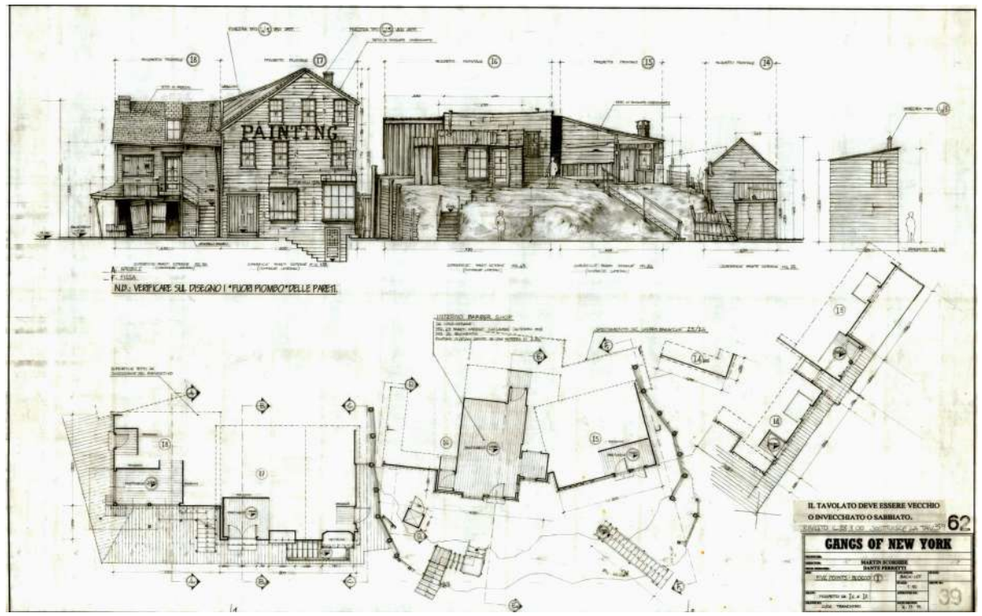

Fig.5

The plans of this project would not be especially remarkable compared to those of other productions were it not for the existence of such a rich graphic ensemble which, in its successive elaborations, moves from a forgotten and nearly vanished reality, also absent from the archives, to an exceptionally expressive materialization. The technical dimension is noteworthy and distinguishes itself from a traditional architectural project through its meticulous focus, not so much on grand forms, but rather on the detail of imperfection, on how Ferretti is able to materialize the passage of time, environmental inclemency and lack of resources in the exact form and placement of, for example, a plank on the facade or on the roof of even the last building constructed to recreate the time of *Gangs of New York*.

5. Conclusions

From this analysis, it is worth underlining the importance that Ferretti attributes to drawing, in all its manifestations, as a primary tool for knowing and comprehending the past. In the case of *Gangs of New York*, drawing proves essential at every stage of the project, for it is first the point of departure for the historical study through original engravings and paintings; subsequently, it helps to synthesize and reinterpret those graphic expressions, transforming them into scenography proposals, and beyond that, into cinematic ones, and, finally, it becomes the instrument that rationalizes, structures and constructs the city, recovered from the scarce documents in which it struggled to endure, thus completing, with its own imaginative resources, the documentary and historical voids. Drawing, understood in this case as one more cinematic device, critically reinterprets the past by emphasizing the marginal and violent nature of the city, revealing the reverse side of nineteenth-century New York idealized by history, cinema and literature.

Ferretti's drawings reveal a particular concern for two issues that hover over each of the stages mentioned above: detail and atmosphere. The first of these is what endows the whole with realism, and yet simultaneously distinguishes this constructive project from an ordinary work of architecture, since detail here does not pursue perfection or precise execution but, on the contrary, the naturalness of imperfection. On the other hand, in his early sketches, Ferretti interprets the essence of the engravings, paintings and texts that he had previously gathered as historical sources. Beyond being merely expressive drawings useful for scenography design, these works, and by extension the scenography project itself, inevitably determined the visual conception of the film. The final images convey the claustrophobic, dark, damp, and dirty atmosphere recreated by Ferretti in his initial explorations of the film's ambience.

The graphic work of production designer Dante Ferretti for *Gangs of New York*, and by extension, for his entire collaboration with director Martin Scorsese, reveals drawing as an essential instrument of analysis and design within his practice and within the architectural and cinematic outcome of the film, since it goes well beyond the merely practical, and in some instances these drawings emerge as pictorial works of interest in their own right. Indeed, to speak of architecture in the case of this scenography is by no means a triviality, for Ferretti's endeavour follows the habitual steps of the architect's craft: analysis, proposal, project and construction. For all these reasons, we may affirm that drawing, at least within the oeuvre of the Italian production designer, constitutes a fundamental tool in each of these stages and that he conceives the project of cinematic scenography as a conventional architectural intervention, as an act in the historical recovery of the constructed and destroyed memory of a city, as the visual rescue of an urban and historical layer at risk of vanishing into the grasp of an implacable past.

Notes

1. Ferretti began working on Pasolini's films as an assistant in production design for *The gospel according to St. Matthew* (*Il vangelo secondo Matteo*, 1964), although his first film as production designer was *Medea* (1969). He continued in that role for Pasolini's films up until the director's final and abrupt work, *Salò or the 120 days of Sodom* (*Saló o le 120 giornate di Sodoma*, 1975). His first collaboration with Fellini was *Orchestra rehearsal* (*Prova d'orchestra*, 1978) and their partnership continued through to Fellini's last film, *The voice of the moon* (*La voce della luna*, 1990).
2. The films on which Scorsese and Ferretti have collaborated are: *The age of innocence* (1993), *Casino* (1995), *Kundun* (1997), *Bringing out the dead* (1999), *Gangs of New York* (2002), *The aviator* (2004), *Shutter Island* (2010), *Hugo* (2011) y *Silence* (2016).
3. To a large extent, this is demonstrated by the conversation between Scorsese and Ferretti as they walk through the set, which is included in the film's extras.

Image Captions

Fig. 1. Five Points, 1827. Engraving by George Catlin made in 1855. Image source: Collection of the New York Historical Society.
Fig. 2. Initial drawings by Dante Ferretti in line and charcoal. Image source: Luca Tranchino's website.
Fig. 3. Left. Drawing by Dante Ferretti of Five Points square. Right. Final set design during filming. Image source: American cinematographer.
Fig. 4. Dante Ferretti's drawings. Various areas of the brewery set in the film. Image source: American cinematographer.
Fig. 5. Set plans for one of the façades of Five Points square. Image source: Luca Tranchino's website.

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Biography

Antonio Gil Díaz-Maroto is an architect graduated from the Escuela Técnica Superior de Arquitectura de Madrid (ETSAM) at the Universidad Politécnica de Madrid (UPM). He is currently pursuing a PhD in Advanced Architectural Projects (ETSAM, UPM), within which he is developing a doctoral thesis on the relationship between architecture and cinema. He has participated as a scholarship holder in the project *AppQuitectura*, developed by the ITHACA research group (ETSAM) and recognized in the COAM Awards 2023, as well as in the organization of the activities of the *IV International Congress of the AhAU*, "Ciudad y naturaleza: aproximaciones desde la historia medioambiental". At the same time, he combines these studies with professional work focused on interventions in historic environments, such as the hermitage of Santa María la Antigua in Madrid and in historic buildings with hospitality uses, such as the Parador de Turismo de Lerma and that of Guadalupe.

Mapping as Inquiry.
On Cartography, Data, and the Lives of Urban Lines

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Abstract

Cities are not merely assemblages of streets, buildings, and infrastructures; they are living fabrics of visible and invisible relations, woven from material and political forces that intersect in space. This article proposes to reconsider drawing and cartography, often perceived as tools of territorial simplification, as critical practices capable of unveiling the complex, multispecies archive that constitutes urban life. This perspective draws on Latour's insight into the necessity of tracing networks and controversies. In this sense, cartography is understood as a performative act (Yaneva 2012): it does not merely describe reality but actively participates in shaping and producing it. As such, it becomes a generative practice, one that seeks to interrogate, rather than merely represent, the intricacies of urban complexity.

To explore this idea, the research focused on selection of maps, combining *in-situ* surveys with the scraping of open-source data in order to bring to light often-invisible urban relations, tensions, and dynamics. Through a careful process of data editing, the resulting cartographies emerge as situated and critical tools, capable of navigating the computational architecture of the territory. At the same time, the challenge posed to canonical representations lies not in stylistic rupture, but in making visible the practical and material operations through which their apparent aesthetic simplicity is produced.

Although vast amounts of data are made publicly available every day, their complexity often renders them inaccessible. In this research, data is approached not as neutral information, but as a material and political object. Engaging with open-source archives entails practices of counter-visualization that aim not simply to show, but to expose what remains opaque – raising fundamental questions about the accessibility and transparency of scientific knowledge.

Accordingly, this article explores drawing as a translational medium and as an epistemic practice conceived not as geographic projection, but as a processual trace. As Ingold (2020) reminds us, lines tell stories of lives, movements, and temporalities.

Key words: cartography, critical practices, counter-visualization, assemblages, invisible relations.

1. Introduction

Constructing a cartography from data that, though coexisting, are rarely analysed together means bringing to light the interweavings and tensions that inhabit urban space. Levels of night-time illumination; demographic composition (Italian and foreign residents); average income; prices and availability of housing (sale, rent, presence of Airbnb listings); environmental and service amenities (trees, bins); density of ground-floor commercial activities: each element, taken singly, risks becoming a mute datum; set in relation, these elements reveal imbalances and unexpected forms of cohabitation. In other words, the analytical move is not to add yet another indicator, but to stage relations among heterogeneous measures so that patterns of co-presence, absence and contradiction can become legible.

This is not about producing a graphic abstraction but about animating a counter-visualisation that makes visible the eminently political nature of urban data. Adopting this perspective means recognising that the city is not a neutral given but the provisional outcome of relations always in motion. In this sense, cartography does not merely represent; it becomes a critical device able to render inequalities, absences and conflicts perceptible, for example, by juxtaposing lighting levels, tree canopy and ground-floor commerce to show how social use and ecological cover co-produce perceived safety and public life. By "counter-visualisation" we mean a graphic practice that foregrounds what standard representations suppress (thresholds, exclusions, provenance), making explicit the decisions through which visibility and invisibility are produced. In this sense, counter-visualisation does not primarily operate through stylistic rupture or graphic novelty, but through a reconfiguration of what mapping does: it foregrounds procedures, frictions, and exclusions that are usually naturalised, even when visual outcomes may appear formally familiar.

Franco Farinelli's reflections on the crisis of cartographic reason (2009) are decisive: the modern regime of the map constructed a world reduced to a homogeneous plane where the identity of places coincides with measurable position. As Farinelli suggests, if the map produces the territory by making it governable, today's crisis arises because contemporary space is reticular and processual, traversed by flows and temporalities that exceed bidimensionality. Along similar lines, Aït-Touati and Gaukroger (2015) critically examine a comparable shift within scientific modernity. In both accounts, processes of reduction and abstraction are called into question as they reveal their limits under heightened complexity and fluidity. Against this theoretical backdrop, the paper treats the critique of cartographic neutrality not as a purely epistemic matter but as a concrete design problem for how maps are built and read.

Against this backdrop, we articulate three research questions that guide the inquiry:

1. How can visual methods – drawing and mapping – surface relations (including multispecies relations) that standard representations erase?
2. How do data formats, accessibility and circulation condition what becomes visible or remains opaque, thereby shaping the politics of urban knowledge?
3. What spatial affordances emerge from iterative moves between observation and construction, that is, from drawing understood as a generative, performative practice?

This orientation resonates with non-representational theory (Thrift, 2008), which shifts the focus from representation as a final product to practices, performances, and effects through which knowledge is enacted. From this perspective, mapping is approached not as an image that stands for the city, but as a set of situated operations that intervene in how urban relations are sensed, discussed, and negotiated.

These questions are operationalised through a paired-neighbourhood design in Palermo (Oreto and Libertà) that combines open-data harvesting with *in-situ* measurement and experimental graphic protocols, enabling comparison of both absolute values and internal proportions across domains.

The counter-visualisations proposed here take this crisis as an operative condition: they renounce the claim of map–world equivalence, work with situated and temporary traces, and bring chorography, scale and narration back into play to draw out what cartographic homogenisation tends to erase. Across the paper we show how visual methods elicit forms of evidence that exceed what textual description alone can deliver; we approach drawing as a generative practice, an iterative oscillation between seeing and making that opens new avenues of inquiry; and we treat data as political actors, advancing cartographies that, by explicitly documenting thresholds, uncertainties, and choices, problematise – rather than celebrate – transparency.

2. Palermo as a case study

Our inquiry begins from this awareness. It is not a matter of narrating a city – Palermo, in our case – in its entirety, but of closely observing how urban life is constructed through different assemblages of infrastructures, economies, and ecologies. The juxtaposition of two neighbourhoods is not intended to establish a neutral comparison; rather, it shows how the same cartographic device can generate narratives that bring to the surface controversies otherwise dormant. Palermo lends itself particularly well to this operation. Inscribed in its streets and districts are radical contrasts and a unique historical stratification: walking only a few hundred metres suffices to encounter social, architectural, and economic landscapes that succeed and overlap one another.

The inquiry was circumscribed to two areas – given time and resource constraints – a purposive selection rather than a casual one. The historic centre, now transformed by gentrification processes and an intense tourist presence, was excluded: including it would have meant working with data already altered by logics exogenous to everyday urban life. By contrast, the two selected neighbourhoods – Oreto-Perez (hereafter Oreto) to the south and Libertà to the north – retain a predominantly residential vocation, where the presence of accommodation facilities such as B&Bs remains significant but not dominant. Both are organised around a railway station (*Stazione Centrale* for Oreto, *Notarbartolo* for Libertà) and share a comparable urban grid, while occupying opposite geographic poles. This dual choice makes it possible to observe similar dynamics in different contexts, thereby offering a balanced and revealing ground for comparison. The juxtaposition of these two fragments of the city aims to show how the same cartographic device can elicit contrasting narratives, returning urbanity in its contentious and mutable dimension.

3. The Power of Inquiry

Once the areas had been selected, the question arose of what to represent and why. Statistical data sequences reported in cartography often overlap without touching; in other words, they build separate, autonomous layers that are sometimes weakly related. However, if we admit that the city is a relational fabric that constructs spaces and defines citizenship, it becomes necessary to supplement cartographic efforts with different investigative tools, not more sophisticated, complex, or technologically advanced, but simply more situated, closer to the material realities of places, including the most minute and infraordinary ones (Burgio, Giunta forthcoming; Burgio 2025). In our view, it was in some sense necessary to mobilise, in a Latourian key, the power of inquiry.

By the *puissance de l'enquête*, Bruno Latour (Aït-Touati 2022) understands the power of inquiry as an active, compositional process through which the common world is explored, created, and instaurated. It is not a matter of discovering a pre-existing world, but of composing it, of making, of instauring relations and meanings. Inquiry is an experiential and continuous method that follows and builds networks of relations among human and non-human actors, with the aim of bringing to light modes of existence and shared practices. In particular, this *puissance* is tied to the capacity of inquiry to produce new knowledges, ways of dwelling on Earth, and collective realities that are not mere abstractions or simple discoveries, but are negotiated and co-constructed. Inquiry thus plays a political and urban role, aiming at a resetting of modernity and at a planetary negotiation grounded in a plurality of modes of existence (Latour 2012; Souriau 2017). In line with this approach, the critical force of the cartographic work does not reside in the visual output as an autonomous object, but in the chain of practices – walking, measuring, translating, normalising, rendering – through which urban relations are progressively made available for inquiry.

The first set of data collected (Fig. 1) – always through open-source archives – is what we might call more classical: vegetation indices (NDVI) derived from Sentinel-2 satellite imagery; demographic statistics; and figures relating to income and school dropout rates. In addition, a significant part of the work was devoted to scraping, that is, the systematic extraction of data from digital sources[1] which, although accessible, are not immediately organised in an analytical form. The other part of the dataset, by contrast, was collected in the field and concerned – as already noted above – the counting of bins and the amount of artificial nighttime light detectable along streets. In these latter two cases, we proceeded to count each litter bin one by one and to take point measurements of evening illuminance recorded with a luxmeter, so as to render the perception of light in urban spaces during evening hours[2].

Indicator	Libertà	Oreto
Trees	352	92
Ground-floor commercial activities	273	197
Waste bins	155	2
Italian residents	4.520	3.344
Foreign residents	163	438
Income	€23.783,00	€17.928,00
Average illuminance (lux)	22,35	8,07
Airbnb listings	60	138
Homes for sale	48	80
Homes for rent	12	20
Average rent cost/m²	€6,50	€3,80
Average home price/m²	€1.725,00	€1.175,00
NDVI green index	30,20%	14,90%
School dropout rate	2,34%	9,40%

Fig. 1

Walking through neighbourhoods, taking measurements with precision instruments, observing the operation of public lighting, and recording how signage lighting reflects on façades means turning the body itself into an analytical device. As Donna Haraway reminds us (1988, 2019), knowledge is always situated and partial, produced by a heterogeneous assemblage of human and non-human elements. From this perspective, the observer's body, measuring instruments (e.g., a lux meter), field notebooks and photographs, processing software, and digital datasets together contribute to the construction of cartography as a hybrid practice. It is precisely this cyborg condition that enables the passage from numbers to their sensory translation, showing that every representation inevitably entails choices, interpretations, and exclusions (what is measured, where, when; which thresholds are adopted; which optical effects are included). The aim of this work is not to deliver a definitive image of the city, but to produce a *device-in-the-making* (Sánchez Criado, Estalella 2024): an experimental cartography that, by making its decisions and uncertainties explicit, generates questions as much as answers and renders visible the controversies that traverse urbanity.

4. Mapping Urban Differences

In the initial phase of the inquiry, we adopted a representational method that can, cautiously, be situated within the more conventional cartographic registers – namely, GIS-based data modelling – applied, for example, to the building stock of the two areas analysed (Fig. 2).

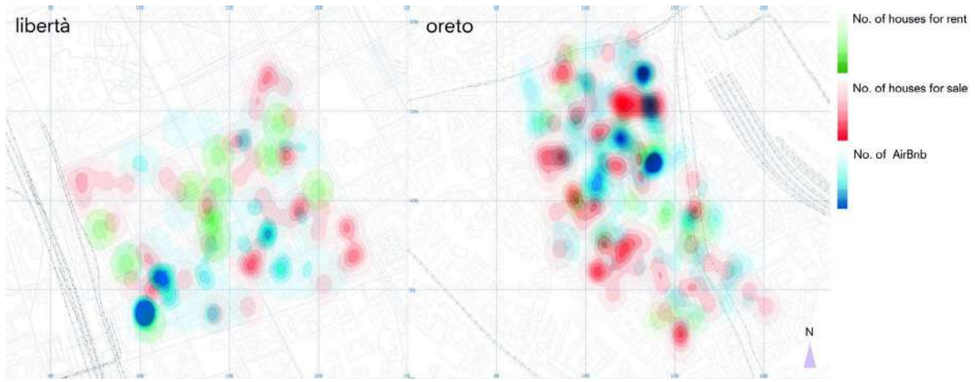

Fig. 2

However, the simple act of juxtaposing heterogeneous indicators already produces a narrative that deliberately distances itself from any claim to cartographic neutrality. It is from this operation that unexpected urban configurations emerge. Observing the distribution of greenery (NDVI and tree counts), the intensity of nighttime illumination, the presence of waste-collection bins, the location of trees, and ground-floor commercial activities, one notes that in Oreto (Fig. 2) these values are systematically lower; in Libertà, by contrast, they tend to be higher (Fig. 3). In parallel, Oreto records lower average incomes and a higher school dropout rate. In other words, recurrent co-variations can be observed between urban indices and income, as if the latter acted as an invisible grid capable of recombining patterns and silently yet forcefully redrawing the very map of inequalities.

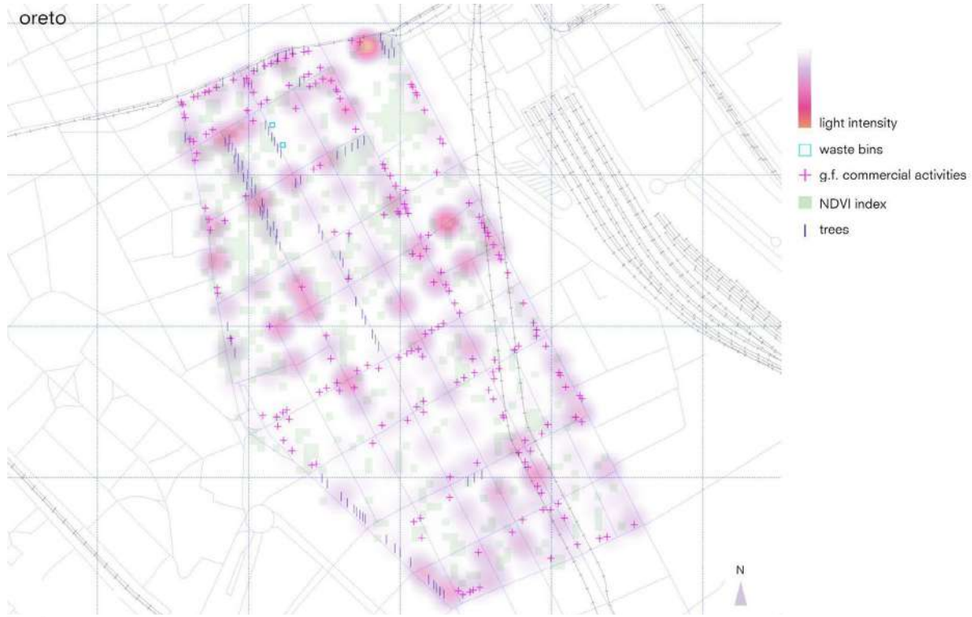

Fig. 3

Applied in parallel to the two neighbourhoods, the data collection made it possible to compare not only the absolute values of the variables but, above all, their internal proportions and reciprocal relations, after normalising them to ensure comparability. One particularly significant indicator is urban greenery: the presence of trees and vegetation is not merely an ecological parameter; it affects air quality, microclimatic regulation, the liveability of public spaces, and even residents' psychological well-being. In this sense, the scarcity of green in Oreto is not a mere environmental datum: it intertwines with more fragile socio-economic conditions, helping to shape concretely the quality of everyday life. Evening light likewise reveals different logics: in Oreto, where many streetlights are often malfunctioning and commercial signage is less numerous, large portions of the city remain in shadow; in Libertà, the density of ground-floor activities ensures diffuse illumination even in the absence of particularly efficient public infrastructure. Moreover, in Oreto fewer than half of the existing streetlights have been replaced with LED technology, whereas in Libertà the replacement has been completed, thereby ensuring higher overall illuminance.

These findings prompt us to push representation further, turning it into a tool capable of bringing to light what remains invisible. From this perspective, the cartography produced – accompanied by a comparative chart – highlights the material and infrastructural make-up of the two neighbourhoods, together with their socio-economic depth. Taken together, the elements analysed compose a landscape that is never merely descriptive but provides a concrete measure of living conditions and the possibilities of dwelling.

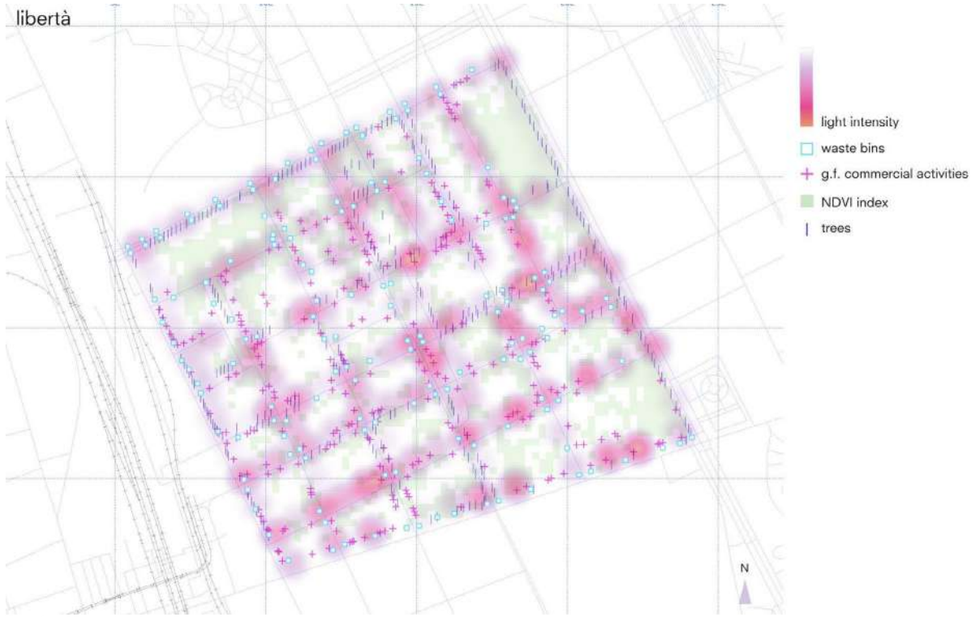

Fig. 4

5. A Cartographic Rendering of the Data

The heterogeneous nature of the data collected posed, from the outset, a methodological challenge: how to bring into dialogue variables expressed in such different magnitudes? On the one hand, demographic values measured in the order of thousands, such as the number of Italian or foreign residents in the neighbourhoods; on the other, small counts, such as the number of bins or trees surveyed in urban space; alongside these, economic indicators such as average incomes and housing costs, expressed in euros and therefore not directly comparable with environmental or social indices. Added to this are quantities expressed as percentages, such as NDVI indices or school dropout. For this reason, it was necessary to devise a translation process that would assemble all these values within a common framework without, however, erasing their specificities.

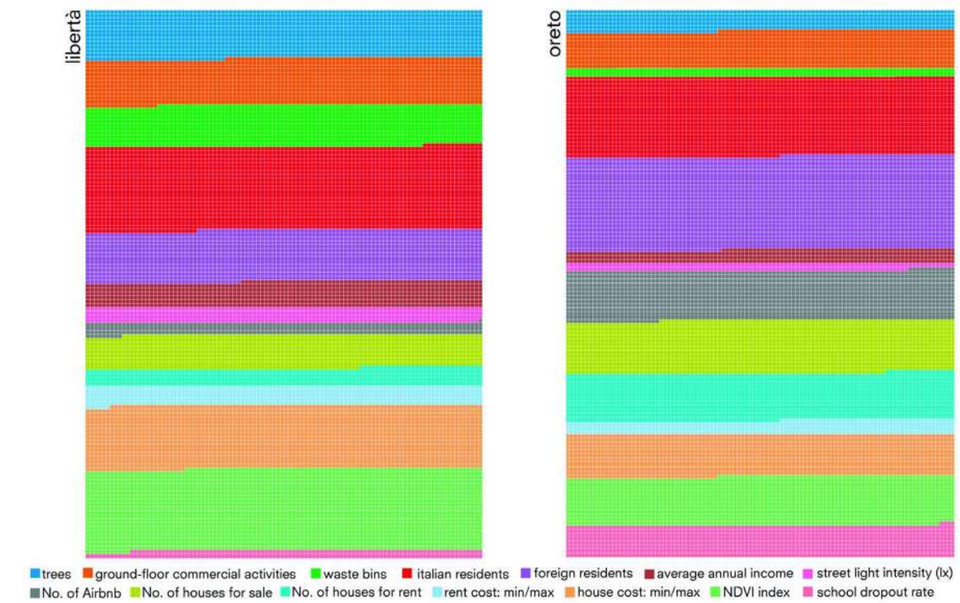

Fig. 5

The first step involved applying a logarithmic transformation (log1p) to the economic and housing data, so as to reduce distortions produced by very pronounced differences in order of magnitude. The log1p transformation (ln(1 + x)) makes it possible to handle zeros and attenuate asymmetries without altering the internal ordering of values. In this way, the internal hierarchy of values could be maintained without upper extremes compressing smaller variables. Indices already expressed as percentages were instead kept on a linear scale, so as to preserve their interpretive immediacy. Before normalisation, count variables were standardised by area (per km²) and/or by population (per 1,000 residents), so as to guarantee comparability between neighbourhoods with different densities.

Once the data had been normalised on a min–max scale (0–100), it became possible to place them within the same comparative space, preparing them for subsequent visual translation. The most consequential methodological choice was to construct a 100 × 140 matrix, for a total of 14,000 elements. The grid, inspired by the classical paper format, was conceived as a visual device capable of hosting and rendering legible the internal proportions of the data. A minimum of 30 pixels was assigned to each variable, to prevent smaller magnitudes from disappearing, while the remaining pixels were distributed proportionally according to the relative weight of the variables within their respective semantic classes. By “semantic classes” we mean four principal sets: demography; housing market; environment; services and commerce. The distribution of the remaining pixels was carried out proportionally to the relative weight of the variables within each class, maintaining intra- and inter-class legibility. The matrix is not conceived as an infographic optimised for visual elegance or immediate legibility, but as a thinking device that holds together heterogeneity, proportion, and loss. Its apparent visual sobriety is intentional: it prevents the naturalisation of data into smooth images and keeps the conditions of translation perceptible.

This operation does not produce a simple graphic abstraction, but a genuine counter-visualisation (Fig. 4), in the sense suggested by Latour (1986): rather than concealing the materiality of the data behind canonical and ostensibly neutral forms of representation, the pixel matrix exposes their construction, making evident the partiality and the choices inherent in every cartographic operation. Colour, defined by a bespoke legend, serves not only to distinguish variables and intensities, but above all to render visually the heterogeneity of phenomena, transforming it into a shared language capable of making legible what would otherwise remain incommensurable. In this way, the method adopted weaves together two complementary dimensions: on the one hand, the technical comparability of the data, guaranteed by their translation into pixels and visual proportions; on the other, the possibility of reading the city as a field of relations in which social, economic, environmental and infrastructural factors never act separately. The result is a matrix that is not merely a mode of representation, but a fully fledged exercise in data visualisation: a thinking device capable of exploring complexity without reducing it. From this perspective, each pixel becomes a fragment of the city, a tessera in a broader narrative. Assembled together, they compose a mosaic that does not erase differences, but renders them perceptible as part of an overall design. It is here that cartography becomes generative (Yaneva 2012): it does not merely describe, but produces realities, opening new possibilities for interpretation and action.

6. Mapping Through Sound: An Alternative Cartographic Device

However, we did not settle for producing only graphic representations. If, on the one hand, it is necessary to call into question classical systems of representation, on the other we cannot deny that our era is characterised by the dominance of the eye as a cognitive, social and political instrument, coupled with an all-pervasive culture of visualisation. In this context, the sonic world has often been downgraded, considered secondary to the visual. Yet in recent decades there has been a re-emergence of the centrality of sound through sound art and contemporary musical experimentations, which have fostered a new cultural awareness of the role of sound in perception and artistic expression, opposing the predominance of the image and foregrounding auditory, spatial and temporal dimensions often ignored.

Seeking to reorganise cartographic representations through alternative mapping practices, we propose here a radically different way of “speaking” about the things of the world. For this reason, we took a further step, pushing experimentation beyond the visual domain and assuming that data could be not only seen but also heard. If the pixel matrix made it possible to translate heterogeneous magnitudes into a common visual language, the next step was to conceive the data as sounds, turning cartography into a score. Each pixel was interpreted as a sonic unit: variables become timbres, values turn into intensities, proportions convert into rhythm. In this way, what began as data visualisation evolved into a fully fledged sonic composition, capable of staging the city in another sensory language.

If visualisation enables the restitution of urban complexity through visual forms, *sonification* goes further in this direction, compelling the data to speak in another register. Transforming the matrix into sound means subverting the visual hierarchy traditionally dominant in cartography and opening up a more

inclusive and accessible experience. Listening to the data amounts to apprehending the city as a weave of frequencies, as a soundscape that recounts in a different way the differences between neighbourhoods. Listening to the data means approaching the city as a fabric of frequencies, as a soundscape in which inter-neighbourhood differences resonate anew. For those who cannot access visual maps, *sonification* becomes an instrument of accessibility; for those accustomed to reading the city only through numbers and charts, it offers an unsettling experience, capable of surprising and shifting the gaze. In this sense, the data are not simply translated into sound: they are renegotiated, transformed into sensory experience, staged through a medium that reveals other dimensions. The transformation of urban data into sonic compositions may be understood as a form of critical and speculative design, capable of generating cognitive and affective instruments that interrogate our relation to the urban environment. The sonic composition, in this framework, is not an autonomous work, but a research device: a way of making audible the hidden relations among infrastructures, ecologies and everyday life. At the link below, one can listen to these sound experiments that reproduce the maps of Libertà and Oreto: Mapping as Inquiry online

The aim of sonification is not to provide an alternative analytical result, but to displace the dominant visual regime of data interpretation. Following a non-representational stance (Thrift, 2008), sound operates here as a performative medium that alters how relations are sensed and discussed, opening the inquiry to different publics and forms of accessibility.

7. Conclusions

This study has treated mapping not as the end point of analysis but as a way of doing research: a sequence of operations that tests hypotheses, composes relations, and renders debatable what is usually taken for granted. Rather than assuming that a map mirrors territory, we have started from the premise that every representation intervenes in how the city is assembled and understood. Anchoring this stance in debates on performativity and situated knowledges, we have treated drawing, modelling, and iteration as fully fledged analytical moves. The result is a cartographic practice that does not aspire to smoothness; instead, it aims to make visible the seams – the thresholds, conventions, and exclusions – through which urban facts are fabricated.

The comparative inquiry in Palermo shows what such an approach enables. By putting into relation two residential neighbourhoods organised around railway stations but exposed to different socio-economic conditions, we were able to make ordinary indicators speak to one another rather than ranking them hierarchically in isolation. Night-time illuminance, ground-floor activity, trees and bins, together with income and school dropout, coalesced into a pattern that would, in all likelihood, be muted in its import if each layer were read on its own. In the southern neighbourhood (Oreto) green provision and service amenities were systematically lower and coincided with weaker socio-economic indicators; in the northern one (Libertà) the reverse holds. Here income does not act as a single causal motor but as an invisible organiser that simultaneously reconfigures multiple indices.

Read through this lens, aspects that appear merely technical – or are dismissed as trivial – acquire political salience. The uneven transition to LED street lighting, for example, offered a crisp signal that anchored qualitative observations: where the retrofit has not been completed, extended portions of the neighbourhood remain in shadow, compounded by a thinner ground-floor economy and sparser commercial signage. Likewise, the joint reading of NDVI and street-level amenities clarified how limited canopy in Oreto intersects with fragile socio-economic conditions, with implications for heat exposure, comfort, and the use of public space. In rendering these relations legible, the approach does not deliver a final portrait; it offers a platform on which claims can be checked, contested, and developed further by others.

A further contribution lies in diversifying the media through which evidence can appear. Translating the cell-based matrix into sound did not replace visual reading; it complemented it. Sonification made relative weights audible and opened an additional access point for audiences for whom charts are inaccessible or alienating. More importantly, the exercise unsettled the hegemony of the eye by showing that different sensory registers disclose different relations. In this sense, the “score” is not an artistic embellishment but a methodological extension: another way to probe urban conditions and to convene collective reasoning around them.

No approach is without limits. Our comparisons are a snapshot rather than a time series; vegetation indices are sensitive to seasonal and atmospheric conditions; night-time measurements are confined to specific dates and hours; scraping depends on sources whose stability warrants caution. We deliberately excluded the historic centre to avoid exogenous distortions introduced by intense tourism and short-term rental dynamics; this narrows the scope of our claims while strengthening internal validity for residential neighbourhoods. These constraints do not weaken the argument; they are part of it. By

documenting provenance, thresholds, uncertainties, and the handling of missing or extreme values, the project substitutes a rhetoric of objectivity with a practice of responsible construction.

The implications extend beyond this case. For administrations, a transparent, grid-based exposition of proportions can support prioritisation where compounded deficits co-locate–intervening, for instance, on LED retrofits, tree planting, street-level amenities, or ground-floor activation in areas where infrastructural and socio-economic scarcities align. For educators, community organisations, and design studios, the combination of counter-visualisation and sonification can sustain workshops that invite publics to “hear” and “see” their neighbourhoods differently, making discussions on safety, comfort, and equity more tangible. For research, systems of standardisation, transformation, normalisation, and exposition within a constrained grammar offer a reproducible template adaptable to other cities, scales, and questions, including climate adaptation and environmental justice.

The broader theoretical wager is that critical cartography gains force when it becomes operational (Paez, 2019). Farinelli’s critique of planar equivalence, Latour’s insistence on following assemblages, Haraway’s situated knowledges, and Yaneva’s performative mapping find here a practical articulation in protocols that are public, transparent, and transferable. The “data infrastructure stack” through which urban knowledge is produced is not a neutral backdrop but the very field upon which visibility is negotiated. To work on that stack is to do urban criticism with tools that others can reuse.

If there is a lesson to carry forward, it is this: maps are not only images but instruments. They can script scores (fieldwalking, measurement, listening), convene arguments, and redistribute attention across the urban field. Treating cartography as inquiry has allowed us to surface relations that standard representations dampen, to show how formats and accessibility configure what can be seen, and to demonstrate that drawing – understood as an iterative passage between looking and making – opens concrete spatial affordances for thought and action. The Palermo experiment is small in scale but strong in implication: when evidence is constructed openly and multimodally, controversies become discussable, and the city once again becomes a shared problem that different actors can work on together. If the visual outcomes of this work do not present themselves as radically novel images, it is because the wager of the project lies elsewhere: in treating cartography as an ongoing inquiry rather than as a representational endpoint. What is challenged is not only how the city looks on a map, but how mapping participates in making urban relations perceptible, debatable, and open to collective intervention.

Notes

1. The open-source data sources used for data extraction are as follows: World Bank (2025), *World Bank country classifications by income level: 2024–2025*, Washington, D.C.: World Bank. Available at: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups; ISTAT (2024), *Security and the state of decay of cities and their suburbs. Hearing before the Parliamentary Committee of Inquiry into the conditions of security and the state of decay of cities and their suburbs, 20 June 2024*, Rome: Italian National Institute of Statistics. Available at: https://www.istat.it/audizioni/sicurezza-e-stato-di-degrado-delle-citta-e-delle-loro-periferie/; Ministry of Economy and Finance (MEF) (2025), *Database of tax returns by municipality*, Rome: Department of Finance. Available at: https://www1.finanze.gov.it/finanze/analisi_stat/public/index.php?search_class%5b0%5d=cCOMUNE&opendata=yes; Municipality of Palermo (2025), *Resident population by district and neighbourhood*, Palermo Open Data. Available at: https://opendata.comune.palermo.it/opendata-dataset.php?dataset=1692; Italian Revenue Agency (2024), *Real Estate Market Observatory (OMI) – Real estate price databases*, Rome: Agenzia delle Entrate. Available at: https://www1.agenziaentrate.gov.it/servizi/Consultazione/ricerca.htm; Idealista (2025), *Property listings for sale and rent*. Available at: https://www.idealista.it/; Inside Airbnb (2025), *Get the Data – Airbnb listings and availability*. Available at: https://insideairbnb.com/get-the-data/; Copernicus (2025), *Copernicus Browser – Access to Sentinel satellite imagery and data*. Available at: https://browser.dataspace.copernicus.eu/
2. This data collection was carried out between 30 and 31 July 2025, starting from 10:00 pm.

Image Captions

Fig. 1 Table of the collected data sets.
Fig. 2 Real estate profile of the analysed neighbourhoods.
Fig. 3 Infrastructural material profile of the Oreto neighbourhood.
Fig. 4 Infrastructural material profile of the Libertà neighbourhood.
Fig. 5 Pixel-based visualization of the analyzed data

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Biographies

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Urban Morpho-Graphy

A methodology for interpreting and transforming collective spaces

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Abstract

Contemporary challenges, related to the climate crisis and social inequalities, force European cities, characterized by heterogeneous urban fabrics, to rethink collective spaces, reflecting on how they are perceived and experienced by their inhabitants. The problem of graphically translating these changing aspects arises as central to the design process: drawing, as a critical approach of analysis, thus becomes the main tool for reading urban space and its transformations.

The term *urban morpho-graphy* – from the Greek, μορφή "form" and γραφή "drawing, writing" of the city – describes this process of design reading and reinterpretation. The research methodology, starting from a retroactive analysis of *morpho-graphic* restitutions in architectural history – from Nolli's plan of Rome to Las Vegas *Strip* – focuses on the critical reading of built space as an existing fabric to be overwritten. In parallel, through university teaching and research, digital methods are explored to represent the perception of collective spaces and the informal transformations introduced by local inhabitants.

The Torrevecchia neighborhood in Rome (designed in 1978 by Pietro Barucci, Lucio Passarelli and Marcello Vittorini and inaugurated in 1984) stands as a significant example of the contemporary need to act on the collective spaces of modern neighborhoods, which are characterized by vast unbuilt areas, lacking physical margins that can identify the places of aggregation proper to the stratified European city, such as squares and streets. Thus, the purpose of the graphic investigation, with a synthetic proposal inspired by the Weber–Fechner law of perception, is to highlight the critical issues of the neighbourhood, reveal latent aspects of the original project, and outline design strategies in response to new community needs.

The research aims to outline a possible methodology applicable to similar case studies, framing drawing not as a mere tool for representation, but as a "revealing" means for critical interpretation of the contemporary city.

Key words: morpho-graphy, collective spaces, perception, informal transformations, communities.

1. Introduction

The contemporary city can be investigated through multiple disciplinary perspectives, each contributing to the development of a critical framework on which to base a transformation project. Analyses may focus on social vulnerabilities, functional shortcomings, aesthetic qualities, or relational characteristics; each of these aspects, in its own way and to varying degrees, helps shape what is commonly referred to as “the perception of urban space”. To delimit the scope of the present research, we chose to focus on the relationship between the city’s form, the sensory perception of space, and its graphic representation, encapsulating this approach in the term *urban morpho-graphy* (from the Greek μορφή, “form,” and γραφή, “drawing, writing” of the city).

By “urban morpho-graphy”, we propose to encompass past and present attempts to translate the perception of urban space into graphic form, while examining the challenges inherent in transposing a three-dimensional physical environment into a two-dimensional virtual drawing. To this end, we critically revisited the experiments of Giambattista Nolli, Kevin Lynch, Robert Venturi, Denise Scott Brown, Steven Izenour, Colin Rowe, and Fred Koetter, comparing the conclusions reached in their respective works as a basis for developing an original contribution to the topic. Our proposal is to employ the Weber–Fechner law as a tool for perceptual analysis of space, generating a series of graphic schemes derived from a specific case study. Although no mathematical formula can fully account for the complex set of features that determine the perceptual qualities of place, the Weber–Fechner law makes it possible to measure how the same alteration may be perceived differently depending on the initial context. In the examined case, the law, when translated into a graphic scheme, helps to reveal how the unity or heterogeneity of an urban space affects overall perception.

We therefore applied the Weber–Fechner law to a specific case study: the Roman district of Torrevecchia, analyzed within the PRIN research project “Places and Stories of Proximity. A Methodology for the Regeneration of Collective Spaces in Modern Neighborhoods”[1] and within the university course “Rome–Madrid: House and City”[2] at the Department of Architecture, Roma Tre University. The formula was used to graphically represent the perception of changes individually introduced by residents into collective space. The main transformations under examination concerned the appropriation of public areas converted into private spaces, the disruption of façade uniformity through the enclosure of loggias and the replacement of window frames, as well as the opening or closure of ground-floor spaces, altering the permeability of the original design. This critical reinterpretation prompted reflections on architectural space, followed by design responses developed by the students of the Rome–Madrid course, whose architectural and graphic outcomes are partly published in this research.

2. *La Pianta di Roma*, Giambattista Nolli

In 1748, Giambattista Nolli published the *Nuova Pianta di Roma*, introducing a new way of conceiving urban cartography. Nolli’s map is not merely a plan of the city of Rome, but an attempt to translate the spatial experience of the urban fabric into a system of signs. Famous, in this regard, is his decision to represent in white—using the same graphic treatment—not only the street network and public squares, but also the ground floors of religious buildings, as well as the atria and courtyards of secular ones, thereby highlighting a continuity between open and enclosed areas, between public and private realms of the city.
Through this distinctive graphic codification, Nolli did more than measure the city with precision by employing innovative methodologies and modern topographical instruments; he also sought to depict the spatial permeability of Rome’s built fabric, anticipating a sensitivity that would later be described as phenomenological. The map does not simply record the city through objective surveying; it invites us to understand how the urban environment can be traversed and experienced, merging technical knowledge with a nuanced reflection on urban space.
The impact of Nolli’s graphic rendering is noteworthy: the city does not appear as a mere aggregate of buildings but as a fabric of connections and relationships. Urban thresholds—the pivotal points of transition between public and private space—are indicated by subtle graphic marks that do not separate but rather relate different environments. Even the city’s structural order is distilled through a clear chromatic distinction between white and black, enabling a rapid reading of spatial boundaries. The visual clarity of Nolli’s map, capable of condensing into a few graphic signs an urban-scale spatial concept, stands as a significant example of how drawing can serve as an interpretative tool, anticipating and influencing modern and contemporary urban theories.

3. *The Image of the City*, Kevin Lynch

In *The Image of the City* (1960), Kevin Lynch conceives the city not merely as a physical reality, but as a mental image arising from the experience of those who traverse and inhabit it. To translate this concept into graphic form, Lynch collected testimonies, sketches, and subjective recollections that reinterpret

individual sensations of urban space. The drawings published in his work can be described as cognitive maps, for they do not reproduce the geometrical configuration of places but rather the perception of an environment. The actual distance between buildings or the dimensions of spaces are represented through personal experience and are therefore inevitably distorted in relation to a conventional plan; it is precisely this discrepancy that reveals how people perceive the city.
Unlike Nolli’s Pianta di Roma, which integrates the physical structure of urban form with a depiction of the porosity of collective spaces, Lynch’s maps reflect an individual experience of place, in which subjective interpretation prevails over cartographic objectivity. Mobile elements—such as people and automobiles moving through the streets—also acquire significance, conveying an image of the city composed of memories and personal meanings. As Lynch writes, “to understand this, we must consider the city not as a self-contained object, but in the ways in which it is perceived by its inhabitants”[3].
For Lynch, it was therefore essential to identify and classify five elements structuring the city: paths, edges, districts, nodes, and landmarks. Particularly notable is the graphic representation of these categories, explored in his text through small sketches placed alongside the narrative. These concise diagrams illustrate, with just a few lines, the arguments developed in the book. In this reading, graphic representation becomes for Lynch a vehicle for communicating to the reader the different subjective dimensions of urban space, shifting attention from an objective definition of physical form to the lived experience of individuals.

4. *Learning from Las Vegas*, Robert Venturi, Denise Scott Brown e Steven Izenour

Learning from Las Vegas, written by Robert Venturi, Denise Scott Brown, and Steven Izenour and published in 1972, originated from fieldwork conducted with students of the Yale School of Art and Architecture, involving participants from architecture, urban planning, and graphic design. The city of Las Vegas became a laboratory for understanding the innovations introduced by contemporary American society. Their approach departed from traditional urban studies, proposing a perceptual and phenomenological reading of space focused less on buildings themselves than on the city’s imagery.
The graphics of billboards and illuminated signs, through their visual predominance in the public realm, are elevated to the status of architectural elements within the urban landscape. Central to this conception is the Strip—the long avenue of hotels and casinos—which introduces a new urban category, foreign to the layered European city, designed to be apprehended swiftly from a moving car rather than experienced on foot. Within this spatial framework, neon lights, billboards, and large signs acquire a new symbolic value. To narrate this environment, the authors, together with their students, employed a variety of representational tools—collage, photography, sketches, drawings, and diagrams—juxtaposing the spatiality of the Las Vegas Strip with Nolli’s *Pianta di Roma*.
These two representations speak of perceptually opposite places. In Nolli’s map, space seems carved out, as though a massive block of stone had been eroded over time through a process of subtraction. In contrast, in Venturi and Scott Brown’s account, the city appears as an immense plateau upon which object-buildings are placed; the visual glue of this space, devoid of physical boundaries, lies in the signs themselves—both in the real city and in the graphic transposition offered by Learning from Las Vegas, where the authors seem to capture the relentless visual rhythm of the aesthetic experience. Leafing through the pages of the book reveals a clear intent to demonstrate how kitsch and the celebration of commerce can convey the urban experience. Whereas Kevin Lynch sought to represent the image of the city through the maps of its inhabitants, Venturi and Scott Brown focus on its symbolic and communicative dimension, depicting a new media-driven reality in which signs and images perceptually prevail over the built form.

5. *Collage City*, Colin Rowe e Fred Koetter

Collage City, published in 1978 by Colin Rowe and Fred Koetter, addresses the themes of fragmentation and the stratification of space, proposing a model for interpreting the city that reclaims the legacy of the historic European urban fabric while highlighting the limitations of modern functionalist planning. In *Collage City*, spatial and temporal distances are dissolved, enabling a comparative potential among architectures that, though physically distant, resonate with one another when placed on the same page. Rowe does not directly render urban space graphically, nor does he conventionally depict a specific site; rather, he alludes to the potential perceptions generated by juxtaposing works. In his text, Rowe does not employ collage merely as a technique for composing one or more images but conceives the entire book as a collage of works. Fragment, discontinuity, and exception become metaphors for representing the city’s construction over time—always understood as a dynamic process rather than a static order.
The juxtaposition of images, drawings, plans, maps, perspectives, and photographs offers the reader a mosaic of experiences capable of accommodating and interpreting the plurality of urban space. To Nolli’s eighteenth-century *Pianta di Roma*, Rowe prefers Luigi Canina’s *Map of Imperial Rome*, where individual buildings, with their pure geometries, do not appear to form a coherent fabric but rather an agglomeration of episodes developing through fragments. Even the graphic structure of Collage City

becomes a metaphor: through the interplay and apparent disarray of multiple and heterogeneous visual languages, it embodies the condition of the contemporary city.

6. Methods of perception in urban morpho-graphy

From the experiments examined, it becomes clear that each author proposed an original and insightful innovation in the graphic translation of complex urban space; nevertheless, the main limitation of these works lies in their reliance on a qualitative and subjective approach. Nolli's map, for instance, portrays a porous city through its striking graphic rendering, yet the actual limits of spatial accessibility are far more complex and, when private areas are included, often impenetrable. His abstraction is therefore synthetic in relation to its communicative intent, but not fully objective.

Similarly, Kevin Lynch's *Image of the City* and Robert Venturi, Denise Scott Brown, and Steven Izenour's *Learning from Las Vegas* present spatial translations—drawings and maps whose innovative value resides precisely in delegating the reading of space to inhabitants or to groups of students; the perception of place and its corresponding graphic representation thus vary from one individual to another. These works constitute stimulating tools for urban interpretation, clarifying new research methodologies, yet their representations remain highly subjective and, at times, arbitrary. Even more so, Colin Rowe and Fred Koetter's *Collage City* stands as an exceptional metaphor for the fragmentation of the contemporary city, yet it ultimately reflects a deeply personal, projective vision.

Naturally, the examples discussed represent only a fraction of the experiences devoted to urban perception; among the most renowned is Guy Debord's psychogeographic method, developed in the late 1950s for his celebrated map of the Parisian *Naked City*, which highlights how urban space shapes emotions and behaviors. Nonetheless, such inquiries largely rest upon data rooted in subjectivity. In light of these reflections, we explored how to introduce a more objective and quantifiable approach to urban perception, selecting the Weber–Fechner law as a basis for analysis and graphic transposition—while remaining aware of the limitations inherent in a strictly mathematical method. We believe, however, that it can provide a meaningful foundation on which to balance objective data about spatial perception with the subjective readings offered by individuals.

7. The Weber-Fechner law

The search for a relationship between the physical world and sensory perception found one of its first formulations in the nineteenth century, with the Weber–Fechner law emerging as an attempt to translate this relationship into quantitative terms.[4] This law represents one of the earliest efforts in psychophysics, the branch of science devoted to studying, through experimental methods, the connections between psychic phenomena and physiological processes, focusing on the construction of measurement scales for stimuli and the determination of sensory threshold values.

Ernst Heinrich Weber (1795–1878), a German physiologist, experimentally observed that the amount of change in the magnitude of a given stimulus required to produce a just noticeable change in sensation maintained an approximately constant ratio to the overall magnitude of the stimulus.

$$k = \Delta I / I$$

With k representing Weber's constant and I the intensity of the stimulus.

This intuition, formulated in the so-called Weber's law, marked the first step towards a mathematization of perception.

Subsequently, Gustav Theodor Fechner (1801–1887), a German physicist and psychologist, expanded Weber's idea by integrating it into a mathematical function that directly linked the intensity of the physical stimulus to the intensity of the perceived sensation. [5]

Fechner thus arrived at the following equation:

$$S = k \log I$$

Where S is the value of the sensation, k is Weber's constant, and I is the value of the physical intensity, measurable through an instrument. [6]

With this formulation, perception is described as a logarithmic function: the increase in the perceived sensation becomes progressively less evident in relation to the increase of the physical stimulus.

7.1. Limitations of the Law

Despite its historical and theoretical importance, the Weber–Fechner law also presents certain limitations that must be considered. Its validity is most evident for stimuli of medium intensity: when approaching very low values, close to the perceptual threshold, or very high values, near the maximum limit of perception, the logarithmic relationship no longer accurately describes subjective experience. Moreover, the law is not equally applicable across all sensory modalities: it works effectively for vision and hearing but is less reliable for sensations such as pain or taste. It should also be noted that, in its mathematical formulation, it reduces an extremely complex phenomenon to a simplified model, whereas perception also depends on contextual, cognitive, and cultural factors. These difficulties also emerge when attempting to represent the law graphically. Graphical representation cannot capture fundamental dynamics such as sensory adaptation or environmental influence, which play a crucial role in perception.

In this sense, the Weber–Fechner law should be understood as an orientative model rather than an exhaustive description: a useful reference for grasping the general trend of the relationship between stimulus and perception, but one that must be integrated with further considerations when applied to more complex situations.

7.2. The use of the Law in Architecture

The interest in the Weber–Fechner law does not end within the field of psychophysics but also offers relevant insights for architectural reflection and for the ways in which space is designed, represented, and experienced. If, as the law states, perception does not grow in a linear way in relation to the stimulus, but according to a logarithmic curve, this means that even in the experience of built environments small variations may be strongly perceived, or scarcely noticed, depending on the environment in which they occur.

Thinking of the plan or the façade of a building, often conceived as a coherent whole in the initial project, later transformations, in many cases carried out by the individual inhabitants, introduce variations that are more or less evident. According to the logic of the Weber–Fechner law, a small modification with respect to the original configuration – the addition of a window, an enlargement of a room, a projecting balcony – is perceived in relation to how much it breaks the compositional unity established by the design. When alterations multiply over time and the overall image of the building has already become fragmented, further interventions are less perceptible: the observer's eye, already adapted to multiplicity and discontinuity, registers new changes with less impact.

In this sense, the Weber–Fechner law can be read as a conceptual tool useful for understanding the limits of human perception within the design process. It not only describes the functioning of the senses but also reminds us that every architectural representation must confront the threshold of sensitivity of the viewer, calibrating differences so as to be more or less perceptible depending on the design intentions and the needs of the inhabitants.

8. The Torrevecchia case study in Rome

With the aim of applying the Weber–Fechner law to a concrete case study and thus testing its applicability, the Roman district of Torrevecchia was selected. Torrevecchia constitutes the main object of investigation within the PRIN 2022 project "Places and Stories of Proximity: A Methodology for the Regeneration of Collective Spaces in Modern Neighborhoods", which seeks to identify strategies for the revitalization of collective spaces, considered a crucial resource for addressing contemporary challenges such as those posed by the climate crisis and its consequences for urban living. Many public spaces in European cities—particularly in historic centers but also within consolidated urban areas—are now inadequate (if not uninhabitable) in the face of increasingly frequent extreme heat waves. In this sense, the case of Torrevecchia, with its intrinsic complexity, offers valuable insights for rethinking the role of collective spaces in the contemporary city.

The neighborhood, designed by Roman architects Pietro Barucci, Lucio Passarelli, and Marcello Vittorini and inaugurated in 1984 in Rome's northwestern periphery as a public initiative, is characterized by a high degree of typological variety and stands as an emblematic example of spatial experimentation and "downsizing" after the era of large-scale public housing projects that marked Italy in the 1960s and 1970s. Corresponding to this typological diversity is a remarkable heterogeneity of open spaces—almost all exclusively pedestrian and level—distinguished by markedly different proportions, qualities, and modes of use. Although currently in a general state of decay and neglect, these spaces retain unexpressed potential, stemming both from their variety and specificity and from the relatively widespread presence of vegetation.

At the same time, Torrevecchia presents several critical issues, such as its physical and social isolation from the surrounding urban fabric, the unfulfilled provision of public facilities and services, and the progressive residential appropriation of spaces originally intended for commercial activities. Over the years, the neighborhood has undergone a series of informal modifications by residents, who have gradually altered the appearance and perception of its collective spaces.

The morpho-graphic investigation of Torrevecchia's collective spaces has been further developed by the Roma Tre research unit within the course "Rome–Madrid: House and City", which this year focused its inquiry on the Roman district. Through a series of exercises, students explored the perception of these spaces and the changes introduced by residents, employing both hand drawing and, predominantly, digital representation as a preliminary phase for subsequent design work.

8.1. The Perception of Change in the Collective Spaces of the Torrevecchia Neighborhood

Among the outputs produced within the course "Rome–Madrid: House and City", a selection of student works was chosen for their analysis of the Torrevecchia district in plan and elevation as a meaningful representation of its collective spaces. The central question is: to what extent do the alterations introduced by residents affect the perception of urban space?

In this essay, the students' diagrams were further reinterpreted through an abstract translation inspired by the Weber–Fechner law. The variations were schematized as sets of points distributed within a square, where differences in point density reflect the perceptual impact of the modifications. In this way, the transition from an analytical reading of the drawings to a conceptual representation also becomes a tool for design reflection—a means of visualizing not only the physical condition of the transformations but, above all, their perceptual weight.

9. Case 1: the Courtyards of Torrevecchia

As noted above, Torrevecchia is characterized by a considerable typological variety. The entrance to the neighborhood is defined by a double row of low-rise houses with ground-floor services, converging on a central space framed by four fifteen-story towers. In the original design, this area—referred to by the planners as the "piazza" —was intended to host community facilities and commercial activities. From this square radiate four rows of slab buildings, ranging from four to six stories (two on each side), which form two large courtyards: mirror-like yet not symmetrical.

The two courtyards flanking the "piazza" have distinct functions and characteristics. The western courtyard, larger than the other, enjoys visual connections with the surrounding Roman countryside and is almost entirely dedicated to public green space. The ground floors of the imposing linear blocks house only stairwells and cellars, with limited porosity toward the surface parking areas behind the buildings; some of these passages have been illegally enclosed to shelter private motorcycles. The courtyard's space is expansive and somewhat dispersive; some residents have enclosed small sections of parkland facing the buildings, personally tending them and thereby reclaiming a domestic dimension in the use of the garden.

The eastern courtyard, by contrast, presents more critical conditions in several respects. In addition to being the only space of its kind raised above the level of the rest of the district—accessible via a long, dilapidated ramp—it is largely defined by extensive areas lacking clear functional purpose. This situation is compounded by the deterioration of pavements and seating, as well as by the neglect of recreational equipment, except for a small playground and a sports field. Although less expansive than its counterpart and more "welcoming" in terms of proportion, the eastern courtyard is almost entirely paved and lacks an adequate system of greenery capable of properly shading its spaces.

9.1. The porosity of the courtyards

The conditions observed in the western courtyard, and even more in the eastern one, illustrate how collective space has been subject to ongoing transformations of use and spontaneous adaptations by residents. The closure of passages, the appropriation of green areas, and the reconfiguration of access routes have affected not only everyday usability but also the overall perception of spatial permeability.

It was from these dynamics that the students developed their initial analytical diagrams, focusing in particular on the ground level and the theme of porosity. They examined how the access points originally planned had been progressively blocked by inhabitants, thereby reducing the permeability of the courtyards and radically altering the perception of openness (Fig. 1). The key issue lies not so much in each individual modification as in its cumulative impact on the relationship between interior and exterior: even the closure of a small opening or the erection of a fence can compromise the legibility of entire pathways.

Fig. 1

9.2. Graphical synthesis using the Weber–Fechner formula

The diagram was further re-elaborated graphically, translating into quantitative terms the passages originally planned in the project and those that remained open after the modifications introduced by the inhabitants. This representation makes it possible to visualise clearly the reduction (ΔI) of ground-floor porosity and to reflect on how such interventions have affected the overall perception of the courtyards (I). In the light of the Weber–Fechner law (Fig. 2), it emerges that even the closure of a limited number

of openings produces a perceptual impact, reducing the legibility and continuity of the spaces. The diagram therefore does not only have a descriptive value but becomes design material: it highlights the critical issues resulting from spontaneous transformations and offers a useful tool for rethinking ground-level pathways, restoring accessibility and coherence to the collective spaces of the neighbourhood.

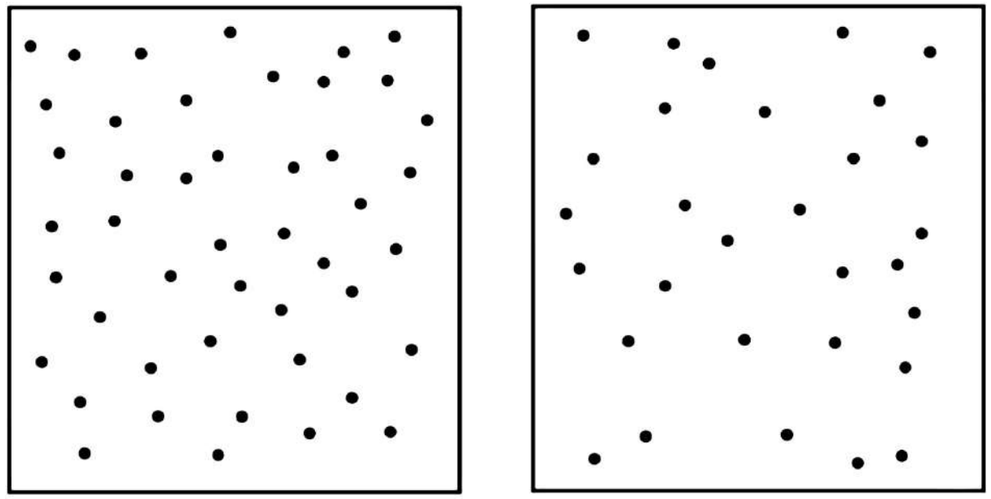

Fig.2

10. Case 2: the Façades of Torrevecchia

The paired row of low-rise houses at the entrance to the neighborhood defines a narrow, linear collective space characterized by the presence of vegetation. While the eastern slab building is served by an elevated walkway, access to the dwellings in the western block occurs via small stairwells opening directly onto this space. The combination of these elements, together with the modest height of the two linear buildings, lends the area between the houses a domestic, almost semi-private character, clearly separated from the main streets and surface parking areas, in keeping with the overall design principle whereby collective spaces are marked by an introverted relationship to the city.

Within this setting, the façades facing onto the space acquire fundamental importance for the morpho-graphic investigation. Although, as noted, the neighborhood is distinguished by its typological variety, the overall image of the project is unified by the uniform, rigorous design of the elevations and by the use of precast concrete panels for the façades. Residential needs and the limited maintenance of the building envelopes have led to a series of informal alterations to the façades, which have inevitably modified the perceptual qualities of the open space.

Although the lateral courtyards are spatially more expansive, the same considerations apply to the façades overlooking these areas: here too, over time, substantial changes have taken place, producing a significant perceptual transformation of the collective space.

10.1. Elevation Diagrams: Minor Variations and Major Transformations

Within this framework, the alterations made by residents to the façades become a privileged lens through which to understand the impact of perceptual changes on collective space. Originally conceived as uniform and coherent surfaces, the elevations now appear as a mosaic of localized interventions alongside more substantial modifications that have gradually altered their overall image. For this reason, a second set of diagrams focuses specifically on the façades (Fig. 3), highlighting the full spectrum of ongoing transformations—from the replacement of window frames or the addition of individual elements to the systematic enclosure of loggias.

Fig. 3

10.2. Graphical synthesis using the Weber–Fechner formula

The graphic re-elaboration of these diagrams, through the application of the Weber–Fechner law, made it possible to represent not only the quantity of the modifications, but above all their perceptual weight. By comparing the total number of openings (I) on the façade with those that have been modified (ΔI) and those that have remained as originally designed, it becomes clear how the multitude of transformations has, over time, produced a new language of the façade (Fig. 4). It is no longer a design and balance dictated by the architect, but an ensemble improvised by the inhabitants, layered through individual and autonomous choices.

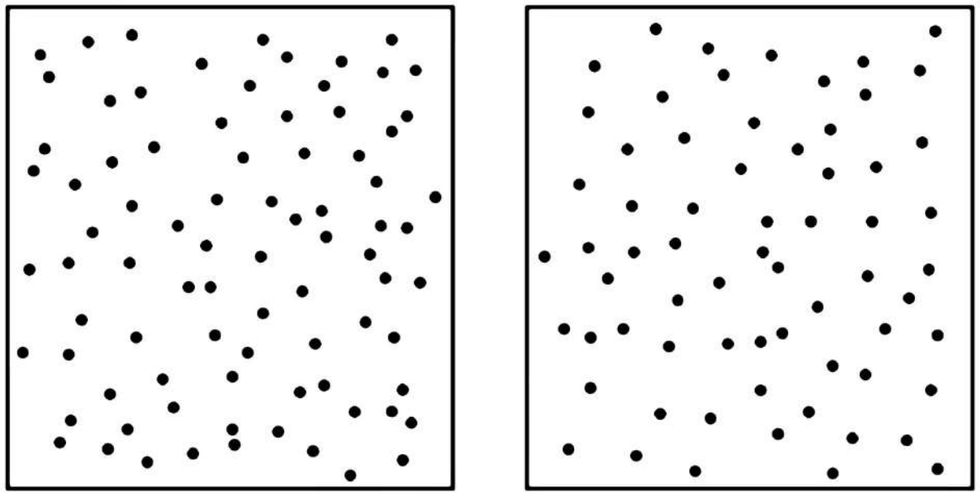

Fig. 4

In this sense, the result is not uniform: for the same transformation (ΔI), perception varies significantly in relation to the initial number of elements (I). In an elevation with few openings, even a single modification stands out immediately, whereas in a much denser façade the same variation tends to fade, and it is precisely this perceptual gap that becomes impossible to ignore in design, as it constitutes the real basis from which to rethink the relationship between architectural form and everyday life.

11. Conclusions

The application of the Weber–Fechner law, following the development of interpretative drawings by the students, allowed for a representation—through translation into quantitative data—of how informal interventions by residents have transformed the overall perception of collective spaces in the neighborhood compared to the original design. This method was applied to the Torrevecchia case study but can be extended to other similar contexts.

The numerical data, which cannot be separated from the qualitative perception of space, proved to be a valuable tool for supporting the design process.

In the case of the courtyards, the analysis of ground-level porosity led students to conceive a design capable of envisioning a continuous system of connections at street level, enhancing and facilitating existing pathways.

Regarding the study of façades, the informally introduced modifications by residents were so numerous that the students' design proposal (Fig. 5)—through the standardization of the façades using a system of loggias, intended to respond to the needs of the inhabitants—was able to integrate and reconcile the full range of spontaneous interventions. These design proposals aim not only to systematically organise informal transformations, but also to enhance the building's climatic comfort, thereby reducing energy consumption and overall energy expenditure.

Fig. 5

Notes

1. The contribution is part of the Prin project "Places and stories of proximity. A methodology for the regeneration of collective spaces in modern neighborhoods" (PNRR - M4C2 - I1.1 - PRIN 2022 - settore ERCSH7 -2022XZZYA5 - CUP F53D23005740006 - funded by the European Union - NextGenerationEU).
The research group consists of three units affiliated with the University of Rome Tre – Department of Architecture (with Professor Milena Farina as Principal Investigator), the University of Campania Luigi Vanvitelli – Department of Architecture and Industrial Design, and the Polytechnic University of Turin – Department of Architecture and Design.
2. Course lecturers: Milena Farina and Valerio Palmieri (Roma Tre University, Department of Architecture), Andrés Cánovas and Sergio Martín Blas (ETSAM – UPM, Department of Architectural Projects). The course focuses on the theme of collective housing and includes theoretical lessons, visits to Roman neighbourhoods, critical analysis exercises and design experiments. 3. Kevin Lynch, *L'immagine della città* (Padova: Marsilio Editore, 1973), 25.
4. “Treccani”, Psicofisica, accessed June 15, 2025, http://www.treccani.it/enciclopedia/psicofisica/.
5. “Treccani”, Gustav Theodor Fechner, accessed June 15, 2025, 2017http://www.treccani.it/enciclopedia/gustav-theodor-fechner/.
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Image Captions

Fig. 1. Ground floor porosity diagram. Students Lucien Crouzet, Muller Ticini Solal, Maja Niccoli. The students identified 46 pedestrian passages at street level and a partial closure of 10 of them carried out by the residents.
Fig. 2. Dot diagram. Reworking of the ground floor porosity scheme modified by the residents. Both courtyards were examined, where 46 passages were planned in the original design and currently 30 remain accessible.
With Weber-Fechner Law: $k = \Delta I/I$ where $\Delta I = 10$ and $I = 46$ so that $S = k \log I$ with $S = 10/46 \log 46$
The first square on the left represents the total of 46 passages and the second on the right the 30 passages that remain passable.
Fig. 3. Facade openings diagram. Left: Students Chloé Lesourd, Justine Musielinski, Aymeric Valerio, Andreyan Yanchev. Right: Students Hugo Malabry, Simone Pinheiro Machado, Tessa Rihai.
In a portion of the facade, the students identified a total of 84 openings, 66 of which had been modified by the residents.
Fig. 4 Dot diagram. Graphic reworking of the modifications in a portion of the facade where the original design included 84 openings and only 20 remain unaltered by the residents.
With Weber-Fechner Law: $k = \Delta I/I$ where $\Delta I = 20$ and $I = 84$ so that $S = k \log I$ with $S = 20/84 \log 84$
The first square on the left represents the total of 84 openings, and the second on the right the 20 that remain unchanged.
Fig. 5 Left: Project focusing on the transformations recorded in plan. Students Lucien Crouzet, Muller Ticini Solal, Maja Niccoli. Right: Project focusing on the transformations recorded in elevation. Students Hugo Malabry, Simone Pinheiro Machado, Tessa Rihai.

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Biography

Flavio Graviglia is an architect, PhD, and Postdoctoral Research in Architectural and Urban Design at the Department of Architecture, Roma Tre University. He is the founder of Volume Atelier and serves as a Teaching Assistant in Architectural and Urban Design. He obtained his PhD at Roma Tre University and carried out research at the École Nationale Supérieure d’Architecture de Paris-Malaquais, with a dissertation entitled “Adieu au Langage: Architecture in the Age of Mass Photography.” He has pu-blished widely on art, photography, and architecture. His work has been exhibited at the Venice Archi-tecture Biennale, the Casa dell’Architettura in Rome, Woodbury University in Los Angeles, the Royal Netherlands Institute in Rome (KNIR), IUAV University of Venice, and the Biennale dello Spazio Pubblico.

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From Research to Design: Analysis of Team 4 Architects’ data visualisation strategies through Reports, Charts and Diagrams (1963-1967)

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Abstract

This paper investigates the underexplored data visualisation strategies employed by Team 4— the British architectural practice founded in 1963 by a group of Yale alumni, Su and Richard Rogers, Norman Foster, and the sisters Wendy and Georgie Cheesman—through the lens of critical research methodologies. Rather than centring on conventional formal or tectonic readings of their early work, this study examines how research and data visualisation shaped Team 4's approach to architectural design within the UK's post-war techno-optimistic and interdisciplinary context. Drawing from rarely published materials from the Norman Foster Foundation Archive—including reports, charts, graphs and diagrams—this article foregrounds how visual research formats extended beyond representation. These overlooked artefacts suggest how Team 4 adopted data-driven methods to formulate spatial research strategies oriented towards community-oriented goals, in line with Chermayeff and Alexander's *Community and Privacy*, and at the same time, incorporated adaptability and systems-thinking strategy inspired by Ehrenkrantz's SCSD.

By adopting an Actor-Network Theory (ANT) framework, this research repositions architectural production as a distributed process composed not solely of the designer's agency but of entangled networks of actors, tools, and systems. This methodological lens is further enriched through Richard Buchanan's scholarship on Design Research and Edward Tufte's principles of information design, enabling a critical unpacking of how visual and data-based outputs served as communication tools and generative design instruments, using diagrams not only to explain but to design. These diagrams—oscillating between speculative strategy and proto-consultancy—reveal how Team 4 leveraged information systems as projective devices, allowing architecture to operate a time-based strategy for growth and flexibility that resonates with its broader emerging high-tech tendencies. By examining the role of visual research within Team 4's practice, this paper seeks to discuss how architectural knowledge is constructed, negotiated, and performed through the very formats that often remain peripheral to traditional historiography.

Keywords: Team 4, architectural diagrams, design research, Actor-Network Theory, information design.

1. Introduction: Expanding Team 4's traditional conceptual framework

Team 4 Architects was a British architectural practice active between 1963 and 1967 that emerged from a collaboration among a group of British Yale alumni – Su Rogers, Richard Rogers, and Norman Foster – and the sisters Wendy and Georgie Cheesman, childhood friends of Richard Rogers. The distinctiveness of Team 4 lies in their ability to navigate between cross-Atlantic contexts, importing several elements from the US while filtering them through the British social, economic, and technological context. Acting as US ambassadors in the UK, Team 4 explored the expanding disciplinary scope of architecture by blending architectural practice with urban research and design consultancy. Additionally, their innovative media strategy, with particular emphasis on narration, visualisation, and mediation, positioned Team 4 among the notable emerging British architecture firms of the 1960s. During their four-year collaboration, Team 4 produced works that would eventually catalyse 'high-tech' by crafting an identity around group design dynamics that enhanced cross-disciplinary design and broadened their conceptual framework through research and design consultancy. This last aspect is the focus of this paper, which moves beyond traditional architectural historiography that focuses solely on architectural outcomes. Viewing architecture as the result of complex networks involved in its creation, use, and transformation, and prioritising process over product, this paper offers a fresh perspective on Team 4's design toolkit, mediation techniques, and design agency. Inspired by Bruno Latour and Albena Yaneva's scholarship, this paper adopts an Actor-Network Theory (ANT) framework to reposition Team 4's architectural production as a distributed process composed not solely of the designer's agency but of entangled networks of actors, tools, and systems, which are visible through a selection of rare or commonly overlooked contents from several archives[1].

1.1 Team 4's Research and Design Consultancy: Incorporating new visualisation methods

In 1963, while Team 4 aimed to establish themselves within the emerging British context, they received a series of commissions that required developing skills beyond architectural design, such as research strategies and consultancy studies. In the creative industries, these ideas have led to specific buzzwords, including terms like "strategic design" or "design consultancy"[2]. These terms often describe overlapping and complementary skills, which Team 4 explored through various formats, including studies, work reports, and research presentations. This variety of representations allows us to analyse the gradual development of research and consultancy skills that ultimately led to the incorporation of strategic design at different scales within Team 4's portfolio. The focus on Team 4's consultancy agency reveals how research functions as a design tool and reflects the practice's growth and evolution, mirroring its relationships with clients, consultants, and various types of commissions[3]. Consequently, this paper concentrates on the pre-design processes, deploying Team 4's research strategies and their representations. Each of the following sections examines the research and consultancy elements integrated into Team 4's design process, arranged chronologically in the order of their incorporation. The first section discusses reports as formats for research storytelling; the second focuses on the use of charts to communicate urban analysis; the third presents diagrams depicting research on social aspects; and the last covers drawing schemes to illustrate growth and time as a design vector. The paper's primary sources are drawn from the Serge I. Chermayeff Papers at the Columbia University Avery Architectural and Fine Arts Library and the Team 4 fonds at the Norman Foster Foundation Archive[4]. Secondary sources complement and expand the theoretical framework in use by drawing on related fields such as Design Research, where the work of Richard Buchanan provides a solid base, and Information Design and Data Visualisation, where Edward Tufte's research is particularly insightful[5].

1.2 Research and visual displays antecedents: *Community and Privacy*

Team 4's initial commissions offered an opportunity to build on the combined research and design skills that earlier members of Team 4– Su Rogers, Richard Rogers, and Norman Foster – had already developed the previous year, during the 1961-1962 academic year at Yale University, specifically under Serge Chermayeff's mentorship. With a career spanning architecture, design, and urban planning—from his origins in Russia, through the UK, and ultimately the US—Chermayeff had established himself as an authority within US East Coast intellectual circles. While Chermayeff's mentorship had directly influenced Richard Rogers and Foster through one of their studio projects during their Master's in Architecture, Su Rogers had indirectly absorbed his strong influence while studying for a master's degree at Yale's Department of City Planning. Chermayeff's main approach was to conduct extensive research to inform a design outcome. Foster has described how Chermayeff prioritised debate and theory over imagery, with questioning at the forefront and analysis driving action[6]. Furthermore, the Yale alumni met Chermayeff while he and Christopher Alexander were preparing *Community and Privacy: Toward a New Architecture of Humanism*, an early call for human-centred design that became a pivotal book in architecture and urban design.

Published at the end of 1963, *Community and Privacy* reflected a method that combined multidisciplinary references, historical research on urban and architectural elements, socioeconomic analysis, and strategic design[7]. The Chermayeff-Alexander collaboration introduced a rarely acknowledged aspect of the book—its visual agency for displaying information — by integrating design theories and early diagrammatic experiments to understand the spatial implications of social relations and to model the flow of people, anticipating pattern language theories. This spans a broad visual repertoire, from scientific representations (diagrams and charts) designed by Ivan Chermayeff (Serge Chermayeff's son) to Saul Steinberg's illustrations. These visual explanations cover topics from "population equation" and "car space percentages" to "design cycles diagram", including Kiesler diagrams, often used in psychology to depict attitudes or behaviours. The letters from Foster and Richard Rogers to Chermayeff during the Team 4 period, with their ongoing references to his teachings, emphasise the book's importance to them—particularly in their initial research on housing schemes, a central theme of the book. Likewise, Team 4's research and consultancy outputs echo the book's diagrammatic diversity through various formats of information presentation, applying what Tufte identified as the "causal reasoning", a visualisation that shows relationships but explains how things work, and "graphical elegance", which results when "data complexity is organised clearly and efficiently"[8].

2. Expanding visualisation formats: serial vision and paced storytelling through reports

This section explores two aspects that Tufte describes as visual reasoning and narrative causality, which Team 4 developed in two early commissions involving an urban-scale approach. Visual reasoning involves making reasoning visible by combining various communication methods, such as words, numbers, images, and graphics, to help an audience understand complex ideas. This concept can be applied to narrative causality, where an idea or concept is shown across time, space, or both. Instead of simply presenting static data, narrative causality uses sequencing, comparison, and layering—techniques that are particularly useful for illustrating the process, use, and consequences of an architectural proposal, especially in site analysis diagrams and environmental impact visualisations. Team 4 initially addressed these aspects in the Creek Vean Development and later, in an updated version, in the Morley Centre urban renewal proposals.

2.1 Storytelling landscape integration: Creek Vean Development (1963-1964)

In summer 1963, Team 4's first commission came from Su Rogers' parents, the Brumwells, who owned several plots in Cornwall, UK. They wanted a preliminary study for a collective housing scheme at Feock, overlooking Creek Vean, to persuade local authorities to grant the necessary permits. Designed for a non-architectural audience, Team 4 produced a 12-page report promoting "small multiples", a series of similar graphics illustrating various conditions or changes over time, to convey a visual story through repetition, variation, and spatial organisation. In this way, Team 4 laid the groundwork for what would later become a formal design proposal, clearly distinguishing the research and design phases. This distinction is evident: the report pages maintain a consistent format, measuring 22 cm by 37 cm, whereas the design schemes include larger plans that vary in size and scale. Each report page was crafted to function as a slide, implying a prearranged lecture sequence in which each board addresses a specific aspect, building on the previous one (Fig. 1, left). The report offers a visual analysis of the county's ambience, viewed through an ethnographic and picturesque lens, incorporating a walkthrough via small vignettes drawn by Norman Foster, reminiscent of Gordon Cullen's serial vision in *The Concise Townscape*[9]. First published in 1961, Cullen describes the experience of moving through a space and how the visual perception of the urban environment develops over time. Beyond this dynamic experience, the report features enlarged diagrams, with each slide including a column of text explaining the intent behind the drawings, likely to support the presentation to clients. Embedded within the text are some of Chermayeff's expressions, where historic buildings "cluster economically", offering insights into the advantages of leaving large areas of landscape undisturbed and rural, which formed the basis of their scheme. The connection with *Community and Privacy* becomes evident in the more detailed drawings, likely developed in a second phase or to complement the report. Team 4 proposes a housing typology that closely resembles the Yale Urban Renewal Group proposal[10], which Foster and Rogers may have collaborated on, suggesting a contribution to the book they frequently cite.

2.2 Urban Analysis charts: Morley City Centre (1963-1964)

Developed alongside the Creek Vean Development studies between summer 1963 and early 1964, Team 4 was tasked with examining urban renewal proposals for Morley in West Yorkshire (UK). The objective was to create a comprehensive redevelopment plan for its town centre as part of a broader effort to modernise and revitalise the area. Among the few remaining documents at the NFFA is a ring-bound report-catalogue. With hard covers, it presents a more professionalised report than the one previously prepared for Creek Vean and demonstrates Team 4's adoption of serial vision. The Morley report combines various media: diagrams, plans, and perspective drawings, scaled to fit within a book format of 29 x 29 cm per page, which at the time required photomechanical work for rescaling—meaning

additional time, budget, and resources. The photographs are affixed to the pages, providing an updated version of the drawings used earlier at Creek Vean, inspired by Cullen's serial vision (Fig. 1, right). The report presents overall design schemes that illustrate a mix of conceptual ideas, helping to identify references and to highlight the tensions between the formal language of architectural Modernity and real-world adaptability. The inclusion of megastructural concepts and modular systems reflects the British context's *zeitgeist*, including nods to the Smithsons' topological planning, such as their unbuilt 1953 project for extending Sheffield University. Similarly, the scheme around the City Hall reflects urban renewal influences that some Team 4 members experienced in New Haven during their mentorship with Paul Rudolph at Yale. Overall, working in both rural (Feock) and urban (Morley) settings simultaneously enriched Team 4's versatility and expanded its emerging visual and design repertoire by employing extensive research strategies before design.

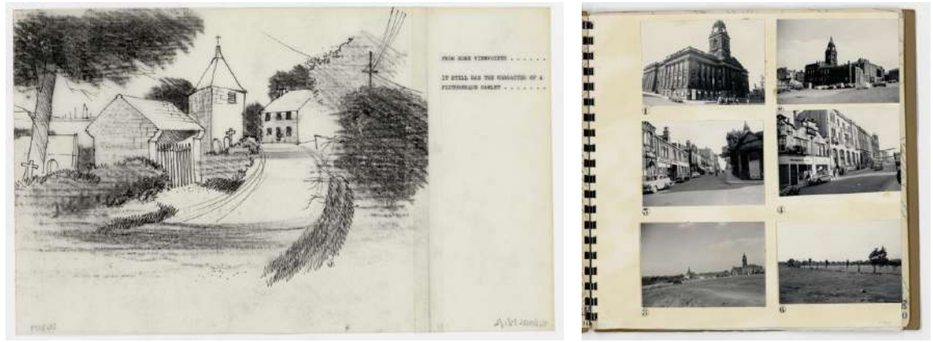

Fig. 1

3. Expanding Conceptual Frameworks: Charts and Diagrams

In the following section, we examine how Team 4's data visualisation evolved, demonstrating a greater influence from *Community and Privacy* (C&P). Previously, we caught a glimpse of Chermayeff's methods and research emphasis, but Team 4's charts and diagrams now confirm a direct inspiration from the book's data visualisation techniques. These strategies enable a deeper critical analysis, showing how visual and data-driven representations functioned as vital communication tools and generative design instruments—using diagrams not just for explanation, but for actively shaping design. This process was already initiated at Morley and was further developed through the larger commission at the time, Wates Housing.

3.1 Diagrams of Interaction: the 'Morley chart'

The first identified diagram or non-architectural medium at the NFFA returns us to Morley. The chart remains untitled and appears to be a clean version of a working document (Fig. 2, left). The X-axis is composed of three categories, apparently based on privacy ("inner zone", "middle zone" and "outer zone"), whereas the Y-axis corresponds to "bldg. [Building] type". A series of red dots indicates intersections between the two, correlating privacy and typology. The terminology in use seems to connect directly to C&P in several ways, and in this specific chart, to Christopher Alexander's pattern rhetoric. Firstly, by taking its advice about managing information, outlined in the "Technology is a Tool" section: "An ever-increasing body of research is providing end-less *(sic)* information - facts, figures, specifications- and possibilities which should be reflected in every form. To achieve this end, the designer needs not only to have the data and consultants at his disposal, but to be able to handle them, organize them, bring issues and principles into focus, and make a unified whole out off many complexities*"* [11]. Secondly, later in the book, in the "Problems Have Patterns" section, an essential working principle is described: "every problem has a structural pattern of its own. Good design depends on the designer's ability to act according to this structure and not to run arbitrarily counter to it"[12]. The explanation follows a list of basic requirements, which are later intersected in a chart titled 'diagram of interaction' (Fig. 2, right), paving the way for the diagram utilised at Morley's consultancy commission. Although the chart's abstraction makes it difficult to conclude, the board's similarity to other drawings in the same archival folder suggests that it should be read alongside other documents, including the serial visions previously described in the photographic report.

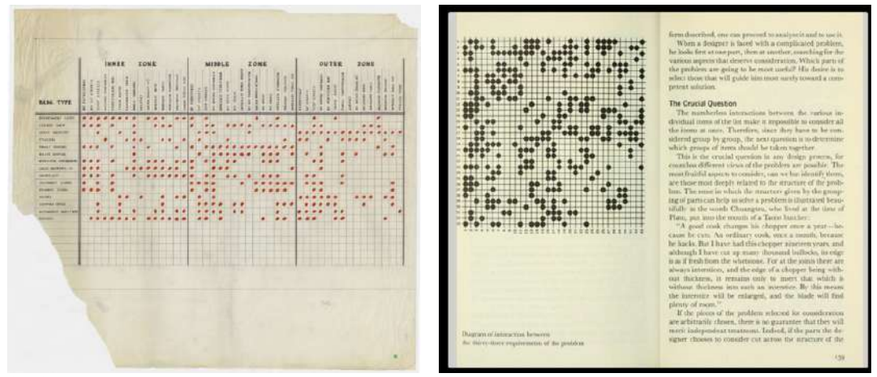

Fig. 2

3.2 Social Diagrams: Wates Housing (1965-1966)

The most significant Team 4 commission possibility, a large housing scheme for the Wates company at Coulsden (Surrey, UK), came after their initial consultancy projects, Creek Vean and Morley, were suspended. Given the effort and output of Team 4 (74 drawings at the NFFA) during Wates' pre-design research phase, it appears that they explored every possible option to secure the job. The most impactful diagram documenting the initial research phase is titled 'Community Structure' (Fig. 3), which features four nested circular systems in a highly conceptual data visualisation. Complying with Tufte's "data-ink ratio" concept, Team 4 deploys minimalist clarity to visualise a hierarchy of domestic, educational and recreational functions. Scaled by radius and population, cores A through D were complemented by programmatic descriptions according to their scale. Although the diagram's abstraction suppresses the site or politics of space, a social approach is evident when analysing the details provided by the complementary text, where the definition describes the "Playspace type (d) for children 1-5 years", which even includes "benches for mothers". We can consider this diagram as Team 4's full adoption of C&P's data and process visualisation. Within C&P's central pages, there are several abstract diagrams – from design process cycles (pages 100-101) to the Kiesler Diagram (page 142), which depicts the interaction of technology, obsolescence and design. Team 4's diagram was likely one of the most important figures in an extensive report presented to Wates; however, the report has not been found, despite references confirming its existence.

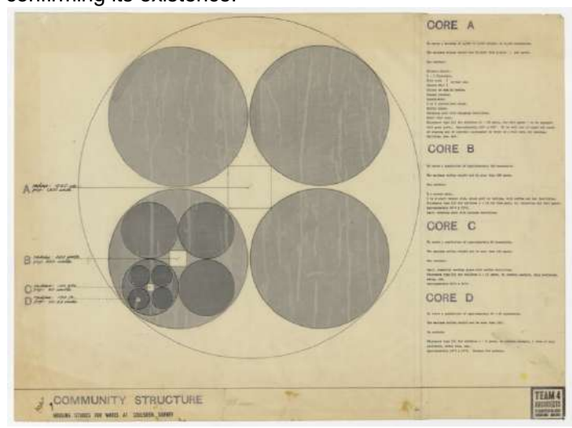

Fig. 3

In September 1964, Foster and Rogers wrote to Chermayeff asking for his feedback on the scheme, confirming how his mentorship prevailed after Yale (Fig. 4). Accessed at Avery Library, the letter is composed on Team 4 stationery paper, and it is signed by both Foster and Rogers, Chermayeff's former students. After citing their recent meeting with Chermayeff in the UK, they explicitly acknowledge that "since then, we have at least obtained your book, which we now know by heart"[13]. The letter goes on to explain that, during the interview process to secure the commission, "we not only quoted your book ad infinitum but also provided them with a copy"[14]. The research and social aspects seem to have permeated Team 4's ethos, as evidenced by their description of the client's reaction: "they were so

impressed with our socially minded approach, as opposed to our competitors' architectural art style, that with a little luck, we shall get the job"[15]. They state that they will send their report to him, and the letter concludes with an underlined sentence in blue ink: "all Team 4 would like to thank you for your direct assistance". Despite their enthusiasm, it doesn't appear that they succeeded, as in March 1966, Rogers and Foster wrote separately to Chermayeff. Both refer to a previously sent report and announce their intention to send a more developed version of the Wates scheme to obtain his feedback. In his letter[16], Rogers describes how "we are all waiting for the sequel to 'Community and Privacy' and its 'total' application"[17], openly acknowledging Chermayeff's paternity on the Wates' scheme: "we consider the scheme to be a direct reflection of your teaching". A week later, Foster sends another letter[18], starting, similarly to Rogers, with "you may remember that we sent you some time ago an outline report of a housing scheme based on your teaching at Yale", followed by: "we're realising more and more the value of the Yale"[19]. It is impossible to know Chermayeff's reaction, as his replies, if any, are neither recorded nor archived.

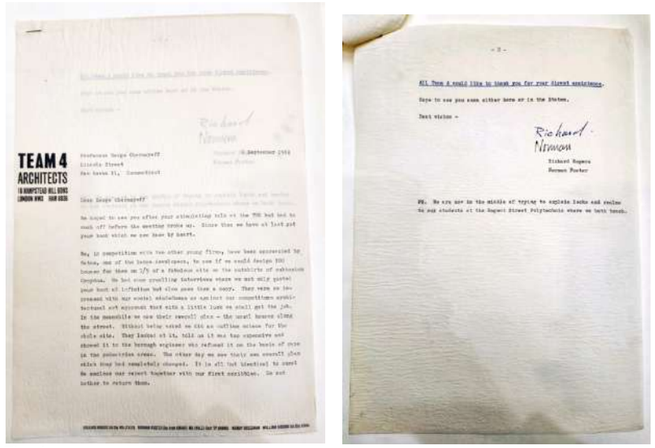

Fig. 4

4. Incorporating Flexibility, Growth and Time as Design Vectors

The final aspect of research or consultancy acquisition skills that can be inferred from the Team 4 archival fonds is the incorporation of flexibility, time, and growth as design vectors within their work dynamics. Although the Wates commission was never completed—and probably never received Chermayeff's feedback—Team 4 received widespread recognition for their approach to design research when they received the 1965 AD Project Award. At the same time as receiving the award, Team 4 began to address the commission that ultimately helped them secure a position in the British context, with one of their first built schemes, the Reliance Controls factory building. Rather than focusing on the building's tectonics, which set the pace for Team 4 and is considered one of the so-called high-tech archetypal buildings, they explored the possibility of motivating their scheme through comprehensive immersion in the project, integrating additional references alongside the existing ones. Most importantly, Team 4 utilised emerging data visualisation techniques to develop a format that would complement their renewed tectonic approach, such as diagrams illustrating flexibility, growth, and time, which ultimately became their core design vectors. By integrating flexibility both as a means and a goal within the design process, we can place Team 4's work in context with its British peers facing similar challenges, such as Cedric Price and Joan Littlewood's 1964 Fun Palace, where a large structure was intended to offer the necessary flexibility for a mixed-use entertainment typology. Although Team 4's Reliance Controls focused on transforming the flexibility provided by the SCSD prototype for educational purposes into flexibility suitable for an industrial building typology, both works provide examples of how architectural knowledge is adapted, negotiated, and performed.

4.1 From SCSD to Reliance Controls (1965-1966)

The Reliance Controls factory building, an electrical components factory, was designed between 1965 and 1966 under a tight schedule and budget imposed by the client. This project was built on Team 4's prior research and consultancy on emerging skills, advancing them by incorporating off-the-shelf materials to reduce construction costs and meet the demanding schedule. This pivotal shift led to the integration of other concepts, such as flexibility. Developed alongside the Wates housing scheme, the research and consultancy commissioned by Reliance Controls took the form of two different strategies.

The first involved Team 4 conducting extensive research to undertake a new type of commission—a factory building—that went beyond C&P's framework and Team 4's earlier projects, which primarily focused on housing and urban planning. The practice required additional references, and in this regard, collaboration with Tony Hunt, the British structural engineer who had become close to Team 4, was crucial to the research process. Hunt provided insights and feedback on structural innovation and prefabrication expertise, shaping Team 4's adoption of integrated design systems. During the research process, *Architectural Design* magazine (AD) featured the School Construction Systems Development, or SCSD, in its July 1965 issue[20]. Archive cutouts confirm that it received significant attention from Team 4 and eventually replaced Community and Privacy as their primary reference. The SCSD project was a US Department of Health, Education & Welfare initiative developed between 1961 and 1967, aimed at building schools faster and more cheaply to meet the needs of the post-WW2 baby boom, aligning with Reliance Controls' objectives. In 1962, in collaboration with Stanford University and funded by the Ford Foundation, architect Ezra Ehrenkrantz was commissioned to create a prototype, completed in California by the end of 1964, followed by *SCD: An Interim Report* in November 1965[21]. The report outlined four system components: the structural roof system, the air-conditioning system, the lighting and ceiling system, and the interior partitions system. Although developed for the US West Coast, Team 4 imported these components into the UK to embed them centrally within their design scheme for the Reliance Controls factory.

4.2 Visualising flexibility through systems integration

In terms of data visualisation, the SCSD report used a perspective cross-section to show systems integration, highlighting "four modes of flexibility": spatial variety, immediate change, long-term changeability, and expansion. Additionally, a diagram with two schematic plans complemented these four aspects by showing the before-and-after of reconfiguring the prototypes' spatial arrangements and their expansion potential. Not only did Team 4 include the cross-sections and diagrammatic plans in their research reflections and visual toolkit, but they also integrated the four types of flexibility into their design processes. Similar to earlier cases analysed at Morley or Wates, the appearance of a new type of diagram helps trace how Team 4 incorporated new research or design elements, such as time and temporality as a design vector. Drawn on squared paper and titled "size and growth", others supplemented the schematic diagram in a series exploring different aspects that create a range of "Plan Possibilities" (Fig. 5, left). Captions clarify how 'the diagram demonstrates leasible programmes for two building solutions', where the visualisation supports—or perhaps encourages—the client to choose a format that Tufte describes as displays of evidence for decision-making. This chart was further supported by another schematic diagram showing growth vectors indicated by three arrows, each representing different circulation aspects: "goods", "services" and "people" (Fig. 5, right). This spatial translation combines diagrammatic abstraction with recognisable elements, such as the trees framing the scheme, thereby confirming that Team 4 had already adopted strategic design elements and reinforced a system-based architectural approach, as reflected in a system-based representation. Therefore, as an outcome of the research process and based on the understanding of the SCSD system design, Team 4 was ready to include the concept of flexibility and all its outcomes—such as expansion, growth, and adjustments to time and schedule—within the design of the building that would be considered one of Britain's pioneering high-tech works.

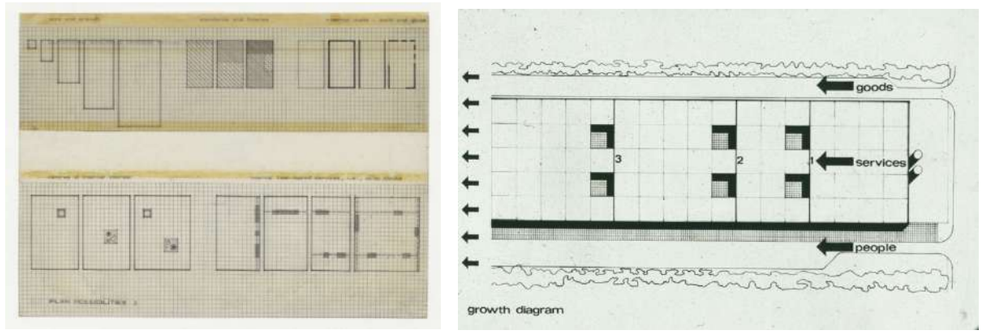

Fig. 5

5. Conclusions and discussion

Tracing Team 4's journey from Creek Vean to Reliance Controls demonstrates how the practice steadily expanded its visual repertoire and imaginative approach to articulate a distinctly interdisciplinary design method. Far from being secondary or merely illustrative, the reports, serial images, charts, and diagrams

produced by the practice served as essential tools for conducting research and clarifying design intentions. By emphasising the significance of research and visual representation often marginalised in traditional architectural history, this paper reveals how these formats functioned not only as visualisation but also as creative instruments for design thinking. Team 4's development of such materials demonstrates the creation of a flexible framework that integrates research with consultancy principles, transforming abstract ideas into projective tools for design. The integration of Buchanan's insights on design research and Tufte's principles of information design further clarifies how these visual and data-driven outputs function as both communication mediums and generative design tools, allowing diagrams to transcend explanation and become tools for projection.

From an Actor–Network Theory (ANT) perspective, this study repositions Team 4's work as the outcome of a distributed network of actors, tools, and systems that collectively produce architectural knowledge. In this context, Team 4's referents—from *Community and Privacy* and the SCSD prototypes to Gordon Cullen's serial visions—are not merely citations but active mediators that shape the practice's ability to visualise and implement design strategies. The resulting system proved robust and adaptable, allowing the practice to undertake diverse commissions while exploring new approaches within their methodological framework. The analysis of Team 4 presented in this paper shows that architectural innovation is not only about formal or tectonic breakthroughs but also about the very representational and informational infrastructures that transformed design into a time-based, adaptive, and collaborative process—anticipating the systemic and high-tech directions that would later characterise British architecture.

Notes

1. This research is part of a doctoral dissertation developed at the Doctoral program of Architecture and Urbanism at Universidad Politécnica de Madrid.
2. When referring to strategic design, I suggest a process that is often speculative, research-based, and intersects different fields (such as policy, planning, or infrastructure) while involving various stakeholders. Most importantly, it may or may not result in an architectural outcome, such as a building. Similarly, design consultancy involves services provided to clients. It is usually client-initiated, with clear briefs and practice-oriented outputs, which could include buildings, reports, or master plans. Clearly, many of these aspects are typically present at the start of any design process; the key difference here lies in the framework within which it is applied: whether it serves as part of a strategy to create a foundation for a potential commission (consultancy) or informs an ongoing design process driven by a specific goal or commission (research).
3. Within Team 4's design approach, if we focus on the consultancy dynamics or directionality, we can identify that it is either from Team 4 towards others (primarily prospective clients), where the legibility of the information is central; or, conversely, the consultancy inputs from other disciplines, mostly structural engineers, services engineers and quantity surveyors. In any case, the consultancy takes place through the creation and exchange of information, which is displayed in various formats, including graphs, diagrams, charts, and, of course, analytical drawings. Overall, these illustrate various research aspects across different fields and scales, from urban and social analysis to flexibility concepts within building schemes.
4. Archival research for this paper draws on the Serge I. Chermayeff Papers (Correspondence, Boxes 6, 8, 37–39), Avery Architectural and Fine Arts Library, Columbia University, New York; and the Team 4 fonds at the Drawings and Textual Files sections, Norman Foster Foundation Archive (NFFA), Madrid. The author consulted the Chermayeff Papers in March 2023 thanks to a Fulbright Grant and those at the NFFA between 2021 and 2025. The knowledge from the NFF's archival fonds comes from the author's former position as the founding NFF Head of Education and Research (2015-2019), when Norman Foster's archive was installed in Madrid.
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6. Robert A. M. Stern, "The Impact of Yale," in *Norman Foster Works 1*, ed. David Jenkins (Munich/London/New York: Prestel, 2002), 30.
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Image Captions

Fig. 1. Left: Page extracted from Creek Vean Housing Report, including perspective views attributed to Norman Foster. Team 4, c.1964 © NFFA, Archival reference: NFF_0076-03D_016. Right: Spreadsheet from 'Borough of Morely Central Area Development', the booklet presented for Studies for New Urban Centre for Morley. Team 4, c.1964 © NFFA, Archival reference: NFF_0079T_001-003r

Fig. 2. Left: Urban Analysis Chart included in the Studies for New Urban Centre for Morley. Team 4, c.1964 © NFFA, Archival reference: NFF_0079D_001. Right: 'Diagram of interaction between the thirty-three requirements of the problem' extracted from pages 158 - 159 of Community and Privacy. Scans from Internet Archive, accessed in April 2025

Fig. 3. 'Community Structure' Diagram for Wates Housing. Team 4, c. 1964 © NFFA, Archival reference: NFF_0085D_002

Fig. 4. Team 4's letter to Chermayeff. Dated 2/9/1964 © Avery Architectural and Fine Arts Library of Columbia University. Archival reference: Serge I Chermayeff Papers, Correspondence Box 8.

Fig. 5. Left: 'Plan possibilities' diagrams for Reliance Controls factory building, introducing 'size and growth' (upper left). Team 4, c. 1965 © NFFA, Archival reference: NFF_0097D_003. Right: 'Grow diagram' chart for Reliance Controls factory building. Team 4, c. 1965 © NFFA, Archival reference: NFF_0097S_02-005

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Biography

Gabriel Hernández is an architect, curator, and scholar whose work focuses on design research, archival practices, and the mediation of architecture through curatorial and institutional formats. He was a Fulbright Scholar at Yale University and in MIT’s History, Theory, and Criticism of Art and Architecture Group. His research has received the Carlos V European Studies Award, the Docomomo US NY/Tristate Emerging Scholar Award, and recognition as a Research and Design Principles Scholar. Additionally, his work has been acknowledged with the Thyssen Museum Award and the Artistic Promotion grant from CAAM. Gabriel has served as the founding Head of Education and Research at the Norman Foster Foundation. Previously, he held various roles, including Art Projects Coordinator at Ivorypress and worked with design consulting and architecture firms in the Canary Islands, Madrid, and Paris. Currently, he is an Adjunct Professor of Analysis at ETSAM and an invited editor at Scopio Network, affiliated with Porto University. He is also a Fellow of the Aspen Institute and a member of the Rafael del Pino Foundation Club of Scientists.

Speaking about the Drawing.
Ashitaka house as a subject of graphical inquiry

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Abstract

This paper argues for drawing as a primary tool of architectural discourse, not merely a vessel of representation. By treating the act of redrawing as a form of research, it demonstrates how visual methods can uncover tensions and meanings that remain hidden when architecture is approached only through text. *The strange plan*, understood here as methodology, becomes a way to expose the unspoken layers of perception and design, revealing contradictions between exteriority and interiority or image and structure. Framed through Carl Jung’s concepts of persona and shadow, the analysis positions Ashitaka house, the project designed by Kazuo Shinohara and built in 1977, as a site where collective *masks* and *hidden counterforces* confront one another. In doing so, this text navigates through much deeper meanings of the project. Nevertheless, the Jungian framework is introduced as an extensive tool; one that suddenly appeared through the graphical inquiry of the house.

All the drawings belong to the author.

Key words: redrawing, diagram, theory, dichotomy, narrative.

Introduction

What if there was a different way to question the spatial aspects of the architectural project than the traditional method?[1] Much like Carl Jung explains the duality of the human psyche, the analysis of an architectural project can be identically pursued as an act that splits the state of the building into two grammars. This mechanism of looking at two distinct entities can be extended in the discourse of architecture to an even larger number of instances: for example, the notion of the outside can be divided into the natural and the built; or even the area built, and the proximity built. On the other hand, the building embodies multiple forms of dichotomy: the built and the designed form, the fixed and the mobile or the interior and the exterior. What Jung offers is a theoretical framework to analyse a single psyche by projecting two distinct entities that coexist in a complementary manner. To be able to apply his method on an architectural building, it is firstly necessary to highlight this duality as psychological concepts. The author argues, in his writings about psychoanalysis, that the human psyche is made up of a fundamental duality between the *persona*, which deals with the exterior, and the *shadow*, that is the inner personality.[2] This theory reflects on two fundamental manifestations that are expressed by a single entity. The *persona* represents the socially constructed image through which one adapts to the surrounding world. Jung borrowed the term from the Roman stage mask, emphasizing its dual role of concealing and revealing aspects of the psyche.[3] Much like the *persona*, the sum of its exterior elements of a building happens to be in a direct dialogue with the context within that object was firstly built. For example, a house that is designed in an urban or rural environment requires specific alignments within the plot, a certain height and pitch of the roof and building materials that are echoing the surrounding buildings. How the architect designs the house becomes no longer an arbitrary act, but rather a sum of decisions within an already established framework. By aligning within these rules, the house *behaves* in a way that it is collectively accepted.

On an opposite note, the *shadow* embodies those aspects of the personality that remain hidden, repressed, or deemed incompatible with societal standards. Jung describes it as being the *inferior part* of the psyche; a reservoir of traits and impulses denied by the conscious attitude, which thus coalesce into a relatively autonomous counter-personality.[4] Similarly, the interior of the same house — that previously aligned its perimeter to the outdoor enclosure and the roof pitch to all the neighbours within the area — becomes *free.* It it's here that the architect embodies his *demiurgian* role and designs the rooms and the building structure as he pleases. He can even invert or rearrange the day/night spatial structure; where, for a better view to the outside, the living area is placed on an upper level. Nevertheless, he can take the decision to empty the entire floor out of rooms and place a column in the middle. In the end, as the *shadow* forms a consequence of the *persona*, the *interiority* of the building exists as a realm, detached from the *exteriority* in order to reveal or to conceive a different architectural discourse; one that does not have to align with a pre-existing set of rules. One architect to be evoked in this regard is the Japanese Kazuo Shinohara. Throughout his career he was heavily remarked for his *mannerism*.[5] On one hand, in his designs about the *interiority* of a house, he often returned to 'the structural column that interfered with the domestic life'[6] or small rooms that are attached and serve the central open space. For example, in his second proposal for the Japanese poet and translator Shuntarō Tanikawa, Shinohara chose to design an interior architectural rhetoric that refuses any direct dialogue to the outer rhythm of the façade. By experiencing the house from the outside to the inside, one will firstly encounter a massive metal pitched roof that almost touches the ground, the entry door and, in the inside, a surprising sloped earthen floor. Here, the *impulses* and the *qualities* of the *shadow* are, in Jungian terms, part of a different personality. Another example of this dichotomy can be identified within the Umbrella House. What might seem as a traditional *chise* from the outside —where the pillars within the outer walls will bear the roof structure — happen to contain a wooden column in the middle that extends within the top of the roof. Here, the experience of one that encounters the house from the outside towards the inside is dramatically shifted. The house's interior is characterized by *elements* that could not be anticipated from the exterior.

Finally, the Jungian theory serves as the fundamental layer of this study; its function is to assist in analysing the architectural project as a sum of multiples, embodying the built form with an abstract character. Moreover, for the purposes of this article, it becomes imperative to forge a personal visual tool — one that springs from the case study itself and merges with the theoretical realm — and to assert its autonomy as a graphical inquiry entity. But to create this instrument, it is neccesary to firstly acknowledge certain key moments within the history of architecture that highlight the drawing as a tool to evoke different meanings of the built form. By doing so, the article will connect to this previous history and will contribute to the ongoing graphical discourse.

The strange plan as method of analysis

Yet architecture could not exist without the drawing. As Pier Vittorio Aureli exposes, even from the ancient times, the builders were developing a certain graphical object in a form of a top-view, that would give *an idea* of what the built outcome would be.[7] Following the reinassance times, Leon Battista Alberti established the framework, within today we operate as architects, in through which the design and the construction should be two distinct entities.[8] Thus, he created a precedent, where drawings are made to communicate information about how the building should be built. As Aureli also argues — by charging the *plan* with a general idea of the outcome — the resulted graphical entity becomes a subject of epistemological value. Its role, however, is to behold knowledge regarding certain aspects of reality. But it was not until the beginning of the nineteen century when the construction process and the buildings became more complex and the drawings will behold more informations regarding the final end.[9] The *general idea* received layers and layers of information, becoming thus a package of drawings that meant to give the builder informations such as the alignement on the plot, materiality, dimensions or specific details within the building. However — throughout the modernist times when the architect role was to streamline the house and the city — figures like Le Corbusier chose to encapsulate ideologies within his drawings. For the iconic two-point persepctive of the Dom-ino house, the architect exposed a house with two levels and one terraced roof by showing only the load-bearing elements. But the house would never be percieved likwise, and for the record, this was neither the purpouse of this drawing. Ideologically speaking, this graphical entity encapsulated the functionalist attitude of that time. Moreover, the façade and the interior spatial structure are two different elements that *stitched* together, they're scope is to create a new house. Thus, this attitude immediatley transforms the building, from its dependece towards the materiality of the outer walls, i.e. *persona*, to an interior mechanism, i.e. *shadow* that becomes suddenly free. It is, however, important to mention this Corbusian instrument because it placed the drawing within an academical realm. Furhteron, in the postmodern Europe, the architect Aldo Rossi questioned the previous ideology. In his drawing about the Modena Cementry, around 1979 in Sepia ink and gouache on paper, the italian architect merged multiple modes of representation in the same graphical outcome. This *torsione*[10], as Paolo Portoghesi described his work, comes from the architects belief that the city is no subject of any tabula rasa. Capturing the plan, the elevation and the birds-eye-view, within the same graphical instance, expresses, in Rossi's view, 'a locus of another reality'.[11] The drawing is employed here not to express a certain reality that the future project will exist, but to question the instruments that forge not the real, neither the imaginary realm within the representation gets to exist. On the other hand, for the Eastern architectural culture these epistemological drawings can be identified even before these 20th century movements. What stands at the core of the japanesse representations were the encounters that one does have with space. This idea of typologies of encounter can be highlighted within Arata Isozaki's drawing about the Ryoan-ji Garden, made in 1976. Contemporary to Rossi, it can hardly argued that one did influenced another. Isozaki chose to explicit here the very concept of *hashi* 橋, where the path that one takes in life is already established. The stones represent the steps one take, while the surroundings enclose the garden. What becomes truly fascinating about this drawing is the decision of the architect to draw not a pure plan but a composition of views. The lower part of the garden's enclouser is represented as an elevation, while the top as an axonometric view. The stones are represented in an elevation too. By doing that, Isozaki emerges the viewer within actual spatial perception of the garden. Thus, the drawing becomes a vessel for the a spatial knowledge, one that's goal is not to speak about dimensions or alignments but to give an actual feeling towards the perception within a certain space.

Contemporary to Rossi and Isozaki is Kazuo Shinohara. As he is mostly recognised from his built work, Shinohara was never an architect that questioned any other set of meanings that the drawings might reveal for the actual building. As he admits, he draws sharp, by constantly using the same scale and graphics for construction details or presentation plans.[12] His buildings, therefore are nevertheless *in extenso* of his precise way of representing. It can be argued that, by managing to design and build such sharp houses, Shinohara left space for others to wonder about their meaning. In this very article, we aim to investigate the case study of Ashitaka house which is, apparently, not enough drawn or written about within the academic realm.[13] It is important to place the research within a contemporary graphical discourse, to achieve a cohesive tool of study. As described earlier, the global point of reference for this period was the drawing as a vessel for knowledge. Architects were concerned, in various ways, with the purpose of the drawing. We can depict drawings that enhance the ideological discourse, such as Aldo Rossi and before him, Le Corbusier; but also, drawings that evoke spatial and perception values, not only for the actual built form but also for towards general attitudes regarding feeling within a building, such as the drawing made by Arata Isozaki. By analysing these two graphical instances, one might identify the following: firstly, these two drawings represent, at the first sight, a top-view of an building/project; secondly, they are not a mere visualisation of the building from above, but rather a composition of different view-instances, composed together to form a whole; lastly, they embody a much deeper meaning regarding the actual subject of study — one is a critique to modernism and an embrace towards the traditional values city; and the other, the feeling and movement one perceives while experiencing the actual construction.

It is essential to first establish the methodology through which these graphical outcomes function as instruments that reveal deeper meanings within the built form. By freeing the architectural drawing from its rigidity and rearranging specific elements within a curated order, one might obtain a new[14] image of the buildings. By doing so, the one that researches the architectural project, choses certain views, which are at their core the very essence of the architectural project and combines them to place the building within a new discourse. For this paper, we chose to analyse the Ashitaka house through the Jungian theoretical framework. In other words, the chosen graphical instruments act as a bridge to explicit the house as a built form containing two complementary entities. To articulate these hidden dualities, we are introducing the notion of the *strange plan*: a drawing-tool that is used to merge multiple representational modes such as plans, elevations, views or construction details of the object into a single graphic entity; much like the drawings from Rossi and Isozaki. On a lexical level, the word *strange* highlights a composite and unconventional nature arising from the deliberate superimposition of multiple instances into a unified image, whereas the word *plan* denotes the materiality of the drawing; typically, but not generally, presented in the form of a top view. Furthermore, the *strange plan* operates as a compositional device, revealing the coexistence of different architectural layers, meaning drawing not as an accessory but as a genuine tool of research. It becomes a visual laboratory where the result is no longer a beautiful image but a composed one, showing simultaneously different meanings of the object: context/construction, structure/non-structure and for the purpose of this study, interior/exterior expressed through the meaning of *persona/shadow*. The intention here is not to innovate, but to align with the previous and current discourse about drawing architecture. By doing so, *the strange plan* represents a methodology that continues, in a personal manner, the work previously done by Corbusier, Rossi and Isozaki.

Choosing form

During his career, Kazuo Shinohara designed and built almost thirty-eight houses. However, the architect remarked himself mostly from the level of detailing and carefulness regarding the buildings. As he was constantly driven by evolution and newness, Shinohara separated his career in four styles. It his highly important to firstly select and review each era by selecting houses from each period. As follows (Fig. 1): Umbrella House, 1960 (in red) for the first phase, Shino House, 1970 (in green) as the example for the second, Tanikawa House, 1974 (in blue) and Ashitaka House, 1977 (marked in yellow) for the third style and the House in Yokohoma, 1984 (in magenta) marking the last period of the styles. The entrance door and the wooden pillar/column are the main two elements recurring in these examples; therefore, they also set the general rule of the drawing. By overlapping these five buildings (keeping the door position as a central reference for all the plans) one might observe a set of similar yet different themes that were used for their design: the vertical structural element, a certain proportion of the plan or the stately set of stairs at the entrance. The wooden *pillar/column*[15] marks, as mentioned before, an important theme in the first two phases. Nevertheless, the rectangular wooden column/pillar does appear in his third style for the Tanikawa House. It is overlapped on the very centre of the circular wooden column of the Umbrella House. In this this case, the depths of the two layouts are nearly equivalent. Moreover, they exhibit a comparable spatial relationship: the distance from the vertical structural element to the first intersecting wall is the same. This distance is not arbitrary in any sense, but it appears as a structural necessity for a wooden load-bearing structure; the wall contains another vertical element and furthermore, supports the beams and the roofing system. The main space of the Shino House with its southern wall or the horizontal division of the house, seem to nearly fold over the column axis of the former two examples. Even though these three projects were built respectively 9 and 4 years apart, this overlapping of distances generates the architect's inclination towards absolute proportion. In his own words: ‘My idea, always, is born and exists before seeing the site.’[16], Kazuo Shinohara reflects on the pre-existence of ‘one idea’. This *one idea* exists as a very specific spatial arrangement, long before the object exists within the site. The method becomes more and more visible in his latest projects. The design suddenly becomes a place where this thought disclaims the context through the material, structural composition or visual relations. The Ashitaka House and Yokohoma House are a true representation of an autonomous intervention; first, towards the exterior and secondly, towards the previous work of the architect. Two, respectively three slabs of stairs are presented as a common denominator. This study case is part of Shinohara’s third style, among the houses built in Karuziawa in 1975, in Itoshima in 1976, in Uehara 1976 and the House under High-Voltage Lines built in 1981. Out of all four styles, or phases of the architect, the third marks a new approach towards the architectural language of the construction pursuing themes, such as misalignment or savagery that were previously mentioned only in his writings[17], but also exploring the possibilities of prefabricated concrete. Here, the architect distanced himself from his characteristic architectural composition, giving up on the central load-bearing element as the principal forming element for his first and second style. For his third style, when building with concrete became his general language, Shinohara designed a series of houses that were strongly defined by a certain central space, dividing the house in two or four symmetrical compositions.

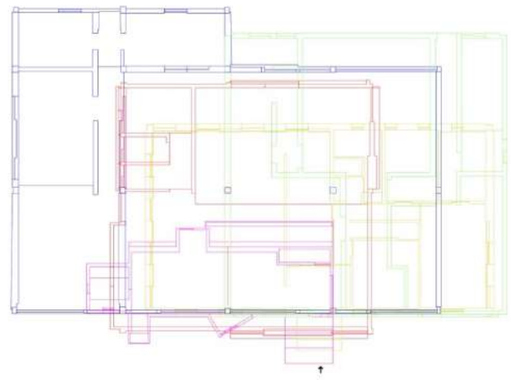

Fig. 1

Data

Ashitaka Susono Residence as it was firstly described in The Japan Architect in 1978, is a project that the architect designed between August 1976 and February 1977; and built in October 1977 on a plot of approximately 1.600 sqm, on the southern slope of the Ashitaka Mountain, at the foot of Mount Fuji in Japan, close to the city of Numazu.[18] It is not known, so far, who chose the site, the client or the architect; but a considerable number of medium and tall trees surrounded by grass and rocks are offering a clear invitation for building using the *traditional* manner[19]. Here this will not be the case.

Much like one would characterise a person — being tall, with blue eyes, brown hair, large ears, left hand that is slightly longer than the right one, one knee damaged knee; or even smart, funny, slightly stubborn — a house can be described using its outer and inner elements. This house is made entirely out of prefabricated concrete, which denotes a monumentality and a heaviness right from the start.[20] With a rectangle plan measuring 17/9,40 meters and a general height of 6 meters measured from the lowest point to the top of the roof, the house is measuring 158,63 sqm on the ground floor and 62,63 sqm on the upper level. It is composed of one main room, a kitchen, an entrance, an unnamed room with a toilet and a shower, a study room, a first storage, a first and a second bedroom, a staircase, a third bedroom with a toilet and a second storage space: approximately ten rooms. On the exterior the house contains the following elements: sixteen windows measuring 1,10/2,40 meters, one entrance measuring 1,10/2,40 meters, four 0,60/2,40 meters windows, two skylights measuring 0,90/1,15 meters, a third skylight measuring 1,2/2,5 meters, and a four-sloped roof on a strict 45 degrees angle. The latter is designed having a horizontal perimetral extension, holding the draining systems in it. Two slabs measuring 1/2,20 and 0,60/2,20 meters, are placed next to the entrance door, acting both as a stair and marking the front entrance.

The plot, however, is strongly characterized by the presence of the natural environment. The house is placed in an open-land foreground, where in the background there is a substantial number of tall fir trees. Yet, the house is anchored on three different sides into the terrain. The south-west façade, one that marks also the entrance, invites the viewer to understand the house as a complete entity. Moreover, the terrain that encloses the north-east façade, is arranged at a perfect 10:10 proportion from the lowest to the highest point. This denotes how meticulously Shinohara designed the project, following a sense of precision and proportion throughout the entire process. Nevertheless, this shall be considered the only intersection in between the built form and the context. For this study, we chose to refer to the outer elements of this architectural project (such as doors, windows, roof, drainage systems, materials, and compositional rhythm) as one single entity, i.e. *exteriority* and, similarly, to the interior (division walls, doors, stairs, rooms, structure, furniture and slabs) as *interiority*. Both terminologies are meant to evoke a continuous event, creating thus the idea of the house as being in a continuous state of existence. Furthermore, the former aligns with the theoretical characteristics of the notion of *persona,* and the latter with the *shadow.* The association comes naturally because one represents the exterior and the other the interior of the house.

Exteriority

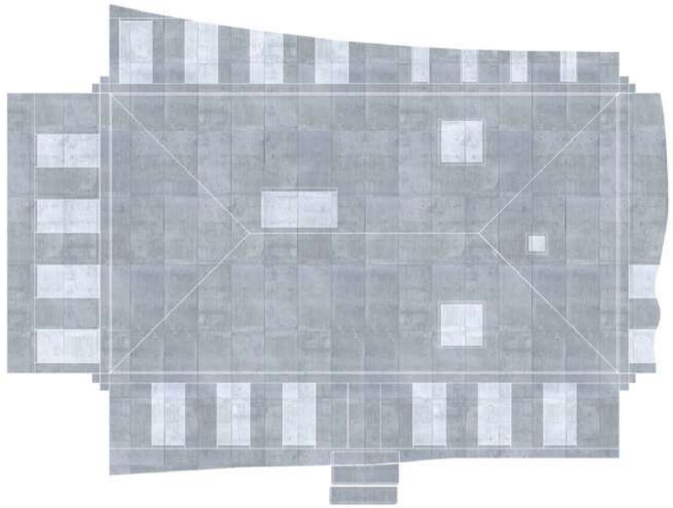

Fig. 2

The following *strange plan* highlights the continuous character of the outer shell. (Fig. 2) Presented in a manner of orthogonal views, all the four elevations of the house are stitched together, creating thus a cohesive graphical composition. As mentioned before, half of the house in inserted in the terrain. Therefore, the outer line of the top, right and bottom sides of the drawing are represented as splines. The left part of the drawing, i.e. the north-west façade, is placed at the same exterior level from one end to another, resulting in a straight line. The slopes of the roof, together with the skylights, are represented exactly as one would perceive a traditional elevation drawing. Citing the existing material, the drawing receives a similar concrete texture to argue even more a continuous language. Jung describes the *persona* as a tool that is used to respond to the exterior necessity. Therefore, it exists as an entity that does not try to experiment but to subordinate. It protects, filters, but also limits contact with the outside.[21] The Ashitaka house can be firstly analysed through this lens of a *collectively accepted* image. The natural general environment of Mount Fuji appears to invite a traditional archaic image of the form. *Persona*, however, is not simply imposed from outside; it emerges from an agreement between individual and collective. Similarly, the image of the traditional house persists because it satisfies the shared notions of propriety, beauty, and order. To build in a traditional archaic typology, to respect symmetry, to align the house with the site's natural order—these seem to contribute to the social affirmations of belonging. In this sense, Shinohara's choice for the *exteriority* deliberately aligns to the generalized *persona*. The dominant image of the roof that bears on the outer walls, creating thus one single entity can be easily associated with the general traditional Japanese wooden houses. As soon as the viewer interacts with the exterior, he anticipates a general continuity with the archetypal wooden house, yet he encounters the starkness of concrete geometry. Finally, the *exteriority* exists, as the drawing aims to communicate, as a general common envelope. There is no interest to design facades that respond and can be understood differently; but rather a continuous event that situates the outer layer within its own separate realm.

Interiority

"People tend rather hide […] from […] themselves behind a façade that shows them to be considerate, thoughtful, emphatic, reflective and genial."[22]

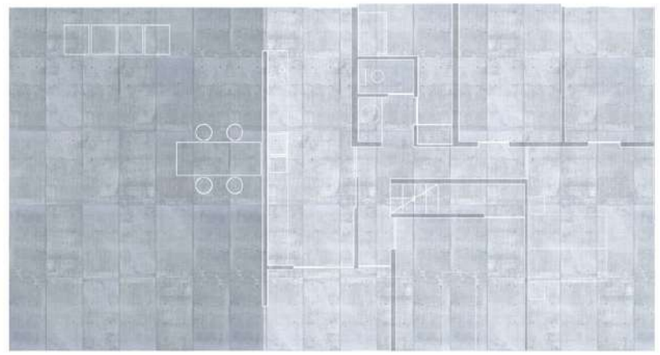

Fig. 3

The drawing here is employed to accuse precisely this framework of chaos. (Fig. 3) Elaborated in two distinctive textures. The former is representing what can be considered a dominant element in the drawing, the main room, the division walls and to illustrate the presence of the furniture. The latter is chosen for to fulfil the space of the other rooms and to illustrate the furniture in the former space. Expressed here in an identical manner as the general plan of the house, the two entities are set side by side so that the proportion, together with the zone areas, can be better understood. It is clear now that the compositional rules for the two entities are different. There was no need to illustrate any external elements such as walls or windows, or even the elements above. As Stein exposes further on in his writings about the Jungian concept of duality[23] the *shadow* represents a set of characteristics that are rejected by the *persona* and the conscious ego. In other words, if a person that perceives themselves as good, polite and socially accepted, any other feeling or instance of contrary is automatically set to be sent into the other realm. This theoretical framework can be similarly applied to the following built form. For example, if the load-bearing structure of a building aligns with the *exteriority*, the dialogue no longer exists and both interior and exterior elements of the house become interconnected; otherwise, the conflict arises and there is a continuous state of chaos as we experience the space or if we interact with the plan. *Interiority* is as an element that is hidden. The first terminology used by Carl Jung in describing the *shadow*. Therefore, we can consider it having double meaning: firstly, the *interiority* is an entity that is elsewhere; hidden from the viewer as he approaches the house, and he only understands the exterior. Moreover, it represents an entity that is contained or hidden by the shell of the house (or the *exteriority*). As mentioned before, the house is composed of one main floor, i.e. the ground floor, and a partial upper floor. For this study, we will analyse the former, judging by the larger proportion that composes the house. Therefore, the inter-relationship between the following rooms (main room and kitchen, entrance area, bathroom, bedroom, bedroom, unnamed room and unnamed room). These spaces, designed to exist under the roof and inside the walls are to be considered elsewhere from the point of view of the user. Moreover, they are contained by the *exteriority*, i.e. hidden.

Secondly, the *interiority* in the Ashitaka House is to be read as an ambiguous space. The general proportion of the plan is 5,5/10 units (length/width). Planimetrically, Shinohara divided the interior of this house into two asymmetrical entities, creating a proportion of 4/6 units. The main room, or the Great Room as Charles Moore referred to it,[24] is placed on the shorter side, while the other rooms are on the larger part. These two entities are composed together in a manner that somehow creates a resemblance with the previous work of the architect but does not reply any of them.[25] Here, it can be argued that positioning them side by side the two create tension. Furthermore, a dominant space that is freed of any walls (and slightly decorated with four armchairs and a foure-seated dining table) and slightly smaller than the other densely arranged rooms, is however, a chaotic yet orthogonal manner of creating architecture. It is unclear whether the main room is the element that sets the rule for the plan or is subordinated to the others. Much like the *shadow,* where the impulses, instincts and insights are constantly changing, the plan of the Ashitaka House is an unclear state of existence.

In the end, they exist as two

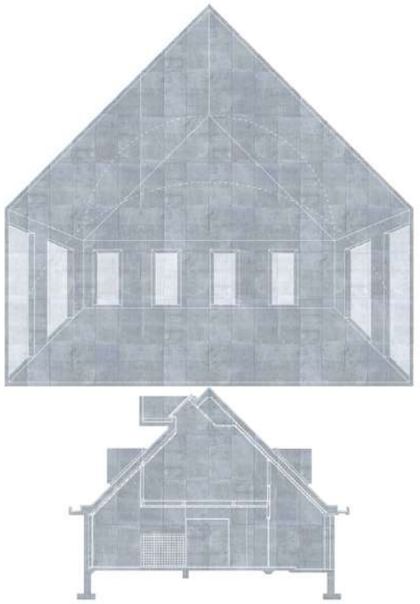

Fig. 4

“When you look at the building, you think there is a direct affinity between what you see on the outside and what you would expect inside. […] So, it is not a collage. The two realms […] remain separate but still communicate something that is beyond what each disparate system ca suggest on its own.”[26]
Here, *the strange plan* (Fig. 4) acts as a tool that highlights the duality of the building. Composed out of two different types of representation, the former (that stands on top) is a vanishing point perspective from the main room of the house, and the latter (on the bottom) represents a construction drawing. Moreover, this manner of stacking the bigger, heavier image on top of the smaller, lighter drawing evokes a state of dialogue; the weight of the exterior language that exists as a separate entity in comparison with the interior world. The intersection of the two representational manners evokes the fragility of the building. It can be argued that, even if the concrete dominates the general aspect of the house, it is an intimacy that the interior has; one that can be associated with the idea of being sheltered.

The idea of the roof being *structureless* is shown in both instances of the drawing. As Kerez also remarked is his essay, the exterior evokes the monumental, yet archaic, while the interior highlights the idea of purity and emptiness.[27] It is interesting to mention, however, that the primal intention of Shinohara was to reference exactly this archaic image of the Japanese architecture.[28] There are a set of remarkable houses around the Ainu Kotan area, where the four-sloped roof sits on top of the exterior walls, creating a dialogue between the roof as an object itself and the enclosure of the exterior walls. Analysing further on, the traditional houses of Ainu Kotan are built with wooden beams and columns and covered with reed, allowing the viewer to understand the house from both the interior and the exterior. Upon entering a ‘chise’[29] the presence of the wooden structure responsible for supporting the reed roof is no surprise. You expect to see it as you soon encounter the roof it from the outside; much like the previous mentioned Umbrella House. The Ashitaka House case bears no resemblance.

The image of any structure for the interior is, at first sight, inexistent. Making use out of the structural potential of the concrete, the interior width of the house is nothing more than the exterior walls and the floor itself. Moreover, the concrete panel walls are acting as a structural element, offering enough load-bearing support for the entire weight of the concrete roof; it is, therefore, possible to create a separate realm under this shelter. Considering the load-bearing aspect of the house, the roof and the exterior wall panels are to be employed as one, i.e. *persona*. Similarly, the interior walls, together with the upper-level slab and even the furniture, evoke another, i.e. *shadow*. These two exist in parallel creating a dichotomy, in that sense.

In the end, the meaning of this house is rather cryptic than direct; ingeniously exploring the structural possibilities of a material rather than recreating a certain image. The architect chose to provoke a felling of ambiguity, placing the viewer in a quest for finding a meaning, a true architectural meaning of an object, rather than guiding towards the use of the banal elements. As a true *shadow*, these interior set of rules are projected in the realm of ambiguity; forcing them to prove themselves constantly which halve of the space is the one that sets the rule. One that is large and empty, but still smaller than the other one that is dense and fragmented. Those, who read the plan - because this tension is evoked in a compositional manner – understand that it is a contradictory event in front of their eyes. Those, who experience the space, will be overwhelmed by the isolated character of the *interiority*. Furthermore, the *generally accepted image* of oneself, is clearly expressed through a conventional prefabricated white form. Like a socially accepted behaviour that a person has, the four-sloped roof. It is very clear that there was no other possibility to design a house in the countryside! Yet, Shinohara chose to create a dialogue between the one that encounters and the meanings of the house. I chose to argue, in this very last instance, this continuous duality of the house by deliberately painting them separately through the act of drawing.

Notes

[1] I employ this terminology as a manner of analysing the architectural project through instruments that are not surpassing its professional field. For example, in her drawings about the Light black House in Bruges, Sophie Van der Linden chose to represent the staircase of the house as a spiral white tube that does not explain how the steps or the structure of the staircase work but rather how we perceive and store in our memory the vertical movement in the house. Therefore, she creates an image, that exists both in the psychological and graphical realm. In her words, 'memories are cerebral and manifest themselves as a kind of collage of impressions'. (Robin Schaeverbeke, et.al., "Imagining Space. How To Teach Drawing as a Tool to Explore Spatiality?", Conference paper, 2014, p.10, citing Van Der Linden, 2013)
[2] Murray Stein, *Jung's Map of the Soul: An Introduction* (Chicago: Open Court, 1998), 98-102.
[3] Ibidem, 62-65.
[4] Carl Gustav Jung, *Memories, Dreams, Reflections*; tr. Clara Winston, Richard Winston (New York: Pantheon Books, 1963), 284-286.
[5] I chose to encapsulate the architectural built discourse of Kazuo Shinohara within this terminology because it implies pattern within the art. As to be further on analysed, the architect often returns to certain spatial and compositional elements to achieve a cohesive built mass. Therefore, one can argue that it is not necessary to oblige the use of the same architectural grammar if the budget, the clients or the site are always different. As he argued in one of his reflections, he was often building a house within his mind, connecting dots and creating a certain image before he would see the plot or meet with the clients. In the end, this behaviour conducts to mannerism. (see Enric Massip-Bosch, *Five Forms of Emotion: Kazuo Shinohara and the House as a Work of Art,* p.283)
[6] Enric Massip-Bosch, *Five Forms of Emotion: Kazuo Shinohara and the House as a Work of Art*, (thesis delivered to obtain a doctor degree awarded by Universitat Politecnica de Catalunya, 2015), 39.
[7] Pier Vittorio Aureli, *Architecture and Abstraction* (Cambridge, MA: MIT Press, 2023), 2.
[8] Whitin his *De re aedificatoria* book, published by the end of 1452, Leon Battista Alberti argues that the architect should be separated from the builder. Following Alberti's treatise, the planning and drawing will become an a priori event to its building.
[9] Aureli, *Architecture and Abstraction* (Cambridge, MA: MIT Press, 2023), 2-3.
[10] Gilles Deleuze, Félix Guattari, *A Thousand Plateaus. Capitalism and Schizophrenia*, Vol. 2, trans. Brian Massumi (Minneapolis, London: University of Minnesota Press, 2007), 322.
[11] Aldo Rossi, *The Architecture of the City*; tr. Diane Ghirardo and Joan Ockman (Cambridge, MA: MIT Press, 1982), 10.
[12] E. Bosch, Five Forms of Emotion: Kazuo Shinohara and the House as a Work of Art, 21-23.
[13] Apart from chapters in books and architectural journals cited in this article—texts that primarily describe the house and convey the experiential qualities of the encounter—no other specific research has been conducted on the Ashitaka house. Moreover, at the time of this article's publication, no prior graphical inquiry exists, which lends a degree of originality to this study.
[14] Not in a sense of invention but as an element that evolved from the previous and becomes different.
[15] When a vertical element is alone within a space, the architect chose to use a column. When there is multiple, he chose to place pillars. They were always built in wood. Because we analyse five houses using this drawing, the verticality is marked by both columns and pillars.
[16] E. Bosch, *Five Forms of Emotion: Kazuo Shinohara and the House as a Work of Art*, 283.
[17] Bosch, *Five Forms of Emotion: Kazuo Shinohara and the House as a Work of Art*, 60-61.
[18] Seng Kuan, ed., *Kazuo Shinohara: Traversing the House and the City* (Zurich: Lars Müller Publishers; Cambridge, MA: Harvard University Graduate School of Design, 2021), 212.
[19] I employ this phrasing to describe the manner of building with wood, reed, clay or tiles. This strategy had already been explored by the architect in earlier projects on naturally surrounded sites, drawing heavily on traditional Japanese architecture. Examples from Kazuo Shinohara's first two periods, such as the Umbrella House and the Tanikawa House, clearly reference traditional Japanese buildings.
[20] Christian Kerez in Kuan, *Kazuo Shinohara. Traversing the house and the city*, 22.
[21] Stein, 103.
[22] Stein, 101.
[23] Ibidem.
[24] *The Japan Architect*, vol 54, no.263, Tokyo, March 1979, p.188.
[25] Christian Kerez referred to the interior as being a set of "2 halves; […] one empty, pure and open, and the other consisting of many small, closed, irregular rooms." Many of the projects from the first and the second phase of the architect are well defined by this hierarchy of one single room and a set of others and, as Kerez pointed out later in the article "[…] the fundamental relationship […] is articulated in a completely new and specific way", they are natural each time. Here this is not the case. Kerez in Kuan, 23.
[26] Markus Breitschmid, *Valerio Olgiati: Conversation with Students* (Blacksburg, VA: Virginia Tech Architecture Publications, 2007; repr., 2010), 12.
[27] Kerez, 22-23.
[28] In her article about the house entitled *House in Ashitaka by Kazuo Shinohara*, Cladiua Cenodya connects the typological houses that were built in the village of Ainu Kotan to the house of Shinohara. However, on a deeper analysis, the distance between the village and the place where the project is built is almost 1.150km. Therefore, the idea that the architect chose to 'reinterpret', as the author writes, appears to be a bit exaggerated, since the architect did not mentioned any reference to the *chise* for this house. Certainly, the formal exterior image of the project in Ashitaka has much resemblance to the exterior image of the Ainu houses. Cendoya, Claudia. 2017. "House in Ashitaka by Kazuo Shinohara." *Metalocus*, February 21, 2017. Accesed on 20 September 2025. https://www.metalocus.es/en/news/house-ashitaka-kazuo-shinohara
[29] The word 'chise' means 'house' in Ainu.

Image Captions

All the drawings belong to the author.
Fig. 1. The very first Strange Plan iteration of the methodology. Here, these five houses by Kazuo Shinohara are overlapped in a specific manner to understand, furthermore, the generality of his projects. *Five Houses by Kazuo Shinohara*, digital line drawing, 2025.
Fig. 2. The character of the *persona* is emphasized in this drawing by stitching together the four elevations of the house, resulting in a graphic entity that helps reading rhythm, texture, unity and proportion, but also shape. *Exteriority*, digital line drawing overlapped on a concrete texture, 2025.
Fig. 3. Like the previous drawing, the drawing expresses proportion and the dialogue in-between the two spatial sequences in this house. *Interiority*, digital line drawing overlapped on a concrete texture, 2025.
Fig. 4. This drawing highlights the dichotomy in between the exterior and the exterior. Also, it explains the structural scheme of the house by the construction detail on the bottom, and expresses the free interior from the main room, by the top perspective.
In the end, they exist as two. digital line drawing overlapped on a concrete texture, 2025.

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Biography

Marius Indrei is a Ph.D. student and Teaching Associate at the Technical University of Cluj-Napoca, Romania, currently conducting a Ph.D. exchange at KU Leuven, Belgium, under the supervision of Thierry Lagrange. He is also currently teaching in KU. Graduated in Architecture and Urban Planning in 2023, with additional studies in Venice and Rome, the author teaches design studios focused on urban and architectural typologies. Research interests concentrate on the typological and social value of 20th-century Romanian urban blocks, examining their value through drawing and representational manners, aiming to evoke different meanings to the urban context. He is a co-founder of the COTAA Journal of Architecture, contributing to academic discourse on architecture and urbanism. Previous work includes internationally recognized design projects such as Nest House, awarded by Beta Awards. His activity bridges teaching, research, and design practice, emphasizing the integration of historical urban patterns with innovative architectural approaches, and investigating methods to enhance spatial quality, and contextual relevance in contemporary architectural and urban interventions.

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Miné Okubo's *Citizen 13660*
Drawings as a Critique of Japanese American Incarceration

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Abstract

Between 1942 and 1944, Japanese American artist Miné Okubo (1912-2001) documented the lives inside Japanese American internment camps in Tanforan Racetrack outside of San Francisco and Topaz in Utah. In spaces where cameras were prohibited, her drawings captured the shock, humiliation, and loss experienced by over 110,000 American citizens of Japanese descent incarcerated by their own government. She compiled nearly 200 drawings from the camps and in 1946, published the illustrated memoir *Citizen 13660*, titled after the number that the government assigned to her. In 1981, Okubo testified before the Commission on Wartime Relocation and Internment of Civilians, whose review resulted in apology and reparation.

Citizen 13660 is a visual criticism of buildings and landscapes appropriated to dehumanize and control people in the name of national security. Okubo's drawings share characteristics of critical ethnography, a fieldwork methodology developed in anthropology that facilitate civic actions and disrupt social inequities. By studying *Citizen 13660* as an example of critical architectural ethnography, what could architects learn from Okubo's work? Can architects develop a methodology to critically study, through visuality, how architects understand those who often remain unheard and unseen in the design process?

Whereas most architectural drawings are made by those with power to design and build, Okubo's drawings are a practice of spatial justice—a criticism of space through the perspectives of the occupants, which in turn elicit actions for change. Mirroring what Paulo Freire writes in *Pedagogy of the Oppressed*, her drawings not only recorded and exposed oppressive appropriation of architecture but also steered towards acts of liberation and reparation. As the transcript from Okubo's 1981 testimony suggests, her drawings humanized not only the oppressed but also the oppressors. The paper asserts how *Citizen 13660* is poised for a timely and meaningful impact on contemporary architectural discourse, practice, and pedagogy.

Key words: critical ethnography, visual criticism, Miné Okubo, Japanese American internment camp.

Introduction
Over thirty-six years after World War II ended, the Japanese American artist Miné Okubo (1912-2001) testified before the Commission on Wartime Relocation and Internment of Civilians. In November 1981 in New York City, she spoke as a former internee of Japanese American internment camps:

"Photography was not allowed in any of the camps. Being an artist, I decided to record my whole camp experience… I was interested in people and life, so the camp gave me an opportunity to study the human race from cradle to grave and to see what happens to people when they are reduced to one status and one condition."[1]

Between 1942 and 1944, Miné Okubo documented the lives of those incarcerated during World War II in the former horse stables of Tanforan Racetrack outside of San Francisco, and later in Topaz Relocation Center in a Utah desert. Her drawings capture the shock, humiliation, and loss experienced by over 110,000 American citizens of Japanese descent incarcerated by their own government. They demonstrate how the government constructed buildings and landscapes to dehumanize and control them in the name of national security. In 1946, she compiled nearly 200 drawings from the camps and published the illustrated memoir *Citizen 13660*,[2] (Fig. 1) titled after the number that the government assigned to her.

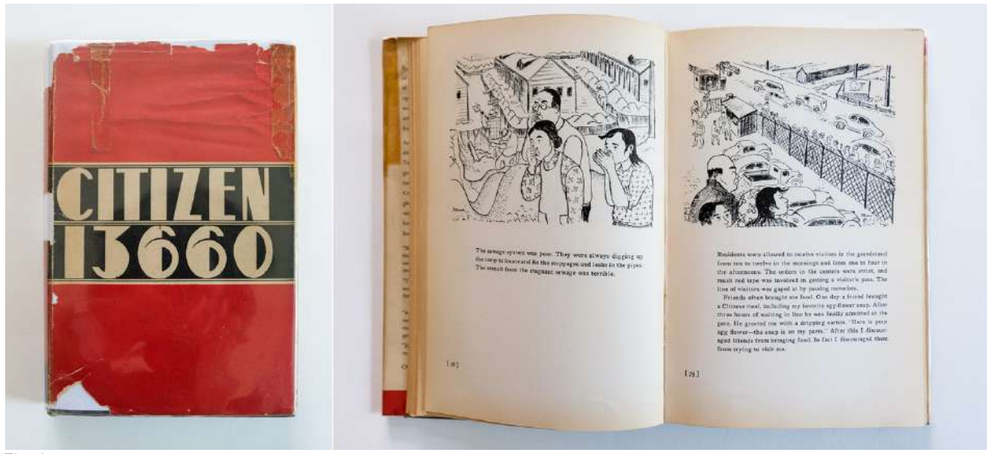

Fig. 1

Okubo turned her documentation of daily lives into a form of social activism, a civic action. While other American artists such as Dorothea Lange and Ansel Adams also documented the lives inside of internment camps, and the Japanese American actor/activist George Takei has published illustrated books about his internment experience, *Citizen 13660* stands out. What distinguishes the book are Okubo's insider perspective of an imprisoned person, the drawings that she made in situ during internment, and the way in which she instrumentalized the book during her 1981 testimony to the federal commission.

Furthermore, her work can inform how architects might study the lived experiences within buildings, by those who occupy them. Her drawings from the internment camps have characteristics of critical ethnography, a fieldwork methodology developed in anthropology that facilitate civic actions and disrupt social inequities. By studying *Citizen 13660* as an example of critical architectural ethnography, what could architects learn from Okubo's work? Recent social crises, including the COVID-19 pandemic and recovery from natural disasters, have urged us to seek alternative ways for architects to observe and represent those who often remain unheard and unseen in the studies of existing spaces and in the design process. Examined through the frameworks of activism and critical ethnography, the book *Citizen 13660* is poised for a timely and meaningful impact on contemporary architectural practice and pedagogy.

Miné Okubo, the artist
Miné Okubo was born in 1912 in Riverside, California. She was one of seven children of two first-generation immigrants from Japan. Miné Okubo attended the University of California, Berkeley, where she received Bachelor and Master of Fine Arts.[3] In the summer of 1940, Okubo was selected to assist Diego Rivera in painting murals at the Golden Gate Exhibition, an experience that exposed her to artists'

political agency. On February 19, 1942, President Franklin D. Roosevelt signed Executive Order 9066, forcing removal and incarceration of Americans of Japanese descent. All members of Okubo family were forced to vacate their home and became dispersed in different evacuation camps in Montana, Wyoming, and Arizona.[4] From the moment she arrived at Tanforan, she sketched everything, capturing the chaos and dismay of everyone who were abruptly displaced from their homes and incarcerated.

Architectural ethnography

Whether wittingly or not, architects have borrowed methods of study from ethnography, a practice established in cultural anthropology to observe people and cultures of a particular community through fieldwork. The work of Japanese architect Kon Wajiro (1888-1973) is often cited as an example of visual ethnographic work by architects. Kon's depiction of the spaces and objects arranged in the domestic environment of ordinary people (Fig. 2) helped to spark imagination of what modern housing could be for post-war Japanese cities.[5] He criticized the elitism of modern architecture for being over-institutionalized and preoccupied with technological advancement. Through his fieldwork, he drew attention to the real and practical needs of those who may otherwise have been excluded or forgotten.[6]

More recently, the Japanese practice of Atelier Bow Wow has applied the practice of visual ethnography in the drawings of buildings they design, as well as "accidental" buildings that have been squeezed into leftover urban spaces. In *Pet Architecture,* they documented small, informal buildings that stand on left-over lots in Tokyo. Their drawings include artefacts that are often omitted from architect's drawings that convey a sense of occupancy, such as the gas meters, vending machines, and air conditioning units.[7] They acknowledge and even embrace the messiness of human lives as Okubo's drawings of the internment camps do.

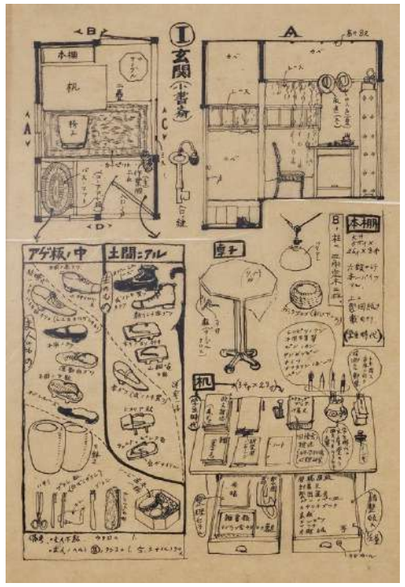

Fig. 2

Critical ethnography

In anthropology, the practice of ethnography—historically associated with imperialists' study of native cultures—has been fraught with coloniality. Anthropologists have been reexamining and redirecting ethnographic studies to include the subjects in the knowledge production process. In other words, they are not only given agency over the research about them and the process by which it is presented to the world, but also to record with a critical voice.

Critical ethnography is a research method developed alongside social activism of the 1960s and 70s. It explicitly sets out to critique hegemony and asymmetrical power relations, to disrupt social inequities, and to inform civic actions.[8] Ethnography has historically been understood as objective, neutral observation, without the distraction of subjectivity or emotions. On the contrary, critical ethnography acknowledges the subjectivity of the observer's positionality, while taking ethical responsibility for their own political perspectives.[9] Furthermore, it moves beyond the neutrality of "what is" to "what could be," challenging dominant regimes of knowledge and social practices.[10] Social psychology scholar Michelle Fine writes that a role of researcher is that of an activist and advocate who take a clear position to intervene upon hegemonic practices. Similarly, architects and artists can choose to be critical and advocate for what or how it could be.

More recently, anthropologists such as Sarah Pink have developed methodologies that focus on the human senses to study the subjective experience of individuals. This way of knowing through the senses, or sensory ethnography, neither privileges one sense nor does it claim to produce a correct or objective reality.[11] Anthropologist Maurice Bloch notes that there is a discord between what people say and what they know, and that most profound type of knowledge is not spoken and remains inaccessible in interviews.[12] Architects as well as artists are adept in understanding buildings, materials, and spaces through not only verbal language but also the senses—vision, scent, hearing, and touch; they therefore are inclined to observe relations between buildings and people through what anthropologists call sensory ethnography. Visual documentation during fieldwork may also capture implicit knowledge that subjects do not express in language.

Since Okubo was neither educated as an anthropologist nor explicitly set up to do ethnographic fieldwork, she did not acknowledge anthropology theory in while reflecting on her observations and drawings she made as an internee. However, Okubo's voice as an advocate for the internees is fundamental to her body of work from the internment. Her drawings portray the sensory experiences of the internees, from the stench from the broken sewer pipes, textures of hay left by horses in the barracks, to the eye irritation caused by a dust storm in the Utah dessert, more vividly and intensely than words alone could. Miné Okubo took agency over how the lives and spaces of internees were recorded and made drawings to expose injustice in camps where cameras were prohibited. Her work as an artist and activist does what critical ethnography aims to do—to unveil oppression and control by those in power.

Double vision

Drawings in *Citizen 13660* are made from a first-person, female perspective. Okubo often includes herself in the picture both as an observer and a subject/participant, easily identified with her wispy bangs. As the Asian Studies scholar Christine Hong remarks, Okubo is often the lone, independent female figure amidst the space of white, masculine power. As if to say, "I was here," she stands as a historic witness to this absurdity and sadness of imprisonment.[13] This sense of seeing oneself through the eyes of others is described as by W.E.B. Du Bois as double consciousness, an identity struggle encountered by Blacks in a predominantly White society.[14] He observed that Black people must navigate double identities: their own individual identity, and that which is imposed upon them by the dominant race.

Okubo's drawings mirror this double vision through the eyes of a Japanese American internee and the gaze of her friends outside the camp for whom she initially drew. As she writes in the preface to the 1983 edition of her book, "*Citizen 13660* began as a special group of drawings made to tell the story of camp life for my many friends who faithfully sent letters and packages to let us know we were not forgotten."[15] Moreover, the drawings reflect the double vision of the artist herself, situated in the drawings with a sketchbook and pencil in hand, and the subject in study—an internee suffering despair, and isolation, sometimes combined with irony and even humor. Her drawings, which are more interpretational than objective recording of the camps, fluidly traverse the worlds of double consciousness.

As the Jamaican-born British cultural theorist Stuart Hall writes, cultural identity can be understood from two different positions. In the first, it is thought as one, shared culture—common experiences that serve as a stable, unchanging frame of reference. The second position recognizes that identity is not singular and continuous but is varied and discontinuous. In other words, cultural identity is defined by both similarities and differences. Hall also asserts that cultural identity belongs to both the past and the future and constantly transforms: "Far from eternally being fixed in some essentialised past, they are subject to the continuous 'play' of history, culture and power."[16]

The double consciousness and her portrayal of collective and individual identities uncovered in her artwork distinguishes her from those who are neither Japanese nor interned, such as Ansel Adams and Dorothea Lange. Both Adams and Lange, whose work were commissioned by the War Relocation Authority (WRA), shared the outrage over the injustice and the urge to document the experience of the internees. Over seven decades after the war, Japanese American actor George Takei published an award-winning graphic novel *They Called Us Enemy* (2019).[17] It chronicles his own childhood experience in three internment camps in California and Arkansas. The images and words in works of Lange, Adams, and Takei—like Okubo's drawings—represent Japanese American bodies in spaces of

oppression, control, and asymmetrical power. Each one told stories using different medium, shaped by their own race, backgrounds, and the context in which they experienced the internment camps.

Dorothea Lange's photographs

American artist Dorothea Lange is known for her photographs of migrant farmworkers and sharecroppers of the Great Depression, taken for the Farm Security Administration (FSA). Her work notably documents the conditions of women and children and demonstrates how indignity and humiliation of poverty threatened masculinity. The US Army suppressed Lange's photographs of the internment camps during World War II. Like Lange's Depression era photographs, the internment photographs convey a sense of tragedy by people caught in circumstances outside of their control. She captures scenes in which people are waiting—for lunch in the mess halls, for the buses to take them to assembly centers, or idly waiting for something to do, as they were deprived of their jobs along with ownership of houses to care for. The images carry her voice as a critic of unjust, racist policy that stripped these citizens of their properties and dignity.

Influenced by Lange's second husband Paul Schuster Tayor, a professor who was known for his ethnographic methods, she established a reputation for her documentary work in which she talked to and listened the people she photographed. When President Roosevelt signed Executive Order 9066, the War Authority hired Lange to document the program. She photographed the arrival of the first internees at the Tanforan Assembly Center. The US government did not permit her to photograph the soldiers who pointed rifles and bayonets at them, a scene which Okubo depicts from memory in her drawings.

Ansel Adams's photographs

One of the most recognized American artists, Ansel Adams is renowned for his photographs of the American West, particularly of the Yosemite and Sierra Nevada. In 1943, Adams photographed at the Manzanar War Relocation Center located at the eastern edge of the Sierra Nevada. In August 1944, a year before the war ended, he published his writing and photographs from the camps in the book *Born Free and Equal: The Story of Loyal Japanese-Americans,* which demonstrates visual evidence of loyal, unambiguously American citizens. At the same time, Adams's photographs reinforced the frontier rhetoric of the splendid American West landscape and the pioneer lifestyle, distorting public perceptions of mass incarceration.[18] "Adams's internees were ennobled by their rough environment rather than angered by their own imprisonment,"[19] writes Elena Tajima Creef, a scholar on Asian American visual history and gender studies.

As Adams himself claims, the focus of the photographs is on the individual. The book is, he writes, "conceived on a human, emotional basis, accenting the realities of the individual and his environmental rather than considering the loyal Japanese-Americans as an abstract, amorphous, minority group."[20] He understood that grouping minority community leads to Orientalist reduction and discrimination.[21] Men are represented as masculine archetypes, productive citizens who pose no threat to the nation's safety: x-ray technicians, electricians, and chemists.[22] While most subjects were men, about a quarter of his photographs were of schoolgirls. The headshots show the girls smiling, wearing American style feminine clothing. Such innocent, submissive bodies of young Japanese American school girls portrayed by Adams contrast Okubo's self-representation that imbue rebellion and resistance.

Despite his inevitable focus on the relationships between people and the surrounding landscapes, he published the photographs and text with noble intentions of serving the citizens.[23] In the book's conclusion, he admits the shortcoming of his external gaze: "Perhaps we find it difficult to visualize the life and mental attitudes of the evacuees. We are, in the main, protected and established in security considerably above other peoples."[24] He sees the internment as a tragedy to which he wishes his book will bring awareness.

George Takei's graphic novel and children's book

One of the most recognized Asian American actors of his generation, George Takei was born in 1937 in Los Angeles to first generation Japanese American parents. He was four-years old when his family was first sent to a temporary detention center at Santa Anita Racetrack in Arcadia, California, then to the swampy Rohwer War Relocation Center in Arkansas, and finally to Tule Lake Segregation Center in California. Unlike the work of Adams and Okubo who published their work in 1944 and 1946 respectively, Takei published *They Called Us Enemy* 74 years after the war ended, and *My Lost Freedom* another five years later.

Takei co-authored *They Called Us Enemy* with two writers, neither of whom was an internee, and the Japanese American illustrator Harmony Becker made over 200 pages of manga-like illustrations that

tell stories in first-person. In *My Lost Freedom: A Japanese American World War II Story,*[25] a picture book for children, Takei collaborated with illustrator Michelle Lee. Lee conducted extensive research with primary sources and heard stories from Takei. At the National Archive, Lee found a blueprint of another internment camp in Arkansas, with which she built a scaled model of a barrack to get a sense of how the internees lived.[26] She illustrates details of the horse stalls that provided little privacy between families, the flies that swarmed around the bare light bulbs, and the details of a mother tucking away Takei and his brother in bed.

The books have received several book awards and been reviewed on major national newspapers. At the time of the two publications, Takei was already a celebrity actor recognized for his activism in Asian American and LGBTQ communities. He leveraged his platform to shine a spotlight on the injustice of the internees and reach a mass audience to increase awareness.

Okubo's drawings

Okubo's drawings fill the gaps that someone like Adams—or even Lange who possessed more attunement to emotions—could not fill. Unlike Takei's illustrator who studied primary sources to draw, Okubo's drew on-site from her direct experience. Her drawings remain some of the most vivid first-hand depictions of what Adams called the "life and mental attitudes of the evacuees." Okubo would tell stories nearly 40 years later to the members of the House and Senate, urging for reparation and formal apology.

While Adams and Lange were both motivated to expose the injustice of the war relocation camps, they were also limited by their camera lens. Cameras would invade the privacy of internees more explicitly than someone who could sketch discretely. Okubo made numerous drawings of women sitting on toilets and in communal baths, presumably drawing after she left the bathrooms and relying on memories of what she had just witnessed. In contrast, Lange's photographs of latrines only show the exterior, leaving the most intimate details of daily lives left to be imagined (Fig. 3). Unlike photographers, Okubo is more interpretational and selective in what she chooses to include and exclude. A swarm of flies that would be difficult to capture in photographs are exaggerated in scale in Okubo's drawings, even conveying the high-pitched buzzing sound through the pen lines.

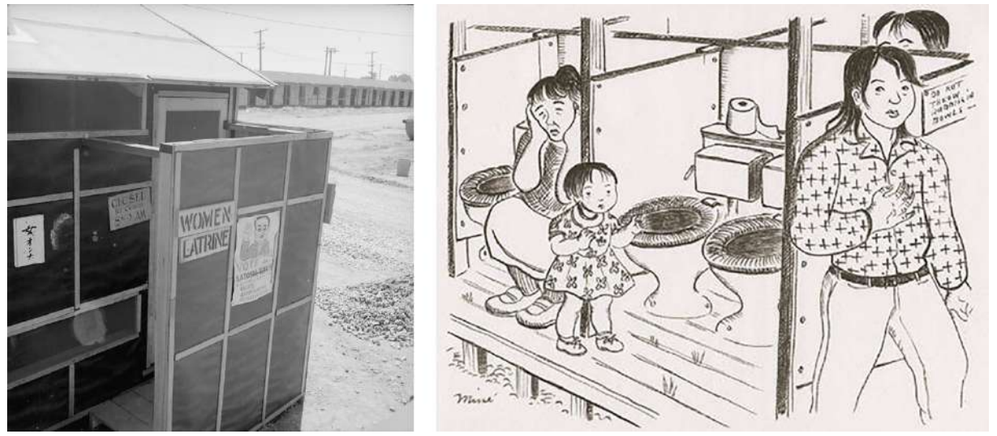

Fig. 3

At the same time, the drawings convey the complex array of emotions associated with the spaces of control (Fig. 4). She depicts architecture of the racetracks and barracks as not only an instrument of discipline and surveillance by the US government, but also a means to strip human dignity. The forms of punishment depicted in *Citizen 13660* are modern forms of control described by Foucault in *Discipline and Punish.*[27] In place of the spectacular forms of punishment like torture and executions, the internment camps punished Japanese Americans on their mind and souls. The drawings in *Citizen 13660* show ways in which they were punished: loss of dignity, lack of privacy, surveillance, lines and crowds, and lack of individual identity.

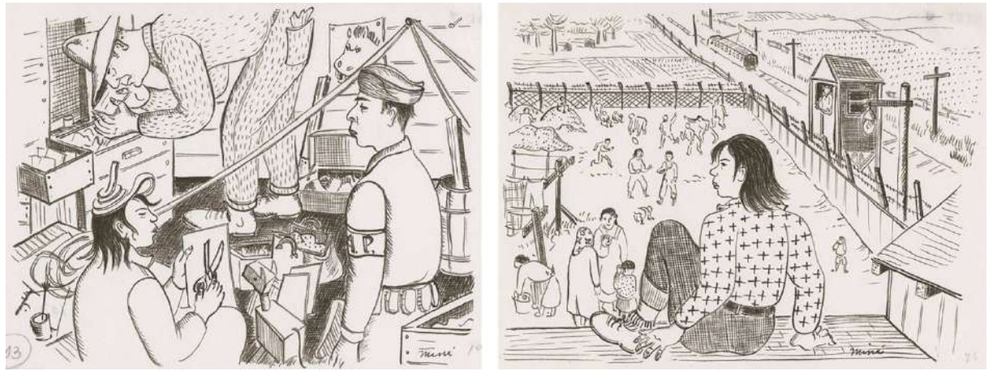

Fig. 4

Loss of dignity is evident in the bleak interiors and landscapes, as well as the body language and facial expressions of the internees. Drawings and words describe stables for racehorses, now appropriated for Japanese Americans, where the stench of manure penetrate through the wooden floor planks and walls and attract horse flies. A scene from a communal bathroom depicts a young girl with a mother seated on a toilet, with half-height partitions but no doors for privacy (Fig. 3). The mother's face and body convey shame and desperation, accentuated against the innocence of the child next to her. Okubo draws herself walking away from the bathroom, with a hand on her chest, expressing both pathos and aversion. As in Lange's photographs, crowds and people waiting in lines (Fig. 5) appear often in Okubo's drawings: the crowd in front of the grandstand that fed 8,000 evacuees at mealtimes, and the line to the camp's single post office, a point of connection for all internees to the world outside.

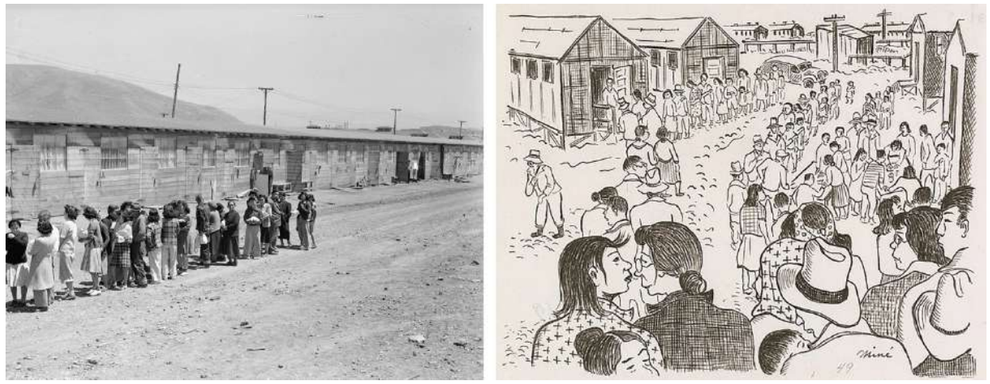

Fig. 5

Civic actions

Nearly 80 years since the war ended, *Citizen 13660* has served different roles, ranging from a visual chronicle for friends beyond the barbed wires, to a catalyst for civic action. In the preface to the 1983 edition, Okubo writes that war was forgotten in the 1950s as Americans focused their attention on rebuilding the country. With the election of President John F. Kennedy in 1961, the younger generation began to take note of social injustice around them, both domestic and abroad. Through the next two decades, Issei (the first-generation Japanese) who survived internment passed away, as did the older Nisei, the second-generation. As their children, the Sansei, reached adulthood and became aware of what the US government had done to their grandparents and parents, they organized to seek justice. In the 1980s, *Citizen 13660* became an instrument of exposure and civic action.

A self-aware and talented artist who had painted murals for Diego Rivera, Okubo presumably was conscious of the political power of her exposé drawings, even though uncertain exactly what long-term impact the book would have. As Okubo notes, "The illustrations were intended for exhibition purposes."[28] In 1981, she presented the book in a testimony before the US Commission on Wartime Relocation and Internment of Civilians, demanding apology and reparation for all interned and stressing the need to educate the younger generations about the internment. Okubo testified, "Textbooks and history studies on this subject should be taught to children when young in grade and high schools. Many generations

do not know that his ever happened in the United States."[29] In 1981, *Citizen 13660* was translated into Japanese, expanding its impact to the "enemy race" and the country of her origin. In the United States, it was reprinted in 1983 and recognized with an American Book Award. *Citizen 13660* continues to educate people about the injustice that often escapes our collective memory, serving as—in the words of the American theorist and social critic bell books —a form of transgression, "a practice of freedom."[30]

So, what can architect learn from the work of Miné Okubo? The book *Citizen 13660* appeals to architects that they, too, can become "researcher activists," a mode of research identified by Brazilian educator and philosopher Paulo Freire in his 1968 book *Pedagogy of the Oppressed*.[31] Okubo's drawings suggest that architects can visually demonstrate how architecture becomes an instrument of control and oppression, and that architects can use their spatial thinking and visual representation skills to uncover the realities of the built environment. Like *Citizen 13660*, drawings can become a witness of spatial injustice. By borrowing principles of methodologies from critical ethnography, architects can help to better understand and represent the spaces and experiences of people for whom we design, to better listen to voices of those who are otherwise silenced and see the actions of people who remain unseen.[32]

Notes

1. “Records of Public Hearings of the Commission**,** Monday, November 23, 1981, Roosevelt Hotel, New York, New York,” before the Commission on Wartime Relocation and Internment of Civilians, 197-203 (1981) (Miné Okubo). https://catalog.archives.gov/search-within/229699513. Okubo was one of over 750 people who testified between July and December 1981.
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3. “Miné Okubo,” Densho Encyclopedia, Densho, accessed August 3, 2025, https://encyclopedia.densho.org/Mine_Okubo/
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5. Izumi Kuroishi, *Sketch, Body and Transforming Everyday Space: Kon Wajiro's Visual Ethnography of Modernologio* (Alexandria: Washington-Alexandria Architecture Center, 2017), 3.
6. “How to Be an Architectural Detective,” Canadian Centre for Architecture, accessed November 26, 2023, https://www.cca.qc.ca/en/articles/issues/12/what-you-can-do-with-the-city/38537/how-to-be-an-architectural-detective. see also Centre canadien d'architecture. 2015. *The Other Architect: Another Way of Building Architecture*. Edited by Giovanna Borasi. First ed. Montréal, Québec, Canada: Canadian Centre for Architecture.
7. Atelier Bow Wow, *Pet Architecture Guide Book* (Tokyo: World Photo Press, 2001). See also Momoyo Kaijima, Junzo Kuroda, and Yoshiharu Tsukamoto, *Made in Tokyo* (Tokyo: Kajima Publishing, 2001).
8. D. Soyini Madison, *Critical Ethnography: Method, Ethics, and Performance* (Thousand Oaks: Sage, 2020).
9. Madison, 7-8.
10. Madison, 5.
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13. Christine Hong, “Illustrating the Postwar Peace: Miné Okubo, the ‘Citizen-Subject’ of Japan, and Fortune Magazine,” *American Quarterly* 67, no. 1 (2007): 116.
14. W. E. B. Du Bois. *The Souls of Black Folk* (Oxford: Oxford University Press, 2007).
15. Miné Okubo, *Citizen 13660* (Seattle: University of Washington Press, 1983).
16. Stuart Hall, Ruth Wilson Gilmore, and Paul Gilroy. “Cultural Identity and Diaspora [1990],” in *Selected Writings on Race and Difference* (Durham: Duke University Press, 2021), 257–271.
17. George Takei, Justin Eiseinger, and Steven Scott, *They Called Us Enemy* (Marietta: Top Shelf, 2019).
18. Xiaojing Zho, “Spatial Construction of the ‘Enemy Race’: Miné Okubo’s Visual Strategies in Citizen 13660,” *Melus* 32, no. 3 (2007): 65.
19. Elena Tajima Creef, *Imaging Japanese America* (New York: New York University Press, 2004), 36.
20. Adams, 9.
21. Creef, 30-31.
22. Creef, 23.
23. Adams, 9.
24. Adams, 108.
25. George Takei and Michelle Lee, *My Lost Freedom: A Japanese American WWII Story* (New York: Crown Books for Young Readers, 2024).
26. George Takei and Michelle Lee, interview by Scott Simon, *Weekend Edition*, National Public Radio, April 20, 2024. https://www.npr.org/transcripts/1245844347.
27. *Michel Foucault, Discipline and Punish: The Birth of the Prison (New York: Pantheon Books, 1977).*
28. Okubo (1983), ix.
29. Records of Public Hearings, 203.
30. bell hooks, *Teaching to Transgress: Education as the Practice of Freedom* (New York: Routledge, 1994).
31. Paulo Freire, *Pedagogy of the Oppressed, 30th Anniversary Edition* (London and New York: Continuum, 2000).

Image Captions

Fig. 1. Cover of book *Citizen 13660* by Miné Okubo. Columbia University Press, 1946.
Fig. 2. Kon Wajiro, “Household of a newly-married couple, Entrance and home office,” Kon Wajiro and Yoshida Kenkichi, eds., *Modernologio: Kogengaku*, 1930.
Fig. 3. Left: Dorothea Lange, Latrines at the Tanforan detention facility, June 1942. National Archives and Records Administration. Right: Miné Okubo, Women's community toilets at Tanforan Assembly Center, San Bruno, California, 1942. Japan American National Museum (Gift of Miné Okubo Estate, 2007.62.72).
Fig. 4. Left: Miné Okubo, Army inspections of living quarters, Tanforan Assembly Center, San Bruno, California, 1942. Japan American National Museum (Gift of Miné Okubo Estate, 2007.62.109). Right: Miné Okubo, Observing camp activities from a rooftop, Tanforan Assembly Center, San Bruno, California, 1942. Japan American National Museum (Gift of Miné Okubo Estate, 2007.62.82).
Fig. 5. Left: Dorothea Lange, Line-up of evacuees waiting for places in the mess hall for their noon meal, June 1942. National Archives and Records Administration. Right: Miné Okubo, Waiting in line to receive vaccinations, Tanforan Assembly Center, San Bruno, California, 1942, Japanese American National Museum (Gift of Miné Okubo Estate, 2007.62.55)

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Biography

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Photorealistic Imagery in Architecture: Toward a Critical Vocabulary

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Abstract

Photorealistic imagery has become a widely used representational tool in contemporary architectural practice. It often carries an aura of feasibility and credibility. Despite this, the term 'photorealism' is vague. It is used inconsistently across various visual materials, which vary greatly in style, technique and intention. This lack of clarity hinders critical discourse, as it is unclear how such images can be interpreted or contested. Recent studies have sought to investigate this phenomenon with greater precision (e.g. Young, 2019; Chiesorin, 2023; Locher et al., 2023); however, a shared understanding has yet to be reached. The term continues to lack stable criteria, and its rhetorical and representational functions remain insufficiently examined.

To engage with photorealistic architectural images critically and consequently assess their rhetorical force, epistemological status, and cultural function, it is imperative to first establish what is meant by 'photorealism' in this specific context. The working hypothesis suggests that the absence of a shared understanding of the term hinders meaningful critique and reinforces superficial acceptance of such images as objective or self-evident representations.

To address this, the study undertakes a literature-based survey of definitions and interpretations of photorealism, starting from the mid-2010s, when a general photorealistic approach to visualisations emerged (Locher et al., 2023). This is complemented by a comparative analysis of selected visual materials labelled as 'photorealistic', through which the visual markers associated with the term can be identified and their rhetorical function can be explored.

Rather than proposing a fixed definition, the paper seeks to elucidate the discursive boundaries of the term. It aims to establish a more precise and productive vocabulary for architectural criticism. In doing so, it contributes to the broader aims of the Conference by treating visual representations not as neutral tools, but as artefacts whose meaning depends on shared language.

Key words: photorealism, architectural imagery, critical vocabulary, definition.

1. Problem definition

Photorealistic renderings have become a widely used means of representation in contemporary architectural practice. These documents frequently convey an impression of feasibility and credibility. Nevertheless, the term 'photorealism' is vague. It is sometimes used to describe a style of representation, sometimes to evaluate technical quality or rhetorical effect. This conceptual imprecision makes both precise analysis and critical discussion challenging. Nevertheless, there is considerable debate surrounding the use of photorealistic architectural renderings, particularly in the context of communication with laypeople.

To critically examine photorealistic architectural images and evaluate their rhetorical power and communicative application, it is first necessary to clarify what is meant by 'photorealism' in this context. This paper assumes that the lack of a common understanding of the term hinders meaningful criticism and reinforces the superficial acceptance of such images as objective or self-evident representations.

Based on the assumption that photorealism is less a clearly definable characteristic than an attribution in architectural discourse, this article examines the criteria that lead to this attribution and the consequences this has for the perception and evaluation of architectural visualisations. Rather than proposing a fixed definition, the article attempts to clarify the discursive boundaries of the term. The objective of this study is to establish a more precise and productive vocabulary for architectural criticism. In doing so, it explores the question of which criteria shape the attribution of ‘photorealistic' in architectural visualisations and what consequences this has for architectural discourse.

2. Objective and method

The study examines various definitions and interpretations of photorealism in relation to architectural renderings. It pays attention to who attributes photorealism and how this is determined. The discourse can be divided into academic and practice-oriented positions. In order to find out what visual differences the various attributions entail, the visual material is compared with the help of image analysis. Six visual markers are central to this comparison: homogeneity, plausibility, degree of mimesis, documentary character and the uncanny valley effect. These markers arose from an interplay between the different positions in the academic and practical fields and through image analysis. By identifying the markers, it is possible to determine which image-inherent phenomena make an architectural rendering appear photorealistic and which counteract this appearance.

3. Photography as a reference medium for renderings

3. 1 Significance and function of rendering

Rendering refers to the process of creating a two-dimensional image from a three-dimensional model. In the digital world, it fulfils a function comparable to photography in the physical world: converting 3D to 2D.[1] Not only is rendering a digital process, it also includes analogue techniques such as shading and colouring to illustrate.[2]

Visualisation, on the other hand, is the overarching process of making the invisible visible. This involves making things visible that do not yet exist, are no longer present, or are not directly visible.[3] In doing so, it combines established knowledge with speculative additions, having both an interpretative and inventive effect.[4] This dual nature gives visualisation a special responsibility, as its images shape perceptions and influence decisions. Therefore, rendering is the operational means and visualisation the conceptual goal of making the invisible tangible.

Architectural renderings are images of buildings that do not yet exist. They vividly visualise design ideas and thus fulfil the function of a communication medium. As they depict the future, they embody the dual nature of visualisation, combining reliable information such as context and current planning status with speculative elements like details and social context. As architecture is perceived through images even before it is realised, both the building and its production come to the fore.[5] Renderings fulfil an anticipatory function, presenting possible realities that must convince and sell, regardless of whether they will ever be built. The urge for photorealism can be explained by the desire to present this potential reality as convincingly as possible. Factors such as light, atmosphere, and materiality act as central quality markers.[6]

Chiesorin demonstrates that renderings are also part of a visual culture that strongly emphasises attracting attention. As attractions, they contribute to architectural knowledge being increasingly conveyed through images. This carries the risk of photorealism being interpreted uncritically as a factual representation, but at the same time opens up opportunities for comprehensibility and democratic participation.[7] Following Krämer, she ultimately understands renderings as media that not only inform, but also create artificial worlds and thus actively shape the perception of architecture.[8]

3.2 Photography

To understand the value of ‘photorealistic’ renderings, it is helpful to consider the medium they imitate: photography. Regarded as a technique for objectively depicting reality since the 19th century, photography continues to shape society to this day. Photographs refer indexically to something that

actually existed, giving them a documentary character.[9] However, the fragility of this objectivity was apparent from the beginning: as early as the mid-19th century, long exposure times were used to stage scenes that influenced public opinion.[10] According to Gadanho, objectivity and manipulation are inherent in photography, and this problem persists to this day, having been exacerbated in the debate about photojournalism and documentary photography in the age of 'post-truth' and 'fake news'.[11]
Bredekamp primarily considers the indexical value in a scientific context, arguing that mechanical image production lends it scientific objectivity.[12] However, photography is still influenced by the photographer's selection and intervention.[13] Hirschberg also emphasises that photographs never 'purely' depict reality; they are dependent on the shooting situation and post-processing. Photography is, therefore, always relative.[14]
Photographs create an illusion by making the absent visible. Chiesorin refers to this as the 'referential power' of photography, a concept that renderings adopt without referencing a real object.[15] While photographs depend on the presence of an object, renderings are based on an internal process of the tool. Rather than depicting the physical world, it makes an idea visible.[16]
This proximity explains the 'photorealistic' label. Renderings should resemble photographs, even if they do not have a real-life counterpart. This requirement has evolved historically; early digital renderings appeared two-dimensional, which is why light, atmosphere and material fidelity became important features. Today, photorealism is considered the standard, both because clients expect images of a 'future reality' and because renderings draw their persuasive power from their similarity to photography. However, the extent to which they resemble photography is at the discretion of the producers.[17]
Chiesorin proposes the photographic as a theoretical concept for classifying 'photorealistic' renderings and their similarity to photography. As the lowest common denominator, this concept encompasses both technical characteristics and the expectations and rhetorical strategies associated with such images, subsuming photography, photorealism, photographic recording and photorealistic visualisation.[18] It is therefore a spectrum that includes a wide variety of effects in different forms. The following section outlines the extent of this spectrum.

4. The Diversity

This section aims to show which types of representation are perceived and described as 'photorealistic', depends on a) the respective actors and their expertise and b) the temporal dimension.

4.1 Labelling in scientific discourse

This section presents various scientific and analytical studies that attempt to describe the phenomenon of photorealism as a style of representation in architectural renderings. It will become apparent that the term photorealism is not a fixed category, but rather an attribution that is interpreted in different ways by different authors. Depending on the theoretical approach, historical period and functional context, different criteria are considered relevant for characterising renderings as 'photorealistic'.

Technical basics: lighting and camera

Photorealism is initially described using technical criteria in many approaches. Hirschberg emphasises the simulation of light effects arising from interaction with physical surfaces. The decisive factor is not the mere representation, but the effect of light, which can enhance, distort or sublimate reality. This puts algorithmic light calculation at the heart of the definition.[19] Lengyel and Schaerer also highlight the close connection to photography. They refer to this as 'virtual photography' because renderings are created through the deliberate application of photographic techniques such as exposure, camera perspective and focus.[20] Photorealism is evident here in its proximity to photographic processes, without the result itself being a photograph.

Mimesis and the claim to reality

Other approaches place greater emphasis on the rhetorical dimension. Scheidegger defines photorealism as achieving a high degree of mimesis, thereby developing a particular suggestive power.[21] With their professional appearance, renderings claim to be realistic and appear as quasi-factual predictions. In doing so, they blur the line between reality and simulation, taking on a transcendent character.[22] Chiesorin argues along similar lines, questioning the term 'photorealism' and instead proposing 'the photographic' as the lowest common denominator. For her, it is not proximity to photography alone that is decisive, but rather the associated expectations and rhetorical functions of such images.[23] A rendering appears photorealistic when it is read as photographic. In other words, when it transfers the documentary character of photography to a design.[24]

Temporality and contextuality

The temporal dimension is particularly evident in the work of Locher et al. and Chiesorin. Locher et al. describe photorealism as a perception- and time-bound phenomenon, stating that whether an image is considered 'photorealistic' depends on the current state of technology and visual habits.[25] In the 1990s,

hybrid analogue and digital processes were sufficient for an image to be considered 'photorealistic' (Fig.1 top left). In the 2000s, however, atmosphere, everyday scenes, and narratives came to the fore[26] (Fig.1 top centre). In the 2010s, a 'new photorealistic realism' emerged through the convergence of photography and rendering. This was characterised by the steady convergence of photography and digital images[27] (Fig.1 bottom left). In this context, photorealism does not refer to perfect imitation, but rather to contemporary plausibility. Chiesorin adds a temporal dimension to this perspective: renderings refer to a possible future, but as construction progresses, they quickly become records of past design stages. They are thus ephemeral by nature, while simultaneously functioning as an archive of the planning process.[28]

Presentation function and exaggeration

Furthermore, photorealism is defined by its communicative purpose. Stöcklmayr emphasises that 'photorealistic' renderings are primarily presentation images (Fig.1 top right). They depict a fully realised concept in an idealised state and allude to a potential future reality, rather than representing an existing present.[29] Nastatsi builds on this idea with the concept of 'super-photorealistic' renderings. For highly detailed images that closely resemble photographs and often imitate the character of snapshots (Fig.1 bottom centre), the term 'photorealistic' is insufficient. This new term emphasises the increased proximity to photography, and thus to credible representations of reality.[30]

Fig.1

4.1 Labelling in practice-related discourse

This section demonstrates how architects and visualisers create 'photorealistic' architectural renderings. The basis for the practical labelling is not scientific publications, but rather sources from architecture magazines (both online and in print) and statements from the architects' own publications. The individuals involved in this field have diverse perceptions of photorealism. These sources reveal more of a positioning and marketing strategy than an objective discourse. The analysis therefore focuses on leading figures and prominent voices in the media.

Photorealism as 'honesty' and realism

In practice-oriented discourse, a central motif is the conception of photorealism as the most truthful and unadulterated form of representation possible.
However, architect and visualiser James Falconer warns against the inflationary use of the term 'photorealistic'. In his 2021 Architizer article, he emphasises the danger of creating a 'false reality' when digital images are presented as 'the real deal'. For Falconer, photorealism is 'an art of honesty' that requires physical laws (light, material and proportion) to be observed, deception to be avoided, and even

'unaesthetic' elements such as infrastructure buildings to be shown (Fig.2 top centre). In this context, photorealism equates to credibility through maximum accuracy and transparency.[31]
In a debate in Hochparterre, architects Miroslav Šik and Astrid Staufer make a similar argument. Šik criticises the use of a standardised visual language to hide unpleasant elements, such as street furniture or shadows. He states that 'the world is painted in rose-tinted colours'.[32] For Šik, a ‘photorealistic’ image must be veristic, depicting the world realistically (Fig. 2 bottom left). Staufer, on the other hand, criticises the use of ‘photorealistic’ architectural renderings, speaking of 'hyper-realistic' renderings that suggest a reality which already exists, despite depicting future states.[33] Like Falconer, she recognises the dangers, but instead of responding with honest realism, she uses a visual language that is clearly distinguishable from photography.
The Baunetz interiordesign platform also compares photorealism with other styles of representation, viewing it as a form of realistic depiction. “High-end photorealism is the queen of visualisation. It realistically simulates materials, surfaces, and lighting scenarios, providing customers with an accurate idea of what rooms will look like upon completion".[34] (Fig. 2 top left).

Photorealism as an aesthetic strategy beyond reality
The focus shifts with the input of other voices: photorealism is not an end in itself here, but rather a starting point for an independent visual aesthetic.
In The Mir Way, the visualisation agency Mir explains that it prioritises 'strong images' that attract attention and remain in the memory over ‘photorealistic’ perfection. "We are talking about images whose quality does not derive from photorealism or light, but from clear and memorable observations.”[35] The decisive factor is how images evoke emotions and categorise projects within a specific visual code: “[...] [T]he image style creates the meaning of the image.”[36] (Fig. 1 bottom centre).
Architect and artist Philipp Schaerer also redefines the term. His series of images, Bildbauten (2007–2009), appears photographic but features invented architecture (Fig. 2 top right). In Domus, he writes: “Images are brought together and rearranged into seemingly incompatible combinations. Image constructions that have little to do with reality. Utopias in terms of content, but mostly composed photographically in terms of visual language […].”[37] Here, photorealism does not refer to the imitation of reality, but rather the use of photographic codes to manipulate perception and criticism.

Photorealism between technology, hyperrealism and the uncanny valley
A third field of discourse explores the relationship between technical development, hyperrealism, and perception.
On Archdaily, Susanna Moreira describes hyperrealistic renderings as “[…] images that are increasingly similar to photographs of the actual built environment after the project has been completed.”[38] She emphasises that hyperrealism is achieved through attention to detail, such as textures, reflections, camera angles and post-production, but at the same time it blurs the line between reality and fiction (Fig. 2 bottom centre). In practice, this visual language often serves marketing purposes, with Moreira stating that “[…] this hyperrealism [...] becomes more of a commercial product than an instrument for the client's comprehension of architectural solutions.”[39]
The use of artificial intelligence also reinforces this trend. In an interview with Baunetz Campus, visualiser Olivier Campagne describes his AI-generated work as realistic imagery.[40] His renderings are firmly rooted in photographic principles (Fig. 2 bottom right).
Finally, the uncanny valley effect comes into play. In an Archdaily article, the phenomenon described by Mori in 1970[41] — the perception of human-like robots or figures — is applied to architectural renderings. Magna explains that overly perfect renderings can cause discomfort due to unnatural surfaces or artificial scenery.[42] Andersen also notes that ‘photorealistic’ images 'fall apart' emotionally when the lighting appears unnatural: “In photorealistic images, you can experience emotional dissonance if the image mimics reality but the lighting behaves unnaturally."[43]

Observations from teaching
During a seminar with architecture master's students, it became apparent that the distinction between 'photorealistic' and 'non-photorealistic' remains unclear. Students often based their assessment on a 'gut feeling' rather than objective criteria. This confirms the difficulty of uniformly defining the term 'photorealism' and, at the same time, highlights its function as a discursive label.

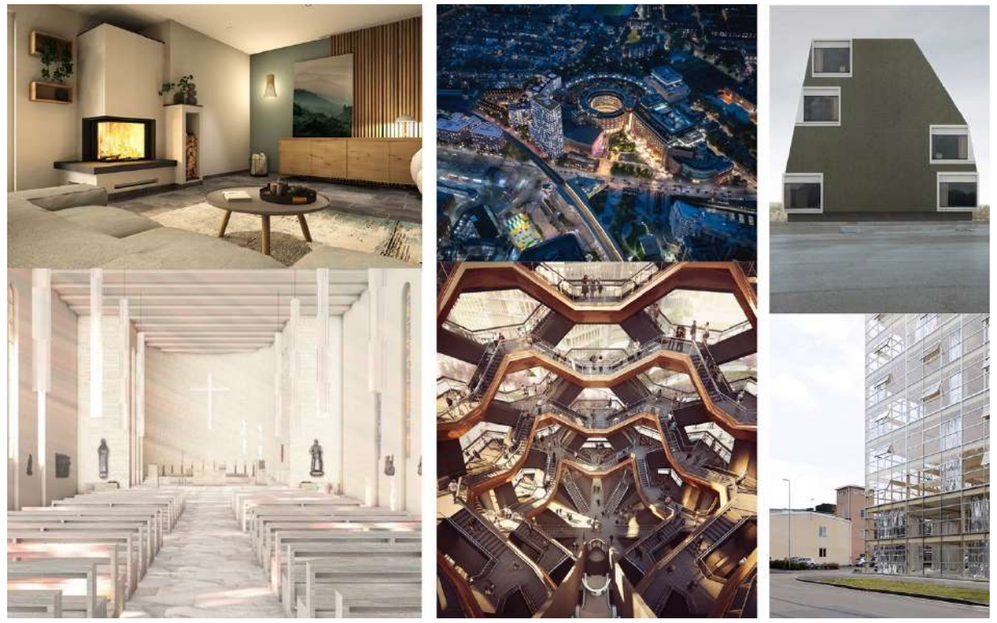

Fig.2

4.2 Intermediate summary
Scientific and practical approaches to the phenomenon of photorealism in architectural renderings reveal different, yet overlapping, perspectives.
From a scientific standpoint, photorealism is not considered a fixed category, but rather a dynamic and context-dependent concept. The criteria for photorealism stem from technical capabilities (e.g. light simulation), cultural viewing habits, and rhetorical purposes. Therefore, photorealism refers less to an objective property of the image and more to an attribution that emerges at the intersection of technology, perception, and context.
In practical terms, photorealism is primarily discussed in relation to positioning within the professional field. Some actors equate photorealism with the greatest possible accuracy and honesty (Falconer, Šik and Baunetz). Others view it as an aesthetic strategy that prioritises image impact over authenticity (Schaerer), while some (Mir) see it as a means of achieving maximum visual impact. Additionally, there is a strong technical focus on the development towards hyperrealism and the uncanny valley effect (Archdaily, Andersen). Here, photorealism is often functionalised for purposes such as marketing, differentiation and artistic reflection.
In comparative terms, it can be said that:
- Both perspectives agree that photorealism is not a clear-cut category, but rather a discursive attribution.
- While academia contextualises and historicises the term analytically, practitioners use it strategically to create authenticity, visual impact or sales arguments.
- In both discourses, it becomes apparent that photorealism lies not in the image itself, but in its legibility, function, and effect.

Photorealism can therefore be understood as a contested label: in academia, it is used to analyse image practices; in practice, it is used to position oneself within markets and professional networks. Both approaches agree that photorealism is always a relational effect dependent on technology, perception and context.

4.3 Image Analysis
The following image analysis is based on these theoretical and practical perspectives, examining which specific markers rendering possesses and the effects they evoke. The aim is to identify the visual factors that make a rendering look ‘photorealistic’. Chiesorin's concept of 'referential power’ provides a useful starting point for identifying these factors. The analysis clarifies the meaning of the term by providing clear examples.
To this end, 16 reference images were examined using a comparative approach to image description and analysis. Figures 1 and 2 show some of the analysis images used. These were supplemented by

others referred to in the described literature. The key comparison criteria — homogeneity, plausibility, degree of mimesis, documentary character, and the uncanny valley effect — were supplemented by analytical parameters such as composition, perspective, lighting, materiality, texture, colour, narrative, and scene. Categories such as 'the real' or 'realistic' were deliberately excluded, since 'the real' is precisely the effect to be examined, emerging only in the interplay of certain factors.

Homogeneity is a central category. It describes the uniformity of the image, created through consistent lighting, colour and material harmony, uniform depth of detail, and consistent perspective. Stylistic devices such as painterly plasticity or the use of high-key photographic aesthetics can reinforce this effect. Heterogeneity, on the other hand, results from inconsistent lighting or varying depths of detail. While homogeneity is a key factor in achieving a ‘photorealistic’ effect, it can also lead to a distanced or staged impression. Related to this is the question of montage points, which manifest as breaks in perspective, jumps in detail, or lighting dissonances.

Homogeneity is closely related to *plausibility*. In addition to uniformity, credibility is created by the haptic persuasiveness of surfaces, correct scales, the use of normal perspective, contextual coherence, and adherence to physical laws. Plausibility manifests itself in two ways: through a factual, authentic mode of representation, and through an atmospheric, narrative spatial effect.

The *degree of mimesis* refers to a rendering's ability to imitate an expected reality. While it encompasses the aforementioned factors, it is particularly influenced by phototypical effects, everyday scenarios, and the realistic depiction of haptic properties. The format and deliberately placed imperfections can also enhance the impression of mimesis. However, over-perfection makes the representation appear artificial and staged.

Renderings with a *documentary character* are closely based on architectural photography. They emphasise a sober and factual presentation of the design, largely refraining from aesthetic exaggeration. By contrast, some renderings deliberately use rhetorical devices such as drama or atmosphere to create a strongly staged effect.

Finally, the U*ncanny Valley effect* can also be applied to architectural renderings. This describes the aesthetic tension between ‘photorealistic’ surfaces and a lack of liveliness. The rendering appears almost real but creates a feeling of strangeness due to overly perfect materials, plastic homogeneity, or insufficiently realistic scenery.[44] Figures, in particular, stand out as problematic elements, as they often appear generic and reinforce the impression of artificiality. Renderings with reduced scenery or a distant perspective can avoid this effect, however.[46]

Overall, it can be said that the impression of photorealism in architectural renderings arises from the interplay of the categories of homogeneity, plausibility, and mimesis. The documentary character further anchors the images in the discourse of photography, while the uncanny valley serves as an indicator of disruptions to this logic of image representation. Therefore, photorealism is not merely the sum of individual effects, but rather the result of a complex balance between technical precision, photographic imitation, and credible representation.

5. Discussion

The following section places the results in a discursive context and discusses the relationship between rendering and photography. Central to this discussion is the concept of the 'photographic', as introduced by Chiesorin, and its associated ‘referential power’. Chiesorin describes an image's ability to refer to physical reality even when this is not present during its production. In the present analysis, the strength of the photographic corresponds to the intensity of this ‘referential power’, which can be operationalised using the categories employed in image analysis.

The ‘referential power’ of a rendering arises from the interplay of various factors. Homogeneity supports visual coherence, plausibility increases credibility, mimesis simulates real-life conditions, and the documentary character aligns with patterns of experience in photographic architectural communication. Together, these factors create the impression of indexical proximity. However, the results also show that overly perfect materials or heavily staged atmospheres can weaken the referential power by emphasising the speculative nature of the representation.

This ambivalence highlights the unique relationship between rendering and photography. Although rendering is inherently speculative, it adopts the rhetorical codes of photography to establish credibility. This shifts the focus of trust away from the image itself and towards its creators, as the expectation that a rendering will correspond to the final architecture is placed on their shoulders. Therefore, differences in the analysed categories reflect differences in perceived ‘referential power’ rather than stylistic variations. Consequently, photorealism does not refer to a specific mode of representation, but rather to the underlying capital of impact and trust.

In summary, ‘photorealistic’ renderings are a form of communication whose persuasive power is based on referentiality and the activation of photographic elements. This effect is not created by a single feature, but by a delicate balance of technical, aesthetic, and rhetorical elements. Therefore, photorealism is less a question of style and more a relational effect that arises from the interplay of image production, context, and viewer expectations. However, with the advancement of digital

technologies, such as AI, VR and AR, this effect could change. In the future, credibility and plausibility will not only be generated by photographic codes, but also by new modes of immersion and interaction. The relationship of trust between image producers and recipients remains crucial here — photorealism is a field of negotiation concerning credibility, representation and power in architectural image production, not merely a form of representation.

6. Conclusion

As assumed in the introduction, it becomes apparent that photorealism is to be understood as a discursive attribution that activates different criteria depending on the context. The analysis has shown that ‘photorealistic’ renderings derive their effect not from a uniform style, but from a complex balance of specific characteristics. For critics, this means that the focus should be less on finding a definitive definition of ‘photorealism’ and more on precisely identifying the factors that support or weaken its photographic effect.

This confirms the initial hypothesis that, in the absence of a shared vocabulary, criticism is vulnerable to the superficial acceptance of images as seemingly objective representations. It is only by differentiating between their individual modes of effect that renderings can be precisely located in their respective contexts and their communicative functions revealed.

Therefore, a sharpened critique should not problematise the mere existence of ‘photorealistic’ renderings, but rather reflect on their effects, especially with regard to credibility, representation, and responsibility. This will help to counteract their standardised use and determine their potential as a consciously employed means of communication.

The present image analysis was a first step towards systematically recording impact-related markers. Future research should refine and supplement these categories further, reviewing them in light of new technologies such as AI, VR and AR. Only then will a differentiated vocabulary emerge that provides a solid foundation for critiquing ‘photorealistic’ renderings.

Notes

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2. Urs, Hirschberg, „Rendering“, in *Atlas of Digital Architecture. Terminology, Concepts, Methods, Tools, Examples, Phenomena*, ed. Ludger Hovestadt, Urs Hirschberg, and Oliver Fritz (Basel: Birkhäuser, 2020), 257.
3. Lengyel and Schaerer, "Visualisation“, 287, 290, 295.
4. Lengyel and Schaerer, “Visualisation“, 288.
5. Lengyel and Schaerer, “Visualisation”, 290.
6. Hirschberg, “Rendering”, 257.
7. Anna Chiesorin, *In die Zukunft schauen: Rendern als Kulturtechnik* (Berlin: Kulturverlag Kadmos Berlin, 2023), 27–32.
.8 Chiesorin, *In die Zukunft schauen*, 37–38.
9. Willfried Baatz, *Geschichte der Fotografie: Ein Schnellkurs* (Köln: DuMont Buchverlag, 2008), 51.
10. Baatz, *Geschichte der Fotografie*, 52–53.
11. Pedro Gadanho, “Image-Making After Photoshop. Architecture and its Visual (Dis)contents“ in *Fiction and Fabrication. Photography of Architecture after the Digital Turn*, ed. Prdro Gadanho, Gloria Moure, and Sérgio Fazenda Rodrigues (München: Hirmer, 2019), 9.
.12 Horst Bredekamp, “Drehmomente - Merkmale Und Ansprüche Des Iconic Turn“ in *Iconic Turn. Die Neue Macht Der Bilder*, ed. Christa Maar and Hubert Burda (Köln: DuMont Literatur und Kunstverlag, 2004),18.
13. Bredekamp, “Drehmomente”, 19.
14. Hirschberg, “Rendering”, 257.
15. In the original German, Chiesorin calls it the “ Referenz-Kraft” of the image, which has been translated into English here as “referential power”. Chiesorin, *In die Zukunft schauen*, 39–40.
16. Chiesorin, *In die Zukunft schauen*, 8–10.
17. Lengyel and Schaerer, “Visualisation”, 288.
18. Chiesorin, *In die Zukunft schauen*, 211, 230.
19. Hirschberg, “Rendering”, 257, 272.
20. Lengyel and Schaerer, “Visualisation”, 293.
21. Tobias Scheidegger, *Flanieren in ArCAADia. Digitale Architekturvisualisierungen - Analyse Einer Unbeachteten Bildgattung*. (Vol. 19. Institut für Populäre Kulturen der Universität Zürich, 2009), 134.
22. Scheidegger, *Flanieren in ArCAADia*, 61–62.
23. Chiesorin, *In die Zukunft schauen*, 211.
24. Chiesorin, *In die Zukunft schauen*, 228–230.
25. Hubert Locher, Dominik Lengyel, Florian Henrich, Catherine Toulouse, Christoph Otterbeck, and Hans-Dieter Nägelke, *Architecture Transformed: Das Digitale Bild in Der Architektur von 1980-2020.* (Uni-Heidelberg.de, February 2023), 75, https://doi.org/10.11588/arthistoricum.1156.
26. Locher et al., *Architecture Transformed*, 105.
27. Locher et al., *Architecture Transformed*, 133.
28. Chiesorin, *In die Zukunft schauen*, 220–222.
29. Nicole E. Stöcklmayr, “Das Digitale Bild des Architekturentwurfs“ in *UNI*VERS. Junge Forschung in Wissenschaft Und Kunst,* ed. Gerald Bast, Florian Bettel, and Barbara Hollendonner (Vienna: Springer, 2010), 62.
30. Michele Nastatsi, "The City of Renderings. Photorealism, spectacle and abstraction in contemporary urban landscapes" in *Congreso internacional: Inter photo arch Interacciones*, ed R.A Alcolea, J. Tárrago-Mingo, (November 2016): 280, https://hdl.handle.net/10171/42355.
31. James Falconer “The Art of Rendering: Making the Case for Photorealistic Visualization.” *Architizer*, April 5, 2021. https://architizer.com/blog/inspiration/stories/the-art-of-rendering-photorealistic-visualization/.
32. In the original German version, Sik states: “Die Welt ist rosarot gezeichnet”. Translation by the author. Miroslav Šik and Astrid Staufer,n“Als wäre alles schon bestimmt” Interview by Andres Herzog. *Hochparterre: Zeitschrift Für Architektur Und Design*, 2017, 18, http://doi.org/10.5169/seals-731025.
33. Šik and Staufer, “Als wäre alles schon bestimmt”, 19.
34. The original German text reads „Die High-End-Fotorealistik ist die Königin der Visualisierung. Sie simuliert Materialien, Oberflächen und Beleuchtungsszenarien realitätsgetreu und liefert Kund:innen ein genaues Bild davon, wie Räume nach der Fertigstellung aussehen werden.“ Translation by the author. BauNetz Editorial Team, “Wie Raumplanungen Digital Zum Leben Erweckt Werden – Stories“, Baunetz Interior|Design. *BauNetz.* February 5, 2024, https://www.baunetz-id.de/stories/die-macht-der-visualisierung-21478526.
35. Trond Greve Andersen, *The Mir Way* (Mir Media, 2022), 55.
36. Andersen, *The Mir Way*, 76.
37. The original German text reads “Dabei werden Bilder zu vermeintlich Unvereinbarem zusammengebracht und neu arrangiert. Bildkonstruktionen, die wenig mit der Realität zu tun haben. Utopien im inhaltlichen Sinne, die in der Bildsprache jedoch meist fotografisch verfasst sind […]“. Translation by the author. Philipp Schaerer, “Gebaute Bilder“. *Domus*, no. 23 (January 2017): 158.
38. Susanna Moreira, “Rendering Styles: Different Techniques and How to Achieve Them.” *ArchDaily*. April 22, 2021, https://www.archdaily.com/960434/rendering-styles-different-techniques-and-how-to-achieve-them?ad_campaign=special-tag.
39. Susanna Moreira, “Who Are We Making Hyper-Realistic Renders For?” *ArchDaily*, May 3, 2021, https://www.archdaily.com/960849/who-are-we-making-hyper-realistic-renders-for?ad_campaign=special-tag.
40. Olivier Campagne in: BauNetz Campus, “Visualisierungskünstler: Realitätsnahe Bilderwelten (engl.) - Olivier Campagne”, *BauNetz*, February 5, 2024, audio, 10:30-13:33, https://baunetz-campus.podigee.io/41-new-episode.
41. Masahiro Mori, Karl MacDorman, and Norri Kageki. 2012. “The Uncanny Valley [from the Field]” in *IEEE Robotics & Automation Magazine* 19, no. 2 (2012): 98–100. https://doi.org/10.1109/mra.2012.2192811.
42. Matthew Maganga, “Architectural Rendering and the Slippery Slope of the Uncanny Valley” *ArchDaily*. April 18, 2021. https://www.archdaily.com/959563/architectural-rendering-and-the-slippery-slope-of-the-uncanny-valley?ad_campaign=special-tag.
43. Andersen, *The Mir Way*, 105.
44. Susan Piedmont-Palladino, “Into the Uncanny Valley”. *Places Journal*, April 2018, https://doi.org/10.22269/180428.
46. Schaerer, “Gebaute Bilder“, 154-159.

Image Captions

Fig.1: Examples of renderings that are described as “photorealistic” in scientific discourse. From top left to bottom right: schneider+schumacher, Hochhausentwurf Frankfurter Westhafen, 1997. Entasis Arkitekter, Carlsberg-Areal Kopenhagen, 2007. Herzog & de Meuron / Bloom Images (Visualisation), Elbphilharmonie Hamburg, 2007. léonwohlhage / Büro STEINLEIN (Visualisation), „The Seven“ Munich, 2012. Powerhouse Company / Atelier Oslo / Lundhagem / Mir (Visualisation), Rotterdam Library, 2022. ARTTOOLS (Visualisation), Maag-Areal Plus Zürich, 2001.
Fig.2: Examples of renderings that are described as “photorealistic” in practice-related discourse. From top left to bottom right: Palette CAD, Image Example, 2024. The Boundary, Television Centre The Ariel London, 2024. Philipp Schaerer, Bildbau No.5, 2007. Miroslav Šik, Kirche St. Josef Horgen, 2015. Heatherwick Studio, Vessel Public Landmark, 2016. Arrhov Frick / Olivier Campagne (Visualisation), Hybrid building Boken, 2022.

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Biography

Franziska Kopf studied architecture at the Nuremberg Institute of Technology, Georg Simon Ohm. After completing her studies, she worked as a research associate and adjunct lecturer at the institution from 2021 to 2023. Since then, she has continued to teach seminars for master’s students in architecture at the Nuremberg Institute of Technology, alongside her doctoral studies. During her earlier teaching period, she collaborated with fellow instructors and students in the seminar *Architectural Journalism* to develop an architecture and urban studies magazine. Currently, she is pursuing her doctoral degree at the Karlsruhe Institute of Technology within the Professorship of Architectural Communication (a*komm). Her research focuses on the role of photorealistic architectural visualisations in architectural communication. For her doctoral studies, the University Service for Family, Equality, and Occupational Health granted her a six-month startup scholarship. Since 2023, she has been a recipient of a scholarship from the Konrad Adenauer Foundation.

Drawing the Erased
Speculative Detailing in Modernist Heritage Interpretation

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Abstract

This research explores how architectural drawing, in the form of speculative detailing, might operate as a means of interpreting and reconstructing erased spatial narratives. The focus is on the Sava Center in Belgrade, a landmark of Yugoslav modernism, which underwent a long and complex process of privatization, followed by extensive reconstruction between 2020 and 2024. During this transformation, many of the building's original interior features and spatial sequences were altered or removed, resulting in the loss of design continuity and narrative complexity that once defined its architectural identity.

Starting from Marco Frascari's view of the architectural detail as a "tell-the-tale" element, where construction and narration converge, this research approaches the detail as both a material and epistemological device. It extends this notion through a post-tectonic perspective, where the fragment is not seen as incomplete, but as critically charged. Informed by Linda Nochlin's reflections on the fragmented and fetishized body in modern visual culture, the architectural detail is considered here not as a lost whole, but as a site where erasure, projection, and meaning are negotiated through speculative visual practices. In line with this, the methodology is not concerned with restoration or accuracy, but with critical interpretation. The speculative reconstructions, developed through the combination of the interpretive 3D modeling, analog sketching, and video, seek to explore the conditions of erasure and the decisions behind transformation of the architectural identity. In that sense, drawing becomes both a tool for inquiry and a medium for design-based reflection.

Rather than treating modernist heritage as a closed historical object, this research reflects on the potential of drawing as a mode of active engagement, one that can question, reframe, and re-narrate what has been chosen to be forgotten. In doing so, it contributes to a broader discourse on visual methods in architectural criticism, where the act of drawing holds the potential to trace and articulate the invisible.

Key words: architectural drawing, speculative detailing, modernist heritage, narrative reconstruction, media-based research.

1. Introduction

The Sava Center in Belgrade is regarded as one of the most emblematic architectural works of Yugoslav late modernism. Designed and built in the 1970s as the venue for the Conference on Security and Cooperation in Europe (CSCE), it embodied the political ambition of a non-aligned state seeking to inscribe itself into the geography of international diplomacy.[1] The complex evolved in several phases: the original congress building (Building A, 1976–1977), later complemented by the so-called Blue Hall and commercial annex (Building B), and finally the hotel block (Fig. 1). Each of these building phases and parts, carried distinct functional and symbolic roles, yet together they articulated the vision of a "city within the city"[2], a hybrid of politics, culture, and leisure. However, over time this complex narrative began to fracture. After decades of economic decline and neglect in the post-socialist transitional period, the Sava Center became the object of successive privatization attempts. Although the Sava Center was proclaimed a cultural monument in 2021[3], the subsequent interventions illustrate the fragile balance between legal protection and market-driven transformation. The final acquisition in 2020 lead to a comprehensive reconstruction, completed in 2024 (Fig. 2).[4] While this reconstruction ensured the building's continued use and technical modernization, it came at a considerable cost. Many of its original spatial narratives were erased, leaving its architectural identity fragmented. This research therefore asks how architects and critics might meaningfully engage with processes of heritage protection in which survival is guaranteed through transformation, but continuity and memory are compromised.

Fig. 1

The central proposition of this paper is that architectural drawing is not a neutral mode of documentation, but a tool of speculative inquiry. The act of drawing is here understood as a critical means of interpreting the altered conditions of space, an act of decoding layers of narratives concealed within both visible and invisible artifacts. In this sense, speculative detailing allows us to probe erased or transformed elements, to reassemble fragments, and to reconstruct narratives that no longer exist in the material form of the building. Speculation, in this context, does not imply arbitrariness. Rather, it designates a disciplined practice of mapping, layering, and projecting, in which drawing traces changes, identifies *Sonderdetail*[5], and formulates questions concerning how and why transformations occurred. The speculative drawing is thus less about recovering an original state than about producing knowledge from absence, loss, and discontinuity.

Within the scope of this paper, the focus is directed specifically to Building A (Fig. 1), the congress hall building as the first realized phase of the complex, where the inaugural CSCE conference was held. While the Blue Hall (Building B), the hotel (Building C), and their subsequent extensions represent significant aspects of the later evolution of the ensemble, they remain outside the scope of this inquiry and will be the subject of future research. By narrowing down to the earliest part of the Sava Center, the analysis seeks to explore how its transformations reveal broader questions of heritage, authorship, and adaptation, with the aim of outlining future directions for research into the complex as a whole.

Fig. 2

The aim of this paper, therefore, is not to reconstruct the Sava Center as it once was, nor to propose an alternative design, but rather to open a field of critical reflection on adaptation as practice. By redrawing what has been erased, the research investigates how speculative detailing can illuminate both the conditions of loss and the potential for new narratives. It aims at understanding what do these erasures reveal about the shifting value systems that govern architectural heritage today? How can speculative drawings yield insights into the broader cultural, political, and economic forces that shape adaptation? And to what extent can drawing itself become a form of heritage interpretation, one that negotiates between memory, absence, and possibility?

2. Theoretical framework

2.1 Detail as a Narrative Apparatus

For Frascari, the architectural detail is inseparable from the narrative translation of design ideas, which never exist in the vacuum of imagination but are simultaneously constructed and interpreted through the act of detailing. In his influential essay *The Tell-the-Tale Detail,* he distinguishes between “construing” (the definition of symbolic aspects) and “constructing” (their material realization)[6]. The design of detail therefore always involves a semiotic act, as the choice of materials and techniques becomes the connective tissue linking the micro and macro scales, matter and concept. In this sense, the detail functions as the “minimum unit of meaning”[7]. The process of building can be understood as the act of translation of drawn instructions into the constructed object. This process encompasses rules, procedures, materials, and systematizations through which the vision of space materializes. For Frascari, such processes are inseparable from the idea itself, since architectural conception emerges through “formativity“ as the act of its own making.[8] Architecture is thus defined simultaneously at the virtual representational and the actual constructive level.

Drawing in this sense becomes an operative process embodied through “architectural invoices”, mediators that enable action in arbitrary circumstances by separating and articulating expression.[9] However, architectural drawing is not self-evident. Only through decoding does it build the structure within which architecture is read as a culturally coded expression of knowledge with its own epistemological premises. In accordance with the “tell-the-tale” notion, the drawing becomes a narrative instrument based on relative facts, at once born from the formality of the idea and the intuition of the act of making. The deliberate tracing of lines thus becomes a form of “formative storytelling”, a prerequisite of construction, but never its copy. From this perspective, the line functions as a medium for establishing system of signification across scales. For Frascari, the translation of drawn lines into built lines is the crucial moment of imagination, as a moment in which the object is conceived, constructed, and built. While this standpoint anchors detail in the dialectic between construction and narration, more recent discourses expand this notion by shifting from tectonics to post-tectonics. This move reframes the notion of fragment from incomplete residue to a critically charged entity.

2.2 Fragment as Critical Entity

The term “tectonics” shares its etymological root with architecture and technology, indicating what Sekler describes as “the fundamental human activity of giving visible form to something new”.[10] Within this framework, the detail is understood as the key juncture between ultimate form and constructive necessity. On the other side, in working with existing buildings, post-tectonic perspectives reorient this view, as detail becomes less a technical adjustment and more a device for revealing the mode of existence of a building and the new regime of being produced through intervention.
Contemporary post-tectonic approaches, including assemblage theory,[11] thus shift the focus from the whole to the fragment, which is no longer understood as lack or remainder, but as a meaning-laden entity. In this framework, the design of detail is not a corrective technical operation, but a process of constant negotiation between the conventions that ensure stability and speculative deviations that open space for reinterpretation. This post-tectonic turn lays the foundation for reading the fragment as a site of meaning rather than deficiency. To deepen this perspective, an analogy can be drawn from the field of art criticism, particularly from Linda Nochlin’s reflections on the fragmented and fetishized body in modern visual culture.

2.3 Fragmentation of the Body of Architecture

A parallel with art criticism, especially in the work of Linda Nochlin, opens an additional dimension for understanding detail as fragment. Nochlin writes of fragmentation, fluidity, and the “vapourousness” of the modern city as symptoms of the loss of the “solidity of the urban body.”[12] This process, she observes, involves “the cut-off view of the body and the cropped picture-surface, a quality shared in the modern city by both the perceiver-constructor and the object of perception.”[13] The fragment thus becomes a “metaphor of modernity,”[14] emerging through operations of cutting and cropping that shape both the pictorial field and the perception of the body. Nochlin identifies two principal modes of interpretation: “total contingency,” in which the fragment represents an arbitrary slice of everyday flow, and “total determination,” in which cutting is understood as an authorial strategy and aesthetic decision. To these, she adds a third position, “play”, which introduces oscillation between accident and intention.[15] In each case, the fragment points to what remains unseen, what lies outside the frame.
This operation can be directly translated into architectural practice. In order to design, the architect must cut, zoom, and define a fragment, which is then further articulated through line. Resolution here is both a visual quality and a decision, a movement of intent that defines the field of intervention. Even seemingly arbitrary choices gain meaning in relation to the whole, opening space for interpretation in which the detail becomes a poetic artifact created through acts of cutting and cropping.
In the context of adaptive reuse (germ. *bauen im Bestand)*, this post-tectonic position can be understood as a mode of post-production of space. It is a type of working with the fragment as a transgressive form that destabilizes the modernist pursuit of wholeness. If, as Nochlin suggests, the postmodern body is necessarily a “body-in-pieces,” then the fragment in post-modern architecture is not the opposite of modernity, but one of its fundamental tropes, a sign of its continuous transformation. Designing detail can therefore be seen as a heuristic device, since it produces through processes of discovery, subtraction, and addition, what Frascari called the “poetics of artifacts”.[16] Detailing is not only about visualizing future states of existing buildings, but also about producing epistemological evidence of the interweaving of knowledge systems and cultural contexts. Acts of cutting, removing, or retaining detail thus become traces through which we can understand the meaning of fragmentation as practice and its potential to generate new knowledge that relate to other fields beyond architecture.

3. Methodological approach

3.1. Speculative detailing

Methodologically, the research is grounded in the concept of speculative detailing, which conceives of the architectural detail as a narrative and speculative construction, contrasting with its conventional role as technical construction drawing. Speculative detailing refers to a process in which drawing, modeling, and visual narration function as tools for reconstructing erased or transformed architectural space. However, speculation does not mean arbitrariness. On the contrary, it is a critical method by which the material and the imaginary are brought into dialogue.[17] Speculation in drawing lies not in generating new forms, but in generating new relations between removed and altered details, relations that disclose the defragmented narrative of the original. In this sense, speculative detailing positions drawing, but also other visual media, as an instrument of inquiry. It relies on its epistemological potential to act as both narrative and speculative medium in interpreting the controlled inferiority of context.[16] Speculation is therefore disciplined and directed toward the epistemic potential of drawing, toward what drawing can reveal about lost continuities and new fields of meaning in the post-intervention condition. This methodological standpoint finds concrete expression in three interrelated modes of representation practice: analog sketching, interpretive 3D modeling, and video-based narrative montage. Together, these modes form a research assemblage that foregrounds absence and erasure as sites of knowledge production, reading both removed and newly introduced materials and textures as carriers of specific value systems.

Building on this methodological definition, and in line with Nochlin’s three positions of *total contingency*, *total determination* and *play*, speculation in this work is understood less as a single procedure, but as a field structured by three interrelated perspectives. Contingent effects are read as unintended consequences of design decisions and new spatial configurations; determined cuts are understood as conscious strategies of adaptation and branding; and play names the space in which visual practices such as sketching, modeling and montage mediate between these two poles and reveal discrepancies in the narrative that stem from specific economic, technical or political conditions. Speculative detailing therefore does not function as the arbitrary projection of new forms, but as a procedure that connects material traces with their erased reflections, making visible not only what has disappeared but also the decision-making dynamics that produced that disappearance. At the same time, speculation remains open to the unexpected. It does not operate as a closed system of verification, but as a position to observe what escapes control in processes of adaptation.

3.2. Speculative detailing through drawing

In the case of the Sava Center, the reconstruction resulted in the erasure of certain original spatial narratives, narratives that were not recognized as valuable. Photographs of the current post-renovation condition reveal an uncanny sense of simultaneous familiarity and estrangement. (Fig. 2) This ambivalence is particularly evident in the interiors but also manifests in the exterior, precisely through the absence or transformation of specific elements. To address this, the research mobilized drawing in three sequential yet overlapping steps:

Analog sketches: Hand drawing functioned as a speculative act in which the pencil became a “scalpel” to dissect fragments, highlight relations, and introduce interpretive layers as a foundation for digital

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modeling.[18] Early archival sketches of interiors, sections, and perspectives were revisited, with a focus on identifying *Sonderdetails* as points of intensity or disruption. These sketches were then reworked through overlays, producing new composite images that deconstructed the past image of the future building, only to subject it again to further reinterpretation. (Fig. 3) A crucial outcome of this step was the mapping of elements central to the building's original spatial character. Among them were the color scheme (orange, green, and blue) that defined the visual identity of the Center, from the earliest sketches of the architect Stojan Maksimović to the final marketing material and signage. The removal of this palette in favor of a neutralized scheme during reconstruction marked a break in continuity, severing the link to the building's symbolic narrative. One further element present in the original drawings was the representational technique employed by Šaletić regarding the people and vegetation. People figures were depicted as linear silhouettes of identical height and size, genderless, and without detail, often grouped together to suggest possible modes of spatial use. Vegetation was also included, reinforcing the significance of the interior landscape of the building within the overall concept, as the trees and water surfaces appeared within overall structural arrangement.[19]

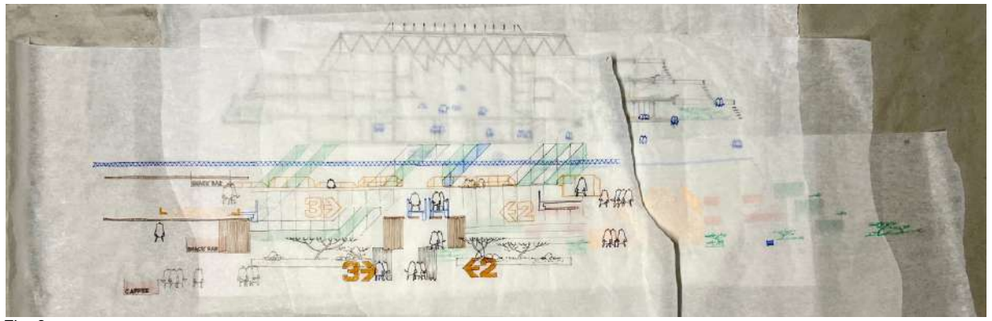

Fig. 3

Interpretive 3D modeling: Digital models enabled the tracing of lost spatial relations, not for precise restitution, but as instruments for mapping gaps and erosions in architectural continuity (Fig. 4). Through digitizing archival drawings, publications and photographs tracing, certain defining elements (handrails, structural supports, signage, tapestries, and material treatments) were reconstructed to examine their role in producing the ambient character of the architectural space. The modeling process emphasized not accuracy, but relational mapping, exposing how details operated within broader constellations of meaning. It revealed how the repetition, variation, or omission of various details structured spatial narratives.

Fig. 4

Video and narrative montage: The third method introduced temporality into the 3D environment of the model. By combining frames, drawings, and models, fragments were assembled into new sequences, suggesting potential narratives in place of lost continuities. This montage created a form of visual essay in which details entered contingent relations and overlays, producing temporal fragments of the erased narrative and early conceived idea of space (Fig. 5). This was achieved through the combination of elements, particularly by translating the silhouettes and vegetation from Šaletić's drawings into dissected detail fragments. Nochlin's category of *play* as the oscillation between contingency and determination, proved particularly relevant here. The montage foregrounded both accident and authorial intention in shaping new interpretive possibilities.

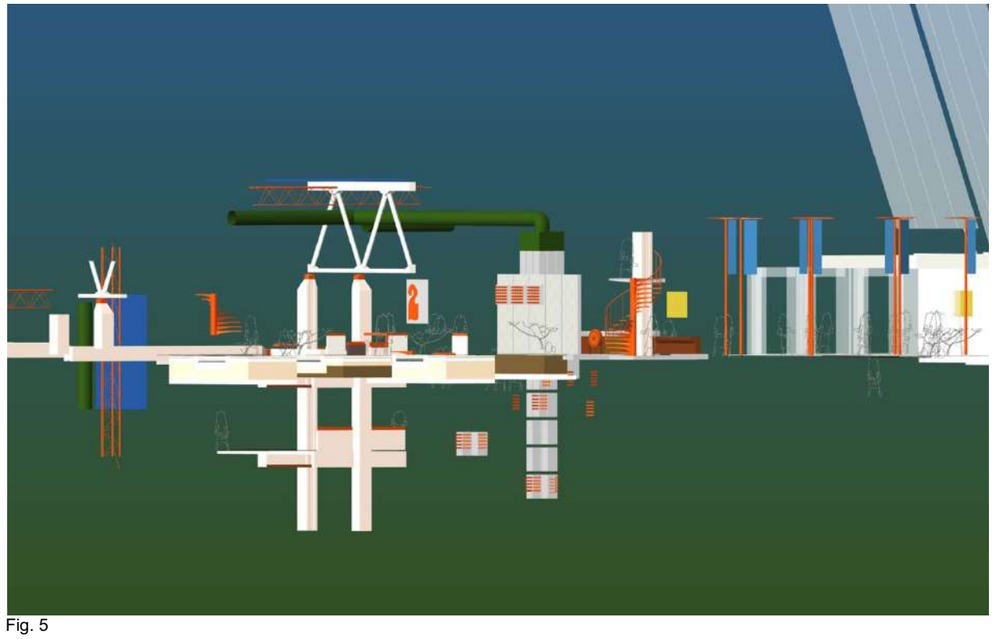

Fig. 5

By operating across different media, the methodology positions the act of detailing not as a means of restitution, but as a speculative practice that produces knowledge from erasure. These media are applied both to archival representations and to the current post-reconstruction condition, so that speculative detailing can address not only what has been removed, but also how economic, technical and political decisions become legible in the transformed state of the building. This repositions the view of the detail as a cutting instrument for understanding the spatial narrative, approaching the fragments of what is left out of frame as critically charged. The following discussion builds on this theoretical resonance by examining three micro-studies from Building A of the Sava Center, where erased or altered details emerge as sites of negotiation between memory, transformation, and identity.

4. Discussion

Once a building is constructed, the technical drawings of details quickly lose significance; when original elements are removed or transformed, restitution is no longer possible. It is precisely here that speculative detailing assumes its role as an epistemological experiment: it offers a heuristic framework for understanding what no longer exists in its original form, while also raising questions about why it was erased, who made these decisions, and what such losses mean for the architectural identity of the building. This standpoint resonates with Frascari's conception of detail as a narrative instrument, Nochlin's interpretation of the fragment as a trope of modernity, and post-tectonic approaches that frame the fragment as a critically charged entity. Methodologically, it has been articulated through sketching, 3D modeling, and montage, where each medium introduces a different interpretive lens: sketch as intuition and heuristics, the digital model as relational mapping, and montage as temporal narrative. In line with this, three erased or transformed details from Building A of the Sava Center are examined as micro-studies. These case studies demonstrate how speculative drawing can reveal the paradox of preservation through transformation.

Entrance Lobby (the experience of the public). The removal of recognizable elements that once defined the lobby, such as ventilation units (mixed-use clusters for sound, lights and ventilation), long rounded wooden reception desk, rubber and vinyl reflective flooring, and the original signage font and symbols, produced a space of emptiness and a loss of narrative clarity at the threshold of the building. The visible language of technical installations, especially the ventilation units, as a legible component of the interior identity, has been replaced with new hanging lighting fixtures. Furthermore, with the removal of the massive wooden reception desk and the substitution of the ventilation clusters, the first encounter with the building was fundamentally altered. The newly introduced materials articulate a different visual language, one that clashes with what was retained (world clock installation on the wall) and transforms the lobby from a vibrant area into a visually flattened transitional zone.
As a result of these interventions, a series of contingent effects become key to how the entrance is now experienced. The neutralization of color and the removal of technical elements, furniture and parts of the original signage system, particularly the large hall numbers in the distinctive Sava Center typeface, cause the world clock and the map to emerge as dominant visual anchors, as other articulating features have been suppressed and the new fixtures remain subtle in relation to the scale of the space. The emptied lobby zones have been refilled with seating that appears underscaled, while the elimination of the spiral staircase and the change in floor materiality merge former lobby and transit areas, weakening the earlier idea of streets and squares within the city under the glass canopy. From the main hall, one now moves into galleries and corridors lined with reflective glass panels that complicate orientation, so that ventilation elements on the walls, the orange hydrants and scattered artworks unintentionally become primary orientation points. These incidental encounters with remaining details turn into contingent discoveries through which fragments of the building's history resurface, because of deliberate design decisions.

The Stream (an interior landscape). One of the central ideas in the design of Building A was to create the impression of a "city within the city." The stream, together with the interior planting, was a key element of this ecological interior landscape[19] Although technical issues with drainage complicated its maintenance, later interventions during the late 1980s respected its position, even as commercial additions were made. The most recent reconstruction, however, erased the stream entirely, thereby changing the original ecological iconography of the interior.
This removal reveals a shift in how ecological identity is articulated in the renewed scenario. Whereas the original design established environmental meaning through the spatial and sensorial presence of water and interior gardens, the current rebranding relocates ecological value to other domains such as solar panels, façade performance and normative certifications. The elimination of the stream thus marks not only the disappearance of a spatial narrative, but also the substitution of the experiential dimension of ecological imagery with sustainability metrics, while at the same time enabling the expansion of commercial floor area within the building.

Entrance Plaque (institutional memory). From the beginning, the Sava Center was a construction success, completed in an impressively short time.[20] In the vestibule of the former main entrance to the Building A, on the only concrete wall on the right, stood a brass plaque inscribed with Tito's handwritten message of gratitude to the builders and recognition of the project's importance for the people of Yugoslavia. This plaque, even after Tito's bust had been removed from the interior and the dissolution of Yugoslavia, continued to bear witness to the political role and public status of the building and stayed until the very beginning of the renovation works at the same place. Its replacement with a reflective panel could be understood as the erasure of institutional memory in favor of a neutral corporate aesthetic. Similarly, the five-flag masts once located near the service entrance, symbols of diplomatic and political events, especially during the Non-Aligned Summit, were removed in the renovation. What remains, altered, is the obelisk along the former Brotherhood and Unity Highway, now carrying the new orange logo of the Center, signaling its rebranded corporate identity.
This intervention not only removed an object but also interrupted a specific narrative trajectory of the original entrance sequence. Namely, the new Congress entrance now operates as a controlled threshold with restricted public access. In the new configuration, the spatial narrative that once guided visitors through a sequence of meaning has been fragmented. Previously, the narrative started with the exterior obelisk and the flag terrace, transitioning to the commercial entrance with the brass plaque acknowledging the builders and the effort behind the construction, then to the large-scale model of the complex, and finally into the monumental main hall with the world clock. The omission of the plaque interrupts this link, intentionally or not, eliminating the moment in which the act of building and its agents were explicitly acknowledged. The renovated state positions the scale of what was built in front of who built it. In this sense, the nostalgic branding narrative is redirected toward a more neutral architectural artifact (the model of the building) while the detail bearing information on its history is emptied. The remembrance of the object's cultural history is aligned with elements that comply with the building's new rebranded image. Thus the removal of the plaque, the disappearance of the flag masts and the

rebranding of the obelisk operate as a series of contingent moves that together generate an altered communicative building image towards the city, shifting its appearance from institutional representation to a corporate identity.
Building on that, in the rebranded Sava Center what becomes legible is not exclusively the transformation of material and narrative layers, but also the establishment of a new system of values that fundamentally redefines the identity of the building through the sequencing of the details. Discourses of sustainability, energy efficiency and technological modernization operate as key legitimizing frameworks for the reconstruction, while a corporate aesthetic and the multifunctional organization of space introduce the standards of global congress and business centers. At the same time, the selective evocation of the building's historical role, nostalgia for the "historical witness" and the partial retention of recognizable interior elements function as a mechanism of symbolic continuity now adjusted to market positioning. Slogans such as "Simply magnificent" convey the emotional capital of the past, while the maxim "Leading by example" mobilizes an indeterminate discourse of ethics and social responsibility that, in practice, signals a transformation of the regime of use and a shift from public to private ownership (Sava Centar, "O nama"). This change undeniably enables the building's survival in an altered economic and institutional context, but at the same time conceptually and physically redefines it. Within this framework, speculative detailing treats the new materiality and surface treatments as carriers of contemporary values, and situates them within the broader process through which the identity of the Sava Center is today actively reconstituted.

Observed together, these micro-analyses confirm that speculative drawing can function as an optic through which detail is read not as derivative of the whole, but as an autonomous entity capable of generating emergent meanings. In this sense, the loss of material traces does not mark the end of knowledge, but an opportunity, as through relations, overlays, and interpretations, new readings emerge. Emptied or altered sites of communication become *Sonderdetails*, points where construction, narration and representation overlap and create the nodes of meaning of different degrees of contingency. Such moments of unplanned legibility can be understood as forms of contingency in Nochlin's sense, accidental effects of deliberate decisions that speculative detailing can register as narrative discontinuity through which the post-reconstruction identity of the modernist fragment is renegotiated. As previously argued, post-tectonic drawing "transcends its technical function and becomes a model for reading the whole without the whole, where fragments are connected not by hierarchy, but by relations".[21]These findings return us to the broader context of heritage interpretation. If speculative detailing enables us to read erasure as a site of knowledge production, then the question is no longer only about what has been lost, but how such loss reshapes the cultural, political, and epistemological frameworks of adaptation.

5. Conclusion

Speculative drawing demonstrates that relations are sufficient to generate knowledge by other means, not as verification of authenticity *per se*, but as a critical reading of erasure. The analysis indicates that drawing has the capacity to act as both a generative and analytical device, mediating between knowledge production and the cultural frameworks of architectural practice. The analysis of the Sava Center illustrates that preservation through transformation always carries ambiguity. Reconstruction ensures the building's continued use, yet the price of such longevity is often the erasure of identity and the loss of layered narratives. In this sense, *bauen im Bestand* should not be viewed merely as a technical practice of extending functionality, but as a critical negotiation between past meanings and new values. Here, speculative drawing, as a method of interpretation, helps to understand the narratives and eventually approach erasures, displacements, and new possibilities with more caution and respect for the existing structure. If we return to Nochlin, the very operations of cutting and cropping become the oscillating decisions that shape the perception of the body or, in this case, of existing architecture, underlining once again that fragmentation is a metaphor of modernity. In this expanded perspective, speculative detailing emerges as a method that operates between intention and chance, between determined interventions and contingent effects, allowing the post-reconstruction condition to be read through the dynamics of the visible and the invisible, of what is retained and what is transformed. What disappears from the frame is not silent, it only continues to further structure the conditions of perception and meaning of the object.

In the context of contemporary heritage policies, particularly the concept of living heritage, adaptation should be understood not solely as technical renewal but as cultural and epistemological practice. Details are never merely technical elements or drawings, since they possess narrative functions that resonate with other parts of the building and, by extension, with broader cultural imaginaries. From this perspective, heritage is not a fixed artifact, but a process that lives through reinterpretations and transformations. While the visual work in this paper has focused primarily on detail fragments and traces of erasure, the same procedure could be further extended to a more systematic decoding of the new

post-intervention configurations. This raises some further pressing questions: How can one balance identity of the structure with the continuity of the usage? How can adaptation prolong the life of a building without influencing its original narrative richness? The research presented here suggests that speculative drawing may serve as a mediator in the negotiation process with the existing, being an instrument that allows heritage to be read not only through what has been preserved, but equally through what has been lost. In doing so, it reframes absence itself as a productive category, one that enables us to understand adaptation as a practice of cultural criticism and epistemological reflection.

Notes

1. Milan Popović, *Sava Centar: Hrabrost i avantura* (Beograd: Socijalna misao, 2007), 15.
2. *Jugoslovenska revija: Specijalno izdanje – Sava centar u Beogradu (Beograd: Sava centar, n.d.)*
3. "Odluka o utvrđivanju 'Sava Centra' u Beogradu za spomenik kulture," *Službeni glasnik RS*, no. 36/2021, http://demo.paragraf.rs/demo/combined/Old/t/t2021_04/SG_036_2021_006.htm.
4. Delta Real Estate, "Obnovom Plave dvorane završena rekonstrukcija Sava Centra," accessed September 4, 2025, https://deltarealestate.rs/mixed-use/obnovom-plave-dvorane-zavrsena-rekonstrukcija-sava-centra/
5. *Sonderdetail* is a German term for specific details or the positions in the project documentation, here extended to particular points of rupture or intensity.
6. Marco Frascari, "The Tell-The-Tale Detail," *VIA* 7 (1984): 22–37.
7. Carlo Rotti and Matthew Claudel, "The Rise of the 'Invisible' Detail: Ubiquitous Computing and the 'Minimum Meaningful'," *Architectural Design* (2014): 86–91.
8. Marco Frascari, *Eleven Exercises in the Art of Architectural Drawing: Slow Food for the Architect's Imagination*(Abingdon: Routledge, 2011), 15.
9. Ibid.
10. Eduard F. Sekler, "Structure, Construction, Tectonics," in *Structure in Art and Science*, ed. György Kepes (New York: Braziller, 1965), 89–95.
11. Miloš Kostić, "Post-Tectonic Translations: Decoding Poetics of Architectural Detail," *Serbian Architectural Journal* 12, no. 3 (January 2022): 85–101
12. Linda Nochlin, *On the Body: The Fragment as a Metaphor* (London: Themes & Hudson Ltd, 2024), 35.
13. Ibid.
14. Ibid.
15. Ibid. 53.
16. Frascari, Eleven Exercises, 70.
17. Peter Emmons, "Size Matters: Virtual Scale and Bodily Imagination in Architectural Drawing," *Architectural Research Quarterly* 9 (2005): 227–235.
18. Frascari, *Eleven Exercises*, 138.
19. Such strategies of abstraction, where bodies and natural forms become reduced to minimal graphic signs, resonate with Colomina's observation that architectural drawings construct not only space but also particular imaginaries of inhabitation. Beatriz Colomina and Mark Wigley, *Are We Human: Notes on an Archeology of Design* (Zürich: Lars Müller Publishers, 2016).
20. Jugoslovenska revija: Sava centar.
21. Ibid.

Image Captions

Fig.1 Left: Cover page of the special issue of *Jugoslovenska revija* on the planned Sava Center. Source: Author's archive. Right: Photographs of the building prior to reconstruction, 2015–2019. source: author's archive.
Fig.2 View of Building A after reconstruction, illustrating the effects of spatial erasure and material replacement. source: author's archive.
Fig.3 Hand drawing overlay analysis of Šaletić's original sketches, mapping key spatial elements as speculative fragments of narrative continuity. source: author.
Fig.4 Interpretive 3D model of a congress hall detail, developed for speculative reconstructions, highlighting the role of fragmentary translation. source: author.
Fig.5 Still from narrative video montage, combining fragments of drawings and models into new temporal sequences. source: author.

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Biography

Miloš Kostić is an architect and researcher specializing in architectural design, tectonic practice, and critical heritage studies. He holds a PhD in Architecture from the University of Belgrade, with a dissertation titled *Architectural Detail in Contemporary Tectonic Practice: Methodological-Interpretive Model* (2021), where he worked from 2017-2022 at the Department of Architecture. His research focuses on architectural details as material and symbolic narratives, particularly in modernist buildings in Belgrade. Kostić uses 3D modeling, spatial storytelling, and media-based research to explore architectural heritage and design at both micro and macro scales. His work has been presented at international conferences, and he has contributed to curriculum development in architecture and heritage. In 2023, he received the HERSUS Award for Innovative Educators. Since 2022, he has been professionally engaged in Munich, Germany.

Lines in Dimensions
Models, Displays and Wireframe Visualizations

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Abstract

Wireframe display mode is a fundamental feature of computer-aided design (CAD) softwares. The wireframe view makes three-dimensional models appear transparent on screens by making visible only the edges of their geometry. Yet, it is often reduced to a mere toggle between shaded and outline views, rendering it largely overlooked as a byproduct of CAD softwares. This narrow view obscures both its importance in the thinking/seeing/drawing of dimensions in architectural design and denies its longer cultural history.

This article examines the historical and conceptual intertwining of the wireframe with architectural drawing. It pursues two lines of inquiry. To begin with, I position the wireframe as a convention of architectural representation to trace its emergences, uses, and graphic logics. Then, I use the wireframe as a retroactive lens for a comparative analysis. This develops a critical reading of earlier visual experiments at the intersection of computer graphics, visual arts, and architecture. Applying a *digital* lens to earlier forms of representation, this method aims to discuss both technological transitions and appropriations of graphic conventions to build an archeological understanding of the wireframe in architectural representation.

The argumentation unfolds in three parts. First, I examine how wireframe visualizations emerged and spread in the 1970s–1980s as conventions of digital representation. Second, I reinterpret historical drawings as modeling practices, situating the wireframe within longer traditions of perspective, measurement, and abstraction that predate computer graphics. Third, through digital reconstruction, I test the tensions between model, view, and display mode, opening practical experimentation as a form of critical inquiry. By developing, testing and reflecting on this interpretative method, the paper highlights the agency of wireframe in shaping past and present architectural design practices. It frames display modes as liminal sites to approach digital representation not merely as an image, but as a larger mode of thinking/seeing/drawing.

Key words: wireframe, computer visualization, drawing, convention, retroactive reading.

1. Introduction

1.1. Problematization and Method: Using Wireframe as a Retroactive Lens

Most current computer-aided-design (CAD) and rendering softwares have a wireframe display mode.[1] The wireframe view makes three-dimensional models appear transparent on screens by making visible only the edges of their geometry. Architects regularly use this “see-through” appearance in their modeling and design work, because the hiding of surfaces and the showing of edges allows them to better see and control the volumes that they manipulate. Wireframe, which was used in the first half of the twentieth century to describe an object made with a *wire frame*—such as glasses—was later reused and introduced with its current meaning in computer graphics in the early 1960s by information scientists.[2] Ambiguous, wireframe entangles a material origin, a graphical concept and an interchangeable display mode. Yet, it is often reduced to a mere toggle between shaded and outline views, rendering it largely overlooked as a byproduct of CAD softwares. This narrow view obscures both its importance in the thinking/seeing/drawing of dimensions in architectural design and denies its longer cultural history.

Architectural historian James Ackerman has investigated how modes of representation in architectural drawing have been established through time.[3] He argued that architectural drawing is an invention that resisted many changes because it was codified with graphic conventions of projection, such as the plan, elevation, or perspective. Conventions, he explained, are not drafting styles or technics, but elements of a shared language between the draftsman and the viewer. They are recognizable, universal, and fixed. Given that a convention is so rapidly shared and spread, it “almost has no history.” [4] Rather, one can understand its nature simply by looking at how and why it originated and evolved over time. Using drawings as evidence, Ackerman visually compared the appropriation of graphic conventions, asking to what effect they were used, mastered, and interpreted. Building on this method, I position the wireframe as a convention of architectural representation and use it as a retroactive lens for comparative analysis. This reframing has two major implications. First, it allows any sketch, model, or image to be read as an architectural drawing. Shifting the norm from a visual regime to a system of graphic representation, I analyze these artifacts through their projections, aesthetics, and spatial values. Second, the method generates a deliberate anachronism which allows for the revelation of cultural aspects that linear chronological order obscures. By applying a digital lens to earlier forms of representation, I use the capacities of computer manipulation—rotating objects in space or interchanging model and image—to provide a critical perspective on the *grapho-logics* of wireframe visualizations. The argumentation unfolds in three parts. First, I examine how wireframe visualizations emerged and spread in the 1970s–1980s as conventions of digital representation. Second, I reinterpret historical drawings as modeling practices, situating the wireframe within longer traditions of perspective, measurement, and abstraction that predate computer graphics. Third, through digital reconstruction, I test the tensions between model, view, and display mode, opening practical experimentation as a form of critical inquiry. This analysis brings together visual experiments at the intersection of computer graphics, visual arts, and architecture to highlight different technics and key transitional moments of the thinking/seeing/drawing processes. I show that Ivan Sutherland’s digital survey of a Volkswagen Beetle, Paolo Ucello’s and Eugène Viollet-le-Duc’s inks on paper as well as Josef Albers’ mural of *Structural Constellations* reflect shared concerns and can be interpreted as part of a common visual culture. To test my methodological reading, I selected case studies based on a simple but decisive criterion: they wireframe-like appearance enables a comparative visual analysis. I also chose drawings by canonical figures in architecture to propose an interpretation different from that for which their work is generally known. Uccello’s and Viollet-le-Duc’s drawings’ use of similar technics in different periods let me put the technical aspects aside and focus on their purposes, asking how, and to what extent, they constitute systematizations of a modeling process? Similarly, I read Albers’ artworks as axonometric views of a model, one that I can reconstruct. By developing, testing and reflecting on the limit of the proposed method, this paper ultimately aims to bring awareness to the agency of wireframe and of any display modes in the contemporary production of architectural imaging. Display modes, I argue, are more than predefined software parameters; they moderate how designers interact with, see, and present their projects. By acknowledging their liminal position, I invite the contemporary designer to see display modes as a research avenue to historically and critically investigate what place digital technics and tools occupy in relation to inherited traditions of architectural representation.

1.2. Approach: Accommodating Continuity in Digital Transition

From the early 1990s, the growing accessibility of the personal computer and the invention of the World Wide Web facilitated the development of CAD in architecture. This *digital turn was* notoriously framed by eminent architectural historians such as Mario Carpo as a social, economic, and aesthetic revolution.[5] Central to the conversation was the claim that technologies such as Building Information Modeling (BIM) narrowed the Albertian gap between drawing and building. For instance, architect and

theorist Bernard Cache demonstrated how Computer Numerical Control machines (CNC) introduced the possibility of not only designing, but mass-fabricating an infinity of formal variations at the same cost.[6] *Digital* became the trademark for any architecture that was not only designed with computer aids, but that would *look* digital. In the mid-1990s, architects exploited the new and exciting computational jargon to generate formal architectural metaphors, incorporating concepts such as the curvilinear principle, infinity, and fluidity.[7] Today the historiography has largely exhausted discussions of computers as tools for designing and generating new forms; the discussion must now move beyond this frame. As Olga Touloumi and Theodora Vardouli noted in their 2021 book *Computer Architectures*, attention should instead turn to histories of banality and failure—accounts that reveal continuity rather than rupture by moving between longue durée cultural frameworks and situated practices.[8] Following this perspective, I position the wireframe as a liminal site that not only marks the transition from analog to digital, but emerges from their blending. Before being able to design forms, practicing architects firstly used computers to produce images and drawings. Faster than manual drawing, computers generated visualizations, immersive points of view from the model, and fascinating-colored renderings. At this time, the dry lines of wireframe visualizations were visual remnants of an obsolete period—one where computers were in laboratories, not in design studios. Looking back on pioneer wireframe experiments, architects such as educator William J. Mitchell, who significantly wrote to support the integration of computational practices in architecture, briefly pointed out their visual similarities to earlier forms of perspectival drawings.[9] Yet, these observations were never theorized in a wider critical discourse of representation. By focusing only on visual comparison, such remarks tend to reassert well-established genealogies and neglect the technical and material frameworks within which such practices were embedded. It is on this claim that the 2020 book *Design Technics: Archaeologies of Architectural Practice*, co-edited by architectural historian Zeynep Çelik Alexander and architect and theorist John May, examined histories of architectural practices through the lens of technics.[10] Going further, May even invalidated terminologies like "computer drawings," because they are technically impossible. As drawings are part of an orthographic and mechanical practice of representation, he argued that they differ from the later electronic signals sent on screens that constituted *images* of a real-time model.[11] While I agree that technics should be incorporated in the historical analysis of computer visualizations, this perspective reinscribes a rhetoric of rupture, ultimately reproducing the very framework it seeks to challenge. By positioning the wireframe as a liminal object, I propose to escape this dichotomy, revealing ambiguities left aside by historiography. Avoiding the establishment of subcategories, I rather understand drawing as a culture, one which incorporates nuances and particular cases. The field of Science and Technology Studies (STS) falls within this scope. Using methods that media theorist Jussi Parikka defined as media archaeologies, it offers an alternative way to reflect on established categories of technological and historical change.[12] Drawing on the steampunk aesthetic and on art installations that combine media from different periods, such as *Story Teller* (1999) by Tom Jennings, media archaeologies "excavate" past or obsolete technologies to better understand current media. By treating time as "folded", this approach challenges technological assumptions and the myth of linear progress. Film historian Thomas Elsaesser argued that since the *digital* is so immersive, it should not be approached with dichotomies of "before" and "after" or "with" and "without." Instead, it is the opportunity to reflect on notions of emergence, transformation, and appropriation of media.[13] Discussing both technological transitions and appropriation of graphic conventions, this paper aims to build an archeological understanding of the notion of wireframe in architectural representation.

2. Emergence of Car (Wire)frames: Byproduct, Convention and Display Mode

In this first section, I establish the foundations for understanding wireframe visualization by examining its technical production, uses, and historical emergence. I ask: how to produce it, why did it become useful, and how did it evolve over time?

2.1. Connecting the Dots: Ivan Sutherland's Digital Beetle and the Wireframe View

Among the most iconic images of the early period of computer graphics, are the three-dimensional models of two symbols of global culture: the Melitta Teapot and the Volkswagen Beetle. Both were developed as part of the pioneering computer graphics program at the University of Utah. Founded in 1965, the program has drawn the attention of historians and media-studies scholars such as Jacob Gaboury, who view it as a formative moment in the field's prehistory.[14] Ivan Sutherland taught at the Utah School of Computing in the 1970s. Trained in electrical engineering, he became renowned for developing Sketchpad for his PhD at MIT in 1963, one of the first graphical user-interface drawing systems. With his students, Sutherland undertook the project of modeling and rendering the now-infamous car of his wife Marsha (Fig. 1). To translate the vehicle into a three-dimensional model, they surveyed it by triangulation. By painting a constellation of dots on the car body shell, they were able to measure flat polygons, through x, y, and z coordinates. As former student and later Utah faculty member Robert McDermott recalls, each point was measured with yardsticks and manually entered in

the program as text data.[15] It is only in the program that each polygon was generated as a separate surface. The project produced two images: a wireframe visualization showing the model as a set of lines, and a shaded version rendering each surface as opaque. The simulation of depth was achieved by variations in the level of greyscale of the surfaces with a flat-shading algorithm. The wireframe was an intermediate stage of this rendering process, but it made the underlying surveying work visible. Although a byproduct, it became an operative tool. Wireframe view allowed students to see and work with their model in ways the rendering could not. It enabled them to visualize the complex geometry and take measurements from it.

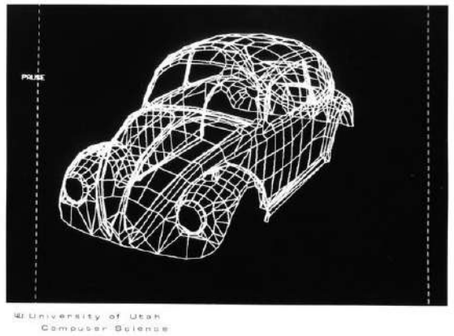

Fig. 1

2.2. Exhibiting the *Digital*: Computer-Aided-Drawing and the Wireframe Convention

When visitors entered the 1978 exhibition *CAO: Conception Assistée par Ordinateur* at Centre Pompidou in Paris, wireframe visualizations were impossible to miss. As the first exhibition on this topic at the newly opened institution, it was organized by the department of Centre de Création Industrielle (CCI) in collaboration with the Atelier de Recherches Techniques Avancées (ARTA), whose mission was to research and provide modern equipment to artists and designers.[16] Designed to show how computer-aided tools were reshaping many sectors of industrial production, the exhibition funded by the Ministry of Industry, brought together installations from major French companies such as Renault and SNCF.[17] At a time when computers were transitioning from mainframes to early minicomputers and graphic terminals, *CAO* presented no fully computer-made products; instead, it emphasized the processes behind them. Plotters from Benson were displayed while tracing line drawings. A whole car body shell was suspended to the ceiling. Wireframe printouts were exhibited as technical drawings to reveal the skeletal geometry of the vehicle. Prototype train seats were shown as playful models, while their wireframe visualization was enigmatically displayed on the cover of the exhibition catalog. The wireframe was the central convention of new digital aids. Rather than focusing on the visual aspect of the product, it showed its skeleton. Its clean lines signaled efficiency, sobriety, and the promise of a seamless digital world. I claim that this aesthetic was pivotal to the exhibition. Whether printed, displayed on screens, or built as a physical model, the wireframe was shown as a structure that could take any matter: ink, light, and even plastic. Using lines as a graphic convention was a way of introducing new, yet comprehensible images. By echoing long-standing traditions used to measure and depict objects in space—such as perspective drawing—computer-aided design appeared both innovative and familiar. I argue that exhibitions such as *CAO* marked a cultural milestone by helping define what the *digital* looked like and what it could mean. It presented the wireframe not only as a technical tool but as a convention of emerging design practices.

2.3. The Hidden-Line Problem: Computer Scientists, Artists and Designers

At the turn of the 1980s, computers were still technically limited. Because they were easy—and cheap—to produce, wireframe visualizations opened digital experimentation to many designers. Founded in 1968, the England based Computer Arts Society regularly published line-based computer drawings.[18] Exploring the capacities of graphic programs with commands such as *move*, *copy*, *rotation* and *revolution*, the line became an object to play with, opening many spatial configurations. In Paris, ARTA collaborated with artists—such as Vera Molnar—to produce computer programs and plotter drawings, while providing a platform to organize meetings and exhibitions on emerging computer art. For artists, the wireframe offered a generative graphic language. For computer-graphics researchers, however, it posed a problem. The visual ambiguity of its intersecting lines obscured the perception of the volume: they wanted to see a body, not a skeleton. In his 1966 article *Ten Unsolved Problems in Computer Graphics*, Sutherland described this situation as the "hidden-line problem." Looking to simulate a sense of human vision in the machine, the challenge was to make objects appear opaque

on screen, by automatically hiding their back edges.[19] Over the next two decades, researchers tested numerous algorithms to solve this challenge which was pivotal to the production of realistic images and animations.[20] By the mid-1980s, early CAD systems integrated this issue through a toggle of display modes, with *viewpoint* and *hide* commands. Through the generalization of CAD in design practices in the 1990s, wireframe visualizations ceased to be spectacular images and integrated larger workflows. For example, the 1992 AutoCAD Release 10 implemented *3DFace* to see 3D object as two-dimensional solids. Its reference manual reads: "The 3DFace command provides a means of controlling which edges of a 3D Face will be visible. You can describe complex, three-dimensional polygons using multiple 3D Faces and tell AutoCAD which edges you want to be drawn. This allows more accurate modeling of objects with holes, such as walls with windows."[21]

These stories illustrate how lines in dimension, conventionally used to depict objects in space, became instrumental in translating a geometry from a physical to a virtual environment. The period from 1960 to 1990 marks a pivotal moment in which the wireframe emerged as a byproduct of computer visualization and solidified as a convention of computer-aided representation. Drawing on established conventions of perspective, the wireframe encapsulates both continuity and transformation through a new process of computer imaging.

3. Archeology of Wireframe Visions: Drawing and Modeling Experiments
In this second section, I read two historical drawings as wireframe visualizations by arguing that they perform a modeling process.

3.1. Seeing Through Solids: Renaissance Visualizations and the Perspective Drawing
Art historian Michael Baxandall argued in his seminal book *Painting and Experience in Fifteenth Century Italy* that Quattrocento painters were conditioned by two forms of visualization experiences: their own perception and the one shared by the culture of the period. Rather than celebrating individual virtuosity, he demonstrated that artists worked within a collectively formed "cognitive style," both shaping and validating their pictorial practices.[22] For instance, perspectival and geometrical methods were legible to beholders because they learned them in the Abaco schools that trained artisan and merchant classes. As a preparatory draft for their paintings, painters often refined and trained their understanding of complex objects and *mazzochi* were the perfect case studies to do so (Fig. 2). Circular, these late-Medieval hats required the ability to represent the effects of depth on a flat surface. By combining perspectival projection to lines, artists approximated objects by their closer geometry, one they found by combining familiar shapes of bodies such as cubes and pyramids. Such drawings trained their manual skills and crucially, their eyes. First, they cultivated the ability to simulate three-dimensionality; second, they required artists to conceive parts of a form that were not visible but nevertheless existed. While this seems obvious today, the "ability to penetrate both distance and intervening solids" was then regarded as a skill reserved to the blessed.[23] Linear perspective, as the closest experience to the latter skill, carried not only a geometrical purpose, but also a moral meaning. As previously mentioned, few architects in the 1990s pointed out the striking similarity of these skeletal drawings to later wireframe visualizations. I agree that this resemblance is indeed a valid criterion of comparison. Going further, I argue that these preparatory drawings did not only *look* like later computational forms but constituted a way of thinking/seeing/drawing akin to wireframe visualizations. Their purpose was not to depict the image of an object, but to make its model visible. A beholder recognized a *mazzochio* precisely because of the ability to conceive the underlying geometry from which it was drawn.

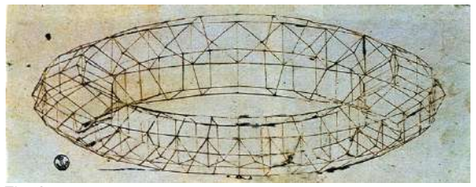
Fig. 2

3.2. Describing Nature with Geometry: Viollet-le-Duc and Mont Blanc Model
These Renaissance preparatory drawings are not isolated cases: wireframe was integral to architectural survey practices. When architect Eugène Viollet-le-Duc traveled through French Alps in the early 1870s to study the formation and movement of Mont Blanc, he produced hundreds of drawings and watercolors to support his analysis.[24] Grounded in descriptive geometry, formalized a century earlier by Gaspar Monge,[25] his drawing technique allow him to describe and compare any irregular topography to a regular shape.[26] Viollet-le-Duc's aim was to uncover the inner laws that ordered this apparently chaotic formation.[27] Among his surveys, one enigmatic drawing stands out. Not published in his dedicated book, this unfinished sketch inscribes the mountain in a rhombohedra volume (Fig. 3). Using parallel projection, the drawing describes Mont Blanc as a crystalline system made of edges and rhombus surfaces. The massif is drawn on a blank piece of paper, detached from its environment. I read this choice of representation as the massif's conversion into an object—one that can be moved, duplicated, and transformed. Mont Blanc is drawn twice. On the right it is represented with shadows articulating its peaks and crevices and inscribed within a prismatic line construction. On the left, the rhombohedra volume is shown alone. Merging a pictorial representation with its geometrical abstraction, I argue that the drawing simultaneously reveals its image and its model. I read this sketch as a wireframe view for it made the massif's geological formation visible by drawing it as a modeled object. The wireframe skeleton enabled Viollet-le-Duc to see through the gigantic mass and unveil its internal logic. Doing so, I argue that it allowed him to test and identify an abstract model –one for any mountain, not just Mont Blanc.

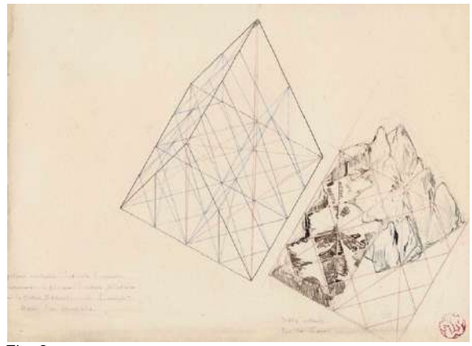
Fig. 3

These two preparatory drawings operated as instruments of vision grounded in geometry and the search for an underlying model. Wireframe visualizations enabled designers to apprehend shapes and transmit an experience one cannot physically do: seeing through solid. Not just a display mode, the wireframe shows a conceptual and formal support for a reasoned eye—one neither deceived by image, nor constrained by matter, but elevated through abstraction.

4. From Lines to Models: Digital Reconstruction of Josef Albers's *Structural Constellations*
This final section takes the idea of retroactive reading literally, wondering what could come from treating Josef Albers's *Structural Constellations* as if they had been produced through computer modeling. I use this anachronism to test what it might reveal—or make even more ambiguous—about the wireframe's liminal position between model and image.

Artist Josef Albers worked on visual formulations to generate complex experiences of spatial perception.[28] A former Bauhaus professor, Josef Albers fled to the United States where he continued to develop his influential pedagogy on graphic design from the late 1930s to the early 1960s. While he is best known for his precepts on the relativity of color perception[29] with *Homage to the Square*, his 1940-1960 series of *Structural Constellations* pursued a different approach. *Structural Constellations* explored irrational interplay of dimensions by the interaction of lines. By intersecting parallel lines, they convey an axonometric sense of three-dimensionality while exposing conflicting visual formulations.[30] Their interpretations are deliberately illogical forcing for instance the viewer to blend different viewpoints. Produced with pen-and-ink drawings, machine-engraved plastic laminates, and large-scale wall paintings, they were made with different technics, materials, and scales. Their common point is that they were all bidimensional, using black-and-white contrast to differentiate lines from their support. To an architect's eye, Albers's 1959 mural of two *Structural Constellations* look like two axonometric drawings (Fig. 4). I interpret them as wireframe views of two adjacent cubes—with the left slightly forward—similar to how a designer would see them on a graphical interface. Looking closer, I wonder how to produce these figures?

Fig. 4

I undertake a digital reconstruction of the artwork to test how the two constellations can be generated from a geometric model (Fig. 5). The process unfolds in two steps. First, I construct the figures from a geometrical model. Second, I explore how changes in viewpoint reveal new spatial distortions. Throughout this process, I use the wireframe display mode of the modeling software to see and control the edges as separate entities. I start the reconstruction by modeling two cubes (0). I refer to the right and left constellations as (1) and (2). To produce the first constellation, I remove the two back vertical edges of the first cube and the two front vertical edges of the second. In the second constellation, the horizontal faces are opaque: when an edge intersects one of the faces, it visually disappears. To reproduce this effect, I remove the portions of edges that appear hidden by the horizontal faces. In a second phase, I rotate the now deconstructed geometry to see it from alternative viewpoints. This operation formulates new constellations. In the first case, the entanglement of lines and surfaces remains legible. (1.B) In contrast, rotating the second constellation reveals the previously *hidden* lines as visibly *broken* lines (2.B). Depending on the viewing angle, the model is perceived differently: while the first constellation remains recognizable, the second reveals a different image according to the viewpoint. This demonstrates that distinct models can produce similar images when viewed from specific positions. Examining this fragmented geometry, I further question whether the later constellation could be generated through an alternative model that avoids these *broken* lines. Returning to the original configuration (2), I reinterpret the horizontal front surface not as the lower face of the second cube, but as an independent surface placed in front of both geometries. I remove the necessary edges to construct the figure using only lines and surfaces, then rotate it to assess the result (2.C). The two rotated views show distinct figures that coincide only at a specific angle to form the initial situation (2).

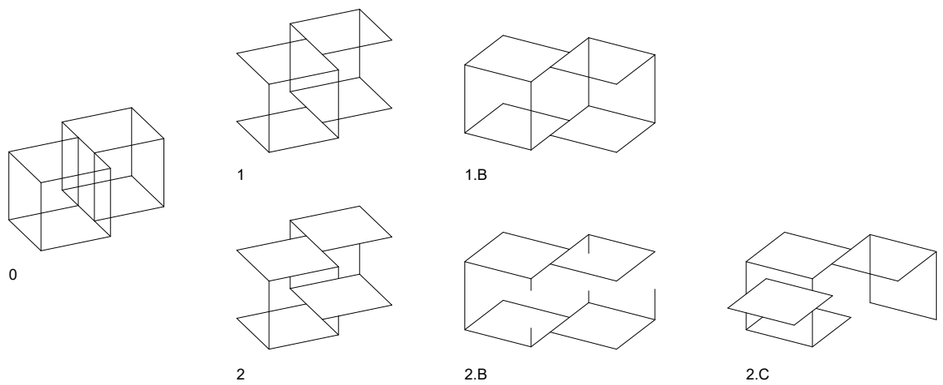

Fig. 5

This reconstruction reveals the gap between a model and its multiple visual interpretations. Rather than “solving” Albers’ *Structural Constellations*, it suggests that contemporary digital tools enable not only new forms of modeling but also alternative modes of vision and interaction with the model.

5. Conclusion

Wireframe visualizations are no longer exhibited as spectacular images anymore, nor primarily used to measure and approximate objects in space. After a brief prominence as a formal metaphor in architectural discourse during the 1990s, wireframe is today treated as a relic of an obsolete digital technology, marginal to contemporary representation concerns. By placing the wireframe at the center of a historical and critical inquiry, this paper actively reflects on how display modes can offer a generative avenue for current architectural research. First, by considering the wireframe as a convention of architectural representation, I traced its emergence across computational and pre-digital contexts. While computer graphics contributed to its widespread adoption, they did not introduce the wireframe as a new mode of representation. Instead, digital technologies instrumentalized an existing tradition. A process of perspectival construction was automatically calculated and displayed either as a wireframe view, an opaque volume—the “hidden-line problem”—or rendered with shadows. Screens, screenshots, and printouts allowed users to easily (re)produce wireframe visualizations, which were disseminated through exhibitions and publications.[31] As a result, the wireframe was established as a convention and closely associated with the early *digital*. Second, by using the wireframe as a retroactive lens, I propose interpretations of historical drawings with a contemporary view. Renaissance preparatory sketches and Viollet-le-Duc’s survey drawings can be understood as efforts of systematization of a modeling process. This reading refines the concept of the wireframe by situating it within longer traditions of perspective, measurement and visual abstraction. Finally, this method was extended through a digital reconstruction of Josef Albers’ *Structural Constellations*. Modeling the constellations with wireframe display proved the instability between model and image, and the interpretive gaps produced by lines, surfaces, and viewpoints. Exploratory rather than conclusive, this last section points toward future investigations in which practical experimentation becomes an integral component of critical inquiry to study the wireframe—one that can be applied to digital representation at large. The paper invites designers to explore the affordances and limits of software, treating them not merely as instruments of production, but as objects to reflect on their own practices.

In his article *The Pencil and the Electronic Sketchboard* as part of the 1989 *Architecture and Its Image* project of the Canadian Centre for Architecture (CCA), historian of architecture Robert Bruegmann argued that wireframe lines were not inevitable.[32] They emerged on computer screens because they were part of a longer cultural tradition of technics, methods, and modes of representation that preceded and shaped them. As collectively established, these conventions are constantly transforming which makes their critical investigation a continuous necessity. The task of the historian of architectural representation is therefore not to exhaustively trace linear progressions of conventions, but to stage comparative histories to shed light on contemporary issues. This paper proposes the wireframe—and display modes more broadly—as liminal objects that crystallize the historical and conceptual merging between so-called analog and digital cultures of representation. It calls for attention to transitional periods, objects and practices of representation through which these modes emerge, by proposing a method that can be extended to the study of other display modes. Today’s expanding range of display modes—from *pen* to *artistic*, which respectively simulate a pen drawing with black lines and a pencil drawing with shadows on paper—reveals how softwares increasingly absorb techniques and visual effects drawn from manual practices.[33] These modes do not merely mark a transition from analog to digital, but emerge from their blending, extending manual traditions into a shared visual culture shaped by contemporary designers’ practices. Such an approach challenges established categories, asking how analog and digital modes of representation intertwine, transform one another, and continue to shape the way architecture is imagined and practiced today. At a moment when AI can generate virtually any visual output, it becomes crucial to approach representation not merely as an image, but as a larger mode of thinking/seeing/drawing.

Notes

1. Common modeling softwares with a wireframe display mode include for instance *Blender* and *Rhinoceros*.
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Image Captions

Fig. 1. Wireframe model of Sutherland's Volkswagen. 1972. © University of Utah Computer Science. Courtesy of the Computer History Museum.
Fig. 2. Perspective study of mazzocchio. Paolo Uccello. 15th century. Galleria degli Uffizi, Gabinetto dei Disegni, Firenze. Public domain work of art.
Fig. 3. Rhombohedral system of Mont Blanc. Eugène-Emmanuel Viollet-Le-Duc. © Ministère de la Culture – Médiathèque du patrimoine et de la photographie, Dist. GrandPalaisRmn / image GrandPalaisRmn.
Fig. 4. Mural of two Structural Constellations. Josef Albers. 1959. © The Josef and Anni Albers Foundation / 2025, ProLitteris, Zurich.
Fig. 5. Digital reconstruction of 1959 Josef Albers Structural Constellations. Image from the author.

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Biography

Emma Larcelet is an architect and PhD candidate at the Swiss Federal Institute of Technology in Lausanne (EPFL) where she researches architectural representation's entwining with digital technologies. Her doctoral project, *Analog and Digital: Addressing the continuity of architectural drawing practice in the design process* was awarded the Doc.CH grant from the Swiss National Science Foundation (SNSF). It is supervised by Prof. Nicola Braghieri, who directs the Arts for Science laboratory (LAPIS, EPFL) and co-supervised by Prof. Theodora Vardouli at McGill University. She is currently a Graduate Research Trainee at McGill University and was a 2025 Fellow in the Canadian Centre for Architecture (CCA) Doctoral Research Residency Program.

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Perspective of Meaning
Drawing “out” the allegorical stories of and in the National Portrait Gallery, London, UK

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Abstract

This discussion focuses on two drawings that were utilised to procure planning permission for alterations to the 1896 Gallery. The construction drawing is a conservation instruction for the preservation of existing windows beneath the new walls while the other employs allegory to present the roofscape of Trafalgar Square as an imagined Tuscan landscape, as a mode of persuasion to planning objections.
These original drawings translated architectural ideas at vastly different stages and were necessary for the new building to be realised. This approach to understanding the architecture of the Gallery continues from a history of narrative techniques underpinned by theoretical understandings concerning the notions of ‘perspective of meaning’, employed to address the meaning of the work. This is applied to critically evaluate the material, spatial, social and cultural aspects of the architecture. Hence these drawings are not isolated pieces of work but embedded within the history of the Gallery and in particular, the layers of meaning that are apparent.
This paper explores critical and reflective drawing practices in design through questioning assumptions of architecture as static and complete entities. Archival research through drawings reveals the design strategies adopted and the consequent response of each shift to specific situations. These notions of sites within sites advocate for the intertwined architectural narratives to be further devised as dialogues with users to enhance the reading, meaning, experiential and unrealised speculative qualities of the Gallery. The drawings serve to confront, place and integrate chronological shifts to initiate the notion of multiple interpretations, furthered as means to mediate and reinterpret research and design processes. Architectural drawings as historical markers and catalysts for transformation are further employed to interpret buildings and spatially reinterpret research material. Consequently, events that would otherwise be consigned to memory or totally forgotten are retold and given new readings, meanings and use through these drawings.

Key words: multiple interpretations, montage, perspective of meaning, archival research, dialectical allegory.

Drawing ‘Out’
The discussions in this instance focuses on two drawings that were utilised to procure planning permission for alterations to Ewan Christian’s 1890 National Portrait Gallery, London and the *NPG 2000* overhaul by Dixon Jones Architects at the turn of this Millennium. The construction drawing was produced to adhere to a conservation instruction for the preservation of existing windows beneath the new walls while the other employs the technique of allegory to present the roofscape of Trafalgar Square as an imagined Tuscan landscape, as a mode of persuasion to planning objections. (Figs. 1 and 2) Addressing the ethos of drawing to build and drawing to create, both were crucial to the building process from inception to completion and in vastly different ways, demonstrated the representation and translation of complex design ideas through material engagement and speculation. While the intention to construct may be seemingly obvious in the first, the latter is drawn with the purpose of pushing existing understandings and enables design opportunities to unfold. Here, this is in relation to assumptions concerning the role of architectural drawings, especially with regards to planning and building regulations. Similarly, while the notion of allegory is purposely employed in the imagined roofscape, the construction drawings can be read as an allusion to a moment in the Gallery’s history that no longer exist. In addition to the building and imagined realities depicted, these two drawings also allow for speculative possibilities of theoretical and material outcomes that are different to the existing architecture. These pieces of work are critical and provocative interactive representations that are open to multiple interpretations, demonstrating tangible and intangible values through practical knowledge and innovative solutions.

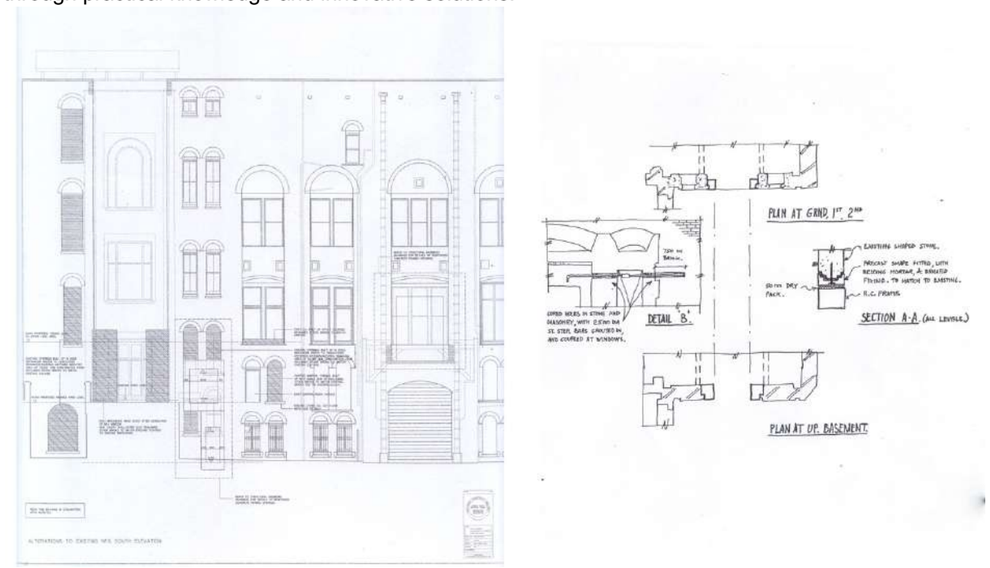

Fig. 1

These original drawings translated architectural ideas at completely different stages and were necessary for the new building to be realised. This approach to understanding the architecture of the Gallery continues from a history of narrative techniques underpinned by theoretical understandings concerning the notions of “perspective of meaning” also referred to as “lost sense of sight” that is used to address the meaning of the work. This contemporary definition is applied to critically evaluate the material, spatial, social and cultural aspects of the architecture. Importantly, the drawings are not read as fixed and finite, privileging material ideas of construction but instead, approached as experimental processes where temporal and subjective qualities are considered alongside empirical attributes. Allegorical techniques are used to subvert architectural logic and exploit the complexities of lived experiences through revealing the multiple interpretations inherent.
The construction details allude to hidden windows while the allegorical roofscape envisions speculative possibilities of how the architecture can be read. The emphasis on this detachment between the actual drawings and construction processes from the realised building uncovers the transitory and ephemeral qualities that are often neglected.[1] Here, these drawings are not simply presented to illustrate measurable spaces but instead, also read as experimental processes where the meanings are fluid and devised to elicit spatial experiences. These drawings simultaneously serve as palimpsests and indicators of absence and, elucidate imaginary potential. Both articulate ways of engaging with the layers of meanings and embodied history of the building. Hence these are not

isolated pieces of work but embedded within the chronicles of the Gallery and in particular, the aspects that are not visually apparent and/or realised.

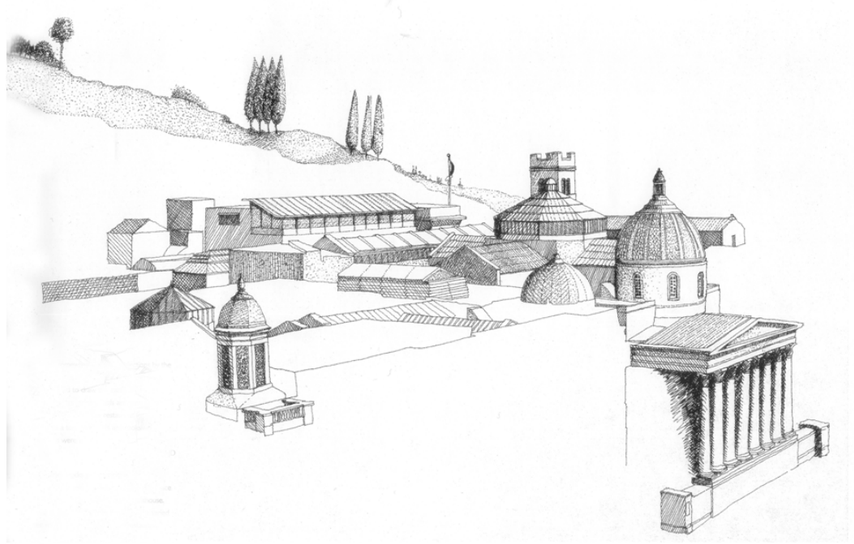

Fig. 2

Perspective of Meaning and 'Lost Sense of Sight'

Perspective of meaning is manifested through issues of conveyance and includes the construction of visual symbols embedded with allegorical references as well as allusions to specific narratives.[2] This sixteenth-century technique of arranging individual objects to create a picture is also referred to as perspective of mind and/or "lost sense of sight". The definition of allegory as the "description of a subject under the guise of some other subject of aptly suggestive resemblance" also includes "the representation of abstract ideas or principles by characters, figures, or events in narrative, dramatic or pictorial form" that is apparent in pictorial compositions.[3] The word "allusion" is less commonly used than "allegory" but nonetheless has a similar meaning and both refer to the idea of hidden meanings being hinted at visually through a diversity of images. This idea of polyfocality is apparent in works that encompass "a great variety of modes of presentation, points of view, media, styles, and levels of reality within one single depiction", with the "tendency to treat single images as part of a larger visual ensemble".[4] Allegory is employed through the individual symbolic elements and the composition of the figures serve to reinforce specific aspects of the narrative depending on the assembling of different combinations. Akin to medieval art, the allusion to specific narratives through placement is emphasised. These works usually appear as a collection of individual objects placed within the picture plane, hence resulting in images that have "no unity in pictorial design".[5]

This contradicts the notion of empirical accuracy and the mathematical construction of spatially accurate depictions. The approach is evident in "Sir Henry Upton", c. 1596, a painting that commemorates his life and legacy within "a summary of the entire Tudor era".[6] This allegorical presentation technique is employed to allude to certain points of view and enhance the potency of particular narratives that are apparent in the work. Hence the term "perspective of meaning" is used in the reading of these compositions as a form of articulation that is similar to a manner of expression and comprehension which is mystical and/or abstract as the accurate depiction of scale and optical distance required for a visually unified picture is disregarded. The application of this medieval technique of presenting and reading paintings diminished greatly during the Renaissance during which the belief that vision and truth were inseparable was fostered. This was mainly due to the addition of a mathematical dimension to the development of linear perspective that afforded vision an empirical status during this period. More importantly it enabled the ability to calculate and realistically represent three-dimensional spaces on two-dimensional surfaces. Hence the well placed foreground and background in paintings serve to give a picture depth, and turn the painted surface into a space. This advocated method of constructing and presenting paintings treated the two-dimensional space in the picture plane as an extension of the actual surroundings. In addition, the meaning of the work becomes apparent at a glance and "the eye no longer has to wander across the painting and piece the events together" as in the case of "perspective of meaning".[7] Hence the demonstration of visual accuracy afforded by the use of linear perspective also ensured that vision was to be regarded as the most important of the five senses. More significantly, this relationship concerning certainty and the

sense of sight is still very much assumed currently and influences the way in which works of art and architecture are appreciated and understood. This idea of visually constructing a picture plane that realistically corresponds to the surrounding space diminishes the possibilities of different readings inherent in processes of completing the work, each of which changes the meaning of the final pieces. Understanding the aesthetic language and implied meanings of key elements embedded in the rhetorical structure was a skill that sixteenth-century viewers were trained in. Hence the term "lost sense of sight" alludes to the fact that the ability to see, understand and appreciate works of art presented in this manner is no longer common practice. Similarly, this understanding extends to the fact that these two important drawings are not considered as part of the public repertoire of exhibits, knowledge of which would enable the public to gain an enhanced understanding and appreciation of the Gallery. Hence these two drawings can be read against each other, alongside all the other pieces of work made during the working process and even juxtaposed onto the existing building. This approach of using drawings as part of a multidisciplinary framework enables innovative readings through combinations of the different mediums of representation apparent in the practice of architecture.

However, the use of sixteenth-century didactic allegory concerns the use of words and/or ideas that may appear to be structured differently, but continuity is nonetheless apparent in the sense of a similar meaning. This also means that despite the different readings and pluralistic compositions afforded to the participant, the intended meanings are comparable. Dialectical allegory in contrast facilitates the creation of new, multiple and individual readings where meanings are solely reliant on the users' interpretations and required to complete the work. Here, the drawing of imaginary places through issues of allegory, narrative and site are used as means to mediate and reinterpret research and design processes. This is similar to notions of polyvocality where the inclusion of many and different voices are used to shift and sustain narrative change. A key feature sees "the narrator renouncing the right to the last word and granting full and equal authority" to the participants.[8] While this does not condone the total erasure of authorship, this spontaneous transformation of meaning through the active engagement of the user should take precedence over the original intentions and provenance.[9] In this instance, this refers to the knowledge contributed by many people through the practice of architecture that concerns building and occupancy. More importantly, this idea of proto-practices creates new definitions to further articulate the term layers of meaning and demonstrate that the related architecture and activities are inclusive and constantly shifting as opposed to definitive. These drawings that are part of a much larger ensemble are one of many ways to interpret the stories of and embedded within the Gallery.

***NPG 2000*: Perspective of Meaning, Different Uses and Users**

At the turn of this Millennium, lengthy negotiations resulted in a design solution that accommodated the "right of light" easement in the site of the shared courtyard between the Gallery and the adjacent National Gallery.[10] The ensuing *NPG 2000* project was essentially a triple volume block that was inserted into this shared space in exchange for the building's east wing. (Fig. 3) The insert that serves as the new entrance concourse is anchored by an auditorium in the basement, a mezzanine floor, balcony gallery, the Tudor Gallery hovering within the triple height space and rooftop restaurant. This proposal necessitated the bricking up of the original courtyard windows for protection due to conservation and planning laws, and to ensure that all construction processes related to original features are reversible.[11] The blocking of the courtyard windows inadvertently created a physical archive of architectural elements. This hidden body of information lies in contrast to existing manners of archival documentation concerning spatial alterations. The construction work that transformed this external courtyard and the process of blocking off the windows was captured with a Russian panoramic camera by John Goto. The captured images of these fleeting moments would also serve as the last visual record of this former external space.[12] This technique of recording and presenting the transformation process facilitates a manner of visual movement through the spaces shown in each photographic image. (Fig. 4) Significantly, the fluid quality displayed provides various readings and hence different ways for the viewer of the images to engage with the space. This body of work serves as the archive to one aspect concerning the history of the Gallery, and appears completely different to the construction drawings.

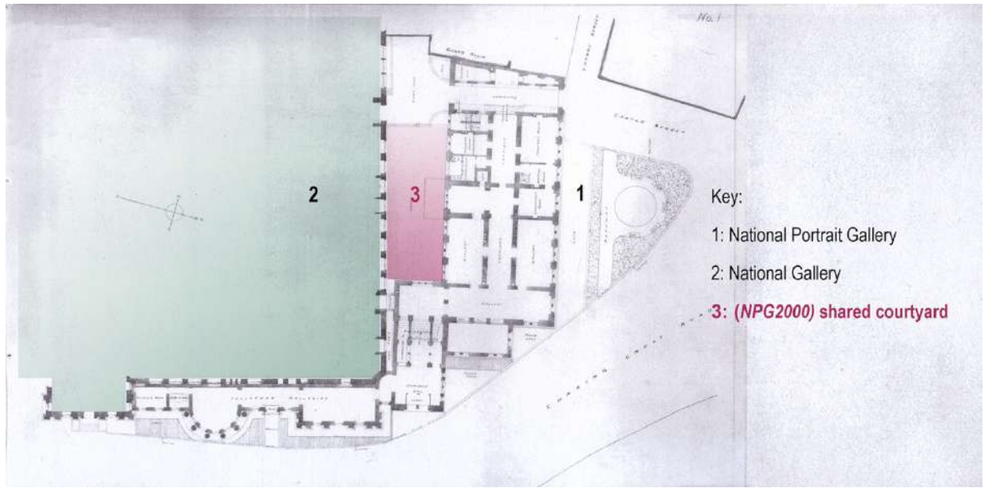

Fig. 3

Fig. 4

In archaeological studies, knowledge inferred from interpreting material finds is used to enable an understanding of the past. Architecture is part of this material culture, and through design practice the knowledge and finds can be appropriated to inform and assume some form of contemporary presence. This rigorous translation of research material into works of architecture encourages history to be represented and take on its own relevance in the present-day to further inherent transformational qualities. Hence the courtyard can be read as a quantifiable material space to delve into as well as a conduit to the past with an existing narrative that occurs within. In this instance, the notion of "lost sense of sight" extends to the physical context of the new entrance concourse, and how deeper knowledge of historical events facilitates an enhanced experience for the current users. The reading of excavation and dissemination techniques can be inferred from the construction drawing that may enable innovative manners by which to reveal these hidden features. At present, this material feature of history is completely hidden from the views and knowledge of the current visitors.

This argument which encourages different interpretations of the architecture also extends to the new rooftop restaurant. The Gallery's glass and steel rooftop restaurant was initially rejected by the planners on the grounds of its modern look.[13] A drawing depicting the National Gallery and the various roofs within its vicinity as an Italian hillside village and the new restaurant sitting comfortably as a "terraced loggia" was subsequently produced to show the numerous visually contrasting elements that are existing.[14] In essence, the restaurant would simply become a part of this context which includes the dome of the National Gallery and Nelson's Column shown spread across an imaginary hill resembling a Tuscan landscape. (Fig. 5) Presenting the context in this manner pacified the planners and permission was subsequently granted for this restaurant. The allegorical reading of the roofscape demonstrates that there are many ways to evaluate and interpret a situation and, can also be applied to the idea of "lost sense of sight". In this instance, it refers to the ability to infer and visually interpret one of many different readings inherent in the given situation.

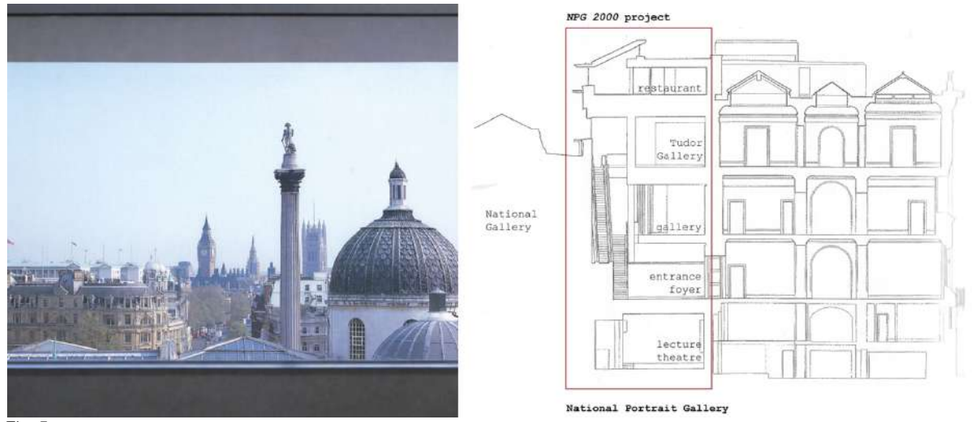

Fig. 5

The layers of meaning revealed here are embedded in the history and fabric of the building and the argument asserts that knowledge of their existence and their roles in the material realisation of the building would contribute to a richer spatial experience for the Gallery users. The discussions reveal the design strategies adopted and the consequent response of each proposal to specific situations. The term "lost" in this instance literally refers to architectural features and aspects of the building that are permanently hidden from view and an imagined reading of the existing context. However, despite user participation there is an inherent linear progression towards a similar outcome. While dialectics are apparent by means of the underlying theoretical implications and initiation of multiplicity, there are also omnipresent traits of didacticism as the plethora of readings are acquired through the trajectory of reverse analysis. Working backwards from the realised architecture raises issues concerning the optimisation of these drawings given the distinct roles they were created for and purposes served. In the first instance, the users share the focused ambition of completing the building and primarily consist of people in the architecture industry like designers, builders and planners. The use of the drawings remains within their roles in the profession and boundaries of assumed knowledge. Extending the users to include academics and researchers would further reveal and exploit the multiple theoretical and material interpretations through the layers of meanings that are inherent. Hence for the intertwined architectural narratives to be further devised as dialogues to enhance the participatory qualities of the drawings, existing stratifications must be negated. Significantly, interpretations of the responses can be further be manifested in design practice as supplementary work to articulate the new narratives construed.[15]

Architectural Forensics, Archaeological Fragments and Montage

Critical and reflective drawing practices in design are explored through questioning assumptions of architecture as static and complete entities. This biased imbalance is further embedded in another common idea that regards a work of architecture as a stable built-form and/or an enclosure, an understanding that eclipses most other means of readings. This prioritises the idea of fixed typologies and overlooks immaterial spatial relations and experimental qualities. A work of architecture is significant to discussions concerning these means of representation because it serves as a form of collective memory where historical knowledge is embedded. Archival research reveals the design strategies adopted in the *NPG 2000* project and the consequent response of each shift to specific situations that resulted in an architecture without elevations, and a building that has no external views. Using drawings to negate boundaries and articulate the transitionary nature afforded by the work enables the deliberate interpenetration of old and new. Additionally, the removal of all assumed boundaries between the drawing categories and distinct types of users mean that the work can be used interchangeably between theory and practice, and within existing chronologies of the design and construction processes. The complexity of the design and spatial narratives reflected in the drawings will be further exploited by broadening the non-exhaustive list of industry and academic users to include visitors, and those who have only experienced the Gallery through remote sources like images, videos and augmented reality. Erasing distinctions between the people with specialised design knowledge and visitors who understand and appreciate the Galley primarily through experiential qualities will exponentially increase user-led outcomes. These discussions of dialectical allegory through techniques of montage and new historiographical approaches consider both the tangible and intangible qualities inherent in the work. This enables the Gallery to be read within a spatio-temporal plethora of different physical and experiential configurations that are conceptual,

relational, and the consequences of social, economical, cultural and political forces from inception until now.

Walter Benjamin's *The Arcades Project* (1999) is referenced in discussions concerning architectural dialectics and notions of plurality where new meanings are produced through juxtaposition and adjacency.[16] In this microcosm of Paris where conceptual and material boundaries dematerialise and spaces are absorbed by the city, the notion of dialectics is employed to simultaneously show the opposing "regressive elements" and "utopian potentials" of nineteenth-century Parisian culture.[17] Importantly, a working system that respected the differences of the events juxtaposed within the spaces was invented to effectively capture the basic essence and characteristics of these arcades. Benjamin's interpretation of this task was reflected in his complete disregard for material that has been "accredited as precious and valuable" with his choice of research matter consisting of the "dispersed and frequently arcane sources" in the Bibliothèque Nationale in Paris. The notion of multiple interpretations is demonstrated through his technique of researching, constructing and organising the contents of the work allowing perceived "waste material to enter into significant connections".[18] The principles of montage are evident in the arrangement of the six chapters of the book, designed to operate independently and enable "the work to be continuously remade anew" by each reader.[19] Here, the shifting of material form, and the ensuing gaps between design, function and site in *NPG 2000* have created opportunities for differences of opinions that demonstrate resistance to notions of finality. The permutations ensuing from user participation further allow for new meanings and uses to emerge. This generative condition rejects established attitudes, revealing and foregrounding original perspectives on history that are continuously in flux.

Similarly, archiving and extending the history of the Gallery to accommodate the chronological gaps and different approaches to alterations require a system that is non-hierarchical and enable knowledge of the ongoing material and experiential changes to enhance occupancy. The qualities of montage are exaggerated as the presence of these gaps allow the architectural dialogue to remain unfinished and "available for endless revisions and appropriations" by the different types of creative users.[20] This is also when the notion of the architectural fragment comes into play as a spatial interpretation of a precise source and/or reference, which enables particular meanings to be expressed through its articulation within the architecture. These allusions can be spatially considered in their entirety or occur as segments. The occurrences imbue the spaces with alternative readings and connotations, which are subject to individual interpretations. This layering of meaning over function also allows for the possibility of new dialogue to be created between the site, building and the user to enrich the experience of the work.[21] In *The Architecture of the City* (1966) Aldo Rossi discusses the manner in which history preserved as built form enables aspects of the past to be experienced in the present, and that architecture is essentially a collection of "other architectures" located within a historical lineage.[22] This is furthered through notions of "pathological" and "propelling permanence" where the first is considered inert and isolated whereas the latter is operative and functions as a record of time. Importantly, "propelling permanence" exist in a "dialectical position" and provides a past that can still be experienced within existing developments.[23] The techniques of montage reflect that history is not linear or binary and further allow the spatial and intellectual qualities of the work to be appreciated in different orders. These processes can be used to highlight alternative meanings that the visual qualities allude to and/or have been overlooked.

Montage enables the examination of the connections between past and present through the multiple ways in which spaces can undergo change and still be considered valuable. Buildings have their own inherent narratives and user participation is generally inevitable through issues of use and habitation. Accepting the gaps and ambiguities as positives allow the users to claim authorship and become part of history. To avoid the argument of multiple interpretations being an accidental and existing by-product, design authorship can ensure that the occurrence of different readings and experiences shift from an assumption to a working focus.[24] This includes exploratory and experimental pieces of work that are attempted as inquisitive acts. Hence more flexible approaches that extend ideas of architectural representation to include the changes accommodated during construction will emphasise the importance of working processes. This asserts that techniques and representations within the scope of drawing are not passive tools but active mediators, guiding thought, shaping design possibilities, and transforming spatial experience[25] This understanding allows for more responsive definitions, demonstrating the value of a non-hierarchical and radial structure that allows more permeable and inclusive understandings of what the practice of architecture entails. The two drawings can be read independently or as fragments of all the work produced for this project. These are not endpoints but generative tools in defining and mediating the gaps to formulate experiences that critique existing conditions and importantly, speculate and create new possibilities of production.

Dialectical Allegory and Proto-Practices

The depth of these drawings contains a world of nuances and inferred meanings, celebrating the gaps between reality and imagination. They also serve to confront, place and integrate chronological shifts,

furthered as means to mediate and reinterpret research and design processes. Architectural drawings functioning as historical markers and catalysts for transformation are further employed to interpret buildings and spatially reinterpret research material. This supports the underlying argument that "there is always a history of drawings, objects and buildings within and against which an architectural work can be seen".[26] Consequently, events that would otherwise be consigned to memory or totally forgotten are retold and given new readings and meanings through these drawings. The occurrences imbue the spaces with alternative readings and connotations, which are further subject to interpretation as participatory-led dialectics allow for the possibility of new meanings to be continuously created. Through issues of transience and permanence these discussions reveal the design strategies adopted in the multifaceted narratives, the consequent response of each drawing to specific situations and the celebration of new architectural propositions that are deliberately incomplete and open-ended. This analysis further provides an additional way of looking at techniques of montage and especially Benjamin's stance that history is understood from the vantage point of the user and historical transformation is not progressive. Hence montage is approached as a "philosophy of history" that focuses on the "discontinuities separating past and present".[27] The rejection of accepted narratives advocates for seemingly random fragments to be read alongside established accounts. When the drawings are used interchangeably between theory, practice, use and/or when accommodating the knowledge proffered by all the different types of creative users, the opportunities within the layers of meanings shift. The dialectical outcomes at each stage can be reread against the processes of inception, design and construction. This also includes the contradicting and diverging readings apparent in the drawings when the assigned purposes of construction and planning are no longer requirements. Disregarding ideas that the completed building serve as the main criteria against which to measure the drawings encourage speculative new outcomes of what and how the architecture could be differently determined. This purposeful misalignment creates possibilities for the final building to be different. For instance, if the construction drawing had not been strictly categorised as a measured survey and used as a catalyst for design interventions, then perhaps material evidence of the courtyard and relics consisting of these windows would be apparent and visible to current visitors. Likewise, if the allegorical drawing or drawings of a similar nature were produced at the start, the readings offered might have altered the design direction and eventual architecture. The initial roles of the drawings that were created for specific users within designated categories are dissolved to enable new purposes like suggesting additional and different outcomes to existing works of architecture. These shifts allow for the recombining of different types of users and sources of material and, simultaneously serves to criticise and reject assumptions in design processes. Consequently, these new ways of thinking and approaching the notions of drawing and drawings through reconstructing and erasing history serve to inform design practice.[28]

The reconstruction of different research fragments through analysis and complex networks encompassing historical, archaeological and theoretical research, conceptual and spatial design strategies as well as construction knowledge establishes how proto-practices can include diverse disciplines and range of tools to enrich architectural design practices. The research processes established through the introduction of multiple authors that are receptive to new ideas, techniques and operating systems facilitate open-ended narratives. [29] In this instance, the emergent multidisciplinary proto-practices look to experimental modes that prioritise the testing of ideas furthered through focused approaches that embrace different skillsets, and importantly, occur prior to the formalisation of methods. These collaborative efforts acknowledge the inherent complexity in new inchoate working methods and perspectives to ensure innovative ways of encouraging ongoing dialogues with variegated users. This also implies that in order for the users' impact to be a conscious consequence, the construction of new frameworks to accommodate design strategies need to be deliberate and integrated from the outset. Hence the additional consideration of ideas and conversations outside the immediate field of architecture is implemented to knowingly generate and further the possibilities and outcomes of multiple interpretations in different and differing capacities.

The methodology is structured to facilitate dialectical interpretations through the development of practices that express a range of readings and responses pertaining to different sources. This includes precise decisions that stage the works differently and question known conventions. Dialectical allegory advances multiple user-centric and multi-faceted interpretations through facilitating active user participation. Hence, the operative potency of these two drawings encompasses and shifts between addressing the programs, appropriating the site conditions and importantly, enabling the use and meaning of the work to be completed by the recipient.[30] This also alternates between responses to the different allegorical, material and immaterial narratives of constructing and appropriating archival sources, manifested by means of associated memories and explored through "perspective of meaning". This sixteenth-century storytelling methodology apparent in historical works is revisited to communicate theoretical, cultural, social, ephemeral, experiential and material narratives within existing and reclaimed knowledge in the drawings. While "lost sense of sight" initially refers to the fact that the information in these drawings is not visually evident, it also suggests a lack of imagination,

curiosity, inference and the ability to use works and knowledge from archival research and other disciplines to reference design practices and vice versa. Here, the notions of dialectics and multiple interpretations extend to definitions of “lost sense of sight” that include revisiting working processes and positing on different building possibilities. This alludes to the fact that these alternative versions have no material and tactile accompaniment to fully articulate the spatial qualities, hence requiring the use of augmented reality to insinuate experiences for the user. “Lost sense of sight’ also encompasses added manners of using the drawings to progress beyond their roles concerning inception, process and completion to address and inform future issues concerning change of use and material alterations through the speculation and simulation of different scenarios. Most importantly, these manners of drawing “out” the allegorical stories would authorise the drawings to be considered as portraits of the Gallery.

Notes

1. Federica Goffi, “Architecture’s Twinned Body,” in *From Models to Drawings, Imagination and Representation in Architecture*, ed. Marco Frascari, Jonathan Hale and Bradley Starkey (UK: Routledge, 2007), 88.
2. Constance Lau, “A Contemporary Reading of the Accession Day Tilts in Relation to Festival and the Elizabethan Notion of ‘Lost Sense of Sight,’” in *Architecture, Festival and the City*, ed. Jemma Brown, Christian Frost and Ray Lucas (London: Routledge, 2019), 40. Additional reference, Roy Strong, *Gloriana: The Portraits of Queen Elizabeth I* (London: Thames & Hudson, 1987).
3. The English word “allegory” is derived from the Middle English and French word “allegorie” with the first recorded instance in 1382. Oxford English Dictionary online, accessed 9 August 2025. http:dictionary.oed.com. The original source is noted as “Wyclif Gal. iv. 24”. Dictionary Reference online, accessed 9 August 2025. http:dictionary.reference.com. The original source is noted as “The American Heritage Dictionary of the English Language, fourth edition, copyright Houghton Mifflin Company, 2006”.
4. Martino Stierli, *Montage and the Metropolis* (New Haven and London: Yale University Press, 2018), 11.
5. Roy Strong, *The Cult of Elizabeth* (London: Thames and Hudson, 1977), 43, citing John White, The Birth and Rebirth of Pictorial Space (London, 1957), 35.
6 .Breeze Barrington, “A Full House of Tudors,” Apollo Magazine, accessed August 9, 2025, https://www.apollo-magazine.com/tudors-holburne-museum-national-portrait-gallery-review/
The painting “Sir Henry Upton” measures 740 x 1632 mm, unknown artist and is currently displayed in the Tudor Gallery at the National Portrait Gallery, London, UK.
7. Anna Krausse, *The Story of Painting: From the Renaissance to the Present* (Cologne: Konemann Verlagsgesellschaft mbH, 1995), 7.
8. Simon Dentith, *Bakhtin Thought, An Introductory Reader* (London and New York: Routledge, 1995), 36–40. This awareness of the creativity of the user and explorations of multiple contributions in author-audience relationships include writings by Mikhail Bakhtin. In *The Dialogic Imagination* (1981), Bakhtin describes the polyphonic novel as having a multi-character approach where active dialogue and multiple perspectives enables meaning to first be derived from the interactions amongst the characters, and consequently between the author, the work and the reader. This idea was developed in relation to Fyodor Dostoevsky’s writings and the concept of polyphony is borrowed from music and literally means multiple voices.
9. Roland Barthes, “The Death of the Author,” 1967, in *Image, Music, Text*, trans. Stephen Heath (London: Fontana Press, 1977), 143. The shifts that occur in the meaning of the text during the process of reading are acknowledged.
10. The project was so termed as developments started in 2000 even though negotiations began in autumn 1994 when Dixon Jones Architects won the open competition for the project. Christian’s Gallery was listed Grade I on 9 January, 1970. The two-storey National Gallery overlooking Trafalgar Square was designed by William Wilkins in 1838, and awarded Grade I listed status on 5 February, 1970.
11. This is in accordance with English Heritage regulations. In general a Grade I listed building like the Gallery may not be demolished or altered without special permission. “Historic England,” accessed August 9, 2025, https://historicengland.org.uk/.
12. John Goto, “Construction Photography,” in *The National Portrait Gallery*, Graham Hulme, Brian Buchanan, John Goto and Kenneth Powell (London: National Portrait Gallery Publications, 2000), 158. This device was so chosen because “the swing lens gives a field of vision rather as if swivelling one’s head through 120 degrees”, and the fluid results of this technique record a vision that cannot be had from the usual singular static viewpoint.
13. This design was not in line with the surrounding buildings which are more traditional in appearance and the comment was in specific reference to the view from the top of a double-decker bus travelling north up Whitehall.
14. Ian Latham and Mark Swenarton, *Dixon Jones: Buildings and Projects 1959–2002* (Melbourne: Right Angle Publishing, 2002), 133.
15. Constance Lau, “On-site as an Interdisciplinary Practice,” *Il Quaderno, no. Onsite*, The International Studies Institute (ISI) Florence Architectural Series (2020): 50.
16. Walter Benjamin, “The Flâneur,” in *Charles Baudelaire: A Lyric Poet in the Era of High Capitalism*, trans. Harry Zohn (London: New Left Books, 1973), 37. Walter Benjamin, *The Arcades Project*, trans. Howard Eiland and Kevin McLaughlin, ed. Rolf Tiedemann (Cambridge, MA: Belknap Press of Harvard University Press, 1999), viii. This position was articulated through Benjamin’s representation and critique of nineteenth-century Parisian bourgeois society through his fascination with life beneath these arcades. Benjamin not only considered these arcades described, as a “cross between a street and an interior” to be “the most important architectural form of the nineteenth-century”, but also where the most interesting and relevant depictions of the century’s preoccupations occurred.
17. Margaret Cohen, “Benjamin’s Phantasmagoria: The Arcades Project”, in *The Cambridge Companion to Walter Benjamin*, ed. David S. Ferris (Cambridge: Cambridge University Press, 2004), 215.
18. Michael Schwarz, “Rag Picking,” in *Walter Benjamin’s Archives*, ed. Ursula Marx, Gundrun Schwarz, Michael Schwarz and Erdmut Wizisla, trans. Esther Leslie (London and New York: Verso ,2007), 252–3.
19. Jonathan Hill, *Actions of Architecture: Architects and Creative Users* (London and New York: Routledge, 2003), 108.
20. Jonathan Hill, *Actions of Architecture*, 200.
21. Constance Lau, “Montage and Multiple Interpretations,” 284.
22. “Aldo Rossi, Bruno Reichlin, Fabio Reinhart, Eraldo Consolascio, 1976,” Léa-Catherine Szacka, accessed 9 August 2025, http://radical-pedagogies.com/search-cases/e08-eth-zurich/. This is in reference to Analogous City, an artwork produced by Aldo Rossi, Eraldo Consolascio, Bruno Reichlin and Fabio Reinhart for the 1976 Venice Architecture Biennale. The working process and outcome was used to illustrate the “ever-changing nature of the city, where the form of the city is determined by the historical imagination—collective memories, places, and buildings”.
23. Aldo Rossi, *The Architecture of the City* (Cambridge, MA: MIT Press, 1982), 6, 22, 59 and 92.
24. Constance Lau, “Montage and Multiple Interpretations,” 288.
25. Robin Evans, “Translations from Drawings to Buildings,” in *Translations from Drawings to Buildings and Other Essays*, (London: Architectural Association Publications, 1997), 157.
26. Yeoryia Manoloupolou, *Architectures of Chance* (Surrey, UK: Ashgate Publishing Ltd., 2013), 124.
27. Margaret Cohen, “Benjamin’s Phantasmagoria: The Arcades Project,” 200-1.
28. Constance Lau, “On-site as an Interdisciplinary Practice,” 56.
29. Constance Lau, “Montage and Multiple Interpretations,” 289. This is important as the assumption of a singular claim to authorship in the practice of architecture is misleading, and the notion has always been ambiguous given that the meaning of the project changes at different stages. Buildings are made by many people and inherently used and appropriated by different people in numerous ways. This inherent dialectical quality contests the straightforward argument that buildings are conceived, constructed and attributed to a single architect and/or a singular source and makes the idea of a single claim to authorship questionable.
30. Constance Lau, “Montage and Multiple Interpretations,” 285.

Image Captions

Fig. 1. Construction drawing of the courtyard, and blockwork construction details for the blocking of the windows. This formed part of the building survey that studied the existing windows in the shared courtyard which were scheduled to be blocked up.
Fig. 2. This drawing by David Naessens illustrates the roofscape of the site and the National Portrait Gallery's rooftop restaurant located in the middle of the imagined Tuscan landscape.
Fig. 3. Site plan showing the National Portrait Gallery and National Gallery.
Fig. 4. This image forms part of a series of photographs taken by John Goto in January 2000 that recorded the transformation of the courtyard during the construction process of the *NPG 2000* project.
Fig. 5. View from the rooftop restaurant and section showing the *NPG 2000* insert.

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Biography

Constance Lau is an architect and member of the Fellow of the Higher Education Academy, UK. She leads and teaches architecture from undergraduate to doctorate levels in London and Singapore. Research interests in multiple interpretations and narratives are explored through the techniques of montage and different notions of allegory from medieval to contemporary discussions of user-led dialectical participatory interpretations, to create multiple readings in design work. These theoretical frameworks are dually examined through design driven methods of writing practice. The idea of a "questioning and incomplete" approach is fundamental. These are applied through studio work, PhDs, REF standard publishing, peer reviews, and international conferences and workshops. Central to the methodology is the role of design practice as an ongoing dialogue that challenges assumptions and emphasises authorship. This is further articulated through publications and especially projects in the book *Dialogical Designs* (2016).

Into the cosmic void

Architecture between utopia and uncertainty

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Abstract

"Architecture can no longer be as we had thought-imagined-constructed it": this is what Alessandro Poli wrote – in a never-sent letter – to Adolfo Natalini, a year after humanity took its first steps on the Moon.

In the stark, silent emptiness of space, the grand ideals of earthbound architecture crumble. There are no monuments, no imposing structures – just the fragile, tin-foil-wrapped spacecraft floating in the cosmic void. Poli's words encapsulate a fundamental shift in a new world, where the boundaries of imagination and reality blur in a single, electrifying moment: architecture is not an act of imposing permanence on the world, but a continual engagement with the unknown.

This letter, that captures a decisive transition in architectural thinking, echoes in the 1978 Venice Biennale catalogue *Utopia e crisi dell'antinatura. Momenti delle intenzioni architettoniche in Italia. Topologia e morfogenesi* edited by Lara Vinca Masini. The two categories emerge as a search for alternative perspectives: mental, utopian territories in which the architectural image – graphical, metaphorical or performative – become a critical tool to question form, temporality and disciplinary boundaries.

Among the most striking expressions of this conceptual shift, the work of the Radical groups explore architecture not as a fixed construct, but as a process that embraces unstable conditions, contradictions and latent forces – a sensibility clearly embodied in Superstudio's *La moglie di Lot*, where the act of dissolution becomes a metaphor for the impossibility of permanence in the face of transformation.

Revisiting radical visions today offers tools to address a present defined not by possibility, but by limits – ecological and physical – and by the need to act critically within them, reframing the role of architecture as a practice of awareness and adaptation. This change requires what Poli described as the need of "the motion of the movie camera", a shift in gaze that navigates uncertainty.

Key words: crisis, utopia, uncertainty, temporality, transformative practices.

1. Introduction

When humanity first set foot on the Moon, a threshold cracked open, revealing a new kind of void – a discovery of conquest and, inseparably, of insignificance – in a silent cosmos where even the greatest monuments fade to dust, as space itself asserted its dominion and compelled architecture to question its long-held certainties.

Alessandro Poli captured this vertigo in an unsent 1970 letter to Adolfo Natalini, observing that "from now on, the real image surpasses the fantasies, our utopias"[1]. The Moon landing did more than expand a technological horizon, it destabilized the categories of gravity, permanence and monumentality on which architecture had long relied; a shift that opens critical questions: if reality itself could exceed even the most radical imaginings, how might architecture deal with phenomena that elude scale, duration and measure? What does it mean to draw, to design, when the ground of permanence dissolves into a universe of immeasurable space and time?

These questions remain urgent today, as architecture is called to address multifaceted and interrelated global crises that unfold with escalating complexity and uncertainty, conditions that Timothy Morton characterizes as hyperobjects: "things that are massively distributed in time and space relative to humans"[2].

These entities – including climate change – exhibit "viscosity", a condition in which they inevitably adhere to all entities with which they interact, refusing any possibility of clear separation. At the same time, they display "nonlocality": since any local manifestation is only a partial appearance displaced across space, never the hyperobject in its entirety. Their temporality is characterized by "temporal undulation", a rippling of spacetime that stretches and folds far beyond human reckoning and by "phasing", in which they appear and withdraw, so we perceive them only in intermittent episodes. Finally, they exist through "interobjectivity", emerging within a mesh of relations among objects rather than as isolated entities[3].

Confronted with such conditions, architecture must operate within a field where permanence is provisional and meaning continually deferred, cultivating an awareness of itself as an open and indeterminate process.

Radical architecture of the 1960s and 1970s, in its critical, destructive and liberating engagement, established the premises for this awareness in which imagination, drawing and design became critical act of inquiry into reality rather than static depictions.

The architectural groups of that time did not merely expose the discipline's limits, but they engaged those limits, exploring how the very idea of inhabitable space might be reconceived in an era increasingly aware of the vast cosmic void beyond the Earth.

From this disorienting revelation arises the central question of this contribution: how might architectural drawing represent and engage with complex phenomena that can never be fully known?

Confronting this complexity requires an imaginative faculty that not only envisions futures, but also grounds a common understanding, bearing in mind that "without the capacity to imagine the future there can be no solution to the city"[4].

2. Threshold of Imagination

To approach the thresholds of imagination, it is essential to question how meaning itself is constituted and deferred. Radical drawing operates in a field where the sign is never fixed but always in motion and this instability becomes the precise condition of imaginative practice.

Jacques Derrida offers a starting point, considering that "the concept of the sign belongs to metaphysics, which represents a simultaneous marking and loosening of the limits of the system in which this concept was born and began to serve, and thereby also represents, to a certain extent, an uprooting of the sign from its own soil"[5]. Derrida admitted "that a semiology of de Saussure type has had a double role, an absolutely decisive critical role: it has marked, against the tradition, that the signified is inseparable from the signifier, that the signified and signifier are the two sides of one and the same production"[6]. The sign is nothing other than the relation established between two elements: two entities that are, at once, the present one that exists (the signifier) and the other it signifies, the absent entity of which the first carries the idea that something may be there, the signified.

The sign, therefore, is neither the first entity nor the second, but rather the relation created between them. Without venturing too far afield and for the sake of simplification, it is also worth recalling that in Louis Trolle Hjelmslev's glossematics – where the semiotic function corresponds to the relation between two planes that constitute the stratified structure of human language (the plane of expression and the plane of content) – the signifier becomes the verbal expression and the signified the content of that expression[7]. This explains why the approach inaugurated by Saussure does not stop at the individual signifier or the individual signified but, giving rise to structuralism, examines the systems of which signifier and signified are parts[8].

Derrida goes further and introduces his concept of *différance*, according to which there is indeed a clear distinction between signified and signifier, but it is unstable and precarious because the signified is never fully present in the signifier, being always deferred and determined by other signifiers. It is therefore a process in continuous becoming, in which the signifier refers to other signifieds that in turn refer onward, producing an endlessly long chain[9].

In light of this, it no longer makes much sense to study the single "thing" in isolation so much as the relations it maintains with other elements of the system over time[10]. Heidegger, for his part, in *Sein und Zeit*, also affirms that the concept of the "thing" in phenomenology is not merely the perceived object but the relation in which the human being places itself in the world, a *Dasein* that already exists within a context. In this sense, phenomenology again proves useful as a mode of analysis and observation of the fundamental structures that reveal how human beings relate to Being and to context[11].

Thus, when we explore the signifier–signified pair and, for example, are asked what we mean by "home", in our minds we do not always, immediately, or instinctively think of the present entity – the physical space in which we spend most of our days – but rather of the entity which, more than merely absent, becomes in our thought the desired, awaited one: that which we expect to arrive from the stars[12], that which – borrowing slightly and invoking a master, Plato – lives in the world of ideas and waits to be seen, contemplated and experienced as we emerge from the cave[13].

This dynamic of continuous deferral finds a striking architectural parallel in Superstudio's "La Moglie di Lot" (Fig. 1), where material dissolution becomes a literal enactment of meaning's impermanence.

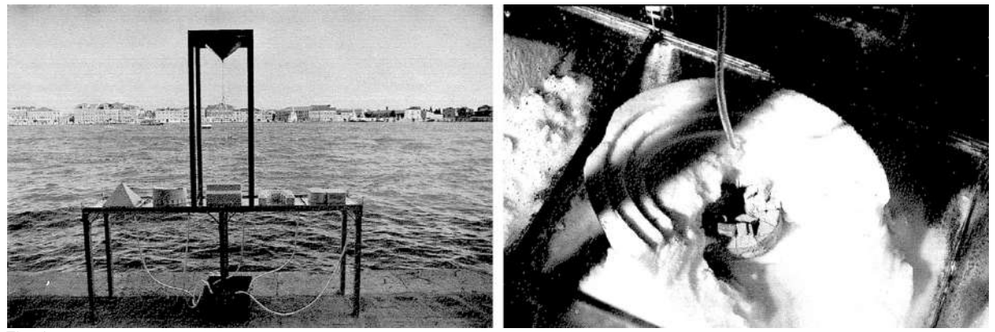

Fig. 1

Presented in the 38th International Art Exhibition of La Biennale di Venezia of 1978, within the section "Utopia e crisi dell'antinatura: momenti di intenzioni architettoniche in Italia. Topologia e morfogenesi"[14], the work staged a slow, ritual dissolution: five small salt constructions (a pyramid, an amphitheater, a cathedral, the Palace of Versailles, and Le Corbusier's *Esprit Nouveau* pavilion) were placed beneath a movable drip of water.

One by one, each form melted, revealing an unexpected object within: a wire skeleton, a miniature settlement, an empty eggshell, Marie Antoinette's brioche and finally a brass plaque engraved with the assertion «the only architecture will be our life". The water, channeled through special pipes, collected in a tank beneath the main structure, where another plaque bore the inscription "architecture stands to time as salt stands to water". As the water evaporated, salt gradually veiled the inscription, making it barely legible[15].

Drawing on the biblical episode in which Lot's wife looked back at the doomed city of Sodoma and was turned to a pillar of salt, the installation critiques the nostalgic attachment to architecture that inevitably betrays its own promises of permanence, while exposing the fraught and complex relation between nature and culture.

Here, meaning proves as soluble as the salt: an architectural representation of the *différance* traced earlier, where signified and signifier are never fixed but continually reconfigured through temporal and material flux. By foregrounding dissolution rather than durability, "La Moglie di Lot" invites to inhabit the thresholds of imagination, operating within uncertainty to explore the shifting boundaries of what can be conceived, shaped and transformed and sustaining the restless utopian drive that remains a critical – if never fully attainable – horizon.

3. Threshold of Reality

If the "thresholds of imagination" revealed how meaning is never fixed, the present demands a confrontation with the thresholds of reality.

The dialectical relationship between design and utopia can be read as a shared projective logic – a drive toward a spatial and temporal elsewhere – a dynamic that Manfredo Tafuri examines in "Progetto e utopia"[16]. Tafuri shows that the evolution of architectural theory has never followed a linear or predetermined path; it has always been marked by conflicts, uncertainties, advances, reversals and contradictions. Contradiction itself, understood as a fundamental feature of reality, becomes a creative principle. The continuous flow of adaptations and transformations, nourished by the conflicts that

traverse both architectural thought and the real world, leads to an understanding of metamorphosis as an open process that unfolds within the irregular and shifting currents of time and space, in a conflict between states of tension that never cease to evolve.
However, these shifts are far from arbitrary: they unfold through material and social constraints that guide their evolution and give form to emerging realities.
Bruno Latour sharpens this perspective, noting that ecological questions seem to speak of objects that have been transposed into both utopia and uchronia, outside any stable time or space. Neither water, nor land, nor air, nor living beings can be framed as if they were simply determined objectively by the laws of nature. Instead, the limits that define our collective survival must be perceived, generated, discovered and decided from within the peoples themselves, for without such decision there is no political body, no freedom, no autonomy[17]. In this view, the concept of the limit itself is not merely a physical boundary but a composite of law, politics, science and the arts: a space where human and non-human agencies overlap and where architectural practice must learn to act.
Examining the already mentioned Lara Vinca Masini's contribution to the 1978 Venice Biennale, reveals an intriguing perspective on the relationship between the visual arts and architecture through an open dialogue reflecting the complexity of a crucial historical moment. This event, in fact, marked both the epilogue of an era of intense theoretical and design experimentation in radical architecture and the prologue of a new season that takes on an intellectual legacy still resonating powerfully in contemporary architectural and artistic practices. "Topology" and "morphogenesis" become key concepts that, respectively, explore an alternative *topos* – mental and utopian territories outside disciplinary, professional and aesthetic systems – and a dynamic *morphé* in which form is not predefined but emerges through the interaction of meta-para-physical systems and structures that determine its evolution[18].
The pursuit of a new design ethics, therefore, must begin with an architecture that accepts limitation as a generative principle, recognizing that the challenge is no longer to conquer – or escape to – new spaces, but to transform existing ones into other spaces, thereby re-signifying the concept of utopia and grounding it in the earthly condition. In a continuous process of redefinition of the relationship between humanity and nature, design becomes a means of mediating between the need for transformation and the constraints of sustainability, between the drive for innovation and the awareness of planetary limits and between systemic inequalities and the urgency of ensuring equity and social cohesion. It is an approach that does not view utopias as a call to realize them – for in that case they would cease to be such – but as a cry of despair addressed to society by designers, who ask to be finally relieved of the double burden of formulating and solving problems[19].
Rereading the design of utopias thus powerfully recalls the imaginative design culture developed in the 1960s-1970s, within a figurative exploration of possible scenarios for social and urban transformation. Given today's climate crisis, the logics of design must now be reshaped to meet urgent demands for sustainability, resilience and adaptability, framing design as a critical agent in negotiating planetary limits.

4. Ecological Threshold of Macro-Micro Visions

During the 1960s and 1970s a new ecological consciousness reshaped architectural imagination. The rapid urban expansion of the postwar decades, the oil shocks and the dawning awareness of planetary limits forced architects to confront the city as a finite system rather than an infinite frontier. If modern architecture had often celebrated the "conquest of space", the crises of that era revealed the Earth as a closed and fragile *milieu*. Within this context two different but complementary experiments emerged: Paolo Soleri's vast "arcologies" and the Florentine collective 9999's intimate "Casa-Orto", that together illuminate how representation became a form of ecological critique at different scales.
Paolo Soleri's projects, collected in "Arcology. The City in the Image of Man"[20], stand as one of the most ambitious attempts to rethink urban life in planetary terms. Far from offering a conventional master plan, the book is a hybrid of manifesto and visionary atlas. Soleri warns his readers at the outset that the graphics "are not to be taken literally": they condense ideas rather than prescribe details and their "symbolism is evident", functioning as conceptual diagrams rather than blueprints (Fig. 2). This disclaimer reframes the act of drawing: it is not representation of a fixed object but a catalyst for speculative thought, an invitation to imagine the city as a living process, guided by the conviction that "there is an inherent logic in the structure and nature of organisms that have grown on this planet. Any architecture, any urban design, and any social order that violates that structure and nature is destructive of itself and of us. Any architecture, urban design, or social order that is based upon organic principles is valid and will prove its own validity"[21].
Soleri's critique begins with what he calls "ecumenopoly", the universal sprawl of megalopolitan growth stretching across the continents. For him, this endless suburbia is not merely impractical but "antilife", a mortification of human potential. He argues that such an urban condition is "doubly false": false because technically unfeasible and false because spiritually deadening. The alternative is the "arcology", a neologism combining architecture and ecology, which proposes the concentration of habitation into dense, self-sufficient vertical organisms. These structures are not conceived as utopias in the escapist sense, they are stepping stones toward an evolutionary future (Fig. 3).

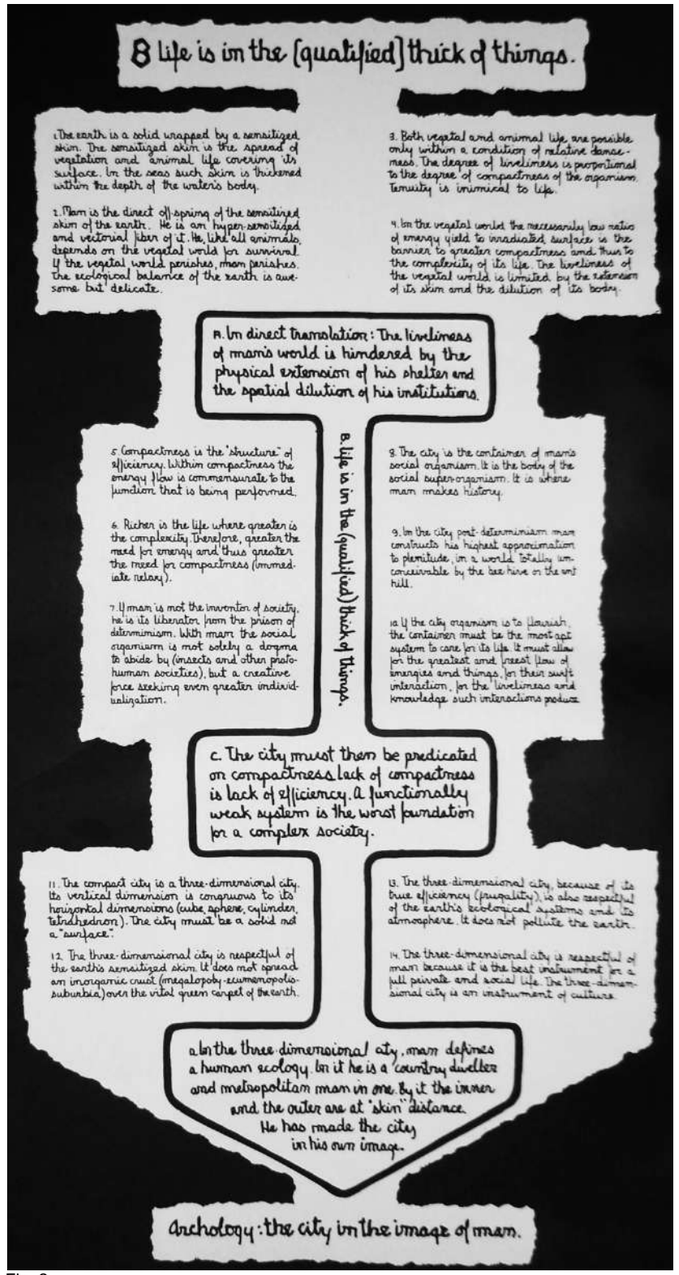

Fig. 2

A central motif in Soleri's thought is miniaturization. "Miniaturize or die", he declares, presenting compactness as a universal law of living systems. For him, the imperative to reduce spatial and energetic footprints is not merely pragmatic but evolutionary, a vector pulling life toward higher complexity and spiritual intensity. The arcology condenses this insight into a tangible form: a vertical city where transportation, communication and production interlace like the fibers of a living organism. By eliminating the horizontal waste of conventional sprawl, such cities promise not only ecological efficiency but also a reintegration of social life.

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In the preface to the paperback edition he describes the arcology as an “inclusive environmental methodology of salvation”, choosing the word “salvation” deliberately over “survival”. Salvation, he argues, implies a qualitative leap: a theological unfolding of the future in which ecological discipline and spiritual aspiration converge. He speaks of a “theo-ecological centration”, a place where the virtue of conservation, frugality and creation becomes an immanent sacredness. Here ecological practice is inseparable from a re-enchantment of the world.
The drawings themselves – dense sectional perspectives, soaring conic towers, planetary networks – perform this double role. They are simultaneously analytical and prophetic, fusing technological speculation with a quasi-religious sense of destiny. Soleri’s images of “urban rivers” continuous bands of habitation flowing across continents and seas, or his intricate axonometrics of Arcosanti visualize not a finished design but a process of spiritual and ecological evolution. In this sense the arcologies “stand abstract and removed from the concreteness of reality”, as Soleri admits, but precisely as “symbols of a hypothetical yet necessary future”.

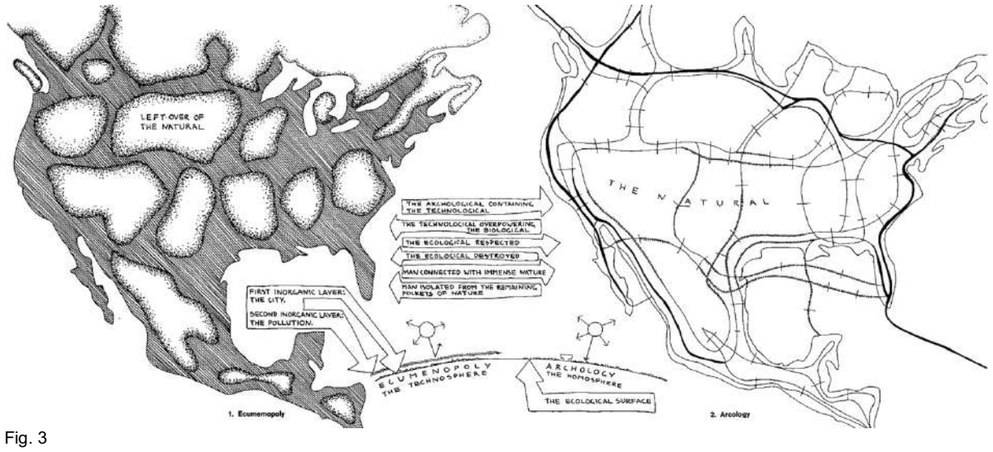

Fig. 3

If Soleri addresses the planetary scale, the Florentine collective 9999 – formed in 1968 by Giorgio Birelli, Carlo Caldini, Fabrizio Fiumi and Paolo Galli – explored ecological consciousness at the intimate scale of everyday life, presenting their work in the 1972 MoMA exhibition “Italy: The New Domestic Landscape”.
Guided by an acute sensitivity to the environment and seeking not monumental solutions but micro-ecological practices, their “Casa-Orto” was part dwelling and part greenhouse. It proposed the integration of living space and food production, anticipating today’s interest in urban farming and circular economies. The project reimagined the home as a self-sustaining ecosystem where domestic rituals and natural cycles intertwine. Rather than separating architecture from nature, the “Casa-Orto” dissolves the boundary, allowing plants, light, water and human habitation to form a single metabolic unit[22].
The representational strategies of 9999 were as radical as their ecological program. They employed photomontage, collage and multimedia installations to create immersive environments that blurred art and architecture. Their drawings are not conventional plans or sections but vivid, almost psychedelic compositions in which human figures, vegetation and cosmic imagery coexist. This visual language reflects a conviction that the ecological imagination cannot be confined to technical diagrams but it requires a sensorial and symbolic engagement that mobilizes desire and play.
Projects like “Vegetable Garden House” staged performances of growth and decay, making natural processes visible as architectural events (Fig. 4). Through these experiments 9999 advanced what might be called a “domestic arcology”, demonstrating that environmental responsibility begins at the scale of daily life and collective creativity.
Despite their differences of scale, Soleri and 9999 share a profound belief in drawing and representation as critical acts. Soleri’s intricate diagrams condense complex ecological and spiritual ideas into visual form, inviting readers to imagine rather than merely observe. His use of italics to highlight key phrases in the text mirrors the graphic intensity of his illustrations, guiding the reader through layers of conceptual resonance.
Similarly, 9999’s collages and multimedia installations transform representation into performance. Their drawings are not neutral tools of communication but active participants in the creation of new realities. By fusing architecture with art, music and theater, they dissolve the distinction between design and life, making the act of representation itself an ecological practice. Both Soleri and 9999 thus exemplify a

radical understanding of drawing as a space where ideas, materials and temporalities intersect: a space where architecture thinks beyond the merely physical.
Taken together, these two trajectories illuminate a crucial moment when architecture confronted the threshold of reality: the recognition that the planet’s resources and the human capacity to inhabit them are finite. Soleri addressed the problem at the macro-scale, envisioning entire civilizations reorganized into compact “arcologies” that minimize energy use and foster spiritual growth. 9999 responded at the micro-scale, transforming the home and the city into sites of ecological intimacy and participatory culture. Both rejected the modernist dream of limitless expansion and instead sought forms of life that acknowledge interdependence and constraint.
As climate change, biodiversity loss and resource depletion demand new modes of living, Soleri’s call for “miniaturization” and 9999’s experiments with self-sufficiency anticipate current debates on density, resilience and local production. Perhaps even more important is their shared insistence that representation – the very act of drawing or imagining – has the power to shape ecological consciousness. In their hands, the architectural drawing is not a static depiction but a dynamic inquiry into how humans and environments co-create one another.
Soleri’s notion of “salvation,” with its theological overtones, and 9999’s playful domestic ecologies may seem far apart, yet both point toward an architecture that is less about building objects than about cultivating relationships between people and planet, culture and nature, matter and spirit. They remind us that the environmental crisis is not only a technical challenge but also a crisis of imagination. To envision sustainable futures, architecture must operate at once as science, art, philosophy.

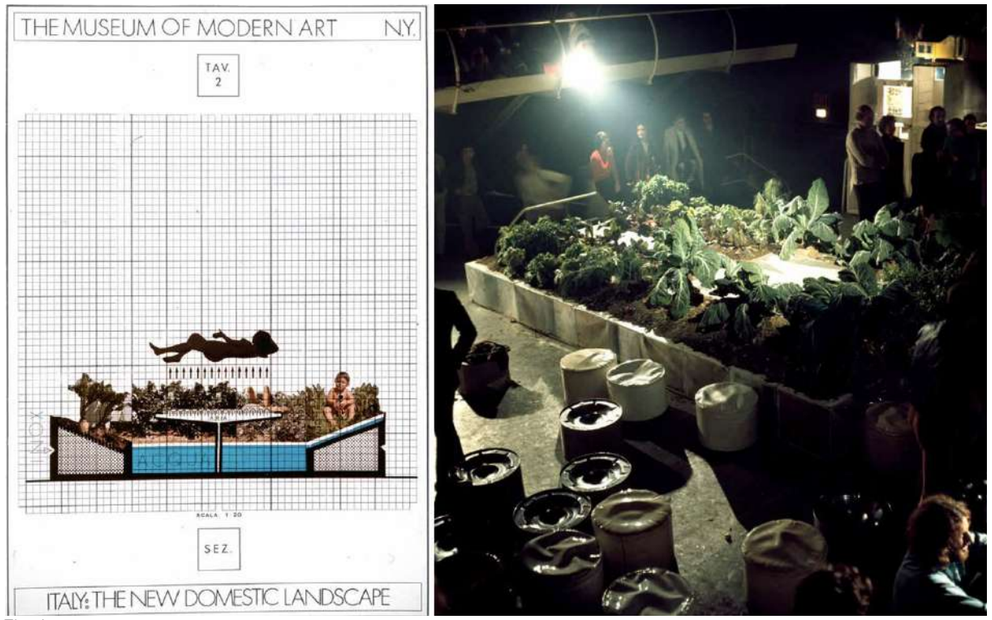

Fig. 4

5. Conclusions
The radical experiments thus offer more than historical curiosities. They articulate an ecological consciousness that remains urgent and relevant. By challenging the conventional boundaries of scale, program and representation, they reveal that the future of architecture lies not in the endless pursuit of new frontiers but in the careful re-drawing of the relationships that sustain life. Their work underscores a lesson increasingly clear in our own time: without the capacity to imagine – and to depict – alternative modes of dwelling, no viable response to the intertwined crises of the city and the planet can emerge.
These experiences are the essence of radical thought: the dissolution of contradiction into complementarity, the move from object to process and the insistence that design is fundamentally the formulation of problems. It invites us to see architecture not as a finished object but as an evolving practice of critical inquiry.
Francis Ford Coppola’s “Megalopolis” extends this insight into the present. Its imagined utopia whose power lies in the questions, forces us to confront rather than in any ready-made answers.
The film makes clear how easily such visions hover on the edge of dystopia, reminding us that the productive conflict between hope and failure is a permanent condition.

Architectural drawing, understood as a critical and political medium, offers not closure but an invitation to constant inquiry, a “motion of the camera” that never ceases to explore.
From the Moon’s silent landscape to today’s climate emergency, the challenge remains the same: to draw the unbounded, to represent the unrepresentable, and to decide – together – the limits of the inhabitable world.
“From the control of the environment with three-dimensional and energetic means to the creation of shelters and microclimate, present design relating man to the environment produces a complexity of new needs and a new kind of poverty. Design may become a cross-discipline. Therefore we visualize an image guide: design is the formulation of problems or the evolution of a new mentality-a guideline for a new society. […] Look at that distant mountain. What can you see? Is that the place to go to, or is it the only limit of the inhabitable? It’s both the one and the other. Since contradiction no longer exists, it’s only a case of being complementary”[23] (Fig. 5).

Fig. 5

Notes

1. “1970: Caro Adolfo. A letter from Alessandro Poli”, Canadian Centre for Architecture, accessed September 10, 2025, https://www.cca.qc.ca/en/articles/issues/2/what-the-future-looked-like/37334/1970-caro-adolfo.
2. Timothy Morton, *Hyperobjects: Philosophy and Ecology After the End of the World* (Minneapolis: University of Minnesota Press, 2013), 1.
3. Morton, *ibidem*.
4. Aldo Rossi, “La città analoga: tavola”, *Lotus International*, no. 13 (December 1976): 6.
5. Jacques Derrida, “Semiology and Grammatology. Interview with Julia Kristeva”, in *Positions*, ed. and trans. Alan Bass (Chicago: The University of Chicago. Press, 1981), 17.
6. Derrida, *ibidem*.
7. Cfr. Antonino Bondì, *Louis Hjelmslev. Fra lingua e linguaggio* (Firenze: Carocci, 2012).
8. “Semiotics has developed two main definitions of the sign. One is that of Ferdinand de Saussure, for whom the linguistic sign is a “psychic entity with two sides” that “unites not a thing and a name, but a concept and an acoustic image” (de Saussure, *Cours de linguistique générale*, 98-99). For Saussure, therefore, the sign is not a material object but the relationship between two entities: one (the present, material, concrete one) signifies the other (the absent one, which may be either concrete, like a particular thing, or abstract, like a concept). Saussure calls the present entity (which represents and refers to the other) the signifier, a word to be fully understood in its verbal sense, as a gerund indicating the action of signifying. The absent entity (which is evoked and, in many cases, defined by the signifier) is the signified” (Volli, *La danza dei segni*, 32). [The quote from the Italian was translated by the authors]
9. Cfr. Jacques Derrida, "Differance", in *Speech and Phenomena*, trans. David B. Allison, Newton Garver (Evanston: Northwestern UniversityPress, 1973), 129-160.
10. “Here the term thing is understood in its phenomenological sense, in which what matters is not the single element or object as such, but the way in which it manifests itself to consciousness – the phenomenon. In architecture, it is the circuit traced by the “infrastructural” energy of Interiorness as it travels through space among different interiorities. The Thing interacts within the relationships between the content of space and the form of objects, between the “things of life” and the “life of things” within the Great Wealth” (Sichenze, *Internità. Architettura Energia Psiche*). [The quote from the Italian was translated by the authors]
11. Cfr. Martin Heidegger, *Essere e tempo,* trans. Pietro Chiodi (Milan: Longanesi, 1976).
12. Here the term “to desire” is understood in accordance with Guido Cusinato, who states that “desire is not […] nostalgia for the stars, but the search for the constellation that corresponds to one’s own vocation”, the true destiny of humankind. (Cusinato, Periagoge, 144). [The quote from the Italian was translated by the authors]
13. Cfr. Maria Italia Insetti, “Postfazione”, in Sichenze, *op. cit*.
14. This section of the 38th International Art Exhibition of La Biennale di Venezia “From nature to art from art to nature”, titled “Utopia and the Crisis of Anti-Nature: Moments of Architectural Intentions in Italy – Topology and Morphogenesis” was curated by Enrico Crispolti and Lara Vinca Masini, with the collaboration of Fulvio Irace and exhibition design by Pier Daniele Mozzetti Monterumici. For further details, see “38. Esposizione Internazionale d'Arte: dalla natura all'arte dall'arte alla natura”, ASACdati La Biennale di Venezia, accessed September 10, 2025, https://asac.labiennale.org/attivita/arti-visive/annali?anno=1978.
15. Lara Vinca Masini, *Utopia e crisi dell’antinatura. Momenti delle intenzioni architettoniche in Italia. Topologia e morfogenesi* (Venice: Edizioni La Biennale di Venezia, 1978), 34-39.
16. Manfredo Tafuri, *Progetto e utopia. Architettura e sviluppo capitalistico*, (Bari-Roma: Laterza, 1973).
17. Bruno Latour, *La sfida di Gaia. Il nuovo regime climatico*, trans. Donatella Carestina (Milan: Meltemi, 2020), 377-378.
18. Ina Macaione et al., “Tra utopia e adattamento: il progetto di architettura nelle transizioni”, in *Metamorphosis. Transforming Italian Architecture*, ed. Benedetta Medas, Alessandro Melis, Barbara Melis, Daniele Menichini, Natalie Mossin, Massimo Pica Ciamarra (Pisa: Pacini Editore, 2025), 84-90.
19. Lucius Burckhardt, *Il falso è l'autentico. Politica, paesaggio, design, architettura, pianificazione, pedagogia*, ed. Gaetano Licata, Martin Schmitz Quodlibet, trans. Carla Buttazzi, Elisa Ricci (Macerata: Quodlibet, 2019), 53.
20. Paolo Soleri, *Arcology. The City in the Image of Man* (Cambridge: The MIT Press, 1973).
21. Peter Blake, “Foreword”, in Soleri, *op. cit*.
22. Eleonora Trivellin, “9999: progettazione radicale orientata alla natura”, *Ais/Design Journal. Storia e Ricerche* 10, no. 19 (December 2023): 120-150.
23. Superstudio, “Supersurface. An Alternative Model for Life on the Earth”, directed by Superstudio, 1972, short film, 9:43, https://www.youtube.com/watch?v=uXyU_hIvr3k.

Image Captions

Fig. 1. Superstudio, La Moglie di Lot
Fig. 2. Paolo Soleri, Arcology : the city in the image of man
Fig. 3. Paolo Soleri, Ecumenology and Arcology
Fig. 4. Left: 9999, Casa-Orto, section. Right: Set of the garden at Space Electronic in 1971
Fig. 5. Frames of “Supersurface. An Alternative Model for Life on the Earth” by Superstudio

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Biography

Ina Macaione is an architect and Associate Professor of Architectural and Urban Design at the Department for Humanistic, Scientific and Social Innovation (DIUSS), University of Basilicata. She is co-founder and coordinator of NatureCityLAB (DIUSS-UniBas) and serves as editor of the book series *Architecture and Phenomenology of the Nature-City* (FrancoAngeli).
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Enrica Gaia Consiglio is an architect and PhD student in the 40th cycle of the *Architecture for the Ecological Transition between Interior Spaces and Landscape* (ATESIP) program at the University of Palermo. In 2023, she was awarded a research scholarship at the Department of European and Mediterranean Cultures, Environment and Cultural Heritage (DiCEM) at the University of Basilicata. As a member of NatureCityLAB (DIUSS-UniBas) and within the PON RESO project, she investigated urban agriculture and participatory approaches to ecological design. Her current doctoral research focuses on climate change, developing strategies for mitigation and adaptation to strengthen urban resilience toward more sustainable urban futures.

Active Ruins: Massimo Carmassi's Pisan Projects

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Abstract

In his *Theses on the Philosophy of History* (1940), Walter Benjamin proposes a critical and fragmentary conception of the past, set against linear, progressive, and positivist narratives. From the perspective of the theorist, history does not unfold as an ordered continuum of objective facts, but as a landscape of ruins and fragments, where the past endures in discontinuous and often marginal forms. Every present nevertheless contains the possibility of redemption—*Jetztzeit*, the "now-time"—a moment in which the experiences and memories of the defeated can resurface. Consequently, the historian's role is not to passively record events, but to wrest meaning and future potential from what official narratives have excluded or silenced.

This concept is exemplified in the oeuvre of Massimo Carmassi, a Pisan architect and the head of the Municipal Architecture Department from 1974 to 1990. In his work the notion of the *ruin* plays a central role. In a city that was still marked by the destruction of the Second World War, Carmassi undertook a project to redevelop the historic centre. He initiated his research with meticulous architectural surveys—treated not as neutral tools but as acts of historical interpretation. From these, he developed proposals that spanned from the adaptive reuse of individual buildings to urban-scale reconnections, linking historic structures with contemporary additions. In contrast to many of his contemporaries, who favoured utopian visions and theoretical abstraction, Carmassi's work was always concrete, empirical, and grounded in the existing fabric of the city. His architecture is not speculative but feasible, rooted in what is already there.

The present article examines Carmassi's design approach through the lens of his realised and unrealised projects for Pisa, with particular focus on the recurring devices of the *fragmented wall* and the *gallery building*. These elements, found throughout the archival project drawings, can be interpreted as a profound reworking of the fascination with the ruin and the historical trace. In Carmassi's oeuvre, the ruin is not merely a relic; it functions as generative device for rewriting urban space, an identity-bearing instrument, and a critical tool against the homogenising tendencies of globalisation.

Key words: Walter Benjamin, Massimo Carmassi, ruins, urban regeneration, Pisa medieval city.

1. Introduction

“Die Vergangenheit führt einen heimlichen Index mit, durch den sie auf die Erlösung verwiesen wird.”[1]

“The past carries with it a temporal index by which it is referred to redemption”[2]

In the 1940 *Theses on the Philosophy of History*, Walter Benjamin proposes a conception of the past that is diametrically opposed to the linear and progressive narratives characteristic of positivist historiography. From this standpoint, history is not regarded as an ordered sequence of events; rather, it is seen as a fragmentary assemblage of ruins and traces. In this assemblage, events resurface in forms that are discontinuous and often marginal.

At the core of this vision is the concept of *Jetztzeit*, which translates as "now-time": moments characterised by a sense of immediacy and simultaneity, instants in which the past intersects with the present – reminiscent of a reemergent memory’s uncovering of the previously forgotten. According to Benjamin, every present has the capacity for redemption, that is, the potential to reclaim the experiences and memories of the defeated, who are typically excluded or erased from the official narrative. The role of the historian, therefore, is not the mere passive recording of facts, but rather the proactive intervention in and transmission of the past, challenging conformism and re-establishing it in a new context. In Benjamin's perspective, the materialist historian is tasked with the sensitive responsibility of immediately and compellingly identifying the moments in which the past intersects with the present. These moments are significant in that they give rise to patterns of meaning that possess the capacity to illuminate both the past and the potential for future transformation. As Benjamin states in Thesis VI: “In every era the attempt must be made anew to wrest tradition away from a conformism that is about to overpower it.”[3]

This notion is vividly represented in one of his most renowned theses, Thesis IX, through the image of the Angelus Novus, the well-known painting by Paul Klee that Benjamin owned. The angel depicted in the work appears to be looking towards the past:

“His eyes are staring, his mouth is open, his wings are spread (…) Where we perceive a chain of events, he sees one single catastrophe which keeps piling wreckage upon wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. This storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress.”[4]

The image conveys a perspective on history as a domain characterised by unresolved tensions, wherein the past cannot be reconstituted or made coherent. In Benjamin's metaphor, Klee's angel is depicted as both the powerless witness to a time that shatters and the privileged observer of its ruins. It from is within these ruins, rather than through history’s triumphs, that the traces to be preserved, the fragments to be reactivated, and the memories to be reclaimed can be found.

In contrast to numerous alternative philosophical interpretations, Benjamin's concept of the ruin is characterised by critical and political significance. For instance, approximately three decades prior, Georg Simmel expounded on this notion in his renowned 1911 essay, *Die Ruine*, from an aesthetic vantage point. He advanced the argument that every work, particularly of an architectural nature, represents the affirmation of the spirit, *Geist*, over the natural element, *Natur*. He further advanced the argument that this balance was destined, sooner or later, to be reversed, with the passage of time seeing nature regain the upper hand in a gradual and almost physiological process.

“Die Ruine eines Bauwerks zeigt dagegen, daß in dem Verschwinden und der Zerstörung des Kunstwerks andere Kräfte und andere Formen, die der Natur, gewachsen sind, und daß so aus dem, was in ihm noch von der Kunst lebt, und dem, was in ihm schon von der Natur lebt, ein neues Ganzes, eine charakteristische Einheit entstanden ist. Gewiß, vom Zweck aus gesehen, den der Geist im Palast und in der Kirche, in der Burg und in der Halle, im Aquädukt und in der Ehrensäule verkörpert hat, ist das Verfallen seiner Form ein unsinniger Zufall; aber dieser Zufall ist mit einem neuen Sinn bekleidet, der beide, ihn und die geistige Gestaltung, umgreift, ein Sinn, der nicht mehr in menschlicher Zweckmäßigkeit, sondern in jener Tiefe gründet, in der diese und das Ineinanderspiel der unbewußten Naturkräfte aus einer gemeinsamen Wurzel hervorgehen.”[5]

“The ruin of a building, however, means that where the work of art is dying, other forces and forms, those of nature, have grown; and that out of what of art still lives in the ruin and what of nature already lives in it, there has emerged a new whole, a characteristic unity. To be sure, from the standpoint of that purpose which the spirit has embodied in palace and church, castle and hall, aqueduct memorial column, the form in which they appear when decay is a meaningless incident. Yet a new meaning seizes on this incident, comprehending it and its spiritual form in a unity which is no longer grounded in human purposiveness but in that depth where human purposiveness and the working of non-conscious natural forces grow from their common root”.[6]

For Simmel, the act of destruction unveils a new form of beauty in the ruin. This romantic notion of the fragment has long captivated artists and intellectuals, as evidenced by the renowned *Capricci* series, notably executed by artists such as Panini, Codazzi, and Piranesi.

Benjamin's work transcends this intuitive understanding by exploring the concept of ruin as a physical space where nature and spirit intertwine. In this sense, the ruin becomes the very material on which the historian must act, serving as a repository for denied memories and unfinished possibilities. The shift in meaning can be partly attributed to a major historical event that took place during the drafting of the Theses: the Second World War. Indeed, it is from the rubble left behind by the conflict, and from the bombings that destroyed entire portions of the urban fabric, that the ruin acquires a new sense; that of rupture. No longer an object capable of evoking historical magnificence, the ruin is here a fragmented, severed, and annihilated body; a custodian of pain. The post-war artistic landscape has been characterised by a recurring theme of urban decay, manifesting in the form of torn cities, sectioned dwellings and violated fragments of everyday life. This thematic tendency has been observed in the works of numerous post-war artists, ranging from the decaying landscapes depicted by Anselm Kiefer to the urban incisions characteristic of Gordon Matta-Clark's oeuvre.
In the contemporary era, this vision is further enriched by the concept of ruin as *waste*,[7] embodied in the skeletal frames of abandoned buildings left behind as a result of unchecked consumerism. The debris[8] of the contemporary era bears no connection to the realm of the sublime. The ruins, devoid of their customary aura and stripped of their former monumentality, stand as poignant testimonies to a consumption that both devours and abandons them. These ruins, in their stark and unadorned state, serve as mirrors, reflecting the ongoing degradation of the present condition.
The ruin, understood as a modest element, also entails a change of scale, as evidenced by Rogers's words at the end of the 1950s:

“Vi sono valori emergenti, facilmente classificabili e difendibili (come i monumenti veri e propri o certi panorami caratteristici), ma il vero problema è d’inserirsi negli ambienti connettivi fra dette emergenze; possono essere i monti, le colline, il litorale, la brughiera poetica o l’edificato di un qualsiasi agglomerato urbano di qualsiasi epoca, l’ultima compresa, s’intende.”[9]

[There are emerging values that are easily classifiable and defensible (such as monuments themselves or certain characteristic panoramas). However, the real problem lies in intervening in the connective environments between these features. These environments may include mountains, hills, the coastline, the poetic heath, or the built fabric of any urban settlement of any age, including the most recent, of course][10]

Consequently, the focus has shifted from the study of exceptional artefacts to that of the broader archaeological material, from the centrality of a single opulent find to the care for anonymous remains dispersed throughout Italian territories.[11]
Empancipated from the weight of the monument, this desacralised ruin opened the way to a freer and more fertile relationship with the past.

“Il rovinismo è vena carsica che scorre non solo nelle produzioni architettoniche ma, con una formatività mai univoca, in molteplici orientamenti d’arte tardo novecenteschi: dal nuovo realismo alla pop art, dal concettuale all’arte povera, dalla land art americana al citazionismo postmoderno, dalla body art alla performance art, da frange del cinema sperimentale alla video arte”.[12]

[Ruinism is a subterranean vein that runs not only through architectural production but, with an always ambivalent formative power, through multiple strands of late twentieth-century art: from New Realism to Pop Art, from Conceptual to Arte Povera, from American Land Art to Postmodern citationism, from Body Art to Performance, from certain strands of experimental cinema to Video Art.][13]

While within the domain of art, this liberty of form may have enabled creators to embark on a wide array of experiments, the realm of architecture—characterised as it is by functional, technical and regulatory constraints - such experimentation did not invariably yield favourable outcomes. On occasion, this approach gave rise to “surrogate architectures,” [14] that failed to establish an authentic dialogue with the remains. At other times, it became a mere exercise in self-referentiality. In the most conscious cases, however, the project takes shape as a moment of “critical reflection,” an intervention able to resonate

with the potential of the fragment without renouncing the creative act of design. The issue at hand is not a matter of denying the project, but rather of establishing a deliberate distance from the existing, thereby allowing new possibilities for interpretation to emerge from the fragments of the past.
In this sense, the process of design can be considered as a form of rewriting. The materialist historian and the architect engage in a similar practice of reinterpreting and reactivating the past. This "analogical rewriting"[15] serves to transform ruins into generative pretexts. As Gregotti observes, it is only through “efforts of imagination” that the landscape and preexistences become operative and dialectical elements. [16] It is evident that certain twentieth-century architects, including Massimo Carmassi, demonstrated an ability to grasp this potential. On occasion, they engaged with what has been termed the "ancient remnants", and at other times, the “contemporary rubble”. Through their endeavours, these elements were made to resonate in the present. The ruin, an imprint suspended between presence and absence, thus becomes both an identity device and a critical tool against the disorientation of globalisation. This forgotten past resurfaces as an unforeseen image, to be “wrested from conformism,” following Benjamin’s exhortation.[17]

1.2 Pisa as a Construction Site of Memory
Italian cities, to a greater or lesser degree, bear the imprint of their past. Some display it with pride, transforming historical vestiges into an integral and visible part of the urban landscape, as evidenced by the establishment of open-air archaeological parks. The city of Rome, for instance, has historically functioned as a privileged site for both architects and scholars. Others preserve their heritage as something precious but untouchable, petrifying themselves into a museum period diorama, or worse yet, chasing maintenance attempts toward Disneyfication; still others conceal their memories beneath plaster, leaving street layouts or block structures to suggest their historical matrix.
Pisa in the 1970s—and to a considerable extent even today—retained a medieval fabric, dense in its weave and punctuated by ancient monuments. This heritage, partly spared from the destruction of the Second World War and misguided renewal interventions, was damaged but essentially intact in its features.
This imprint proved to be a significant source of inspiration and experimentation for Massimo Carmassi, a young and skilled Pisan architect who served as the director of the Municipal Architecture Department from 1974 to 1990. Carmassi was born in Pisa, and it was in this city that he spent his childhood, playing among the ruins of a city whose reconstruction lagged behind due to unstable political power. The landscape of ruins, which had left an indelible mark on his memory, exerted a profound influence on his design sensibility. Through meticulous analysis of the historic city and the conceptualisation of the contemporary ruin, he distilled the fundamental tenets of his architectural poetics, both for conservation and new construction.
In the context of a progressive administration, with a PCI majority, that was finally committed to the city's postwar reconstruction, Carmassi was able to address significant design issues from the periphery to the historic centre. It is evident that a significant number of public edifices were erected under his supervision in the peripheral areas of Pisa, including educational institutions, social centres, a residential structure in Cisanello, and expansions to cemeteries. A significant proportion of the restorations encompassed municipal buildings and urban repairs in the historic centre, including the renowned Palazzo Lanfranchi, Teatro Verdi, San Michele in Borgo, and the buildings in Via dell'Occhio. A comparable number of projects were initiated at the urban scale, including the Cisanello business centre and studies for the new Master Plan of Pisa. The numerous public edifices, that are dispersed throughout the city and stand as a testament to that era, exhibit a distinct and discernible language, deeply rooted in the analysis of the historic city. The vocabulary of the architect is characterised by a few recurring elements, including the element of the wall[18] and elementary geometric forms, which are assembled in accordance with principles of simplicity, homogeneity, neutrality, and coherence, as articulated by Carmassi himself[19].
In addition to completed buildings, the Palazzo Cevoli drawing archive in Pisa[20] bears witness to the dedicated labor of Carmassi and his close collaborators, who daily prepared various design proposals in order to identify the most appropriate solutions. The archive preserves everything: from preliminary sketches to meticulous detail drawings at a 1:1 scale. These include, for instance, the custom brickwork panel representing the masonry texture for the renovation project of San Michele in Borgo, or the numerous details of typical iron framework composed of standard bar and rod profiles.
Like many architects of the time, Carmassi favored drawing as a medium for translating his visions. However, in contrast to some of his contemporaries who demonstrated a proclivity for utopian visions and theoretical abstractions realised through graphic experiments such as collage, Carmassi employed a concrete, empirical and realistic line, firmly anchored in the existing urban fabric.
This emerged from the very outset of the design process: at the foundation of each hypothesis, according to his studio’s working method, there was a true *progetto di conoscenza* (project of knowledge), founded on a detailed survey of the context—not a simple technical representation, but a tool of investigation and an act of understanding.

Drawing on this idea, Carmassi initiated a comprehensive survey of the historic centre immediately upon his appointment by the Municipality. The primary objective of this initiative was to furnish technicians with a substantial foundation of knowledge, thereby averting any inadvertent or uninformed interventions that might have compromised the integrity of Pisa's urban fabric and its unique identity. The operation, resulted in the documentation of 28 architectural complexes—ranging from monumental buildings to significant parts of the urban fabric—562 survey drawings, mainly at 1:50 scale. A significant proportion of these illustrations was allocated to the documentation of the medieval walls that encircle the city—a structure that Pisa has maintained almost intact, with only a few sections exhibiting signs of damage—and the numerous monuments situated along its trajectory.

1.3 The *Fragmented Wall* and the *Gallery Building*
As already mentioned, throughout his career in Pisa Carmassi engaged both with the historic centre of the city and with its peripheral extensions. In the first case, when the intervention concerned a strongly historicised building—whether monumental or belonging to vernacular construction—his strategy was predominantly conservative. The design method, evident in his well-known projects—from the recovery of Palazzo Lanfranchi to the restoration of the Teatro Verdi—was based on an analytical conservation of the historic preexistence, combined with its reworking into a new system of architectural and functional meanings. It was a continuous and dialectical dialogue with urban morphology and building typology, in which traces were respected and enhanced through the careful introduction of contemporary technological devices, clearly legible and distinguishable. On the outskirts of the city, by contrast, where the fabric is often characterless or marked by neglect, it is the public building that becomes a visual fulcrum and an identity catalyst. In these context without distinctive character, Carmassi conceived contemporary architectures able to assume the symbolic stature of the monument, sometimes allowing the echo of the ruin and its bond with historical memory to emerge as a subtle undertone.
The aim of this research is not, however, to retrace the architect’s well-known work in the city of Pisa, but rather to highlight—through the systematisation of certain project drawings—two recurring elements of his architecture. Elements that can be interpreted as a personal and profound re-elaboration of the concept of ruin, whether as historicised legacy or inert urban fragment.
From the analysis of numerous drawings preserved in the archive—some relating to projects never realised, other executed in ways that diverged from the original conception—two recurring devices emerge with particular force: that of the *fragmented wall* and that of the *gallery building* typology.
In the project for the expansion of the suburban cemetery (Fig. 1), for instance, an internal road with a serpentine course disrupts the rigid geometry that organised the alignment of the niches along parallel walls. The same device is once again employed in the design for the middle school in Barbaricina[21] (Fig. 1). In the project, a substantial fragmented glass wall serves to divide the teaching spaces from the gymnasium, which itself is closed off by an opaque wall of similar articulation. The design gesture employed in the work evokes the image of a building struck by an explosion, as if a detonation had destroyed part of it.

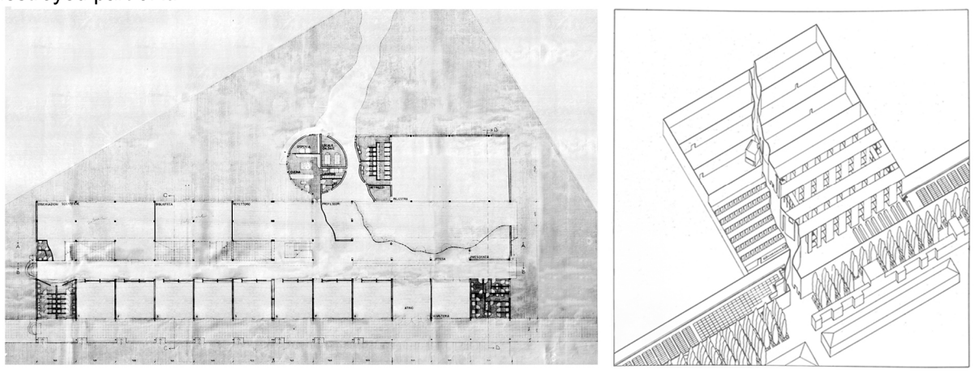

Fig. 1

In the proposal for the Putignano social centre (Fig. 3), the architectural device breaks into the sequence of cubes that define the spaces, while in the adjacent school (Fig. 2), a wall defined by short undulating lines interrupts the regular modular succession of classrooms. In this particular building, moreover, the intention to evoke the ruin appears even more evident: the east elevation shows a wall that extends beyond the outline of the building, dissolving into an irregular, fragmented profile. [22]

An ancient ruin or a contemporary work? Or, again, a postmodern reference to the ruin as ironic artifice, as employed by James Wines in the stores of the BEST Products stores?

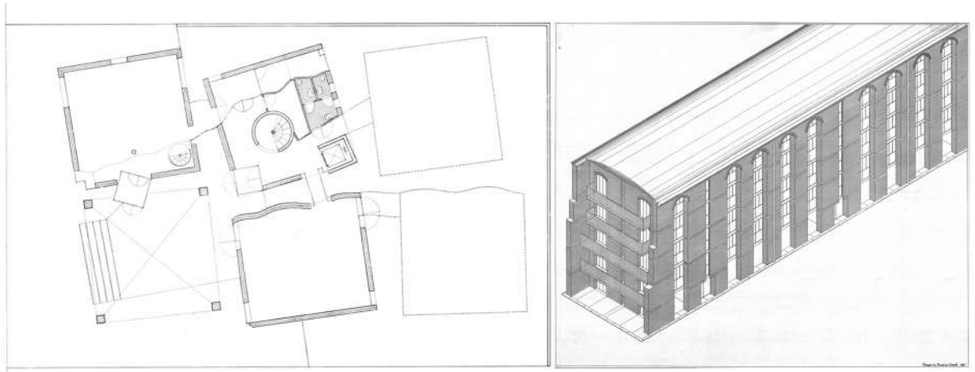

Fig. 3

A similar, though less striking, solution appears in the termination of the monumental walls of the residential building at Cisanello (Fig. 3). Here the building ends in a triple-stepped profile, evoking a missing volume.

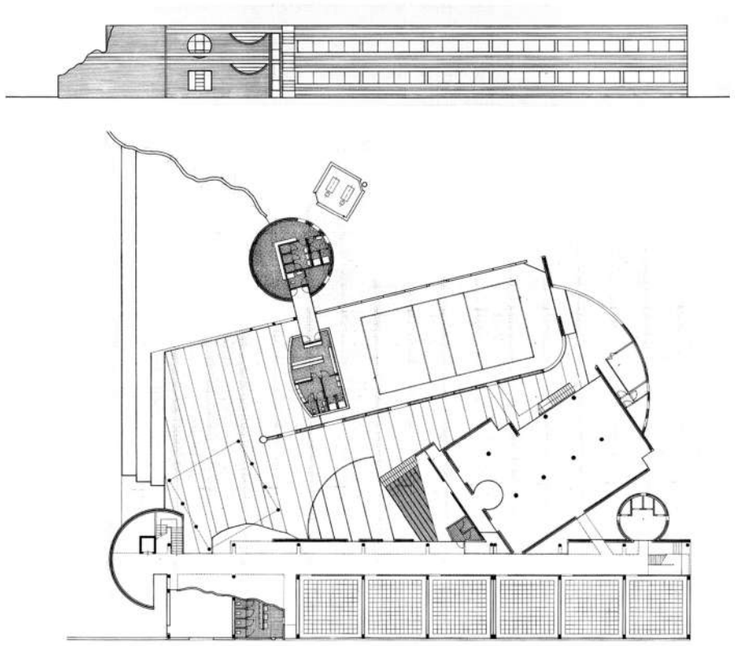

Fig. 2

The irregular graphic line also appears as a fragmented trace in proposals for urban and landscape interventions. In the drawings for the Cisanello business district, for example, a large building with sinuous walls sprawls across existing lots. Paths of similar form break the serial rigidity of symmetrical buildings, recalling by analogy the organisation of the green areas in Le Corbusier's well-known plan for Chandigarh.
Whether by conscious allusion or unconscious reflection, the device seems to evoke a subtle fascination with the ruin, with its eloquent silence and the evocative power of absence. A suggestion that Carmassi shared with other architects of the time, whose work he held in high esteem. One example of this is James Stirling's projects for German museums[23].
This suggestion is also recurring in several proposals for the redevelopment of the medieval city walls, a significant urban-scale adaptive reuse project to which Carmassi devoted his entire life, formulating various hypotheses from the 1970s through to the 2000s.[24]

In the project for the Cittadella area, illustrated on the cover of issue no. 96 of *Parametro, Pisa modernità di una città*[25], for example, an extremely irregular path crosses the park in front of the Medici Arsenals. In one of the earliest design proposals for the Fortezza Fiorentina (Fig. 4)—an area particularly dear to Carmassi, built as a military stronghold at the beginning of the fifteenth century with the contribution of architects such as Filippo Brunelleschi, Giuliano da Sangallo, and Antonio da Sangallo—the terraced slopes marked by parallel lines that connect the level of the moat to that of Piazza Toniolo break against the water, assuming a sinuous course. Upon analysis of the plan, it becomes evident that a modest community centre is situated in proximity to the moat, in dialogue with eight reinforced concrete pillars that are part of a disused factory. The complex already reveals, albeit in embryonic form, some elements destined to become distinctive features of the architect's language: an isolated service block, circumscribed by a circular wall; a juxtaposition of massive regular geometric forms and light structures; a predilection for exposed brick; the use of iron for stair blocks and light partitions; and, on the ground floor, a sinuous line that delineates the space designated for the café and the civil registry.

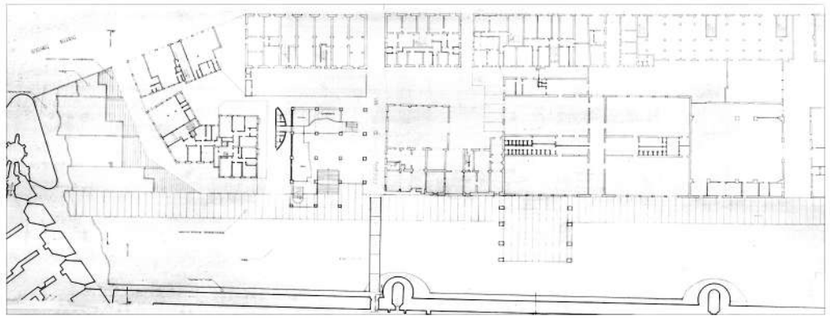

Fig. 4

However, as Carmassi's architectural language evolved and consolidated, these serpentine lines disappeared, while a tendency towards geometric forms and the use of regular, though asymmetrical, geometric design became more established. [26] In accordance with these tendencies, a second element—derived from the analysis of the medieval historic city and destined to become a constant feature of the author's oeuvre—became increasingly recurrent in his language: the "gallery building." This typology is characterised by two massive parallel brick walls that define a long empty interior space, articulated by lightweight partitions or glass screens.
The architect himself has explicitly delineated the genesis of the design gesture as a typological reinterpretation of the medieval tower house:

"Può darsi che questa preferenza derivi dalla mia lunga consuetudine con lo studio delle case torre pisane e con il lavoro di restauratore. Infatti la tipologia della casa torre, con la sua struttura elementare ma forte, ha consentito la massima flessibilità alle modifiche, senza perdite di qualità, mentre la condizione di inamovibilità della struttura cellulare degli edifici antichi non è stata un vincolo ad ottenere risultati spaziali e funzionali brillanti, ma uno stimolo alle più sofisticate soluzioni architettoniche".[27]

[It may be that this preference derives from my long familiarity with the study of Pisan tower houses and with my work as a restorer. Indeed, the typology of the tower house, with its simple yet strong structure, allowed maximum flexibility for modifications without any loss of quality, while the immovable condition of the cellular structure of ancient buildings was not a limitation to achieving brilliant spatial and functional results, but a stimulus to the most sophisticated architectural solutions.][28]

The *gallery building* is clearly evident in the analysis of the plans of numerous projects, both realised—such as the residential building at Cisanello (Fig. 3) or the intervention at San Michele in Borgo—and unbuilt, such as the final project for the Fortezza Fiorentina area (Fig. 5).
The detailed and fascinating drawings from 1998, which illustrate the last of the forward-looking projects for the redevelopment of the medieval walls proposed by Gabriella and Massimo Carmassi on behalf of the Pisa municipal administration, show major building replacements within the historic city. In these proposal, degraded urban fabric is substituted with narrow, elongated volumes establishing new spatial and compositional relationships with the context. In the Fortezza Fiorentina area, for instance, the drawings reveal the demolition of the buildings along via Bovio and the closure of the block along the street with the introduction of new structures characterised by simple, clean, and contemporary language. The long gallery-type volumes, in explicit dialogue with the historical preexistences—like an important covered walkway—in both orientation and materiality, confer a more homogeneous and ordered aspect to the area compared to previous solutions.

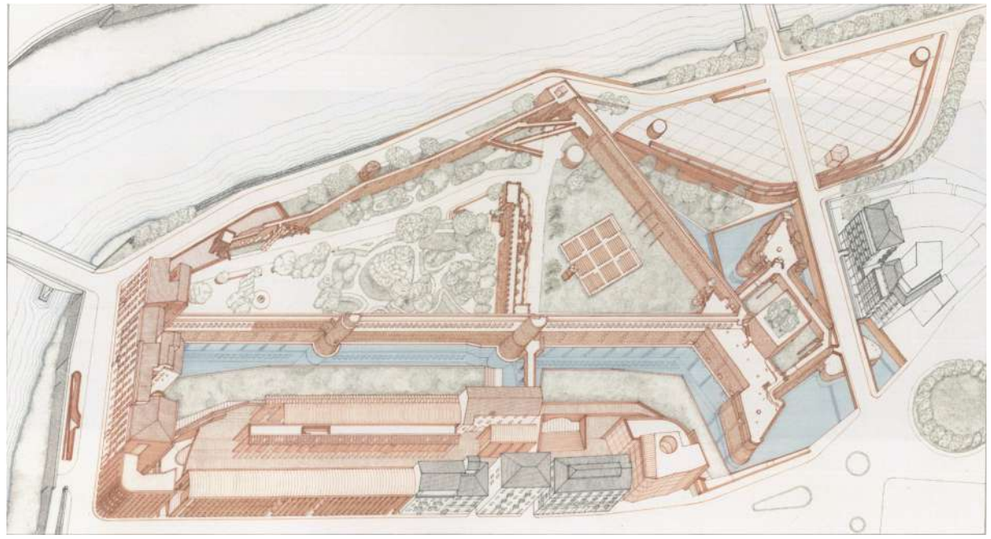

Fig. 5

From the analysis of the numerous drawings illustrating the walls project, which span a considerable time frame, it is also possible to trace the maturation of Carmassi's language. This is evident in two respects: firstly, in the greater consistency of compositional technique, and secondly, in the refinement of representation.
The conventional black ink drawing is replaced by the well-known red line—perhaps a reference to the color of brick—by which the architect emphasises the important historical preexistences and the architectural interventions in dialogue with them. This is particularly evident in the drawings of the final proposal for the walls project, where green—paired with the red of the built form—highlights vegetation as an integrated architectural element within a carefully composed landscape design (Fig. 5).
The increasing use of the red line in the later drawings—sometimes retroactively applied to earlier projects—underscores a graphic intention that, while not autonomous in the sense of many contemporaneous design experiments, nevertheless reveals an emerging awareness of authorial expression.[29]

1.4 Conclusions

The role of the ruin in the oeuvre of Massimo Carmassi is manifest in a variety of ways: as the fulcrum of restoration projects, as a subdued element within new constructions, and as a guide for urban renovation projects.
In the presence of preexisting historical elements, the architect integrates them into a system of relations with other elements—architectural, landscape, urban—that amplify its meaning and reposition it as a protagonist of contemporary space. In the absence of remains, Carmassi establishes a connection with history through contemporary ruins: design elements that evoke their form, fragmentation, and narrative power. Beyond mere formal exercise, these devices serve to reactivate the memory of place and to reassert the identity of the urban fabric.

As with the materialist historian described by Benjamin, for the architect too the ruin becomes an opportunity to “wrest” the past from conformism and return it to the present in a in a forward-looking perspective. The role of the architect, therefore, is not confined to the preservation of existing structures, but rather encompasses the reinterpretation and orchestration of a dialogue between ancient traces and new edifices. This enables the urban landscape to reclaim its identity while embracing new possibilities.
Walter Benjamin’s thought has provided an important theoretical horizon for many postmodern architects in the second half of the twentieth century. Among them, Aldo Rossi occupies a central position, having articulated a reflection on memory, fragment, and historical discontinuity that profoundly shaped architectural debate[30], and whose work Massimo Carmassi observed with great interest.
Unlike many postmodern approaches, that adopted the ruin as a rhetorical or symbolic motif, Carmassi’s architecture maintains a critical distance from formal citation and irony. The fragment is never aestheticised, but rather disciplined through the project and translated into a constructive and urban logic. At the same time the analysis of the archival drawings reveals the existence of multiple design versions for the same project, often substantially different in their spatial and formal configuration. This highlights a process of continuous verification, in which drawing assumes the role of an investigative tool and a means of critical selection among design hypotheses, rather than a simple representation of an already defined solution.[31]
In Carmassi's oeuvre, the ruin—whether actual or metaphorical—functions as a catalyst for activation, a means of resistance and regeneration, and a conduit between memory and the future. The project, put in scene by the act of drawing before that the construction, is elevated to a critical and creative act, capable of reintegrating memories of places into new forms of urban life, which are indispensable for countering the loss of specificity in the era of globalisation.

Notes

1. Walter Benjamin, “Theses on the Philosophy of History”, first published in *Neue Rundschau* (Amsterdam), 1942; later included in the German edition *Über den Begriff der Geschichte* (Frankfurt am Main: Suhrkamp, 1955).
2. Walter Benjamin, *Illuminations* (New York: Schocken Books, 1969), p. 254.
3. *Ibid*
4. *Ibid*
5. Georg Simmel, “The Ruin.” *Philosophical Culture: Collected Essays*. Leipzig, 1911.
6. Georg Simmel, “The Ruin.” *The Hudson Review* 11, no. 3, 1958: 371–385.
7. Lina Malfona, “Sleeping Beauty: Aesthetics of Ruin, Corruption and Rome,” in *Proceedings of the 34th Annual Conference of the Society of Architectural Historians, Australia and New Zealand*, 2017, 353–365.
8. For a discussion of the distinction between *ruins* and *debris*, see Marc Augé, *Le temps en ruines* (Paris: Éditions Galilée, 2003).
9. Ernesto Nathan Rogers, “Il problema del costruire nelle preesistenze ambientali,” *L’Architettura*, no. 22 (1957): 225.
10. Translation by the author.
11. During the 2018 Venice Biennale, architect Mario Cucinella, curator of the Italian Pavilion Arcipelago Italia, initiated a reflection on the depopulation of small towns in Italy. This phenomenon is leading to the systematic abandonment of numerous minor settlements across the national territory, many of which are reduced to ghost towns. This is resulting in a loss of local traditions and memories.
12. Fabrizio F. V. Arrigoni, *Fogli. Scritture per l’architettura* (Florence: Dida Press, 2018), 145–182.
13. Traslation by the autor.
14. Lina Malfona, “Il progetto di architettura tra testi archeologici e riscritture analogiche,” in *Portus, Ostia Antica, via Severiana*, ed. Andrea Bruschi (Macerata: Quodlibet, 2015), 13–19.
15. *Ibid*
16. *Ibid*
17. Benjamin, Walter. *Illuminations*, p. 255.
18. The brick wall is a distinctive component of Carmassi's architectural language. It assumes particular significance as a load-bearing elements, structuring and giving form to the architecture itself. Its inspiration derives from two primary sources: the medieval tower houses of Pisa and the city’s medieval walls. At times, the wall functions as a structural device, as in the residential complex of San Michele in Borgo or the gallery building at Cisanello. In other cases, it acts as an autonomous sign of spatial delimitation, mediating between exterior and interior, between the horizontal plane and verticality, as evidenced in the cemetery of San Piero a Grado and the nursery school at San Marco. In yet other projects, however, the wall merges with the geometric forms that define the space: parallelepipeds and cylinders collide, meet, and intersect through slight rotations, as in the Putignano middle school. Where financial resources allowed, Carmassi also engaged in experimentation with — and showed a clear predilection for — the Roman construction technique known as muro a sacco.
19. For an in-depth discussion of these principles, see Massimo Carmassi, “Architetture toscane,” in *Architettura e progetti. Seminari*, ed. G. Praderio (Bologna: CLUEB, 1993), 87–108
20. The palace was chosen by Carmassi as the headquarters of the Municipal Architecture Department. The current Department is still located there.
21. The project was only partially realised and does not appear in any of the monographs that collect the architect’s work.
22. The allusion to history in the new building is not limited to the device of the fragmented wall. The configuration of the volumes in plan—with the regular axis of the classroom block and other rotated bodies—calls to mind Kahn's well-known design for the Dominican Motherhouse. It is an irrefutable fact that Kahn drew considerable inspiration from ancient Roman architecture, as evidenced by the influence of Villa Adriana. The aforementioned plan also functioned as a source of inspiration for James Stirling in his design for the Social Science Research Centre in Berlin. At that time, Carmassi regarded this project with great interest.
23. In the 1970s James Stirling, together with Michael Wilford, developed three major museum projects in Germany: the Wallraf-Richartz Museum in Cologne (1974, unbuilt), the competition for the Nordrhein-Westfalen Museum in Düsseldorf (1975), and the new Staatsgalerie in Stuttgart (1977–1984, built).
24. The project for the redevelopment of Pisa’s medieval city walls is one of the most significant examples of Carmassi’s methodological approach to the historic city. Initiated in the 1970s with preliminary surveys, it encompassed the entire wall circuit, approximately seven kilometres long. This circuit was partly compromised by wartime bombings and inappropriate postwar interventions. The architect's objective was to reinstate continuity and dignity to the urban monument, which historically functioned as the boundary between the centre and the periphery. The project materialised as a system of public spaces, pedestrian pathways, and green areas, accomplished through conservative restoration works, new additions in dialogue with the preexistences, and building replacements.
25. Massimo Carmassi, “Pisa modernità di una città,” *Paramento,* no. 96 (Faenza: Faenza Editrice, 1981).
26. Carmassi employs a substantial use of simple geometric forms, which are assembled in an asymmetrical manner. The introduction of asymmetries, rotations, and intersections between the geometries does not aim to consolidate a preestablished order but rather to challenge it, transforming the composition into a critical device capable of questioning the very principles of the geometric rule.
27. Massimo Carmassi and Gabriele Lelli, eds., *Progetto urbano e architettura* (Florence: Alinea, 1996).
28. Translation by the autor.
29. The red line, characteristic of Carmassi’s work, is also used by some of his contemporaries. It is recurrent, for example, in the work of Paolo Zermani.
30. In his writings, Rossi reworks themes of Benjaminian origin such as memory, the fragment, and historical discontinuity.
31. The analysis of the archival drawings reveals for examples the existence of multiple design versions for the same project, often substantially different in their spatial and formal configuration. In the unbuilt project for the ten-classroom school, for instance, the scheme shifts from a longitudinal layout structured around a sinuous wall to a more compact, geometrically ordered building with a square plan articulated by parallel walls.

Image Captions

Fig. 1. On the left: project plan for the Barbaricina school. A fragmented glass wall characterizes the space between the gym and the school, while a wall with a similar shape defines the gym’s service area. The connecting street to the building also follows this particular pattern.
On the right: Axonometric view of the project for the suburban cemetery expansion. A sinuous concrete wall-street breaks the regular sequence of oculi.
Fig. 2. Plan and elevation of the Putignano school. The plan shows a fragmented wall interrupts the sequence of the classrooms, while another irregular wall defines the boundary of the external space. The allusion to the ruin is also reflected in the façade, where a long wall dissolves into a disintegrated profile.
Fig. 3. On the left: Plan of the Community Center in Putignano. The cubic volumes are intersected by a sinuous wall-line that both divides and characterises the space.
On the right: the gallery-type building at Cisanello. Two long, massive walls define the space, and the overall shape recalls a Roman aqueduct. The walls terminate with triple setbacks, evoking a missing final portion
Fig. 4. Project for the Social Center in Fortezza Fiorentina, 1979. A sinuous line defines the ground floor space, while a profile with an undulating outline shapes the terrace where it meets the water facing the *maschio.*
Fig. 5. Proposal for the adaptive reuse of the Fortezza Fiorentina, 1998. Carmassi proposed the replacement of lower-value structures along via Giovanni Bovio with elongated brick gallery buildings, conceived to establish a new spatial and material dialogue with the historic fabric.

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Biography

Cecilia Marcheschi is an architect and PhD candidate in Architectural Design at the University of Pisa, where she combines her research with work as an architecture design teaching assistant for Professor Lina Malfona. Her research focuses on the role of the “civil servant architect”; in particular, the work of the Ufficio Progetti, directed by Massimo Carmassi in Pisa.
She studied at the University of Florence, where she earned her degree in Architecture with a thesis later published under the title *Entroterra. Museo per le genti senza storia* (DidaPress, 2020). She is a member of the research laboratory Polit(t)ico and actively participates in workshops, conferences and contributes to publications on contemporary architecture. In 2022 she took part in the research project *PRA, Implementazione del patrimonio edilizio dell’Università di Pisa*, the results of which are currently being published. The year later, after previous experience in different architectural firms, she co-founded the collective studio Atelier Vago.

Electric Dreams
Rethinking wiring diagrams and their affordances

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Abstract

The paper focuses on a specific drawing type: the wiring diagram. At the turn of the 19th century, technological advancement brought electricity into the home, radically transforming the performance of domestic work and leisure. Initially, the furnishing and usage of rooms was heavily influenced by the logic of electricity: determined by the radius of light shed by a specific fixture, or the location of accessible wires. If the wiring diagram was, at this point, still showing the interconnection between technical apparatus and domestic life – appliances were drawn as objects – increasing standardisation turns it into an exercise of abstraction, a composition of lines and symbols. The graphical transformation implies a deeper architectural and social one, as the wiring diagram in its present form, often undecipherable to the common eye, represents the nature of electricity in our homes: ubiquitous and untraceable.
Such a visual language is deeply counterintuitive, as, today, electricity is at the very core of most of our domestic routines, whether it concerns plugging the laptop into a socket, Wi-Fi coverage, cooking, or turning on a bedside lamp. Rather than a merely neutral technical scheme, the wiring diagram should be read as an instrument that influences the interpretation of electrical information and the very use of electricity within the domestic environment.
The analysis of the wiring diagram's dual function, both as a technical product and a symbolic marker, unveils how contemporary domestic interiors are built upon an enigmatic system of wires whose presence and design are often overlooked. Questioning the very nature of the wiring diagram's standardised language and role, the paper argues for its centrality within the design process, calling for its critical conceptual and graphical re-interpretation as a dynamic notation system, actively affecting the planning and execution of ordinary domestic tasks and the unfolding of everyday life.

Key words: technology, electricity, diagram, wiring, home, domestic.

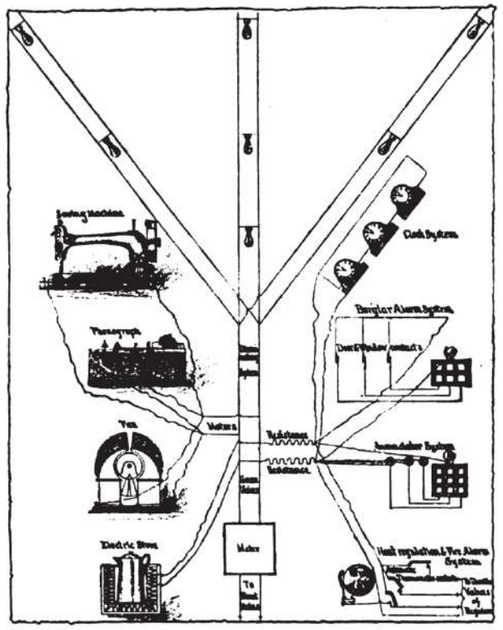
1. Taming the beast: between fear and wonder

Source of both marvel and fear, electricity entered the home in the guise of an untamed beast, mysterious and dangerous. While addressing the public during a general meeting of the Electrical Development Association in 1934, the chairman pointed out that: "One of the greatest bugbears to be contended with in the development of electricity [is] the haunting spectre of fear."[1] At the turn of the 20th century, during the first years of its application, incidents and deaths caused by electric malfunctions were promptly recorded in the journals and press communications of gas companies, at the time the sole energy provider for the domestic environment, which did not fail to recognise in electrical discoveries the potential threat of rivalry. Such is the case of an entry in the *Journal of Gas Lighting* titled "The Electric Light and its Friends," which, in 1881, reported the "death of a labourer at Hatfield House (…) from touching a presumably un-insulated electric lighting wire," warning of the "peculiarly insidious, or rather deceptive character of the principal risk in dealing with electricity in a state of high tension."[2] An extensive propagandistic campaign was therefore put into place to combat public mistrust and present electricity as meaningful and unthreatening to the household economy of values.[3] The jargon used borrowed from that of colonial missions: as much as a wild animal, electricity had to be "trained," "tamed" or "captured," and its power harnessed to service the modern home. As an example, in a number of the British magazine *Electrical Review,* published in 1924, it was claimed that: "...with the corning of electricity a new era has dawned. One of the great powers of nature has been tamed and harnessed and trained to the service of man, making life clean, wholesome and simple."[4] While rarely addressed, the fear of electricity played a significant role in guiding the development of domestic electrical systems and appliances. Starting from the 1860s, the manufacture of self-exciting generators paved the way for the commercial production of electricity, and, especially in the interwar period, the quest of presenting electricity as useful, safe, and as an ally in household management, triggered the proliferation of countless exhibitions, leaflets, manuals and magazines, specifically conceived to address the technician as much as the consumer.
Today, electrical technology is in large part taken for granted: of all the invisible networks of wires within and beyond domestic walls, the main subject of consideration is most often the powered object – be it the lamp, the tv or the washing machine – rather than the system needed to operate it. The aim of this study is therefore that of broadening the perspective, shifting the focus from the single object to the apparatus. Through the analysis of a series of documents produced between 1890 and 1960 by British companies and associations concerned with the commercialisation of electricity, the paper will unveil how the need of achieving synchrony between electrical systems and appliances, between technical planning and everyday tasks, became an essential part of the domestic project, informing not only the design of spaces and objects, but also the development of a specific graphical language for the representation of technology within the home. While the geographical focus is on Great Britain, which, during the 20th century, was at the forefront of electrical experimentation, a few references are drawn from the USA, whose contribution to the international dialogue was paramount for the development of a shared electrical culture.

2. Electricity at home: wiring appliances

The process of electrical commodification was a lengthy and complex one: several issues related to costs, load capacity and supply, caused electricity to take more than fifty years to become a commonly accessible good. In the early 1880s, innovations in public lighting generated widespread commercial response and several British companies focused on developing new and more efficient systems for lamps and generators.[5] In 1882 (later amended in 1888), the Electric Lighting Act was the first governmental measure to regulate the production and supply of electricity throughout the UK, authorising municipalities and companies to sell at a local level. One of the main problems at this point was the low load factor recorded by power stations: as electricity was solely employed for lighting, its demand would spike with the approaching of darkness, causing the need for high generating capacity at peak times, which would then remain underused for the rest of the day. Colonel Rookes E. B. Crompton, inventor, industrialist and president of the British Institution of Electrical Engineers, was between the first to advocate for the diversification of electrical demand, calling for "the perfecting of electric and cooking appliances."[6] Even though domestic load increased slowly, in the following years supply engineers placed a great effort in supporting the growth of domestic demand and the development of appliances, key to incentivise the consumption of electricity in the household. Anticipating such a wave of interest was Arthur Edwin Kennelly, an American electrical engineer who, in 1890, wrote an article titled "Electricity in the Household." In the text, Kennelly observes the rapidly increasing spread of electrical household equipment, both in the form of utility and ornament, proceeding to give detailed accounts of the functioning of diverse electrical systems such as the bell, the thermostat, the fire detector, the clock and the telephone, in addition, of course, to the electric light.[7] While intended for a general audience, Kennelly's piece dwells onto what was one of the main technical limitations to the implementation of domestic appliances in the home: that of wiring. After giving some general indications on the position of light switches and lamps, he praises the usefulness

of the electrical motor powering domestic appliances, stating that: “In any house supplied with the electric light it is only necessary to connect the motor with the electric mains, like a lamp, and turning the switch sets the machine at work.”[8] Accompanying his claims, an explanatory drawing (fig. 1) illustrates how domestic appliances drew electrical supply directly from street mains, without the need of installing batteries, and providing the possibility to register consumption through the use of a meter: “the lamps, heaters and motors, wherever they may be situated, are operated directly from the house mains or their ultimate ramifications; while the annunciator, clock, and alarm system are all operated from submains connected to the central mains through simple regulating coils of wire.”[9]



Plan of Wiring a House for its Various Electrical Appliances.

Fig. 1

The drawing represents one of the early examples of the so called “wiring diagram,” a technical conventional drawing used to schematically portray the electrical system of wires servicing the house, and to indicate the location of sources of illumination and domestic machines within it. What is interesting to note in Kennelly’s drawing is that, despite its diagrammatic quality, one can clearly recognise the diverse appliances available, which are indicated with precise pictorial representations: a series of lamps, a sewing machine, a telegraph, a fan, a clock system and an electric stove, between others. In addition to that, what might seem just an imprecision at first sight is actually the representation of the current state of things – and their limitations – as these appliances are, in fact, wired in permanently. This meant that the placement of appliances had to be defined in advance, included in the wiring plan and, when the wiring was completed, could not be modified. Clearly, the early implementation of electricity in the home inevitably implied a reduced flexibility in interior arrangements, influencing the furnishing and usage of rooms.
Even though many of the manufactured components necessary to allow the flexible use of electrical facilities – such as flexible cords, attachment plugs and receptacles – had been conceived already during the 1880s, and were in large part exhibited at the 1893 World's Columbian Exposition in Chicago, they would not be standardised and available for public purchase until after the First World War.[10] We will see how their commercialisation went hand in hand with the explosion of “labour saving” household appliances, which from the 1920s were the object of a massive propagandistic campaign advertising the end of straining domestic work. Before then, the most common alternative to permanent wiring was that of plugging appliances directly into light sockets, a practice as easy as dangerous, still portrayed as a “familiar and yet unnecessary problem” in an American wiring handbook of 1937.[11] Pioneering the implementation of outlets in baseboards and sidewalls was H. W. Hillman, an electrical expert at the General Electric Company, who, in 1905 designed and built an all-electric home in Schenectady, New York. The project received widespread attention and was published in several American magazines such as New York *Cassier’s Magazine*, *Good Housekeeping*, and the *Scientific American Supplement*, soon reaching the general public of London,

Paris and Berlin.[12] In every article, Mr. Hillman put a great effort in advocating for the superiority of electrical devices compared to gas ones, while attempting to debunk the negative myths still related to the use of electricity. After having described the domestic and technical functioning of several appliances through the eyes of Josie, the “domestic electrician,” who, going through her daily chores, makes use of the coffee percolator, the iron, the telephone, the heating pad, together with a number of other devices, Hillman concludes stating that the subject of properly wiring a house is of the utmost importance, as it would offer the opportunity to use small devices freely without recurrently having to unscrew the incandescent lamps.[13] Yet, by looking at the house wiring diagrams (fig. 2), it is clear that Hillman’s idea for the distribution of lamps and appliances was still conceived as inextricably linked to the hierarchy and arrangement of domestic programmes. Notwithstanding the presence of several wall receptacles in many of the rooms, all devices, with the exception of portable lamps, are represented as wired to the main electrical system, their location defined in response to traditional requirements: the electric stove in the kitchen, the coffee percolator and chafing dish in the dining room, the water heater in the bathroom, the sewing machine motor and the cigar lighter in the sitting room.

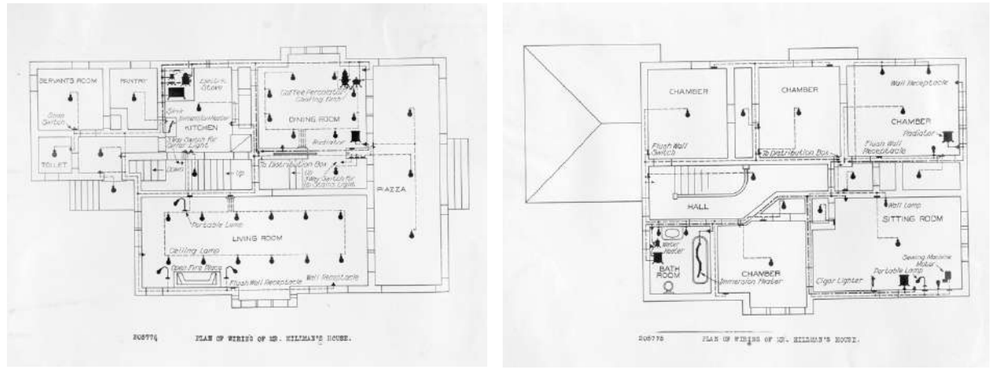


Fig. 2

Compared to Kennelly’s diagram, Hillman’s wiring scheme strives for a higher level of precision: the representation shifts from an abstract tri-dimensional space to the conventional two-dimensional plan, which allows to show the exact location of wires as they run through the walls, and the precise positioning of lamps and devices according to the purpose of every room. However, Hillman, as much as Kennelly, employs a bespoke pictorial language, following which every object, from the wall lamp to the cigar lighter, is portrayed in respect to its real-life form and size, just flattened out as a two-dimensional side view. Such graphical choices, far from being merely aesthetical, are, instead, an inherent part of that cultural programme which wanted to familiarise the general public with the inner workings of electrical systems.

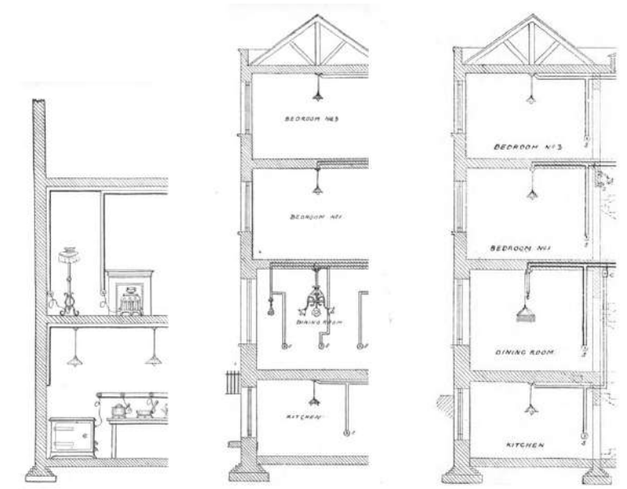


Fig. 3

In this context, clarity and readability to a non-technical eye were as important as the ability to evoke a sense of friendliness and safety through the method of representation employed. Similar drawings appear in coeval English electrical manuals, such as in Frederick Charles Allsop *Practical Electric-light Fitting*, where the explanations of different wiring methods, respectively called the "tree system" and the "distributing board system," are illustrated with detailed section drawings (fig. 3) showing the arrangement of cables to serve the requirements of various types of lamps and devices.[14] More than simply technical documents, these early electrical diagrams are considered to be propagandistic materials, where the aesthetic and decorative dimension of electrical facilities is presented side by side to their mechanical functioning.

3. The domestic electrician: housewives as expert consumers

At this time, a further step in the standardisation of plugs and sockets was necessary to implement the convenient use of appliances. The process started in 1915 in New York, when the American National Electric Light Association organised a National convention in the attempt to establish some uniform standards for production, but it was only in 1926 that the NELA Wiring Committee officially reported that "within a few years the plugs for attaching the ordinary appliances to the sockets, and the receptacles or convenience outlets for attaching the ordinary appliance to the circuit otherwise than through the socket, have been standardised in the sense that the plugs and receptacles of practically all manufacturers are interchangeable."[15] Already by 1914, however, the variety of household appliances available on the market had increased spectacularly, as shown in the account of British housewife Maud Lancaster who, in that same year, published her *Manual of Electricity in the Service of the Home*, soon after brought to the American public by Stephen Coles, formerly managing editor of the *Electrical Review*. In the book, both Lancaster and Coles, make clear that such a detailed compendium is addressed to the "great army of wives in the United States," and Lancaster's "sisters in distress," to "instruct them on the practical uses of these time – and labour – saving devices," and to convince them of the wonderful blessings offered by electricity in the quest for bettering home life.[16] Lancaster's publication marked a relevant shift concerning the interpretation of women's role in the development of domestic electricity: if, on one side, women were the main target of marketing campaigns, on the other, as claimed by historian Suzette Worden, they managed to exploit their traditional domestic role to articulate their interests and bring their influence to bear through consumption.[17] Two British associations were particularly active in the years after the First World War: the Electrical Development Association (EDA), formed in 1919, and the Electrical Association for Women (EAW), founded in 1924 as an off-shoot of the Women's Engineering Society (WES). During these years, the competition between contractors in the attempt to meet consumers' demand played a crucial role in reducing the cost of electricity, while, at the same time, the question of being "servantless" became increasingly more pressing in every middle-class household.[18] Despite sharing the same scope, that of encouraging the use of electricity and of electric appliances, the publicity campaigns of EDA and EAW differed greatly in the way they addressed their public. The EDA emerged from the will of a group of engineers and suppliers with the aim of coordinating sales and marketing campaigns. Their approach to propaganda was rather generalist: campaigns such as the 1933 "Wizard in the Wall," encouraging the installation of more sockets, represented the interests of the supplier rather than the consumer.[19] As claimed by Sprenger and Webb, archivist and senior curator at the Manchester Museum of Science and History, in their analysis of EDA's archival material, the imagery and wording used in EDA's publications suggest that the association viewed women merely as a passive and largely homogeneous body of housewives ripe for persuasion.[20] Exemplary of such a mindset is a quote reported in a 1925 pamphlet: "What is the stroke of magic which for the last few years has been transforming household tasks, formerly so burdensome, into a part of the daily routine cheerfully undertaken by mistress or maid? (…) Indeed, Electricity comes as a timely solution of the servant and other problems, which threatened to disturb that most potent factor in civilisation – THE HOME; Electricity provides the modern housewife with a perfect servant – clean, silent, economical. What used to be the labour (hard labour) of hours is now accomplished almost without effort in a matter of minutes."[21] In contrast, the EAW was an all-female initiative: established by Caroline Haslett, one of the few women who managed to obtain an engineering degree during the war, and activist Laura Annie Willson, it sought to educate women on the use and workings of domestic appliances and electricity in the home. To this end, the association sponsored several publications, such as the 1934 *Electrical Handbook for Women*, providing technical advice on the safe handling of electricity, and the *Electrical Age Magazine*, which run from 1926 to 1986 covering a wide range of subjects in addition to electrical matters. It also provided different educational courses, such as the "Electricity for Everyday Living," aimed at teachers and demonstrators, employees of the electrical industry, school children and the general public.[22] Compared to EDA, the EAW considered women as active participants in the promotion of electricity, viewing their knowledge of domestic practices and their consumers' feedback as a crucial factor for the development of the supply chain. Yet, despite its avant-gardist premises, the EAW was still stuck in the traditional narrative which saw the woman as

the sole domestic carer, and the possibility of implementing labour-saving practices as the only goal of the diffusion of electrical devices in the homes of all social classes. This ideological dichotomy is evident in a 1926 article published in *The Electrical Age* and written by editor and EAW president Caroline Hasslett. In the piece, titled "How many outlets have you in your home?" Hasslett denounces the current inefficiency of housekeeping caused by the lack of proper wiring and the insufficient number of outlets: "When will the British housewife grow more impatient with the badly equipped houses in which she is expected to live and work and when will she cease to accept inefficiency as a necessary part of housekeeping?," she asks, arguing that if electricity is to be the servant of the woman in the home, this has to be provided with the means whereby to use all those many useful appliances which are the real savers of labour.[23] However, a few lines later, Hasslett highlights the fundamental role women were supposed to play, as "In order that some indication may be given to the housing authorities of the woman point of view in this matter, the EAW is drawing up a National Woman's specification showing the number and position of electrical 'Outlets' which it is necessary to provide for every room in the house."[24] The woman herself, as both the main expert and consumer, feeding into the illusion that mechanised domestic work was not work at all.[25] Equally influenced by such a paradox, the graphical language of informative material was simultaneously daringly technical and innocently domestic. Emblematic is an article published in *The Electrical Age* journal issue of January 1936, which presents the plans of the EAW All Electric House in Bristol, inaugurated and opened to the public in October of the previous year. Realised to demonstrate the potential of electrical technology, the house was equipped with all sorts of appliances such as electric clocks and fires, drying cupboards and food warmers, to mention a few. Here, the attempt to address women is evident: as stated in the article, "it was in the interest of the housewife that the EAW House was built,"[26] and the presence of so many labour-saving fitments was fundamental to prove that, in the new servantless home, time and fatigue would not be an issue. The plans accurately portray the position of lighting and heating points in relation to space and furnishing, allowing the observer to clearly individuate a bed stand lamp in every sleeping room, a ceiling lamp on top of the dining table, light fixtures in every cupboard and on top of every sink, and a reading lamp right next to an armchair in the writing recess (fig. 4).

Fig. 4

Confirming the crucial role a traditional idea of domesticity played in the planning of domestic wiring, during the 50s and 60s, the EAW produced a series of tea towels, dusters and aprons with printed diagrams, drawings and vignettes, used to explain the workings of electrical systems and the principles of electrical safety to women. One of these products, a bright orange duster (fig. 5), portrays the wiring diagram of a "modern home" with exceeding precision. Together with the fixed lighting circuit, the diagram shows the position of the water heating circuit, that for cooking, the ring circuit and

the one for central heating, as they run from the terminal through the walls of the ground floor and first floor of the house. The drawing gives detailed indications also on the composition of the control panels, the different fuses and switches, the meter and the cables connecting to the street mains. Differently from the documents considered above, here the conventional two-dimensional representation in plan or section is given up in favour of a slightly exaggerated isometric axonometry. As a drawing methodology, the axonometry finds itself in between the technicity of the plan and the realism of the perspective: rather than focusing the observer's gaze on a single viewpoint as in the classical perspective, therefore limiting the extent of the field of vision, the axonometry allows the viewer to become a ubiquitous spectator and see everything simultaneously. To this end, the external walls and the ceiling, which could impede the view of certain spaces, are not represented, their presence suggested only by the course of wires. Used since the Middle Ages in treatises concerning geometry and the building of fortifications, the axonometric projection offered the possibility of technical tri-dimensional representation, and soon became the accredited method for portraying everything that concerned engineering and science.[27]

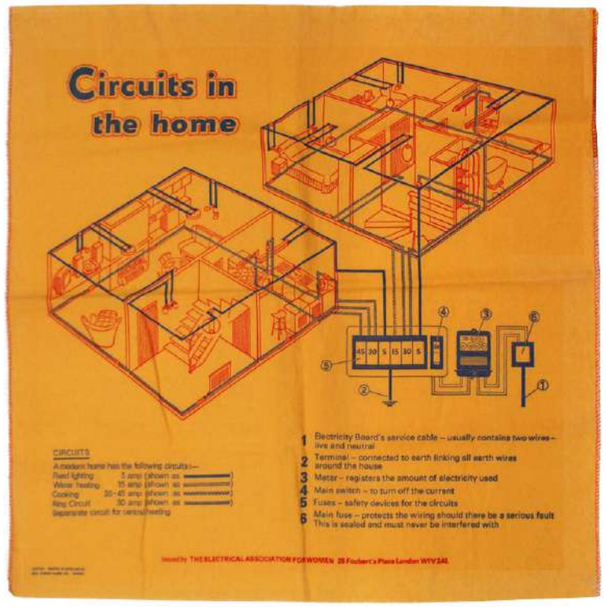


Fig. 5

The choice of such a drawing typology reflects the willingness of the EAW to confront women with the technics and complexities of electrical installations: rather than hiding it, exposing technology to the public eye became a marker of progress and modernity. Yet, as much as perspectives, the drawing strives to convey a sense of domesticity familiar to the viewer: furnishings of various kinds populate every room, and, paired with detailed representations of different types of lamps, switches and outlets, display the articulation of circuits as related to the unfolding of domestic life, emphasising how the planning of electric wiring was inextricably linked to the architecture and organisation of domestic spaces.

4. Wiring the walls: complexity and standardisation

Contrarily to Hillman's house plans, the purpose of these drawings is not so much that of specifying the type of every electric point, but rather that of showing how electricity could facilitate everyday life, evoking appealing domestic scenes through the meticulous portrayal of objects and furniture in what is, in fact, a technical drawing. It is especially the proximity between the representation of domestic life and its servicing technical apparatus that will progressively decrease following the increasing complexity of electrical systems and construction methods. Already from the 1920s, a process of abstraction starts to endanger the readability of wiring diagrams: the standardisation and mass production of electrical components supports the use of icons, numbers and codes, familiar to the technician but indecipherable to the general public. If, up to a certain point, this process was balanced by the need of publicising electricity and electrical appliances to new users, housewives in particular, from the second half of the 20th century standardisation takes command, both on the drawing board and in the actual planning of domestic electrical systems. *The Home of a Hundred Comforts*, a small

handbook firstly published in 1920 by the merchandise division of the American General Electric Company, clearly portrays this gradual transformation. Providing detailed indications on how to properly wire a home, the introduction states that the measure of domestic comforts resides in its convenience, and that, convenience is, in large part, a matter of electrical service whose effectiveness depends on the completeness of the wiring system.[28] In the following pages, several drawings types are presented side by side, each showing different aspects of home wiring: vignettes portraying a "Qualified Contractor" demonstrating the advantages of an electric house to a young couple, detailed axonometries of every floor showing lamps, switches and convenience outlets (but no wires) – all amidst the clutter of furniture and everyday objects – and a wiring plan, two dimensional, schematic, accompanied by a legenda for the translation of symbols used to represent the wiring scheme, and a list of recommendations and possible alternatives concerning electrical fittings (fig. 6).

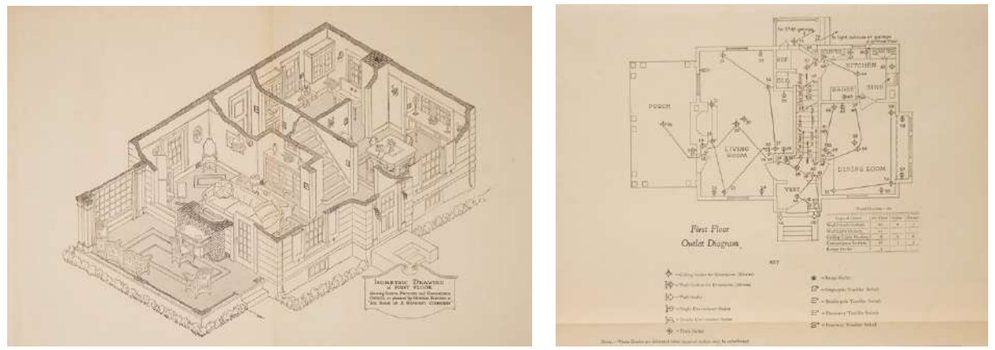


Fig. 6

The graphical material starts to be differentiated according to whether it is addressed to the technician or the customer: the effort of making the technical language of architecture accessible to everyone succumbing to the complexity of electrical workings. Such a schism will continue to intensify until the point when, as it happens today, the technical drawing stops being a concern to the user, it remains behind the curtains, a communication tool between the architect as mediator and the builder as expert artisan.

In 2017, British architect Farshid Moussavi curated the exhibition hosted in the architecture room at the Royal Academy's Summer Show; here, Moussavi displayed a collection of "construction coordination drawings" produced by different well-known architecture firms. The drawings, including two-dimensional plans and sections, as well as perspectives and axonometries, are layered with an incredible amount of superimposed information, including the layout of the electrical, fire detection and ventilation systems, the location of water supply and drainage pipes and the furnishing of spaces. What is interesting to note is that, according to Moussavi, the drawings are not supposed to be understood by the public for what they are, but are rather to be appreciated on an aesthetic level, as a peculiar form of artistic production.[29] While Moussavi's exhibition is certainly compelling, its expected interpretation is symptomatic of the general disinterest that has concerned technical drawings in recent times, which, in terms of representation methodology, have remained fairly similar to those produced at the start of the 20th century. In retracing the evolution of wiring diagrams, it becomes clear that the means of graphic representation served not only to accompany the dweller in the transition to modernity, but also to illustrate the meaningful relation between technics and daily life. The nature of informative materials contained in the numerous electrical manuals and publications developed from the end of the 19th century, proves that wiring plans were laid out alongside the architectural design; the organisation and location of wires responding to specific domestic uses and spaces. These drawings not only recognised but also celebrated the machinic turn of domestic architecture, making technology accessible, and, most importantly, controllable by everyone. Looking at this transformation encourages us to question the current nature of wiring diagrams, which, while electricity colonises every aspect of our lives within and beyond the domestic environment, are becoming increasingly abstract and enigmatic, detached from the actual design of spaces and the events they are supposed to accommodate. If the wiring diagram was, at some point, a domestic tool, as much as the washing machine or the electric cooker, it is fair to ask what it could be in the future, how it could regain its central role in the design process, as well as its communicative quality, which allowed it to function as a translation tool between planner and user. Ultimately, the historical overview demonstrates that the affordances of the wiring diagram are far reaching and multifaceted: more than a mere technical instrument, it played a crucial role in the design of domestic environments, portraying the logics and the development of domestic technologies in the new modern era.

Notes

1. Quoted in D. A. Wilson, “The Economic Development of the Electricity Supply Industry in Great Britain, 1919-1939” (Ph.D. diss., Bristol, 1976), 169.
2. “The Electric Light and its Friends,” *Journal of Gas Lighting, Water Supply and Sanitary Improvement*, no. 38 (December 1881): 1030-1031.
3. Graeme Gooday, *Domesticating Electricity: Technology, Uncertainty and Gender, 1880-1914* (London: Pickering&Chatto, 2008), 3.
4. *Electrical Review*, vol. 94 (June 1924): 928.
5. Leslie Hannah, *Electricity before Nationalisation: A Study of the Development of the Electricity Supply Industry in Britain to 1948* (London: The MacMillan Press, 1979), 5.
6. *Journal of the Institution of Electrical Engineers* (JIEE), vol. XXIV (1895): 10.
7. Arthur Edwin Kennelly, “Electricity in the Household,” *Scribners* (January 1890): 102-115.
8. Ibid., 111.
9. Ibid., 114.
10. Fred E. H. Schroeder, “Small Things Forgotten: Domestic Electrical Plugs and Receptacles, 1881-1931,” *Technology and Culture*, vol. 27, no. 3 (July 1986): 526.
11. *Handbook of Interior Wiring Design* (New York: Industry committee on interior wiring design, 1937), 7.
12. Schroeder, “Small Things Forgotten: Domestic Electrical Plugs and Receptacles, 1881-1931,” 537.
13. “It is necessary that the house should be wired and recently I have seen an advertisement by a large electric lighting company, offering to wire houses at an exceptionally low price. Architects are also making a special study of the subject, with the view of favoring those clients who exhibit an interest in the subject. If it is desired to use simply the small miscellaneous devices, then the extra wiring is exceedingly simple. Lighting wires of ordinary size can be used with the proper arrangement of circuits to meet insurance rules. Such wiring will offer the opportunity to use small devices freely without unscrewing the incandescent lamps every time one desires to use a heating device.” In H. W. Hillman, “An Electric Day,” *Good Housekeeping* (June 1906): 618.
14. Frederick Charles Allsop, *Practical Electric-light Fitting: A Treatise on the Wiring and Fitting-up of Buildings Deriving Current from Central Station Mains, and the Laying Down of Private Installations* (London: MacMillan, 1905), 174-183.
15. R. S. Hale, “Report on Plugs and Receptacles,” *National Electric Light Association Bulletin* (April 1926): 247-48.
16. Quotes from Coles’ foreword to the American edition and Lancaster’s introduction. See Maud Lucas Lancaster, *Electric Cooking, Heating, Cleaning etc., being a Manual of Electricity in the Service of the Home* (New York: D. Van Nostrand company, 1914), 1.
17. Suzette Worden, “Powerful women: electricity in the home 1919-1940,” in *A View From the Interior: Feminism, Women and Design,* ed. Judy Attfield and Pat Kirham (London: The Women's Press, 1989), 132.
18. See Randal Phillips, *The Servantless House* (London: Offices of Country Life, 1920).
19. Hannah, *Electricity before Nationalisation: A Study of the Development of the Electricity Supply Industry in Britain to 1948*, 193.
20. Elizabeth Sprenger and Pauline Webb, “Persuading the Wife to Use Electricity? An interpretation of material in the Electricity Council archives,” *The British Journal for the History of Science*, vol. 26, no. 1 (March 1993): 61, 64.
21. “‘Chats’ about Electricity,” *Electrical Development Association pamphlet*, no. 422 (1925): 5.
22. Ibid., 58.
23. Caroline Hasslett, “How many outlets have you in your home?”, *The Electrical Age*, vol. 1, no. 1 (June 1926): 289.
24. Ibid., 290.
25. Adrian Forty, in his book *Objects of Desire* gives a detailed account on the nature of housework in Britain during interwar years, especially focusing on its mechanisation and the contradictions this generated. Adrian Forty, *Objects of Desire: Design and Society from Wedgwood to IBM* (New York: Pantheon Books, 1986), 207-221.
26. Dorothy Newman, “The E.A.W. House at Bristol: How the Enterprise was received by the Public,” T*he Electrical Age*, vol. 3, no. 1 (January 1936): 19-26.
27. On the history and evolution of axonometry as a method of visual representation see Massimo Scolari, *Il disegno obliquo: una storia dell’antiprospettiva* (Venice: Marsilio Editori, 2005).
28. General Electric Company, *The Home of a Hundred Comforts* (Bridgeport: General Electric Co., Merchandise Division, 1925, 3rd ed.), 3.
29. Pamela Buxton, “Remember the architectural drawing?” *The RIBA Journal* (2017).

Image Captions

Fig 1. Plan of Wiring a House for its Various Electrical Appliances. In Arthur Edwin Kennelly, “Electricity in the Household,” *Scribners* (January 1890): 114.
Fig. 2 Left. Plan of electric wiring of Mr. H. W. Hillman's house in Schenectady (New York), second floor. General Electric Company, 1905. Right. First floor. Courtesy of miSci - Museum of Innovation and Science, London.
Fig. 3 Different methods of wiring a building. In Frederick Charles Allsop, *Practical Electric-light Fitting: A Treatise on the Wiring and Fitting-up of Buildings Deriving Current from Central Station Mains, and the Laying Down of Private Installations* (London: MacMillan, 1905), 174-183
Fig. 4 Floor plans of the EAW All Electrical House in Bristol. In Dorothy Newman, “The E.A.W. House at Bristol: How the Enterprise was received by the Public,” *The Electrical Age*, vol. 3, no. 1 (January 1936): 21.
Fig. 5 Circuits in the Home. Duster produced by the EAW during the 50s and 60s. Courtesy of IET Archive, The Institution of Engineering and Technology, London.
Fig. 6 Left. Isometric diagram of first floor showing lights, switches and convenience outlets as planned by General Electric in “The Home of a Hundred Comforts.” Right. Outlet diagram of the first floor. In General Electric Company, *The Home of a Hundred Comforts* (Bridgeport: General Electric Co., Merchandise Division, 1925, 3rd ed.), 14-15.

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Biography

Mariapaola Michelotto (1993) is an architect, researcher, and a PhD candidate at IUAV within the Villard de Honnecourt International Programme in Architecture, Theory and Design. Her thesis investigates contemporary western domestic spaces through the lens of rituals and routines. Mariapaola studied at IUAV and TU Delft, where she graduated in 2018. Following her studies, she gained professional experience working in Brussels and Rotterdam. In 2021 she started her own practice in Milan, while also joining the Swiss collective TEN. Since 2022 she has been involved in several academic activities at TU Delft, where she was a Guest Lecturer at the Chair of Methods and Analysis, and at ETH Zurich, where she is a Teaching Assistant at the Chair of Emanuel Christ & Christoph Gantenbein.

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Ecosystem Diagrams
A Practical Approach to Conducting and Disseminating Challenging Research

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Abstract

Infographics combine “information” and “graphic” to create hybrid resources that manage to explain complex topics in an understandable format. Florence Nightingale and Charles Joseph Minard are noteworthy precedents in the use of graphic communication to bring specialized subjects closer to everyone, opening the field to prominent figures such as Peter Sullivan.

In architecture, infographics seem to evolve the conventional atlas format pioneered by Aby Warburg in the 1920s, to transcend the limitations of boards and canvases delving into deeper representations that synthesize intellectual design within a single document—as can be seen in Robert Smithson’s drawings, or the well-known Charles Jencks’ mappings. This approach highlights the role of infographics as a basic tool for developing alternative methodologies that integrate a wider range of elements. “Ecosystem diagram” is one of them, which takes shape on a main drawing surrounded by text, images and complementary graphics. By establishing linear relationships, gradual reading levels are sorted out to make large-scale issues comprehensible.

The main objective of the present experimental study is to validate “ecosystem diagrams” as a methodological tool for organizing research. In order to test this hypothesis, it is implemented in three academic experiences based on the same environmental theme, but with different durations and numbers of participants: a five-day workshop, a five-month seminar, and a five-year Ph.D. The results confirm its viability as an asset for advancing research, but only if it is structured in a compositional hierarchy. Main drawings must be nexus that articulate logic, thereby creating multiple lines of reading that allow for a deeper understanding. Otherwise, “ecosystem diagrams” will not achieve multiplicity success, resulting in traditional infographics that once again require other complementary documents to fully comprehend the topic.

Key words: infographic, tool, methodology, comprehensive, logic.

1. Introduction

The term “infographic” combines the words “information” and “graphic” to create a hybrid resource that facilitates the communication of complex topics[1]. The understanding of infographics as a visual tool constitutes an interdisciplinary field of academic study that brings together components of graphic design, information science, cognitive psychology, and mass communication. This field has evolved significantly since the advent of infographics as a representational device, becoming a vital instrument for contemporary research communication—particularly in the domain of architecture.

An infographic document can be created in a variety of ways, depending on the subject matter to be conveyed. From the earliest rudimentary representations of data, infographics have undergone a remarkable metamorphosis, evolving into complex graphics or diagrammatic images. Each of these types of documents has its own unique characteristics, since they can be customized according to the intricacies of the different topics. This virtue offers the possibility of achieving the optimal method for conveying each thematic content. However, its realization is contingent upon the existence of a substantial sample table of elements with which to develop this document. Consequently, traditional infographic representations are typically produced at the conclusion of each study, rarely concurrently with the research process and never at the beginning.

Regardless of the subject matter or format, all types of infographics share a common characteristic: they are designed to capture the viewer’s attention initially and subsequently motivate a comprehensive engagement. This approach avoids the intellectual distancing that has led to a large number of research being categorized as intended exclusively for a specialized academic audience. It is imperative to recognize the necessity of disseminating the content to the general public, who should be regarded as the true beneficiaries of any study.

The subject of this paper is predicated precisely on this final premise. The research presented in the following lines seeks to update the evolution of infographics as a graphic-communicative resource in line with the demands of today’s changing context. What is known as an “ecosystem diagram” is diagnosticated here as a representation tool that goes a step beyond traditional infographics, becoming an effective document with which to address increasingly complex and heterogeneous research.

Ecosystem diagrams are conceived on the basis of two fundamental pillars. One perspective continues the creation of a compositional hybrid, devoid of the constraints imposed by a graphic definition such as a data chart or word cloud. The new document also integrates a variety of formats for configuration, but all of them are structured by relating not only one type of family of elements—numbers, words, or graphic compositions made from them. Instead, a variety of visual components, including drawings, texts, images, and graphics, are meticulously arranged to create a cohesive unit. By correctly placing those different elements in a gradual order of organization, the main subject of the study is presented as an “evolved infographic document” or ecosystem diagram.

The proposal explores that this new tool should function not only as a means of communicating a study once it has been completed, but also as a working resource with which to advance the research itself. This means that the infographic document will undergo a process of refinement as the study progresses, ultimately becoming a highly polished graphic that will facilitate more effective communication of the content. The document suffers a series of transformations as it metamorphoses to bring together references on the state of the art, show the progress of the study, and organize the research findings. These transformations result in the document gradually taking on greater complexity and depth of content. While this approach may initially appear to impede comprehension, it clarifies communication even further, as it is imperative to establish a systematic sequence in which the components are introduced, according to their relevance. In essence, the material is structured into a hierarchical system, with each element assigned to a specific impact level—rather than the uniformity that characterized traditional infographics.

As a result, while facilitating an overall understanding of the subject matter represented, the ecosystem diagram also discovers successive lines of reading to delve deeper into the researched content. This allows the comprehension of the subject matter by the non-specialized public in its broader context, requiring only the initial stages of information processing. Consequently, a specialized audience will persist in their reading until they have thoroughly explored the most intricate aspects of the representation. However, for this dynamic to occur successfully, it is essential to define the hierarchy strategy with which these logical scales of understanding are to be configured.

In summary, this advancement in infographic representation delves even deeper into the terminology that constitutes the original word, seeking to combine the principles of empirical evidence comprehension with the fundamentals of graphic design—in accordance with the current technological and cognitive context guidelines.

2. State of the art

The development of modern infographics can be traced back to the earliest forms of visual data representation, which were found on Mesopotamian stone tablets. However, they were not conceptualized as a genuine medium of communication until the 19th century. The first statistical mappings based on data management applied to economy and meteorology, have already outlined the growing necessity to identify a tool capable of synthesizing diverse information in both complex and comprehensible format. The evolution of this communicative representation is characterized by three different approaches (Fig. 1), culminating in the conception of the ecosystem diagram.

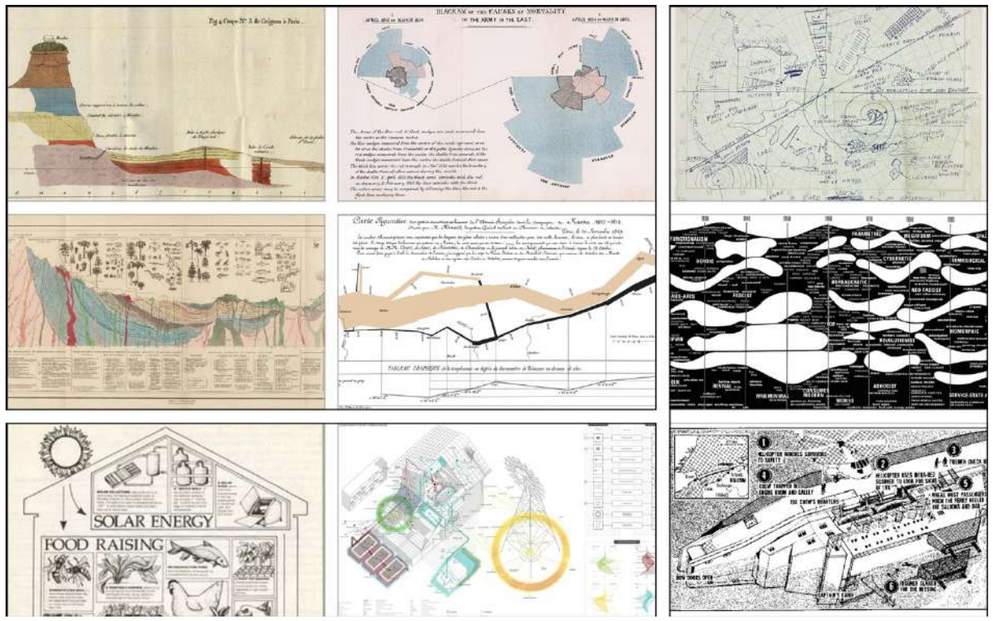

Fig. 1

The first record is attributed to two distinct groups of authors and their respective graphic works. On the one hand, there is the “Geographic mineral section” produced by Cuvier and Brongniart in 1811, as well as the “Diagram of a cross section of the earth’s crust”[2] drawn in 1841 by Alexander von Humboldt. Both terrestrial sections are the result of the implementation of a combined methodology of systematic fieldwork and sample analysis[3]. The outcome of this dual process is reflected in the creation of schematic representation of the Earth’s stratigraphy[4]. In these sections, the various layers of elements are distinguished by color coding. Supplementary information, such as textual explanations or concise sketches, is provided to facilitate comprehension of the strata. The development of these graphic tools, which reflect the methodology behind each study, set a standard for other research in the field of biogeology[5]. It is noteworthy that both infographic documents are produced at the conclusion of each primary research project, but Cuvier and Brogniart’s work does undergo certain modifications in subsequent years as the study itself expands[6].

A secondary group of authors must be acknowledged for their role in establishing infographics as a resource capable of creating relationships between data graphically. This group includes British writer Florence Nightingale and French engineer Charles Joseph Minard. Both sought to go beyond the mere data representation by employing infographics to convey complex subjects in the domains of sociology and politics[7]. In 1857, Nightingale developed a circular histogram based on pie charts to explain the diffuse statistics on causes of mortality during the Crimean War. The aim was to present an exhaustive and quantifiable study to a non-specialist audience[8]. Conversely, in 1869 Minard created one of the most iconic examples of traditional infographics, capturing the peculiarities of Napoleon’s 1812 Russian campaign in a single diagram. Although Minard did not originate the idea of incorporating flow lines on maps[9], his contributions lie in a deeper development of this technique, turning infographics into more intricate and expressive documents[10]. This objective was accomplished by integrating data visualization[11], explanatory symbols and text blocks to establish relationships between elements[12].

The subsequent substantial approach to the definition of infographics as a communicative tool continues in the vein of the last two examples, exploring the more diagrammatic issue of representation[13]. Artists and architects, including Robert Smithson and Charles Jencks, published a series of intuitive diagrams in the 1970s. The “Surd view for an afternoon”[14] and “Evolutionary Tree”[15] exemplifies this approach, with words, data, and organic lines serving as fundamental elements of the composition. Both are structured under a polar grid or axis with chronological stages, which creates a logic of ordering that requires careful and deeper reading to achieve a complete understanding of the subject matter. It is important to acknowledge that a purely diagrammatic approach impedes effective content communication in broad terms, as it lacks the illustrative graphic contribution of images or symbols that enhance clarity. This finding suggests a growing emphasis on the dissemination of knowledge among only specialized audiences.

Toward the close of the 20th century, Peter Sullivan broke with this trend by democratizing the use of graphic communication among the local population[16]. He transformed this resource into a medium for disseminating information on quotidian events and topics that, ostensibly, transcended the boundaries of straightforward comprehension. The objective of this “journalistic infographic” is to move beyond its conception as mere data graphs, without falling into the equating of a simple board or canvas wherein information is compiled without any discernible hierarchy. This “universalization” of infographics “for all audiences” aims to facilitate the comprehension of specific thematic by the general public—and not only by the specialized academic one, as in previous cases.

Pursuing this line of discussion, a third approach emerges. Closely associated to the field of architecture, it focuses on constructing diagrammatic spatiality through a substantial increase in the complexity of the subject matter. This does not imply that the specialized audience is further narrowed. Rather, it suggests that, by increasing the rigor of the work, the content is also clarified, bringing it closer to the general public. That is exemplified by the Integral Urban House poster created by Helga and Bill Olkowski in 1979[17], and Lydia Kallipoliti’s more recent environmental diagram illustrating the cycles of matter and energy in this encapsulated habitat[18]. Despite the evident disparities in their respective graphic approaches[19], their communicative proposal is effectively highlighted. Both aim to raise awareness of how life dynamics are managed in self-sufficient houses. It is also noteworthy that Kallipoliti’s diagram does not emerge at the end of the research but is configured as the variables that define the case study are determined.

How to bring these graphic-diagrammatic-ecosystemic approaches into a comprehensible document is precisely what is sought with the application of ecosystemic diagram to academic research in architecture. The subsequent three experiences examined the effectiveness of employing this representational tool as a medium to promote research and present findings to a general audience with an interest in architecture—but not necessarily specialized in the topics investigated.

3. Objectives and methodology

The fundamental objective is to validate the viability of the ecosystem diagram as a methodological tool for advancing and presenting academic research. Secondly, the aim is to test whether this mechanism is equally effective when used in studies of varying duration and agents involved. To this end, the ecosystem diagram is implemented in three types of academic research experience: a five-day workshop, a seminar with recurring meetings over five months, and a five-year doctoral thesis.

Each of these experiences uses the ecosystem diagram as the fundamental tool for structuring the research. This is achieved by creating a graphic document in a medium-to-large format to serve as the main support for compiling preliminary information and subsequent progress. The document is also encouraged to be used as a means of communicating in the various critical sessions held for each experience. Consequently, the representational document undergoes a metamorphosis as each study evolves, becoming increasingly complex. At the same time, it also becomes more structured, owing to the necessity of coherently organizing all the layers of information. Therefore, what is obtained is a hybrid document containing images, drawings, graphs, and text. This document undergoes a metamorphosis to clearly show the intricacies of each project, thereby ensuring that all recipients of the research can understand its particularities.

While each experience addresses a specific topic, they collectively fall within the domain of environmental architecture. Furthermore, the methodology for implementing the ecosystem diagram as a representational and communicative graphic tool for each study follows the same pattern (Fig. 2). The first phase of each experience is dedicated to the conceptualization of infographics, emphasizing its historical development to enable the ecosystem diagram. The use of this tool is proposed based on its practical and efficient nature in compiling and organizing heterogeneous elements for correct interpretation. In order to assess the use of the ecosystem diagram as a tool for gradual work and the presentation of preliminary results, several critical intermediate follow-up sessions are held[20]. At the end of the research, the effectiveness of the ecosystem diagram as a mechanism for global communication is determined when using it in the final presentation.

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Fig. 2

The “BIP FoodCity Prato/Florence” workshop was scheduled to be held in the Florentine city of Prato from February 26 to March 1, 2024[21]. It focused on the study of agroecological regeneration in the urban-rural context of the city, with the aim of designing a practical intervention proposal[22]. This experience began with an exhaustive field visit to the study area surrounding Prato, and organizing the students into groups based on productive, ecological, or social themes[23]. The ecosystem diagram was adopted as a tool for recognizing the urban-rural interface, conducting historical analysis of the area, and mapping potential initiatives. In addition to using it as a working mechanism, the goal was to create one graphic document per theme. These documents were designed to clearly convey the intricacies of the research, with the purpose of presenting them to the local public.

The Seminar on Research in Environmental History of Architecture (SIHMA) took place from September 2023 to January 2024 at the School of Architecture of the Polytechnic University of Madrid. The theme of the seminar was “Water and orchards: the culinary infrastructure of the Monastery of El Escorial”[24]. Similar to the workshop, the seminar began with a field visit to the object of study, and the formation of three working groups based on sub-themes—water infrastructure, the monastic kitchen, and the vegetable garden[25]. The research was carried out using an ecosystem diagram to compile reference sources and organize progress. Monthly progress reports verified the effectiveness of this tool for communicating results.

The final experience in which the ecosystem diagram is used involves a different scenario: it is applied to an individual’s longer-term Ph.D research, which began in 2021 and is nearing completion. As the research progresses, the diagram also undergoes a transformation. Once again, the methodology begins with exhaustive fieldwork, but this time it corresponds to a larger number of case studies. The obtained content is systematically organized into subcategories belonging to the same thematic field: environmental studies in landscape architecture. In this case, the ecosystemic diagram is used as a tool to guide the research process, from organizing references to presenting results in critical sessions with other university members.

In summary, the ecosystem diagram produced in each of the three academic experiences is a document that is gradually built according to the phases that guide the study itself. Thus, it reflects the methodology behind each study. This representational and communicative instrument is invariably structured around a main graphic—sometimes more diagrammatic or pictorial— and is accompanied by brief text and image fragments. Thanks to the hierarchy of content, a series of understanding logics is established. This phenomenon is due to the presence of a primary element that is supported by a secondary group of elements linked by relationship lines. These logics are organized into levels of reading, which allow for a deeper understanding of the content. In this way, non-specialized audiences

will remain at the general level of reading, while specialized ones will delve into the field of relationships that address the details of the study.

Additionally, creating an ecosystem diagram for each subcategory of the three experiences yields a set of representative documents of each study. This fulfills two purposes: first, it establishes a valuable mechanism for comparing the different subtopics and, second, it provides a more comprehensive overview of the entire subject. The latter aspect allows readers without prior knowledge of the matter to explore specific subtopics according to their affinity. This approach fosters a deeper understanding of complex issues by presenting them in a fragmented manner with consistent graphics that clarify the reading.

4. Discussion

The results of the three academic experiences reflect what was established in the methodology and initial hypothesis. Despite the heterogeneity in the contexts and temporal periods examined, a preliminary synthesis reveals a unifying characteristic: all of them use the ecosystem diagram as a pivotal graphical structuring device. Taking into account the varying durations of each experience, the number of agents involved, and the type of research, a compelling case can be made for the use of this methodological mechanism.

Regardless of their duration, the three experiences present a substantial challenge to the application of the ecosystem diagram in research and academic activities. Due to the limited time available for the Prato workshop, it is essential to employ a tool that is both pragmatic and well-defined, thereby ensuring that students do not spend valuable time in the process of identifying a format for working and delivering results. The use of an ecosystem diagram structured around a central figure—to which subordinate elements are added as the content is expanded—is initially presented as a straightforward process. The diagram is structured around a main drawing, typically in the form of a plan or axonometric projection. Additional images and sketches complement this drawing and organize the DIN A1 using connecting lines. The tool allows for rapid progress in diagnosing contextual issues, in order to propose a conclusive, comprehensible action plan.

The seminar on El Escorial features a more relaxed timeline, thus requiring a methodological tool that allows for continuous editing without losing relevant information in the process. For this reason, the implementation of the ecosystem diagram is introduced in DIN A3 format. This size is optimal for graphic definition on a computer and is large enough to be projected audiovisually. The document is developed in accordance with substantial research advances achieved on two simultaneous scales. On the one hand, each graphic element of the drawing, text, or image that complements the central planimetry is worked on in detail. On the other hand, the overall coherence of how all these elements relate to each other is defined by creating successive layers of content with a clear hierarchical scale.

The Ph.D research is based on the necessity of having an instrument with which to document a wide selection of case studies for comparative analysis. Consequently, the ecosystem diagram is presented in DIN A4 format to ensure its suitability as a comprehensive compilation document for each case. Due to the extensive duration of the research, the diagrams evolve as the study progresses, becoming more refined as additional cases are compared. This is possible because the tool’s hierarchical structure allows its presentation to be transformed without nullifying the internal network of relationships that make up the intricacies of each analyzed case.

In terms of the number of agents involved, ecosystem diagrams are repeatedly defined and transformed until the final presentation by 7-8, 2-4, and 1 person, respectively—according to each of the three academic experiences. The tool’s validity extends to research of varying durations, and it can be regarded as well as a methodological instrument capable of capturing either a single personal point of view or a group understanding. The brilliance of the results obtained from the experiences substantiates the hypothesis that the interaction between two or more agents through the definition of an ecosystem diagram occurs without conflict. The underlying, layered structure enables multiple individuals to simultaneously edit the diagram without interfering with each other. However, although progress can be represented in detail, links must be created between the parts to properly communicate the subject. For this reason, regular dialogue between the agents is imperative to ensure the hierarchical organization of the content.

The implementation of the ecosystem diagram as a valid methodological tool is also verified, regardless of the type of research. The short workshop is proactive by nature. Its aim is to propose a series of initiatives that explore potential intervention strategies within the context of Prato. While these proposals are based on an analysis of environmental problems, the experience’s projection is considerably practical. Conversely, the type of research covered in the monthly seminar is based on historical analysis. The objective is to diagnose the technical infrastructure supporting one of Spain’s

most significant buildings, which remains hidden or is lesser known. Therefore, the core of the research is the analysis of reference sources on the construction of this and other monasteries from that period to determine graphically how this infrastructure can be organized—despite the lack of precise historical records on the subject and the inability to conduct tests on the building. Although the materialization of this analysis exhibits a certain propositional character, the ecosystem diagram primarily reflects historical research. Lastly, in the case of the longer doctoral thesis, these two previous perspectives are combined to create a type of theoretical-historical-practical research. The objective conceived through the ecosystem diagram is to document the existence of places characterized by environmental reconciliation. To this end, the evolutionary development of each case is analyzed, applying contemporary theoretical discourses on ecology to determine how architecture plays a fundamental role in the balance between nature and human action. Consequently, this third academic experience is neither pure historical analysis nor theoretical dissertation. Rather, it is a hybrid, integrating a pragmatic projection of how to contribute constructively to environmental equilibrium through architectural design.

This discussion confirms the viability of using the ecosystem diagram as an asset for advancing research in all formats and durations, but only if it is structured in a clear compositional hierarchy. The virtue of this new infographic model lies in its ability to create complexity through the generation of simple relationships between elements on different scales. In any ecosystem diagram, the main drawing must serve as a nexus that connects conceptual frameworks derived from the other diagram elements. A range of scales in content depth then emerges, influenced by the arrangement of elements within the diagram. Without a gradual, hierarchical order, the relationships between elements lack structure, and the multiple lines of interpretation necessary for a profound understanding of the topic remain uncreated. Consequently, effective communication would fail, resulting in a simplistic, two-dimensional infographic that requires supplementary documents for a comprehensive exploration of the subject.

Working on the ecosystem diagram tool is a three-phase process. First, the pieces that make up the ecosystem diagram are associated with a central graphic element, as well as text and photographs that provide context and references to flesh out the preliminary idea. The initial levels of organization do not reflect a comprehensive reading because the hierarchical structure that would organize the elements needs to be explored in greater depth. Therefore, each element of the initial version of the ecosystem diagram is identified and grouped by family to determine the most relevant elements and their derivatives. This hierarchical arrangement yields the final ecosystem diagram, which clearly associates elements and allows for a more complete and understandable reading of the subject matter. The final document's graphic refinement clarifies the theme's different levels of depth, contrasting with the intermediate phase's abstract checkerboard and the initial diagram. However, it should be noted that the initial attempt to associate elements and the resulting diagnosis are necessary for configuring the final ecosystem diagram's different levels of understanding.

The examples produced in each of the experiences show how diagrammatic documents evolve in complexity as they are transformed. The initial ecosystem diagrams are depicted on the left side of the following images, while the diagnosis-abstraction process is in the center, and the final document is shown on the right. A close examination of the diagrams produced during the Prato workshop discloses the emergence of a predominant form of drawing, wherein a plan of the rural-urban context occupies a central role in the analysis (Fig. 3). Similarly, it is possible to deduce the gradual evolution of the design, beginning as a rudimentary hand-drawn sketch and progressing to a grid of axes delineating regions. This progression gives rise to a more intricate pattern that highlights the most remarkable areas for study. In addition, it is evident that the type and manner in which secondary elements are integrated has a significant impact on the perception of the composition as a whole. Initially, the illustrations of the encountered issues were exclusively derived from images captured during the field visit. Subsequently, freehand sketches are incorporated, until they are transformed into icons within the main figure. In the culminating phase of the study, references to other nearby cities in a more visual way are also added. The introduction of these references is always accompanied by a brief explanatory text. While it is not possible to build a substantial depth of layers of information, the different levels of reading that guide the understanding of the proposal can be identified by the gradation of magenta color filters.

In the El Escorial seminar, depth of field is not achieved by incorporating connecting lines, but rather through the definition of each element's scale. Once again, the planimetry occupies a central position, despite the fact that each one belongs to a different sub-theme, such as the monastic kitchen, the vegetable gardens, or the water infrastructure. To complete what is highlighted in the axonometric projection, depth plans are created, incorporating a diverse array of elements—such as icons, texts, photographs, or construction details. In this experience, it is interesting to contrast how the ecosystem

diagram allows for the coverage of the different scales of analysis according to the demands of each theme, whether it be the building itself, its productive context, or the territorial valley on which it sits (Fig. 4).

Fig. 3

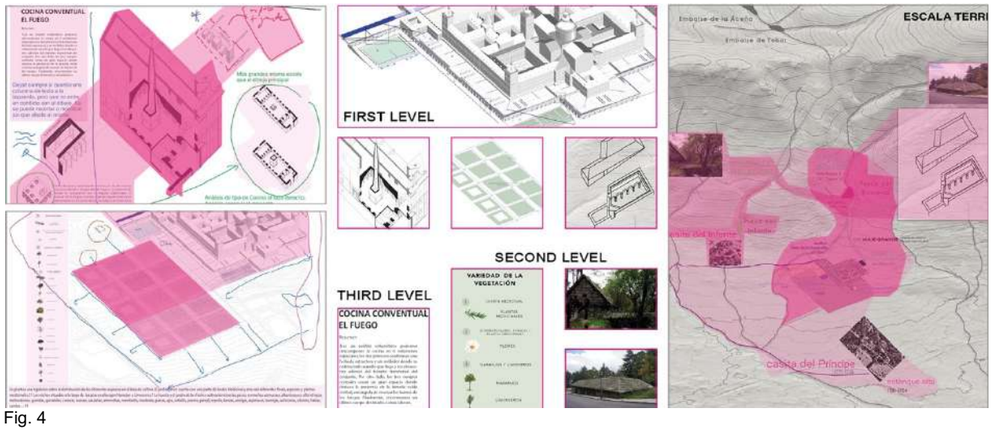

Fig. 4

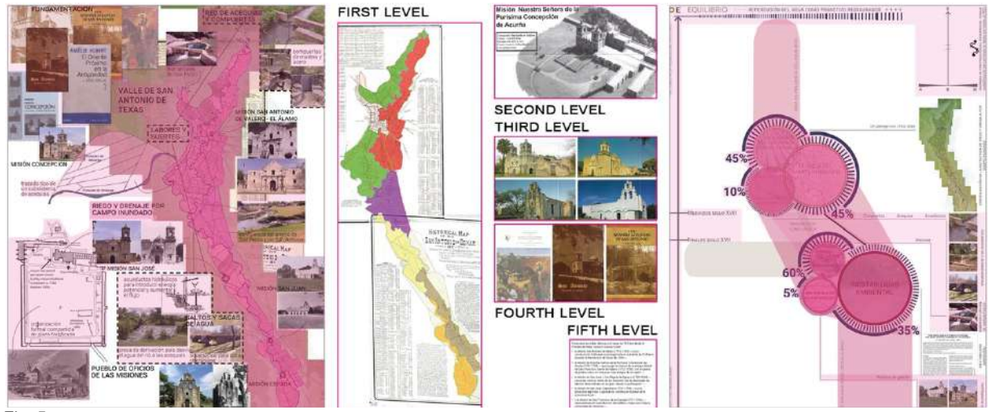

Fig. 5

In the context of a long-term doctoral research project, the use of this methodological tool facilitates exploring how much an ecosystem diagram can be modified until it effectively conveys the object of study. In the illustrated example, it is evident that the diagram begins by connecting images, historical documents, and explanatory graphic details, through drawing lines and arrows indicating interaction. The elements are grouped according to their relationship with the main plan. However, it lacks sufficient clarity to understand the crux of the issue under study. For this reason, Florence

Nightingale's work is referenced to create a more diagrammatic document that aims to clarify the main factors characterizing the subject under investigation. Here, the depth gradients are built through the interplay of scales in circular graphics, incorporating textual data and supporting graphic lines that illustrate the impact of each factor (Fig. 5). Furthermore, the integration of supplementary images and plans that provide contextual depth is maintained, but they are arranged on one side of the composition—as observed in Kallipoliti's or Humboldt's approaches. This modification emphasizes the central figure, indicating the location of complementary information for those who wish to undertake a more comprehensive examination of the subject. Ultimately, two additional levels of understanding are introduced. On the one hand, there is a set of relational lines with textual support that allow the extra content to be linked to the central graphic in a hierarchical manner. And, on the other hand, there is a scalar axis reminiscent of Smithson's or Jencks' infographics, which facilitates the intuitive comprehension of the mechanisms, underlying the comparison of ecosystem diagrams from various case studies.

As demonstrated by the intermediate control sessions conducted during each experience, the ecosystem document exhibits a high degree of complexity. Surprisingly, this complexity is communicated clearly when the elements of the diagram are connected correctly. The central drawing of the composition is as important as the supporting elements that orbit around it. However, the scale with which each element is introduced and the lines of relationship that guide the hierarchy are even more important. Without these relationship fields, there is no room for the multiplicity of readings that facilitate a gradual deepening of understanding of the object. In other words, comprehending the intricacies of the subject under investigation requires systematically unveiling its contents, which are arranged in hierarchically structured layers of information as the reading unfolds.

One final interesting point is that the ecosystem diagram is non-conclusive, meaning it can be updated with new information as more research is conducted. However, this is only possible if its compositional elements are correctly organized within the relational grid that makes up the compilation document. In conclusion, the advantage of using this hybrid infographic as a methodological model for architectural research lies in generating complexity through simple relationships between diverse elements based on different organizational scales. This model allows for a deeper understanding of the content according to each recipient's needs.

Notes

1. Lankow, Jason, Josh Ritchie and Ross Crooks. *Infographics: The Power of Visual Storytelling.* New Jersey: John Wiley & Sons Inc, 2012, 10-14.
2. Von Humboldt, Alexander. *Cosmos: Ensayo De Una Descripción Física Del Mundo.* Madrid: Imprenta de Gaspar y Roig Editores, 1875, second part, no. IV.
3. Brogniart and Humboldt undertook extensive travels throughout Europe and Latin America, respectively, while Cuvier conducted an analysis of the geological samples that had been documented in the laboratory at the Muséum d'Histoire naturelle in Paris. Humboldt also recognized that the analysis of samples from distinct Earth's layers yielded additional insights.
4. Robinson, Arthur Howard. *Early thematic mapping in the history of cartography.* Chicago: University of Chicago Press, 1982.
5. Berghaus, Heinrich. *Physikalischer Atlas.* Gotha: Justus Perthes, 1892 (1852).
6. The Geographic Mineral Section was initially published in 1811 as a component of the "Essay on the Mineralogical Geography of the Environs of Paris, with a Geognostic Map and Cross-Sections". Subsequently, in 1822, it was republished in the "Description géologique des environs de Paris" to incorporate novel advancements. Following Cuvier's death in 1832, a final version of the study was published in 1835. Humboldt's diagram was first published in 1841 and was subsequently included in the 1845 publication *Cosmos* and in the 1875 reissue of that volume. It was also included in Heinrich Berghaus's Physikalischer Atlas, published in 1852. The "Diagram of a cross section of the earth's crust" was not subjected to substantial editing.
7. Tufte, Edward R. *The Visual Display of Quantitative Information.* Connecticut: Graphic Press, 2001 (1983), 191-194.
8. The purpose of the histogram was to elucidate the precarious sanitary conditions in military hospitals to senior British government officials. This chart, which was finally published in 1858, demonstrates that epidemic diseases were responsible for a greater number of deaths than battle wounds themselves. This finding underscores the notion that epidemic diseases could also be mitigated through simple methods, such as ventilation.
9. This innovation is generally attributed to Henry Drury Harness, who had previously employed them in his own work.
10. This graph correlates six distinct variables to comprehend the intricacies that characterize this military campaign. The variables include the size of the army, the distance traveled, the ambient temperature, the latitude and longitude, the direction of the battle's advance, and the specific dates.
11. Friendly, Michael. 2002. "Visions and Re-Visions of Charles Joseph Minard". *Journal of Educational and Behavioral Statistic* 27, no. 1: 31-51.
12. Indeed, this diagram exerted a decisive influence on Jacques Bertin's *Sémiologie graphique*, published in 1967 and widely regarded as the first theoretical basis for the creation of truly communicative informational graphics. It establishes a systematic classification of the use of visual elements to display data and semantic relationships, playing with seven variables: position, shape, orientation, color, texture, value, and size. This approach is syntactic, seeking to codify the construction of signs in the most appropriate way according to the nature of the source data, while revealing the connections that can be established between those signs.
13. Bertin, Jacques. *Sémiologie graphique: Les diagrammes, les réseaux, les cartes.* Paris: Editions de l'Ecole des Hautes Etudes en Sciences Sociales, 2013 (1967).
14. Hailey, Charlie. 2020. "Island of Broken Glass". *Holt Smithson Foundation.*
15. Jencks, Charles. *Architecture 2000: Predictions and Methods.* New York: Praeger, 1971.
16. Sullivan, Peter. *Newspaper Graphics.* Darmstadt: IFRA Publications, 1987.
17. Farallones Institute, Helga Olkowski, Bill Olkowski and Tom Javits. *The Integral Urban House: Self-Reliant Living in the City.* San Francisco: Sierra Club Book, 1979, 10.
18. Kallipoliti, Lydia. *The Architecture of Closed Worlds: Or, What is the Power of Shit?* Zürich: Lars Muller Publishers, 2018.
19. The Helga and Bill Olkowski's diagram predicated on the utilization of texts and symbols, while the Kallipoliti's one underpinned by a five-variable color analysis applied to an axonometric drawing.
20. In the five-day workshop, only one intermediate critique session is scheduled. In the case of the five-month seminar, two such sessions are held, and during the five-year research, three significant critique sessions are organized.
21. This workshop is organized by the University of Granada, the Università degli Studi di Firenze, the Universidad Politécnica de Madrid, and the Universidade Autónoma de Lisboa. It also involves collaboration with faculty and students from the University of Las Palmas and the Università degli Studi della Campania Luigi Vanvitelli. This academic experience is coordinated with the objectives and organizational support of the National Plan Research Project PID2020-115039GB-I00, "Food and City, from the Domestic to the Public Space. Elements for a History, Arguments for Contemporary Design."
22. Arredondo Garrido, David. 2025. "FoodCity Prato/Florence". *Sobre* 11, https://doi.org/10.30827/sobre.v11i.32711
23. Hum813. 2025. "Estudiantes y profesores participan en el BIP Workshop FoodCity Prato/Florence". *Hum813.*
24. It should be noted that this seminar has offered a second edition scheduled under the theme "Water and Fire: Fountains and Chimneys of the Monastery of El Escorial" during the months of September, October, November, and December of 2024, and January of 2025. In this new edition, the ecosystem diagram continued to be utilized as a graphic tool for working and presenting results.
25. The results of the research carried out at the seminar will be published in a compilation book edited by Ediciones Asimétricas in the coming months.

Image Captions

Fig. 1. Personal collage prepared with the infographic's references that provide the necessary context for the present paper. The first group of images, located in the upper left corner, includes the "Geographic mineral section" by Cuvier and Brongniart (1811), the "Diagram of a Cross Section of the Earth's crust" by Alexander von Humboldt (1841), the "Crimean War Diagram" by Florence Nightingale (1857), and the "Napoleon's 1812 Russian Campaign" diagram by Charles Joseph Minard (1869). The second group of images, situated on the right, joins the "A surd view for an afternoon" diagram by Robert Smithson (1972), the "Evolutionary tree" by Charles Jencks (2000), and a "Newspaper Graphic" by Peter Sullivan (1987). The third group of images, located in the lower left corner, brings together a diagram of "The Integral Urban House" made by the Farallones Institute in 1979, and a new version of it created by Lydia Kallipoliti in 2018.
Fig. 2. Summary of photographs taken during three distinct periods of the study: the initial field visit (left), the intermediate working sessions (center), and the final presentation (right). The uppermost series of images corresponds to the workshop experience, the median ones to the seminar, and the lowermost images to the Ph.D thesis.
Fig. 3. Three stages of creating the final ecosystem diagram during the Prato workshop.
Fig. 4. Three stages of creating the final ecosystem diagram during the El Escorial seminar.
Fig. 5. Three stages of creating the final ecosystem diagram during the Ph.D research.

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Von Humboldt, Alexander. *Cosmos: Ensayo De Una Descripción Física Del Mundo*. Madrid: Imprenta de Gaspar y Roig Editores, 1875.

Biography
Ana Patricia Minguito is an architectural researcher at the Polytechnic University of Madrid. Doble MArch in Architecture, she has received the First National End-of-Degree Award by the Ministry of Spain, in addition to the First UPM 2018 Award, the Second PFC-COAM 2019 Award and a nomination for the "Mies Van der Rohe YTAA Awards 2020". From 2019 to 2022, she served as an Architectural-Projects-Fellow in undergraduate and MArch's programs, while holding the position of Head of the Architectural-Design-Research Department at SUMA Architecture's professional office. Since then, she has been an Assistant-Research-Professor at ETSAM. In 2023, she was invited by Tulane University in New Orleans as a Research-Teaching-Fellow. She has published in *Vitruvio* (2025), *PpA* (2025), *AhAU* (City and Nature 2024), *ZARCH* (2024), *Constelaciones* (2024), *REIA* (2023), *JIDA* (2021, 2024), and *INCUNA* (2019). She has also organized the "SIHMA"-"SIHA" Seminars (2023-2025) and the lecture series "What is History for?" (2022-2025).

Peter Märkli: Aphasia
Error as a Method, Drawing as a Sentence

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Abstract

In 2023, part of the archive of drawings by Swiss architect Peter Märkli (1953) was once again made publicly accessible (Mion; Don, 2023). Nearly a decade after the first English edition of his work (2015), the author's graphic corpus has returned to address certain questions concerning architectural design, clarifying how drawings possess their own autonomy with respect to issues of construction.
Far from attempting to verify the technical realities of the project, the drawings reveal the possibilities of a territory that extends beyond the limits of the sheet, introducing "inaccurate" inscriptions in which error itself establishes the field of theory.
The absence of titles in many of them underscores the character of an author who leaves little room for words. It is the drawing itself that constructs the sentence of a theory oscillating between the autonomy of construction and that of drawing. Theory thus appears displaced, repositioned from the written to the represented.
A dense corpus of exercises engages with the discipline by interrogating colors, proportions, knots, and therefore elements—such as the *Knots*—which in 2011 became points of resolution in the Synthes Headquarters (Johnston, 2017). These aim to clarify postures, but above all, the conditions dictated by the absence of a verbalization capable of expanding critical analysis beyond the purely technical logics of the project.
This is a shift in which the graphic mark—"primitive" and handmade—welcomes erasures, hesitations, in other words, uncertain thoughts, translating error into a methodological device intended to search for answers and languages (Azzariti, 2019).
The loss of fidelity between what is drawn and what is built defines the concrete trace of theory and, above all, the approaches to an authorship that seeks to imagine non-existent realities, often not fully translatable into buildable terms. The renunciation of precision, as well as the absence of structural or executive anxieties, renders theory almost unspeakable in words. This opens the discussion toward modes of traversing the drawn space by means of the very tools of *adventure* (Agamben, 2015)—the same that transformed Pinocchio from puppet into living body and that, therefore, amidst thicknesses and depths, can be discerned in Märkli's "script," whose reference is life.

Key words: error as method, graphic autonomy, non-verbal thought, Peter Märkli.

1. Between the Rooms: A Method

Before venturing into the territories drawn by Peter Märkli, the Swiss architect, who from 2002 to 2015, held the Chair of Architecture at the Swiss Federal Institute of Technology in Zurich (ETH), it is appropriate to proceed gradually, entering—accompanied by a text—into the world, and, above all, the thought of the author. *Peter Märkli's Approximations*, a book edited by Moshen Mostafavi, begins with the image of a room: the architect's studio in Zurich[1]. It is here, with an evocation of Paul Cézanne, that one realizes how "one says more and perhaps better things about painting when facing the motif than when discussing purely speculative theories in which, as often as not, one loses oneself"[2].
To stand before the subject means to verify, without further mental constructions, the interaction with a field of action that is precisely that of a silent studio—devoid of human bodies yet filled with others, which are objects, thoughts, and drawings piled together.
In order to avoid a loss of premises, Mostafavi's text is accompanied by a horizontally framed photograph in which certain objects emerge to outline the world in which Märkli operates. The image seeks to provide the words that are missing, or even those that remain unspoken, unsayable; it is the objects—other bodies—that enter this conversation, substituting for terms which, taken together, tend to compose communicative phrases.

> "For Märkli, the idea of working alone, at least during the pre-construction phase of a project, has a special significance. One can imagine that for most people, working alone day after day would lead to utter boredom. But for Märkli, this is the only way to come upon unforeseen ideas or to have the chance to re-work others. Märkli's working procedures, however, are self-induced and are in part a deliberate reaction to the prevalent notion of the architect's studio as an office machine. […] One imagines that, working alone in his studio, Märkli too comes to pay closer attention to things—to the proportions of his houses, to the texture of their surfaces, to the materials of their construction"[3].

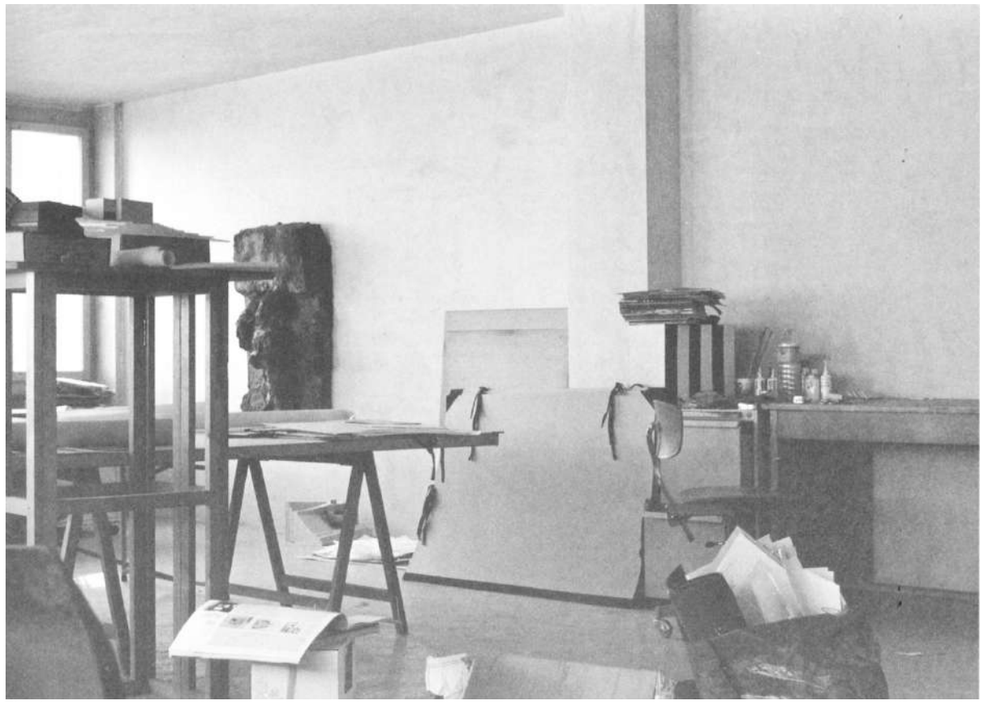

Fig. 1

Märkli's world is one constructed through the superimposition of objects, layered one upon another. On the one hand, easels, canvases, and sculptures emerge—elements to which we shall later return—while on the other, one cannot fail to notice the absence of human bodies: the room is empty. Indeed, many years after the photograph was taken in 2002, David Chipperfield would once again observe how "this private working space appears at first to be that of an artist. On closer inspection, they are in fact cluttered with the creative mess of an architect who has no time for the superficial vanities of a normal architecture practice. They are a haven from distraction, a place to focus. His modus operandi is made explicit by the drawing board with Mayline parallel motion, familiar to my generation but banished from most architects' offices many years ago. Books lie open on the floor, sketches and drawings are pinned to the walls. […] Märkli's studio flaunts the idea of isolation and the need to detach from realities to deal with them. Being in such a space provokes discussion about the idea of the artistic autonomy of the architect"[4].
Returning to Mostafavi's perspective, what becomes central in the subsequent passages is the introduction of *boredom* as a mode of reading the author's thought. Boredom emerges as a methodological presence at the foundation of design practice: a necessary tool for testing the possibilities of architecture, for examining the phases of construction which are not only those of the building site but are composed, through *Märkli's eye*[5] of pre-texts, experimentations, inscriptions, and languages.
This measurable exercise finds its critical terrain precisely in the literature of Alberto Moravia, in a boredom that "is not the contrary of amusement; […] indeed, in certain respects, it resembles amusement in that, precisely, it provokes distraction and forgetfulness"[6]".
Boredom—like that of Dino, the protagonist of the Italian novel—when applied to Märkli's design experience, presupposes the existence of a relationship between the body, that of the architect, and things, which may be material (objects) or immaterial (events, narratives).

> "It must be stated clearly: boredom exists only where there is consciousness. A plant does not grow bored. Nor does a coral. Like the disposition to suffer, the faculty of experiencing boredom is therefore, to some extent, a symptom of vitality: not everything is lost […]. To be bored, in short, is still a way of reacting, albeit a sad, sterile, and drowsy one; boredom requires nerves, and the foundation must in any case have remained intact"[7].

In the attempt to construct a theory of design grounded in techniques of observation[8], boredom thus presents itself as speculative material for narrating spaces and dimensions, so that it may become a substance of construction. What is at stake is fixing within the analysis of the work the presence of a consciousness, which in turn admits an authorship capable of introducing into the design process even intangible conditions.
Within the professional studio, the sentiment of boredom—of becoming bored—hovers, transforming into a *Good practice* for interrogating, prior to any verification, the statutes of the architectural discipline. A first detachment from reality allows the architect to establish a new order, an elsewhere, through a different attitude toward the space surrounding him. It is precisely in the groove of isolation that the necessity emerges for such boredom to become an "electric current," establishing the field of intervention and of the construction of a theory orchestrated through the accumulation of references.
These references, in the time of the project and even before drawing, will dissolve or crystallize in relation to their origin, transforming into new articulations and figures—that is, into new rooms, refuges, which are worlds. Boredom thus becomes the litmus test for structuring itineraries, elements of a foundational theory for traversing data of reality: "above all, it is a matter of making time compelling, so that consciousness may once again find within its intensity and fullness"[9].
In the workrooms, in the absence of words and sounds, lines of tension are activated within which Peter Märkli experiments with the search for a language—that of architecture—moving across the times of the project, as well as its functions and objects. It is a matter of "a rigour to attain a goal to be reached gradually, not settling for what is or what has been and not settling for apparent reality, but searching for a hidden reality, an absurd reality; one that stands before us, but that we have not yet been able to grasp and that only a persistent effort of reflection and thought can allow us to see. This continuous search is never content with what has already been done and/or achieved and can be exhausting, even boring. But this is a necessary boredom"[10].

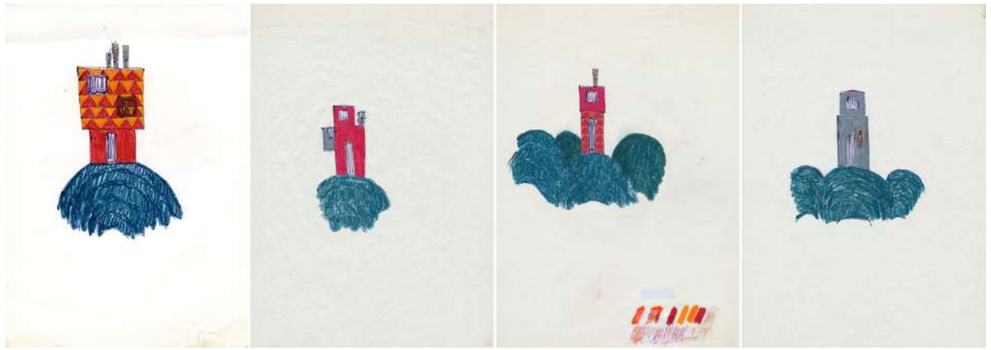

Fig. 2. In this sequence, the method and process through which Märkli trains his thinking are visible, also based on the repetition of slightly varied or overlaid elements.

The lens thus proposed, even if never directly declared by Peter Märkli, structures a collective memory that transcends geographical distances in order to explore territories—above all, those of paper—and to define points of a logical syntax capable of updating or reaffirming design notions through the construction of archives. The archive, in fact, where part of these drawings are "preserved," is articulated across the spaces of work—that is, the atelier and the studio—becoming almost a third, ephemeral space in which the intensification of the relationship between reasoning and references creates a catalogue from which to draw during the operative phases.
Studio, office, and archive thus discuss the existence of an authorial geography, according to an autonomous and ever-updatable order, in which multiple environments of different purposes gather the outcomes of a work grounded in thought and drawing, and very little in words, though nonetheless exercised in long dialogues. The composition of spaces, like islands, defines the presence of an archipelago of rooms suited to explaining a method that later re-enters the design process.
The space is therefore destined to identify and collect, in a kind of uninterrupted yet promise-filled collection, the evidence of an authorial strategy that the drawings—both as fact and as testimony—may document.

2. Error Generates Design

> "The point for me, when I started making these drawings, was to try to develop a grammar of architecture – to try to grasp the basic elements for myself, so that I could use them again and again in different situations without having a predetermined image in mind"[11].

> "I do two different types of drawing. The ones that relate directly to a project are always small—necessarily so, because they express only what is essential, the details are not yet clear. They're never two-dimensional, but always bird's-eye views that include the surroundings. I'm trying to capture the overall idea. If I can do this in a three-dimensional drawing, then I know what kind of space I'd like to build. Before that, I can hardly begin. Along with these sketches, I make very small models.
> Again, they're small because they're ideas and not yet finished projects. I develop the interior and exterior in parallel, but I tend to have a better idea of how the interior will look. The external expression is not so easy to picture. The other kind are the two-dimensional drawings that I use continually to explore certain themes—like the forms of buildings and certain orders, the relation of a single element to the whole, or color. These are A4—my preferred format for more than ten years—and they're never done in isolation but are always part of a series. This work is not tied to a specific brief but may be inspired by something I've seen in a book, for example. And while the first sketches are still close to the original motif, the more I draw, the freer the drawing becomes"[12].

Within the field left open by the approximations anticipated by Mostafavi, it is crucial to specify a passage that in Märkli's work becomes a construct: one based on the concrete observation of basic rules, a veritable grammar whose reference is space.
The mechanisms under discussion mark the existence of lists that the architect makes available to practice, where the elements of architecture—assumed as letters capable of forming words—constitute the fundamental vocabulary of the design action, in which drawing plays a central role. This is a grammatical syntax in constant evolution: things—objects represented through lines, knots, colors, intensities—shift reality by a few degrees, interrogating it.

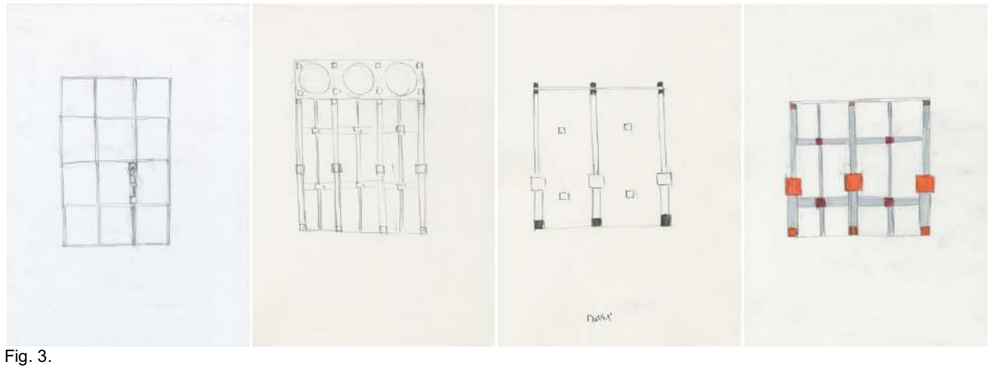

Fig. 3.

The field of exploration, materially composed of a series of handmade drawings—what today we might call analogue, to distinguish them from digital ones—establishes a "craft-based," but above all haptic, methodology (*Craft of Architecture*[13]), made precisely with the hands, composed of small displacements that become more precise as the number of tests on paper increases.
In this sense, the open system presented in Mostafavi's text finds its own resolution, a summary, through the calibration of a few marks repositioned within the framework of small sheets of paper. The necessity of producing small drawings—most often on A4 sheets (ISO 216)—thus lies in the fact that they are not meant to define an executive detail or a technical solution, but rather to debate principles. Lines, as well as color fields, serve to capture the essence of things without fixing a final solution, which in fact, through the few represented elements, tends to suggest multiple possibilities rather than a single one[14].
The sheets become the true territory of construction, the space in which to experiment with error—an acceptable expression in Peter Märkli's work during the phase of formulating questions, even if never explicitly mentioned[15]. Contrary to the executive precision of the building project, the drawings demonstrate how it is nonetheless possible to deepen architectural themes "without being dominated by the building"[16].
This establishes a pivotal point within the process, highlighting the autonomy of drawing and of its inscriptions with respect to the themes specific to construction and the building site. It is therefore in the loss of fidelity between what is drawn and what is built that theoretical tension takes root, presupposing on the part of the author deliberately elusive strategies regarding completeness, where even indecision finds expression within drawing.
If built figures are verified through the construction site, drawn ones do not need to be completed or obligatorily constructed. The absence of a client—no direct commission traceable within the drawings—further intensifies the methodological process and the foundation of a thought that seeks to explore, through the operative deployment of error—for instance, concerns of structure or statics are almost absent from the drawings—the forms and expressions of architecture.

> "When I had the good luck to get a commission, I was able to refer back to some of these things. Without this work, I would not have been able to build – to realise – the buildings"[17].

The drawings thus come to construct an armamentarium of logics and functions, as well as of forms and proportions, shifting theory from the written to the drawn. The absence of a personal, that is, verbal, writing is, therefore, returned not through words but through signs. These, thus determined, constitute the catalogue of the real, where abstraction—understood as a return to an elementary origin—grounds the true degree of novelty.
Likewise, the absence of domination by the realized work does not imply a methodology that evades the rules of architecture but rather foregrounds an exercise intended to test, through questions—as already anticipated—the construction of an a priori grammar. In this regard, it is appropriate to recall the thought of Raymond Queneau, who maintained that:

> "Another very wrong idea that is also going the rounds at the moment is the equivalence that has been established between inspiration, exploration of the subconscious and liberation, between chance, automatism, and freedom. Now this sort of inspiration, which consists in blindly obeying every impulse, is in fact slavery. The classical author who wrote his tragedy observing a certain number of known rules is freer than the poet who writes down whatever comes into his head and is a slave to other rules of which he knows nothing"[18].

Thus, in the work of the Swiss author, we find a form of reduction derived from a programmatic approach, which allows him to state that "to be able to communicate, we have to know the rules of language"[19]. In this sense, he acknowledges having realized "that not only could these words be used to describe things, like describing a particular loaf of bread to the baker, but also that it had, in literature, the power to describe feelings and world views. […] I looked to the profane and the visual arts and started to observe and slowly learn the language. I simply began by observing the grammar of our discipline. I mean I had to learn French, German, and English. I was taught those languages, but no one taught me how to understand architecture. So, I had to do it myself. […] Now I can describe everything, but that still doesn't necessarily produce a good building—you just understand the language"[20].
In constructing a precise language in which drawing forms the core of a non-verbal (aphasic) discussion, Märkli employs the paradigm of letters to define an organizational structure—a syntax—so that the process may acquire meaning by generating knowledge. The sentences that emerge from his script, highly complex despite the simplicity of their marks, are directed toward describing multiple focal points to move beyond the merely technical datum and clarify, above all, the meaning of spatial and/or compositional relationships expressed.

This consideration finds its foundation—particularly in our own time, as will be further developed in the conclusions—in the figure of the author, where “Author instantiates creation, the expansion of the pre-existing”[21]. In this role as an *augmentor*, drawing becomes the instrument, while the perimeter of the sheet presents itself as the territory in which to describe the designing matter.
Presented in temporal strata (1980–1999; 2000–2015; 2016–2023), despite their continuous narrative structure, the drawings represent a world, a reality that should never be regarded as isolated. Indeed, they cannot be understood in their singularity but rather as belonging to a sequence of questions that are articulated through the act of making. Just as they resist the appearance of completed objects, the images resist any attempt at historical cataloguing or at classification within cultural or geographical categories. They are the offspring of a genealogy whose primary fundamentals lie in architecture.
From this arises the importance of sources—that is, all those materials that inform the inscriptions and, even prior to them, the author who produces them—oscillating between individual experience and universal experience. The first is rooted in an intense relationship, above all, with the sculptural work of the artist Hans Josephsohn, for whom the architect designed and built an archive-museum in Giornico, in the Grisons, known as *La Congiunta*[22]. The second source, instead, is grounded in the history of architecture, within which Märkli identifies clear elements, atmospheres, relations, and solutions that he copies, reuses, joins, juxtaposes, and overlaps. History thus becomes operative, not didactic or chronologically sequential, conceiving of historical time as circular rather than linear.
This is therefore not a mere reproduction of fragments from the past, but an interpretation made necessary by the syntactic construction elaborated and made explicit in *Zur Grammatik der Architektursprache*[23]. Here, in a lecture booklet prepared for the autumn semester of 2014, the image of the Acropolis of Athens placed at the beginning clarifies the point of departure, specifying the frame of reference in which data—again, images rather than words—are sought and re-proposed according to other sequences that, over time and through practice, generate new figures of design.
It was in 2015, however, that the first rigorous attempt to collect the drawings was presented in the publication edited by Claudia Mion and Fabio Don, *Peter Märkli. Zeichnungen | Drawings*. Following an approach in which the temporal sequence of production itself forms the narrative matrix, it becomes possible to grasp the discourse undertaken. The drawings reveal the absence of continuity in the conventional sense, an autonomy that grants to the two-dimensionality of the sheet a privileged territory of communication. The white of the paper enables the author to amplify the resonance of the single elements invoked, which together compose the project: the drawing thus becomes a sentence.
The ways in which the space of the sheet is traversed describe an intense activity in which oscillation between doubt and invention is sustained by the possibility of error: in drawing, it is possible to err. Error thus becomes a pivotal element of thought, expressed voluntarily through the use of small pieces of tape, erasures, jagged lines, or abundant hatching that testify to reconsideration or correction, which nevertheless leave behind their own trace. Although error might be considered “unnatural” in the field of (built) architecture, in this process, it is not concealed but rather becomes an integral part of the reflection that the drawing retains, foregrounding the uncertainty of thought and the inexactness of its execution within the graphic field.

> “There are, of course, many ways of deviating from a norm besides committing an error—flouting, resisting, subverting, perverting, mocking, exaggerating, etc. Speaking strictly, we would have to say that error denotes only unintentional deviation. This presents serious difficulties for any attempt to use error programmatically as a stimulus in architectural practice. […] As a matter of architectural practice, the issue will be how to intentionally construct situations and ways of working that encourage errant acts—often through the use of some form of automatism that, in part, neutralizes the original intentionality.
> Thinking of error as straying highlights another peculiarity of error in architecture. As much as it is an art, architecture itself often has been defined as straying, as deviation, from the normal expectations of building […]. This suggests that, in some sense, architecture is not something that we err from but something that we err into. Yet in this view, based ultimately on a romantic notion of artistic genius, not all straying leads to architecture, but only straying that discovers something, that comes to be recognized as significant, and that succeeds in establishing new norms (here is one definition of the avant-garde)”[24].

Sean Keller’s words can, therefore, provide an interpretative key also for the drawn work of the Swiss architect, where the adopted handwriting, built upon a solid interpretative methodology of architecture, indeed tends to discover something new through drawing. Taken together, the sheets compose a text in which the search for the “new” is not developed through the obsessive pursuit of something that has never existed before, but rather through the reappearance of forgotten questions that, for the author, as in the use of the column, become something significantly capable of establishing ancient norms through new relations.

The attempts are numerous and prevent forms from crystallizing thanks to the differing scales, atmospheres, and thus the degree of openness that each single image—produced by hand—carries with it: its irreproducibility. The hand seeks clues, leaving a field that remains open until the construction site: “But they also seem ready, finished: He sometimes draws a line around them, framing them on the paper. Their asserted presence penetrates through the imperfection, and the incompleteness defines them, like the complexity of a personality you can never entirely nail down. Their incertitude is reassuring, as they are akin to life and its frailty, its continuity of un-finishedness. Things may aspire towards ideal states and forms, but a sleepless night, a deviated road, come in the way of the ideal and alter conditions to accommodate, negotiate, and improvise. This way, the sketches seem to reconcile model and interpretation, rational and irrational, the deliberate and the accidental”[25].

Fig. 4. The error corrected with adhesive tape remains within the sheet and becomes an integral part of the composition. The piece of tape represents the author’s open-ended thinking.

A further element to consider regards the partial or total absence of context. With few exceptions—in particular, in the drawings made and archived between 1980 and 1999—the connection to place appears absent. Landscape elements such as hills, roads, and trees merely provide a generic indication of an “open” environment, without a precise location or recognizable references. This reveals how architecture itself constitutes the parameter of reference, only rarely establishing a relation with a hypothetical context and ultimately confirming the primacy of a design-oriented thought. Recovering the well-known Latin expression *Ars gratia artis* (Art for art’s sake), the drawn architecture seems to refuse adherence to a specific place (even when at times one is specified), perhaps awaiting the moment to become a “real” project.
Rather, it seems to aim at being interpreted according to its own internal rules, or at most within the codes of art. In this sense, it configures a search for identity that concerns not so much places as the disciplinary dimension itself, observed through differences that may at times appear imperceptible but are nonetheless essential in the work of Peter Märkli. It is in this self-regarding attitude—like a play of mirrors—that the Swiss author’s total project emerges, where architecture, particularly in its drawings, becomes place according to a clear intention: that of a return to life.

3. A Return to Life

> “The small rooms of Märkli’s studio are not meant for the visitor. They are cluttered, filled with books, drawings, photographs, and samples of paints, pigments, and other building materials. A pile of carefully drawn sketches for a façade lies on the floor next to a black refuse bag of

rejected drawings and sketches. But it is hard to tell when the plastic bag might have been replaced last. There is such stillness about the place"[26].

This text opened with the image of Peter Märkli's studio, and it is within it that we now return. The silence and solitude that Mohsen Mostafavi identified as the author's modus operandi aim to construct an atmosphere composed of many terms, as well as conversations and operative modes, in which architecture is central. A discipline informed by other materials, sometimes apparently "off-field," moving between literature and art, finding in invention[27] not only a response but above all a *raison d'être*.
In addressing the questions of a grammar—which implies a language, a syntax, and therefore the presence of rules—Märkli, through his drawings, reaffirms the existence of the "real" rather than of mere "reality."

> "Reality is the actual reality whose existence no one […] can doubt. […] Reality has the characteristics of permanence, independent of my will. This reality obviously also involves my person. […] But reality, precisely because of these attributes of permanence and independence from my will – Lacan would insinuate – is asleep. In the sense that in our habitual frequentation of reality – my image in the mirror, the slipper in the room – we tend to fall asleep, that is, we assume that reality responds to a certain naturally evident order. […] And the real? When do we encounter the real? For Freud, in nightmares. That is, in something that awakens us and prevents us from continuing to sleep […]. The encounter with the real is always the encounter with a limit that shakes us, with something that prevents us from continuing to sleep. […] Everything that awakens us from the sleep of reality is real, including the nightmare Freud speaks of. […] The real is that from which one cannot escape. In this sense, for Lacan, the real is associated with a trauma that introduces into our life a discontinuity that breaks the routine sleep of the normality of reality. […] The real, if we were to give a dry definition, never coincides with reality, but is that which unsettles it"[28].

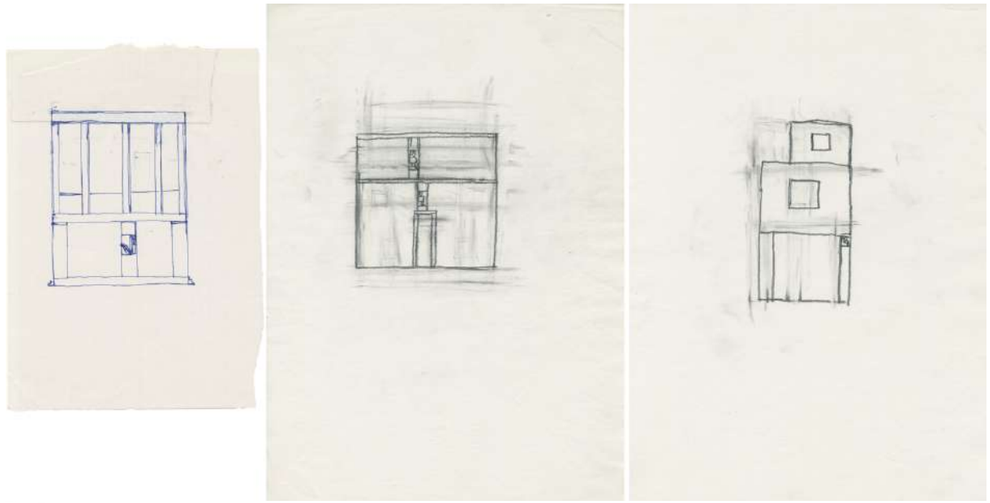

Fig. 5

If construction is reality—something "whose existence no one can doubt"—drawing, on the other hand, belongs to a thought and a graphic expression that sets itself up as a discontinuous moment, a wakefulness against normality, unsettling it. Within this dimension, the question of error—practically excluded in the executive phase of realization—is fully accepted, assuming the terms of "doubt" and "uncertainty."
On the one hand, this reflects the modalities proper to the author, understood etymologically as an "enlarger"; on the other, the open structure of drawing presents itself as an uninterrupted construction site, in which the margins expand and the perimeter of action no longer coincides, or not only, with that of the sheet of paper. It follows that in drawing the rule may be altered, disregarded, or replaced without losing the logic of a language that here operates without sounds (words).
The apparent aphasia—in any case mitigated by the author through constant dialogue and teaching activity—is the result of a position that recognizes in drawing, before anything else, the manifestation of a discipline in continuous evolution. It is the sense of the operation that guides the process: the

value of drawing lies in its ability to describe specific behaviors within a univocal language, that of architecture and its projective capacity. In this framework, the relationship between rule and experience generates a tension within which architecture becomes life, not merely "alive."
Fundamentally, the graphic experience, which is also expression (a way of expressing oneself), allows the author to pose questions and find answers, constructing an archive of the real without specifying the place that would be reality. The drawings thus become parts of a design discourse, projective devices where—though far from the theoretical posture discussed here—they may recall certain positions of Giuseppe Perugini concerning the existence of a *new dimension*:

> "... the world of the aesthetic object therefore has one of the essential properties of the world, that of being open. But more than in extension, it is such in intention, or, as we shall say, in depth. It is not indefinite as space and time are indefinite […] but rather as a potential is indefinite, one that no use can ever exhaust. It is an indefinite possibility of connected objects, tuned by a common quality, as a sound is laden with harmonics, strictly speaking, innumerable. And in this precisely it has the dimensions of a world, dimensions that defy any measurement, not because there is always more to measure, but because there is not yet anything to measure: that world is not populated by objects; it precedes them, it is like a dawn in which they are revealed, in which all those who are sensitive to that light will be revealed, or, if one prefers, all those that can unfold within that atmosphere. Therefore, this world is not yet structured according to space and time; it is rather the potential of space and time, just as it is of objects"[29].

This premise, which *has the dimensions of a world, dimensions that defy any measurement*, seems to find a counterpart even in the drawn work — however different — of Peter Märkli. Architecture presents as a discipline in which the forces of object and form at times exceed the relations they maintain with context, clarifying the overcoming of mere technicality in favor of a life of things.
In this fissure, deliberately left open and unresolved, lies a parallel with the story of *Pinocchio* and his adventures: in Carlo Collodi's famous Italian tale, it is precisely through mistakes that the protagonist — a puppet, thus a product of technique — discovers the world, inhabits space, and ultimately transforms into a body, that is, into life.

> "By connecting the regular and irregular, Peter Märkli could create order, organized forms, and immersive space. Inside the work, through Peter Märkli's eye, I could move around and feel my presence in the world, either in silence or with a pleasant whisper. Peter Märkli's 'eye' is 'I'"[30].

The metaphor of the character from the Italian novel can, in conclusion, clarify the role of an author and, above all, an authorship that finds its place in the contemporaneity of the project, departing from exactness in drawing, to tell us something more about the world of design, or simply to signal that the latter requires new tools.

Acknowledgments. I wish to thank Peter Märkli and Theresa Hecker for their availability in sharing with me parts of the archive held at the Studio now located in Mühlezelgstrasse 15, 8047 Zürich.

Notes

1. “Märkli’s personal studio sits in a small courtyard close to the historic centre of Zurich (his office is located a ten-minute drive away). Occupying three small rooms, this private working space appears at first to be that of an artist”, David Chipperfield, “La buona pratica | Good Practice. Peter Märkli,” *Domus*, no. 1043 (February 2020): 22.
2. Paul Cézanne to Charles Camoin, Aix, 28 January 1902.
3. Moshen Mostafavi, “Peter Märkli’s Approximations,” in *Approximations. The Architecture of Peter Märkli*, ed. Moshen Mostafavi (London: AA Publications, 2002), 8.
4. David Chipperfield, “La buona pratica | Good Practice. Peter Märkli,” *Domus*, no. 1043 (February 2020): 22.
5. See: Erwin Viray, “Peter Märklis Auge | Peter Märkli’s eye,” in *Peter Märkli. Zeichnungen* | *Drawings*, ed. Claudia Mion; Fabio Don (Luzern: Quart Verlag, 2015), 113-145.
6. Alberto Moravia, *La noia* (Milan: Bompiani 1960), 7 [TbA].
7. Vladimir Jankélévitch, *L’avventura, la noia, la serietà* (1964) (Turin: Einaudi 2018), 83-84 [TbA]; or. ed. *L’Aventure, l’Ennui, le Sérieux* (Paris: Aubier 1963).
8. See: Adam Jasper, *Drawing upon Painting*, en *Die Liebe zur Architektur* | *For the Love of Architecture,* a series of five online talks curated by Peter Märkli. In this talk, Adam Jasper, editor of gta papers, investigates the relationship between painting, sculpture and architecture in Peter Märkli’s practice. What is the potential of art for architectural method, and what happens at the crossing of disciplinary boundaries*?* (2021) *(www.*youtube.com/watch?v=JgyDkZG8xcg).
9. Vladimir Jankélévitch, *op. cit.*, 150 [TbA].
10. Giorgio Azzariti, *In Search of a Language – A Journey through Peter Märkli’s Imaginary* | *À la recherche d’un langage – Voyage dans l’imaginaire de Peter Märkli* (Marseille: Cosamentale, 2019), 61.
11. Peter Märkli, *Mein Stoff für Fassaden* | *My Facade Material* (2021) (www.youtube.com/watch?v=JgyDkZG8xcg).
12. Elena Markus, “Peter Märkli in conversation with Elena Markus,” in *Everything one invents is true. The architecture of Peter Märkli*, ed. Pamela Johnston (Luzern: Quart Verlag, 2017), 18.
13. Nobuyuki Yoshida, ed., *Peter Märkli. Craft of Architecture. A+U*, no. 448 (2008).
14. “Märkli’s takes a similar approach in his drawings. He repeats the same motif using minute changes in color and form. But he is not pursuing a single, ideal solution. Instead, Märkli seems to be searching for as many solutions as possible”, Kenjiro Hosaka, “Towards a vital architecture | Auf dem Weg zu einer vitalen Architektur” in *Peter Märkli. Zeichnungen* | *Drawings*, ed. Fabio Don; Claudia Mion (Luzern: Quart Verlag, 2015), 190-192.
15. “A research process shaped by attempts and uncertainties. As Erwin Viray writes, the drawings — with their hesitant lines, visible traces of revisions and erasures, and the sequences they form — seem to follow the question: what happens if I do this? And then: how do the form and dimension of each element reach my eye? Drawing thus becomes a tool for revealing the mechanics of vision (Viray 2023, 17) and its translation into graphic sign”, Michela Maguolo, “Tracce visive di pensiero. Presentazione di Peter Märkli Dessins/Disegni,” *La revista di Engramma*, no. 207 (2023): 119-120.
16. Fabio Don; Claudia Mion, “The Heritage of Thoughts | Das Gedankengut,” in *Peter Märkli. Zeichnungen* | *Drawings*, ed. Fabio Don; Claudia Mion (Luzern: Quart Verlag, 2015), 6.
17. Peter Märkli, *Mein Stoff für Fassaden* | *My Facade Material* (2021) (www.youtube.com/watch?v=JgyDkZG8xcg).
18. Raymond Queneau, *Le Voyage en Gréce* (Paris: Gallimard, 1963), 39 [TbA].
19. Peter Märkli, “On Ancient Architecture. Fragment of a lecture at London Metropolitan University,” *Peter Märkli. Craft of Architecture. A+U*, no. 448 (2008): 10.
20. Peter Märkli, *Interview to Peter Märkli by Samuel Penn for the AE Foundation for Architecture + Education*, 2012 (https://aefoundation.co.uk/Peter-Markli).
21. Sara Marini; Angela Mengoni, “Materia-autore | Author-Matter,” *Vesper. Rivista di architettura, arti e teoria* | *Journal of Architecture, Arts & Theory*, no. 2 (2020): 10.
22. “Märkli’s interest in Josephsohn’s work is rooted in his wide-ranging interest in the fine arts as a whole. […] Josephsohn summarizes, in a single look and a few well-chosen words, the essential impression of the work and all its components. Märkli’s analysis, by contrast, takes longer: it is seemingly an attempt to understand the aesthetic conditions of his experience. ‘Laws of perception’ is a term used frequently by Märkli, but never by Josephsohn. It may be that the architect’s need to address a range of technical, economic and social problems encourages an analytical approach. […] With the help of Josephsohn, Märkli has developed his own ‘position in relation to life’ that has allowed him to define a new relation between art and building”, Erich Brändle, “The Architect and the Sculptur. Peter Märkli & Hans Josephsohn” in *Approximations. The Architecture of Peter Märkli*, ed. Moshen Mostafavi (London: AA Publications, 2002), 58.
23. Peter Märkli, *Zur Grammatik der Architektursprache*, course handout for the design studio at the Department of Architecture, ETH Zurich, Autumn Semester, 2014 (Studio Märkli Archive, Zurich).
24. Sean Keller, “Ways About Error,” *Perspecta*, vol. 46 (2013): 32-33.
25. Elizabeth Hatz, “Making a Mark | Zeichen setzen,” in *Peter Märkli. Zeichnungen* | *Drawings*, ed. Claudia Mion, Fabio Don (Luzern: Quart Verlag, 2015), 146.
26. Moshen Mostafavi, “Peter Märkli’s Approximations,” in *Approximations. The Architecture of Peter Märkli*, ed. Moshen Mostafavi (London: AA Publications, 2002), 8.
27. See: Pamela Johnston, ed., *Everything one invents is true. The architecture of Peter Märkli* (Luzern: Quart Verlag, 2017).
28. Massimo Recalcati, “Quando ‘la realtà’ anestetizza ‘il reale’,” *La Repubblica*, 23 aprile 2012 (https://ricerca.repubblica.it/repubblica/archivio/repubblica/2012/04/23/quando-la-realta-anestetizza-il-reale.html) [TbA].
29. Giuseppe Perugini, *Nuova dimensione: strutture* (s.l. 1969).
30. Erwin Viray, “Peter Märklis Auge | Peter Märkli’s eye,” in *Peter Märkli. Zeichnungen* | *Drawings*, ed. Claudia Mion; Fabio Don (Luzern: Quart Verlag, 2015), 114.

Image Captions

Fig. 1. Peter Märkli, Studio, photos from 2002. Ph. Heinrich Helfenstein, © Studio Märkli.
Fig. 2. Drawings 1034-1036-1038-1040, © Studio Märkli.
Fig. 3. Drawings 2017-2041-2112-2115, © Studio Märkli.
Fig. 4. Drawings 1001-1082, © Studio Märkli.
See the use of tape as a means to reconsider certain parts of the project, to remove specific elements, or to clarify their relationships.
Fig. 5. Drawings 1178-1258-1292, © Studio Märkli.
See the erasures, the reconsideration of certain marks, and the addition of pieces of paper.

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Biography

Vincenzo Moschetti, architect and Ph.D., is a Researcher in Architectural and Urban Design at the Department of Architecture and Design, Sapienza University of Rome. He was a Research Fellow (2020–2023) at the Department of Architecture and Arts, Iuav University of Venice, and a Lecturer (2022–2023) in Interior Architecture and Architectural Design at the University of Ferrara.
His research and teaching address the theoretical dimensions of architectural design, focusing on the relationship between design and authorship, and on the intersections among architecture, geography, and “natures.” He takes part in and curates conferences, seminars, and workshops, presenting work on the idea of a “Mediterranean image” as a design framework between architectural and geographical scales; critical readings of figures such as Aldo Rossi and Peter Märkli; and explorations of “natural” systems as sources for design strategies aimed at crossing or coexisting with them in alliance. His publications synthesize these investigations, framing theory as a grounding for architectural action.

Drawing the Last Island.
Unbuilt Architecture in Cedric Price's Two Tree Island

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Abstract

Conceived for the last uninhabited island in the Thames estuary, the *Two Tree Island* project envisaged both new settlements and conservation areas, yet remained unrealized. Through maps, diagrams, tables, and a "logbook," Price constructs a graphic archive that does not simply translate a built idea but instead explores possibilities and perceptions linked to a marginal, uninhabited territory.

This paper argues that Cedric Price's unbuilt project reveals the potential of drawing as a critical research tool capable of producing autonomous knowledge, beyond the mere representation of architectural forms.

Two Tree Island emerges as a "test field" where drawing is not subordinated to construction but becomes a tool to document a "natural" state while simultaneously envisioning future transformations. Archival materials held at the Canadian Centre for Architecture demonstrate how sketches, diagrams, and notes generate an unstable map of intentions, slips, and uncertainties—traces that elude linguistic or classificatory analysis but retain implicit and subjective information.

In line with Robin Evans' perspective (1986), this research shows how the "principle of reversed directionality" of architectural drawing enables the anticipation of non-existent realities and uncovers latent design logics. Drawing the last island thus becomes both an act of memory and a projection of the future, carrying cultural legacies of unbuilt landscapes forward.

The paper ultimately demonstrates how archival graphics can serve not only as documents but also as critical tools to interpret space and its transformations, overcoming the binary between documentation and design.

Drawing the last island is, ultimately, a hope for the future and a promise to the past, aiming to ferry unbuilt territories and their cultural legacies into awareness.

Key words: architecture, islands, cedric price, unbuilt, drawings.

1. Two Tree Island
Two Tree Island began as a development proposal for the last uninhabited island of the same name in the Thames Estuary, Essex, commissioned by local entrepreneur David Keddie to Cedric Price (CPA), who collaborated with Yorke Rosenberg Mardall Architects (YMR) and others for the project.
The project involved settlements covering 178 hectares, both existing and new, reserving parts of the island for the conservation of the existing ecosystem and defining trajectories for subsequent expansion.
The project, developed from 1971, came to an abrupt halt in 1974, following unrest and boycotts, leading to the island being declared a *National Nature Reserve*.
The design research, referring at this point purely to quantitative issues, since qualitative issues will be addressed in the essay, included shipyards, gas supply and refueling facilities, a hotel/botel, a deep marine pool for large cruise ships and the local fishing fleet, a dock for rubber boats, a lagoon, water skiing facilities, a freshwater swimming pool, an ice rink, an artificial beach, a caravan park, an open-air cinema, a nature trail and bird sanctuary, an observation tower, and a new connecting bridge.
It was a little-known, subordinate project that was never realized and rarely mentioned by Price in his lectures or communications, if only because it was never built.
In its almost only appearance during a public lecture, *Two Tree Island* is introduced as follows:

"This was Two Tree Island, which was a mixture of harbour, housing, bird sanctuary, a bit of salt marsh agronomy and pleasure.
Over and above that: Nature Conservancy, Port of London Authority, Department of the Environment, Essex River Authority, Greater London Council, British Airports Authority, Wild Fowl Trust, British Water Sea Federation, Thames Estuary Development, Crown Estates, Essex County Council, Southend, Benfleet Urban District Council, Eastern Sports Council, National Yacht Harbour Association, Ship and Boat Builder's Federation, Essex Naturalist Trust (I don't think that's strippers), Countryside Commission and the Royal Yachting Association. Now that wasn't many years ago, and I've got a feeling it was the wrong list - though we produced a scheme, and the list was very impressive. But it wasn't aiming to miss; it was aiming to hit."[1]

Fig.1

It seems pertinent to highlight certain preliminary considerations arising from these brief remarks, prior to engaging more fully with the hypothesis of the design dream embodied by *Two Tree Island*. In this sense, the author's words may be understood and employed as a "statement," serving as the foundation for a critical reflection on the possible modalities and uses associated with the drawing and conception of space.

In the first instance, the recollection of the project emerges in the context of a conference entitled *Research and Cooperation*. This framing allows *Two Tree Island* to be repositioned within the domain of research – that is, as an experimental design endeavour – rather than as a straightforward and somewhat tedious "commissioned project" by an entrepreneur intent on investing in the last uninhabited Indian reserve in England, as it has often been portrayed.
The second sphere concerns the active participation in the construction of the research by a broad collective, both within the design team itself and among contemporary stakeholders. These included environmental non-profit organisations, airport authorities, municipal and higher councils, as well as agencies for water and rural governance and development, alongside naval orders and corporations.
This episode engages with a principle common to the entirety of the research presented, addressed, or proposed by Cedric Price throughout his career. When associated with the idea through which he often introduced himself – that of the "non-architect" – it serves to redefine the competencies, modalities, trajectories, and counter-fields required to generate an imaginary and a projective vision for the last island.
Architecture and its manifestations do not stand apart from disciplinary competences or from interests situated outside the field of design. For this reason – that is, in order to produce research – it becomes necessary to invent translators[2], to render into the discipline languages and vocabularies external to it; mediators, to orient such interests toward a generative rather than a destructive hypothesis; and authors, to embed within the task of architecture an "augmented" key[3] for interpreting reality.
In the third instance, the closing phrase of the citation confirms the earlier hypothesis that it was the stakeholders themselves who were misguided, rather than the very notion of collaborative participation. Furthermore, the most enigmatic part of the passage suggests that the objective was not to miss a target – that is, to realize the project – but rather to strike it: to draw the last island, and to interrogate, both architecturally and beyond architecture, the meanings inherent in intervening upon the last island.
The design hypotheses for the last island, along with the various forms of graphic institutions developed (ranging from logbooks, boards, and sheets to masterplans, watercolours, and diagrams), all "on paper," delineate the modes and temporalities of traversing the "Indian reserve." They enable processes of thought and structures of reasoning that are both unpredictable and, above all, bound to a vision of the island as territory (Fig. 1).
The structure of the following contribution is dedicated to these instances, although their exploration proceeds in a different order from that outlined here.
There exists, moreover, a fourth instance: the subtle irony of Cedric Price, which surfaces in a parenthetical aside left intentionally intact as a mark of the procedural authenticity of both the research and its author. It is to this notion of irony[4] – which, even in *Two Tree Island*, found its own form of representation – that the epilogue of this contribution is devoted.

2. Drawing the Last Island

The indication that one is confronted with a largely overlooked[5] project within the author's "prolific" output can be discerned from its near absence, or only sporadic appearance, in catalogues and scholarly texts[6]. This is presumably attributable to its lack of "realization," as is frequently the case with Price's more widely recognized visions[7].
Despite its relative invisibility, Two Tree Island serves as a testing ground for more mature or comprehensive projects – such as *Surf 90*[8] or *Venice '01*[9] – which would enjoy a longer life of projections and theoretical reflections, even without ever reaching the stage of construction.
Starting from the principle that "each stage tested the theory of continually enlarging the opportunity of the dweller to transform and enrich the home with minimal interference from the architecture,"[10] the drawings produced for the project will be examined.

2.1 In Crescendo. On the Evolutionary Hypotheses of an Island

The operational strategy that Cedric Price employs to narrate the genesis of the project begins with a series of growth or evolutionary diagrams, in which no definitive form or masterplan is encapsulated[11].
We are confronted with drawings of combinatorial potential, introducing grids, letters, and hypothetical structures for the emergence of an island that grows–or at least, might grow. The four drawings originate from an identical structure based on a regular grid of cells (indicated as 100x100, with meters as the assumed reference), where each square represents one hectare; a system of horizontal axes (numbered 00–30) and vertical axes (numbered 00–20) serves to geolocate the terrain.
Within this architectural battleship board, the drawing of the last island takes shape.
In this essay, these drawings are defined as diagram, an object of desire upon which much emphasis has been placed. With a deliberate awareness of the partiality of this term, and in fidelity to the actual object of this essay, which is not the diagram, the intention is nonetheless to offer a key interpretation for the subsequent investigation. Here, by diagram we mean "a reasoning […] that operates through abstractions in order to formulate hypotheses and test them: 'we construct an icon of our hypothetical state of affairs and proceed with observation… One must not only select the aspects of the diagram to which it is pertinent to pay attention, but also return time and again to certain aspects… Yet the true masterpiece lies in introducing certain abstractions.'" [12]

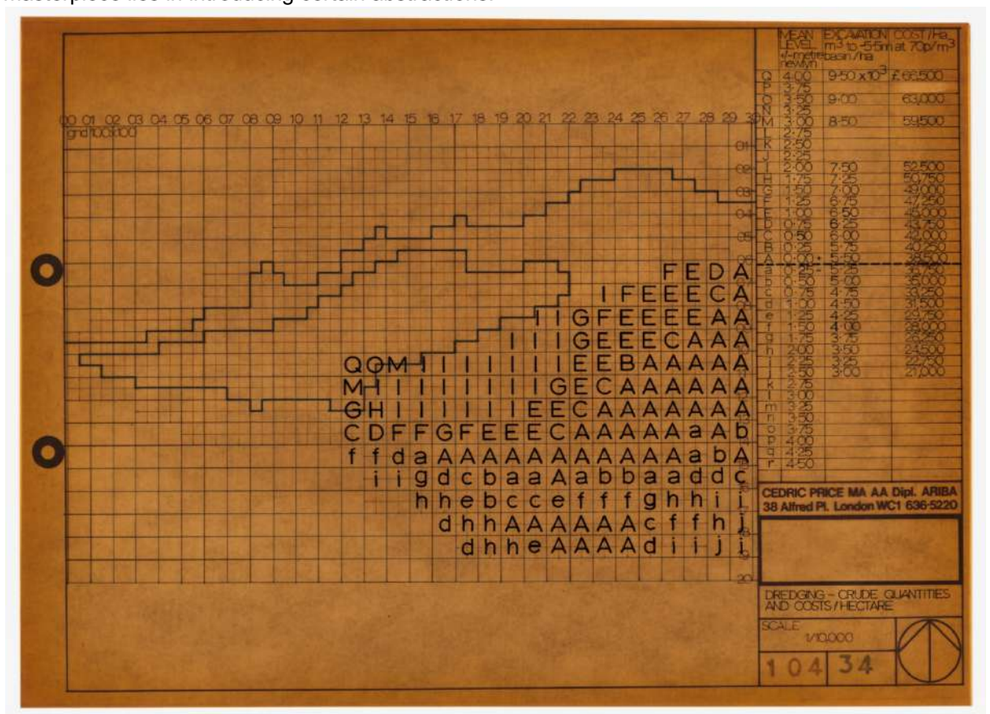

Fig. 2

The first diagram to be considered, *Land use*[13], hypothesizes at a 1:10,000 scale the possible uses of insular lands already existing or yet to be formed. Four project areas appear on the sheet. The first, renamed with the capital letter A and bounded by a continuous black line, indicates the existing surface of the island, approximately sixty-seven hectares. The second area, designated with the capital letter B, identifies a portion of mainland measuring twenty-three hectares, to which the hypothesis of the island's growth could have been attached.
Following these two, an area C, referred to as *Enclosed Phase 1*, of forty-seven hectares, and an area D – *Enclosed Phase 2* – of forty-one hectares, both delineated by a dashed black line.
The design proposal, starting from the existing land nucleus (A), identifies several possible hypotheses, among which the agglomeration of mainland and island that expands exponentially through the integration of areas C and D.
On closer inspection, however, the design process proves to be far more complex than a simple addition of parts. It also includes the possibility that areas B, C, and D may never be included or realized, thereby sustaining the thesis of uncertainty in the project of the lands.
Following this reasoning, the drawing becomes a matrix of possibilities, where the grid, calculations, and hypotheses point to an operational rationality incapable of becoming a prescriptive project (Fig. 1).
The assignment of a code to the project phases and the articulation of the relationship between existing and potential space determines an unstable masterplan, constructed upon combinatory hypotheses – whether alternative or simultaneous – in which even the disappearance of certain lands through submersion becomes a design possibility.

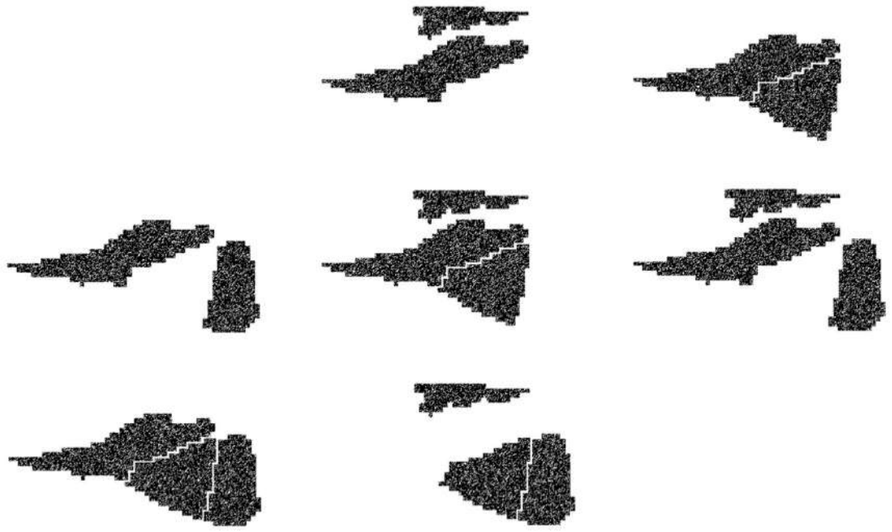

Fig. 3

The second diagram, renamed *Dredging – Crude Quantities and Costs*[14] (Fig. 2), identifies the costs of dredging operations necessary for the construction of the island or its expansion. The area of the existing island and the continuous edge of the mainland coast are the only solid black lines. The dredging project, this time, does not take the form of project lines but of capital and lowercase letters of the alphabet (from letter “A” to “Q”, from letter “a” to “r”), arranged in an orderly logic of rows and columns. To each letter is assigned an excavation value (up to a design depth of nine meters) and a cost value (attributed per hectare depending on excavation depth). Entering into the details of the progressing hypothesis, concerning areas C and D of subsequent expansion, the possibility that these may take “form” is confirmed by this document-diagram, which quantifies both the costs and the final formal outcome of the expansion operation.
Each letter, hypothetically, also corresponds to a bathymetric quota, allowing the identification of primary and secondary phases in the reconstruction works of the island.
In this drawing, whose interpretation is inseparably linked to the previous one, the design datum – or the formal construction of a space – intertwines with a series of other variables: expansion, time, costs, depth.
The relevant datum, which concerns the form assumed by things – by space in this case – clarifies that form, or rather the drawing of form, whether of an island or of a city, is indissolubly tied to its meaning and to the implications that the sense of form entails in reality, including the economic dimension of architecture. (Fig. 3)
Form and its representation – through drawing in this case – contradict the stringent hypothesis advanced by Thom Mayne, according to which “drawings and models […] allow for a degree of precision that is often eluded in verbal discourse.”[15]
For the *Tree Two Island* project, drawing itself becomes the uncertain instrument, while conversely, the language through which those drawings are read becomes the precise tool – a mapping of temporal conditions. The diagram-drawings do not seek precision with respect to the atmospheres generated by the project; rather, they evade, allude, and deliberately refrain from addressing certain conditions, leaving them suspended[16].

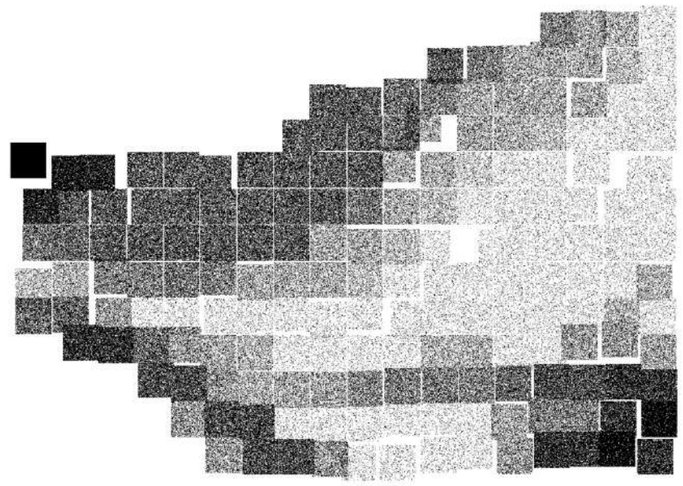

Fig. 4

The third image-diagram – denominated *Phasing 1*[17] – is another partial image, which again originates from the basic Euclidean structure and delineates the existing island and the mainland line in a very thin black stroke. The object of this third drawing is the mode or direction of development of the expansion zones C and D; it is precisely in this third episode that the evasion, imprecision, and uncertainty of the drawing, previously discussed, become clearly evident.
Two dark-colored patches, named A and B, identify a “core,” from which small arrows (renamed a, b, c, d, e) move outward. C indicates the area of intersection between A and B, while D represents a not precisely defined area. Two additional, longer and more pronounced arrows (1 and 2) delimit the “action” area, while two dashed lines determine, in each instance, the extent of the phasing. This elaboration, regarding the precision of the drawing, is apparently incommunicable. Yet, a hypothesis for translating it into language merits consideration.
More than expressing a design intention, the drawing – almost as a “contropiede” strategy – places us within a probabilistic horizon in which the existence of A could imply certain outcomes, but does not necessarily entail the existence of B, for example. Within this horizon of multiplied signs (continuous and dashed lines, uppercase and lowercase letters, circled letters, and numbers), combinatory hypotheses grow exponentially and, in fact, help us to read the phasing project (Fig. 4).
Phasing, inherited from urban planning, becomes the privileged tool for designing the instability and volatility of this territory, introducing time as a component of the project. Numerical sequences act as growth evolutions, letters as dormant or active modules, and arrows determine bifurcations rather than clear evolutionary lines. In this sense, architecture is designed to last only as long as it is needed.

The fourth and final diagram of this series – *Activity Availability October 1972*[18] (Fig. 5) – adds at least three new layers of overlap to the previous ones, indicating the use of areas according to their principal territorial “vocation.”
The sheet, simultaneously a planimetric diagram, cross-sections, and a battleship-like field as in the previous cases, is based on the same cartographic framework of vertical and horizontal lines. The combinatory use of these tools and project modalities, which makes the imagination both frenetic and stimulating, removes from the drawing both of its possible roles: prescriptive and descriptive. Price does not suggest the island that will be; rather, he translates zones of possibility into different languages and codes (letters, signs, numbers, shadings), accentuating the uncertainty of each domain.
The planimetric reading, partially obscured by the diagonal sections almost superimposed on the sheet, is rendered technically illegible, even before considering the indeterminacy of building regimes. A new lateral legend anticipates a novel way of reflecting on the areas of interest: the entire existing island, as the original core, is already marked in these maps as a “natural reserve”; the salt flat area is associated with the expansion zone C from the previous sheets; expansion zone D is linked, for the

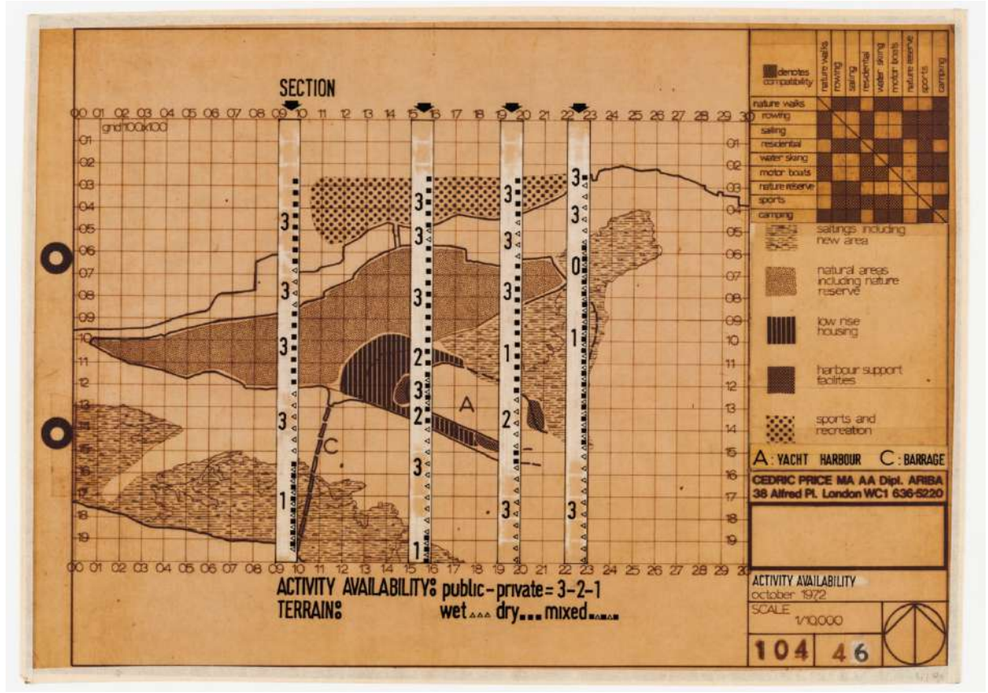

Fig. 5

larger part, to “low-rise housing” and, to a lesser extent, to “harbour facilities services”; the entire mainland line, instead, was projected for recreational use.
The sectional reading interweaves the planimetric data with additional conditions: the variation in use from public to private, depending on the areas, and the quality of the associated terrain (wet, dry, mixed). As stratigraphic and geological conditions vary, the sections reveal how the possible use of specific zones also changes. A section, abstracted into a line of numbers and symbols, becomes a tool with variable-use resolution.
A matrix of “compatibility,” located on the right side of the drawing, opens up new and diverse scenarios. Developing along a diagonal trajectory, the compatibility hypothesis starts from the assumption that certain uses are more or less compatible with others, and that the life of the island may unfold within the balance between these uses.
Starting from the hypothesis that a rule of compatibility is granted by common sense in the use of space, the conditions proposed by Price regulate entirely unpredictable scenarios, even if apparently banal. The apparent contradiction of the compatibility diagram (located at the top right of the sheet) forces the uses of territorial vocations to generate new usage short-circuits. Thus, the functions of “natural reserve” in certain areas become highly isolated from more “risky” uses (such as areas designated for sporting activities – rowing or sailing – or zones allocated to residential port quays). This hypothesis, in addition to distancing “nature” from human uses, clearly reinforces the link between the two possible territories, generating short-circuits.

3. Islands. Dreaming of a “Venice-on-Thames”

“In the past we tended to keep prisoners on islands, that is, we tended to put people there that we didn't want to see again. But there is an advantage of islands. Holidaymakers know the advantages: they seem to be called sun and cheap food. But we must do more than that. We must transcend the centuries from the prisoners on the islands, and immigrants, to what else? Holidaymaking isn't sufficient. The people that live there haven't been touched; or rather, they have been touched, but adversely up until now. So it's a positive consideration.
H.U. Obrist: So the non-scheme for the island [Palma de Mallorca, 2003] you are developing here will also be incomplete?
It will have to be. Unless there are tidal waves in the Mediterranean, which haven't been planned yet. The future of the island, of any island, should always be incomplete. And there's no answer to a useful island apart from a tidal wave, but that's a bit disastrous. Apart from that, the continuous ebb and flow of the tide which delineates the island is in itself a change of conditions, which should be put to some advantage.”[19]
When, during an interview with Price, Hans Ulrich Obrist asks about the usefulness or advantage of being an “island,” Price introduces some theoretical conditions that, when reread in light of the drawings of the *Two Tree Island* project, are capable of constructing a context of action in which the design of an island’s space is only the final move of a broader reflection.
The reference to confinement – “in the past we tended to send prisoners to islands” – immediately destabilizes the iconography of the island as a paradisiacal place, redirecting attention to its design function as a marginal and separate space, where central social norms lose their force and the territory becomes the stage for an ambivalent form of freedom.
In *Two Tree Island*, this condition of marginality is not accidental: the site, marshy and peripheral, destined for secondary or residual uses, embodies a form of urban exclusion that, paradoxically, generates fertile ground for architectural and social experimentation. An island is an ambivalent territory that likely allows multiple readings beyond the more obvious ones: isolation and recreation. In Price’s interpretation, an island becomes a device of productive exclusion: a space defined by what it is not, through its distance from central hierarchies, and precisely for this reason enabling the proliferation of unprecedented possibilities.
From a theoretical standpoint, being an island is both a figure (that is, a noun) and a verb. Islands are both objects surrounded by the sea, positioned from a geo-territorial perspective, and objects subject to movement due to the very sea in which they are immersed. When we speak of islands, we identify both their nature and their purpose; these two structures determine their definition in terms of spatial use.
The unstable nature becomes the mirror reflecting *Two Tree Island*, conceived as a “Venice-on-Thames”[20], following Price’s own words, who looks specifically to Venice to trace a useful reference for drawing the final island, already identifying in the lagoon city the hypotheses of instability and indeterminacy that are pursued in the diagrams.
The project cannot envisage a rigid masterplan: the strategy of phasing, diaries, and diagrams, employed by Price, demonstrates how the island progressively defines itself in relation to temporality, seasonality, and environmental changes. Sloterdijk, in his theory of spheres[21], provides an additional interpretative layer: the island can be seen as a micro-sphere, a container that defines an internal and relational space, yet is continuously permeable to external flows. The tides, then, are not merely a natural phenomenon but a metaphor for architecture that adapts and reinvents itself – a mobile architecture that moves between permanence and transience, between isolation and interconnection.
The ambivalence of the island also emerges in the tension between touristic promise and experimental value. For holidaymakers, the island reduces to “sun and cheap food,” a simulacrum of consumptive escape; for Price, however, the island cannot be a mere attraction, as reducing it to consumption would annul its complexity and transformative potential. *Two Tree Island* translates this tension into design interventions on paper that prioritize lightweight infrastructure, reversible spaces, and temporary conditions, demonstrating how design can be conceived in terms of processes rather than products.

4. Bonus and Last Track. Dreaming of the Curaçao Soaked Treat

The episode of the Curaçao dessert represents one of the most emblematic moments of Cedric Price’s irony and, at the same time, of his radical methodology. In conceiving a dessert that recalled the title of the failed project – a sea of whipped cream dotted with artificial palm trees and colored by the intense blue of the liqueur – Price transformed the failure of an architectural endeavor into a new opportunity for design invention. The project, unable to materialize in built form, found an alternative expression in an ephemeral, playful, edible, and carefully designed object: a tabletop map that is consumed in the very moment it is created.
This drawing, seemingly a playful gesture, clearly articulates the logic that underpins the entire *Two Tree Island* experience. For Price, architecture is never bound to the permanence of matter, but to the capacity to activate processes, generate situations, and create conditions for use and imagination. The dessert is the ultimate embodiment of this logic: a transient architecture, without foundations, that exists only for the duration of its consumption.
The whipped cream and the Curaçao perform the same function as the colored surfaces and diagrams in the project: they do not represent a form, but a condition, an atmosphere, an imaginary landscape that suggests more than it defines.
In the act of “reducing” an entire masterplan to a convivial dessert, Price also demonstrates another insight: that a project, as a cultural construction, can continue to exist and exert influence even when its physical realization fails. The dessert thus becomes a kind of ephemeral archive, an alternative representation alongside technical drawings, diaries, and diagrams, completing their expressive range. It is a table that is not preserved in the folders of an archive, but in the memory of those who have tasted it.

From this perspective, irony functions as a critical device that allows the terms of the project itself to be reformulated. Where others might have seen definitive failure, Price identifies a state of transformation: from territorial utopia to perishable landscape, from artificial island to an archipelago of cream.

4. Anticipating Futures

The first thing to bear in mind when contemplating Price's work is that his central field of enquiry was what he called “anticipatory design”, an approach which is concerned with the importance of defining a question rather than solving a problem – on the basis that architecture is too slow for problem-solving – and which produces architecture that is specifically designed to expect change. The architect Robertson Ward Jr described Price's endeavour as the “principled pursuit of the dynamics of time”[21], exploring the themes of flexibility, impermanence, indeterminacy, temporariness, planned obsolescence and expendability. […] More than anything, the term draws attention to the central role that people play in Price's work: for the architect to be an enabler there needs to be a continual involvement of all the parties engaged in the life of the building, from its initial conception to its eventual demolition. As a way of working, it reflects a specific period of time - the 1960s and 1970s - when a growing awareness of individual difference and choice became a central topic of research in the social sciences, pursued by statisticians, demographers, politicians, scientists and health professionals alike. It is not by chance, then, that Price collaborated and consulted with these and many other disciplines throughout his career, in accordance with his belief that the architect must justify himself as useful to society.[22]

Price’s work, and in particular the *Two Tree Island* project, exemplifies a principle of anticipatory, provisional architecture that is deeply attentive to change. Architecture is a discipline for defining questions, and the project becomes a tool for navigating uncertainty and contingency. Through the use of *phasing* strategies, diaries, diagrammatic explorations, and the construction of a collective agency[23], Price develops a project in which the island functions both as a territory and as a theoretical device. Islands, historically and socially understood as instruments of confinement, are reinterpreted as fields in which the interaction of temporality, environmental conditions, and human action continuously redefines spatial possibilities.

In the act of “reducing” an entire masterplan to a convivial dessert, Price highlights another key insight: that a project, as a cultural construction, can continue to exist and exert influence even when its physical realization fails.

Two Tree Island translates this tension into design interventions on paper through subordinate drawings that prioritize lightweight infrastructure, reversible spaces, and temporary conditions, demonstrating how the project – understood in anticipatory terms – can be conceived and drawn as a process rather than as a product.

Notes

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3. Sara Marini, Angela Mengoni. “Autore | Author” in *Vesper. Rivista di architettura, arti e teoria | Journal of Architecture, Arts & Theory*, n. 2, *Materia Autore | Author Matter*, 2020, 8.
4. Sissi Cesira Roselli. *Ironia progettante. Tre sketch su Cedric Price*. Melfi: Libria, 2021.
5. Yet once can notice that «The project is 'probably the most comprehensive attempt so far to work through both the large-scale and small scale implications' of project such as Potteries Thinkbel (specifically its sprawl housing), the Steel House competition, Short-Life Housing study and Non-Plan. Each stage tested the theory of continually enlarging the opportunity of the dweller to transform and enrich the home with minimal interference from the "architecture"?». Samantha Hardingham. “Two Tree Island” in Samantha Hardingham (ed.). *Cedric Price Works 1952-2003: A Forward-Minded Retrospective. Projects*. London, Montreal: Architectural Association, Canadian Center for Architecture, 2016, 359.
6. Manuel R. de la O. Cabrera. 2017. “Planning for Enabling: An Analysis of Cedric Price’s Proposal for Two Tree Island, 1971–1973.” *Planning Perspectives* 34 (3): 369–90. doi:10.1080/02665433.2017.1393629.
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8. See Cedric Price. “Surf ’90” in Samantha Hardingham (ed.). *Cedric Price Opera*. New York: Wiley 2003, 16-19.
9. See Cedric Price. “Venice’ 01” in Samantha Hardingham (ed.). Cedric Price Opera. New York: Wiley 2003, 118-119.
10. Steven Mullin. 1976. “Cedric Price still keeps going when everything else has stopped”. Architectural Design. May: 281-287.
11. Other works will also include the Two Tree Island Project: table of contents of the log book for the project, an entire log book dedicated to the evolution of the project, which reads: “The purpose of this log book is to provide a comprehensive guide to the Two Tree Island Project. […] it is intended that this logbook be used by the client and consultants involved to provide an up to date picture of progress, and as data and research material is refined and/or updated, it can be replaced with new material issued by this office. Accordingly the plan, its policies & proposals is adjusted and refined.”. “Two Tree Island Project: table of contents of the log book for the project,” Cedric Price fonds, Canadian Centre for Architecture, Montréal, May 1973, DR2004:1223:001. Consulted on 12.06.2025, https://www.cca.qc.ca/en/search/details/collection/object/440852.
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Image Captions

Fig. 1. Cedric Price, *Two Tree Island project: plan,* between 1971 and 1973?, graphite, coloured pencil, ink and ink stamp on, tracing paper. 51,2 × 76,5 cm, DR1995:0255:022, Cedric Price fonds: Canadian Centre for Architecture.
Fig. 2. Cedric Price, *Two Tree Island project (England): schematic map and chart showing cost of dredging,* between, 1971 and 1974?, 30 x 42 cm, DR1995:0255:092. Cedric Price fonds: Canadian Centre for Architecture.
Fig. 3. Laura Mucciolo, *In crescendo. On the evolutionary hypotheses of an island. Stages*, digital drawing 2025.
Fig. 4. Laura Mucciolo, *The Shapeless and Indifferent Construction of an Island*, digital drawing 2025.
Fig. 5. Cedric Price, *Two Tree Island project (England): schematic map showing activity availability,* October 1972 or later, 31 x 43 cm, DR1995:0255:093. Cedric Price fonds: Canadian Centre for Architecture.

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Biography

Laura Mucciolo is an architect (University of Florence) and holds a PhD in *Architecture: Theories and Design* from Sapienza University of Rome, with a dissertation entitled *La casa di Pan: Thinking Architectures in Uncertainty*. She trained briefly at OMA – Office for Metropolitan Architecture in the Netherlands.
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A Feminist Reading Beyond the Text
Graphic Inquiry into the Architecture of Carmen Gil Torres

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Abstract

Despite the fact that gender has become a significant lens in architectural discourse, its influence remains largely confined to sociological or textual critique, with architecture's own tools of analysis being rarely engaged with. Researchers focusing on gender perspectives in Spanish architecture argue that the work of women architects often addresses issues related to the everyday experience of architectural space. However, these aspects have rarely been examined beyond sociological narratives or textual interpretations. It is evident that a number of analytical approaches supported by graphic readings of spatial phenomena have the capacity to address both the complexity and the objectivity required to investigate this hypothesis. Furthermore, this distinctive understanding extends beyond the field of gender studies, finally emerging as a key question in the generic architectural discipline.

The objective of this paper is to propose a possible methodology for a graphic approach to gender studies in architecture. The analysis is specifically focused on the architecture of one of the most relevant women pioneers in Spanish architecture, Carmen Gil Torres. Gil Torres pursued her studies in Madrid at the Escuela Técnica Superior de Arquitectura de Madrid (ETSAM, UPM), and following an initial period in Southern Spain, she was recruited to the architectural department of the Madrid municipality. In this capacity, she was responsible for the design of over 20 public buildings, including those dedicated to sports, public baths, and social services. In her designs, she addressed the common space – both interior and exterior – as well as the building systems and budgetary control. In addition, the professional performance of Spanish architects was instrumental in the oversight of the construction process, thereby ensuring the successful realisation of the project.

Consequently, the architectural proposal of Carmen Gil constitutes an optimal corpus for the graphical examination of whether her project decisions result in a distinctive spatiality. The analytic method will address a different reading of the contemporary cultural approach, grounded in users' everyday experience and their dialogue with spatial arrangements and architectural transformations.

Key words: architecture, gender perspective, public space, architectural analysis, Carmen Gil Torres.

1. Introduction

In recent decades, gender studies have gained a prominent role in the field of architecture, yet their contributions have frequently been confined to sociological or narrative interpretations. This methodological bias has resulted in a lacuna in disciplinary analysis: the traces that a gender perspective leaves on design language and spatial materiality have seldom been examined. The work of Carmen Gil Torres, a Madrid-based architect whose career spanned from the late twentieth to the early twenty-first century, offers a paradigmatic case for addressing this gap. Her projects, which are primarily public buildings commissioned by the Madrid municipal administration, provide a corpus through which to investigate whether specific design principles linked to gendered sensitivity in architecture can be identified.

It has been asserted by several authors that the history of architecture should be "revisited" with a view to incorporating women's experiences as central actors, with a view to making both their life trajectories and their material production visible. Zaida Muxí[1] observes that gender, as a sociocultural construct, has historically defined roles and hierarchies of spaces. In the domain of architecture, this phenomenon has given rise to a dual invisibility: the systematic exclusion of female architects from official historiography and the devaluation of building types associated with care and reproduction, such as social centres, care facilities, and collective housing, in comparison to the prominence of masculinised typologies like museums, infrastructures, and corporate headquarters.

In this particular context, the case of Carmen Gil Torres assumes particular significance. Having graduated from the Escuela Técnica Superior de Arquitectura de Madrid (ETSAM), she initiated her professional endeavours in southern Spain, undertaking projects pertaining to social housing and rehabilitation. Subsequently, she joined the Madrid City Council. It is noteworthy that she was responsible for the design of more than twenty public facilities, including sports centres, public baths, day-care centres, social service buildings, and cultural spaces. In contrast to the conventional pursuit of media visibility, Gil Torres grounded her practice in social commitment, constructive rigor, budgetary control, and the careful design of relational spaces. Her work was conceptualised not as a form of spectacle but as a contribution to the public good. This condition renders it an ideal case study for exploring the intersections between gender and spatiality.

Recent studies in Spain on gender and architecture[2] emphasise that many pioneering women architects paid particular attention to everyday spaces, the scale of care, and the communal dimension of architecture. Nevertheless, there is a paucity of analyses that have systematically examined how these concerns are translated into concrete design decisions. In this context, the significance of a graphic approach becomes evident, understood not merely as a form of representation but as a methodological approach to inquiry. As demonstrated by Prak[3], Roth[4], Singley[5] and Aureli[6], the process of drawing can serve as a rigorous medium for the revelation of spatial structures that are imperceptible to textual analysis. As Umberto Eco[7] also highlighted, each cultural reading is characterised by a distinct "model of interpretation". Within the domain of architecture, this model is required to be firmly rooted in its own instruments, encompassing plans, sections, diagrams, models, and spatial mappings.
This article thus puts forward an alternative approach to gender studies in architecture, rooted in the graphic analysis of the work of Carmen Gil Torres. The central hypothesis of this study is that the architect's design decisions generate a distinctive spatiality in which attention to the common, the intermediate, and the economic operates as a form of resistance against the hegemonic discourses of the discipline. This approach does not seek to establish a definitive "feminine architecture"; instead, it examines how Gil Torres's practice, influenced by the gendered dynamics of her professional environment, gives rise to spatial outcomes that contribute to a more comprehensive disciplinary discourse, extending beyond the confines of feminist studies.

Methodologically, the article is structured into five sections. Firstly, it presents a theoretical framework that situates the relationship between gender, architectural historiography, and graphic methods. Secondly, it delineates the methodology employed, which integrates redrawing, the creation of analytical diagrams, and typological comparison of multiple projects by Gil Torres. Thirdly, a detailed analysis of selected case studies is developed, including the Miguel Guillén Prim Sports Centre, the Margot Moles Sports Centre and various social and senior centres. The focus of this analysis is on circulation, accessibility, integration with the urban fabric and budget management. The subsequent discussion encompasses a comparative analysis of these findings with respect to extant discourses on gender in architecture. Finally, the conclusions emphasise the necessity to position graphic analysis as a central resource in gender-based architectural research.

The work of Carmen Gil Torres is not confined to technical production for public administration; rather, it offers a framework for rethinking architecture as a service committed to everyday life and spatial justice. A graphic reading of her legacy not only recovers a pioneer who has largely been absent from architectural historiography but also advances a methodological shift in gender studies applied to architecture, placing the discipline at the centre of its own critique.

2. State of the Art

The incorporation of a gender perspective into the discipline of architecture is a relatively recent phenomenon in both the Spanish and international academic contexts. Despite the fact that women have participated since the early 20th century, their presence has been marginalised in official historiography. The recovery of these trajectories, in conjunction with the generation of interpretive frameworks capable of addressing the spatial implications of design practices, has become a central aim of contemporary studies.

In Spain, scholars such as Elia Gutiérrez-Mozo and Inés Sánchez de Madariaga have been trailblazers in the field of architectural history, particularly in terms of the visibility of female architects and the integration of gender-sensitive analysis into urban and architectural research. Gutiérrez-Mozo's research[8] on the first women to graduate from ETSAM has led to the promotion of pioneering architects and the emphasis on the value of an 'archive of affections', which encompasses both documents and testimonies. In the case of Carmen Gil Torres, this perspective is especially relevant, since her professional practice was shaped by the need to reconcile her personal life with her professional work in a strongly masculinised environment.

It is also essential to acknowledge the context of inequality in which Spanish women architects of the late twentieth century carried out their work. Agudo Arroyo and Sánchez de Madariaga[9] demonstrate that discrimination manifested in the form of vertical and horizontal segregation, which resulted in the relegation of numerous women to roles within public administration. Sánchez de Madariaga has developed a robust theoretical framework for gender-sensitive urbanism, integrating analytical tools from feminist theory and the social sciences. This framework places significant emphasis on the value of reproductive labour and care as fundamental components in the design of collective spaces. Within this theoretical framework, the trajectory of Gil Torres can be situated, as her work demonstrates an alternative to the hegemonic canon of Spanish architecture.
In order to comprehend the architecture of Carmen Gil Torres, it is necessary to consider the division between the productive and the reproductive, a theory which was described by Zaida Muxí[10] in Mujeres, casas y ciudades. The sphere of production, which is public and remunerated, has been occupied mainly by men; the sphere of reproduction, which is private and unpaid, has been assigned almost exclusively to women. This structural division has not only defined social roles but has also profoundly shaped the configuration of spaces, distinguishing between domestic and urban, private and public. Consequently, architecture that caters to the needs of care, such as collective housing, childcare facilities, senior centres, and social infrastructures, has historically been regarded as secondary in comparison to architecture of representation, characterised by monumental scale and associated with political or economic power.

This imbalance has resulted in a paucity of studies that analyse women's contributions through architectural methods, with the majority of research relying on biographical or sociological approaches. In this regard, the work of Carmen Gil Torres is worthy of particular mention. The development was principally formulated within the Madrid public administration framework. Its design does not align with the media-driven paradigm of "starchitect" architecture; rather, it is oriented towards addressing quotidian and community requirements. This condition of "architecture of service" renders her work an ideal corpus for testing graphic methodologies of analysis capable of detecting distinctive spatial patterns.

The field of architectural theory has historically acknowledged the significance of drawing as a medium for the acquisition of knowledge. It has been posited by scholars such as Prak[11] and Roth[12] that redrawing and analytical representation are fundamental to understanding the organisational principles of architecture. This methodology finds resonance with international debates on architectural interpretation. Paulette Singley[13] proposes a novel interpretation of architecture as a visual text. In this paradigm, formal elements, diagrams and spatial relations are considered to carry equivalent weight to that of written discourse. This concept lends support to the hypothesis that graphic instruments function not merely as vehicles of representation but as critical tools, enabling the identification of a spatiality oriented towards care and community life in the oeuvre of Gil Torres. The graphic analysis of her work, particularly her public facilities in Madrid, can also be linked to recent debates on architectural abstraction. In a similar vein, Pier Vittorio Aureli[14] puts forward the argument that diagrams are not merely representational instruments, but rather theoretical mechanisms that possess the capacity to condense spatial and social relations. This standpoint is especially beneficial in comprehending the

manner in which material austerity and the preeminence of intermediate spaces in Gil Torres's architecture give rise to an inclusive and community-oriented spatiality. Aureli[15] has explored the role of diagrams and graphic abstraction in the production of architectural theory, arguing that visual instruments can reveal underlying structures that go beyond textual description. This critical reading is in alignment with Umberto Eco's[16] notion that every cultural interpretation is shaped by a "model of reading" that organises the way in which phenomena are understood. In the context of architecture, this model should be grounded in its own representational codes.

When applied to the domain of gender studies, this framework facilitates the investigation of how accessibility, intermediate spaces, urban relations, and budget management are spatially configured. This approach enables research to transition from discourse to material understanding. In the case of Carmen Gil Torres, the plans, models and diagrams of her projects reveal a consistent interest in transitional spaces, such as courtyards, vestibules and porches. These are conceived not as residual elements but as domains that foster social interaction and community appropriation.

The state of the art in Spain reflects significant progress but also evident shortcomings. On the one hand, a substantial corpus of research has emerged that documents the trajectories of pioneering women architects, from Matilde Ucelay to the generations that entered the profession en masse from the 1980s onwards.

This scholarship demonstrates that women are underrepresented in authorship and overrepresented in administration, non-tenured teaching, or anonymous competitions. Conversely, there is a paucity of systematic analysis examining how these structural conditions are translated into concrete ways of practising architecture, using the discipline's own tools.

At the international level, the field of gender studies in architecture has followed a parallel trajectory. From the pioneering contributions of Dolores Hayden in the 1980s, focused on feminist urbanism and the critique of the sexual division of domestic labour, to more recent debates on the "space of care" and social sustainability, the interest in making women's contributions visible has grown steadily. Nevertheless, globally, there remains a tendency to relegate graphic analysis to a secondary position, which complicates the identification of the spatial specificity of these contributions.

This article is situated at a critical juncture, integrating feminist historiography with graphic reading. The hypothesis guiding this research is that, by redrawing and diagrammatically analysing the works of Carmen Gil Torres, it is possible to identify a distinctive spatiality that responds to gender concerns, not as essentialism but as the effect of a structural context of inequality. This approach facilitates the extension of the debate beyond the confines of feminist studies, integrating gender as an architectural problem of general disciplinary relevance.

In conclusion, the theoretical framework and the literature review demonstrate the need to move beyond the descriptive and narrative stage in which much of the research on gender in architecture remains. By situating graphic analysis at the core of the investigative process, the potential for constructing a more equitable historiography is realised, concomitantly engendering a discipline more cognisant of its transformative capacity.

3. Methodology:
The research on the work of Carmen Gil Torres is based on the premise that the graphic instruments of architecture, including plans, sections, diagrams, and models, are not merely tools of representation but also analytical devices capable of revealing deeper spatial structures. The methodology adopted combines a qualitative approach, aimed at capturing the experiences and narratives linked to the architect's professional practice, with a quantitative and graphic approach designed to systematise her body of work and to detect recurrent patterns.

3.1. Compilation and systematization of the corpus
The initial step entailed the comprehensive compilation of projects that Carmen Gil Torres had completed during the course of her professional career, with particular emphasis on her tenure at the Madrid City Council. This catalogue, which was developed as part of Paula Ruiz Usero's undergraduate thesis, encompasses a wide range of interventions. These include sports centres, swimming pools, public baths, senior centres, day-care centres, social service facilities, nursery schools, housing, and cultural facilities. The classification of each project was determined by a series of variables, including the date of completion, the scale, the function, the built area, the location, and any potential recognitions. The present systematization provides the quantitative basis for identifying recurrent typologies and prioritizing the case studies.

3.2. Interview and qualitative analysis
The interview conducted with Carmen Gil Torres in November 2023 provides a fundamental component for understanding the relationship between her personal and professional life, as well as the gendered conditions that shaped her career. This testimony facilitates the contextualisation of her design decisions, thereby enabling the recognition of the influence of family reconciliation, access to public competitions, and the stability of public administration on her practice. The qualitative material obtained in this phase is integrated with the graphic analysis, allowing for a more comprehensive interpretation of her architecture.

3.3. Redrawing and analytical diagramming
The methodology is centred upon the process of redrawing original plans and the subsequent production of analytical diagrams. This process necessitates a critical reinterpretation, wherein decisions are made regarding the emphasis to be placed on various elements, such as circulation, voids, intermediate spaces, or relationships with the surroundings, and the manner in which these elements are represented. Consequently, the act of drawing becomes an act of reading and comparison. The tools employed in this process include two-dimensional plans, axonometric projections, digital models, and physical models, depending on the specific requirements of the project.

3.4. Selection of case studies
From the complete set of projects, four cases were selected on the basis of their typological diversity and their relevance within the trajectory of Gil Torres.

-Centro Deportivo Municipal Miguel Guillén Prim (The Miguel Guillén Prim Sports Center) (2000-2002),
-Piscina Cubierta del Centro Deportivo Margot Moles (Margot Moles Sports Center) (2002),
-Centro de Servicios Sociales San Diego (San Diego Social Services Center) (1997-1998),
-Centro de Mayores Villa de Vallecas (Villa de Vallecas Senior Center) (1994-1997).

Each case will be the subject of a detailed graphic analysis, focusing on aspects such as functional organisation, accessibility, the relationship between interior and exterior, the articulation of transitional spaces, and the management of material and economic resources.

3.5. Interpretive Framework
In conclusion, the results of the graphic analysis are interpreted in light of the theoretical framework that was previously outlined. The objective of this study is to examine whether the concerns identified in feminist literature, such as attention to the everyday, the centrality of care, and the balance between the productive and the reproductive, find a material correspondence in the design decisions of Carmen Gil Torres.
In summary, the methodology combines the documentary and testimonial dimension with a graphic approach that facilitates the investigation of the disciplinary specificity of the work analysed. The integration of qualitative, quantitative, and graphic techniques at this nexus initiates an innovative trajectory for gender studies in architecture, offering a duality of analytical rigour and critical sensitivity.

4. An Analysis of the Works of Carmen Gil Torres
Through a graphic analysis of the oeuvre of Carmen Gil Torres, it becomes evident that her architectural practice is structured around a set of recurring concerns. These include attention to the common, the balance between functionality and constructive austerity, the articulation of intermediate spaces, and the ability to generate community identity through medium-scale public facilities. The subsequent section will examine four illustrative cases from her career, applying the methodological tools previously described.

4.1. The Centro Deportivo Municipal Miguel Guillén Prim (Miguel Guillén Prim Sports Center) was constructed between 2000 and 2002.
The Miguel Guillén Prim Sports Center, which is located in Vallecas, is regarded as one of the most emblematic projects of Gil Torres. In 2002, it was awarded the Madrid Prize for Urbanism, Architecture, and Public Works. The edifice is a recent construction, encompassing an approximate area of 2,000m2. It has been conceptualised as a light and ethereal structure, its design centred upon the organisation of diverse sporting activities around a central volume.
The redrawing of its plans (Fig. 1) reveals a clear strategy of functional organisation. Access to the building is arranged through a primary lobby that distributes circulation either towards the stands of the lower-level courts or down the ramp that leads to the underground facilities. Concurrently, the transparency of the façades facilitates a direct visual connection with the surrounding public space, thereby reinforcing the concept of the building as a community node. This intention is further emphasised

by the creation of a public square, with auxiliary programmes such as changing rooms, a gym, and technical rooms placed below ground in order to free the surface for neighbourhood use.

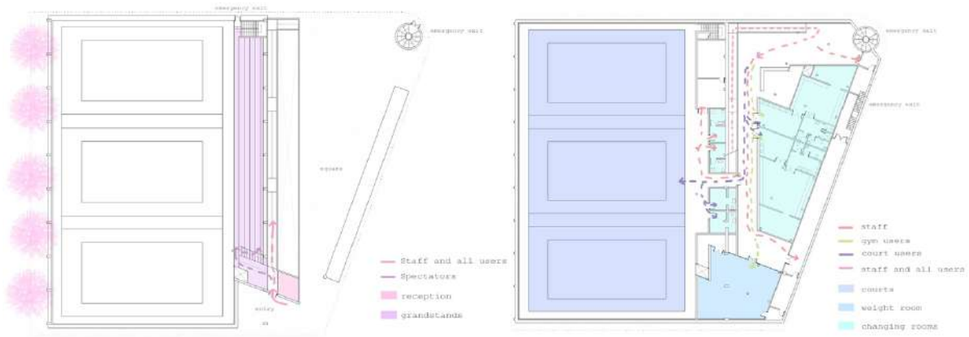

Fig. 1

The cross-section is a visual representation that emphasises the significance attributed to natural lighting and the volumetric relationship between spaces of varying heights. The resulting spatiality does not solely respond to technical criteria but also reflects an interest in fostering the appropriation of the building by its users.

4.2. Piscina Cubierta del Centro Deportivo Margot Moles (Margot Moles Sports Center) (2002)
The indoor swimming pool of the Margot Moles Sports Center, which is also located in Vallecas, is characterised by its economy of means and by the attention given to user comfort. The project, which covers an area of 1,000m², was awarded the Quality Award for Architecture and Housing of the Community of Madrid in the 2004-2005 period. It is imperative to elucidate that the scope of Carmen Gil's intervention was confined exclusively to the confines of the pool. The common areas, changing rooms and other facilities formed part of the pre-existing sports complex and were not designed by her.

The graphic analysis (Fig. 2) therefore focuses on the pool, showing how its longitudinal arrangement is complemented by transitional elements that mediate between the street and the bathing area. Within this theoretical framework, Gil Torres's contribution transforms a functionally rigid programme, the indoor pool, into an environment that encourages social interaction and collective well-being.

The digital model, produced from the redrawing, illustrates how the pool connects with its immediate urban surroundings through a base that integrates with the topography and softens the transition between the humid interior and the dry exterior. In this particular instance, the graphic dimension underscores the significance of the intermediate category within the framework of feminist architectural theory. This category, which does not function exclusively as a producer but rather serves to organise and sustain social relations, is of paramount importance.

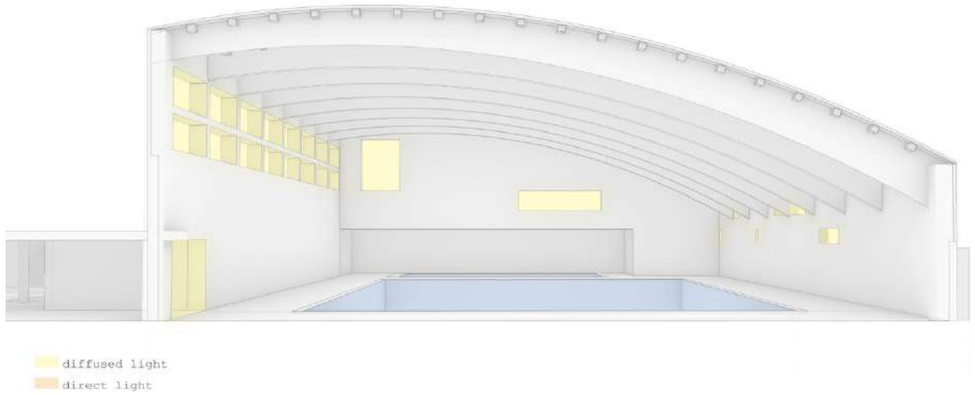

Fig. 2

4.3. Centro de Servicios Sociales San Diego (San Diego Social Services Center) (1997–1998)
The San Diego Social Services Centre in Puente de Vallecas is a prime example of Gil Torres' vision for the relationship between buildings and the urban landscape. Spanning 2,000 m², it was recognised by the Community of Madrid in both 2001 and 2002.

Redrawing the complex (Fig. 3) reveals how the volumes are organised around a raised terrace, which can be accessed from the dining room and the communal area. Although it is fenced off and not directly connected to the surrounding public space, the terrace serves as a social area for the building's users. This strategy, which is a recurring theme in Gil Torres's work, creates an intermediate space that strengthens community interaction and offers continuity within the building.

The longitudinal section shows how topographical differences are used to create clear functional hierarchies while ensuring that the building is accessible at street level with no steps. Universal accessibility thus becomes a structuring criterion, anticipating later regulations. In this sense, the graphic interpretation highlights the inclusive nature of the project, which caters for diverse users and affirms the principle of spatial justice.

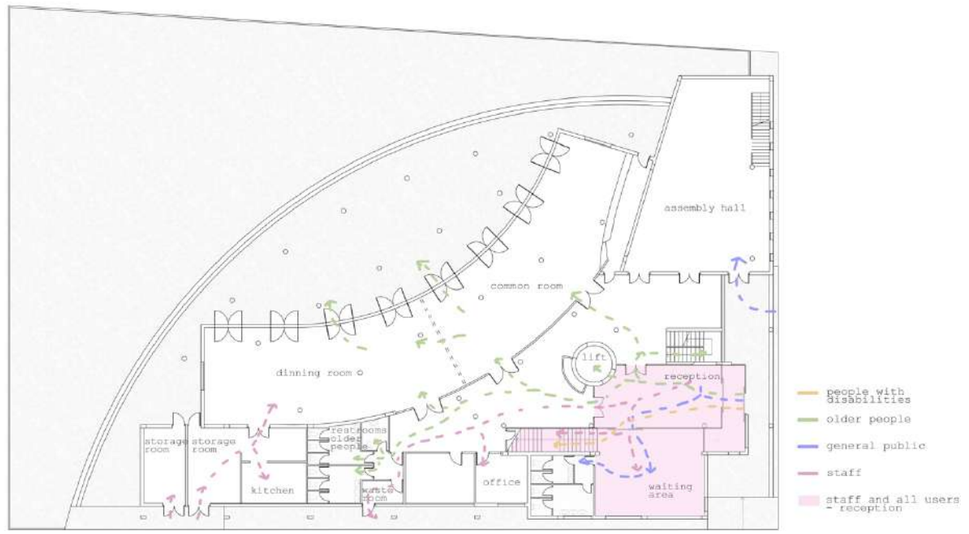

Fig. 3

4.4. Centro Municipal de Mayores Villa de Vallecas (Villa de Vallecas Senior Center) (1994–1997)
The 1,500 m² Villa de Vallecas Senior Centre is a prime example of Gil Torres's dedication to creating spaces where marginalised groups can come together. Awarded by the Community of Madrid, it has become a local landmark for promoting community integration and supporting user autonomy, setting an example of inclusive design.

A graphic analysis (Fig. 4) reveals a clear hierarchy between communal areas (such as halls and workshops) and rest areas, which are connected by intermediate zones like galleries and terraces. The low-fenced patio extends the continuity of the street, while the interior galleries and first-floor terrace bring in natural light and enhance the spatial experience.

The physical model highlights the use of simple construction elements employed austerely yet effectively in terms of space. Rejecting formal spectacle, Gil Torres emphasised functionality, economic sustainability and consistent consideration of everyday life and community well-being.

Fig. 4

The graphic examination of these four cases confirms the initial hypothesis: the work of Carmen Gil Torres is defined by a distinctive spatiality, focused on the creation of intermediate realms, universal accessibility, and an economy of means. The design decisions under scrutiny in this instance must be considered in the context of the gendered conditions that shaped the subject's professional trajectory. Such conditions encompass the need to reconcile personal and professional life, access to architecture through public administration, and the prioritisation of programs related to care.

The objective of graphic analysis is to identify patterns and traces of gender concerns in a spatial context. These traces do not emerge from a supposed "feminine essence" in design, but rather from the structural conditions of practice and the priorities that guided Gil Torres's architectural decisions.

Firstly, it is important to note the centrality of intermediate spaces. The repeated utilisation of courtyards, galleries, lobbies and porches is indicative of an architectural conception that is regarded as everyday infrastructure, wherein intermediate spaces are conducive to social interaction, community appropriation and accessibility. From a feminist standpoint, this accent on the intermediate can be interpreted as a method of accentuating the reproductive, the quotidian, and the collective at the core of architectural design.

Secondly, the economic dimension emerges as another defining feature. It can be argued that the control of budgets and construction systems should be regarded not as a limitation, but rather as a design criterion. Material austerity has been demonstrated to yield clarity and rational solutions that confer dignity and functionality. This approach is in alignment with the concept of "spatial justice," which can be defined as the capacity of architecture to distribute resources and opportunities in an equitable manner. From this standpoint, Gil Torres's artistic praxis foreshadows contemporary discourses on social sustainability and the economy of means.

Thirdly, the graphic analysis confirms the importance of accessibility and inclusion as structuring principles. The resolution of circulation, topography, and access demonstrates a sensitivity to user diversity that extends beyond the confines of regulatory compliance. The design of the programme was oriented towards three key principles: the autonomy of older adults, the dignity of social services users, and the integration of residents into sports and cultural facilities. In this sense, her work can be understood as an architectural practice committed to care, in line with the principles of feminist urbanism.

In contrast to conventional historiography, which prioritises monumentality and authorship, Gil Torres's work emphasises alternative values, such as the common and efficient use of resources and spaces of social interaction. From this standpoint, the notion of a "feminist architecture" is not resolved in essentialist terms but rather acknowledges the influence of social and gender conditions on design decisions, thereby giving rise to diverse spatialities.

In conclusion, it is recommended that the discussion's findings be extrapolated to a more general level, beyond the particular case of Gil Torres. The integration of a graphic perspective within the domain of gender analysis in architecture has the potential to address the underrepresentation of architects within

the field, whilst concurrently contributing to the enrichment of the broader disciplinary discourse. The acknowledgement of architecture's function in supporting day-to-day life facilitates a revaluation of value through the lenses of equity, sustainability, and social justice.

5. Conclusion

The graphic analysis of Carmen Gil Torres's work confirms the initial hypothesis: the architect's design decisions generate a distinctive spatiality articulated around attention to the common, constructive austerity, and the centrality of intermediate spaces. These features do not embody a feminine essence, but rather the architectural expression of a context shaped by gender inequality and by the intention to provide fair and sustainable responses through professional practice.

The research also demonstrates that graphic analysis is an indispensable tool for gender studies in architecture. In contradistinction to approaches that are exclusively sociological or biographical, the analysis of plans, sections, diagrams, and models enables the rigorous identification of the spatial mechanisms that translate concerns related to everyday life and care into form and materiality.
Carmen Gil Torres' professional oeuvre, chiefly cultivated within the domain of Madrid's public administration, personifies a praxis of architectural design that defies the conventional disciplinary norms. Her legacy underscores the significance of community facilities, emphasising their role as essential components of urban infrastructure, rather than as minor architectural elements.

In conclusion, the centralisation of her practice within academic reflection facilitates the recovery of a pioneering figure who has been unjustly rendered invisible. Moreover, it establishes a methodological framework for future research, wherein gender is recognised as an inherent aspect of the architectural discipline.

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Image Captions

Fig. 1. Floor plan of Miguel Guillén Prim Sports Center (2000–2002)
Fig. 2. Escaped section of the longitudinal layout of the Margot Moles Sports Center (2002)
Fig. 3. A study of routes of San Diego Social Services Center (1997–1998)
Fig. 4. The relationship between interior and exterior space in Villa de Vallecas Senior Center (1994–1997)

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Through Shadows and Silence
Kinaesthetic Perception of Space in Ripley and Greek Lessons

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Abstract

This paper examines how architecture operates as a visual-critical lens across cinema and literature through Steven Zaillian's *Ripley* and Han Kang's *Greek Lessons*. In both works, space is not a backdrop but an active, generative medium shaped by silence, shadow, and the cadence of movement. Read phenomenologically, spatial experience is grasped less by typology than by kinaesthetic and atmospheric registers: partial sight, occlusion, delay, and peripheral attention. In *Ripley*, chiaroscuro interiors, thresholds, and stair runs function as operative diagrams in which duplicity is inscribed through stillness and oblique occupation; watchfulness becomes spatial writing. In *Greek Lessons*, muteness and tactile withdrawal trace an absorptive cartography of absence—handrails, pages, damp steps—where memory returns as atmosphere rather than flashback.

Anchored in Merleau-Ponty's account of embodied perception and the "pregnancy of silence," the argument develops with Pallasmaa's notions of peripheral vision and atmospheric intuition, Edward Casey's emplacement of remembering, and Bruno's "haptic visuality" and "public intimacy," which together clarify how viewers and readers are drawn into shared perceptual fields. To operationalize these ideas, the paper stages a set of intermedial plates that juxtapose stills from *Ripley* with short passages from *Greek Lessons* that activate the same phenomenological register (threshold, fog, sonic punctuation, tactility). Following Robin Evans, these pairings are treated as analytic diagrams—sites where representation produces spatial effect—rather than illustrations.

The contribution is twofold. First, it proposes "grapho-logic" as a method for architectural criticism: a way to read inscription across gesture, pause, and peripheral sensation. Second, it reframes absence, attenuation, and delay as spatial technologies that organize experience and make architectural atmospheres thinkable. In dialogue with film and literature, architecture here emerges not only as form or function but as a medium that generates its own epistemologies—legible in the lived traces of those who hesitate, observe, and remember.

Key words: phenomenology of architecture, atmosphere, kinaesthetic perception, cinematic space, diagram and narrative.

1. Embodied Shadows: Phenomenology as Drawing

Architecture is not simply an arrangement of forms but a process of bodily engagement with space. In Merleau-Ponty's words, "I am not in front of my body, I am in my body, or rather I am my body".[1] Perception is not passive but a motor project that unfolds through gesture and movement. To perceive a space is to trace it, to sketch its boundaries through action and stillness, much like drawing. As Pallasmaa notes, "The door handle is the handshake of a building", a tactile point where architecture meets corporeal awareness.[2]

This paper reads *Ripley*[3] and *Greek Lessons*[4] as forms of spatial drawing, where architecture is not a static background but a field of traces—shadows, gestures, and silences that mark the contours of lived experience. Both works are preoccupied with embodied perception, not as visual clarity but as atmospheres that emerge at the threshold between presence and absence. "We see the depth, the smoothness, the softness of objects," writes Merleau-Ponty, "because they awaken an echo in our bodies and because the body welcomes them". In *Ripley* and *Greek Lessons*, this echo is articulated through the quiet choreography of characters who engage space without words.

David Seamon's account of environmental embodiment and place ballet is helpful here: People unconsciously coordinate their bodily movements, patterns, and rhythms with their environments, creating places that are not merely settings but lived structures of feeling.[5] Ripley's stillness—the way he pauses at doorways, hovers in dim corridors, or presses himself against walls—acts as architectural calligraphy, inscribing duplicity into the surfaces of villas and stairwells. Likewise, the unnamed protagonist in *Greek Lessons* inhabits a quieter register of spatial drawing. Her retreat into silence and tactile awareness—fingers brushing the edges of books, lingering at stair rails—forms a subtle cartography of absence and remembering.

Han Kang describes this bodily withdrawal as both loss and attunement: "Her body felt as though it had shed language, like a snake leaving its skin behind."[6] In such moments the environment is heightened as sensorial presence. Edward Casey characterizes this as the intertwining of memory and place, where "places are not inert containers but vibrantly lived."[7] Beyond simply occupying rooms, the protagonist etches memory and loss into them, as a pencil leaves a faint pressure on paper.

The cinematography of *Ripley* amplifies this sense of spatial drawing. Robert Elswit's black-and-white palette emphasizes chiaroscuro, rendering stair runs, handrails, and doorframes as lines and gradients of shadow. Ripley often appears as silhouette against textured surfaces, tracing the architecture's tension. Pallasmaa's notion of peripheral perception resonates here: architecture engages the whole body and memory; it frames silence, echo, and shadow.[8] The film's measured tempo lets voids and frames act as extensions of interior life.

To perceive these works is to read drawings—open, provisional, gestural. Drawing here is not the fixity of plan but the kinaesthetic line of a body sensing space. Merleau-Ponty's insistence that "to perceive is to render oneself present to something through one's body" underlines the argument: both *Ripley* and *Greek Lessons* map emotion by inscribing silence and hesitation into architecture.

The arguments around phenomenology of architecture in this paper are occasionally corresponded with curated excerpts from the both case studies with visual-critical lens. The figures in the following sections stage an intermedial, diagrammatic reading rather than illustration. Each plate juxtaposes a still from *Ripley* with a short passage from *Greek Lessons* where the same phenomenological register is active—threshold, fog, tactility, or sonic punctuation. Each pairing functions as an operative diagram in Robin Evans's sense: a place where representation produces spatial effect.[9] This method draws on Merleau-Ponty's embodied perception, Pallasmaa's peripheral and atmospheric sensing,[2,8] and Bruno's public intimacy as a projective relation to surfaces.[10] Minimal annotations mark pauses, edges, and light. The aim is to elicit (or rather develop) perceptual references and map this inscription as architectural atmosphere.

2. Hesitations in Form: From Wordlessness to Watchfulness

Silence is not the absence of language; it is the temporal thickness through which form acquires depth. In both *Ripley* and *Greek Lessons*, silence functions less as a narrative void and more as a structuring device that slows perception and heightens corporeal attunement to space. Merleau-Ponty calls this the pregnancy of silence, a charged pause before meaning forms. It appears not only as withheld speech but as somatic delay: a lingering gesture, a stalled footstep, an orientation that resists premature articulation.

In *Greek Lessons* the unnamed protagonist's silence is not inert. Her muteness, born of emotional trauma, transforms how space is sensed. Her passages through stairwells, bookshops, and subway corridors are rendered in intimate, textural registers: the coldness of steel, the damp grain of steps, the weight of books held to the chest. "The stairs felt like something she had forgotten how to use," Han writes, marking a rupture in the habitual bond between body and place. The similar phenomenological register applies to the other protagonists who is gradually losing his vision (Fig. 1). Casey's claim that "remembering is an act of emplacement" clarifies the moment: when memory falters, the body's claim

to place falters with it. The resulting experience is absorptive rather than navigational, a friction between past impressions and present perception.

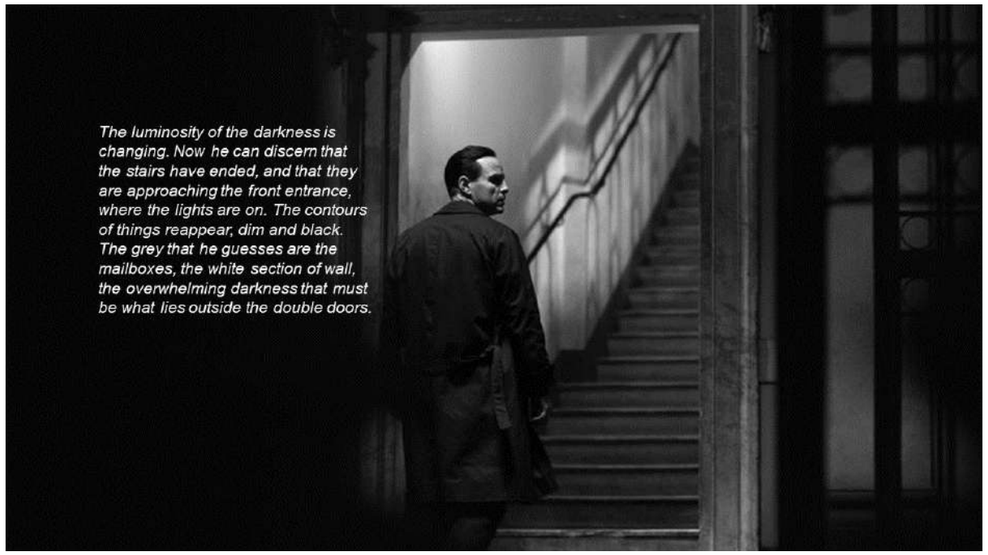

Fig. 1

Tom Ripley's silence works differently. He withholds speech to stage action. He waits, watches, and listens. Movement often follows only after the field is assessed and embodied. He leans into thresholds, peers through mirrors, and hovers at doorframes. The camera lets spaces settle before he appears, casting him as apparition rather than actor. Giuliana Bruno's haptic visuality helps frame the effect: vision becomes touch at a distance; surfaces register as emotional material rather than décor.[11] In *Ripley*, seeing is never neutral. It is always charged with proximity, voyeurism, and tension. Architectural surfaces such as tiles, glass, velvet, stone become emotional materials.

In both works, silence thickens space. The protagonists' hesitations introduce a slower temporal rhythm, a kind of narrative breathing room where perception precedes comprehension. Pallasmaa's assertion that we "do not so much look at a space as look through it" is echoed in these lingering sequences.[6] The spaces of *Ripley* and *Greek Lessons* are not static containers for story, but temporal fields in which the body's minor hesitations—pauses, falters, intuitions—become modes of spatial knowledge.

Crucially, these hesitations are not failures to act but recalibrations of conditions. The characters delay speech not due to indecision, but to preserve the density of silence. Merleau-Ponty reminds us that expression does not replace silence but emerges from it, and this emergence is felt spatially.[1] In both the sun-drenched Italian interiors of *Ripley* and the dim, atmospheric classroom of *Greek Lessons*, architecture does not clarify the self, it holds it in latency. The unspoken, the delayed, the almost—these are the phenomenological atmospheres from which transformation arises.

3. Spatial Sequencing: Mise-en-scène as Grapho-Logic

Architectural experience unfolds through repeated encounters and small adjustments in perception. In *Greek Lessons* and *Ripley*, architecture is both the medium that guides movement and the palimpsest that receives inner states. Spatial sequencing, in this sense, is less about continuity in narrative than it is about the kinaesthetic sedimentation of place—what might be called a *grapho-logic*: the quiet accumulation of affective traces across time, space, and memory.

Merleau-Ponty offers a lens for this dynamic: the body interanimates with the world through movement, orientation, and peripheral sight— "to move one's body is to aim at things through it." The body is not only in space; it is of space. Pallasmaa extends the idea by treating architectural experience as a verb form rather than a noun, emphasizing process over fixity.

This process becomes particularly palpable in spaces that are visited repeatedly. Seamon's place ballet describes how routine movements give a place its tone. In *Ripley*, recursive climbs and descents in Atrani, Rome, and Venice form a slow choreography of reinvention. Each ascent re-inscribes presence and embeds duplicity into the grain of the setting. Over time, stairs acquire what Casey calls the re-presencing of memory: the past returns not as flashback but as atmosphere.

The atmospheric accumulation becomes a grapho-logic of space. In *Ripley*, the black-and-white palette operates as a mechanism of spatial writing, instead of a mere mood-setting. Light appears without source, not to clarify but to complicate, rendering brightness as a rupture in the spatial field. Like a palimpsest, architecture becomes overwritten by shadows, silences, and residual gestures. Presence appears at edges and thresholds, suggesting a mode of inhabiting space that is less about occupying than about etching. Movement draws out the latent potential of walls and corridors. Beyond a cartesian translation of function, forms become legible by their capacity to retain intention.

Yet *Ripley*'s use of architectural inscription also cultivates what Bruno calls public intimacy: a seemingly paradoxical condition in which shared spatial experience yields a collective, affective attunement to a character's inner life. Through Bruno's lens, the chiaroscuro and voyeuristic framings of *Ripley* create a projective materiality where the viewer is invited to "feel into" Ripley's world. The series' many scenes filmed through doorways or across thresholds enact what Bruno refers to as empathic projection: the transitive force by which space, image, and surface generate intersubjective relation. The audience is not just watching; they are implicated—drawn into a shared perceptual space that hovers between distance and absorption. Ripley's gestures, like brushing his hand across a wall or pausing beside an ornate doorframe, become architectural calligraphy, enacting his duplicity as material trace (Fig. 2).

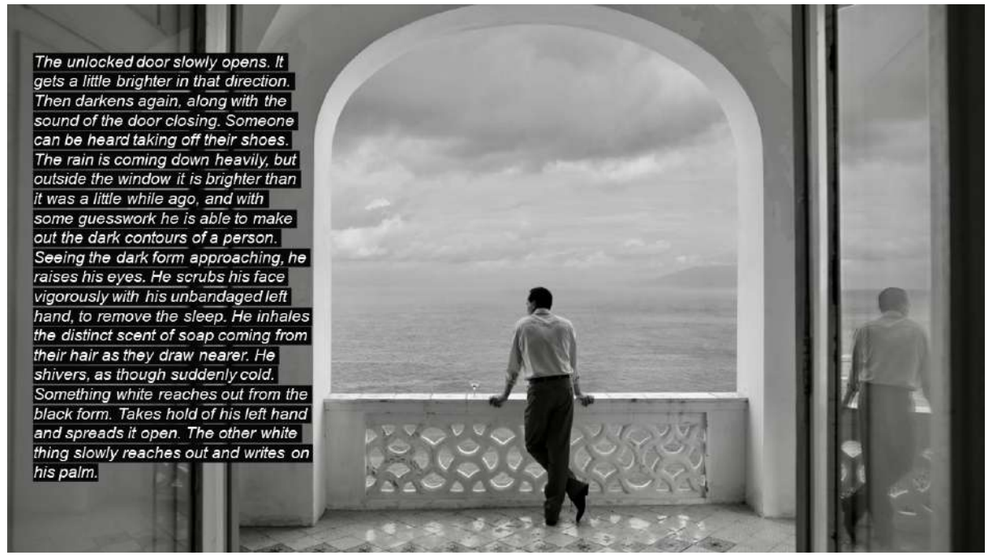

Fig. 2

A parallel grapho-logic appears in *Greek Lessons*, quieter and more interior. A daily walk to a dim classroom becomes a script of motion, each return rewrites a bodily sentence. The protagonist's stride mirrors the teacher's, turning the corridor into a line of echo: "Up until the moment they entered the empty classroom… they walked with a similar stride… calmly aware of each other's presence". They do not speak; they write themselves into space through posture and alignment. Architecture becomes a sentence passed between bodies.

This inscriptive dynamic intensifies within the protagonist's subjective field, where space is not clearly seen but atmospherically traced. The memory of fog— "when early-morning fog would roll in from the lake and smother the town well into the evenings"—is yet another exemplary moment for this mode of spatial apprehension. The urban fabric is absorbed not through clarity, but through immersion: "my body pressed up against the wet stone walls, their frescoes obscured by the fog." Here the environment is a smeared page. The line between body and wall blurs; writing happens with skin (Fig. 3).

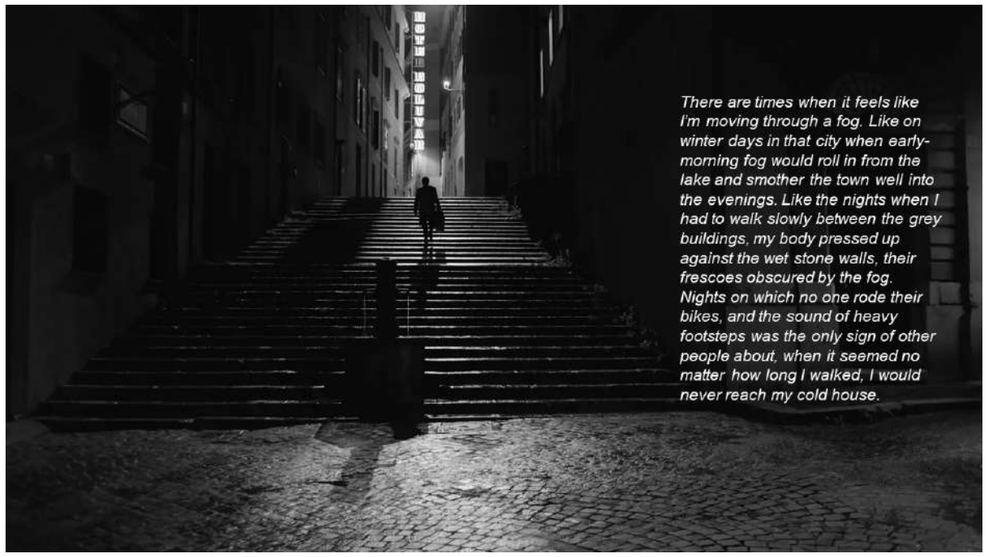

Fig. 3

This fogged perception aligns with Merleau-Ponty's account of peripheral vision as the mode through which we are enveloped in "the flesh of the world." The periphery does not scan for meaning; it invites spatial text to surface slowly under repetition. Classrooms, corridors, and fog-soaked streets become mnemonic diagrams. Repetition sediments rather than simplifies.
But even in this quiet cartography of absence, *Greek Lessons* activates a different kind of public intimacy. The protagonist's silence structures space, so the reader enters empathically. Surfaces foster shared feeling—Bruno's projective relationality. The protagonist may not speak, yet her body inscribes absence into surfaces, inviting us to feel the contour of her world. In this way, empathic projection becomes a spatial practice: a silent invitation to dwell together in the intimacy of loss.

4. Toward a Method of Absence

Absence in architecture is often perceived as lack—of function, of volume, of representation. Yet in *Ripley* and *Greek Lessons*, absence emerges as a method: a condition that renders architecture perceptible through its resistances, partialities, and haunting. The claim is that absence in speech, form, and bodily engagement functions as a spatial technology of encounter. It shapes the emotional logic of rooms and streets, making the built environment a medium of latency and unspoken tension (Fig. 4).
Ripley performs identity through mimicry and spatial camouflage. He rarely occupies a room's centre; he keeps to margins, watches from thresholds, rests in stairwells, hides in rooms not his own. Presence becomes spectral and generates discomfort through a seemingly incomplete occupation. Such partial gestures open what Bruno calls an emotive interval, where architecture is not backdrop but delay; it suspends knowing and draws a diagram of displacement.
In *Greek Lessons*, absence is explicit. Muteness suspends verbal legibility and reorients attention to texture and memory. Sitting in classrooms, pressing a cheek to a cold wall, wandering bookstores: all enact withdrawal that is attentive rather than vacant. Place is animated by a kind of memory—felt more for what it lacks than for what it contains. As David Seamon suggests, place can be constituted as much by routine as by rupture, by what no longer happens as much as what does.
This idea aligns with Peter Zumthor's notion of atmosphere as a felt presence emerging from the intangible: presence we cannot name, a form of silence that moves us.[12] Absence, muteness, and hesitation acquire architectural gravity. In both cases of this study, space does not act; it waits. And waiting is structured, not passive. It is a diagram of possible emotion, drawn through voids, pauses, and half-seen gestures.
Merleau-Ponty offers a final alignment: what is seen is always in the wake of what is touched. In *Ripley* and *Greek Lessons*, absence is what allows the body to recalibrate its sensory range. What is unseen becomes what is most intensely felt. Absence, then, becomes an epistemic strategy to attune perception to the latent structures of place.

Fig. 4

Architecture in these works is no longer a stable container of action or narrative. It is a medium for an attentive absence. The result is a spatial phenomenology that eludes conventional drawing and appears instead as the lived, fragmentary traces of those who hesitate, observe, and remember. To learn from these works is to attend to what remains unsaid and unseen: atmospheres that gather before language and form and persist after language and beyond form.
This paper suggests a method of architectural thinking grounded in diagrammatic absence: a grapho-logic that privileges delay over presence, intervals over objects. Instead of depicting forms, it invites us to draw space-as-pause and produce it as an experience. In so doing, it reclaims architectural thinking as a practice of perceptual uncertainty—one that cinema and literature, in their silence and shadow, continue to teach.

Notes

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Image Captions

Fig. 1. Hesitation as form. A still from *Ripley* paired with a sentence from Han Kang's *Greek Lessons*, p. 109. The plate registers "pregnancy of silence". The place is felt as the strain between memory and step.
Fig. 2. Watchfulness as grapho-logic. *Ripley* still with *Greek Lessons*, pp. 144-45. Threshold framing solicits empathic projection. What appears as looking is already inscription.
Fig. 3. Peripheral attenuation. *Ripley* exterior stair with *Greek Lessons*, p. 135. Fog, damp stone, and muted frescoes convert facade into a smeared page. Perception accentuates in the periphery: space is not scanned but slowly read by the skin, and repetition sediments its trace.
Fig. 4. Method of absence. A still from *Ripley* paired with a sentence from Han Kang's *Greek Lessons*, p. 87. Intervals, not objects, carry the form: footsteps as punctuation, waiting as structure. What holds back sets the measure of the room. The spacing itself casts the projective field in which the liminality expands, and contours re-emerge after language.

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Biography

Roohid Novinrooz is a design researcher and workplace strategist. Based in Singapore, he has led workplace consulting operations in commercial real estate, advising occupiers and landlords on strategy, change, and user-centred environments. He has also authored industry pieces that are practice-led and driven by the active evolution of design and user-perception philosophy. His writing pursues a phenomenological account of architecture: atmosphere, peripheral perception, and intermedial methods that read film and literature as evidence for lived space. Roohid's practice centres on how movement, memory, and perception inform spatial decision-making, bridging scholarship and application in the built environment.

Operative visual practices
Chronicle of an experiment in critical thinking

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Abstract

In his pedagogical experiments of the early 1960s, Bruno Zevi allowed students to transgress the concrete datum of authored documents—such as Michelangelo's entire oeuvre, realised and unrealised—in order to challenge the dominant assumption that architecture is inextricably bound to a specific temporal frame, the *zeitgeist*, a hallmark of Modernism. Those preliminary interpretative models probed the document's transformative potential while giving form to the impulse to test hidden hypotheses or even to complete what may be regarded as unfinished.

The inherent possibilities of completion and actualisation within authored documents operate as a relational device that nurtures new spatial imaginaries. Such "performative generosity" of the authored document—once released from its historical embedding—underpins a didactic experiment undertaken with a selected group of scholars. The process began with the selection of a key-word pertinent to each scholar's research domain. Despite their rhetorical assertiveness—and precisely because of their semantic ambiguity—such key-words tend to foster cumulative rather than strictly critical approaches.

A second phase required selecting a specific authored document from the MAXXI Museum Archives, linked to the key-word by connections not always self-evident. Various techniques were then employed to manipulate the document and to generate new critical narratives. The strategy guiding this experiment assumes that the conventional algorithm "intention–objective–result" can be subverted, thereby opening a visual stance encouraging critical thought and theoretical self-learning.

This paper investigates—practically and theoretically—the experiment described herein, which mobilises key-words, authored documents, and manual manipulations to challenge prevailing modes of historicising critical thought.

Key words: key-word, authored document, transformative manipulation, critical thought, visual emergence.

1. Embodied Knowledge and Critical Writing

In the pedagogy of art and architecture, in Italy and elsewhere, a long-standing question concerns the function of history. The Croce-inspired view—still influential in Italian education—that history is the arena for formulating present questions has had prominent advocates in architectural culture. Foremost among them, given his international reach, is the historian Bruno Zevi.

Zevi advanced a view of history as *project*, a stance that would find in Manfredo Tafuri an equally emblematic, if polar, interlocutor. From the 1950s onward, Zevi systematically adopted the expression "operative criticism" in both his dissemination of architectural culture and his political engagement[1]. The term speaks not only to the evolving nature of the historical method and to the *problematic relation* between history and historiography[2], but also to the conviction that reflection on historical facts is ineluctably oriented toward operative actualisation.

Drawing on procedures akin to those of modern science—proceeding by "trial and error" within "a network of exploration that leaves ample latitude to probability, hypothesis, and chance"[3]—Zevi legitimated the manipulation of historical material as the basis for an operative continuity between historical analysis and design, and as a foundation of critical thought. Within his historiographical project, the aesthetic unity of the architectural work is dissolved, and reality is framed as a weave of spatio-temporal and conceptual relations where the lines between past and present, content and form, fact and fiction are intentionally indiscernible.

What makes the "historical method" less a theoretical manifesto than a practice open to verification are Zevi's academic experiments. Defying the schism between history and design—kindled in the avant-garde schools from the Bauhaus onward and perpetuated by Modernist theoretical constellations—Zevi turned his IUAV course into a workshop, a place for methodological experimentation. Through the imitation of artistic behaviours and the emergence of *embodied knowledge*[4], the Venetian students' exercises on documentary materials—especially Michelangelo's oeuvre[5]—sought to retrace the creative process so as to proliferate latent potential, surface suspended hypotheses, and even complete what may be deemed unfinished.

When set against other theories and pedagogies of the period that developed pre-graphic representational methods to unsettle the ideological premises and theoretical constraints of Modernist historiography and protagonists—restoring to history the right to interpret, metabolise, and actualise its outcomes[6]—Zevi's endeavours appear as audacious acts of design. In the students' bi- and tri-dimensional manipulations—marked by metric vagueness and constructive innocence, at times verging on "clumsiness"[7]—genetic filiation with the source document often remains obscure, undecipherable, unreliable. The aim was not philological analysis of historical data but its deliberate transformation into a *speaking object*. In Zevi's pedagogy, such an object—in a calibrated play of arbitrariness—incites critical thought, "produces reasoning"[8] about architecture and the ordering of space, and does so from a militant perspective oriented to concrete action within contemporary contexts.

It is precisely the immediate "actualisation" of operative criticism and its translation into action upon reality that elicited Manfredo Tafuri's corrosive assessment; disparagingly, he labelled it a "normative" or "prescriptive" rather than "operative" practice.[9] Tafuri's historical project nonetheless shares the premise of a critique that tears open the compactness of historical constructions to expose the "contradictions" among design, systems of production, and ideology, even as it sharpens the focus on new and contingent themes. As he writes: "At the origin of the critical datum there is always the operation of destroying, separating, disintegrating a given structure. Without such a disintegration of the object of analysis […] no subsequent rewriting of it is possible[10]".

His project unfolds within a *discursive praxis*—extending to didactic experimentation—that consolidates techniques of disintegration and engineers a "productive tension" between interpreted structure and interpretive practice, from which provisional hypotheses emerge[11]. Collective, seminar-based exercises vivisect architectural problems in search of clues and paradoxes that unsettle the ideology embedded in any value judgment, whether concerning past phenomena or contemporary ones. "Crisis" itself becomes the engine of renewed meaning. The resulting critical discourse treats truths as deposits to be continually tested—undone by doubt and emergent contradiction. No manual exercises, visual techniques, or prefigurative studies appear to accompany the making of texts; writing alone functions as the dialectical apparatus through which critical thought takes shape—and as the only medium capable of eluding the compromises to which architecture, as a historical–political phenomenon, is inevitably subjected[12].

Setting aside a fuller consideration of the legacies of Zevi and Tafuri to the culture of the historical project and to critical thought, these introductory notes frame a didactic experiment undertaken over a few weeks within a doctoral programme, in collaboration with a professor of history and theory of contemporary architecture[13]. The exercise aimed to cultivate competencies in critical-writing processes through the experimental interplay of graphic and textual devices. On the one hand, verbal language is the primary vehicle through which critical thought is made manifest; on the other, non-verbal language enables logical and non-intentional leaps that imaginatively nourish thought itself. In this respect, more than half a century later—and notwithstanding the controversial drifts flagged by Tafuri—Zevi's operative criticism still seems to offer effective tools for enabling historian and designer to speak with one another, precisely where the "manipulation" of authored documents becomes a point of encounter and productive tension from which critical thinking can germinate. What follows is the diachronic account of this synchronic experiment—of its methods, instruments, and the trajectories along which architectural research seems to be moving—whose outcomes remain the object of reflection and self-critique.

2. Key Words (Logics)

How might history, theory, and architectural design be brought into dialogue? How can the instruments for investigating contemporary architecture be sharpened so as to widen—or even invert—the gaze directed at its urgencies and emergencies? What competencies are needed to write architectural theory? How can the conventional algorithm "intention–objective–result" be unsettled in the production and transmission of ideas? And what role should images play in the acquisition of critical thought?

Around these recurring questions—which, alongside the development of new systems of production and reproduction, have long concerned designers, scholars, observers, and critics—the experiment (hereafter, the Experiment) takes shape. Proceeding through fragmented, situated speculative exercises—each focused on a specific problem, micro-history, or architectural episode—helps to overcome the impasse that so often marks the outset of doctoral study. Identifying a topic, assembling documentary material, and formulating a "thesis"—that is, a historical-political *position* which, in a Tafurian sense, treats writing as a project and the project as the manifestation of a vision of world and society—requires an effort that does not always balance specialist and "panoramic" approaches (to borrow Umberto Eco's term for subjects too vast to provide firm footholds for sharpened inquiry)[14]. Hence the frequent recourse to thematic seminars which—at least in principle—offer opportunities to dissect partial architectural problems in a collective, relational setting that complements the solitary labour of the final dissertation.

Within the Experiment, each participant proposes a problem cast in the compact, assertive form of a "word", pertinent to their research domain. These are words that resonate with the architectural lexicon yet are capable of "speaking" other languages: *in-disciplinary* terms preferably unburdened by stereotypes, *zeitgeist* emblems, or marketable labels within the field. Endowed with a degree of semantic ambiguity, such words enable work within disciplinary bounds—by stratification and accumulation—while also opening onto adjacent and complementary fields, from art to cinema, from philosophy to anthropology. Whatever the trajectory—monographic or thematic—the key-word functions as a bridge-object to reality, a "key" that anchors the architectural problem to contemporary phenomena[15]. At the same time, as Reinier De Graaf notes, semantic ambiguity can become a weapon "to facilitate consensus in absence of agreement […] When words can carry any and all meaning, no credible disagreement can ever ensue as a result of their use[16]". This *lingua franca* of professional jargon (ironically dubbed *Profspeak* by De Graaf) has impoverished the architectural lexicon and intellectual production more broadly—the price of a publishing culture which, for at least three decades, has moved along a slippery ridge where distinctions between representativeness and persuasion, between critical content and promotional content, tend to disappear.

Before the writing exercise begins, the key-word is therefore probed in its widest etymological sense, so as to dismantle epistemological prejudices and hasty value judgements that the term—always the bearer of an idea or ideology—inevitably carries. Even so, close reading is not immune to approximation and anarchic selection, and writing—Roland Barthes's "device of closure"[17]—remains guided by intention. To *produce* an instrumental crisis, a purposeful friction capable of scrambling the order of systematic, cumulative, chrono-logical discourse, a second device is introduced into the Experiment.

3. Authored Document (–)

The first "critical space" capable of suspending the primacy of writing is opened by the choice of an authored document, selected from the MAXXI Museum Archives[18]. In an initial phase one seeks historiographic and thematic "correspondences": ideally, the document is a testimony that informs the conceptual apparatus of the chosen key-word and its research ambit. Yet the correspondence may be aleatory, even ineffable, when figural and *gestalt* affinities surface between the image and the imaginary first triggered by the key-word. This fortuitousness—or paradox—between word and image—akin to the "juxtapositions" and "dissociations" cultivated by Surrealism and Dada, as well as

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by works generated with Artificial Intelligence (AI)[19]—can, in fact, heighten the productivity of the Experiment precisely because it tempers, without wholly abdicating, the degree of "rational control" in the deconstruction of critical thought. At the same time, the outcome of the Experiment is strongly conditioned by the choice of this initial/initiate image, which will be manipulated and transformed.

What this calls into play are the "transcendental aspects," as Oswald Mathias Ungers named them in the introduction to his small, precious image-atlas *Morphologie. City Metaphors*—published a few years after the Berlin Summer School that produced *Berlin: A Green Archipelago*, among the earliest and most incisive postmodern manifestos[20]. As in the pedagogical practices that adopt a free syncretism of images and figures, Ungers employs the image-metaphor and morphological analogy as the basis of visionary thought which—he notes in the opening essay—intermittently overlays the logical-rational process during the elaboration of the architectural idea. Fifty-seven pairs of images are juxtaposed—on the left, a city map; on the right, the image of a thing, a situation, a texture, or a natural architecture—accompanied by a single word (in English and German). With this disarming hermeticism, which leaves room for multiple possibilities and misunderstandings, Ungers's fabulous handbook of metaphors aims to show that from the visual short-circuit between "the factual reality—the object" and "the perceptual reality—the analogy" there emerges a form of intuitive intelligence that generates "the idea, shown as the plan—the image—the word.[21]" Seen from today's vantage, one senses that, whereas words are inescapably tied to the fashions, anxieties, and urgencies of their time, image-metaphors continue to tease the imaginal mind—even though visual perception itself bears a "historicity," derived from evolving techniques of producing, reproducing, and processing the visual[22]. It is precisely the modern obsession with the *zeitgeist*—the spirit of the age—that the Experiment seeks to unsettle, in the very direction pursued by Zevi's operative criticism.

The sketches, diagrams, technical drawings, photographs of completed works, and scale models preserved in MAXXI's archives are "authorial" products: some widely known, others little known or forgotten; some aesthetically compelling, others that merely translate the "intention" of a line of reasoning into an apparently negligible *trace*[23]. Treated as the "bark" of a history still to be rewritten[24]—literally isolated from an archival corpus—these documents are inspected with a surgical gaze: small details, marginal aspects, can become major enigmas capable of initiating a new narrative. By adopting an eye estranged from the language, stylistic signature, and aesthetic judgment that the authored document ordinarily conveys, it can be recast as a "social artefact," a point of departure for the social production of artisticity. Conversely, the archival document—an expression of a historicised temporality—operates as a temporal "offset" to the present, enabling the architectural problem to be reframed from another angle. Creating mental "distance" from the architectural problem[25]— initially posited by the key-word and shaped by the research trajectory—once again opens a neutral critical space.

At this juncture the authored document operates as a suspension of logic and of time, a *trait d'union* between logical and imaginal thought. Such "performative generosity" of the authored document, once released from its historical embedding, is what makes it a potentially *speaking object*. Yet the document does not, by itself, produce any "effect" on critical thought. One must act upon it, enter into a dialectical relation with it, and convert the iconographic support into a graphic-critical one. The first operation is to become the document's *operator*, so that it sheds its authorial and historicised character.

4. Un-doing (Grapho)

In *Un manifeste de moins*, Gilles Deleuze opens with a remark on Carmelo Bene's *Romeo and Juliet*: "'It is a critical essay on Shakespeare,' Bene says of his production. Yet Bene does not write *about* Shakespeare; the critical essay is itself a theatrical work. How, then, should we understand the relation between theatre and its criticism, between the originating work and the work derived from it?"[26] This is precisely the question that arises when we take an authored document as a *reflective agent* for a theoretical–critical project. In another passage Deleuze outlines the technique that allows the Apulian actor to shift from "actor" to "operator" of the theatrical fact. Bene—who calls himself an "acting machine," an "operator of un-doing and un-writing"—reworks Shakespeare's texts through an "operative writing" that "subtracts everything that constitutes an element of power in language and gesture, in representation and the represented.[27]" Through this "surgical amputation," designed to neutralise the elements of Power[28], Bene "changes not only the matter of theatre but also its form: theatre ceases to be 'representation,' and the actor ceases to be an actor[29]". On stage, everything that "makes" Power is removed—"even the power of theatre itself[30]". Far from being narcissistic or despotic, this operation is, Deleuze argues, profoundly "humble": the actor knows that "theatre does not change the world and does not make the revolution," but at best can unsettle consciences.

Translating this practice of un-doing into the Experiment, the authored document—like Shakespeare's text for Carmelo Bene—becomes the substrate of a critical–manual project, a *montage platform* on which we act as "mechanics" of deformation. Viewpoints are proliferated; registers of meaning are expanded; material and immaterial scales, together with visible and latent entities, are activated. Variations of graphic writing are then elaborated to establish alternative modes of seeing. The underlying premise is that the critical–manual project—similar to architectural design—emerges from a struggle between the methodical and the anti-methodical, between conscious and non-conscious procedures. The Experiment does not pursue compositional ends; nor is it a *displacement* into an abstract universe for probing the internal rules that govern the relation between space and project[31]. Accordingly, the operations on archival documents are not a "diagrammatisation" of their design content: the document is treated not as a *code*[32] or a metric system but as a stimulus for the eye and for visionary faculties—much as Ungers's exercises mobilise images of objects and things to prompt imagination.

In the process of visual rewriting, the key-word—and the conceptual charge it bears—functions as bridle, compass, and provocation. Put differently, the key-word stands to the authored image as Power stands to Shakespeare's text for Carmelo Bene. Moreover, coupling the image and its deformation with a textual specification (what generative-AI systems call a *prompt*) enables the Experiment to interrogate the terms of "visual culture" after the advent of technologies for producing and processing the visible. With AI, the "field of the visible" has been decentered from the human gaze and opened to a non-human, *algorithmic gaze*[33]. Only retrospectively have the potentials and limits of this decentering become an object of reflection, informing possible updates to the Experiment[34]. With deliberate untimeliness, the inquiry was confined to a dialogic exercise between text and image, guided by Walter Benjamin's "optical unconscious" (*optisches Unbewußtes*) [35], activated across analogue, digital, and algorithmic media alike.

Within a temporally and instrumentally limited framework, the exploration, layering, and interplay of techniques—manual and digital collage, photomontage, computational modelling, translation into typographic signs, AI-based generation—are nonetheless disciplined and oriented toward the production of a new visual document fit for print. The document's manipulation is staged as a liberating —indeed, profaning—ritual, largely driven by affective impulses. Its outcome is, in turn, the product of a personality marked by singular intellectual dispositions.

5. Twelve Manifestos

The Experiment culminates in a manifesto distilled from the iterative exchange between graphics and text. Conceived as a theoretical–programmatic statement, it takes the form of a graphic–textual document spread over three A3 pages and is designed to produce an *effect*—in the etymological sense of *manifestus,* that which the hand makes palpable, even in an immaterial body. It may "unsettle consciences" (to recall Carmelo Bene), but above all it serves a "pill of theory" that enables focused debate on specific architectural problems[36]. This is the operative horizon of the Experiment. When presented publicly, the twelve manifestos—outlined below—brought to light methodological, instrumental, and thematic issues. They exposed contradictions, weaknesses, paradoxes, and suspended virtualities within the grapho-logic game: misplaced key-words, dysfunctional manipulations, and vacuous narrative trajectories. In practical terms, specific correctives are advisable—not least the addition of a printed storyboard detailing the conceptual and operational pathway leading to the final synthesis.

Fig. 1

Document: Pier Luigi Nervi, *EA 53 Superficie Sferica*, 1953, DOCF11561. Photographic material © Archivio MAXXI, Rome.
Manifesto 1: *Accumulation* (Fig. 1). A photograph shows an obscure object—perhaps a magnet resembling an iron detritus—set at the centre of Adalberto Libera's Palazzo dei Congressi during the

1953 Agriculture Exhibition. Reworked in Midjourney through successive prompt+image iterations, Nervi's globe is deflagrated into a (planetary?) accumulator of energies, objects, and scraps, eliciting that uncanny mix of aberration and attraction that shadows contemporary practices/pathologies of accumulation.

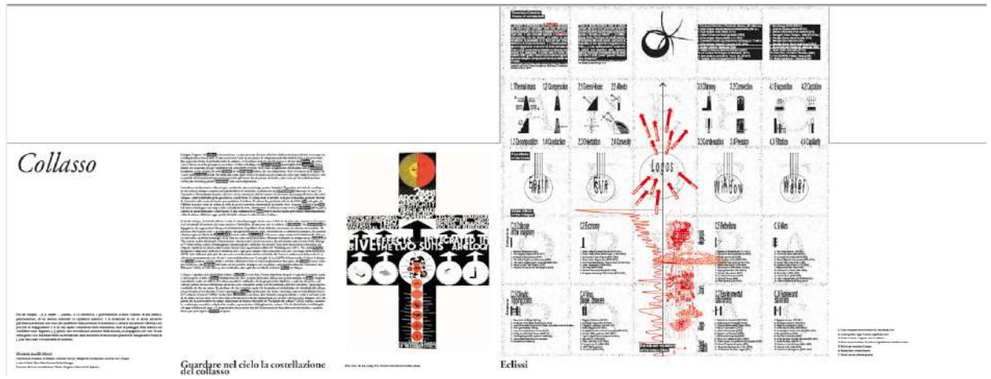

Fig. 2

Document: Paolo Soleri, *Two Suns Arcology*, 1976, DOC120. Poster © Archivio MAXXI, Rome.
Manifesto 2: *Collapse* (Fig. 2). An enigmatic poster stages an alliance of nature and architecture. At the top of a cross a sun appears— half celestial body, half Vitruvian man—illuminating (obscuring?) human life and its architectures. Read as a rebus, Soleri's symbolic dualism is re-edited in a near-collapsing world where the sun yields to an eclipse—an encounter of opposites—revealing new, more complex interactions between natural forces and architectural elements. Do these actions and strategies, arrayed on an atopical, expandable grid, establish a novel systemic balance—or do they register the collapse of theoretical devices themselves?

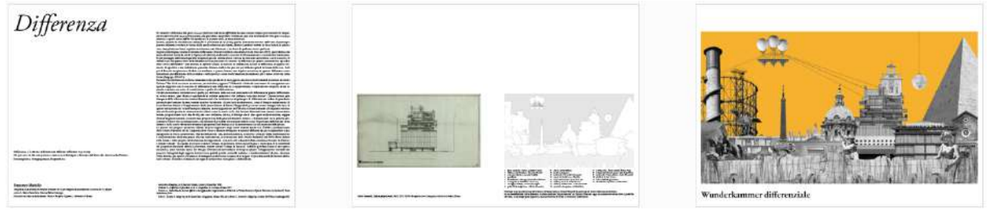

Fig. 3

Document: Studio Passarelli, *Mixed-use Building*, 1965, DOC55094. Elevation on Via Campania © Archivio MAXXI, Rome.
Manifesto 3: *Difference* (Fig. 3). The façade drawing of the mixed-use building erected in Rome in front of the Aurelian Walls epitomises the palimpsestic city, where autonomous strata and morphologies coexist and overlap seamlessly. Taken as a symbol of the mediation between identity and alterity that the city magnifies, the building is placed within a metaphysical, two-dimensional montage of Roman landmarks, held together by Christo and Jeanne-Claude's 1974 wrapping of the Aurelian Walls. The image's seemingly static (romantic?) poise casts light on the ambiguity of *difference*, suspended between forces of wrapping and unwrapping.

Fig. 4

Document: Giorgio Grassi, *Project for the Roman Theatre at Sagunto* (1985–86 / 1990–93), DOC85. Photograph by Roberto Bossaglia, 1994, © Archivio MAXXI, Rome.

Manifesto 4: *Emersion* (Fig. 4). An unusual photograph frames the theatre as a bulwark, a *monument/monition* above an organic settlement spread across a valley ringed by hills. Through a radical erasure of the city—suggesting a (future or primordial?) inundation—Grassi's theatre, the walls, and the church remain as irreducible signs in a (metaphorically?) vanishing landscape.

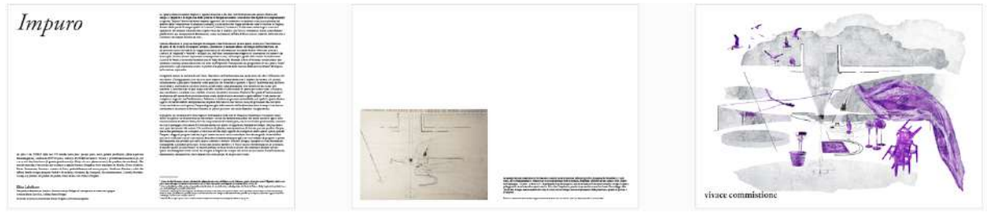

Fig. 5

Document: Francesco Berarducci, *Church of Nostra Signora di Bonaria, Ostia Lido*, DOC78504. Interior view, 1969–78, © Archivio MAXXI, Rome.
Manifesto 5: *Impure* (Fig. 5). A sketch emphatically traces elements of a liturgical space: the immateriality of light; the curving of a surface expanding from centre to periphery. Exploiting the sketch's unfinished, tremulous nature, the presumed purity of sacred space is counterfeited by objects that vitalise (contaminate?). *Impurity*—beginning with reinforced concrete itself—appears not as exception but as the operative truth of the artefact.

Fig. 6

Document: Pietro Sartogo, *The Roman Phalanx Achieves Phalansterian Harmony…*, DOC20016. Plan and photomontages, 1977, © Archivio MAXXI, Rome.
Manifesto 6: *Indiscretion* (Fig. 6). One tile in a twelve-part, symbolic recomposition of Nolli's map, produced in an age of sprawl. Macro-signs overlay, erase, and rewrite the Vatican territory. Through a work of in-discretion—typical of Sartogo, author-curator of *Roma Interrotta*, and of any curator of past imaginaries—the tile is corrupted by torn textile montages that give bodily evidence to the elusive boundary of authorship.

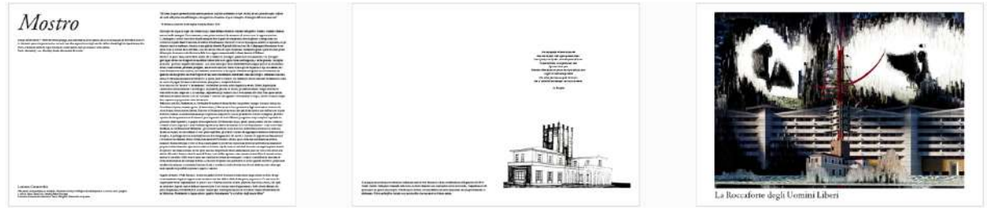

Fig. 7

Document: Lorenzo Chiaraviglio, *Villa Farinacci*, undated, DOCP1/15. Perspective © Archivio MAXXI, Rome.
Manifesto 7: *Monster* (Fig. 7). The drawing depicts a villa composed of a frame that forges continuity among otherwise unrelated elements—a tower and two Neoclassical buildings. The architecture's parasitic character assumes the form of an uncanny assemblage, evoking a monumental register that is anything but reassuring.

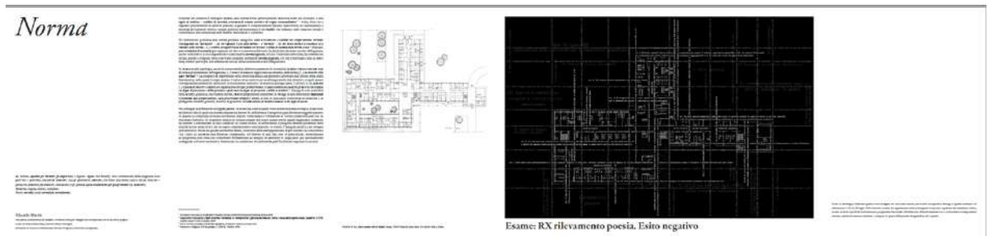

Fig. 8

Document: Vittorio De Feo, *New Civil Hospital of Alghero*, Sassari, 1964. Ground-floor plan. © Archivio MAXXI, Rome.
Manifesto 8: *Norm* (Fig. 8). The hospital plan exhibits certain elements of typological variety yet, in substance, adheres rigorously to the prescriptive logics of space of care (?). When subjected to an X-ray reading, the plan becomes an abstract device that disentangles the catalogue of constraints and regulations from its morphological scheme, translating them into a deformable, interpretable diagram.

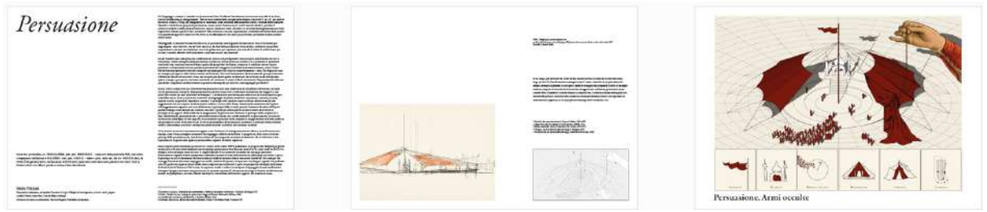

Fig. 9

Document: BBPR, *Pavilion for Large Events in the Park of the Palazzina Reale at Stupinigi for the International Exhibition of Textile Art and Fashion*, 1953. © Archivio MAXXI, Rome.
Manifesto 9: *Persuasion* (Fig. 9). The sketch stages a vast circus tent against which the profile of an "Oriental" mausoleum is set, casting a spell over onlookers. From an elevated viewpoint, the reconstructed structural logic frames the exhibition apparatus as a radical act of persuasion (or fiction?). Every constituent—standard, emblematic insignia of power, draped proscenium, central mausoleum—operates within a calibrated rhetoric of display.

Fig. 10

Document: Superstudio, *Fundamental Acts. The Love-Making Machine*, 1972, DOC50008, © Archivio MAXXI, Rome.
Manifesto 10: *Pleasure* (Fig. 9). With a soft luminescence, a transmitter activates (or is activated by) the nude bodies of a man and a woman lying on a wild terrain in the act of love. The lithograph's caption states that the love-making machine turns love for architecture into love for one's neighbour. Re-sited within an entertainment park—where Superstudio's apparatus becomes one among many architectures programmed for pleasure—its erotic valence is *neutralised*. This landscape of sex toys signals the current commodification (and ostensible democratization) of pleasure apparatuses, together with the stringent temporal regimentation governing their use.

Fig. 11

Document: Studio Passarelli, *Ethnological–Missionary Museum*, 1971. Section of display cases. © Archivio MAXXI, Rome.
Manifesto 11: *Repressed* (Fig. 11). A section depicts a constructive lattice in which the fusion of structures and furnishings (display cases) confers abstraction (inconsistency?) and stasis (obsolescence?) upon its contents: an ethnographic museum—among the earliest Italian examples—rooted in colonial expropriation, the foundation of much modern museology. Centred on Alighiero Boetti's embroidered planisphere and animated by the circulation of Anima Mundi objects to and from their places of origin, the montage underscores the assonance between exposing and exploding—between ethnography and pornography.

Fig. 12

Document: Superstudio, *Continuous Monument, Grand Hotel Colosseo*, 1969, DOC20158. First version, ink, diazotype on card, © Archivio MAXXI, Rome.
Manifesto 12: *Subverted* (Fig. 12). The collage depicts the Flavian Amphitheatre surmounted by a Rationalist superstructure. In Superstudio's radical vision, the aim is to inhabit the icon and convert it into an object of commercial use. A second iteration of the provocation—at a moment when mass tourism has acquired apocalyptic overtones—reverses the symbolic charge by recasting the Grand Hotel Colosseo as an espresso cup: a souvenir that transposes the subversive gesture into a creative act for *connoisseurs*.

6. Tempered Worlds (Epi-Logue)

"*Of the twelve cities [*visions*] you have read, how many did you desire to exist—and how many did you deem would serve the good of humankind?* [37]"

Although limited to a small yet significant generational sample[38], the Experiment acts as a seismograph: it registers "tendencies" and brings emergent narratives into light. We have long since moved beyond "great heroes, great journeys, great ends[39]" and the Experiment bears this out. We are far from the city of radical thought—which nevertheless plays an important role in speculative inquiry, as the repeated selection of items from the Superstudio holdings at the MAXXI archive demonstrates. Equally distant are the peripheries, the disturbed landscapes, the no-man's-lands—in short, the city itself—that dominated theoretical production in the second half of the twentieth century. In the tempered worlds the twelve manifestos seem to recount—worlds of controlled instability, playful catharsis, and mild alienation—the gaze turns inward, discrete, relying on elementary, objectual, measurable certainties. There is, in the end, neither "the lightning nor the sun of the dead," to recall Henry Focillon's words on "visionary" minds[40].
The same considerations apply to language. Within today's collision of communicative and critical apparatuses that frames the dissemination of knowledge, the manifestos *resist* both the exuberant monstrosities tested in the 1990s after the publication of *S, M, L, XL* and the refined austerities of the 2000s[41].
A final remark concerns the retrospective sense of the Experiment in a historical moment when the digital image archive—within an ever-evolving network—processed by discrete, inscrutable, "black-box" operations, accustoms us to a non-critical use of the optical device. Within the rapidly expanding field at the intersection of AI and artistic creation, the most compelling research—as Antonio Somaini argues, curator of *Le Monde selon l'IA*, the first exhibition devoted entirely to AI's "latent spaces"—

returns to the past and to memory by reworking archival images[42]. The Experiment and these investigations seem to share the idea that looking to the past in order to imagine *other* worlds does not necessarily entail prefiguring "new" worlds, utopian or dystopian; rather, it can serve, in a critical sense, to rewrite "possible pasts, counterfactual histories, imaginary memories"[43].

Notes

1 For a reconstruction of the concept of "operative criticism," see the chapter "La critica operativa" in Roberto Dulio, *Introduzione a Bruno Zevi* (Rome: Laterza, 2008).
2 Bruno Zevi, *Architettura e storiografia* (Milan: Libreria Editrice Politecnica Tamburini, 1951).
3 Bruno Zevi, *Prolusione*, Aula Magna del Rettorato dell'Università di Roma, 18 December 1963, typescript, Archivio Bruno Zevi.
4 All studies on the perception of art, from Konrad Fiedler to Maurice Merleau-Ponty and Henri Maldiney, up to Richard Shusterman, support the idea that art is apprehended through "embodied knowledge". For an overview, see Dan Zahavi, *Phenomenology: The Basics* (London: Routledge, 2019).
5 Bruno Zevi, "Michelangelo in prosa. L'opera architettonica di Michelangiolo nel quarto centenario della morte. Models, photographs and comments by the students of the Istituto di Architettura di Venezia", *L'architettura. Cronache e Storia* 99 (January 1964). See also: Paolo Portoghesi, "Mostra critica delle opere michelangiolesche al Palazzo delle Esposizioni in Roma", *L'architettura. Cronache e Storia* 104 (1964).
6 Rudolf Wittkower and his pupil Colin Rowe, and later Peter Eisenman, used synthetic redrawing and analytical deconstruction to extract the "mathematics" or "invariants" of architectural form. Rudolf Wittkower, *Architectural Principles in the Age of Humanism* (London: Academy Editions, 1962). Colin Rowe, *The Mathematics of the Ideal Villa and Other Essays* (Cambridge, MA: MIT Press, 1976). Peter Eisenman, *Diagram Diaries* (London: Thames & Hudson, 1999).
7 Henry Focillon, *Vie des formes* suivi de *L'éloge de la main* (Paris: Presses Universitaires de France, 1955).
8 Charles Sanders Peirce (ed. Peirce Edition), *Selected Philosophical Writings*, Vol. 2 (1893–1913) (Bloomington & Indianapolis: Indiana University Press, 1998).
9, Manfredo Tafuri, *Teorie e storia dell'architettura* (Rome–Bari: Laterza, 1968).
10 Manfredo Tafuri, *La sfera e il labirinto* (Turin: Einaudi, 1980), 6.
11 Marco Biraghi, *Progetto di crisi. Manfredo Tafuri e l'architettura contemporanea* (Milan: Marinotti Edizioni, 2005).
12 Marco De Michelis, "Manfredo Tafuri and the death of architecture", in *This Thing Called Theory*, eds. Teresa Stoppani, Giorgio Ponzo, George Themistokleous (New York: Routledge, 2017), 9–20.
13 The seminar took place in 2024 within the PhD programme *Architecture. Theory and Design* at Sapienza University of Rome, together with Professor Maria Clara Ghia.
14 Umberto Eco, *Come si fa una tesi di laurea. Le materie umanistiche* (Milan: Bompiani, 1977).
15 "KEY WORDS. Beautiful, Sustainable, Together", ed. Simona Chiodo, *Ardeth – A magazine on the power of the project* 12 (Spring 2023).
16 Reinier De Graaf, *architect, verb: The New Language of Building* (London–New York: Verso Books, 2023).
17 Roland Barthes, *Le degré zéro de l'écriture* (Paris: Éditions du Seuil, 1953).
18 The MAXXI (Museo Nazionale delle Arti del XXI secolo) in Rome preserves over 60,000 architectural drawings and 75,000 photographs, plus models, letters, documents, and works by architects such as Aldo Rossi, Pier Luigi Nervi, Carlo Scarpa, Giancarlo De Carlo, Superstudio, and others.
19 Consider, for example, Adrian Reynolds's *This Person Does Not Exist*, 2019.
20 Oswald Mathias Ungers, *Morphologie. City Metaphors* (Köln: Verlag der Buchhandlung Walther König, 1982). The book was published a few years after the 1977 Berlin Summer School, in which Ungers and his assistants—Peter Riemann, Rem Koolhaas, Hans Kollhoff, and Arthur Ovaska—published *Die Stadt in der Stadt. Berlin: Ein grünes Archipel*. A few years later, in 1984, John Hejduk published *Victims*, an urban constellation of 67 small structures distributed across Berlin.
21 Ungers, *Morphologie*, 14.
22 Erwin Panofsky, *Perspective as Symbolic Form* (New York: Zone Books, 1991. Orig. "Die Perspektive als 'symbolische Form'," *Vorträge der Bibliothek Warburg*, 1924/25, Leipzig–Berlin: Teubner, 1927).
23 Maurizio Ferraris, *Documentality: Why It Is Necessary to Leave Traces*, trans. Richard Davies (Oxford: Oxford University Press, 2012).
24 Georges Didi-Huberman, *Écorces* (Paris: Les Éditions de Minuit, 2011).
25 Marco Biraghi addresses this theme in his book on Manfredo Tafuri. Biraghi, *Progetto di crisi.*
26 Gilles Deleuze, *Un manifeste de moins* (Paris: Les Éditions de Minuit, 1979) 87.
27 Deleuze, *Un manifeste*, 97.
28 In those years many intellectuals, across different fields, confronted this problem and turned their work into an intellectual mission of *resistance* to hidden mechanisms of power. For further reading, two recent sources: Gabriele Mastrigli (ed.), *Superstudio. Opere 1966–1978* (Milan: Quodlibet Habitat, 2016). Pier Vittorio Aureli, *The Project of Autonomy: Politics and Architecture Within and Against Capitalism* (New York: Princeton Architectural Press, 2008).
29 Deleuze, *Un manifeste*, 91.
30 Deleuze, *Un manifeste*, 109.
31 Luigi Moretti, "Struttura e sequenze di spazi," *Spazio* 7 (December 1952).
32 Silvio Cassarà, (ed.), *Peter Eisenman: Feints* (Milan: Skira, 2006).
33 Antonio Somaini, (ed.), *Teorie dell'immagine. Il dibattito contemporaneo* (Milan: Cortina, 2009).
34 The seminar, in the 2025–2026 edition, will include work with image generation using DALL·E, MidJourney, Stable Diffusion, or other generative programs.
35 Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," *Illuminations*, ed. Hannah Arendt (New York: Schocken Books, 1968).
36 The seminar concluded with a presentation featuring guests Gabriele Mastrigli and Filippo De Dominicis.
37 Superstudio, "Le dodici Città Ideali. Premonizioni della parusia urbanistica," *Casabella* 361, (January 1972): 45–55. See: Mastrigli, *Superstudio*, 312.
38 This generation was born after the digital revolutions at the end of the last century. For further reading: William John Thomas Mitchell, *Picture Theory* (Chicago & London: University of Chicago Press, 1994). Mario Carpo, *The Alphabet and the Algorithm* (Cambridge MA: MIT Press, 2011). Marianna Charitonidou, *Architectural Drawings as Investigating Devices: Architecture's Changing Scope in the 20th Century* (London; New York: Routledge, 2023).
39 Lyotard, Jean-François. *La condition postmoderne*. (Paris: Les Éditions de Minuit, 1979).
40 Henry Focillon, "Esthétique des visionnaires," in *Maîtres de l'Estampe* (Paris: Henri Laurens, 1930), 193–212.
41 Giovanni Corbellini, *Lo spazio dicibile. Architettura e Narrativa* (Siracusa: LetteraVentidue, 2016).
42 *Le Monde selon l'IA*, exhibition curated by Antonio Somaini, Jeu de Paume (11 April – 21 September 2025). Catalogue: Ada Ackerman, Alexandre Gefen, Antonio Somaini, Pia Viewing, Noam Elcott, Tim Trombley, *Le monde selon l'IA / The World Through AI: Exploring Latent Spaces* (Paris: JBE Books / Jeu de Paume, 2025).
43 Antonio Somaini, *Frontiere della percezione. Intelligenza Artificiale e cultura visuale*. Lecture delivered at the Festival Filosofia, Sassuolo, 15.09.2024 (https://www.youtube.com/watch?v=YF4zZeyXfb8).

Image Captions

Fig. 1 *Accumulation*, Rosita Scura, 2024
Fig. 2 *Collapse*, Michele Anelli-Monti, 2024
Fig. 3 *Difference*, Francesco Masiello, 2024
Fig. 4 *Emersion*, Federica Taschini, 2024
Fig. 5 *Impure*, Elisa Labellarte, 2024
Fig. 6 *Indiscretion*, Gianmichele De Sario, 2024
Fig. 7 *Monster*, Lorenzo Casavecchia, 2024
Fig. 8 *Norm*, Edoardo Marini, 2024
Fig. 9 *Persuasion*, Giulio Feliziani, 2024
Fig. 10 *Pleasure*, Manuela Ciangola, 2024
Fig. 11 *Repressed*, Edoardo Menon, 2024
Fig. 12 *Subverted*, Valerio Trubiani, 2024

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Biography

Caterina Padoa Schioppa is an architect and Associate Professor of Architectural Design at the Faculty of Architecture, Sapienza University of Rome. She curates the thesis laboratory *Small Scale Matters* and sits on the Doctoral Board of the PhD programme *Architecture. Theory and Design*. She is a member of the scientific editorial board of *Ardeth*. Her research investigates architectural and urban design across conditions of reality and virtuality, foregrounding contingent relations between formal structure, political agency, and symbolic meaning. Current projects develop (a) diagrammatic thought as an operative framework for critical thinking and (b) architectures of death as a political-symbolic and imaginal horizon shaping the "world-to-come."
Selected publications: *Transcalarità e adattabilità nel Landscape Urbanism* (*Transcalarity and Adaptability in Landscape Urbanism*, Aracne, 2010); *Kongjian Yu. Turenscape* (Libria, 2019); *Vector Architects* (Libria, 2021); *Architettura e Morte. Riti, sepolcri e resti dell'umano* (*Architecture and Death. Rites, Sepulchres and Human Remains*, LetteraVentidue, 2024); *In Transito. Progetto urbano tra Esquilino, Porta Maggiore, Castro Pretorio* (*In Transit. Urban Design between Esquilino, Porta Maggiore, Castro Pretorio*, with M. Raitano and L. Reale; Libria, 2024).

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[VSR] Visual Scene Research

Conceptual and material reconstruction of furnished modern interior spaces: Le Corbusier in La Plata, Argentina – Julio Vilamajó in Montevideo, Uruguay

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Abstract

The opportunity to restore the original atmosphere of some furnished domestic interior spaces, paradigmatic of different stages of modernity, drives this research. The first step involved tracking down reliable and verifiable information about all the elements that defined the design identity of the spaces when they were first inhabited.
To achieve this, accessing the period photographic records, which are often elusive and scarce, became essential. Both in the case of the architect Vilamajó's own house in Montevideo (1930) and in the case of Dr. Curutchet's house by Le Corbusier in La Plata (1953), the recent recovery or donation of personal archives from prominent photographers (Jeanne Mandello and Horacio Coppola, respectively) propelled the initiative and provided the expected viability.
As in Hitchcock's Rear Window, the frame of each photograph revealed a complete universe and almost the only potential source of information about the objects it contained and their multiple relationships. It was then necessary to fully trust the eloquence of the image and activate the appropriate heuristic tools: spatial, geometric, and dimensional knowledge of architectural envelopes; a well-informed visual culture related to all scales of design; selective application of some codes from forensic investigation; and extensive specialized training in the use of analogy as a research instrument.
As a result of this work, extensive graphic dossiers were created for both case studies, meticulously describing the design of their interiors, including both the furniture and the works of art and personal objects of their inhabitants.
In the case of the Vilamajó House, this allowed for the material reconstruction of its interiors and the opening of the residence as a museum of itself. Regarding the Casa Curutchet (declared a World Heritage Site in 2016), a collection of more than 50 unpublished drawings has been completed, which would allow for a similar reconstruction today.

Key words: interior, visuality, reconstruction, Corbusier, Vilamajó.

1. Introduction – The Crumbs Trail
Whether designing or researching design, we will always need triggers and catalysts, circumstances that set in motion and fuel our interest in research, exploration, and deeper understanding. Here the breadcrumb trail begins: a small sign catches our attention; we follow it into the path ahead, and, with a touch of luck, an opportunity slowly unfolds.
In research, we often talk about the importance of identifying niches of opportunity or vacant spaces.
To achieve this, we must, on the one hand, to cast a discerning and attentive eye on reality and, on the other, relate it to who we are, to our interests and abilities, in a way that reflects our personal and disciplinary identity. When the object of study is still under construction, slippages and estrangements in relation to the previous gaze often occur, beginning to outline unexplored spaces.

2. Vilamajó House- A formative experience
2.1 Julio Vilamajó
Julio Vilamajó (1894–1948), one of the pioneers of modern Uruguayan architecture, created an extensive and memorable body of work in his short lifetime of 53 years. Committed both to history and to his own time, he was neither the most avant-garde nor the most radical among his contemporaries, yet his work represents the essence and commitment of architectural thought with such conviction that even today it serves as an exceptional didactic instrument.
He was a multidisciplinary designer during a period of remarkable growth and development in Uruguay, when key aspects of our national identity were consolidated, many of which endure to this day.

2.2 A house to explore and a few printed photographs
Until now, the descriptive graphics of Vilamajó's house, as seen in books and magazines, hardly did justice to the project. They not only omitted the movable furnishings but also overlooked key fixed elements, such as the masonry library in the living room. The newfound possibility of free and regular access to the house, allowed, for the first time, a careful and detailed measured survey of the house, and the few remaining pieces of furniture and luminaires still in place.
Photographs from the period were few and, following common practice, focused mainly on the exterior. Among them, a series of impeccably crafted images by Jeanne Mandello (1907–2001) from the 1940s stood out. Her photographic report documented the house's urban context, its volumetric composition, and also captured glimpses of its domestic interiors, providing a rare window into the life within the walls.
This series of photographs first made it possible to identify and recognize furniture that had since been lost. Then, by applying projective geometry principles, linear perspective was corrected, and, using the room's known dimensions and orthogonal relationships, reliable indirect surveys of each piece of furniture were produced, restoring their accurate geometry and measurements.
With all the recovered information, it became possible, for the first time, to assemble a comprehensive graphic record of Vilamajó's house capable not only to describe but also capacity to reconstruct architecture's integration within the spirit and culture of the time and place in which it was conceived.
The richness of the resulting visuals proved crucial in shaping a discourse that could accurately convey the design of the house at all scales.
At that point, a decision was made to overturn the traditional paradigm of the illustrated text. The concept of the annotated graphic dossier was introduced: not merely as descriptive drawings, but as a unitary visual discourse intended to organize all collected information in a clear, coherent, and expressive manner.
The graphic dossier was organized into three series of plates, each progressively increasing in focus and detail:
- The first series provides a general overview of the house through a sequence of floor plans, complemented by a detailed tomographic series of cross-sections.
- The second series zooms in to depict each of the house's rooms in greater detail, highlighting their spatial organization.
- The third and final series provides an even closer focus on each room, emphasizing the design of its furniture and lighting fixtures.
Conventions exist for representing architecture, whether empty or furnished, but the challenge of incorporating not only the fixed equipment, but all the house's furniture, design pieces, works of art, everyday objects, and even his automobile, required the development of new representational strategies.

The incorporation of subjective information characteristic of everyday life required a sensitive approach to experiential space, while maintaining a rigorous, scientific, and objective expression.
To honour this set of qualities, a technical digital representation encoded within the orthogonal dihedral system was employed, using a linear style whose black digital filigree on a white background could ensure both unity and legibility throughout the graphic dossier.
The depiction of comprehensive, fully equipped sections deliberately evokes the spirit of Saúl

Steinberg's illustration *No Vacancy* (1946), which Georges Perec cited as one of the sources of inspiration for his book *Life: A User's Manual* (1978). Unveiling the private universe concealed behind the façades holds special relevance in a project as introspective as Casa Vilamajó.
The graphic dossier, conceived in this way, became a key tool for coordinating resources in preparation for the house's opening as a museum. For the first time, precise and trustworthy graphics were available to guide the restoration and material reconstruction of numerous pieces of furniture. Thanks to this meticulous work, when the house opened its doors to the public in 2012, visitors could once again find the built-in sofa, armchairs, coffee table, and floor lamp in the living room; the glass cabinet, table, and lighting fixtures in the dining room; and the daybed, dressing table, and dresser in the bedroom. The house thus gradually began to breathe again with the intimate domestic atmosphere it once held.

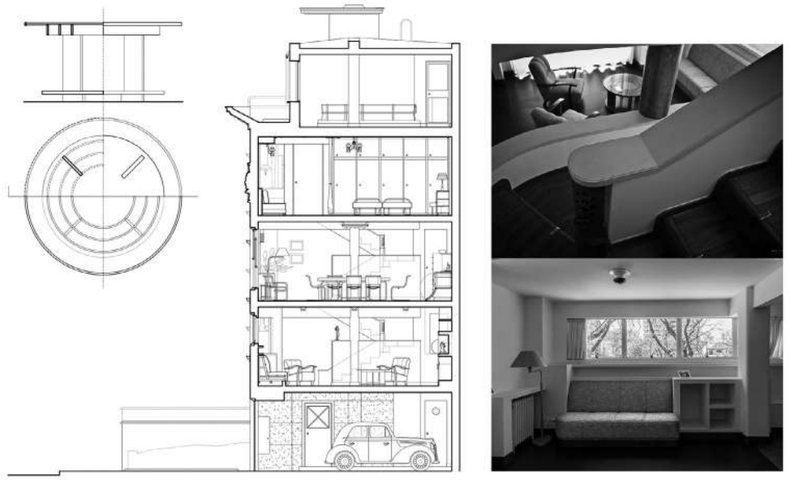

Fig. 1

2.3 Jeanne Mandellos's negatives
Years after the publication of the book, the same series of photographs that had made it possible to identify and document the main pieces of furniture took on new life, thanks to the fortuitous reappearance of their negatives and the subsequent opportunity to digitize them in very high definition. The circumstances of this discovery transformed the series of images into an entirely new documentary source and reformulated the methodological approach and the analytical tools to be employed henceforth.
Mandello had frozen a series of domestic scenes in time, which now allowed for unprecedented approaches. Reading these snapshots not merely as records of each object represented, transformed them into active relational documents that depict a domestic life. The objects began to establish multiple and intersecting dialogues, shifting the focus from mere description to the formulation of interpretations that, in some cases, led to valuable and unexpected findings.
As in *The Rear Window* (Hitchcock, 1954), the frames of these few negatives emerged as the only remaining source of relevant information, potentially capable of filling gaps in our understanding of the inhabited interior spaces of the Vilamajó house.
In the same way that, in Hitchcock's film, we are compelled to trace evidence within the confines of its immutable frames and to speculate on what might lie beyond them, Mandello's digitized negatives invite us to decipher the possible relationships between furniture, glass vases, paintings, sculptures, and books. We dove into these snapshots to search for new clues, and even within what remains hidden from view, we sought new keys to understanding the master's thought.
It soon became apparent that the logic of the investigation had acquired a somewhat detective-like tenor. Based on this observation, the decision was made to consciously draw on this reference and to explore real analogies between the processes of crime scene investigation and the academic study of the domestic scene, as a means of broadening the interpretation of the new research methodologies being tested.

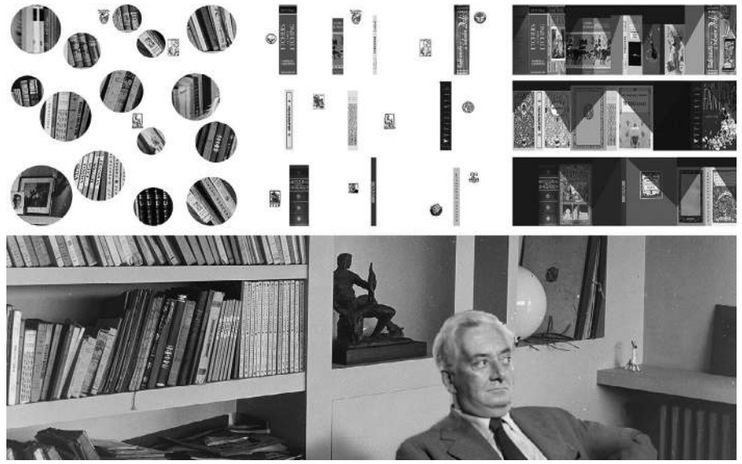

Fig. 2

2.4 Visual Scene Research
A new research project called [VSR] Visual (or Viilamajó) Scene Research, came to light.
The meticulous scrutiny of the different scenes preserved by Mandello for posterity made it possible to:
- confirm the provenance of all the works of art depicted;
- identify and date with certainty a significant number of design objects;
- open the door to a universe of information previously unimaginable from the photographs of the library.

The first two points, beyond demonstrating the enhanced precision afforded by high-definition digital files, also required complementary skills that the research team fortunately possessed: an extensive visual culture encompassing history, art, design, and architecture, together with rigorous training in the use of analogy as a heuristic instrument. These conditions significantly improved the effectiveness of cross-referencing information across both physical and digital repositories, including open web sources. Through these means, we were able to identify, for example, four engravings by Francisco de Goya from the series *Los Disparates*, a reproduction of Gauguin's painting *The Bathers of Tahiti*, a cast of the head of Marcus Brutus by Michelangelo, and several Art Deco Lalique crystal vases.
The third task, focused in particular on the photographs showing the library, proved to be one of the most distinctive and labor-intensive, yet also among the most productive. The first indication emerged when, upon enlarging one of the digital files, the word *Precisions* became visible on the spine of a book in the library, set in the tall and narrow typeface characteristic of the first French edition of Le Corbusier's work. The process did not continue with the same success, as few titles could be identified solely through the clear legibility of the spines. Nevertheless, in many cases one or two words, together with the general structure of the title—such as the number and relative length of the words—could still be recognized.

Another element that facilitated the identification of the books was the visibility of the publishers' isotypes. By researching the publishing houses active during that period, their isotypes were first listed, and many were subsequently identified in the photographs. As a complementary measure, period catalogues from the same publishers were consulted. The dimensions of the books could always be inferred from the known heights of the shelves on which they were placed.
In addition to the systematic cross-referencing of these data—dimensions, partial title readings, recognition of the publishing house, and consultation of the corresponding catalogues—multiple alternative tests involving digital image manipulation were consistently carried out to optimize the reading of the digital archive. Furthermore, targeted searches on websites of auction houses and antique or rare bookstores were conducted to confirm the hypotheses formulated.
Thanks to this synergistic approach and the persistent application of these procedures, it was possible to identify more than 50 titles and, in most cases, determine the corresponding editions.
Each identified book enabled the precise location and study of its contents, which in turn allowed the expansion of the map of interests previously recognized by historians of Julio Vilamajó. Through this process, his admiration for the drawings and engravings of Rembrandt, Joseph Pennell, Frank Bragwyn, and Giovanni Battista Piranesi was revealed, along with his enthusiasm for Walt Disney's animated works. It was also possible to confirm that he collected *The Architectural Record* and maintained an extensive library on etching. His interests encompassed a range as diverse as pre-Columbian cultures,

Renaissance art, and the work of Paul Cézanne, Salvador Dalí and Benito Quinquela Martín. Notably, Honoré de Balzac's *The Muse of the Department*, Herge's *Tintin in the Congo*, and Gracián's *The Critick* were found sharing the same shelf with Cervantes's *Don Quijote de la Mancha.*
Currently, as a direct and positive outcome of this process, the *Vilamajó Library CollaborativeProject* is underway, aiming to materially reconstruct and return to its original site the collection of books identified in Mandello's photographs.

Fig. 3

3. Curutchet House – An architectural experience
The experience of visiting Le Corbusier's Curutchet House in La Plata always leaves a lasting impression. It evokes a primal, almost uncontrollable desire to enjoy, again and again, its remarkable *promenade architecturale*. In our discipline, the delight of architectural experience is often primarily linked to the abstract qualities of space, which can at times transcend the architectural program itself. In this sense, *La Curutchet*, rather than being appreciated merely as a house, is typically experienced as a phenomenological encounter—perceptual, spatial, and temporal—that approaches perfection.
This tendency is also reinforced by certain particular circumstances. First, the house was inhabited by the Curutchet family for only a very brief period. Consequently, its real and effective recognition as a dwelling, as a domestic space, was equally short-lived. Second, the few known images of its furnished interiors have not been widely disseminated. Third, since the house was opened to the public, it has almost always been empty—devoid of nearly all traces of everyday life. Inside, we encounter neither furniture, curtains, nor personal objects, only the unavoidable presence of fixed elements such as sanitary fixtures, kitchen countertops, and storage units, integrated into the architecture itself.

3.1 Triggers
In 2009, the release of Cohn and Duprat's film *The Man Next Door* offered architects a gentle reminder—or perhaps even a revelation: the existence of "another Curutchet," inhabited and previously unknown. The dramaturgy of the film activated its domestic identity in eloquent and tangible ways, compelling us to see it for what it truly is: a house.
In 2012, the same year that the Vilamajó House Museum was inaugurated in Montevideo, a series of period photographs of Curutchet's House was displayed on its walls, showing its furnished interiors, with beds, armchairs, chairs, and tables arranged throughout the rooms. Dividing furniture, lighting fixtures, curtains, plants, everyday objects, and works of art further revealed the use of the house's various corners.
In conversations with representatives of the College of Architects of the Province of Buenos Aires, who manage access to the house, we were told that the displayed sequence consisted of a printed set of photographs, recently recovered, whose origin had not yet been identified. In the absence of precise attribution and of the original negatives—and to aid our memory—we decided to create a provisional photographic record of the framed images on display, allowing the material to be considered as a source for future research.

3.2 The Project
This convergence of circumstances inevitably highlighted a space vacant of information and reflection regarding one of Le Corbusier's projects about which so much had been written: the design of its interior

spaces, as well as the various pieces of furniture that furnished it at the time it was occupied by the Curutchet family.
During this process, it became increasingly clear that once all the scattered information was recovered and articulated, it would be possible to develop an unpublished representation of the work that would help restore an accurate perception of its original domestic character and could eventually encourage future efforts to physically restore the furniture and equipment to their original locations and functions.
From a methodological point of view, we benefited from the successful background and prior experience gained at the house of the architect Julio Vilamajó in Montevideo, where this type of work had proven decisive as a foundation for the comprehensive restoration of its furnished interiors.
A review of documentary sources from the new perspective proposed became essential. Regular consultation of the existing bibliography and multiple visits to the house were fundamental pillars of our work. The patient compilation of the few photographs from the period allowed us to confirm that those that had caught our attention in the house a few years earlier were by the renowned Argentine photographer Horacio Coppola.

3.3 Emerging visual scenes
As in our previous experience in Montevideo, the precarious initial record of these few period photographs became both a key trigger and one of the main sources of information for the research to be undertaken. Each photograph in the series was once again transformed into a frame through which to scrutinize domestic life— in this case, that of the Curutchet family. All traces and evidence had to be sought within the boundaries of each frame, while fostering a dialogue among them.
This apparent limitation revealed the photographic image as an inexhaustible source of information and questions. At each stage of the study, when resources seemed to run out, a new door opened. From our experience with the Vilamajó House, we had already seen how a rigorous, systematic, and trained examination of any visual material can elicit new information, which can then be articulated in the generation of new knowledge.

3.4 The Graphic Dossier
All the information collected made it possible to develop the script of a visual discourse, materialized in a set of more than fifty unpublished plates. The resulting dossier combines pre-existing architectural survey of the house—whose consistency is verified through new, exhaustive on-site photographic records—with indirect surveys of everything contained within. The material certainty of the architecture is thus integrated with the recovered information about the furniture, thanks to the technical graphic processes applied to the available period photographs.
Under a strictly technical and linear graphic expression, which had already proven its communicative efficiency, the architecture, furniture, design objects, and works of art documented in the photographs are reproduced using consistent visual codes. An accurate depiction of the interiors is intentionally constructed in both geometric and experiential terms.
In this way, the three levels of graphic description, with progressively increasing zooms tested in Casa Vilamajó, were recreated: the house, its rooms, and their furnishings.

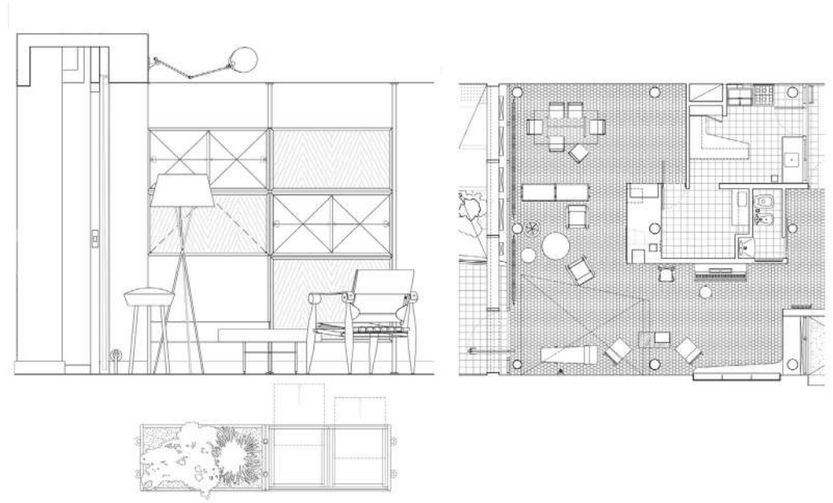

Fig. 4

3.5 The Inhabited Curutchet House

The empty space that visitors encounter today may misleadingly suggest a way of furnishing the rooms in which furniture pieces move freely, creating shifting and flexible corners. Although this idea may persist in certain imaginaries of modernity, we can affirm that, in the case of Le Corbusier—as in that of many other modern masters—it is far from reflecting reality.

From the *Villa Le Lac*, through the *Villa Stein*, to the *Maisons Jaoul*, and even those built in India, all of Le Corbusier's houses trace a precise map of how to experience space. This design precision arises naturally from the configuration of the boundaries of the living environment, whether walls or carefully designed pieces of fixed furniture. Although much of the literature suggests otherwise, the most significant furniture designed by Le Corbusier and his team is likely the fixed, permanent equipment present in all his works—not the *Sling chair* (LC01), the *Petit* and *Grand Comfort* armchairs (LC02, LC03), or even the famous adjustable *Chaise longue (LC04).* The *Casiers Standard* of the *L'Esprit Nouveau* pavilion, the concrete shelves and storage furniture of his first Parisian homes, the table that corbels from the window open to Lake Léman on the garden wall of his parents' retirement home, and the petrified Chaise longue on the threshold between the master bedroom and the bathroom of *Villa Savoye* are examples of enormous eloquence. But they are not isolated; they form a recognizable pattern throughout Le Corbusier's work, particularly in his domestic architecture.

The Curutchet House is no exception. The shared area of the living and dining rooms is organized around a series of fundamental fixed elements: the volume of the wood-burning stove around which all movements in the social area pivot, the dihedral of shelves and storage in the music nook, and the tall, double-sided sideboard—analogous to those designed by George Nelson in the 1950s—which separates the dining area from the conversation corner opening onto the terrace.

The bedroom level organizes its circulatory dynamics around the placement of the sanitary cores of the two main bathrooms, a very long linear built-in wardrobe extending along the north party wall, and a second wardrobe that mediates access to both the main and the half-open bedroom overlooking the double-height living space. In addition, the bedrooms feature light wood dressing tables, integrated with the cylindrical columns that span and support the house.

In the wing directly facing the street, Dr. Curutchet's office—located on the first level above the house entrance—features floor-to-ceiling shelving and storage spaces. In front of it stands a brise-soleil that filters sunlight and regulates the visual connection with the city. Rising upward, it gains depth and becomes an efficient spatial threshold (a sort of immense permeable screen-diaphragm) that, together with the large partially covered terrace, controls the house's exposure and privacy.

Nor should we forget the omnipresence of the large tree, which spans all levels and filters sunlight into the interior of the house. To a large extent, it also functions as fixed equipment, conceived from the outset and gradually materialized over time.

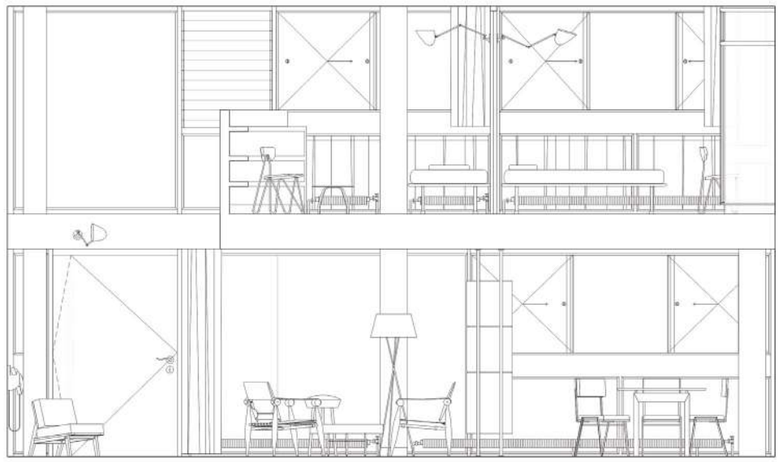

Fig. 5

Conditioned by this general map of fixed facilities, other "species" of furniture populate the space. Among them are: a Swedish upright piano by Nylund & Son with a stool, also Nordic, by Alvar Aalto (1930); several examples of Amancio Williams' version of the traditional *Safari* detachable seat (1943); *W* chairs by César Janello (1947–55); a dining set composed of stackable chairs designed by Gerardo Clusellas (1953), arranged around a table with airplane-tube legs by Perriand-Jeanneret (1928); a low table with a tree-trunk section top, modelled on one designed by the Italian Ignazio Gardella (1941); a Robsjohn-Gibbings tripod lamp; a copy of the *Chaise Longue* by Perriand-Jeanneret (1928); a *BKF* armchair (1938); two comfortable low armchairs reminiscent of those designed by Pierre Jeanneret in Chandigarh, also replicated without cushions for the terrace; and luminaires with articulated arms projecting into the space from the white walls.

Above the piano is a chryselephantine figurine from the 1920s, depicting an Egyptian dancer, and above the party wall, a Cubist painting, possibly portraying the house's owner.

In period photographs of the kitchen, we can identify a gas stove with six burners and a double oven (c. 1950), as well as a Prussian-type module combining an oven and a wood-burning grill (c. 1930), similar to those incorporated by Williams in the Casa del Puente.

On the walls of several rooms, one can see latest-generation Ericsson intercoms, and on the cantilevered shelf attached to one of the cylindrical pillars in the music corner, the first television designed in Argentina. The model of his car was also identified: a 1951 *Chevrolet Styleline De Luxe*.

The result of this detailed and unprecedented process of collecting, recording, and documenting was a graphic dossier of a design universe that faithfully represents the spirit of the time and place in which the Curutchet House was built.

This information, articulated into a unified visual discourse and accompanied by the necessary references and written explanations, will be integrated into a forthcoming book that aspires to envision future actions aimed at the material reconstruction of the house's original furnished interiors and, ultimately, to restore the full living experience of the inhabited Curutchet House.

4. Too Much of an Architect

At first glance, the Vilamajó House and the Curutchet House seem to share little beyond circumstantial connections. Yet both stand as paradigmatic expressions of domestic architecture, each situated within a distinct moment in the evolution of modernity—the early 1930s and the 1950s, respectively. Geographically, they are relatively close to one another, and both were designed by architects recognized as leading figures in their profession: Vilamajó, celebrated as a Latin American reference, and Le Corbusier, acclaimed on the international stage.

They are also brought together in this research, which is decisively shaped by visual documentary sources—period records captured by renowned photographers such as Mandello and Coppola—together with a comparable working methodology.

What is less widely known is that, the year before his death, Julio Vilamajó worked alongside Le Corbusier as part of the design team for the United Nations Headquarters in New York, under the direction of Wallace Harrison. Despite his lifelong admiration for the Swiss master, Vilamajó—a man of strong convictions—stood his ground against several of Le Corbusier's proposals for the building. Later, Le Corbusier, who recognized in his colleague a worthy interlocutor, would remark: *He was a great architect, too much of an architect for me.*

What is less widely known is that, the year before his death, Julio Vilamajó worked alongside Le Corbusier as part of the design team for the United Nations Headquarters in New York, under the direction of Wallace Harrison. Despite his lifelong admiration for the Swiss master, Vilamajó—a man of strong convictions—stood his ground against several of Le Corbusier's proposals for the building. Later, Le Corbusier, recognizing in his colleague a worthy interlocutor, would remark, *He was a great architect, too much of an architect for me*[1].

The deep disciplinary commitment of both masters to architecture, design, and the arts is eloquently embodied today in these two houses, which are open to the public as mirrors of their time and place.

Notes

1. Jorge, Nudelman, *Tres visitantes en París. Los colaboradores uruguayos de Le Corbusier*, Montevideo, Biblioteca Plural, UCUR-CSIC, Udelar, 2014, p. 240.

Image Captions

Fig. 1. *Graphic Dossier of the Vilamajó House*
a) Detail of the design survey of the living room coffee table, based on VSR.
b) One of the 11 full sections of the house incorporating its complete furnishings, furniture, artworks, and personal objects, based on VSR.
c) Two records of the living room with pieces of furniture reconstructed and restored based on the present work.
Fig. 2. [VSR] *Vilamajó (and Visual) Scene Research*
Image manipulation work to identify the books that were part of his library collection.
Fig. 3. *Photographers*
Top row: Jeanne Mandello and her documentation of the inhabited interior spaces of the Vilamajó House,1940s.
Caricature of Vilamajó by Peloduro
Bottom row: Horacio Coppola and his documentation of the inhabited interior spaces of the Curutchet House,1950s.
Caricature of Le Corbusier by Saul Steinberg.
Fig. 4. *Graphic Dossier of the Curutchet House*
General plan and detail of the furbished conversation corner of the Living Room, based on VSR.
Fig. 5. [VSR] *Visual Scene Research, Curutchet House*
Furbished interior elevation toward the terrace of the social area and the bedrooms, based on VSR.

References

Nudelman, Jorge. *Tres visitantes en París. Los colaboradores uruguayos de Le Corbusier*, Montevideo, Biblioteca Plural, UCUR-CSIC, Udelar, 2014, p. 240.

Biography

Aníbal Parodi is an architect (Udelar, Uruguay) and holds a PhD in Theory and Practice of Architecture (ETSAM-UPM). His doctoral thesis, *Altered Scales: The Manipulation of Scale as a Trigger in the Design Process*, received the First International Prize at the XIX Pan-American Architecture Biennial in Quito, Ecuador.
Since 1987, he has taught at FADU, Udelar, and currently serves as Full Professor and Director of the Department of Interior Architecture and Furniture Design at the Institute of Architectural Design. His work encompasses undergraduate and postgraduate teaching, research, and academic leadership. He has lectured and participated in academic events in Argentina, Brazil, Bolivia, Spain, and Italy. His research focuses on the Theory of Architectural and Design Projects, with a current emphasis on *The Eloquence of the Image in the Production and Communication of Knowledge.*

Unbuilt and Un-built
Sawaber Housing Development

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Abstract

The Arthur Erickson Archive at Canadian Architecture Collection of McGill University notes that the Sawaber Housing Development in Kuwait City was “not executed; the design and documentation were not completed.” Similarly, Erickson’s website lists it alongside ‘unbuilt works.’ On both sites it is represented by a striking one-point perspective looking over a plaza with stepped building masses reaching over from either side, just shy of reaching one another. The drawing displays many of the stylistic tendencies of the megastructure projects of the time—a movement which Erickson was an active participant and builder, and within which there was no shortage of unrealized designs—so one might not question the unbuilt status. Very few of the ambitious megastructures with their landform buildings and flying staircases came anywhere near realization. However, from 1981 when it was belatedly opened, until 2019 when it was eventually demolished, the complex stood near downtown Kuwait City, significantly altered by the building contractor and not executed to the full scope, but recognizably derived from the same drawing.

Now that the built development has been demolished, both the built and the drawn versions of Sawaber occupy similar irreal states, existing only through records. This paper draws on research done on Erickson’s perspective drawing and on documentary photographs to construct first, an overlaid 3d model of both using projective geometry and digital photogrammetry, and then a graphic analysis of the intermediate states that might occur between the two. In this reconstruction, the purpose is to relink the authored and disowned versions suggesting that they can be thought of as the opposing limits that bound a space for Sawaber to exist.

This project is the first in a series of applying advanced digital representation for unpacking the complexity of the late wave of megastructures proposed across the MENA region.

Key words: Arthur Erickson, megastructure, computational design, combinatorial modeling, point cloud estimation.

1. Introduction

Reyner Banham's seminal 1976 text, 'Megastructure: Urban Futures of the Recent Past' tracks the origins and development of the megastructural movement, its widespread proliferation through professional discourse and, soon after, acceptance by institutional clients.[1] That moment, which saw ground-breaking new models actually constructed (documented in in chapter seven, 'Megastructure in Academe'), is in many ways a bittersweet culmination of Banham's story, as he documents the movement backsliding into tired expo gimmicks and losing support to new forms of collectivity as the sixties drew to a close. At the time of writing, he already considered the movement to be effectively finished, a "fossil future,"[2] In Banham's formulation, the megastructure was a strategy to rescue the Modernist project of total environment and total design by providing a form that was more sensitive to the spontaneity of everyday life and that could thus avoid the totalizing effect on society and urban life, that resulted from the Modernists' original attempts. This effort was quickly exhausted by the conclusion that the practicable reality was never quite able to live up to the ideas as drawn up.[3]

In actuality, many of the key figures of that scene—Candilis-Josic-Woods, Kenzo Tange, Arata Isozaki, Victor Gruen—built on the notoriety that they accrued as leading megastructuralists and continued to advance an experimental praxis that leveraged large-scale architecture as the primary instrument of civic or urban design. Whereas Banham's narrative played out largely in the United Kingdom, Western Europe, Canada, and Japan, this later echo was buoyed by newly independent countries in the Middle East and North Africa.[4] Although the formal and utopic ambitions of the early megastructures were largely tempered, there is a clear continuity of the centralized, technocratic project, announcing modernity not only as city building, but as an instrument of state-building on the global stage.

This group of ex-megastructuralists included Canadian architect, Arthur Erickson who (with Geoffrey Massey) had designed Simon Fraser University, one of the largest realized projects featured in Banham's book. The drawing published there shows a cubically terraced form that rises out of the ground as it climbs and bridges two hilltops with an elevated spine that is equal parts street-in-the-sky and agora-of-ideas.[5] As a result of the positive reception of the university project, Erickson was invited in 1976-77 to contribute to the reconfiguration of Kuwait City's urban core, through a massive housing complex. As detailed by Asseel Al-Ragam, this project was intended to reset the public conception of dense, urban living in the country.[6]

Erickson's design for the Sawaber housing project proposed 900 residential units in terraced, 9-story monoblocks, grouped around a series of linear axes and community facilities,[7] from southwest to northeast following the dominant wind flow.[8] A heroic one-point perspective drawing looking directly along one of these axes summarizes the primary ambition of the project: the blocks on either side of the drawing step inward dramatically toward one another, stopping just before they close in above. At the same time, they are shifted to avoid mirror symmetry and stepped in plan, with protruding volumes, recessed balconies, and elevated terraces from which the scene is observed. Flying staircases jut out diagonally and switch back inward again. At the center, under the shelter of the residential block, is an urbane plaza of shaded gardens and fountains scattered across small levels. Much more solid than the plug-in style megastructures, it still retains many of the stylistic traits of that era: not only the slotted A-frames of Tange's Boston Harbor and Tokyo Bay projects and the cavernous, triangular undercrofts of Rudolph's Lower Manhattan Expressway, but more importantly, the impression of a system of small assembled units (as in an organic city form) contrasted with the capacity for endless extension out to the horizon or backward behind the picture plane.

On Erickson's website, this project is listed under the heading of 'unbuilt' works,[9] and at this point, that fact should not be terribly surprising: most megastructures remained unbuilt and none of the formal references mentioned above were built either. However, in this case and evidenced in Figure 1, the housing complex at al-Sawaber was most certainly built. By 1981, when construction finished, the complex had only reached 524 units, but in its broad strokes was recognizable from Erickson's design: facing pairs of terraced monoblocks, strung along staggered linear axes from the southwest to northeast. Before the design was completed, the project was taken away and put in the hands of a Korean-Singaporean contracting firm.[10] The buildings retain some of the stepped form, but to a much lower degree and are spaced farther apart so there is no sense of the outdoor enclosure intended by Erickson. The terraced levels between were shrunk to narrow gangways and the parking level left more visibly exposed.

Fig. 1

Erickson's disavowal of the built work created a separation into two parallel projects that co-existed from 1981 to 2019 in a fraught relationship. The architect's autograph drawings represented an abstract, visionary potential, while the building complex went out into the world as a compromised copy, albeit one that was steeped in actual, experientiable reality, immediate sensation, and direct access to a material reality—not only concrete and sunlight, but also damp, mold, ash from semi-regular fires, temporary enclosures, and countless other modifications made by residents. These facts of matter are apparent in the photographs of Tarek Al-Ghoussein's *K File*s series, that document the weedy plazas, peeling paint and wallpaper, dusty furniture and other remnants of vacated apartments.[11] The photos that comprise *K Files* were taken in 2015-17, prompted by the imminent demolition of the entire development, which was already in process of evacuation and finally occurred in 2019.

With the demolition of the built project, the apparent platonic dichotomy between an ideal form and an imperfect physical copy shifts instead to a representational question. Erickson's version of the project exists as a drawing and all evidence of the physical buildings exist as photographs. John May contrasts the photographic and the drawn, or orthographic, not simply as differences of technical production, but also as constituting different temporal relationships.[12] Here, the orthographic is essentially historical, a trace of the time in which it was constructed, one line after another, while the photographic is a 'chemomechanical' capture of an instant. The third element of May's schema is the electrical image, which is continuously updated (processed, calculated, broadcast, displayed) in real-time. In this formulation, there appears, perhaps, a possibility to reconcile the relationship between the two al-Sawabers, to place them on the same footing, and to draw them back together, the unbuilt and the un-built, through the construction of a third entity that contains both.[13] The remainder of this paper explores approaches of digital media that permit a drawing to be peeled open, projected, morphed, and recombined.[14]

2. Drawing Apart

"Architectural drawing… makes it possible to see some things more clearly by suppressing other things: something gained, something lost. Its power to represent is always partial, always more or less abstract. It never gives, nor can it give, a total picture of a project, so in consequence it tends to provide a range of subject matter"[15]

In Erickson's drawing, the first impression is that of a seamless surface, rendered in an even pink-buff coloring across everything—walls, stairs, and floors alike—with regular, gridded dimensions that allow precise alignment of joints and corners, and especially the centralized, single-point perspective. No distractions, no conflicts, or odd juxtapositions seem to be present, it is very much the kind of polished rendering that is made to be put in front of a client.

By reconstructing the three-dimensional volume from the drawing, we can identify that there are, in fact, many ambiguities in the drawing that aren't otherwise obvious. The specific degree of foreshortening produces curious alignments between edges that are not on the same level or depth

but occasionally appear to be continuous. In actuality, there are exaggerated recesses that do not appear and what we see is, in fact, spread farther apart than it seems. Many connecting moments, such as the location of stair landings, are screened by volumes that cantilever out into the central space, while balconies are set back within the building mass and further obscured. Further adding to the confusion, Erickson renders both direct shadows and secondary shadows cast by reflected light but applies them selectively such that adjacent planes may appear to have light coming from oscillating directions. At times there are even geometries which produce Escher-like moments of impossible forms, with walls that appear in multiple planes simultaneously based on which end one looks.

In order to realize this reconstruction, We first used the software fSpy to compute a comparable focal length and viewpoint location for the image.[16] These parameters were assigned in a floating viewport in Rhino3d and the image was placed on a surface perpendicular to the camera. Starting from one of the frontal planes and working both forward and backward, the primary volumes were first placed and adjusted in alignment with the drawing to get a rough massing. When this was sufficiently resolved, we then added surfaces shaped to represent just the portion of the presumed volume that was visibly depicted in the drawing. Using Grasshopper, these surfaces were converted into mesh geometry so that the original drawing could be projected onto them using a custom texture mapping that radiates from the viewpoint. This gave immediate visual feedback on whether the surfaces were placed correctly in reference to the image. Even when wildly distorted by foreshortening, these projected fragments of the drawing were able to show more clearly where edges and shadows should fall, even to the extent of prompting corrections in the first spatial mapping.

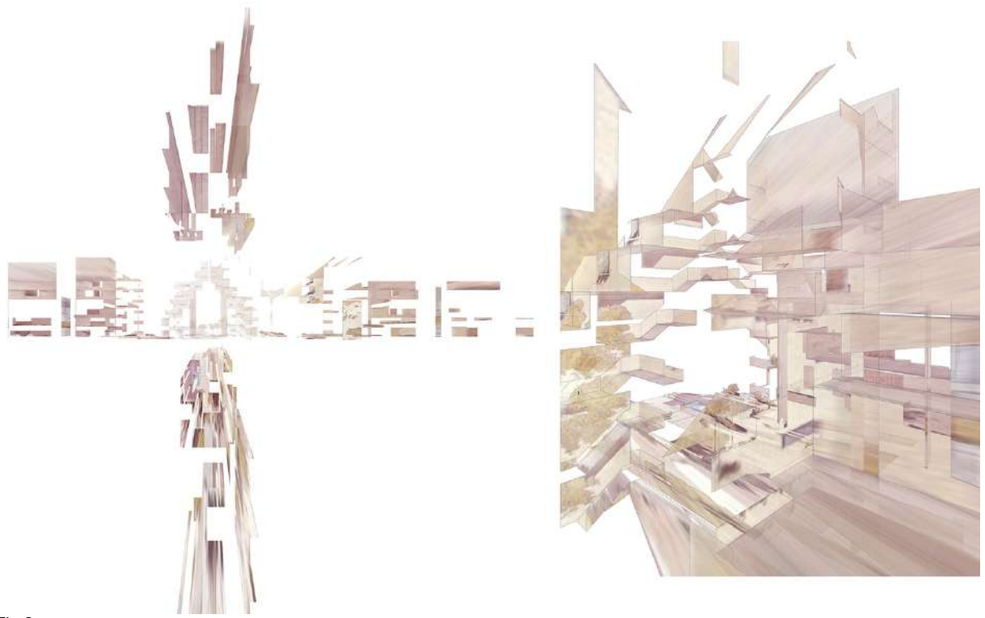

Fig 2.

Reconstructing the volumetric structure behind the drawing also reveals how little we are actually shown in Erickson's drawing. The effect of fragmentation can best be seen in animation, rotating the view from the privileged vantage point and around to the side and then back, letting everything 'snap' into place again like one of Brunelleschi's perspectival mechanisms. When out of alignment, the fragments float in space with less to anchor them than we would expect. In a still image, we can illustrate the sparseness through an unfolded or developed surface drawing. Unlike the 18th century examples by Robert Adam and others, that Evans cites in the essay referenced above, this technique is not utilized to remove the distorting effects of a perspective drawing, but to call attention to them and their limitations.

The image in Figure 2 depicts all of the frontal planes—especially the recognizable, stepped profile of the massing—at its center and 'unfolds' the other orientations to their various directions: the ground plane is folded downward, and the ceiling surfaces or cantilevered overhangs are folded up. The side

walls perpendicular to the image plane are folded out to either side. To imagine putting the surfaces back in place, note that the hinge point adjacent to the central frame is always the plane closest to the viewpoint and the outer edges are the most distant. This is counter to the visual effect, that results from the diverging lines and stretching of the pixel grid onto oblique surfaces. Despite the developed drawing as a purely orthographic projection, it seems to still have a perspectival effect that inverts the original: the ground surfaces farthest from the original viewpoint in the perspective drawing are of course the smallest due to foreshortening, whereas they cover the largest area in an orthographic reconstruction (the lowest part of the image in Figure 2).

What is also apparent is the absolute thinness of the drawing and, by extension, also the outdoor room. In this sense it fits well with Evans' qualification of Adam's design as being limited to an "enveloping surface"[17] that draws everything to its edge and leaves the contained space empty. We note that the developed surface works surprisingly well exactly because the design operates with such flatness, there is very little true or implied depth such as through literal or implied transparency.

The process of constructing this model is surprisingly similar in its mechanics to the methods of 3d capture that would typically be used for built works out in the world: either LiDAR scanning (if the site is physically accessible) or photogrammetry applied on sequential images or video clip.[18] In either case, fragments of a visual image are projected out into space from a central point. Surprisingly, given the long phase of threatened demolition and advocacy campaigns, the available photo documentation of al-Sawaber is quite sparse. Photogrammetry works best when there is a great deal of overlap between photos from the same camera and focal length (ideally sequentially ordered) and when the object is near enough to observe parallax in even small changes of position. The photos of al-Sawaber have the opposite characteristics, mostly from middle distance, often emphasizing the flat planes of featureless concrete, not typically overlapping but jumping from landmark to landmark, and taken on a wide array of different cameras.

Fig. 3

As a result, we have instead utilized a new AI model, trained to estimate 3d scenes from monocular vision.[19] Given a single photographic image, it is able to produce a color-graded depth map or 3d pointcloud in a matter of seconds. This is achieved through a radically simple approach that disposes with typically complex processes and simply focused on predicting for each pixel the direction from which it was viewed and its depth from that viewpoint.[20] Taken together, the depth-ray representation of every pixel is sufficient to implicitly determine the viewpoint by projecting backwards from the image frame.[21] Figure 3 shows some first steps with the results from around 40 point clouds arranged around the site in their original locations.[22] Additionally, some of the photographs have been further segmented and projected onto the volumes of Blocks 11, 5, 3, and 2 using the previously described method.

Point-cloud based drawings produce interesting optical results unlike those of typical drawing or imaging.[23] They capture the detail of textures, foliage, and material incredibly well, having indexical origins in digital photography, but they resist impulse to zoom in. The closer an object is, the lower the

visual density of the cloud and the larger the space between points. The imagability of the model only converges with sufficient distance, which also means that these drawings demonstrate a paradoxical transparency wherein one can see through foreground objects to a background that appears in sharper detail. In this instance, the variety of image sources (different lens angles, and object distances) produces a patchwork of varying densities and overlaps. In these overlaps, two different photographic instants can also co-occupy the same space, for example in one place there are traces of a news photo of an apartment on fire and another tourist photo of the charred remains.

3. Drawing Together

The first section has been concerned with explorations of the drawing produced by Arthur Erickson—explorations that operated through methodologies, modeling and (re)drawing—in order to unravel a bit, the impression of a 'finished product' and to find openings for alteration or simply alterity. In the second experiment, we similarly translated the found photographs into an imageable digital model. Given the desire to draw connections between the original and the built, it might be possible to extract something more from the project's lineage as an offshoot of the megastructure movement. Although material aesthetic could not be farther from the industrial, disposable, plastic of plug-ins of the 60s, both versions of al-Sawaber give a feeling of having a logic of assemblage, from oversized blocks in their sculptural mass and in the solutions for dealing with the project scale.

If the two versions are taken as opposing ends of a design schematic, it is possible to imagine series of steps that interpolate between them by scaling and sliding volumes in and out. For this to work, the source material at either pole needs to be reconstructed with a comparable makeup. Referencing the typical unit plan, we were able to make a first approximation of this interpolation with 28 volumes for a typical floor and a few additional for the ground, structure, and stair cores. In sum, this represents most of the massing effects that are visible from or exposed to the exterior. This study is presented in Figure 4 as a linear gradient with 4 discrete steps interposed between the two ends. In fact, as it is modeled in Grasshopper is able to be able to smoothly and continuously deformed from one state to the other in infinitesimal increments.

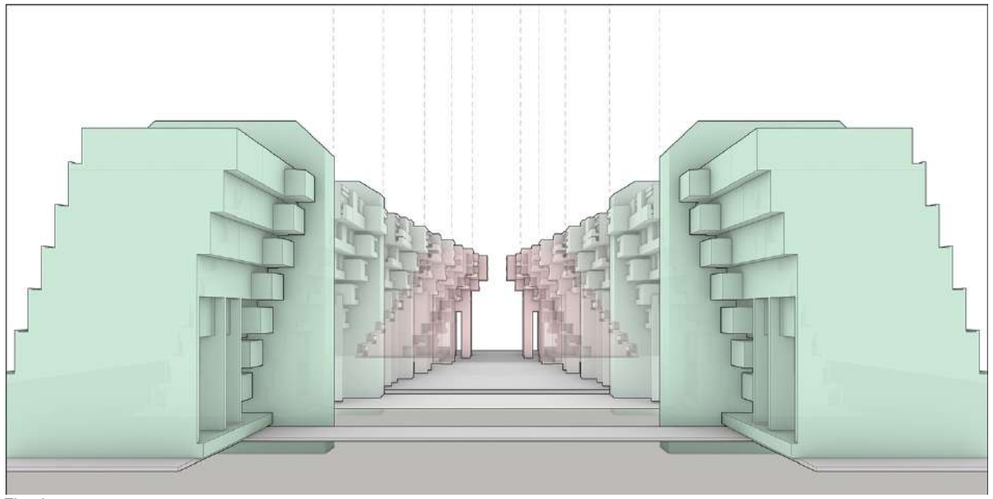

Fig. 4

However, it is not merely a formal resemblance that we are interested in, but a kind of systemic logic for aggregation. "Drawing," write Andrew Kudless and Adam Marcus, "has a unique ability to capture the abstract logic of an idea, and this capacity to formulate, refine, and understand foundational design concepts increases in importance as the discipline's entanglements with computation become more pronounced."[24] In our example, this means a logic of aggregation that is not dependent on a volumetric whole, nor is it necessary for the aggregation to always occur between similar stages. A stair module or residential unit should be able to plug in to the right component regardless of whether it belongs to step one, or step five. In Figure 5 below, a series of such composite assemblages are displayed.[25] These maintain the relational, topologic structure of the al-Sawaber housing but produce a much wider range of buildings, sometimes returning to a near-vertical slab block (no. 001, 010), or projecting out large balconies (no. 016). Future work will develop the internal logic, particularly of the

structural and contextual placement. While this workflow is certainly capable of tackling the scale of a project like al-Sawaber, it does not yet have site-sensitive features incorporated.

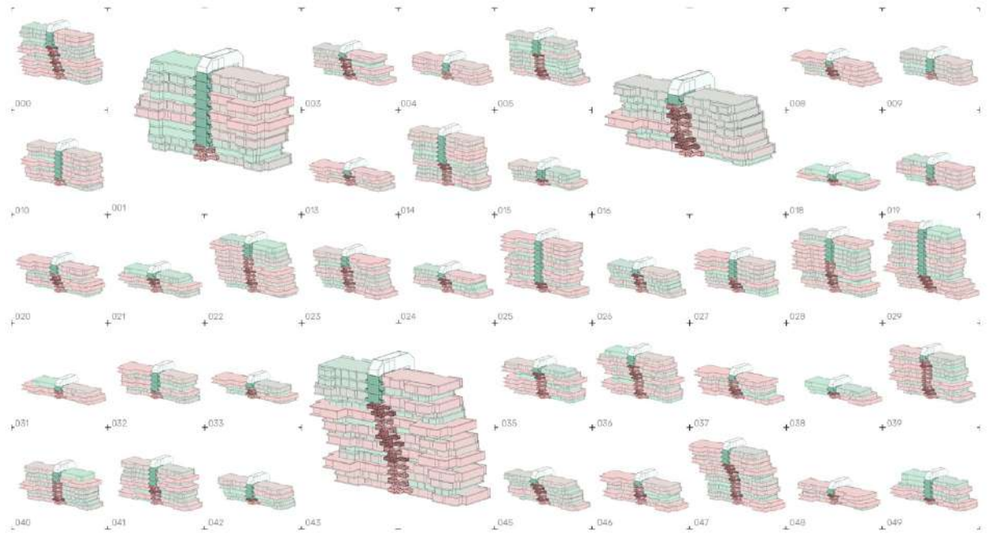

Fig. 5

Combinatorial sets of truly large possibility space are still something of a novelty in architecture and do not yet have a satisfying representational solution. While complete exhaustion is possible in some trivial cases (such as Sol Lewitt's Incomplete Open Cubes), and highly functional or procedural compositions might be represented in flow charts (for example, Price and Pask's Fun Palace diagrams) discrete assemblage is pushing far beyond this in terms of quantity. Here we show 41 randomly generated combinations, but this is a miniscule subset of total number of possible outcomes (for even a 6-story aggregation, the set of possibilities is greater than 15.6 billion). The current model draws from the precedent of Jean Nicolas Durand's Précis des leçons d'architecture, in the form of a catalog that implies the extent of possible combinations but cannot hope to identify every option.

4. Conclusion

We have argued elsewhere that "the image is partial. The image engages and requires reciprocal engagement; the situation and the particulars of its deployment are an active part of its definition at any given moment."[26] This attitude is largely pointed toward the reception and interpretation of drawings, but here we have also attempted to work though some possibilities of more active engagement where the openings created by the image's partiality are taken as a field for design. These openings are especially productive in new media of modeled images that go beyond the traditional graphic techniques of conventional drawings. This work is still early in its exploration and refinement, but the intention is to synthesize the three methods: working with the fragmentation of images into spatial point clouds and integrating this into a parameterizable, combinatorial model.

Notes

1. Reyner Banham, *Megastructure: Urban Futures of the Recent Past.* London: Thames and Hudson, 1976.
2. Banham, *Megastructure*, 210.
3. Banham, *Megastructure*, 9, 216.
4. A fitting return, as Le Corbusier's Plan Obus for Algiers was identified as the "most general ancestor" of the megastructure idea.
Banham, *Megastructure*, 7.
5. Banham, *Megastructure*, 136.
6. Asseel Al-Ragam, 'The Destruction of Modernist Heritage: The Myth of Al-Sawaber.' *Journal of Architectural Education* 67, no. 2 (2013): 246-7.
7. Canadian Architecture Collection, Irena Zantovska Murray, ed. *Arthur Erickson, The Middle-East Projects, Guide to the Archives*. Montreal, McGill, 1999, 55.
8. David Stouck, *Arthur Erickson: An Architect's Life*. Douglas & McIntyre, Madeira Park, 2013, 328.
9. 'Sawaber Housing,' Arthur Erickson, accessed September 15, 2025 https://arthurerickson.com/unbuilt-projects/sawaber-housing/1.
10. Asseel Al-Ragam, 'The Destruction of Modernist Heritage," 249.
11. Bergen Hendrickson, 'Liminal Belonging' *Khabar Keslan*. April 10, 2018.
https://www.khabarkeslan.com/articles/2018/3/26/liminal-belonging.
12. John May, 'Everything is Already an Image.' *Log*40, (2017).
13. There is some sense of Graham Harman's claim "that two entities influence one another only by meeting on the interior of a third, where they exist side-by-side until something happens that allows them to interact," though the connection is somewhat more metaphorical than ontological in this case.
Harman, Graham. 'On Vicarious Causation.' *Collapse*, (2007): 190.
14. "[S]oftware… much like analog drawing, contributes to the formulation of that very thought from our first encounter with it."
Canizares, Galo. 'More Translations (from Drawing to Building)' *The Ethical Imperative: 106th ACSA Annual Meeting Proceedings,* (2018): 147.
15. Robin Evans, 'The Developed Surface: An Enquiry into the Brief Life of an Eighteenth-Century Drawing Technique. *Translations from Drawing to Building and Other Essays*, Architectural Association, London, 1997. 199.
16. 'fSpy,' Stuffmatic – Per Gantelius, accessed September 15, 2025, https://fspy.io.
We used a camera with 16mm lens length setting, with target location centered horizontally on the image and 67.1% of the way down, set back a distance equivalent to 90.6% of the image width, and using 2-Point Perspective projection (n.b. this is something of a misnomer in Rhino3d, what it indicates is an effect similar to a shift lens which preserves parallel vertical lines).
17. Evans, The Developed Surface,' 209.
18. Ng, Amelyn. 'Scanning, Storing, Checking: Architecture and the (Machine-Readable) Image,' *Drawing Codes: Experimental Protocol of Architectural Representation*, Andrew Kudless and Adam Marcus, eds. AR+D, 2024.
19. 'Depth Anything 3' ByteDance-Seed, Hugging Face, accessed December 10, 2025
https://huggingface.co/spaces/depth-anything/depth-anything-3
20. 'The 'Minimal Modeling' Revolution: How Depth Anything 3 is Rewriting the Rules of 3d,' Izumi Okano, Medium, November 18, 2025.
https://medium.com/@aeckel/the-minimal-modeling-revolution-how-depth-anything-3-is-rewriting-the-rules-of-3d-778095fa10de
21. 'Depth Anything 3: Recovering the Visual space from Any Views,' Haotong Lin et.al, arXiv ePrint, Novermber 13, 2025.
https://arxiv.org/abs/2511.10647
22. Currently, we have collected about 500 images and a handful of video clips from scouring the internet. After removing duplicates and extremely low-resolution images, and accounting for photos whose location on site cannot be determined, we expect to be able to use about half of that number.
23. Ivsic, Lucija, Jon McCormack and Vince Dziekan. 'The Point Cloud Aesthetic: Defining a new visual language in media art,' *Virtual Creativity 13*, no.2 (2023): 221ff.
24. Kudless, Andrew and Adam Marcus. *Drawing Codes: Experimental Protocols of Architectural Representation*. AR+D, 2024.
25. This study makes use of the Assembler plugin for Grasshopper: https://github.com/Co-de-iT/Assembler.
26. Trevor Ryan Patt, 'The Collective Image: Form, Figure, and the Future,' Architecture at the Edge of Everything Else, Esther Choi and Marrikka Trotter, eds. MIT Press, Cambridge, 2010.

Image Captions

Fig. 1. Photograph of the al-Sawaber estate in 2019. Courtesy of Rebecca John.
Fig. 2. A developed surface representation derived from Erickson's perspective drawing (left) and an off-axis view of the digital model.
Fig. 3. Superimposition of pointclouds generated from collected photos
Fig. 4. Interpolation of building form from Erickson's design (rearmost) to the built version (foremost) in five steps.
Fig. 5. A catalog of approximately fifty combinatorial variations drawing from all interpolated modules.

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Biography

Trevor Ryan Patt is an Assistant Professor at the American University of Beirut and the Architecture Department Chair. He holds a PhD from the École polytechnique fédérale de Lausanne, where his dissertation developed a conceptual and technical framework for computational modeling for responsive urban design. His current research is primarily on muli-agent systems with an emphasis on utility for designers.

Vertical Ground

Visual Inquiry into the Integration of Innovative Air Mobility in the Urban Environment

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Abstract

This research examines the architectural integration of vertiports within complex and stratified urban environments, responding to the emerging framework of Innovative Air Mobility (IAM).

The study approaches the vertiport as an architectural and spatial inquiry emerging from fragmented urban conditions and the lack of typological precedent. IAM infrastructure reconfigures urban circulation by introducing verticality as a new operational layer. In this framework, architecture is required to engage with ground, air, and intermediate thresholds simultaneously.

The study adopts axonometry as the exclusive design and research method. Drawing is understood not as a representational outcome, but as an operative tool for analyzing spatial hierarchies, engaging with urban complexity, and informing design strategies. Axonometric projection enables critical readings of vertical layering and supports iterative spatial testing in the absence of built examples.

Two sites in Milan—Bresso Airport and the Ex-Slaughterhouse—serve as case studies to apply four architectural actions: replacement, rarefaction, stratification, and addition. These are deployed across phased design scenarios to test spatial transformations over time. From this iterative process, three design strategies emerge: ecological interplay, adaptive reuse, and hybridization. These strategies redefine the vertiport as an adaptable architectural system responsive to the complexities of the existing urban fabric. In this frame, the aerial infrastructure is capable of embedding ecological systems, redefining existing buildings, and hybridizing with other functions, as civic, logistics, and mobility.

The research introduces the notion of vertical ground as a conceptual framework to interpret the sectioned and stratified nature of contemporary cities. Within this paradigm, axonometric drawing enables design to frame IAM not as a disruption, but as an architectural opportunity. The project situates the vertiport as an active element in the transformation of the urban environment.

Key words: innovative air mobility, vertiport, design strategies, axonometry, tool.

1. Introduction

Innovative Air Mobility (IAM), first introduced as a concept in 2016, proposes a reconfiguration of urban transport through electric vertical take-off and landing (eVTOL) systems, enabling a third spatial dimension of movement within cities[1]. IAM introduces not only a new mode of transport but also a novel layer of infrastructural and spatial complexity. Its implementation, however, is not just a technological question—it is an architectural and urban challenge.

At the center of this emerging system lies the vertiport: the spatial and operational infrastructure that enables the interface between air and ground. Unlike traditional transportation hubs—such as train stations or airports—vertiports lack built precedents[2]. Actually, they do not evolve from typologies that have been historically sedimented, nor are they rooted in urban habits or recognizable architectural conventions. This absence of precedent situates vertiports in a unique condition of conceptual and spatial blurriness. Their configuration, scale, and integration into existing urban environments remain open questions. These infrastructures are expected to adapt to context-specific constraints and operational requirements. Architecture is therefore required to operate within a condition where the program is emergent, and the urban environment is already dense, fragmented, or obsolete, demanding strategies that are both adaptive and anticipatory.

This paper frames the vertiport as a spatial hypothesis—an architectural construct that emerges from the opportunity to rethink infrastructures, and the relation between urban density and new forms of aerial access. IAM challenges the horizontal paradigm of urbanism by expanding the vertical section into a layered operational space. Architecture negotiates aerial corridors, roof-based platforms, and mid-air thresholds, producing a new vocabulary of spatial interaction.

The research[3] employs axonometry as both a conceptual and operative tool. Axonometry is used as a method for interrogating spatial relationships that are otherwise difficult to visualize. It allows for the simultaneous reading of ground, volume, and the space of the air.

2. Questioning Verticality as an Approach to Designing the Airspace

Verticality in architecture has historically signified more than height or visibility. It has often operated as a conceptual framework for reconfiguring spatial, social, and infrastructural relationships. Throughout the 20th century, radical architectural visions explored vertical space as a territory for experimentation, embedding within it the potential for transformation.

Archigram's Plug-In City envisions a megastructure composed of infrastructural trunks housing services and circulation, into which modular units can be plugged and replaced. The system supports constant spatial reconfiguration, where movement is not about vehicles but about flexibility within a vertically organized framework. Infrastructure becomes both frame and interface, enabling a society in motion and redefining airspace as a livable dimension[4].

Takis Zenetos's Suspended City imagines a lightweight, cable-suspended structure hovering above the landscape. Rooted in cybernetics and telecommunication theory, it proposes a dematerialized, non-invasive urban system. Visual and structural lightness expresses an ideology of ephemerality, where the city floats above the environment[5].

Besides the radical experimentation, their projects were constructed through drawing as a critical and projective medium. In both cases, representation is not an afterthought but an active site of inquiry—a means to speculate, and spatialize emerging logics of urban life. The visionary quality lies as much in their conceptual ambition as in the way they were visually assembled. Their drawings work as a methodological device, enabling the architects to juxtapose heterogeneous systems, insert modular disruptions, and fragment conventional readings of space. These projects use drawings to test ideas, articulate relationships, and challenge models. They show how representation itself can become an instrument of design research, projecting urban futures that remain unbuilt yet deeply influential.

3. Axonometry as a Methodological Tool

To investigate the spatial challenges linked to the Innovative Air Mobility, the research adopts axonometry as its exclusive methodological tool. In this framework, axonometric drawing becomes the core of the investigation—used to construct, test, and compare spatial hypotheses in the absence of built precedents.

Axonometry is used for its capacity to construct a unified spatiality where information available in plan and section coexist without distortion. Axonometry offers a neutral, consistent, and scalable projection. It allows for multiple ways to experiment while preserving dimensional reliability. This analytical precision is essential to the research, as it enables the identification of spatial hierarchies, latent continuities, and unresolved thresholds between built form, circulation systems, and urban morphology, conditions often hidden in conventional orthographic representation[6].

This analytical projection reveals spatial discontinuities—between roofs and voids, built masses and flight paths—that conventional orthography fails to visualize. These discontinuities are central to IAM design, which operates through non-terrestrial trajectories and stratified navigation zones. Axonometry, in this sense, becomes a conceptual site of architectural reasoning. It produces

knowledge not through representation, but through spatial construction, allowing multiple scenarios to emerge within the same structural diagram. Given the current absence of architectural representations for vertiports, these drawings form a necessary contribution. They respond to a gap in the aerial mobility field where technological and regulatory frameworks are extensively discussed, yet architectural articulation remains largely underdeveloped.

This approach draws on three key references. First is the work of James Stirling, whose axonometric projections demonstrated that drawing could serve as a vehicle for thematic and structural argument, not merely illustration[7]. Stirling's disciplined projections revealed the transformative capacity of architectural operations within a single drawing space—a method echoed in this research.

Second is the legacy of John Hejduk, whose axonometries operated at the "degree zero" of representation. Hejduk used drawing not to reflect the real, but to construct alternative spatial orders through autonomous graphic thinking. Similarly, this research treats axonometry as a condition of thought—capable of generating spatial logics independently from built form. Its abstraction is not a limit, but a strength, allowing the drawing to stand apart from visual habit and technical constraint[8].

A third reference is the editorial position of San Rocco magazine, which insists that drawing is not a retrospective act but a project in itself. The process of redrawing is treated not as reproduction but as a form of design reasoning: a way of reconstructing, measuring, and reframing spatial systems to reveal what remains otherwise under-read[9]. Within this view, the drawing is epistemological. It precedes design rather than following it.

Axonometric projection is therefore used to explore the interaction between existing ground conditions and the insertion of aerial infrastructure. It allows the research to analyze the spatial consequences of IAM through sectioning, layering, and recompositing. Drawing becomes a device through which the urban environment is opened and examined. It allows for a critical assessment of where and how aerial systems can appropriate or activate residual spaces—rooftops, voids, interstitial platforms.

The drawings presented in this research are all original and authored by the researcher. In a landscape where industrial stakeholders produce many renders without architectural depth, the decision to produce drawings through a self-authored method reclaims disciplinary action. It repositions architectural drawing as a primary site of inquiry—not a by-product of technological speculation, but a critical and conceptual framework through which cities can be thought, imagined, and projected.

4. Strategic Actions for Aerial Infrastructure Integration

Infrastructure has long been a force in the development of cities, shaping patterns of movement, connectivity, and economic activity. Unlike traditional architecture—often defined by formal expression and programmatic specificity—infrastructure operates as a networked system, privileging adaptability, efficiency, and logistical performance. Yet the nature of movement itself has changed; it is no longer organized linearly, but unfolds through a series of distributed choices within complex, overlapping systems[10]. This evolution has transformed transportation hubs from mono-functional conduits into multifunctional urban platforms, where commerce, mobility, and public services converge.

Within this expanded understanding of infrastructure, Milan offers a dynamic context for architectural experimentation on the integration of aerial mobility systems. The city is approached in an operational attitude—as a layered urban field marked by infrastructural presence, latent spatial opportunities, and competing development pressures. In this context, vertiports are architectural devices capable of reactivating underutilized sites and reframing urban conditions. The aim is to adapt the city to the logic of emergent mobility and explore how architecture can engage aerial access as a catalyst for urban transformation.

As infrastructure becomes increasingly shaped by emerging technologies, the role of architectural design is re-centered—not only to accommodate new mobilities, but to reinterpret the relationship between form, use, and network. The integration of new infrastructural systems reopens fundamental questions about architectural language and its operative connection to function[11].

Within this operational reading of Milan, two sites were identified for further investigation: the Ex-Slaughterhouse, situated within the central urban fabric, and Bresso Airport, located along the northern periphery. Both are characterized by unresolved spatial conditions, infrastructural disjunctions, and latent programmatic potential—qualities that make them particularly suited for testing the architectural integration of vertiports. The choice was driven by the need to confront real constraints and layered urban complexities.

The investigation is structured around four architectural actions: replacement, rarefaction, stratification, and addition. These are intended as operative modalities that allow the project to mediate between existing urban conditions and future scenarios. Each action defines a spatial logic through which vertiports can be integrated, not by removal or insertion alone, but through relationships between the different types of actions. Architectural transformation reveals the hidden potential of existing structures, turning them into opportunities for design innovation[12].

Replacement involves the complete removal of an obsolete structure to introduce a new spatial system. It engages with contexts where functional disuse or decay opens the possibility for radical redefinition. Replacement enables the dismantling of redundant volumes, making space for new programs and circulation patterns.

Rarefaction operates through subtraction. It involves the loosening of built density to create voids, corridors, or flows necessary for vertical mobility. Particularly effective in compact or saturated environments, rarefaction recalibrates the balance between solid and void, rethinking ground access and air–surface transitions. Rarefaction is used to clear strategic zones, allowing aerial paths to interface with existing urban tissues.

Stratification introduces new architectural layers without erasing the existing ones. It exploits the section of the city by adding platforms, decks, or structural additions either above or below the current elevation. This action responds directly to the spatial logic of aerial mobility, which demands new thresholds of access and vertical circulation. Stratification is used to overlay new programs and mobility functions on top of existing infrastructure, creating a coexistence of multiple systems.

Addition is conceived as a grafting operation. It attaches new elements to existing structures, maintaining continuity while introducing new roles. This action preserves the character of the original architecture, allowing the vertiport to emerge as a visible yet integrated layer.

These four actions are not applied in isolation but are deployed through sequential and temporal configurations, generating phased development scenarios. The project constructs a framework of architectural operations responsive to the temporal unfolding of IAM. Each action responds to a phase, enabling gradual adaptation and layered coexistence. Design operates across multiple timeframes, envisioning how each site might evolve in response to changing conditions[13]. The architectural project arises from the interplay between elements of differing temporal permanence, where enduring structures coexist with more mutable layers. In this context, drawings identify and direct the design actions necessary to guide transformation over time[14].

5. Sequencing Architecture between Airfield and City

Bresso Airport is located north of Milan, serves as a testing ground for the integration of Innovative Air Mobility infrastructure within an underutilized yet operational airport. Its current condition is marked by a scattered ensemble of outdated buildings and disconnected programs, spatially detached from the surrounding urban fabric. Rather than viewing these inconsistencies as constraints, the project treats them as opportunities for architectural reconfiguration. The proximity of Bresso and Parco Nord, combined with the site's latent infrastructural potential, opens the possibility for a new model of hybridization between research facilities, mobility systems, and ecological networks. The presence of such a programmatic anchor catalyzes broader transformation.

The design intervention unfolds across three sequential phases (Fig.1, Fig.2), each corresponding to a specific design action: replacement, addition, and rarefaction. These actions are deployed in response to the spatial logics and temporal rhythms of the site's transformation, acknowledging both immediate needs and long-term adaptability.

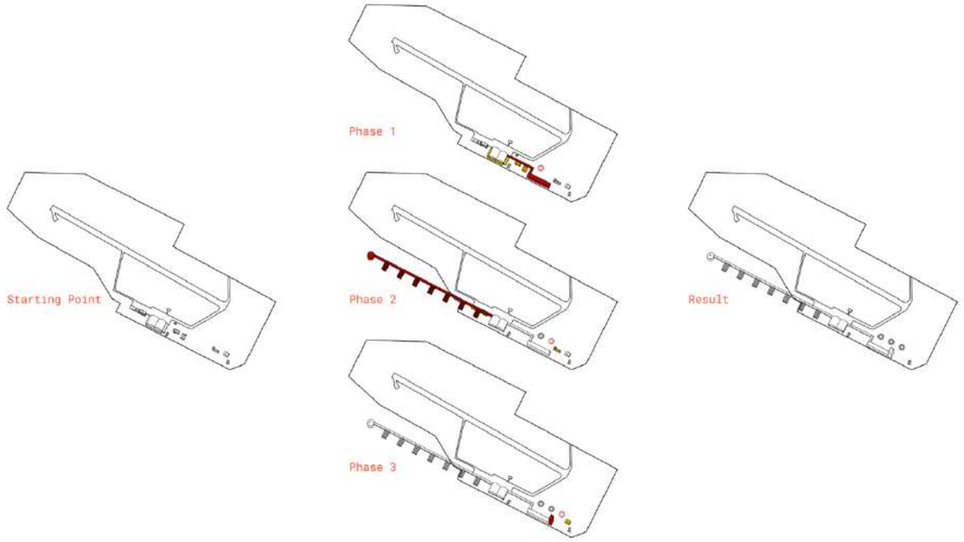

Fig. 1.

5.1. Phase 1 – Stratification: Establishing a Research Anchor

The first intervention operates through stratification, inserting a new research centre within the spatial logic of the existing airport infrastructure. While obsolete structures are cleared, the design aligns with the geometry and orientation of the original hangars, preserving the site's operational continuity. The research facility becomes a new layer that anchors future development. Its configuration enables seamless spatial integration with test-flight zones and adjacent airfield activities, setting the groundwork for a hybrid environment of research, experimentation, and aerial mobility.

5.2. Phase 2 – Addition: Reframing the Urban Edge

The second phase addresses the boundary condition between the airport and the city of Bresso. Here, the action of addition articulates a new interface between infrastructure and the surrounding residential area. A linear greenhouse system is introduced along the airport's perimeter, functioning simultaneously as an ecological buffer, a spatial filter, and a public space. This structure provides a clear architectural threshold that defines access, transparency, and separation. By operating at the intersection of program and landscape, the greenhouse creates a boundary that allows for visual continuity, public engagement, and controlled circulation.

5.3. Phase 3 – Replacement: Activating Aerial Infrastructure

The final phase introduces the action of replacement, which involves reordering the space through selective insertions. On one side, obsolete structures are cleared, and a vertiport is integrated within the research centre. This component is both infrastructural and symbolic, enabling IAM operations while reinforcing the identity of the site as a platform for experimental aviation. Its compactness and spatial calibration respect the aeronautical constraints of the site, while offering a gateway for future operational flight. On the opposite side, adjacent to the greenhouse edge, a drone delivery node is introduced to support small-scale logistics and last-mile distribution. It reflects a different spatial logic—more flexible, networked, and service-oriented. Together, these two insertions structure the field without saturating it, enabling flows and reorienting the site's open character toward productive use.

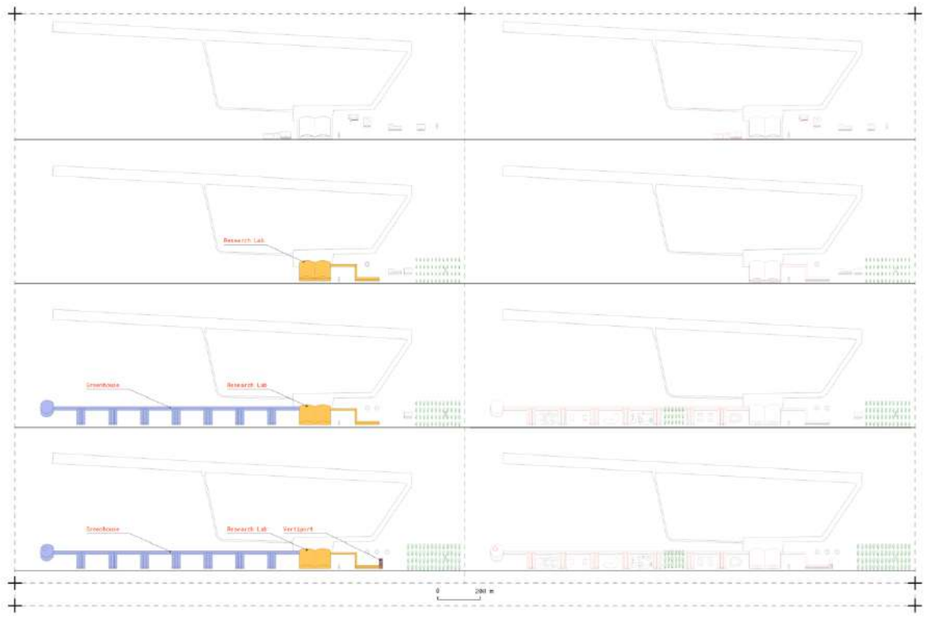

Fig. 2.

6. From Industrial Fragment to Infrastructural Nod

Located near Milan's city center, the Ex-Slaughterhouse stands as a site of significant architectural and urban potential. Defined by its spatial vastness, industrial morphology, and abandonment, it reflects the condition of many transitional sites in contemporary cities. While existing urban strategies frame the area's redevelopment around mixed-use and residential models, this research proposes an alternative reading: positioning the vertiport as a spatial and programmatic catalyst. The site is thus approached not through comprehensive replacement but via surgical architectural operations, applied across three scenarios (Fig. 3, Fig. 4), each of which balances transformation with continuity.

Fig. 3.

6.1. Phase 1 –Rarefaction and Stratification: Initial Insertion

The first phase initiates the transformation by rarefaction and stratification. A portion of the existing industrial structure is selectively cleared to open a new civic void—an urban park that defines a public threshold and reframes the site's ground-level identity. This rarefaction introduces permeability, allowing new flows and framing a spatial break in the dense block.
Simultaneously, stratification occurs through the installation of a landing platform on top of one of the retained buildings. Rather than erasing the industrial mass, the vertiport emerges from within its structure—occupying the roof as a newly activated layer. This gesture introduces IAM infrastructure with minimal disruption, while offering a tangible sign of future transformation.

6.2 Phase 2 – Replacement and Stratification: Reinforcing Urban Publicness

The second phase deepens the integration of the site within the urban fabric through a combination of replacement and expanded stratification. The existing structure along the main street is retained and reprogrammed as a civic centre. This action introduces new public functions into the existing shell: community rooms, exhibition halls, educational areas, and flexible spaces for families and cultural programming. The action affirms the site's civic vocation and enhances its urban legibility.
Above, the stratification strategy continues with the addition of a second landing platform, introduced on another rooftop. These elevated layers are carefully positioned in relation to one another, enabling safe flight paths. Here, architecture mediates between obsolete structures and new infrastructural demands, producing a form of continuity.

6.3. Phase 3 – Consolidation through Addition, Replacement, and Stratification

The final phase articulates the most comprehensive transformation. Design actions converge: addition, replacement and stratification are deployed to consolidate the site as a multi-functional and multi-scalar node. One building is demolished to open an expanded public plaza, defining new spatial continuity between existing programs. Another structure is cleared to leave space for an additional vertiport platform, reinforcing the aerial function of the site.
A new connective volume is introduced, bridging the two vertiport structures across the site. This architectural addition not only provides covered circulation between landing nodes and public spaces, but also acts as an infrastructural spine—channelling access, flows, and services. It transforms the site from a fragmented set of interventions into a legible system of parts.
At the southern edge, adjacent to the wholesale fruit and vegetable market, an existing building is reprogrammed into a logistics hub. Designed to support last-mile delivery and parcel collection, this

component positions the site within broader urban distribution networks. Its adjacency to the market strengthens its infrastructural relevance, while its integration with the public layers of the site ensures coexistence rather than segregation.

Fig. 4.

7. Comparative Reading and Outcomes

In the research, axonometry is adopted as the sole representational tool, not only for its visual neutrality, but for its operative potential in constructing and testing the project. It offers a consistent and scalable projection system that preserves dimensional accuracy, enabling the exploration of spatial hierarchies. Its precision provides fundamentals in contexts such as Innovative Air Mobility, where the relationship between ground and air must be thought through architecture. Axonometric drawing drives the design process itself[15]. It allows the simultaneous reading of spatial information, revealing the vertical layering necessary for integrating aerial systems into the existing urban environment. In each intervention, axonometry acts as a field of inquiry where architectural actions are tested alongside site constraints. It enables a spatial reasoning that is both comparative across case studies and specific to local context conditions.

The two case studies—Bresso Airport and the Ex-Slaughterhouse—present distinct spatial and operational contexts. One is a peripheral infrastructural site partially in use, the other a central void suspended between obsolescence and potential redevelopment. Yet both are treated as urban laboratories for testing how aerial mobility infrastructure can be spatially integrated through architectural means. The design actions—replacement, rarefaction, stratification, and addition—are not conceived as formal outcomes, but as operative tools through which spatial transformation is tested and articulated across each site. Through their deployment across time-based scenarios, a set of broader design strategies emerges: ecological interplay, adaptive reuse, and hybridization. These strategies are conceptual frameworks that can guide the architectural integration of vertiports in other urban contexts.

7.1. Ecological Interplay

The first strategy that emerges is the ecological interplay, which addresses the potential for vertiport infrastructure to engage with environmental systems and landscape conditions. This strategy proposes that the vertiport can operate in dialogue with open space and urban ecosystems.

In Bresso, this logic is expressed through the addition of a greenhouse system along the edge of the airport, which acts as a transitional threshold between infrastructure and residential fabric. While this linear element hosts ecological functions—such as thermal mediation and plant growth—it also defines new forms of accessibility and openness. The greenhouse blurs the boundary between built and unbuilt, inside and outside, civic and infrastructural. Its placement articulates the airport's interface with the city not as a fence, but as a permeable ecological edge.

In the Ex-Slaughterhouse, ecological interplay is articulated through the site's rarefaction. Selective demolitions open up space for a new public park, reframing the dense industrial block as a porous public space. Here, the relationship between vertiport and ecology is not additive, but subtractive: the removal of built mass becomes a precondition for environmental reactivation. The vertiport's coexistence with green infrastructure enables a dual reading of the site—as a hub of mobility and as a resource of open public space.

The environmental strategy adopted reflects a progressive design approach that balances ecological awareness with functional pragmatism, offering a replicable model for future urban and architectural interventions. Rather than relying on large-scale remediation, the project prioritizes immediate usability and public activation, transforming the site into an active ecological and social landscape. Reintegrating decommissioned infrastructure into the broader landscape challenges the long-standing dichotomy between built and natural environments[16].

The transformation of ecosystems influenced by anthropogenic activities defines a new intersection between design and ecology. This collaboration emphasizes the importance of developing more resilient and adaptive ecological systems—particularly in urban contexts, where digital tools and performative design can support layered ecological interventions[17]. This framework opens possibilities for repurposing underutilized urban land as evolving ecological infrastructures.

The concept of re-naturalization introduces a paradigm shift from static spatial planning to adaptive strategies that embrace temporal, ecological, and social dynamics. By delineating activated and residual zones, the design supports biodiversity, improves microclimates, and integrates green infrastructure. The use of native vegetation further enhances resilience, reducing maintenance while strengthening urban ecological continuity.

7.2. Adaptive Reuse

The second strategy is adaptive reuse, which recognizes the potential of existing buildings to support the insertion of vertiport systems. Rather than clearing ground for new construction, this approach leverages the formal, structural, and spatial qualities of existing buildings to accommodate new functions.

In the Ex-Slaughterhouse project, the street-facing buildings are renovated, becoming the civic core of the intervention with community rooms, exhibition halls, and educational spaces. Other two buildings are reused as vertiports, hosting the functions inside, while the roofs are adapted to host the landing platform.

While Bresso might seem less suited to this strategy, given the presence of aviation-related structures, it adopts adaptive reuse through the conversion of existing buildings into research infrastructure, especially the old hangars host the laboratories. The integration of the research centre into the site is not imposed through tabula rasa construction but structured by rethinking the internal logic of the airport. The architecture absorbs new programs without rejecting its past.

Adaptive reuse, when applied to vertiport design, establishes a theoretical framework in which infrastructure becomes a catalyst for urban transformation. Rather than introducing new structures, this strategy reframes existing and often obsolete or abandoned sites as fertile grounds for renewal. The vertiport, conceived as a multifunctional hub, represents this principle by condensing urban activities and embedding them within the existing spaces.

Through this lens, adaptive reuse transcends the pragmatic objective of accommodating aerial mobility and becomes a critical instrument for reinterpreting the city. It emphasizes continuity over rupture, promoting regeneration by layering new programs into previous forms[18]. Such an approach minimizes demolition and capitalizes on existing resources, thereby reducing the carbon footprint of construction while extending the lifespan of architectural stock. It defines environments where infrastructures of the past are re-scripted to serve contemporary urban needs, aligning mobility innovation with ecological responsibility[19].

In this configuration, the vertiport is a cultural and spatial mediator. It transforms sites of obsolescence into active condensers of mobility, public life, and urban imagination. Adaptive reuse thus defines a design strategy that merges efficiency with symbolic resonance, positioning vertiports as both infrastructural prototypes and instruments of sustainable urban evolution.

7.3. Hybridization

The third strategy, hybridization, explores the potential for vertiports to operate in combination with other programs, systems, or scales. This approach emphasizes co-location and functional overlap, enabling it to serve multiple urban purposes simultaneously.

At Bresso, this is clear in the collocation of the vertiport with the research centre and greenhouse. The vertiport is a component of an experimental research campus. Its spatial and operational logics are intertwined with academic activity, making it part of a productive environment rather than a transit node. On the opposite side of the site, a drone delivery node complements the human-scale mobility

function, creating a multi-scalar infrastructure system that blends logistics, research, and air mobility within a single site.
In the Ex-Slaughterhouse, hybridization develops over time. As the site evolves, the vertiports are linked not only with civic programs but also with last-mile logistics. This adjacency enables the site to act simultaneously as a hub for passengers, public services, and goods. The addition of a connective volume between the two vertiport structures consolidates these relationships.
In dense metropolitan contexts, vertiports can act as strategic urban connectors, strengthening mobility networks in areas most affected by congestion. Their emergence represents not only an infrastructural innovation but also a transformative element in the reconfiguration of accessibility. By introducing vertical mobility into the urban fabric, vertiports address structural limitations of ground-based transportation and open new trajectories for movement across highly saturated environments. This positions them as critical devices within the discourse of contemporary urban design and mobility infrastructures.
The integration of vertiports into the urban fabric can be understood as a reconfiguration of accessibility, navigation, and systemic balance. As nodal infrastructures, they extend connectivity beyond conventional limits, linking strategic destinations and reshaping patterns of urban access. Their introduction of aerial corridors reframes navigation within dense environments, offering alternative trajectories that bypass ground congestion and redistribute flows across vertical layers of the city[20]. At the same time, vertiports embed themselves within multimodal frameworks, diversifying mobility systems and reducing the strain on existing infrastructures. In this sense, they emerge not simply as transport devices but as architectural mediators, redefining the logics of circulation while enhancing the resilience and adaptability of metropolitan structures[21]. Viewed through this lens, vertiports are architectural infrastructures with the capacity to reshape patterns of circulation, redefine accessibility logics, and enhance the adaptability of urban systems in conditions of density and congestion.

8. Drawing the Vertical Ground

This research has articulated a design-driven framework that engages with Innovative Air Mobility not as a fixed technological element, but as an architectural opportunity. The strategies of ecological interplay, adaptive reuse, and hybridization do not prescribe formal solutions; they constitute a design attitude—one that resists iconic forms, embraces infrastructural complexity, and operates through contextual consideration. Emerging not from abstract typological models but from site-specific experimentation, these strategies were tested through phased design interventions and the generative use of drawing.
The strategies developed through this research aim to inform future design responses to aerial mobility, not by stabilizing its architecture, but by opening it to interpretation, negotiation, and architectural invention. In this perspective, the vertiport is reconceived as an urban condenser— an architectural interface that activates latent urban conditions and enables the spatial integration of aerial systems into existing morphologies. Rather than resolving the form of IAM infrastructure, the strategies proposed here aim to frame its spatial integration within evolving urban contexts. This reframing affirms the role of design not as a reactive gesture, but as a speculative, projective tool that constructs new spatial logics across programmatic, temporal, and infrastructural layers.
To engage with these emerging conditions, the research introduces the notion of vertical ground—a conceptual lens through which to read and intervene in the layered, fragmented, and discontinuous urban field. Unlike the traditional ground defined by horizontal continuity, vertical ground is a stratified construct composed of rooftops, voids, decks, intermodal thresholds, and latent air rights. Architecture must now operate simultaneously in plan, section, and elevation, negotiating the spatial, legal, and atmospheric conditions that define IAM.
Within this framework, axonometric drawing is used as a critical design tool. Its capacity for scalar neutrality, spatial simultaneity, and dimensional rigor makes it uniquely suited to navigate the spatial, programmatic, and regulatory complexities posed by IAM. Axonometry allows for analytical and generative readings of form and infrastructure. It becomes a tool to construct relationships, reveal hidden hierarchies, and test scenarios across multiple phases and altitudes.
Completing axonometric drawing, AI-generated imagery has been adopted as a parallel tool. It operates not as a final visualization but as a secondary design layer, enabling the rapid simulation of future scenarios in which the proposed design strategies can be tested under different urban conditions. The speculative nature of AI enhances the ability to assess and reinterpret existing spatial hypotheses, reaffirming the centrality of design not just as representation, but as a method of inquiry.
While axonometry provides dimensional rigor and architectural specificity, AI introduces a more fluid mode of experimentation, one that is abstract yet grounded in the spatial logic developed through drawing. Together, these tools offer a dual framework: drawing as a form of spatial reasoning, and AI as a means of scenario projection (Fig. 5).

This research positions drawing as a site of architectural reasoning. In the absence of typological precedents and within the volatility of technological innovation, drawing becomes the project itself: a method to measure, to test, and to imagine. In this expanded representational ecosystem, AI adds a second layer of interpretation, extending the experimental field and enabling the translation of architectural ideas into new contexts. Vertical ground is not a metaphor but a spatial condition—one that demands new representational tools and design frameworks capable of articulating the aerial dimension of the contemporary city.

Fig. 5.

9. Acknowledgment

This study was carried out within the MOST – Sustainable Mobility National Research Center and received funding from the European Union Next-Generation EU (Piano Nazionale di Ripresa e Resilienza, PNRR) – Missione 4, Componente 2, Investimento 1.4 – D.D. 1033 17/06/2022, CN00000023). This manuscript reflects only the authors' views and opinions, neither the European Union nor the European Commission can be considered responsible for them.

Notes

1. Jeff Holden, and Nikhil Goel. "*Fast-Forwarding to a Future of On-Demand Urban Air Transportation".* Uber Elevate. 2016.
2. Vertiports lack built precedents as an emerging infrastructure, making their architectural definition. The available material primarily consists of rendered visualizations, which serve as conceptual representations rather than concrete architectural references. While these renders provide insights into design intentions, they remain fictional projections, often shaped by marketing strategies rather than technical or spatial realities. This ambiguity leaves a margin for interpretation, allowing for critical reading and exploration.
3. The research is conducted within the Doctoral Program in Architectural Urban Interior Design (AUID) at the Politecnico di Milano, under the supervision of Professor Giulia Setti from the Department of Architecture and Urban Studies (DAStU), with co-supervision by Professor Fabrizia Berlingieri (DAStU) and Professor Giuseppe Quaranta from the Department of Aerospace Science and Technology (DAER). The project is supported by Italy's National Recovery and Resilience Plan (PNRR), part of the European Union's broader "Next Generation EU" investment strategy. The work is developed within Spoke 1 "Air Mobility," one of fourteen research nodes constituting the MOST – Centro Nazionale per la Mobilità Sostenibile. MOST is a national research center aiming to implement innovative, sustainable, and inclusive mobility solutions across Italy, involving 24 universities, the National Research Council (CNR), and 24 industrial partners. Spoke 1, coordinated by the Politecnico di Torino, addresses the implementation of Air Mobility systems, while the activities developed at the Politecnico di Milano, within Work Package 1, focus on sustainable design strategies and social acceptance.
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17. Margaret Grose, *Constructed ecologies: critical reflections on ecology with design*, (London; New York: Routledge, 2017).
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Image Captions

Fig. 1. Design Action at Bresso Airport visualized through red (construction) and yellow (demolition).
Fig. 2. Phased Implementation Scenarios for Innovative Air Mobility at Bresso Airport.
Fig. 3. Design Action at Ex-Slaughterhouse visualized through red (construction) and yellow (demolition).
Fig. 4. Phased Implementation Scenarios for Innovative Air Mobility at Ex-Slaughterhouse.
Fig. 5. AI-generated image operating as a testing ground for architectural hypotheses, revealing aerial overlays, spatial transitions, and layered continuities within the framework of vertical ground.

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Biography

Ottavio Pedretti, architect and Ph.D. candidate in the Architectural, Urban, and Interior Design program at Politecnico di Milano. His Ph.D. research, funded by the PNRR program, is titled "Pioneering Infrastructure: Experimentation on Design Strategies for Innovative Air Mobility in Italy". The research, presented at several international conferences, explores design strategies for IAM integration in the urban environment. Since 2017, he has worked at SANAA (Tokyo), Onsitestudio (Milan), and ION Fund (Milan). Since 2020, he has been a tutor for B.Sc. Design Studios at Politecnico di Milano. He graduated in 2018 with a thesis on abandoned industries and slums in India.

Architectural Ethnography as a Methodological Approach in Teaching Architecture

Drawing as a Performative Form of Knowledge/Knowing

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Abstract

The article reflects on a series of teaching and research experiences that have taken place in the School of Architecture, Urban Planning, and Construction Engineering at Politecnico di Milano. In the last ten years, in fact, our teaching experiences, our readings, and some joint research paths have stimulated a reflection to develop an understanding of the specificities of the so-called “architectural ethnography”. In particular, in the paper, we make reference to two design studio: *Gratosoglio Ground Zero*, focused on the observation of the ground floors of a stigmatised social housing estate in the outskirts of Milan (2019); *Quarantined Houselives* (2020) that has been carried out online during the early months of the 2020 lockdown, a situation in which the domestic dimension was observed in a self-ethnographical and introverted condition.
In these two cases, the *post-production* of what has been observed and tracked in the field is both a selection/organisation of information, as well as a performative act[1]. It is in this specific phase that the generative value of visualisations becomes very clear. Usually, the work with/on drawings, photos, and written texts is exhausted until they are able to tell/produce a story and to make visible issues that were impossible to grasp by any other process. It’s a blue-sky research work that starts from ‘what is out there’, questioning the evidence and looking beyond stereotypes. A situated knowledge producing thick descriptions and imaginaries[2] takes shape and is performed.
Visualisation can be understood as both a special form of thick description with a synthetic and generative value and a personal *knowing*.

Key words: the architectural drawing, architectural ethnography, interior architecture, spatial practices.

1. Introduction

Architectural ethnography has increasingly drawn attention thanks to the work and research carried out by Momoyo Kaijima[3]—both with her studio, Atelier Bow Wow, and through her teaching at ETH Zurich (Chair of Architectural Behaviorology)—as well as to the extensive research conducted over the years by Tim Ingold[4] on the intersections between architectural pedagogy and ethnographic approaches. Inspired by these well-known examples, we began to reflect on these practices by returning to the roots of the term *ethnography*. According to the Treccani online encyclopedia, ethnography derives from the Greek and refers to the "written representation of forms of social and cultural life of human groups." [5]At the same time, ethnography denotes both a research methodology with specific characteristics and the textual outcome of that research process[6].
Over the past seven years, we have been engaged in this reflection, supported by our collaboration in a series of design workshops at the School of Architecture, Urban Planning, and Construction Engineering at the Politecnico di Milano[7]. Through our teaching experiences, readings, and collaborative research[8], we have sought to develop an understanding of the distinctive features of ethnographic approaches for designers[9]—what we refer to as “architectural ethnography.”
In particular, we draw on two meaningful teaching experiences in design studios: *Gratosoglio Ground Zero* (2019), which focused on observing the ground floors of a stigmatised social housing estate on the outskirts of Milan; and *Quarantined Houselives* (2020), conducted entirely online during the early months of the COVID-19 lockdown, in which the domestic environment was observed in a self-ethnographic and introspective mode.

2. Gratosoglio Ground Zero

In *Gratosoglio Ground Zero*[10], students were guided to understand the role that space plays in shaping social life. Far from any form of spatial determinism, the work highlighted how spaces can bridge or separate people, reinforce or question social structures, and how objects can play significant, sometimes antagonistic, roles. Each student interacted with residents and users, recorded findings during field explorations, and transcribed their observations through written texts, drawings, and photographs. These materials were then organised to evoke encounters, atmospheres, perceptions, emotions, and multisensory experiences. All materials were post-produced in A5 format to develop rich, spatialised descriptions of the people, places, and everyday practices in Gratosoglio (Fig. 1).

Fig. 1

This “micro” level of representation focused on the physical context and the objects where the most significant practices occurred, with particular attention given to the materiality of spaces. In parallel with

this micro-level, students also worked on a macro level by collaboratively producing a large-scale co-design object: a 12-meter-long, 3-meter-high isometric representation of the entire Gratosoglio area (Fig. 2). This isometric map was used to locate and represent the key practices identified during the fieldwork. It allowed information about places (both physical and experiential), people (who inhabit or use those spaces), and practices (that activate and give meaning to the spaces) to coexist on a single plane. The twelve Gratosoglio panels depict the neighbourhood's spatial structure and intersect the personal narratives of its residents with the stories of the students who observed these places over the course of a semester.

Fig. 2

3. Quarantined *Houselives*

Quarantined Houselives[11] presented a significant challenge for a course originally designed to collect information through fieldwork. The “field”—understood as an external, physical site—suddenly became inaccessible just days before the course was scheduled to begin. Nevertheless, we decided to maintain the use of the same tracking tools adopted in *Gratosoglio Ground Zero*—written texts, photographic narratives, and drawings—and apply them to document everyday life within domestic spaces: individual rooms, shared areas, terraces, and gardens. In this case, each student’s home became the “field.”

Transcriptions documenting the use of space in more traditional households revealed how living rooms were transformed into study spaces or offices during the day, became movie theatres in the evening, and sometimes served as bedrooms at night. Meanwhile, in apartments shared by students, an urgent need for privacy emerged. In these settings, individual rooms became personal “shells” for carrying out daily activities from morning to night, often limiting interactions in shared spaces to a minimum.

A particularly effective exercise involved mapping the “life around objects” (Fig. 3). This produced a kind of catalogue of affordances, revealing how tables, carpets, and beds were reimagined as settings for diverse and often unexpected uses—far beyond their original functions[12].

Objects and the affordances of space proved to be valuable resources in enhancing the liveability of these confined domestic environments. These observations generated forms of design knowledge that extended beyond the immediate personal context of students' homes during the emergency (Fig. 4). While rooted in an introspective form of fieldwork, this experience also offered broader reflections on societal issues—specifically, the limitations of the codes and norms established by the Modern Movement in housing design.

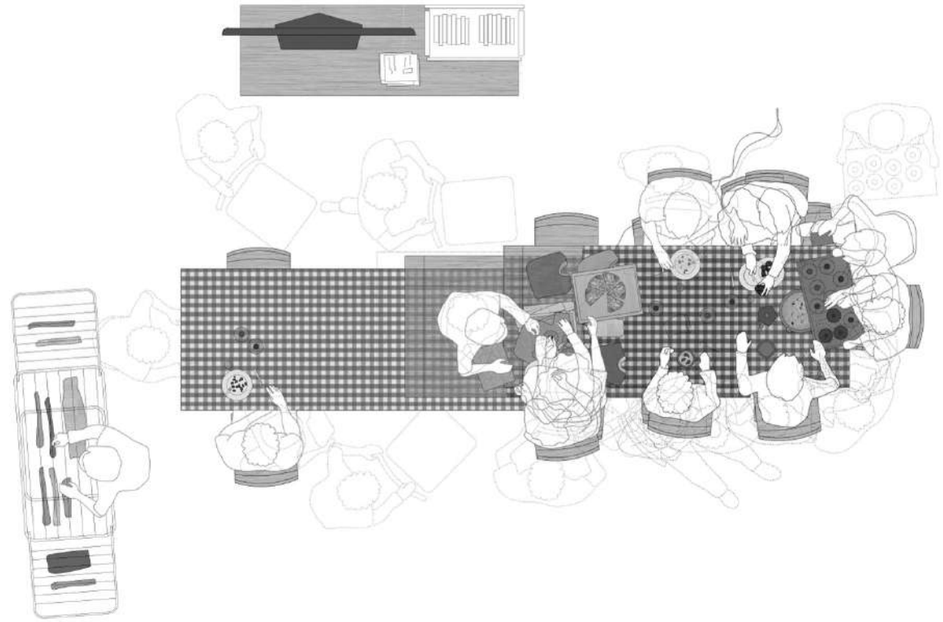

Fig. 3

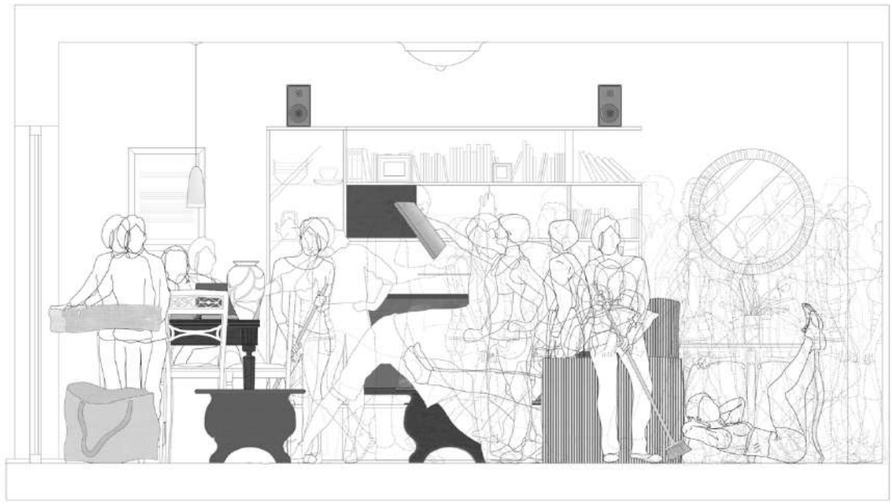

Fig. 4

4. Preliminary reflections

The research and teaching practices discussed here have prompted a reflection on the knowledge processes that characterize the use of an architectural ethnographic approach in the design studio. To simplify our thoughts, we have divided this knowledge process into four interconnected—and sometimes overlapping—phases: (a) entering the field and defining it; (b) staying in the field and “absorbing” knowledge; (c) post-producing what has been observed and tracked in the field; and (d) orienting the post-production based on the final output.

The process of entering the field, of course, is not a straightforward one, as the field is not “out there” waiting to be discovered. Defining the field is a way of interrogating places, and this definition can evolve

and be reshaped through discoveries and encounters. Through our experiences, we have learned that the architect enters the field with a filter shaped by their tacit knowledge. As Cranz[13] suggests, and as we often encourage our students, it is crucial to observe practices and uses of space without assuming that the space could be "better" if designed in a different way. However, some aspects of the architect's tacit knowledge are difficult to "suspend." In particular, this tacit knowledge includes an awareness of how space may frame social relationships—beyond any deterministic assumptions—attention to materiality and construction, and a focus on the people within that space. Architects also use specific tools—such as drawing—to visualize, interrogate, and understand how places function, thus framing their personal knowledge of these spaces[14]. We will refer to this mix of tacit and explicit knowledge, along with the tools used, as the architect's "filter."

Fieldwork exposes the architect to a multitude of information—a bodily experience within the space where the architect's filter remains actively engaged. What happens during fieldwork, and how the experience is tracked and selected, remains, as Nova points out, somewhat mysterious[15]. This phase is typically chaotic, disorganized, and ideally open to serendipity and the unexpected. Indeed, it plays a central role in producing thick and often counterintuitive descriptions of places. It is precisely during these moments that the architect's filter is active, when both tacit and explicit knowledge are fully engaged in a process of immersion with people, places, and practices. In this context, bodily experience is not optional; it is a fundamental requirement for producing one's own "knowing." While knowledge consists of facts and solutions, "knowing" consists of processes.

In this sense, post-production of the fieldwork observations is, first and foremost, a process of selection and organization. It is also a performative act. This is the phase where the generative value of visualizations becomes apparent. Typically, the work with drawings, photos, and written texts continues until these representations can tell a story—until they can make visible issues that were previously hidden or difficult to grasp. This is a kind of "blue-sky" research work that starts with what is "out there," constantly questioning the evidence and looking beyond stereotypes. In this process, situated knowledge takes shape, producing thick descriptions and imaginative constructs. Visualization, in this context, can be understood both as a special form of thick description, with synthetic and generative value, and as a form of personal knowing.

When considering outputs, it is clear that for an architect, the type of performative act is not independent of the objectives that led to the need for a deeper understanding of a place. At the same time, the findings produced in the post-production phase often suggest the appropriate forms and formats for communicating the results, shaping the final direction of the work. The relationship between inputs and outputs—whether meeting a client, producing a design, creating an exhibition, writing a book, or sharing knowledge with other stakeholders—has a direct impact on the decisions made regarding how to visualize the work.

5. A possible path for an Architectural Ethnographic approach in Design Studio

We distance ourselves from the idea of toolkits as a "categorical" form of knowledge, which might initially seem more aligned with operational practice[16]. The goal is not to create a "fast track" for ethnographic research that simply supports design, but rather to observe a more or less constrained context through an ethnographic lens.

From our experiences, we argue that using an ethnographic approach in design is about understanding how an intricate system of space, objects, and people functions—far removed from any deterministic functionalism.

However, not having a toolkit does not mean lacking a methodology. The path we outlined at the outset has helped us appreciate the importance of framing specific ethnographic processes focused on spatial practices and the material culture of places. With this in mind, we would like to conclude with some open reflections, based on our teaching experiences, about key points that have played a central role in our approach:

1. **Allow time for direct participant observation**: The time spent in the field, as in our teaching experiences, holds the same value (in terms of scheduling) as time devoted to lectures, fieldwork, or in-class tutorials.
2. **Observe practices and the use of space without preconceptions**: It is essential to observe how people, places, and everyday practices intertwine, temporarily "suspending" the design impulse that arises from the architect's specific background[17]. This approach encourages us to witness how spaces function without assuming they could be improved through design interventions.
3. **Assign specific formats for fieldwork reports**: Providing simple constraints—such as paper formats, the use of photo sequences rather than single images, and requests for hand-drawn sketches and micro-narratives—has proven successful in guiding students' fieldwork and encouraging rich, reflective exploration.
4. **Embrace the unexpected and be open to changing course**: Fieldwork often leads to "dead ends" or unforeseen encounters, and documenting these shifts is an important part of the ethnographic learning process. It's essential to trace and account for these changes, which may lead to new insights or revised paths.
5. **Visualization as a way of producing knowledge, not just representing "reality"**: Drawing, sketching, writing, and photographing in the field are not merely methods of representation. They are creative practices where the architect's "filter"—their tools and tacit/explicit knowledge—remains active and engaged, allowing them to collect and process information, whether consciously or unconsciously, for the post-production phase.
6. **Ethnographic knowledge is not about user-centered design**: Ethnographic knowledge for architects is not a direct method for translating user demands into design solutions. This approach differs from participatory processes or ergonomic design, which typically focus on accommodating users' explicit needs. Instead, architectural ethnography helps us understand how a place functions and reflect on how those understandings may inform broader design decisions.

6. Conclusions

The body, direct participant observation, and immersion in a space are essential elements for any ethnographer, as they should be for any architect. We would like to emphasize that something fundamental to architectural education—the bodily experience and individual understanding of meaningful architectural spaces—has been largely lost but is now being unexpectedly rediscovered through architectural ethnographic approaches. This is why we believe our exercises are inspired by a much older, specific disciplinary tradition that looks back to the roots of architecture. One might even argue that architectural ethnography can be linked to the *Grand Tour* of the late 18th century, a tradition considered a final stage of education for any aristocrat, artist, or intellectual[18]. It was a journey of observation and learning, deeply rooted in direct engagement with different cultures and environments. Similarly, the early 20th century saw architects embark on their own "journeys," which were seen as formative experiences—of participant observation—that enriched their personal knowledge and understanding of architecture.

This tradition resonates with the more recent multidisciplinary approaches to "reading places" promoted by movements such as TEAM X[19] or IL&AUD[20], which focused on rethinking architectural practice in a way that would deviate from the mainstream. These efforts sought to establish a different tradition of architecture—what we might call *Other Modernity*[21]—which has influenced much of the postwar radical pedagogical approach to architecture[22].

In conclusion, we want to point out that while collaboration with ethnographers and anthropologists is a well-established practice in urban studies, it is almost entirely absent in architecture. This gap underscores the disconnect between place and project. For those with an interior architecture background, the ethnographic focus is inherently rooted in the centrality of people. As De Carli notes[23], interiors are the "primary space," the space where the first relationships between people are expressed through "gestures" that enhance the "preciousness" of the person[24]. However, a clarification is necessary here: by *Interior Architecture*, we refer to the discipline that involves the transformation of spaces, architecture, and furnishings[25]. At the same time, the centrality of gesture refers to the belief that a good design stems from listening to those who will use the space. In this regard, the designer is seen not as an author or executor, but as an explorer.

Given the intersection between architectural ethnography and interiors, we argue that it is necessary to introduce—or expand—courses in Interior Architecture within architectural programs, at both the undergraduate and graduate levels. These courses should focus on people, places, and practices—on the very nature of architecture itself and its role in shaping our shared environment. Such courses would address how spatial, material, and constructive qualities can enhance the everyday lives of people and how the quality and timelessness of design can lay the foundation for the built environments of the future.

Notes

1. Tim Ingold, *Imagining for Real* (London & New York: Routledge, 2021).
2. Clifford Geertz, *The Interpretation of Cultures* (New York: Basic Books, 1973).
3. Momoyo Kaijima, ed., *Architectural Ethnography* (Tokyo: TOTO Publishing, 2018); Momoyo Kaijima and Yoshiharu Tsukamoto, eds., *The Architectures of Atelier Bow-Wow* (New York: Rizzoli, 2010).
4. Tim Ingold, *Imagining for Real*.
5. Treccani, "Etnografia," June 26, 2023, https://www.treccani.it/enciclopedia/etnografia/.
6. Raymond Madden, *Being Ethnographic* (London: SAGE, 2017).
7. Paola Briata, "Being Together as a Body Exercise. Ethnographic Perspectives," in *Conscious Dwelling*, ed. Anna Anzani (Cham: Springer, 2022); Paola Briata and Gennaro Postiglione, "Gratosoglio Ground Zero: persone, luoghi, pratiche," in *Costruire l'abitare contemporaneo*, ed. Gioconda Cafiero, Nicola Flora, and Paolo Giardiello (Padova: Il Poligrafo, 2021); Paola Briata and Gennaro Postiglione, "Reinvenzioni nel quotidiano," *Urbanistica Dossier* 25 (2022): 96–102.
8. The essay is based on a shared reflection of the authors on teaching and research experiences. Anyway, the Introduction and sections 1-3 and 5 should be attributed to Paola Briata; Sections 4-7 to Gennaro Postiglione. Many theoretical insights have been possible thanks to the project *Ethno-Graphs. The transcription (textual, graphic, photographic) of field observation as a specific practice of Architectural Ethnography* funded by the Department of Architecture and Urban Studies at Politecnico di Milano in 2021-2023. We are grateful to Martina Bovo, Sara Trolese, and Rose Veitch for their suggestions on a draft version of this essay.
9. Galen Cranz, *Ethnography for Designers* (London & New York: Routledge, 2016).
10. Most of the materials produced for *Gratosoglio Ground Zero* are available at: https://www.lablog.org.uk/2019/06/09/grz-0-final-seminar-exhibition/#more-8920
11. Most of the materials produced for *Quarantined Houselives* are available at: https://quarantinedhouselive.wixsite.com/a-biography/about
12. James Gibson, *The Senses Considered as Perceptual Systems* (London: Allen & Unwin, 1996).
13. Galen Cranz, *Ethnography for Designers*.
14. Per Olaf Fjeld, *The Power of Circumstance* (Copenhagen: Architectural Publisher B, 2020).
15. Nicolas Nova, *Beyond Design Ethnography* (Genève: HEAD, 2016).
16. Cristina Bianchetti and Pier Luigi Crosta, *Conversazioni sulla ricerca* (Roma: Donzelli, 2021).
17. Michel de Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1984).
18. Ilaria Bignamini and Andrew Wilton, eds., *The Grand Tour: The Lure of Italy in the Eighteenth Century* (London: Tate Gallery Publishing, 1996).
19. Team X is a group formed in the fifties by Alison and Peter Smithson, Aldo van Eyck, Jaap Bakema, Georges Candilis, Shadrack Woods, John Voelcker, William and Jill Howell. These young architects marked a distance from the functionalist perspectives of the Modern Movement, in particular from the CIAM, by proposing a gaze capable of giving relevance to the interaction between individuals and buildings.
20. ILA&UD – The International Laboratory of Architecture and Urban Design, is an association founded in 1976 by Giancarlo De Carlo that brings together universities, cultural institutions, and scholars interested in the human habitat and the environment. Over the years, the laboratory has taken on very different forms of work and methods of dissemination, but a crucial role is attributed to fieldwork with the inhabitants in places where relevant issues – social, environmental, related to the built environment – arise in contemporary societies. Drawing is used as a tool for exploring and reading places.
21. Colin St. John Wilson, *The Other Tradition of Modern Architecture* (Cambridge: Cambridge University Press, 1995).
22. Beatriz Colomina et al., eds., *Radical Pedagogies* (Cambridge, MA: MIT Press, 2022).
23. Carlo De Carli, *Architettura. Spazio primario* (Milano: Hoepli, 1982).
24. Roberto Rizzi, ed., *Carlo De Carli 1910–1999* (Milano: FrancoAngeli, 2016).
25. Gennaro Postiglione, "No One Should Ask Me if I Teach Interior Design," *Demo* 7 (2023): 55–93.

Image Captions

Fig. 1. GRZ02018, Fieldwork (by: Sara El Aawar, Lilia Ivanova, Boris Penkov, Alice Rinetti, Ada Rosito).
Fig. 2. GRZ02018, The Twelve Tables of Gratosoglio. Fragment (collective work).
Fig. 3. QHL2020, The Life around Objects (by: Marta Marinoni).
Fig. 4. QHL2020, The Room Life (by: Virginia Capone).

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Biography

Paola Briata is an Associate Professor of Planning and Urban Policy at the Department of Architecture and Urban Studies at the Politecnico di Milano, where she teaches Urban Planning and Urban Ethnography. Since 2002, she has been teaching and working at the Politecnico di Milano, the Iuav University of Venice, and the Bartlett School of Planning, UCL. Her research, primarily based in Northern Italy and the United Kingdom, focuses on spatial processes and social dynamics, with particular attention to planning tools and urban policy in multi-ethnic contexts, as well as ethnographic approaches in urban planning and architecture.

Gennaro Postiglione (ORCID ID: 0000-0003-4886-4548) is Professor (and the longest-serving in Italy) of Interior Architecture at DASTU/Politecnico di Milano. His research field is Interior, at the intersection of people, places, and practices. The same theoretical background also nourishes his (research by) design activity focused on the adaptive reuse of built heritage, including the minor and neglected ones. He is interested in Architecture and its way of knowing, that is, in responding to human, non-human, and environmental needs while reflecting on the Discipline's own principles. He studied architecture at the University of Naples, where he also pursued a three-year Master in Industrial Design, soon after completing his PhD (1994). He has been lecturing and a Visiting Professor in several International institutions.

Drawing on the evolutionary tree
The currency of the architectural chronogram today

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Abstract

This research critically revisits the architectural chronogram as a conceptual and historiographic tool through a recent initiative of The Cosmic House (Jencks Foundation) and e-flux: *Chronograms of Architecture*. Originating with six speculative chronograms by different authors exhibited in the Architectural Association in 2023, and extended by two new commissions for the 2025 exhibition at CIVA Brussels, this project questions how architectural genealogies are constructed, contested, and visualized today. By analysing these eight examples, this paper asks whether the architectural chronogram has evolved beyond its graphic constraints to represent architectures of entanglement, rupture, or refusal—those not easily captured within conventional diagrammatic visual grammar.

It draws methodologically on punctual visits to The Cosmic House and archival work conducted at the Architectural Association Archive. These engagements provide curatorial and intellectual context for understanding both Charles Jencks's original *Evolutionary Tree to the Year 2000* (1969) and its recent reinterpretations and their differences. Through close comparative analysis of the eight chronograms and their related literature, the paper interrogates these diagrams ability to actually discuss urgent questions such as techno-optimism, techno-bureaucracy, feminist and decolonial spatial practices, disciplinary racism, and the ecological and labor conditions of architectural production.

While the tool of the chronogram aims to pluralize architectural historiography, many remain tethered to stylistic or formalist frameworks that risk replicating evolutionary logics and linear narratives. Rather than discarding the chronogram, this research proposes its evolutionary reframing: from a tree of coherent progression to a diagram of contested terrains and epistemic friction. In doing so, it positions the chronogram not as a static representation of the discipline, but as a live and critical medium—one that must be radically reconfigured to confront architecture's ecological, political, and disciplinary urgencies in the twenty-first century.

Key words: evolutionary tree, architectural chronogram, linear narratives, visual grammar, live representation.

This conference proceeding is supported by a four-year FPU contract funded by the Ministry of Universities of Spain's Government.

1. Drawing on the Evolutionary Tree

Charles Jencks's first chronogram, the canonical *Evolutionary Tree to the Year 2000* (1969) sets a departure point for this research as it sought to map architectural history in a highly influential drawing that echoed biological evolution. Scholarship has generally agreed on how Jencks "proposed a structural approach to architecture, and a way of identifying the channels through which its evolution occurs". Maria Teresa Muñoz claimed, for example, that for Jencks, "architecture is a system in which ideas are born, compete with each other, evolve or become extinct in a similar way to living beings"[1]. In his drawings, each architectural trend emerged, flourished, and eventually faded, much like any other living being.

Jencks's chronograms became a visually compelling way to understand the history and evolution of architectural styles while attempted to organize and predict the future of the discipline and simultaneously allowed to position himself critically within architectural history. On one hand, he was able to record schools of thought by mapping them in order to log what had been happening so far: he would normally span his charts between the 1920s and the year 2000, calling everything before the 1970s as Late-Modern. On the other, organising everything after the 1970s under the Post-Modern umbrella tag granted him an influence, through predictive speculation, of what had still to be thought and built. This is critically illustrated when one compares two of his most relevant publications: *Architecture 2000: Predictions and Methods* (1970) and *Architecture 2000: Success in the art of Prediction* (2000). Jencks went as far as to publish, in the year 2000, an annotated revision of his 1970 book where he goes page by page demonstrating the success of his predictions and the validity of his methods.

Fig.1

Given the unlikely re-edition of this second book, even if Jencks concluded it with yet another predictive chronogram (Fig.1), Muñoz concluded: “the question now is how Jencks' work should be read today, when its prospective capacity and subsequent verification have become history”[2]. This research comes to directly address this question by asking what is the currency of architectural chronograms today, not only as evolutionary inspired drawings, but as representation tools that have shifted and expanded their agency in diverse ways. To put it in Mario Carpo's words, drawings have now “become a tool of investigation of some aspects of the very same architectural discipline from which they derive and to which they belong to probe and test the limits and constraints of architectural representation itself”[3]. With time, the static and linear nature of Jencks’s chronograms has become increasingly insufficient to depict the world today given its far more interconnected, diverse, and dynamic character that can't respond to the sometimes oversimplifying deterministic methods used by Jencks. New challenges—ranging from globalization, climate change, technological advancements, and social justice—have reshaped how architects approach the discipline worldwide. It is within that realm that The Cosmic House and e-flux launched the *Chronograms of Architecture Project*[4], commissioning six new chronograms to different architects and scholars around the globe. But how does a chronogram today, as a drawing typology, chart and capture the complexity, fluidity, and multiplicity of contemporary architectural thought and practice? Is it still a sufficient graphic system for architecture or does it depend on secondary sources, agents or interpretations?

To answer that, the aim of this paper is to critically examine how these *new* chronograms —produced as an update to Jencks' evolutionary drawings— reflect these shifts while expands and reframes the representational typology of the chronogram as a mapping tool. By revisiting a genealogy since Jencks’ first *Evolutionary Trees* and comparing them with the new forms displayed in the *Chronograms of Architecture* project, this paper argues that the true value of chronograms today lies in their ability to capture the evolving, collaborative, and negotiated processes of drawing in architecture. Accordingly, a more complex underlaying chronology, that of the drawing design process, arises; and in doing so, the traditional self-explanatory nature of the chronogram is now questionable and dependent on its material conditions to be produced.

Rather than offering definitive historical narratives, contemporary digital chronograms are presented as non-static representations of architectural history and evolving representations that capture the process of architectural thinking as it unfolds. As designers, as Peter Cook, have also reminded: “when the drawing becomes part of an interchange of ideas between colleagues, there are often layers of *graphic shorthand* that pass from hand to hand – or screen to screen”[5]. In this regard, as we will witness, digital platforms, interactive software, and real-time collaboration enable contemporary chronograms to be living documents, reflecting the collaborative, discussed, and speculative nature of the architectural drawing process.

2. A brief genealogy of the Chronogram as an evolving representational system

Looking at “CJA-PHD-1”[6] folder in Jencks' archive, one can retrace his first scholar experience between 1966 and 1970, including a letter from Nikolaus Pevsner refusing to supervise the dissertation or letters from his supervisor Reyner Banham. But, from the historian perspective, the most relevant traces are the first sketches that Jencks designed for his famous chronograms of architecture.

Aware of those, Mark Wigley successfully dived into these hand-drawn sketches and into the constant editions and re-editions of his well-known architectural chronogram, first published as *The Evolutionary Tree* in the Architectural Design issue of October 1970[7]. According to Wigley, Jencks had already drawn a version of it in 1969 for his Phd and even written on the subject of the chronogram in journals as *Arena* (1967) and *Connections* (1969). Under the title *The Drawing that ate architecture*[8], Wigley successfully writes a genealogy of the successive attempts through which Jencks endlessly insisted in mapping the different streams of thought in architecture. As he recalls, Jencks was allegedly inspired by pre-existing examples using the biological concept of evolution in architecture, including Banister Fletcher's *The Tree of Architecture* from his book *A History of Architecture on the Comparative Method* (1896)[9], which was at the same time inspired by biologist Ernst Haeckel's *Evolutionary Tree of Life*, included in his book *The Evolution of Man* (1879); but also Levi Strauss´ structuralist analysis about mythology[10] and, of course, the famous Alfred H. Barr’s Evolutionary Diagram and his cover design for the famous 1936 exhibition *Cubism and Abstract Art* at the Museum of Modern Art (MoMA, 1936).

These references were confirmed by Jencks, specially when invited to write the chapter *Architectural Evolution: The pulsations of time* in *The Diagrams of Architecture* (2010) where he expanded this list including George Kubler’s provocative *The shape of time: Remarks on the history of things* (1962). In this text, after critically reviewing these references and how they affected his evolutionary thought,

Jencks subtly reviews part of his own chronograms and eventually asks for the *“*evolutionary trees and semantic diagrams to be made in the future” to “show some kind of cumulative improvement”[11].

Regardless of the success or precision of Jencks' methods of visualizing, or *eating,* everything, what remains clear is that the drawing eventually grew to a point out of control where wether some architect was in or out of its blobs, or wether these were accurately depicted, was no relevant at all. However, after revisiting the different re-editions of the chronogram, one could argue that the actual relevance of it as a project is not any of its fixed manifestations in time, but rather the existence of this chronology of drawing (Fig.2) attempts that show Jencks' systematic and anxious desire to capture and monitor the evolution of architectural *species*. The idea of a design process chronology underlaying a chronogram drawing project —as the ones we are about to review—appears here, inspired by Wigley's exercise with Jencks, as an interesting approach to consider the expanded chronology of not just drawings but of the coordination and negotiation issues that these processes entail.

Fig.2

In this regard, and as Nic Clear has deeply studied, when it comes to the chronogram today, “the role of the drawing becomes as much a mapping of the process of production as it does of defining the outcome of the project itself”[12]. Clear even provides a definition and a list of basic functions that a chronogram needs to comply with. According to him, “*chronogram* means *time writing*, but it is also an alternative term for the Gantt chart, a type of bar chart that is often used to illustrate a project schedule”[13]. According to Clear, it has very concrete functions: “(1) to set out the narrative; (2) to describe processes involved; (3) to communicate style by using the graphic language; (4) to develop and communicate the spatial ideas[14]. But, Clear carefully insists that “perhaps the most important function is that the chronogram stands in for the time-based work when it cannot be shown”[15]. This comes to consolidate the idea of the chronogram today as a rather transient, fluid and networked drawing medium in which negotiation, engagement and exchange of ideas and images are embedded. Wether this is the case for the *Chronograms of Architecture* project is yet to be discussed.

3. Looking, reading and listening to the new Chronograms of Architecture

This research is built upon a multi-faceted analytical approach that combines close visual analysis of the architectural chronograms, critical reading of the texts written by the authors of the drawings, and a study of the conversations and speeches delivered at the 2023 AA Symposium[16]. This method, mainly

distilled from the available information, will allow for a complete examination of how these chronograms have evolved from their original inspiration in Charles Jencks's *Evolutionary Tree* (1969) to a more speculative process-driven drawing approach seen today. By granting the same relevance to these visual, textual, and oral discursive sources, the text seeks to build an argument that emphasizes the new dynamic and contested nature of these architectural chronograms and the ones to come.

3.1. Looking

The natural first step is the close visual observation of the chronograms. The study focuses on the formal aspects of the diagrams, considering their spatial configurations, structural organization, and the visual languages used. These include the use of time, the way movements or schools of thought are mapped, and how visual metaphors—such as trees, streams, circles, or cartesian grids—are employed to represent history and the progression of time. The formal choices made in each of them—such as linear versus radial structures, color coding, or categorization—will be analyzed in relation to the theoretical ideas each author is attempting to convey. The visual properties of the chronograms, closer to the ones of the image than to the drawing techniques[17], provide insights into how these visual tools function as representations of architectural knowledge and how they engage with issues such as historical determinism, intersectionality, or globalization. The inclusion and exclusion of certain movements in these diagrams will also be scrutinized to understand how contemporary chronograms may address unattended gaps by earlier models.

3.2. Reading

This research seeks to simultaneously engage with the texts written by the authors of the chronograms, looking for a deeper exploration of the conceptual foundations behind these drawings. The texts reveal how the authors designed their diagrams to function, not only as representations but as theoretical artifacts that support the architectural discourse. The texts will be analyzed in parallel to the visual grammar of the chronograms in order to answer critical questions such as: How do the authors use language to justify the spatial organization of their drawings? What theoretical concepts are embedded in their visual choices?

3.3. Listening

Another essential part of this paper's methodology is the analysis of dialogues and the speeches delivered during a 2023 Symposium, where practitioners, scholars, and curators discussed about the drawing processes and the final outcome of the *Chronograms of Architecture* project. Key figures at the symposium, including Jeremy Till, Pier Vittorio Aureli, or Maria Fedorchenko, discussed the conceptual shifts in architectural chronograms and their associated drawing techniques. By listening to the symposium, this paper will explore how the chronograms are interpreted and critiqued while explained again in architectural forums.
Accordingly, this paper will combine and synthesize the visual, textual, and oral analysis to build a comprehensive argument about the role of architectural chronograms today. By drawing on these three primary sources—the visual diagrams, theoretical writings, and symposium speeches—this research will trace how contemporary chronograms have shifted from apparently self-explanatory historical representations to instrumental drawings that refuse to be read as closed manifestations of ideas in time.

As a result, this particular research approach is oriented towards producing a significant document as the main constitutive outcome of this integrated analysis. It aspires to create a working research chart where the visual (images), the textual (essays) and the oral information (symposium proceedings) obtained from the chronograms is logged into different categories in order to analyse how and why do these chronograms share any commonalities in regard to their visual identities as drawings. The chart contemplates the compliance with different categories, conforming a visual representation of the analysis itself beyond text and quantitative data compilation, thus intensifying the possibilities of research techniques.

4. Chronograms of Architecture

The analysed chronograms and their associated essays are listed here not in the order displayed in the website nor in the symposium speeches, but rather in the order followed when the author researched them at first. The following lines provide a critical summary describing the chronogram main features while simultaneously accounts the most relevant insights that their authors shared both through texts or through oral discourse.

4.1. "The Middle Passage of Vernacular Art" by Charles L. Davis II and Curry Hackett. Followed by a text named "Visualizing the Racial Epistemologies of the Architectural Canon".

This chronogram critiques architectural evolution through racial epistemologies, exploring how race shapes architectural discourse. It challenges the traditionally hierarchical approach to architecture by analyzing evolutionary diagrams that often exclude marginalized communities. Davis and Hackett argue that these diagrams, which symbolize architectural knowledge, exclude those who are not deemed *insiders* of architectural history. By "using a three-dimensional reconstruction of the Brooks slave ship as a model"[18], they illustrate how race and scientific theories of racial difference influenced architectural practice, urging a rethinking of the role race plays in defining architectural knowledge.

4.2. "Prevalence of Computation in Architectural Design" by Mark Garcia and Steven Hutt. Followed by the text "A short but believable history of the digital turn in architecture" by Mario Carpo.

Garcia and Hutt trace the rise of computational tools in architecture through their so-called *chronographic historiogram*, reflecting the growing importance of digital technology in shaping architectural design. It tracks *waves* of computational theories and tools, illustrating how they have transformed design practices. The text, written by Carpo, highlights key milestones, such as Greg Lynn's 1996 introduction of the "blob" design, marking the advent of digital curviness. Far from detailing the graphic features of the drawing, he positions these waves within a broader historical context, discussing both the *booms* and *busts* that have shaped the digital turn in architecture. In conclusion, their work successfully provides a timeline of computation's influence, mapping its trajectory over time.

4.3. "Base and Superstructure: A Vulgar Survey of Western Architecture" by Pier Vitorio Aureli and Marson Corbi.

Aureli and Korbi's chronogram offers a marxist critique of western architecture, framing it as a dialectic between base (mode of production) and superstructure (ideology). They argue that architecture is not a neutral form but a product of the social relations of power. Using historical patterns of (mostly urban) land use and architectural solutions, their diagram traces the development of architecture through different modes of production, from pre-capitalist to capitalist societies. The superstructure is depicted as a continuous field, so-called a *non-stop architectural carpet*, inspired by Piranesi's *Campi Marti* (1756), suggesting that architecture reflects and perpetuates societal power structures. The goal is to emphasize how architecture serves as an ideological tool, shaped by societal divisions and power dynamics.

4.4. "Architecture is Climate" by Mould Collective.

The Mould Collective's drawing visualizes the relationship between architecture and climate change, using a rising mountain to represent atmospheric CO2 emissions. The diagram's layered structure identifies various forces accelerating climate change, emphasizing the extractive practices tied to the built environment. The diagram highlights potential intervention points within these layers, framed not geographically but thematically, focusing on the entanglement of climate and architecture. The collective urges architects to confront these interconnected crises, proposing that the future of architecture must actively respond to climate change. On a more speculative level, the diagram's rifts, working as *bursts of inspiration*, symbolize moments of hope and potential for transformation amid the crisis of global capitalism.

4.5. "Feminist Spatial Practice, Part 1" by Bryony Roberts and Abriannah Aiken.

Roberts and Aiken's one traces the landscape of feminist architecture. The diagram positions its associated practices as responsive to political struggles, mapping their development along a timeline from the late 1960s to the present. The authors emphasize the relational, intersectional nature of feminist spatial practices, which challenge traditional hierarchical systems and propose alternative modes of engagement in architecture. The diagram is a landscape of converging ideologies, with *mountain*s symbolizing peaks of theory and practice emerging from a *sea* of oppression. The rivers, the deltas as any other landforms, are inscribed within this allegorical world of geological language.

4.6. "Cul-de-sac" by Urtzi Grau and Francesca Hughes.

Grau and Hughes critique the predictive power of diagrams, specifically Charles Jencks's 1969 dissimilarity matrix (Fig.3), which categorized architects based on their relational distance. They argue that such diagrams fix us in an eternal present, erasing historical time and context. Their proposal, so called *predictive-chronograph*, proposes a critical approach to the influence of managerial and data-driven systems in contemporary architectural education, highlighting the shift from creative, diagrammatic forms to reductive, data-oriented approaches. The authors focus on how spreadsheets, void of narrative agency, have replaced complex diagrams, reducing architecture to a series of

measurable, predictable outcomes in a sort of time-less and future-less educational environment. Their work critiques the logics of prediction embedded in the imported mindset governing the modern management of architectural schools.

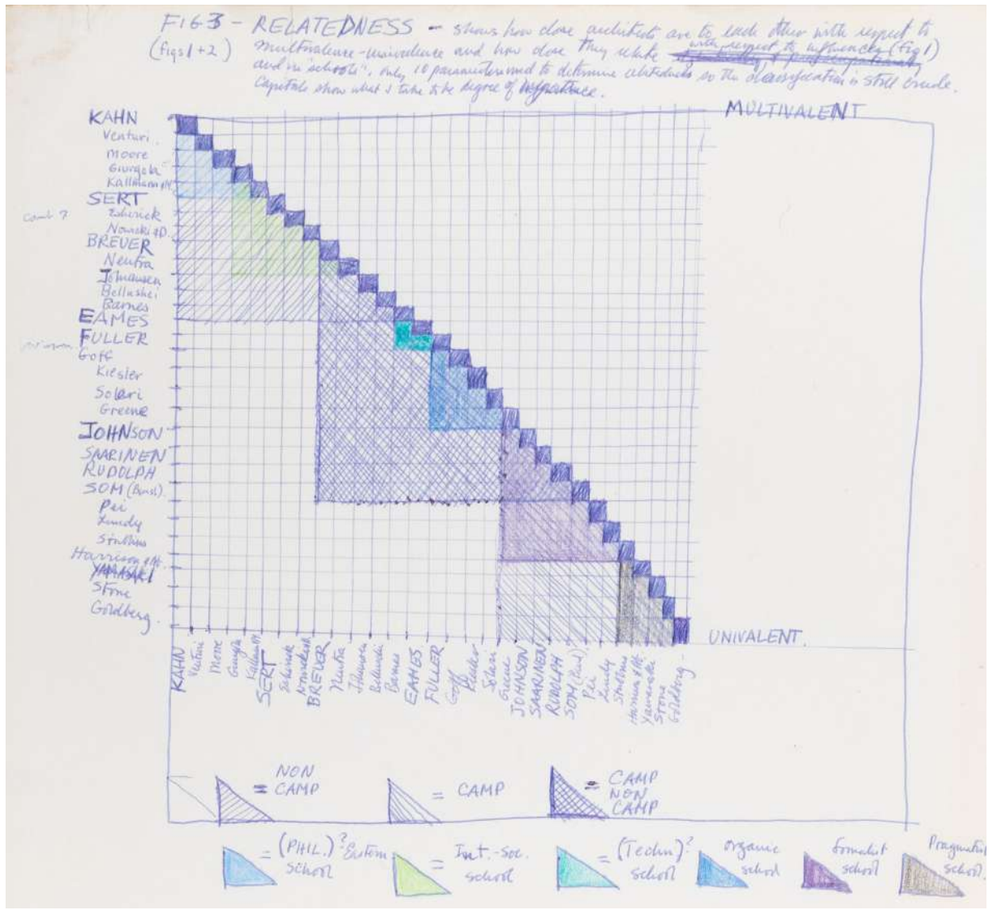

Fig.3

These were the 6 Chronograms commissioned on a first round by e-flux and The Cosmic House. The authors offered a detailed explained of their chronograms followed by two round-tables with experts during a symposium held in 2023 at the AA School of Architecture. Additionally, after an exhibition in London[19], the project expanded and they commissioned an extra round of chronograms with two new drawings added being[20]:

4.7. "Circular Design Principles: Between Theory and Practice" by Lionel Devlieger, Michaël Ghyoot, Adam Przywara, Karen Steukers, Arne Vande Capelle, and Louise Vanhee.
This one examines the gap between the theory and practice of circular design in architecture, focusing on sustainability and material efficiency. The chronogram charts the evolution of circular practices from 1750 to the present, highlighting key movements like industrial ecology and adaptive reuse. By structuring their diagram across production, consumption, and waste, they illustrate how circular design principles can be applied to the built environment. The diagram also explores the historical context of circular practices while acknowledging that solutions must be tailored to specific local conditions, rejecting any global problem-solving pretension. The work challenges architects to consider both aspirational goals and material realities in their designs. They optimistically trust their diagram with the power to encourage or determine that in the same way Jencks' diagrams were able to influence future schools of thought.

4.8. "Chronogram of Chronograms: On Disciplinarily" by Maria Fedorchenko and Yeliz Abdurahman.
It presents a dynamic, evolving view of architectural history, rejecting static, linear representations. The authors map how disciplinary frameworks have transformed over time, incorporating diverse innovations and movements. The diagram reflects the tensions between autonomy and contingency, speculation and action, and imagination and rationality, proposing a more flexible, open-ended approach. They analyze the *end of postmodernism* and trace architectural thought from 2001 to the present, using sub-chronograms and hybrid systems to illustrate the complexity of architectural evolution. Fedorchenko and Abdurahman's drawing is a good example of the need of framing these chronograms as heavy digital images that most of the times are dependent on screen-digital zoom in order to all their information be made readable[21].

5. Charting Visual Grammar, Discursive Textuality and Oral Explanations.
As stated before, the following chart (Fig.4) was produced as a result of integrating the three research approaches applied to the eight drawings commissioned for the *Chronograms of Architecture* Project. While it also includes Jencks influential drawing, it mainly showcases wether a chronogram complies with several factors, which once appeared in one of the drawings , they were used to prove if also appeared in the rest. They are analysed in terms of wether they include bibliography; are planar or not; include figurative drawing; represent a linear idea of time; allow for speculative prediction; open up for interpretation; acknowledge its limitations tied to geographical or cultural areas; acknowledge other drawing references; use metaphors; use a particular range of time; divide its space in stripes, streams or bands; verse around an specific subject; or use a particular style.

The discussion regarding the collected data displayed in the chart seeks to think beyond ontological definitions of the chronograms as drawings themselves. Given that they are named more or less freely depending on their authors and the use they are given— they are produced as maps, consumed as images, miss-referred as diagrams, and explained as timelines or spreadsheets— the following lines scape definition to directly discuss what commonalities or differences these chronograms contain in order to find out how do they honor, expand or update Jencks chronographic pulsations.

As Lily Jencks and Eszter Steierhoffer, have noted in the editorial text for the project, "each of these new diagrams do not rely solely on information and indexicality, but also, and in their own way, form and image"[22]. But, how do they rely on form and image? And more importantly, how are form and image enacted and what implications does it have in terms of, for example, its dimensionality, accessibility, interpretability, subjectivity…?

Curiously enough, most of the drawings include bibliography (books or publications) that are relevant to frame particular authors or works in time. We could argue that many of them use bibliography as a time marker in their drawings, which in addition to other time representations, remarks the time approach the drawing sustains. In that regard, except *Cul-de-sac*[23] and *The Middle Passage of Vernacular Art,* the rest of the chronograms display a linear idea of time in the same mode that Jencks did, using different time spans which vary a lot depending on the chronogram. Some only represent a range of a few years —*On disciplinarity* only studies the last 25— while others span a whole history from 3000 BCE to the present, as is the case of *Base and Superstructure*.

At the same time, not all the drawings include figurative drawings (as is the case of *Mould*'s mountain and mining facilities within it); only four of them do, while the rest stay faithful to the general chronogram aesthetic of different stripes of text and 2D shapes that generate different areas of information through different parts of the image. In this regard, all of them, except two, are represented in two dimensions. Contrary to what one could think, and as Carpo himself had already warned in earlier essays, "despite any recent or forthcoming technological development, planar drawings in many cases still are, and will remain for a while, the best way to record and transmit some visual ideas"[24]. This surprisingly contrasts with what Jencks himself stated not so long ago about his own drawing while critically thinking about its aging. He would claim that "it had the faults of previous diagrams in being two-dimensional, and this means that crosscurrents are partly obscured"[25]. Additionally, Jencks would put as an example the case of his beloved Lévi-Strauss, who according to Jencks, would mention "the difficulty of showing the complexities of his *mythemes* on paper, and in two dimensions"[26]. However, it is also true that the only ones that attempt to scape the two-dimensionality of the drawings are neither specially successful in representing any contamination between different currents.

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Fig. 4

CHRONOGRAM	AUTHORS	TEXT TITLE	INCLUDES BIBLIOGRAPHY	2D	INCLUDES FIGURATIVE DRAWING	LINEAR IDEA OF TIME	SPECULATIVE PREDICTION	OPENS UP INTERPRETATION	ACKNOWLEDGE GEOGRAPHICAL / CULTURAL AREA	ACKNOWLEDGE DRAWING REFEERNCE	METAPHOR	TIME SPAN	STRIPES/ STREAMS/ BANDS	STYLE	SUBJECT
Evolutioniary Tree (1969)	Charles Jencks	*Various*		X		X	X	X		Claude Levi Strauss's structuralist analysis and Alfred Barr's (1936) diagrams of abstract art	Blobs (Petri dish inspo...)	Various	Various (6 traditions)	Cartesian with Blobs	Various
The Middle Passage of Vernacular Art (2023)	Charles L. Davis II and Curry Hackett	Visualizing the Racial Epistemologies of the Architectural Canon	X		X				X	Pierre Bourdieu's visualization of social habitus; Peter Bürger's categorization of the social tendencies of bourgeois art; Rosalind Krauss's "Sculpture in the Expanded Field," and Claire Jean Kim's "Racial Triangulation of Asian Americans"	Boat	18th & 19th Century	3	Three Storeys and Genetic Trees	Colonial Western Canon in Architecture
Prevalence of Computation in Architectural Design (2023)	Mark Garcia and Steven Hutt	A short but believable history of the digital turn in architecture (Mario Carpo)		X		X	X			Charles Jencks Chronograms	No	1940-2030	1	Cartesian: Time Prevalence	Digital Turn in Architecture
Base and Superstructure: A Vulgar Survey of Western Architecture (2023)	Pier Vittorio Aureli and Marson Korbi	Base and Superstructure: A Vulgar Survey of Western Architecture		X	X	X		X	X	Piranesi - Campo Marte	Urban	3000 BCE - 2020	2	Cartesian	The Role of the Architects through Base & Superstructure
Architecture is Climate (2023)	MOULD	Architecture is Climate	X		X	X	X		X	Alexander von Humboldt Mountain "maps"	Mountain	1850-2023	6-8	Cartesian: 3 axis	Climate and Carbon Emissions
Feminist Spatial Practice, Part 1 (2023)	Bryony Roberts and Abriannah Aiken	Feminist Spatial Practice, Part 1	X	X		X	X	X	X	Generic Geological maps	Rivers and Geography	1970-2022	6	Diagonal axis with River Like areas	Feminist Spatial Landscape
Cul-de-sac (2023)	Urtzi Grau and Francesca Hughes	Cul-de-sac							X	"Pigeon-holing Made Difficult" Architectural Design (Nov 1969) by Charles Jencks	Rejects it	No	By Architect	Numerical Taxonomy Matrix	Governing and Managing Architectural Education
Circular Design Principles: Between Theory and Practice (2025)	Lionel Devlieger, Michaël Ghyoot, Adam Przywara, Karen Steukers, Arne Vande Capelle, and Louise Vanhee	Circular Design Principles: Between Theory and Practice	X	X	X	X	X		X			1750-2050	10	GRID - CHART	Circular Design and Environmental Impact
Chronogram of	Maria Fedorchenko &	Chronogram of	X	X		X	X			Banister Fletcher; Charles Jencks, Sigfried Giedion, Alejandro Zaera-Polo and Guillermo Fernández				CIRCULAR	Evolution of

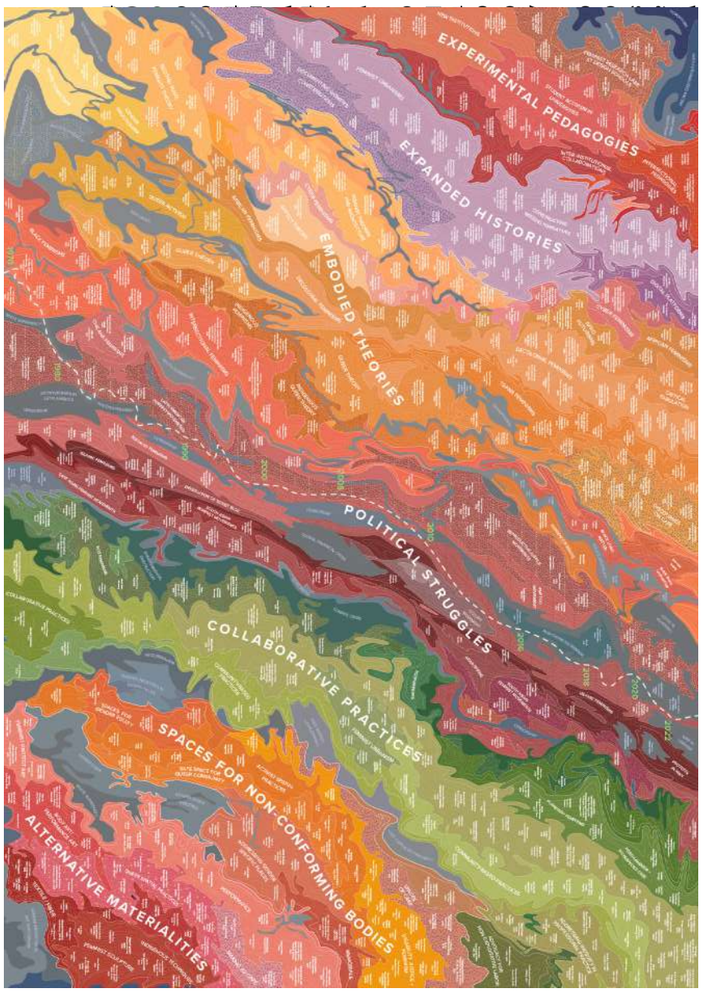

Fig. 5

Seeing both together, the final outcome and the working board for reaching that end, one can easily question the different value and agency of two different graphic temporalities: one running vertically bottom-up and represented in the chronogram itself and the other running horizontally on the Miro board left-to-right and interspersed with all sort of additional layers of exchange with their own temporality and authority depending on the agent and the time they were added to the board.

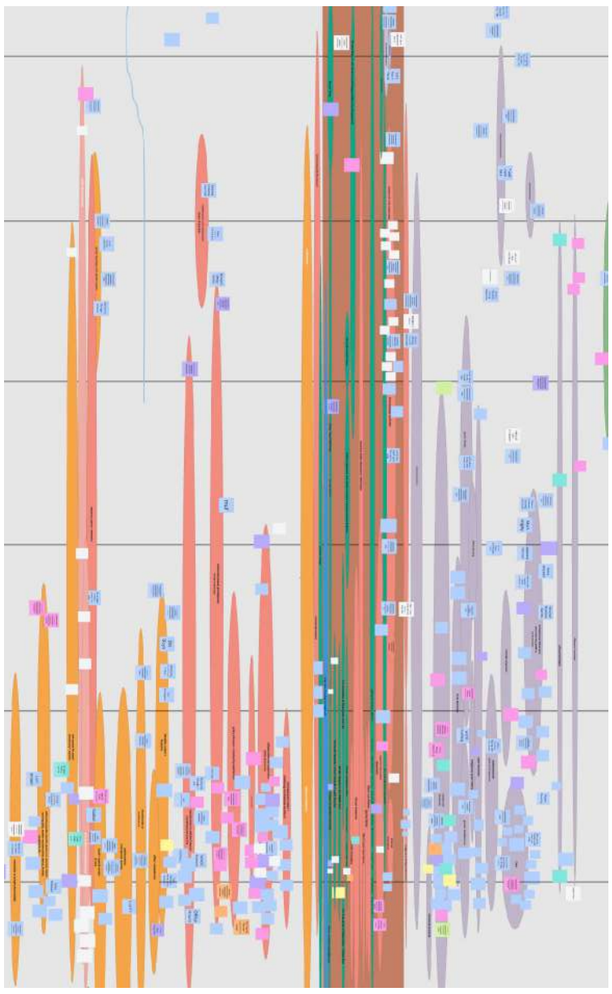

Fig. 6

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This is not exclusive of *Feminist Spatial Practice,* as *Mould*, or *Circular Design* authors shared a similar approach and reflected critically on this when acknowledging the *Miro* board endless possibilities and the kind of openness that one has to negotiate with"[32]. And even if, as Hughes also outlined, "we still need to see what are the resistances of the spreadsheet or the *Miro* board, as we have seen the resistances of the paper"[33], may we acknowledge that the actual chronology of the process of a drawing in the making is, to an extent, as relevant, as the chronology the same drawing seeks to depict. This is particularly interesting when looking retrospectively to the whole project, to borrow someone's words from the audience, "the diagram project was a generator of conversations that are probably much more important than the actual drawing or diagram itself"[34]. Given the complexity to capture this type of conversations in a drawing, this commentator continued to pose the question "if representation, in that way, is potentially an enemy"[35]. Thus, we might be used to watch and use chronograms as the result of a drawing process, but might this representational end of the process be acting as an oblivious outcome for the actual silenced conversation and its collective intellectual space.

6. Conclusion

Contrary to Jencks' chronograms, where as Wigley noted, "the drawings had an independent life and their whole point was to appear self-explanatory"[36]; these new chronograms where commissioned together with the writing of a text that most usually describes the process of making the drawing, or additionally frames it in a wider theoretical set within architectural discourse. This turns the chronogram into a document that depends of explanation, not just for the amount of information or the complexity of layers it includes, but because of the existence of these additional sources. As happened with Jencks and his successive articles and books where these chronograms appeared, as Wigley has remarked "the supposed polemical clarity of the drawings paradoxically required its own polemic"[37]. This impossibility of self-explanation of chronograms is then enacted today by being strictly linked to the endless possibilities of publishing, exhibiting and discussing them, but more importantly, of having them analysed in their full drawing process, specially one that accounts the negotiations and conversations held between the authors in order to achieve a final drawing version. Thus, the relevance that final fixed images that chronograms have traditionally offered might be substituted by another type of chronography which shows evidence of the partial and fragmented moments in the process of a drawing that allow for complementary explanation and interpretation of the chronogram.

Accordingly, the idea of organising symposiums after having texts published prior to the exhibition of a large-scale printed image of a chronogram, somehow consolidates this dependance of the drawing today to be watched and explained, not only once, through essays, but through oral discourse and conversation. With that in mind, might we suggest the existence of the chronogram today as a drawing type transformed into a non-autonomous and dependent technique for architectural discourse. In other words, a graphic tool that far from being illustrative and self-explanatory, reshuffles into a complex document that needs to be seen, read and listened in its different readable platforms and stages of development for it to be actively participant in architectural culture.

Notes

1. María Teresa Muñoz, "Taxonomía de la evolución arquitectónica 'Architecture 2000 and beyond'," *Cuaderno De Proyectos Arquitectónicos,* no.5 (2014): 131.
2. Ibid.
3. Mario Carpo, "The Art of Drawing," *Architectural Design* 83, no.5 (2013): 130.
4. Initially there were six commissions for six new chronograms to be drawn. Eventually CIVA Brussels commissioned two more for their 2025 exhibition in Brussels. This research will consider the eight of them.
5. Peter Cook, "Looking and Drawing," *Architectural Design* 83, no.5 (2013): 80
6. When I asked the archivist Anna McNally on additional documentation containing materials related to the elaboration of the Evolutionary Tree she also retrieved the folders named *CJA. ARTICLES 1970+; CJA-CPA-2;* and *CJA. LATE MODERN 1 - TEMP BOX 077/F2*. See the digital archival catalogue (https://jencksfoundation.maxarchiveservices.co.uk/) for further details on the contents of these folders.
7. Charles Jencks, "The Evolutionary Tree," *Architectural Design,* (October 1970): 527.
8. "The Drawing that ate architecture," The Cosmic House, accessed April 23, 2025, https://www.jencksfoundation.org/explore/text/the-drawing-that-ate-architecture
9. I thank the anonymous peer-reviewer 2 for drawing my attention on this reference. According to Wigley, Giorgio Vasari's narratives of the mid sixteenth century are also evident as an inspiration.
10. Within the aforementioned Phd folder available in Jencks Archive, one can see a review-chart of different historians that influences Jencks' thought on Mythology, including Pevsner, Giedion, Banham and Scully; while at the bottom right-hand side he funnily added: *with apologies to Levi-Strauss,* for not including him. For further reference see: *History as Myth* in Charles Jencks and Geoffrey Broadbent (eds.) *Meaning in Architecture.* Full details in References.
11. Charles Jencks, "Architectural Evolution: The Pulsations of Time," in *The Diagrams of Architecture: AD Reader,* ed. Mark Garcia (Chichester: Wiley, 2010), 307.
12. Nic Clear, "Drawing Time,". *Architectural Design* 83, no.5 (2013):77.
13. Clear, "Drawing Time", 77. Its use in Clear's article, as he acknowledges, "was also seen as being inspired by the 'chronophotography' of Etienne Jules Marey (in the 1880s) and Man Ray's 'rayographs' (of the 1920s), and is influenced by Bernard Tschumi's Screenplays (1976) and Manhattan Transcripts (1976–81).
14. Clear, "Drawing Time", 78.
15. Ibid.
16. Held in the Architectural Association on October 20th, 2023. Video available on https://www.aaschool.ac.uk/publicprogramme/whatson/chronograms-of-architecture.
17. If anything, the analysed visuality of these chronograms reveals its ontological form as that of the image, not only by the way they have been created, but fundamentally by the way they are offered to the public and consumed.
18. "Visualizing the racial epistemologies of the architectural canon," E-flux, accessed July 11, 2025, https://www.e-flux.com/architecture/chronograms/528225/visualizing-the-racial-epistemologies-of-the-architectural-canon. It was a very famous boat used in the slave trade in 1781.In 1789 it was first published and widely reproduced, to raise awareness of the inhumanity of the slave trade. More info on https://www.rmg.co.uk/collections/objects/rmgc-object-254938.
19. They were first exhibited in the AA Exhibition Room in 2023 and they have been exhibited this year in CIVA Brussels. See more info in: https://www.aaschool.ac.uk/publicprogramme/whatson/chronograms-of-architecture-exhibition and https://civa.brussels/en/exhibitions-events/chronograms-architecture.
20. While this research was being conducted, and after a second symposium at Civa Brussels (2025) with no available proceedings or recording, the project grew with another extra chronogram commissioned to Nana Biamah-Ofosu from the Architectural Association to be completed by 2026.
21. "Chronogram of Chronogram: On disciplinarity," E-flux, accessed July 11, 2025, https://www.e-flux.com/architecture/chronograms/665510/chronogram-of-chronograms-on-disciplinarity. This is specially evident in the case of Carpo, Garcia and Hutt's drawing, where the website itself warns of the time needed for loading and rendering the chronogram visible.
22. "Editorial," E-flux, accessed July 12, 2025, https://www.e-flux.com/architecture/chronograms/519547/editorial. Published also in Axel, Nick, Silvia Franceschini, Nikolaus Hirsch, Lily Jencks, and Eszter Steierhoffer, eds. *Chronograms of Architecture*. Leipzig: Spector Books, 2025.
23. Hughes and Grau's drawing does not comply with any of the studied categories in the chart, partially due to its more abstract approach that differs with the rest of the approaches of the other chronograms.
24. Mario Carpo, "The Art of Drawing," *Architectural Design* 83, no.5 (2013): 133.
25. Charles Jencks, "Architectural Evolution: The Pulsations of Time," in *The Diagrams of Architecture: AD Reader,* ed. Mark Garcia (Chichester: Wiley, 2010), 303.
26. Charles Jencks, "Architectural Evolution: The Pulsations of Time," in *The Diagrams of Architecture: AD Reader,* ed. Mark Garcia (Chichester: Wiley, 2010), 307.
27. "Organizing tendencies. Charles Jencks and Alejandro Zaera Polo compare diagrams," Canadian Centre for Architecture, accessed August 28, 2025, https://www.cca.qc.ca/en/articles/issues/25/a-history-of-references/55386/organizing-tendencies. I recognise drawing on this reference thanks to the text written by Hughes and Grau as part of their chronogram too.
28. Charles Jencks, "In what style shall we build?" *The Architectural Review 15, (*March 2015): 99. I acknowledge drawing on this reference thanks to Mark Wigley's in his text "The Drawing that ate architecture," The Cosmic House, accessed April 23, 2025, https://www.jencksfoundation.org/explore/text/the-drawing-that-ate-architecture
29. "Chronograms of Architecture," Architectural Association, accessed July 20, 2025, https://www.aaschool.ac.uk/publicprogramme/whatson/chronograms-of-architecture
30. Ibid.
31. Ibid.
32. Ibid.
33. Ibid.
34. Ibid.
35. Ibid
36. The Cosmic House, "The Drawing that ate architecture."
37. Ibid

Image Captions

Fig. 1. "Likely inventions, discoveries and trends". *Architecture 2000: Success in the art of prediction*. Page 141. The book back matter includes this speculative chronogram ranging from the year 2000 to the year 2050 and beyond ironically using the term

Never as the latest stage of Jencks' optimistic predictions who speculated about 30 extraordinary years to come. The Cosmic House.
Fig. 2. Hand-drawn chronogram of the evolution of Jencks' *Evolutionary Tree* (1969-2011) while reading Mark Wigley's *The drawing that ate architecture*. See reference in Bibliography. Elaborated by the author, 2025.
Fig. 3. Dissimilarity Matrix sketches as found in Charles Jencks Archive. Contained in “CJA-PHD-1” Folder. See reference in Bibliography. The Cosmic House.
Fig. 4. Working research chart produced in order to log the different features found in the three different grammars of each chronogram (image, text and voice) according to the categories that appeared through their close reading and observation. Elaborated by the author, 2025.
Fig. 5. “Feminist Spatial Practices: Part 1”, 2023. Commissioned by the Jencks Foundation and e-flux Architecture for the Chronograms of Architecture series. Bryony Roberts and Abriannah Aiken. Bryony Roberts and Abriannah Aiken.
Fig. 6. “Feminist Spatial Practices: Part 1”, Process Image, 2023. Commissioned by the Jencks Foundation and e-flux Architecture for the Chronograms of Architecture series. Bryony Roberts and Abriannah Aiken.

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Charles Jencks Archive. CJA-LPA-2. The Cosmic House.
Charles Jencks Archive. Uncatalogued file,‘ Late Modern 1’. The Cosmic House.
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Cook, Peter. 2013. “Looking and Drawing”. *Architectural Design* 83, no.5: 80-87.https://doi.org/10.1002/ad.1638
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Biography

Tomás Rodríguez is an architect and Phd researcher currently conducting research about amateur architectural archives and the informal management of architectural documentation. He has undertaken research placements in Manchester School of Architecture (2024) and The Cosmic House in London (2025). He has lectured and teaches in different schools of architecture and design.

Redrawing the Modern.
Critical Devices in the Age of Hypervisibility

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Abstract

The Computer-generated images dazzle while obscuring the assemblies at the heart of the architectural project. The contemporary condition of hypervisibility confronts digital automation and its speed of emission, consumption, and oblivion of images whose seductive aesthetic asserts a suave utopia. How can we respond to this with critical devices capable of producing and validating the graphic evidence of the architectural project? In principle, the image is only an intermediary stage in the project before it becomes a material reality. Drawing, as a selective language, records the spatial characteristics of architecture and articulates latent interpretations: what Robin Evans has called the ‘inverted directionality’ of the medium, capable of anticipating or contradicting the constructed work (Evans, 1986).
Within this framework, ‘critical drawing’ is based on the selective superimposition of graphic and semantic layers. Reconstructing, in a vector environment, the different phases of an artefact (initial project, transformations, current state) and making them interact reveals geometric invariants, dimensional deviations, and mutations in use; the drawing becomes a visual argument, beyond the fetishism of the original and the schematic routine.
This method, a re-appropriation of the critical role of drawing in the operational approach to the built heritage project, was explored in a course on the conservation and transformation of modern heritage, focusing on the Trois-Rivières Exhibition Park (1938), an early witness to modernity in Canada.
The analysis of archival drawings, enriched by in situ surveys, was structured into a multi-layered atlas on three scales: 1) the relationship with the city and its infrastructures, 2) the dialogue with the immediate context, and 3) the internal interactions between the space and the built typologies. The links, materials, typological features and spaces, veiled by the reuse, become legible again. Additions and demolitions are quantified, distinguishing between permanent and ephemeral elements. These layers illustrate the intentional assemblages, made and lost.
This experiment shows how selective superimposition forges the ability to hierarchise heterogeneous information. It establishes a critical contrast between the graphic document and the constructed reality and contributes to a shared lexicon. ‘Redrawing’ restores the image to its role as an analytical and formative device, offering a synchronic and diachronic synthesis of the structures of space, a major tool in contemporary architectural research.

Key words: critical drawing, hypervisibility, architectural heritage, digital redrawing, layered analysis.

1. The Hypervisibility and the need for critical drawing

This study addresses a methodological problem in architectural heritage research: how to counter the persuasive authority of hypervisual imagery with graphic procedures that generate verifiable, comparable evidence for design decisions.

It tests the hypothesis that stratified critical redrawing, grounded in documented sources, scale control, and traceable overlays, turns heterogeneous documents into commensurable evidence. “Commensurable” here means that documents are brought into a shared reference system so that correspondences, deviations, and uncertainties can be measured rather than narrated.

The approach is tested on the Trois-Rivières Exhibition Park (1938–1939), where an earlier fairground genealogy was consolidated into a legible modern ensemble, later altered by reuse and incremental transformations. The study combines a general claim about drawing as evidence with a measurable case, producing a multilayered atlas that identifies invariants, deviations, and programmatic mutations.

In the age of hypervisibility, visibility tends to substitute for demonstration, and images circulate faster than they can be verified.[1] Visual overload[2] reduces the time available for scrutiny, favouring recognition over analysis. This shift marks a passage from *oraō*, the apprehension of surface appearance, to *skopeō*, a deliberate seeing oriented toward decision, which requires explicit criteria, scale control, and traceable operations, precisely what stratified redrawing is designed to provide.

In architecture, this second mode of seeing corresponds to critical drawing: an analytical process in which every graphic line makes a choice explicit (scale reference, historical source, measurement) and thus becomes open to discussion. Here, “critical drawing” denotes redrawing as analysis: the controlled reconstruction of an artefact across time by superimposing normalized archival plans, survey data, and interpretive layers within a single reference system, so that invariants and transformations can be measured rather than asserted.

As Le Corbusier recalled when speaking of his tracés régulateurs, such a gesture “orders” design elements to bring concealed harmony to the surface, without thereby becoming mere embellishment, framing drawing as a rule-based operation rather than a stylistic doctrine. [3]

In this sense, drawing, in its analytical dimension, differs from mere illustrative representation. Analytical drawing does not aim to seduce through a finished image; it renders design choices explicit and therefore discussable. Between drawing and building, there is no neutral mirror, but active mediation. As Evans has shown, drawing is not a neutral translation of building, but a medium that can anticipate, redirect, or contradict construction, and thus demands explicit accountability.[4]

Rossi’s *Analogous City* (Fig. 1), is cited as a conceptual precedent: identity persists through relations and traces, while formal configurations change, making underlying spatial rules retraceable across time.[5]

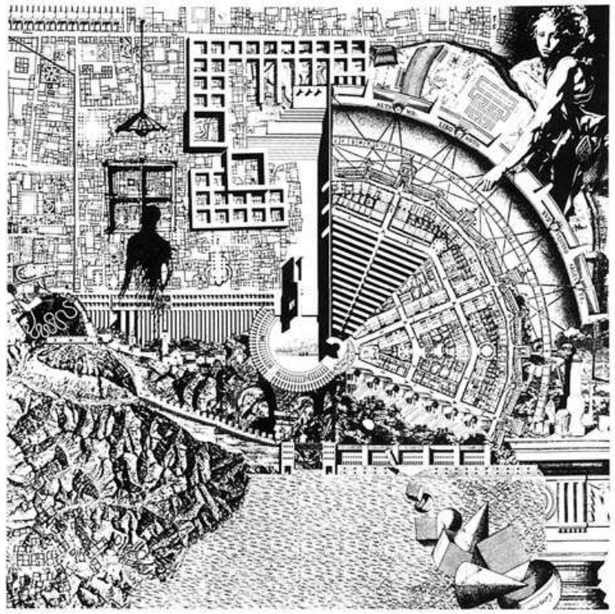

Fig. 1

The resulting plate functions as a critical cartography: an ordered visual argument from which rules, constraints, and design strategies can be derived. The next sections define the concrete operations of this methodology and apply them to the Parc de l’Exposition in Trois-Rivières (1938–1939), testing its effectiveness as a tool for knowledge.

Within this framework, what is at stake is not only epistemic, but also public. By formalizing sources and assumptions, critical drawing operates as a device of responsibility: it does not ask the reader to believe, but to verify. Graphic transparency is treated as a condition of comparison, and the plate becomes the operative environment in which the argument can be verified.

2. Drawing and knowledge. Seeing to decide

In architecture, drawing is not only a means of display but a mode of inquiry. It is a cognitive act in which the object under study is reworked rather than merely reproduced. To redraw is to reconstruct the order of an artefact by aligning heterogeneous sources, including historical plans, current surveys, and photographic documents, within a shared graphic frame. This operation is necessarily selective, and each stroke embeds a decision. Tracing a central axis, for instance, treats it as a determining element. Fixing its orientation and length presupposes a correspondence with a design datum. The interval between the drawing sheet and the building site, which Evans describes as a non-neutral translation from drawing to building, is therefore not a translation error but the very scene in which operative knowledge is formed, and where drawing can orient or contradict built reality.

Here, knowledge is treated as a verifiable output produced through controlled overlays and measurement, in which geometric, dimensional, and typological relations become visible and comparable. These relations are not metaphors but evidence. Constructed transparently, the drawing allows correspondences between design grids and surveys, and between constructive systems and formal configurations, to be measured rather than asserted. Evidence takes the form of measurable correspondences, including axial alignments, module intervals, threshold sequences, and quantified additions or losses. Critical redrawing thus functions as a decision device that shifts judgement away from image plausibility and toward graphic elements that are controllable and reproducible.

This knowledge is also embodied. Drawing involves eye, hand, and mind in a continuous feedback loop. Notebook sketches that register volumetric torsions, light variations, and changes in ground level operate as instruments of experiential control rather than decorative byproducts. As Pallasmaa argues, drawing generates visual and tactile memories that accompany the design process. [6] In the same vein, Schön describes design as reflection in action, a continuous conversation with the situation in which drawing externalizes what does not yet exist.[7]

The resulting plate is both synchronic and diachronic. It holds multiple temporal phases of the project on a single plane and renders them comparable in graphic space. The outcome is not a static image but a field of verification, supported by explicit references to sources, scales, and slopes. [8] Digital translation can strengthen this disciplinary substance when named layers, geographic references, and versioning are used to georeference, overlay, and compare data, rather than to produce realism effects. Software becomes a tool of traceability rather than a tool of pure representation.

In practice, the passage from eye to hand to CAD need not impoverish reality. It can reduce interpretive ambiguity by making alignments, tolerances, and discrepancies explicit. In this space of graphic transparency, an alignment mismatch is not noise but a signal of mutation, while inconsistent levels may reveal archival approximation rather than survey imperfection. Discrepancies become prompts to distinguish between original structures and secondary narratives.

The operative plate therefore functions as both lens and test bench. It exposes hypotheses to critical comparison and supports ethics of precision, and no synthesis is admitted without prior checking of sources. The result is articulated as metric evidence in which surviving geometries emerge, axes reappear and lost or recovered symmetries become legible. On this basis, design choices can be derived from explicit rules. Retracing a historical axis as a pedestrian infrastructure, for example, does not pursue an illusion but recognizes a priori spatial coherence. In this sense, redrawing transforms observation into decision, providing a common base of verifiable evidence that is technical and intersubjective. Knowledge does not accumulate as an archive but is built through comparison. The same line, tested across successive states, becomes a hypothesis subjected to verification. If it holds, it consolidates as an invariant. If it fails, it signals a mutation that demands interpretation. Stratified redrawing therefore does not produce a better image. It produces a more rigorous criterion of identity and difference.

3. Drawing as selective and critical language

Architectural drawing is not only a technical code of representation. It functions as language in the broadest sense, namely a system of signs that establishes relations and hierarchies, gives form to spatial facts, and assigns priorities. As in language, drawing operates not only through a conventional alphabet of signs, but through a lexicon and a syntax that produce meaning. Line weight, hatching, and scale choices contribute to a discursive order within which the parts of the work acquire meaning through the selected graphic grammar.

From this viewpoint, code and language are not equivalent. A code guarantees coherence and correctness in transmitting information, as occurs with drawing conventions. Language, by contrast,

produces meaning and hierarchy, transforming signs into an intelligible field of reality. In design terms, the distinction concerns the passage from description to decision. A set of signs can communicate space, whereas a language constructs the field within which that space becomes interpretable and actionable. Attention therefore shifts from drawing as mere transmission of data to drawing as an interpretive field that establishes the rules of its own account.

Within modernist genealogy, this linguistic dimension is explicit. Modern architecture was not reducible to a stable iconographic repertoire, but relied on abstract structures such as spatial frameworks, regular grids, volumetric relations, and hierarchies of collective spaces. Drawing therefore consisted in selecting and ordering these elements. Rather than simplifying complexity, modern analytical drawing rendered it operable. Axes, alignments, thresholds, and modules became fixed points that could support the project. This sobriety was motivated not by aesthetics but by an ethics of measure that binds form and structure through explicit relations.

Recourse to historical memory was integral to this test. Types were not models to be copied, but logical structures that traverse variants of the built. Ordering architectural memory meant identifying compatibilities between past and present, including structural steps, aggregation modes, and recurring rhythms. In this sense, drawing does not passively preserve history. It translates it into possible fields of action. Selection does not flatten architecture. It sharpens complexity by showing how elements coordinate within an overall scheme.

These parallels with language clarify why graphic counterpoint has long been a privileged method. Comparison is not invoked as an intellectual metaphor but performed as a graphic operation. Plans are redrawn at a common scale, aligned through shared constraints, and reduced to a limited set of variables so that invariants and deviations can be measured rather than narrated. Historical precedents are well known. Colin Rowe compared Palladian and modern villas through side by side drawings, while Italian typological urbanists built serial graphic analyses to extract invariants and variants as vectors of design. [9] Site plans, threshold sections, and axonometries of distinct systems were juxtaposed not for spectacle, but to derive criteria. Comparison thus becomes a work of syntax in which figure and ground are placed in tension to reveal rules and deviations. In the Trois Rivières case, invariants are operationally defined across three scales. At the urban scale they include axial continuity and edge permeability. At the site scale they include the hierarchy of open spaces and ground coherence. At the building scale they include modular compatibility.

This approach requires coherence with construction. Graphic language is grounded in tectonics. Lines select what is structurally solid, including bays, columns, and modules, while distinctions between solids and voids become operative norms. At the same time, vigilance against spectacularization remains necessary. When representation detaches itself from constructive logic, the project loses reason and risks becoming merchandise. Drawing as language therefore requires concrete anchorage, and every graphic axiom must correspond to a real property of the built.

The present work translates these premises into a linguistic practice of redrawing. The plate assumes the value of a critical text through explicit declaration of sources, scales, and conventions, through a rigorous distinction among states, and through the staging of relations among layout, ground, types, and uses as if they formed the syntax of the same utterance. The graphic lexicon is intentionally reduced through controlled line weights, minimal fills, and limited chromatic coding. Every choice on the sheet has an operative counterpart. A building type, for example, is not repeated as a formal cliché but defined through comparison. As Moneo notes, type is defined by a characteristic formal structure and is recognized through internal relations between parts rather than through a single exemplar. [10]

With contemporary tools this language remains active. Diagrams and digital overlays become genuine instruments of thought only when accompanied by protocols, including coherent nomenclature, named layers, traceable versioning, and uniform scales. A CAD drawing has value when it supports reliable comparison. When it becomes merely appealing, it loses its epistemic function. In this context, stratification becomes the privileged path. Composing the same sheet through data origins, scale hierarchies, and temporal strata makes each choice legible within its genealogy.

Redrawing, in this sense, becomes selective writing. It mobilizes invariants and variants not to produce a finished image, but to structure a design agenda. The result is a form of public language that remains shareable and criticizable. Tables and legends provide the data through which the reader may assent or dissent. The plate can also support quantitative calculations, including metres of continuity, coverage percentages, and average depths, translating spatial norms into measurable terms. Drawing as language therefore becomes method through a sequence of controllable acts that include source collection, normalization, stratification, thematic analysis, and synthesis. The following section formalizes this procedural chain as a protocol of stratified redrawing and tests it in a case where documentation is incomplete and transformations are substantial.

4. A question of method. Stratified critical redrawing

The method proposed here does not aim to beautify representation. Its purpose is to restore drawing's cognitive power. In practice, the paper formalizes a protocol of critical redrawing that is replicable and verifiable and that can transform heterogeneous historical and contemporary material into coherent

graphic evidence. Within this procedure, the plate is not treated as neutral. It becomes the environment in which phases separated by time are integrated, the scale and orientation of sources are compared, and interpretive choices are declared.

Stratified redrawing overlays three informational levels within a single coherent reference system. These levels include the original project, subsequent mutations, and the current condition. This operation makes permanence and departure legible, and each overlay produces a differential that can be checked against the same spatial frame. Stratification is privileged because it converts temporal difference into a readable differential, allowing claims about permanence and change to be tested within one reference system. The aim is therefore not photocopying, but the transparent reconstruction of an organism's evolution, so that original geometries can reappear and deviations can be measured.

For the procedure to remain critical, the work assigns each datum a rigorous chain of custody. This is not a bureaucratic constraint, but the core of the analytical effort. Every graphic element is accompanied by information on its source, its transfer process, its uncertainty, and its versioning. When an archival planimetric document presents distortions, these are corrected through normalization, while the residual margin of imprecision is recorded in the working file and in the drawing legend. In this way, graphic information retains a visible genealogy.

Visual coherence follows a principle of parsimony. The protocol relies on limited line weights and restrained colour use, together with a clear hierarchy of emphasis. Each thematic plate, including ground, layout, types, structure, and uses, is designed to be readable on its own while remaining comparable with the others and with the state plate through systematic cross checking. Collective review is also treated as part of the method. Periodic evaluations guided by shared criteria, together with change logs that explain why lines are kept or discarded, reinforce the auditability of the process.

The final plate must remain reversible. It should be possible to modify it, integrate new data, and reopen layers without reconstructing the entire system. The stronger the evidential base, the freer the project becomes. This freedom is not arbitrariness, since it remains constrained by an order of proofs. Graphic reversibility is therefore a design principle. A drawing that does not allow one to return to layers or to reconstruct the genealogy of decisions quickly becomes opaque, even when it appears visually clean. By contrast, a layered file structured through stable conventions allows a clear distinction between the construction of evidence and the construction of a proposal. This distinction remains decisive when projects change hands, cross phases, or involve multiple actors. The stratified plate functions as an operative archive. It preserves not only results, but also the process by which they were obtained. Method is therefore treated as a discipline of work that specifies which operations are admissible, which must be declared, and which require cross verification. In this framework, parsimony has a control function rather than an aesthetic one. Anything not necessary for proof should not enter the plate, since it weakens the status of the drawing as argument.

The process begins with source collection and evaluation. Each document is examined critically to assess reliability, gaps, and deformations. Once sources are selected, the protocol proceeds through intermediate steps with explicit outputs, which makes the path transparent. These steps include collection and evaluation, geometric normalization, vector reconstruction across scales, overlay of states, thematic analyses, comparable synthesis, and a matrix of rules and decisions. Geometric normalization establishes minimal conditions for comparison, since drawings produced in different contexts and periods can only be combined sensibly once they share orientation, scale, and reference constraints. Scale transition is not simple enlargement. It functions as a change of grammar, since each scale makes different relations visible through specific design choices.

Overlays in a vector environment reveal what repeats and what breaks. In the Parc de l'Exposition case, normalized historical planimetry provides the comparison base. Thematic drawings register axes, pedestrian areas, plantings, and building bodies in ways that make regularities and variations comparable. Separate maps are produced for ground, layout, types, structure, and uses, each supported by standardized legends. The resulting multilayer atlas does not promise an ultra realistic rendering. It proposes a stratified spatial argument that encourages the reading of rules. The essential output is not a final image, but guidelines and a decision matrix derived from synthesis. These outputs identify invariants to be preserved and thresholds of transformation that remain tolerable. Redrawing therefore already operates as a form of norm setting. It does not replace the project but binds it to responsibility.

To ensure that this responsibility is shareable, the method's language remains sober and traceable. It relies on clear nomenclatures for files and layers, precise legends, controlled graphic weights, functional colour coding, and dated and signed versions. By shifting attention from image realism to process evidence, the protocol responds technically to the risk associated with hypervisibility. Procedures that generate effects must remain controllable. Eye, hand, instrument, and traditional means remain essential, since they constitute the first workshop of ideas and measures. The method therefore highlights the frameworks that express the site's deep value, including hierarchies of axes and collective spaces, modularity, relations between ground and volume, and urban thresholds. Invariants are treated not as forms to be repeated, but as logical constraints from which compatibilities follow. Tectonic verification remains decisive, since interaxial distances and constructive steps test the

consistency of the graphic reading. The protocol finally follows Tufte's principle, increasing the ratio of information to marks by reducing everything that is not needed.[11]

5. Case study. Parc de l'Exposition, Trois-Rivières (1938–1939)

This section tests the central hypothesis. Stratified critical redrawing can generate comparable knowledge and produce motivated design indications. In Trois-Rivières, an architectural culture shaped by work and industry is not a collection of images. It is a patient construction of rules that link artefacts to ground, networks to landscape, and everyday use to public representation. Along the St. Lawrence corridor and the railway spine, the timber and pulp and paper economy traced an operative geography that gave measure to the city and its edges.

Since 1896, the exhibition grounds beyond the falaise have functioned as a periodic device of civic focus. They translate production into an urban grammar of axes, thresholds, porticoes, and open spaces. The 1938 construction phase did not invent the fair in Québec, which had been documented earlier in Québec City. It consolidated the tradition in Trois-Rivières into a unified ensemble capable of holding together event time and ordinary time. The case study examines the Trois-Rivières Agricultural and Industrial Exhibition Park, whose modern ensemble was built in 1938 and inaugurated for the 1939 cycle in Québec.

Located along the St. Lawrence River, Trois-Rivières developed as an interface between production territories and exchange networks. The fairgrounds translated this geography into an urban syntax. The original complex, a series of pavilions on a large public forecourt with court gardens, has been transformed yet still preserves significant traces of its rationalist layout. This combination of legibility and loss makes the site a rigorous test for evidence-based redrawing under conditions of transformation and incomplete documentation. Despite substantial changes, the park remains physically legible and therefore suitable for testing reversible strategies of active conservation grounded in evidence.

The work originates in a university studio devoted to the restoration of modern heritage. The goal is not to design a final intervention. It is to verify whether stratified redrawing can reactivate a historical layout by providing a coherent basis for reuse. The case is treated as industrial modern heritage. The aim is not to reproduce forms, but to keep the ensemble's spatial rules in operation through compatible and reversible interventions grounded in documentary evidence and technical diagnosis.

The research mobilizes four main resources. It draws on the long fairground genealogy in Québec and its consolidation in Trois-Rivières since 1896, documented by economic and agricultural sources. It uses the 1938 planimetry attributed to Jules Caron, complemented by descriptive historical documentation. It develops analytical CAD redrawings produced with shared protocols, including overlays and thematic layers. It also produces a synthesis plate that combines the current masterplan with strategic directives (Fig. 2). [12]

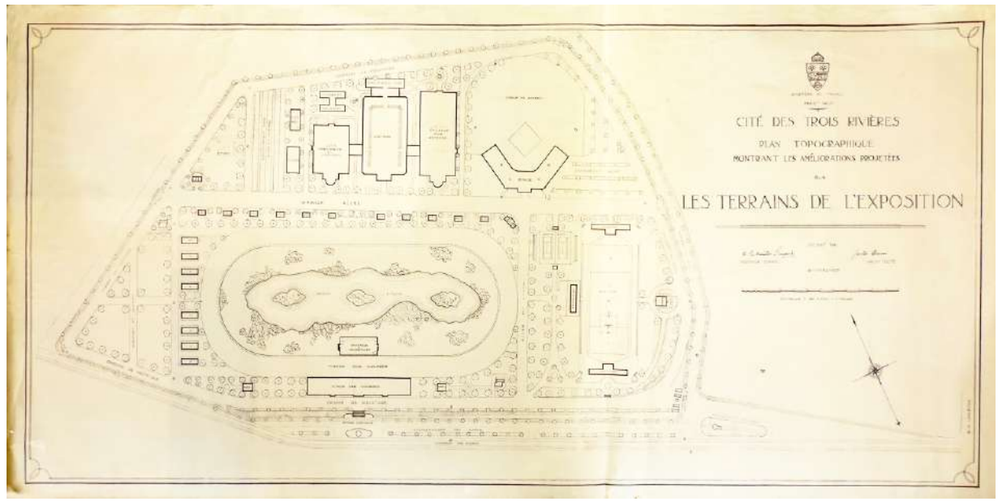

Fig. 2

The operative process is articulated in three controllable phases. A vector historical base is established first. A thematic reading by strata follows. Critical synthesis then produces a decision matrix that correlates rules with measurable criteria. Already at the end of the overlay of states, key points emerge. Normalized historical and current surveys show that the main north to south axis functioned as the aggregating element of the entire system and partially reappears in the ground trace (Fig.3). From a design standpoint, the axis is not a scenographic motif. It operates as a civic infrastructure that can be restored through pedestrian and visual continuity, calibrated widths, rhythmic vegetation, and lighting. Its value lies in its capacity to hold public space together within a coherent order. This reading also enables a further step. Spatial permanence becomes a management criterion, since an axis is not only a line of movement but a device that organizes times, intensities, and maintenance.

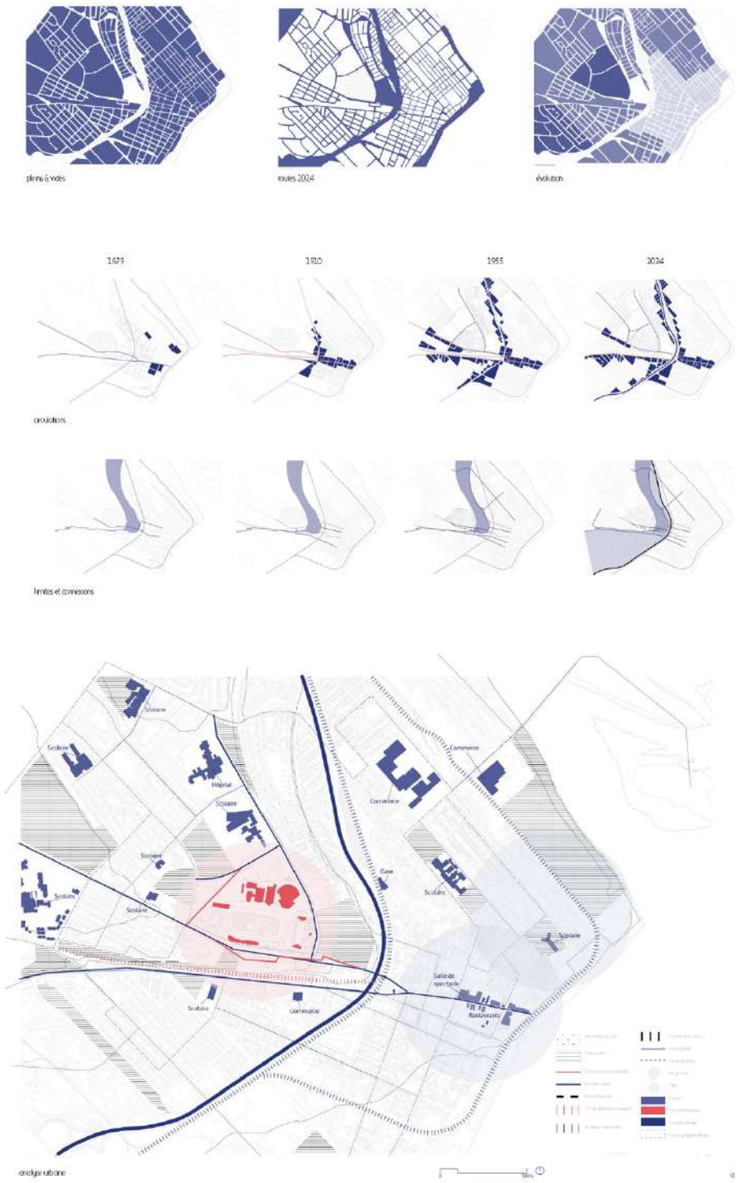

Fig. 3

The hierarchies of open space also become clear. Comparative redrawing reveals three historical functional levels, a central square, linear gardens, and internal courtyards (Fig. 4).

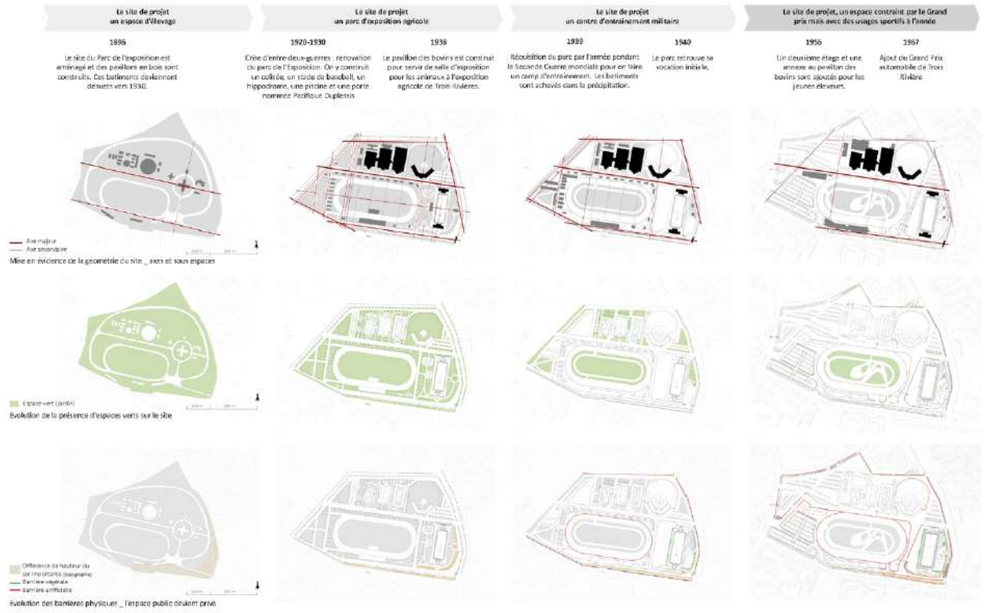

Fig. 4

The data show that later transformations flattened these differences. The thematic cartography makes visible the historical gradient of spatial intensity, which is now partly lost. A coherent restoration of the modern ensemble does not, therefore consist in freezing forms. It consists in reactivating uses through targeted programming, mobile furnishings, and reversible interventions. The distinction between permanent and ephemeral elements then informs maintenance and temporal management criteria.

Among the most immediate findings is the importance of the ground as the first architecture. In the historical planimetry, level changes and drainage were represented as a continuous fabric. Today that fabric is fragmented through heterogeneous paving and interrupted permeability. Specific drawings allow one to measure unexpected levels, inappropriate slopes, and conflicts between exterior surfaces and pedestrian paths. The criterion derived is that restoration shifts from the addition of images to physical reconnection. Layers must be restored, thresholds clarified, paths reconnected, planes stabilized with coherent paving and lighting sequenced. Success is measured in the legibility of the step rather than in the appeal of a spectacular image.

The building fabric also confirms modularity. Regular bays and interaxes remain readable in the surviving structures. Redrawing clarifies correspondences of the module and supports a reuse metric. Interventions can align with existing depths, adopt solutions compatible with the constructive step, and remain recognizable through reversible assemblies and dry services. Typology becomes a measurable procedure rather than a visual repertoire.

Further evidence concerns the edges. Borders that were once permeable are now interrupted by improper barriers. The analysis prompts treating edges as urban devices, reopening passages, realigning connections and sightlines, and strengthening dialogue with public transport nodes. At the urban scale, the axis position and proximity to the river suggest further potentials, including transverse green traces as ecological corridors and integrated access thresholds supported by protected paths and coordinated lighting.

Redrawing enables operative metrics that ground discussion without closing it. These include axial continuity, hierarchy of open space, ground tectonics, building modularity, and edge permeability (Fig. 5). The magnitudes become coherence indicators that translate spatial rules into verifiable criteria.

During the studio, La Vacherie was also analysed to test the method at the level of detail. The case confirms that the interest lies in rules, including modularity in solids and voids, reopening the portico, and reconnecting the courtyard to the path. Redrawing allows the quantification of reactivated continuities and openings, and it clarifies where an intervention respects the layout or betrays it. Three main invariants emerge, a hierarchy of accesses and paths structured by a central spine, a sequence of thresholds between square, gardens, and courtyards, and modular compatibility of the pavilions. Variants concern additions that interrupt continuities and changes of use that transform borders into

exclusion. Stratified redrawing exposes the genealogy of these choices and keeps them open to debate.

The case teaches that memory in the modern is operative. The 1938 Exhibition is not a museum to be reconstructed. It is a layout to be read and made functional today. The axis becomes a policy of public space. The hierarchy of open spaces becomes a programme of uses. Modularity becomes compatibility of dimensions. The edge becomes a device of exchange. Infrastructures become sequences to be reactivated. Redrawing turns these links into design instruments. The case demonstrates that stratified redrawing functions as a device of design research for fragile modern contexts, where documentation is partial, and the appeal of images can too easily replace proof.

6. Conclusions: redrawing to know

Within architectural heritage research, the production of knowledge depends on procedures that turn design claims into verifiable, comparable evidence open to scrutiny. The study has argued that stratified critical redrawing restores drawing to its cognitive role, before any representational ambition. Tested on the Parc de l'Exposition in Trois Rivières, the method produces a shareable body of evidence and a set of operative criteria for design work on the existing. The point is not to astonish images, but to establish a rigorous basis for discussion, comparison, and decision.

Design work is reframed around three interdependent dimensions. Analysis orders sources and stabilizes the conditions of comparison. Interpretation selects spatial frameworks such as axes, hierarchies, and modules, then formulates them as rules that can be examined and debated. Instruments establish a chain of responsibility that holds together measurement and judgement in the passage from observation to drawing and from drawing to project. In this perspective, engagement with the past is not a cult of origins, but a method for acting in the present. To redraw the Modern means keeping its characters in operation where they remain legible, recognizing them where they have been obscured, and accounting for them where they have been lost. Memory does not supply closed answers. It supplies criteria. The atlas is therefore conceived to make founding characters explicit not as fixed forms, but as relational structures, including axes, thresholds, hierarchies of voids, and modular compatibilities, capable of guiding restoration, reuse, and transformation without collapsing identity into stylistic replication.

Redrawing is not treated as a graphic genre, but as an attitude. It requires deliberate seeing oriented toward decision, and it demands that relations be made explicit before any composition is proposed. Overlays, thematic drawings, abacuses, and matrices function as critical devices that allow the discipline to argue through traceable operations. Against the contemporary risk of confusing effects with proof, analytical drawing does not constrain imagination. It makes constraints explicit, renders choices controllable, and withdraws them from arbitrariness by tying them to declared sources, measured correspondences, and reproducible comparisons.

Transferability remains a central question. A method grounded in characters and proofs must offer grammar that can be applied elsewhere without erasing local specificities. What can be replicated is the procedure rather than the form. Constants are the reading frameworks, the normalization protocols, and the rules of traceability. Variables are the indicators and their incidence, determined by use, context, and the specific constraints of each site. Limits must also be acknowledged. Archival gaps, ambiguities, and political decisions remain external to drawing, even when drawing clarifies them. Precisely for this reason, making sources, assumptions, and uncertainties explicit is not an accessory gesture, but part of the method's responsibility.

Three outcomes follow. First, the study defines a replicable protocol for stratified critical redrawing based on source declaration, normalization, and layer traceability. Second, it derives measurable indicators, including axial continuity, hierarchy of open spaces, ground coherence, modular compatibility, and edge permeability, that support design discussion beyond image persuasion. Third, it clarifies transferability as procedural replication rather than formal imitation. By shifting debate from image plausibility to measured indicators, the method links graphic material and design decisions explicit, checkable, and contestable.

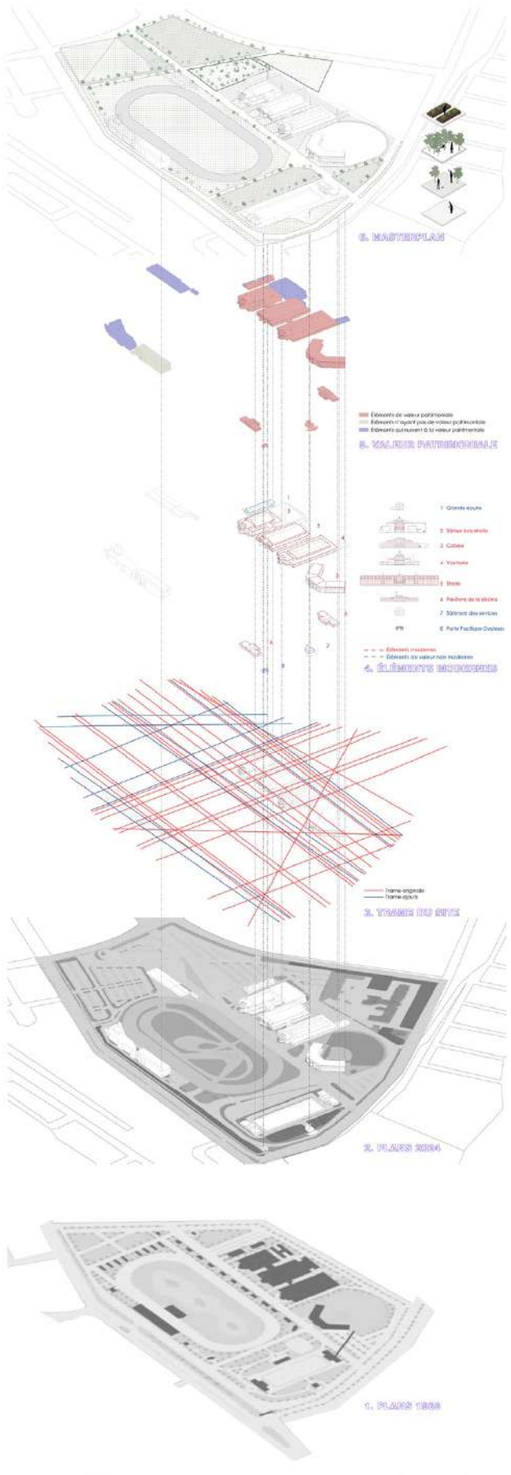

Fig.5

Notes

1. Andrea Mubi Brighenti, “Visibility, Hypervisibility and the Public,” in *The SAGE Handbook of Social Research Methods*, ed. Pertti Alasuutari, Leonard Bickman, and Julia Brannen (London: SAGE, 2010), 47.
2. Alessandro Luigini and Matteo Moretti, “The relevance of Otto Neurath. From ISOTYPE to visual journalism for a visual account of society,” *XY digitale*, no. 6 (2018): 74.
3. Le Corbusier, *Toward an Architecture*, trans. John Goodman (Los Angeles: Getty Research Institute, 2007), 85–86.
4. Robin Evans, “Translations from Drawing to Building,” *AA Files* 12 (Summer 1986): 3–18.
5. Aldo Rossi, “The Analogous City,” *Lotus International* 13 (1976): 6.
6. Juhani Pallasmaa, *The Thinking Hand: Existential and Embodied Wisdom in Architecture* (Chichester: Wiley, 2009), 22.
7. Donald A. Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983), 79.
8. Andrea Gänshirt, *Tools for Ideas: An Introduction to Architectural Design* (Basel: Birkhäuser, 2007), 3.
9. Colin Rowe, “The Mathematics of the Ideal Villa,” *Architectural Review* 101, no. 602 (March 1947): 101–104.
10. Rafael Moneo, “On Typology,” *Oppositions* 13 (Summer 1978): 22–45.
11. Edward R. Tufte, *The Visual Display of Quantitative Information* (Cheshire, CT: Graphics Press, 1983).
12. Gérard Paquet, *Histoire économique du Québec* (Montréal: Boréal, 2015); *Journal de l’Agriculture* (Québec), 1818 and following; *Répertoire du patrimoine culturel du Québec*, entries related to the Parc de l’Exposition and the 1938 ensemble.

Image Captions

Fig. 1. Aldo Rossi, *The Analogous City*, 1976. Memory as an operative structure. Permanences and variations made visible through drawing.
Fig. 2. Jules Caron, *Les terrains de l’Exposition, Trois-Rivières*. Topographic site plan with proposed improvements. Ink and pencil, 1938. Bibliothèque et Archives nationales du Québec, Centre d’archives de Trois-Rivières, Fonds Caron.
Fig. 3. C. Gagné, N. Morel, M. Saint-Jacques, M. Fleury, J. F. Morasse-Langlois, *Parc de l’Exposition, Trois-Rivières*. Solids and voids, infrastructures and networks at the urban scale. Evolution of circulation, limits, and connections. Analysis of the contemporary city. Digital graphic, 2024. Authors’ collection.
Fig. 4. L. Comet Picat, R. Deschênes, J. Lamon, M. Morel, P. Suprano, *Parc de l’Exposition, Trois-Rivières*. Analysis of site geometry, axes and sub-spaces. Evolution of green spaces and vegetative and artificial screens. Transformation of physical barriers and progressive privatization of public space. Digital graphic, 2024. Authors’ collection.
Fig. 5. A. Anderson, N. Benjelloun, H. Côté, R. Grandmont, M. Watanabe, *Parc de l’Exposition, Trois-Rivières*. Existing-conditions master plan and strategic project guidelines. Digital graphic, 2024. Authors’ collection.

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Biography

Fabio Sedia is an architect, adjunct professor, and researcher with a joint PhD from ETSAM Madrid and the University of Palermo. His work operates at the intersection of design, heritage, and representation, examining drawing as a tool of knowledge and governance that links archival research, field survey, and digital protocols. He has led and contributed to studies for public administrations and cultural institutions on adaptive reuse, open-space infrastructures, and accessibility, and advises on competitions and masterplans focused on measurable urban outcomes. In academia he teaches design studios and seminars on critical drawing, type and morphology, and post-digital methods, promoting reproducible procedures, selective observation, and shared vocabularies across scales. His projects and writings have been presented in conferences, exhibitions, and journals, and he collaborates widely with interdisciplinary teams bridging architecture, urbanism, and environmental design. He works between practice and research with a civic, evidence-based approach to the contemporary city.

All Scales Considered
How Solar Infrastructure Reorganises Space from German Fields to Global Networks

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Abstract

The term ‘energy transition’ is often oversimplified in public discourse, reduced to emissions-free targets while black-boxing the intricate spatial configurations and material flows that sustain them. This article argues instead that these transitions are spatial projects, constituted by infrastructures that reorganise land while linking local sites to global systems of extraction, production, and finance. Taking the 465,000 photovoltaic (PV) panels at Brandenburg’s Weesow–Willmersdorf solar park as a point of departure, the paper develops a visual research methodology that treats architectural drawing as an investigative tool rather than illustration.

The method addresses challenges that define energy research: the spatial blindness of conventional analysis, the need to account for infrastructures across multiple scales, and the tension between abstraction and materialisation. By moving iteratively between local installations and global supply networks, it traces how planetary infrastructures are embedded in specific landscapes. Through plans, sections, axonometrics, overlays, and flow diagrams, drawings reframe technical data as spatial evidence, revealing connections that standard statistical approaches cannot easily show. Unlike design drawings that anticipate future development, these mappings analyse already-produced spaces, exposing synchronic relationships between component geometry, site layouts, network infrastructures, and planetary circulation.

Applied to Weesow–Willmersdorf, this approach discloses the material intensity embedded in a single PV module, demonstrates how law and ecology are inscribed into design, and exposes uneven geographies of benefit and burden between rural Brandenburg and metropolitan Berlin, power purchase agreements (PPA) across Germany, and distant manufacturing landscapes in Jiangsu, China. The analysis shows that decarbonisation remains materially intensive, territorially uneven, and structurally dependent on Chinese industrial capacity.

The contribution is both methodological and disciplinary. For architectural humanities, the paper extends drawing’s critical repertoire by using it as evidential practice. For environmental humanities, it provides spatial evidence for debates on dependency, justice, and geopolitics. In doing so, architectural drawing is positioned as a critical analytical practice for investigating the spatial production of energy transitions.

Key words: energy transitions, spatial analysis, architectural drawing, supply chains, environmental humanities.

1. Introduction

The energy transition is rewriting the world’s geography. Solar fields consume agricultural land, wind parks claim coastlines, and transmission corridors slice through regions—each infrastructure reorganising not only landscapes but entire networks of value, connecting remote territories to global circulations of minerals, capital, and labour.[1] This spatial revolution poses urgent questions across disciplines. For the architectural humanities: how can we investigate infrastructures not as mere engineering artefacts but as territorial projects that remake landscapes, jurisdictions, and social relations? For the environmental humanities: how do we trace the planetary entanglements of supposedly ‘green’ technologies without collapsing them into abstract flows?

This article responds by developing a visual methodology for analysing energy infrastructures through architectural drawing. It argues that plans, sections, axonometrics, and flow diagrams function not merely as illustrations but as analytical instruments that generate new forms of knowledge. These drawings produce what I call ‘spatial intelligence’: an evidential and narrative capacity to make visible the contradictions and dependencies otherwise hidden in statistics, policy reports, and technical specifications.

The Weesow–Willmersdorf solar park in Brandenburg provides the empirical ground. Commissioned in 2020 as Germany’s first large-scale subsidy-free PV installation, the project marked an early consolidation of financial, legal, and spatial shifts that have since become increasingly central to renewable energy deployment. Its reliance on long-term PPAs, its siting on agricultural land in rural Werneuchen, and its role in supplying electricity to distant industrial and metropolitan consumers render visible the uneven territorial relations underpinning the *Energiewende*.
Analysed across five scales, the case is mobilised as a diagnostic device rather than an exemplar. While it cannot stand in for PV infrastructure more generally, it offers a lens through which to examine how contemporary energy projects bind local landscapes into national and global systems. The analytical framework developed here is therefore intended to be transferable, even as the empirical findings remain situated.

1.1 The Problem: When Data Obscures Space

We need to talk about energy dependencies. Germany, Europe’s industrial powerhouse, reveals the continent’s precarious energy reality. In 2022, the country’s Primary Energy Consumption (PEC) reached 11,769 PJ[2]—enough energy to power 853 million households,[3] roughly 20 times Germany’s residential count.[4] Yet, despite this scale, domestic production covered barely one-third of total demand, leaving the country with a 68% energy import dependency.[5] This vulnerability is mirrored across the European Union, which depends on imports for 63%[6] of its energy and still sources 78% from fossil fuels[7]. Behind these figures lie extensive but often invisible infrastructures of pipelines, grids, railways, and shipping routes that connect Europe to resource-rich territories worldwide.

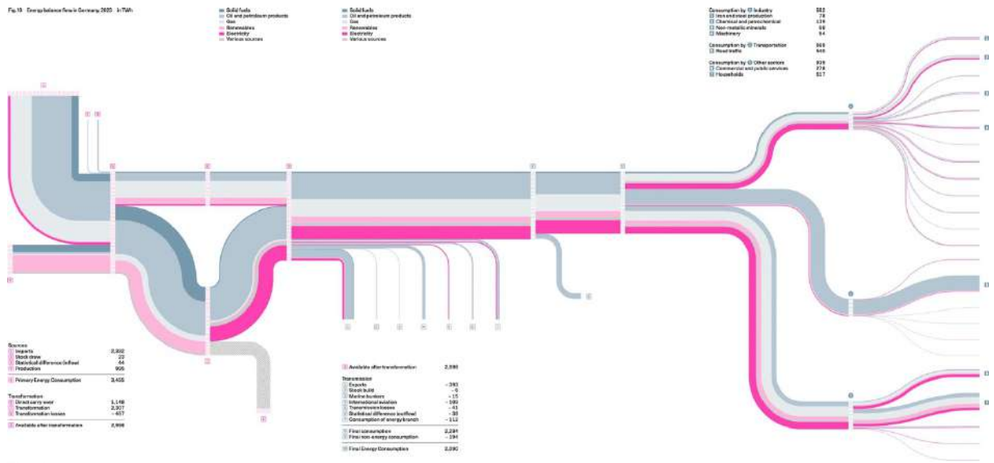

Fig. 1

However, in conventional energy analysis, these dependencies appear not as geography but as abstraction. Sankey diagrams (Fig. 1) and balance sheets depict energy as coloured flows—light pink for renewables, blue for fossil fuels, and dark pink for electricity—tracing energy’s movement from primary sources through conversion to final consumption. The visualisation excels at showing

proportional relationships: how much energy enters the system (2,392 TWh imports, 995 TWh domestic production), where losses occur (457 TWh), and which sectors consume what quantities (Final Energy Consumption, FEC, 2,090 TWh). But fundamental spatial questions remain unanswered: Where do flows originate? Through which territories do they pass? What infrastructures enable their movement? What new dependencies do they create?

The diagram's smooth curves and calibrated widths suggest seamless flow, but energy never moves as pure abstraction. Behind every statistical curve lie contested infrastructures: gas pipelines crossing warzones, lithium mines carved out for electric vehicles, or simply a wind turbine blocking someone's view. The visual language of energy statistics renders these material realities invisible, presenting energy as information divorced from geographical context, social relations, and spatial consequences. Transition studies scholars call this problem 'spatial blindness'—the systematic tendency to ignore how socio-technical systems materialise differently across territories.[8] What infrastructure scholar Susan Leigh Star calls the 'boring things'—the cables, pipes, and everyday infrastructures that make up our mundane worlds[9]—remain systematically invisible in this spatially-blind analysis. The challenge, then, is not only technical but representational: how to produce accounts that make these hidden geographies visible without losing analytical clarity.

2. Methodology: From Data to Space

This article develops a visual research methodology that translates abstract data into spatial form. Architectural drawing is central here, not as illustration but as method—capable of producing evidence and critique. The aim is not to provide a comprehensive review of architectural representation or energy research, but to situate drawing as an analytical and evidential practice for interrogating already-produced spatial conditions. As Latour argued, representations are 'immutable mobiles': stable enough to circulate while retaining meaning across contexts.[10] Drawings, in this sense, travel across scales and categories, reframing data as territory while also carrying narrative force, telling stories of extraction, regulation, and dependency that remain absent from statistics. Where statistical diagrams reduce energy to abstract flows, architectural drawings resituate these flows within landscapes, infrastructures, and jurisdictions, countering the spatial blindness identified in transition studies.

The approach builds on three strands of scholarship. First, transition studies have highlighted a persistent neglect of spatial perspectives. Foundational work by Bridge et al. and Hansen and Coenen showed how dominant approaches—network analysis and statistical modelling—privilege temporal and quantitative dynamics over spatial ones,[11] a point reiterated in later publications and in contemporary reflections.[12] Second, critical legal geographers argue that legal practices such as zoning or ordinances do not simply regulate pre-existing spaces but actively constitute them, drawing boundaries, attaching meanings, and enforcing consequences—processes that become legible when mapped.[13] Third, architectural theory has long stressed drawing's critical agency. Evans described the 'reversed directionality' of representation, whereby drawings generate forms of knowledge rather than merely depict reality.[14] Corner similarly argued that mapping operates as an agent that reveals latent territorial relations rather than passively recording them.[15] More recent methodological work has extended these insights by explicitly framing drawing and mapping as research practices. Pelger et al., for example, distinguish analytical mappings that document already-produced spaces from design drawings that project possible futures, positioning multiscalar drawing as a qualitative method capable of holding together empirical precision and interpretive abstraction.[16]

In parallel, contemporary practices such as Forensic Architecture have demonstrated how architectural drawing and spatial analysis can function as evidential tools, assembling dispersed data into legible spatial claims through the reconstruction and interrogation of existing spatial realities rather than the projection of future form.[17] While such work operates primarily within juridical and human-rights contexts, it signals a broader disciplinary shift in which architectural representation is increasingly mobilised as an analytical practice. This article engages with this shift methodologically by framing energy not only as a technical system but as a spatial, legal, and representational construct. To operationalise this approach, the article develops a five-scale heuristic—component, installation, network, territorial, and global—that enables systematic movement between part and whole, detail and system. The heuristic is not intended as an exhaustive model but as a flexible analytical device that makes legible the 'glocal' nature of infrastructure, in which the ostensibly local is always already planetary.[18]

Practically, the method works through multi-scalar visualisation developed through architectural drawing and diagrammatic representation.[19] Component-scale axonometrics foreground material composition and manufacturing logics; site plans and sections reveal how zoning ordinances and ecological requirements are inscribed into geometry; network maps juxtapose rural generation with urban demand; territorial overlays trace the recoding of farmland into energy zones; and global flow diagrams expose

supply chains and corporate dependencies. Within this methodology, representational forms perform distinct analytical roles. Plans, sections, and axonometrics operate as scale-bearing drawings that situate technical, legal, and ecological parameters within specific spatial configurations, while diagrams function at higher levels of abstraction, foregrounding relational and systemic connections such as grids, contracts, and supply chains. The analytical contribution lies not in privileging one form over another, but in holding drawings and diagrams together within a single workflow, allowing spatial specificity and systemic abstraction to inform one another.

There are limits to this approach. Drawings inevitably simplify, stylise, and risk aestheticisation. Each visualisation is therefore produced through deliberate selection. Decisions regarding scale, projection, and content determine what is rendered visible and what remains absent. Component drawings foreground material composition while excluding labour conditions; site plans emphasise zoning and geometry while bracketing lived community experience; network and global diagrams privilege connectivity and dependency over everyday practice. These exclusions are not oversights but methodological constraints that enable specific spatial questions to be posed. Drawing here functions not as a totalising representation, but as a partial and situated form of evidence that must be read critically alongside its limits. Recognising this makes drawing not a substitute for statistical analysis, GIS, or ethnography, but a complement that opens a different register of inquiry.

3. Empirical Investigation: Weesow–Willmersdorf and the Scales of Solar Transition

Commissioned in 2020, the Weesow–Willmersdorf solar park in Brandenburg was, at the time, Germany's largest PV installation and the first of its scale to operate subsidy-free. Although since surpassed by projects such as the Witznitz Energy Park near Leipzig, it remains a symbolic marker in the *Energiewende*.[20] At 187 MWp, with 465,000 PV modules spread across 164 ha, its scale and financing model were heralded as proof that solar power had achieved commercial competitiveness without the subsidies that once sustained the sector.[21] However, the narrative of technological maturity obscures a spatial paradox. Built on Brandenburg's fertile soils, assembled from modules manufactured in China, and contracted to industrial consumers in Baden-Württemberg and North Rhine–Westphalia, the park connects local landscapes to distant supply chains and remote markets rather than to the community in which it stands.[22]

This paradox frames the analysis that follows. To make its dynamics visible, this empirical section applies the data-to-space methodology, translating technical and policy data into architectural drawings and diagrams. These drawings—plans, sections, axonometrics, and flow diagrams—do more than illustrate. They generate spatial intelligence (understood here as knowledge produced through the act of drawing), exposing how manufacturing logics, infrastructural hierarchies, and geopolitical relations materialise in the built environment. The analysis proceeds across five scales—component, installation, network, territorial, and global—each demonstrating how renewable infrastructures are simultaneously local artefacts and nodes within planetary systems.

3.1 Component Scale: Manufacturing Logics in Local Space

At the smallest scale, each PV panel at Weesow–Willmersdorf in Werneuchen embodies both technical optimisation and extractive geographies. The park employs Trina Solar's TSM-DEG15M.20(II) modules, approximately 2 m × 1 m × 0.03 m, with a rated output of 385–410 Wp (Fig. 2).[23] This standardisation is essential: the module's rectangular format governs string assembly, the pitch of mounting systems, and ultimately the geometric order of the field. Each black rectangle in the field is less a neutral surface than a unit of global standardisation, inscribing distant production logics into Brandenburg's landscape.

The manufacturing of these modules ties Brandenburg's landscape to Chinese industrial regions, where more than 80% of global PV modules are produced.[24] Trina Solar's production capacity is concentrated in Changzhou, Suqian, and Yiwu, where development zones integrate large-scale industrial parks, worker housing, and logistics corridors. These zones are products not only of industrial clustering but also of state planning: land conversion, tax incentives, and cheap coal-based electricity underpin the extraordinary expansion of Chinese solar manufacturing.[25]

German demand played a decisive role in this trajectory. The 2000 Renewable Energy Sources Act (EEG) established a generous feed-in tariff, catalysing global solar demand and drawing Chinese firms into the European market.[26] As demand scaled, cities such as Suqian grew from modest provincial seats into industrial hubs, with urbanisation closely tied to solar export markets (Fig. 3). In drawing, the Brandenburg PV module becomes a proxy for this translocal urbanisation: a 2 × 1 m rectangle deployed across fields in Werneuchen simultaneously reflects the demographic and industrial growth of distant Chinese municipalities.

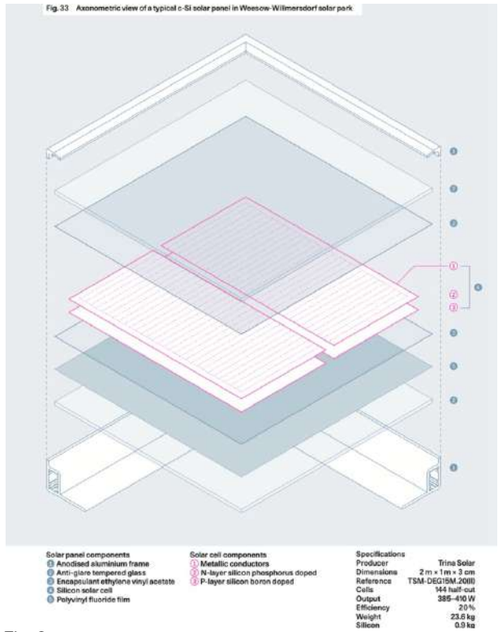

Fig. 2

Fig. 3

Modules also embody material intensity. Each unit contains aluminium framing, tempered glass, ethylene-vinyl acetate, copper cabling, and around 20 g of silver for cell metallisation (see Fig. 1). Most significant are the silicon wafers, requiring high-purity polysilicon whose production consumes 60–70 kWh of electricity per kilogram.[27] Much of this energy-intensive process occurs in Xinjiang, where cheap, coal-based electricity dominates.[28] In spatial terms, the carbon intensity of Chinese production is displaced onto Brandenburg's 'green' landscape: the drawing of a standardised panel conceals an embedded geography of fossil energy.

The implication for spatial analysis is twofold. First, the apparent homogeneity of the module belies a geography of uneven development: Brandenburg's energy transition is materially dependent on distant, often opaque, industrial systems. Second, the module's standardisation propagates a geometric order: each 2 m × 1 m rectangle multiplies across the field, dictating spacing, land coverage ratios, and the visual impression of the park. In this sense, the 'local' geometry of Weesow–Willmersdorf is already a global geometry, standardised in design but replicated across space. When multiplied into fields, this modular logic becomes territorial, visible at the installation scale as geometric order, ecological hybridity, and infrastructural hierarchy.

3.2 Installation Scale: Territorial Transformation

Scaling up from the single module to the site, the panel's geometry becomes the organising principle of territory. What appeared at the component scale as standardisation now reconfigures farmland into regimented east–west rows, segmented by 4.5–5 m service tracks and formalised in zoning law. In the site plan (Fig. 4), geometric repetition overlays the once palimpsest of agrarian patterns. Instead, irregular parcels are rearticulated into a metric of yield per hectare, replacing crop productivity with energy efficiency as the governing order.

The *Bebauungsplan* (local development plan) shows a section drawing that makes this transformation explicit.[29] Each row of modules is tilted at 25°, raised between 0.8 and 2.15 m above ground, and spaced ca. 4.5 m apart to minimise inter-row shading while sustaining projected yield. The plan also fixes land-use distribution: approximately 39% of the ground surface is directly covered by modules, while 61% remains designated as green space between rows.[30] These figures were not left to chance. The *Bebauungsplan* required roughly 170 ha beneath the panels to remain as extensive grassland, with chemical clearing explicitly prohibited. The section thus shows how solar optimisation and zoning law together inscribe a juridical ecology, where groundcover is designed into the geometry of the park.

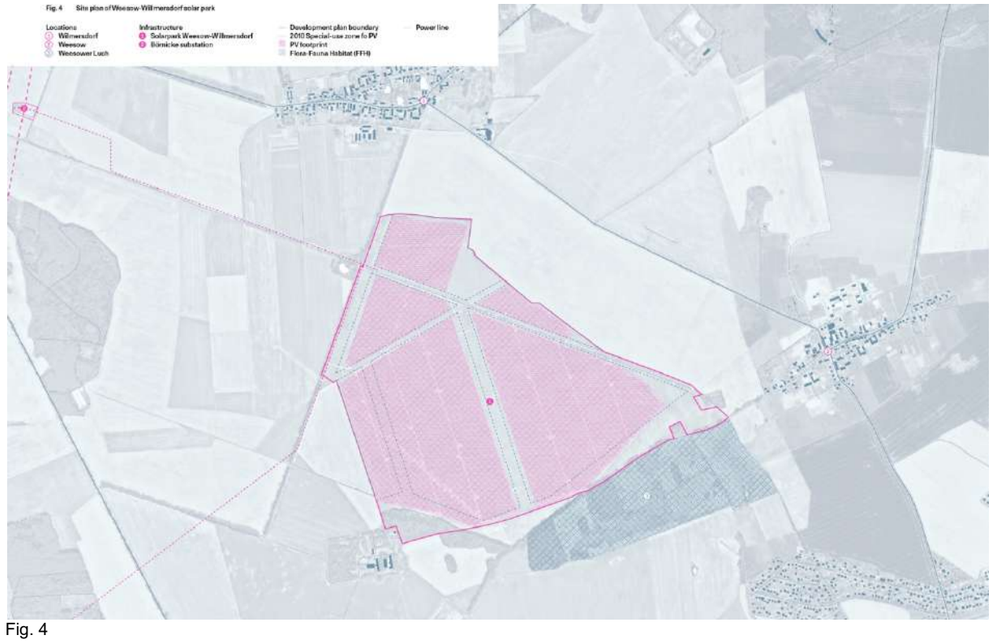

Fig. 4

Photographs of the site confirm how this codified geometry translates into lived ecologies.[31] Patchy grass persists under tilted panels, denser vegetation colonises sunlit corridors, and sheep grazing is deployed to manage groundcover. The drawing's technical parameters—25° tilt, 4.5 metre spacing, 39/61 land-use split[32]—materialise in ecological assemblages that are simultaneously technical and biological.

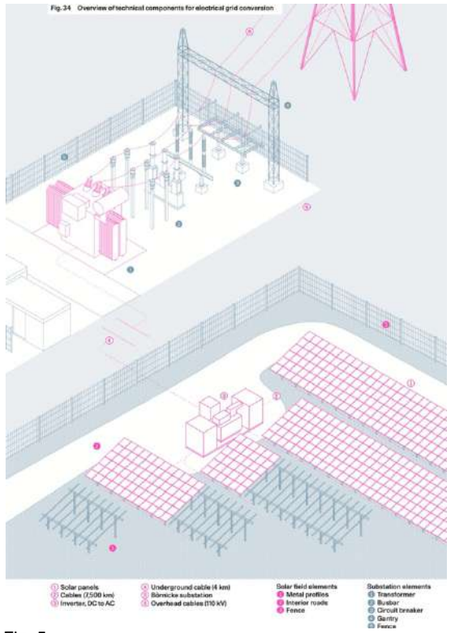

Fig. 5

Axonometric projection (Fig. 5) brings into view infrastructural hierarchies concealed in surface perspectives. Strings of modules aggregate into inverters, which step up to substations, while fenced pads and service corridors fragment the terrain. From above, the park appears as a continuous sea of glass; the axonometric reveals instead a mosaic of electrical territories, organised by technical optimisation rather than cadastral boundaries.

Together, these drawings demonstrate that the installation is not a neutral insertion into the landscape but a layered territorial project. The plan makes visible the imposition of geometric order, the section exposes a legally scripted ecology, and the axonometric discloses hidden infrastructural logics. Drawings here are not merely illustrative but evidential, making visible the processes through which global technologies are grounded in Brandenburg's local territory. On their own, however, such geometries remain partial; only through grid circuits and planning instruments does the installation become legible as part of a wider system. This shift—from local optimisation to regional inscription—marks the move to the network scale.

3.3 Network Scale: Regional Integration and Territorial Asymmetries

At the network scale, Weesow–Willmersdorf is less a field of panels than a node in Brandenburg's energy system. What the site plan revealed as geometry, the network map shows as connectivity: underground 110 kV cables run 4 km and 7 km to substations at Börnicke and Blumberg, where the park enters the E.DIS Netz distribution system.[33] This mapping discloses what statistics obscure. Brandenburg's *Energiestrategie 2040* claims near self-sufficiency in renewable generation,[34] while in 2024, Berlin's local electricity mix contained only 5.6% renewables.[35] The network map (Fig. 6) highlights this asymmetry: high-capacity connections channel rural Brandenburg's generation into the metropolitan grid, while Berlin contributes relatively little of its own. This territorial configuration risks reproducing a familiar centre–periphery relation—what Golubchikov and O'Sullivan call the 'energy periphery'—in which metropolitan demand is structurally underpinned by rural supply, even as the energy source shifts to renewables.[36]

Zoning overlays from the 2010 *Bebauungsplan 'Energiepark Weesow–Willmersdorf'* anchor the park to the grid by reclassifying farmland as technical land, legally fixing the conditions of energy flow.[37] The plan covered 238.5 ha in total, of which 178.6 ha were redesignated as a *Sondergebiet Photovoltaik* (special-use zone for PV), overriding Werneuchen's *Flächennutzungsplan* (municipal land-use plan) through the *Parallelverfahren* (parallel procedure) permitted under §8 (3) of the federal building code (*Baugesetzbuch BauGB*).[38] Only about 71 ha are physically shaded by modules, while ca. 170 ha were zoned as extensive grassland. Buffers of 100–220 m to the *NSG/FFH Weesower Luch*[39] and internal *Grünachsen* (green axes) corridors were legally mandated.[40] The plan staged solar use as temporary:

capped at 25 years, with dismantling required by 2036–37 and a *Sicherheitsleistung* (security deposit) to guarantee removal.[41] This fiction of reversibility secured approval by presenting energy development as provisional, even as the infrastructures it embedded are unlikely to be undone.

Cadastral maps (see note 10) show how governance restructured ownership to stabilise the park's integration into the grid. Because the site lay in the *Außenbereich* (outer zone), where only privileged uses under §35 BauGB are normally permitted, approval required improvisation: the project first entered as a *vorhabenbezogener Bebauungsplan* (project-specific development plan) (§12), before conversion to a regular *Bebauungsplan* (§8).[42] A *Bodenordnungsverfahren* (land consolidation) consolidated fragmented ownership.[43] Parcels were struck out, merged, and re-inscribed as technical land, reframing contested change as cartographic adjustment.[44] By legally reorganising parcels, cadastral inscription transformed agricultural property into infrastructural territory, ensuring the continuity of electricity flows as much as module installation itself.[45]

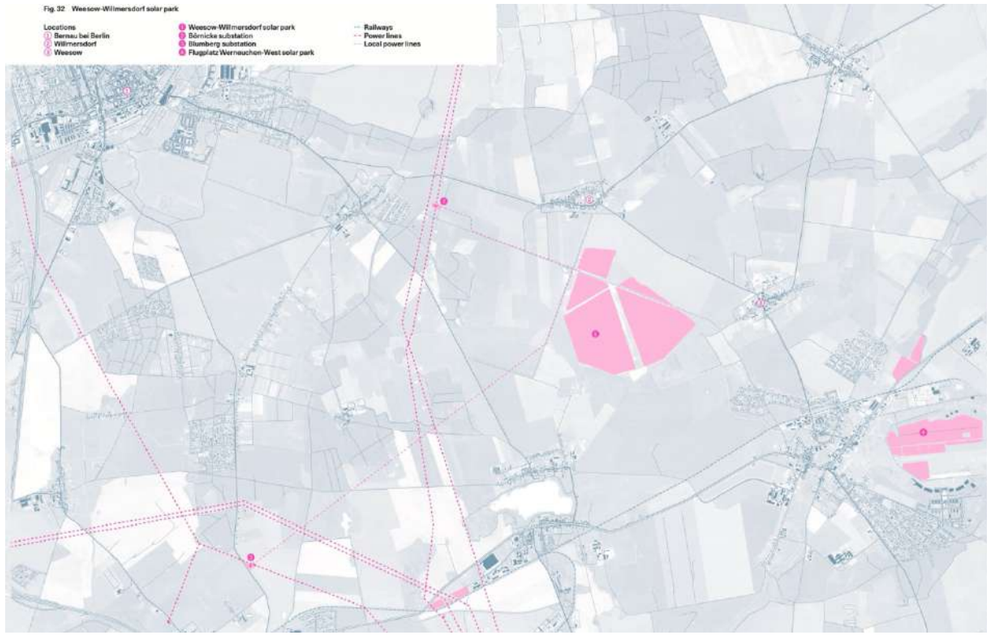

Fig. 6

Taken together, these maps and overlays reveal a legal–cartographic assemblage: grid lines govern connectivity, reversibility clauses secure political acceptance, and cadastral reorganisation reframes land-use change as technical administration. Drawing exposes how law and cartography stabilise the solar park within Brandenburg's energy system, turning contested transformations into infrastructural normality.

3.4 Territorial Scale: Policy, Land Use, and Conflict

At the territorial scale, Weesow–Willmersdorf is no longer a single installation but part of a wider patchwork of renewable projects spread across Brandenburg. Regional maps show dense clusters of solar and wind parks along high-voltage corridors, while other areas remain largely untouched (Fig. 7). This uneven geography demonstrates that the *Energiewende* is not a uniform rollout but a fragmented territorialisation shaped by grid capacity, land classifications, and municipal decision-making.

Overlay drawings—combining soil quality maps, cadastral parcels, and zoning designations (see notes 37, 38, and 45)—show how agricultural land is systematically converted for energy use.[46] In some cases, PV parks occupy highly productive soils (grades II–III), raising concerns over food versus photons. At Weesow–Willmersdorf, the *Bebauungsplan* justified development by characterising the site as a comparatively minor agricultural loss, citing moderate soil productivity values (*Bodenwert*[47] mostly in the 30–50 range, with a district average of 33).[48] This reading aligns with the Barnim soil quality map, which classifies much of Werneuchen within this mid-range band.[49] While these soils are low relative to

Germany's most productive agricultural land, they are not marginal in absolute terms; rather, zoning overlays recoded them as technically and politically suitable for PV development. From above, the territory reads as a shifting landscape of continued farming interspersed with renewable production, with ecological offsets functioning primarily as compensatory devices rather than integrated ecologies—examples include the buffer zone mandated between the special use zone for PV and the NSG/NFF Weesow Luch.

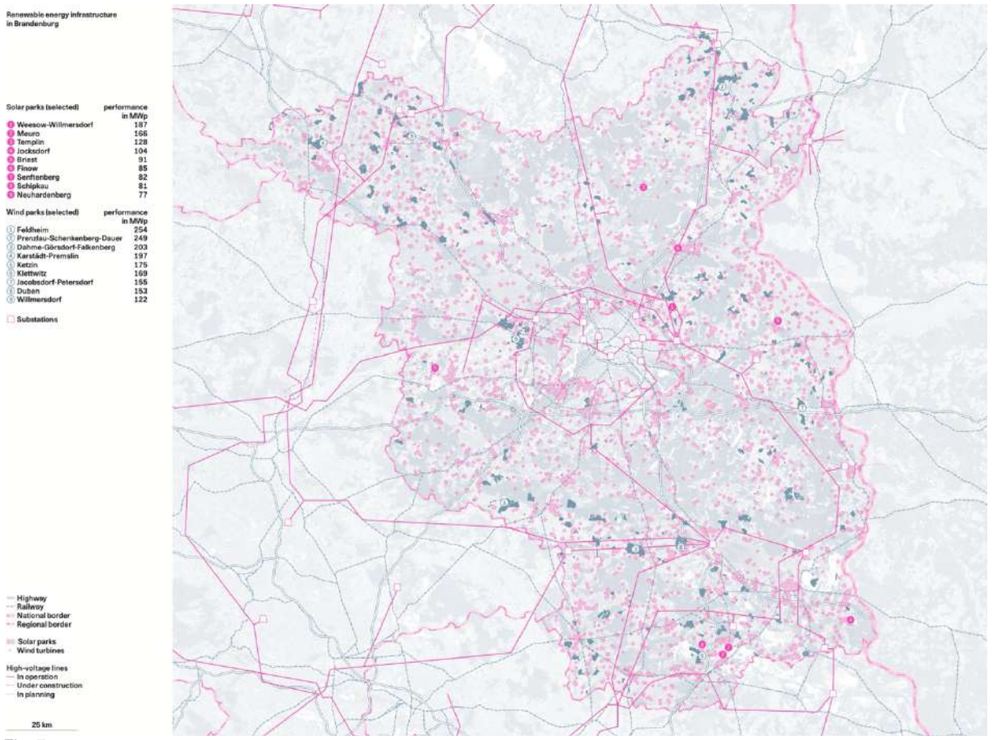

Fig. 7

Patterns of acceptance and opposition also emerge spatially. In Brandenburg, the proposed Lieberoser Heide solar park spurred strong local resistance: a *Bürgerinitiative* (citizens' initiative) *Lieberoser Heide*, backed by conservation groups, opposed the project in 2011, arguing it would turn a freely accessible forest into a fenced solar field.[50] Müller and Morton emphasise that such conflicts are not reducible to 'NIMBYism.'[51] Instead, they reflect overlapping tensions around distributional inequalities, procedural shortcomings, and the uneven geographies of East German energy politics. By contrast, at Weesow–Willmersdorf, mandated compensation measures—including 100–220 m ecological buffers, *Grünachsen* (green corridors), and grassland under the panels—helped pre-empt similar resistance by framing the solar park as environmentally responsible. Here, zoning overlays and corridor diagrams show how spatial planning was deployed to mitigate environmental impact and secure acceptance.
Governance, too, takes a territorial form. Municipal councils negotiate zoning ordinances, state authorities pursue renewable targets, and federal frameworks set climate commitments. Their overlapping mandates inscribe administrative boundaries onto land, structuring renewable deployment as much as soil quality or grid capacity. In this sense, governance is not abstract but spatial: a layered configuration of jurisdictions that determines how, where, and under what terms energy landscapes such as Weesow–Willmersdorf materialise.

At this scale, architectural drawing demonstrates that energy transition is a process of territorial restructuring. Regional maps highlight uneven clusters of renewable sites, overlays trace how farmland is recoded as energy zones, and spatial renderings of conflict mark contested geographies. If the installation scale traced hybrid ecologies and the network scale exposed cartographic inscription, the territorial scale shows how these processes converge into a reconfigured landscape order across Brandenburg.

3.5 Global Scale: Supply Chains and Geopolitical Dependencies

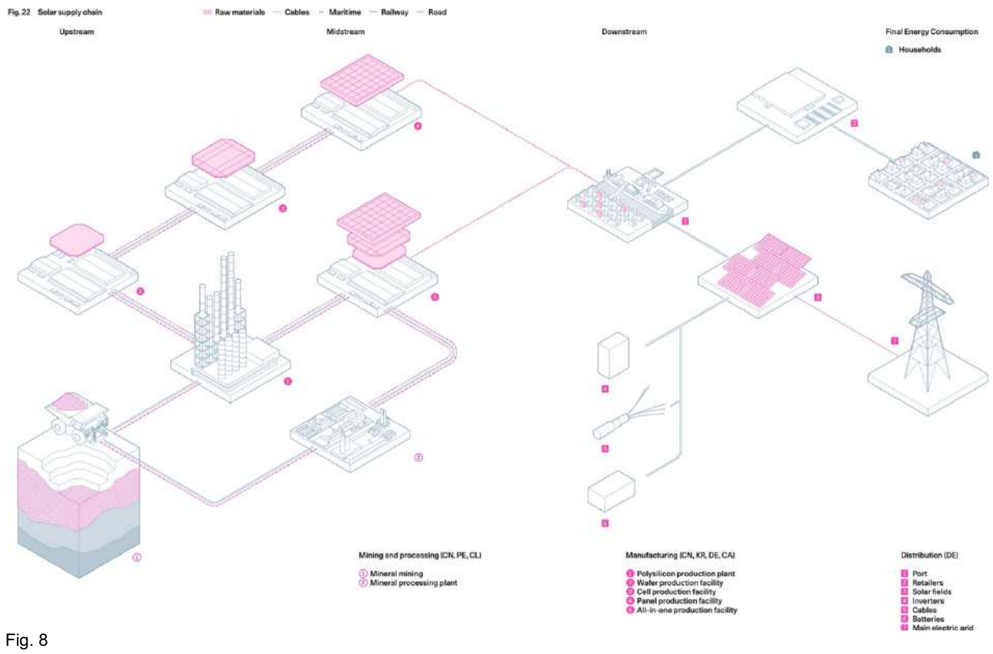

Fig. 8

At the global scale, Weesow–Willmersdorf is revealed not as a self-contained solar park but as an artefact of planetary circulations of matter, capital, and power. The neat rows of panels visible in Brandenburg rest upon extractive frontiers and industrial clusters stretched across continents. Fig. 8 situates the solar park within these extended production chains, mapping how a single installation is assembled through globally distributed processes of extraction, manufacturing, and distribution. Flow diagrams trace how PV modules link quartzite mines in western China, silver extraction in Latin America, bauxite from Guinea smelted into aluminium in Australia and China, and copper drawn from Chile.[52] These material chains remind us that 'green' infrastructure is inseparable from mining economies and their ecological and social consequences.

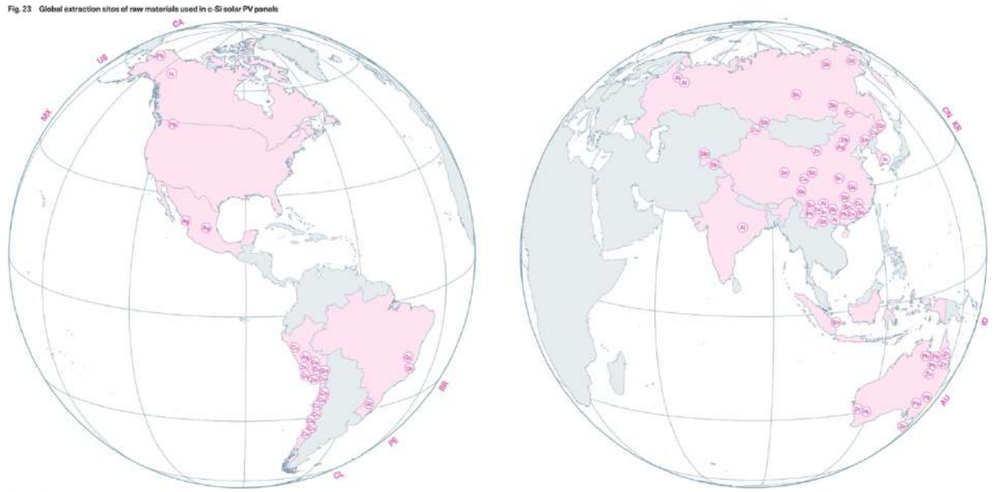

Fig. 9

The spatial concentration of these processes becomes legible at the planetary scale. Fig. 9 maps the geographic clustering of extraction sites and manufacturing hubs for raw materials used in Weesow's modules, revealing the extent to which solar production is anchored in specific regions rather than evenly

distributed. More than 80% of global PV modules are manufactured in China, concentrated in industrial clusters in Jiangsu and Xinjiang. This dominance rests on deliberate state support: land conversion, subsidised electricity, and coal-based power secure cost advantages, while vertical integration consolidates the entire supply chain within national borders. The International Energy Agency already identifies silver and polysilicon as potential bottlenecks in global decarbonisation, underlining that the security of future renewable rollouts depends on vulnerable extractive circuits.[53] Germany's *Energiewende* is therefore paradoxical: celebrated as a project of national sovereignty, it is materially dependent on Chinese industrial power.

Value flows are equally uneven. Corporate mapping (fig. 10) shows how development, production, and consumption are spatially disembedded. The project developer and operator, EnBW, is headquartered in Karlsruhe; its modules are supplied by Trina Solar in Changzhou; electricity is sold via PPA to Covestro, a chemical producer in North Rhine–Westphalia. These agreements guarantee stable returns for investors and secure electricity for industry, but they also detach the project from its host region. Brandenburg provides the land and absorbs ecological change,[54] while value circulates to shareholders in Baden-Württemberg, to industrial consumers in the Rhineland, and to Chinese manufacturing zones.[55] PPAs are therefore more than technical contracts: they are instruments that reallocate value and anchor Brandenburg's territory into global corporate networks.

Spatialising geopolitics makes these dependencies stark. China today accounts for over 95% of global wafer production and 80% of polysilicon.[56] European ambitions to reshore 20 GW of PV capacity by 2025 appear modest in comparison, raising questions about whether energy independence is attainable without confronting new forms of technological dependency.[57] In this sense, the solar transition exposes not only environmental but also geopolitical vulnerabilities: the energy periphery extends beyond Brandenburg to Europe itself.

At this scale, drawing can visualise the planetary entanglements otherwise concealed in a single solar park. Globes locate extractive regions, mineral charts register systemic risks, and corporate diagrams illustrate how value escapes local territories. Together, they show that what seems like a regional infrastructure is in fact assembled from distant mines, industrial clusters, and corporate strategies. The global scale, therefore, reframes Weesow–Willmersdorf: not as a local symbol of clean energy, but as a crystallisation of mineral frontiers and geopolitical asymmetries that condition the transition worldwide.

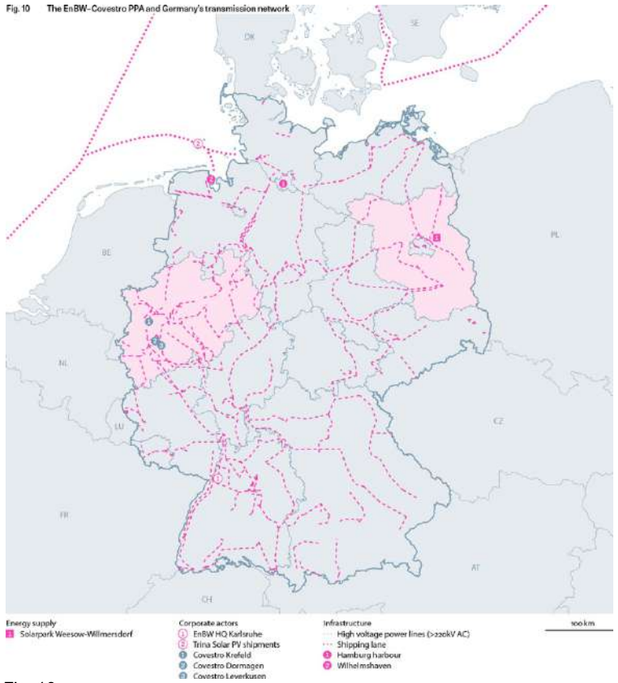

Fig. 10

4. Synthesis: Drawing Energy Infrastructures

The investigation of Weesow–Willmersdorf demonstrates that energy infrastructures are not neutral technologies but spatial propositions, remaking landscapes and jurisdictions while embedding a local field into global supply chains. Equally important is how such dynamics become legible. Architectural drawings—plans, sections, axonometrics, overlays, and flow diagrams—have functioned not as illustrations but as investigative tools. They have generated a form of spatial intelligence that counters the spatial blindness identified in transition studies, revealing how infrastructures are materialised across sites, jurisdictions, and scales.

Three contributions stand out. First, drawings expose what statistics obscure. The axonometric of a single panel condensed global supply chains into local geometry: the same 2 × 1 m rectangle that organises Brandenburg's fields also encodes extractive frontiers in Peru, Guinea, and Xinjiang. This paradox of standardisation—at once simplifying installation and concealing material intensity—demonstrates that renewable energy remains materially extractive and carbon embedded.

Second, drawings demonstrate how governance takes spatial form. The *Bebauungsplan* fixed tilt angles, spacing, and heights while simultaneously mandating grassland retention, ecological buffers, and a 25-year reversibility clause. In the drawings, these regulatory instruments appear not as abstract legal texts but as parameters inscribed directly into spatial geometry. In Evans's terms, representation operates with 'reversed directionality': it demonstrates how law and ecology are written into design.[58] The fiction of reversibility and the cartographic reorganisation of parcels stabilised contested land-use change by framing energy infrastructure as temporary and administratively manageable, even as its territorial effects are likely to persist.

Third, drawings expose uneven geographies of benefit and burden. At the network scale, mapping showed how Brandenburg's renewable surplus structurally underpins Berlin's energy demand, crystallising what Golubchikov and O'Sullivan describe as an 'energy periphery.'[59] At the territorial scale, overlays traced how farmland is systematically recoded as energy land through zoning and soil-value assessments. Contrasting cases such as Lieberoser Heide and Weesow–Willmersdorf further revealed how planning instruments, compensation measures, and spatial design shape patterns of acceptance and resistance, redistributing not only electricity but also land rights and political legitimacy.

Taken together, these findings confirm the value of a five-scale heuristic. By moving iteratively from component to global, the analysis makes legible what Swyngedouw calls the 'glocal' condition: infrastructures that appear local are in fact planetary assemblages.[60] In this way, the method extends Bridge et al.'s (2013) concepts of location (substation proximities and cable routes), landscape (hybrid ecologies scripted by zoning ordinances), and territoriality (zoning, cadastral reclassification, and PPAs as instruments of control).[61] Where Bridge et al. outlined the need for spatial perspectives, the five-scale framework demonstrates how architectural drawing can enact them.

Yet these contributions must also be read critically. The empirical analysis rests largely on planning documents, technical data, and secondary sources on supply chains, which illuminate infrastructural logics but cannot fully capture financial flows or lived community experience. The *Bebauungsplan* encodes ecological buffers and reversibility clauses, but the drawings suggest these are legal fictions whose long-term effects remain uncertain. The five-scale heuristic, meanwhile, is selective: it vividly reveals spatial organisation but leaves other dynamics—such as household-level practices or supranational policy regimes—less visible. Drawing itself is reductive; every line is a choice about what to foreground and what to omit, raising the risk of aestheticising what it seeks to expose.

From this synthesis, several propositions follow. Energy transitions remain materially intensive; their burdens fall disproportionately on rural territories; their rollout is patchy rather than uniform; and they remain heavily dependent on Chinese industrial capacity. These are not predictions but abstractions developed through drawing-based evidence, and they require caution: a single case cannot stand for the entire energy transition, but it can point out processes that recur elsewhere.

The methodological contribution lies in recognising drawing as both evidential and narrative. It does not replace statistical or textual methods but complements them by translating heterogeneous data—wattages, soil scores, ordinances, contracts—into spatial relations. Its value lies in showing how infrastructures are grounded in land, law, and global flows, while also telling stories that capture contradictions and vulnerabilities; at the same time, its limits lie in partiality and stylisation. Acknowledging this partiality is crucial if drawings are to be read critically rather than illustratively.

In this way, the approach responds to transition studies' call for spatial analysis, operationalises legal geography's claim that law constitutes space, and affirms architectural theory's insistence on the agency of representation. It contributes to architectural humanities by extending drawing's critical repertoire, and to environmental humanities by offering spatial evidence for debates on dependency, justice, and geopolitics.

5. Conclusion

This article has argued that energy transition is not only a technical process but a spatial project, constituted through infrastructures that reorganise land, governance, and value. Through the case of the Weesow–Willmersdorf solar park, the analysis has shown how renewable energy infrastructures bind local landscapes into wider systems of extraction, production, regulation, and finance. Traced from component-level materialities to global infrastructures, the case demonstrates how ostensibly local energy projects materialise planetary dependencies and uneven geographies of benefit and burden. Methodologically, the article has advanced architectural drawing as an analytical and evidential practice capable of countering the spatial blindness of conventional energy analysis. The five-scale heuristic developed here operates as an analytical device through which these relations can be synthesised between part and whole, detail and system, situating architectural analysis within debates in the architectural and environmental humanities. At the same time, the evidential strength of drawing—its capacity to stylise, condense, and synthesise—also carries the risk of aestheticising contested processes if not read critically alongside its sources and omissions.

As already indicated in the preceding synthesis, this approach brings infrastructural, legal, and territorial relations into focus while leaving lived experience at the scale of settlement and household only indirectly addressed. The drawings emphasise material configurations, regulatory frameworks, and systems of connection, necessarily bracketing everyday practices and perceptions through which energy infrastructures are encountered locally. Future extensions of the method could integrate complementary approaches, including settlement-scale data analysis and GIS-based mapping of socio-spatial indicators such as deprivation, energy affordability, or exposure to infrastructure. Such analyses would allow questions of spatial justice and energy peripherality to be examined alongside architectural drawing, linking systemic reorganisation to uneven conditions of everyday life. Beyond this, ethnographic and participatory research could further inform and enrich drawing practices, enabling local knowledge and contestation to be spatialised rather than treated as external to visual analysis.

In answering calls within the architectural and environmental humanities to spatialise energy research, this article has sought to demonstrate not simply that space matters, but how it can be investigated. Taken together, the analysis confirms that contemporary energy transitions remain materially intensive, territorially uneven, and structurally dependent on global supply chains, even as they are framed as pathways toward sustainability. Architectural drawing, when deployed as a method of spatial inquiry, offers a means of engaging these contradictions by rendering infrastructures as land, law, and flow rather than as abstract technical systems. By treating representation as an analytical instrument rather than a neutral medium, the article offers a transferable methodological approach for investigating the spatial dimensions of energy transition. Energy transitions, it concludes, are not only powered by electrons; they are drawn—conceptually and literally—into space.

Abbreviations

AG	Aktiengesellschaft (German joint-stock company)
BauGB	Baugesetzbuch (Federal Building Code, Germany)
CAP	Common Agricultural Policy (European Union)
c-Si	Crystalline silicon (solar PV technology)
EG	Electronic-grade (polysilicon)
EGD	European Green Deal
EEG	Erneuerbare-Energien-Gesetz (Renewable Energy Sources Act, Germany)
EEC	European Economic Community
EnBW	Energie Baden-Württemberg AG (German energy company)
EnWG	Energiewirtschaftsgesetz (Energy Industry Act, Germany)
EU	European Union
FEC	Final Energy Consumption
FFH	Flora-Fauna-Habitat (protected areas under the EU Habitats Directive)
GIS	Geographic Information System
GW	Gigawatt
GWp	Gigawatt-peak (installed PV capacity)
ha	Hectare
IEA	International Energy Agency
kV	Kilovolt
km	Kilometre
LEAG	Lausitz Energie AG (German energy company, Lusatia)
M	Metre
mm	Millimetre
MW	Megawatt
MWAEK	Ministerium für Wirtschaft, Arbeit und Energie des Landes Brandenburg
MWp	Megawatt-peak (installed PV capacity)
NSG	Naturschutzgebiet (Nature Conservation Area, Germany)
PEC	Primary Energy Consumption
PJ	Petajoule
PPA	Power Purchase Agreement
PV	Photovoltaic
SoG	Solar-grade (polysilicon)
TWh	Terawatt hour

Notes

1. While not unprecedented—fossil fuels also organised vast transnational networks of extraction, transport, and conversion—the spatial footprint of renewables is distinct. Whereas coal and gas concentrated generation at compact power stations (albeit underpinned by extensive mining and transport systems), solar and wind disperse production across land and sea, demanding larger areas per unit of energy. They also introduce new dependencies through the critical minerals required for modules, turbines, and batteries, extending energy geographies into global mining frontiers. For a comparative chart of land requirements across energy types, see: Hannah Ritchie, 'How Does the Land Use of Different Electricity Sources Compare?', *Our World in Data*, 16 June 2022, https://ourworldindata.org/land-use-per-energy-source.
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Section displaying distance measure depending on sun position, designed to balance inter-row shading of the modules with the projected energy yield.
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The Energiestrategie 2040 reports that renewable generation in Brandenburg already exceeds the state's annual electricity demand in net terms (*bilanziell*). This does not imply full self-sufficiency at every hour of the year, since temporal mismatches between production and consumption require balancing via imports, exports, and storage.
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An indicative line that can be used to compare the current footprint with the approved special use zone for PV in the 2010 *Bebauungsplan* is also shown in fig. 4.
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To see the 2005 pre-solar approved land use plan see: '2005 *Flächennutzungsplan*' on page 50 of the *Bebauungsplan*.
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Image Captions

Fig. 1 Sankey chart depicting energy balance flows in Germany, 2023 (in TWh)
Fig. 2 Axonometric of a typical c-Si solar panel in Weesow-Willmersdorf solar park
Fig. 3 Historical site plan developments of industrial areas in Siquan, 1985-2023
Fig. 4 Site plan of Weesow-Willmersdorf solar park depicting allocated planning zones after land consolidation
Fig. 5 Axonometric overview of technical components for electrical grid conversion
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Fig. 8 Visualising the spatial requirements of the solar PV supply chain
Fig. 9 Global extraction sites of raw materials used in ci-Si solar PV panels
Fig. 10 Mapping the Weesow–Willmersdorf value chain. The EnBW–Covestro PPA (in pink) is shown in relation to Germany's high-voltage transmission grid, situating the solar park within national energy flows and Chinese PV imports

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Biography

Joseph Smithard is a Berlin-based architect and urban researcher. He is currently pursuing doctoral research through the InterGrad EGD graduate academy at the University of Applied Sciences Anhalt, supported by Land Saxony-Anhalt and the European Regional Development Fund (ERDF). His research investigates trans-local urban development in the context of the European Green Deal, focusing on infrastructural provision, climate adaptation, and spatial storytelling. Drawing on methods from the architectural and environmental humanities, his work examines how energy transitions reorganise space, redistribute value, and generate new territorial dependencies. In 2025, he co-edited *Power, Flows, and Transformation: Portraits of Berlin-Brandenburg Energy Spaces*, developing cartographic and visual methodologies for analysing energy landscapes. His broader interests include architectural theory, urban political ecology, and the role of visualisation in tracing the socio-material geographies of climate transformation.

The Operative Atlas in Architecture

An inchoative medium to elicit graphical forms of knowledge

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Abstract

Increasingly, contemporary research in architectural design produces atlases. No longer a compilation of cartographies assembled within a single volume, the atlas has, over the centuries, undergone fundamental epistemological turns (Brotton, Harley).
Focusing on the distinctive graphic dimension of a range of examples, this paper addresses the pertinence of the operative atlas in architecture, beyond the collecting of images, which belongs primarily to Art History and History of Architecture.
We will argue that in architecture, the atlas is always operative: its plates are both meta-projectual and graphic-cognitive. Simultaneously, they legitimize the epistemological value of the *lacuna*, being embedded within a broader visual culture attuned to the heuristic potential of the map, the role of paratactic systems, and the poetics of collage and fragment.
The operative atlas constitutes an implementable collection of images conceived as a medium of thought, capable of positing complex phenomena concerning the forms of built space. Moreover, it enables an epistemological leap by defining modes of transformation of the very elements it depicts, elements that make up the phenomena under investigation.
As a visual form of knowledge suited to surveying, mapping, cross-mapping, mis-mapping, and transforming (Didi-Huberman, Harley), the operative atlas proves relevant in complex systems where interpretative criteria must often be reconstructed a posteriori. Such criteria reveal latent architectural potentials by gathering myriad of heterogeneous elements initially indifferent to one another.
The convergence of concreteness and abstraction that characterizes the operative atlas leads to the production of graphic and visual forms of knowledge otherwise unattainable. This paper reflects on the foundations of this approach, rooted in the critical legacy of Durand and Warburg, set in counterpoint to theoretical contributions by Huet, Moneo, Picon, Purini, Sol LeWitt, Ungers, Eisenman and Holl. Together, these perspectives illuminate the role of the operative atlas in updating the graphic and interpretative cognitive models in architecture.

Key words: operative atlas, architectural design, Jean-Nicola-Louis Durand, Aby Warburg.

1. Introduction

With increasing frequency, contemporary research in architectural design is producing *atlases*. Beyond the significance this category has acquired in art history, particularly through Aby Warburg's *Mnemosyne Bilderatlas,* it is worth elucidating the processes that distinguish the *operative atlas* as a specific approach, grounded in the proliferation of thematic, comparative, and analogical collections of plates that, either directly or indirectly, initiate the design process.
Focusing primarily on the graphic dimension of the issues at stake, while simultaneously evoking the models of knowledge they engage, this essay is structured into two main parts.
The first addresses two heuristic turns that unfolded across various fields of knowledge and paved the way for the emergence of this distinctive form of atlas. A brief genealogy of certain innovative epistemic models is proposed, with attention to the ways in which drawings have come to function as elements endowed with cognitive capacities distinct from those of written text.
It will be argued that this condition arises from two key circumstances. The first lies in the legacy of early mapping practices and, later, in the emergence of the atlas as a book genre distinct from the textbook. This heritage persisted for centuries and was profoundly reframed in the late eighteenth century, as most explicitly embodied in Plate no. 20 of J.N.L. Durand's *Précis des leçons* d'architecture, which traced a new trajectory for architectural design, one that emancipates itself from the imitation of historical buildings and instead operates through a coordinated set of abstract rules, thereby establishing the core of what we refer to here as the operative atlas.
The second part of the essay begins by examining how Durand's work reverberated in subsequent examples, before making a chronological leap to consider more recent contributions. The essay then highlights their pertinence to architectural design, which stems from specific structural and graphic features, helping to define what can be understood as an operative atlas in architecture.

2. The Semiotic and Cognitive Power of the Map

Ancient maps are re-presentations grounded in an empirical approach. They were directly produced through the pragmatic logic of the itinerary, registering what was remarkable within a given territory. Lacking orientation systems and standardized coordinates, these maps functioned simultaneously as interpretive and creative representations. Hence, their value lies as much in what they record, namely, what exists and was directly experienced by the mapmaker, as in what they represent, despite not having been physically explored. In this sense, the map brings into existence the very spaces it depicts, assigning a role even to the voids that separate the annotated elements.
Long before any awareness of the Earth's sphericity or the capacity to geometrically control spatial configurations, by representing all parts at the same scale and referencing fixed coordinates, ancient maps consisted of symbolic and abstract transpositions of reality. They depicted space as if seen from above, flattened onto a plane surface. In truth, however, since people at the time could only move by foot, horseback, or ship, a view of large spatial extensions from above was virtually inaccessible to them, nor could they ever physically traverse the entirety of the territories they mapped.
Jerry Brotton (2012) emphasizes the divine perspective that such maps evoked for their contemporaries[1]. He further demonstrates how, over the centuries, the cultural sensibilities of civilizations evolved at times mirroring the very maps they produced, as every mapmaker placed his own territory at the center of the representation, thereby deriving a political power from the mere existence of the map.
This perspective highlights the theoretical nature of the map, which is essential for the further development of operative atlases. As Harley, Wood, and Brotton argue, the map is a cultural artifact possessing an inherently semiotic nature. This is expressed through the ability of each map to elaborate its own language, composed of lines, symbols, and figures that, when applied to parts of the territory left unvisited, construct those spaces rather than merely represent them.
The map's semiotic capacity thus underscores its cognitive role while maintaining its distinction from the geographical chart. Its value lies not in scientific accuracy (whether the map is true or false), but in its ability to draw existing territory with symbolic and speculative representations on the same material and heuristic plane.

3. The Atlas as the visual Source of various Forms of Knowledge: an Epistemic Turn

Alongside the production of maps, around 150 CE, the composition of Ptolemy's *Guide to Geography* (*Geōgraphikḕ Hyphḗgēsis),* later known simply as the *Geographia*, established the principles of cartographic elaboration, setting out how charts were to be assembled into collections for the following two millennia.[2]
From this moment on, drawing charts became a distinct operation from the drawing of maps. Geographical charts normalized the relationship between the territory and its depiction, through shared methodologies and standards. The use of the geographic grid, orientation, scale, and unified representational modes (stylistic conventions, plans, or parallel axonometry) enabled both the normalization of cartography and the thematization of charts.

As the term *atlas* first appeared in the late sixteenth century[3] (Brotton, ibid.), it came to designate a bound or assembled collection of geographic charts. These printed books curated plans, thematic drawings, and city views, organized within what already was the standard structure of the book: frontispiece with title and author; dedication; index; preface; introduction; and commentary. Charts were sequenced according to a narrative principle explained in the introduction, while drawings and text remained separate, the latter typically following the former.
The role of these collections in supporting territorial power structures explains their wide diffusion[4].
The materiality of these charts, views, and maps, produced through etching, woodcut, or engraving and often hand-coloured, made them centres of knowledge for diverse intellectual communities (cosmographers, antiquarians, mathematicians, theologians, painters, and engravers), fostering the hybridization of representational modes and rendering atlases both geographic and iconographic. Within this cultivated cultural framework, early atlases revealed the key epistemic capacity of enhancing the observer's cognitive engagement with an existing or an imagined territory through the aggregation and organization of the plates.
In fact, when consulting atlases, we encounter a particular kind of image that is not subordinate to text. On the contrary, in geographic and iconographic atlases, knowledge arose entirely from the drawings themselves, and not from the text. Consequently, consulting an atlas generated further contributions to knowledge that depended on each reader and were capable of prompting additional intellectual and operative mediations concerning space.
The selection, aggregation, and organization of plates can be understood as heuristic operations that atlases introduce as an additional cognitive dimension. These operations enhance the gnoseological potential of the lacuna already at play in the act of mapping.
A distinctive feature of early atlases, crucial for understanding their modern operational counterparts, was a certain structural instability. The combination of iconographic materials (such as portraits of illustrious figures, views of monuments and cities, archaeological remains or reconstructions of buildings, and emblems) with geographic and cosmographic charts produced composite works, highly successful with buyers[5], and contrasting sharply with the closed structure of textbooks. Under the same title, atlases could take markedly different forms, varying in the number and nature of their plates, which allowed places and themes to be constructed differently across editions. This openness was reinforced by the circulation of unbound plates. From the sixteenth century onward, the atlas thus emerged as an open-ended visual genre, sustaining social and cultural practices central to the history of thought[6].

4. The Plate no. 20 in JNL Durand's *Précis*: a cognitive Shift

By the Enlightenment, Western culture already understood the atlas as a visual source of knowledge, grounded in the capacity of drawing to construct multiple bodies of learning, and embedded in university pedagogy and scholarly research. Emancipated from geography and structured more diversely, a new type of architectural atlas emerged for the teaching of architecture, whose plates no longer documented existing buildings but interacted to initiate the design of new buildings. This shift, rooted in earlier analogical and comparative reasoning, soon acquired theoretical significance.

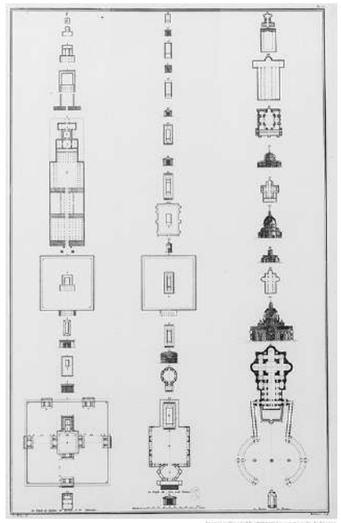

Fig. 1

In 1770, following extensive archaeological fieldwork in Greece and on the Acropolis of Athens, Julien-David Le Roy[7] published *Les Ruines des plus beaux monuments de la Grèce*, a work positioned between odeporic travelogue and formal atlas. Its comparative plates of temples introduced key innovations[8]: buildings were represented in plan, at a uniform scale, arranged by geographic origin[9] and ordered by increasing size within a structured grid[10]. The distribution of homogeneous images within a matrix enabled abstract relationships between the depicted elements and the observer and proved influential on the pedagogical methods of Jean-Nicolas-Louis Durand.
Durand, a former student of Étienne-Louis Boullée and Julien-David Le Roy, is considered the first modern theorist of architectural design. Beginning in 1794, he worked at the newly founded École Polytechnique[11]. Within the context of this inquiry into operative atlases in architecture, the work of Jean-Nicolas-Louis Durand proves decisive in completing a fundamental cognitive leap. His first collection, titled *Recueil et parallèle des édifices de tout genre*, published in 1801, builds on the comparative, homogeneous, and analogical approach previously employed by Meissonier and Le Roy[12]. Known as the "Grand Durand," this volume was soon followed by a slimmer yet seminal companion volume, later referred to as the "Petit Durand": the *Précis des leçons données à l'École Polytechnique*, published in multiple editions beginning in 1802.
Extensive scholarship has established Durand as the founder of a rational method of architectural design[13]. Building on this foundation, the present reflection examines Durand's *Précis* as the first operative design atlas of the modern era, focusing on the role of its drawings in shaping a distinct architectural mode of thought.
The *Précis* opens with a drawn selection of historical elements, followed by the design lessons, in which the plates function not as references for design, but as instruments initiating the design process. Across both sections, comparative sequences of buildings or components are rendered at a uniform scale and organized on an orthogonal grid. This grid, adopted as a measuring and organizing device, became the basis of Durand's pedagogy[14], imposing an abstract graphic framework that structured architectural composition as a pre-formal and obligatory condition while evoking a rational, orthogonal spatial logic throughout the design process.
The first plate of the 1802 edition of the *Précis* juxtaposes a set of elements deemed necessary for the composition of a building. On the left side of the plate, a square abstract plan is presented, organized according to the principles of symmetry and centrality, resulting in two analogous buildings at two different scales. On the right side of the same plate, a variety of structural solutions are drawn in correspondence.
In other words, the design process allows for the separation of architectural form from its structural, technological, material, and linguistic aspects. By proposing this approach, Durand marks a definitive cognitive shift: from this plate onwards, the conception of buildings is grounded in principles of rational abstraction.

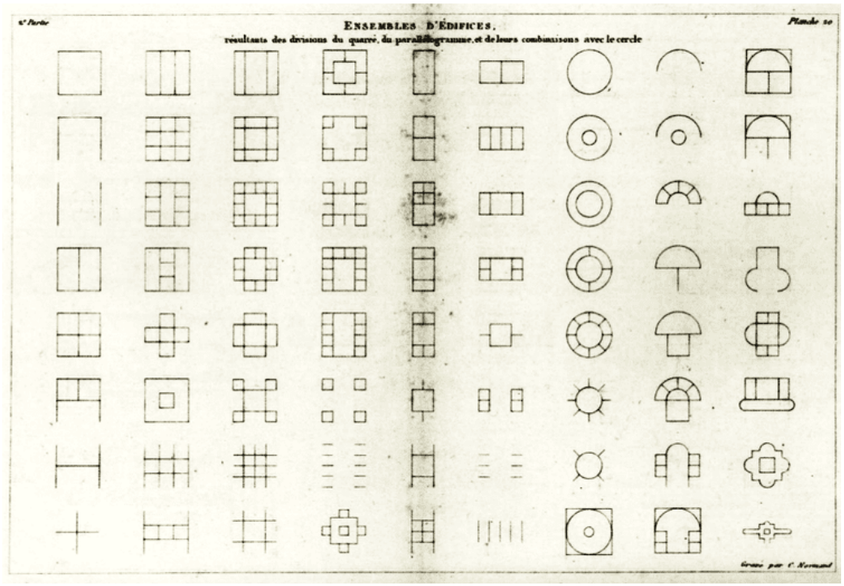

Fig. 2

This operative direction proposed by the *Précis* reaches its clearest articulation in the Plate no. 20 of the 1802 edition, entitled “Ensemble of all the buildings resulting from the division of the square, the parallelogram, and their combination with the circle.”
A grid of eight rows and nine columns organizes 72 planar geometric figures. These shapes lack thickness, openings, or any explicit technical characteristics. They do not reference historical buildings, nor do they resemble any existing architecture.
These are conceptual forms of architectural thought, laid out like a map.
As in a map, it is the missing element that stimulates the production of knowledge. The regular spacing between figures functions as a *lacuna*, the significant void that catalyses speculative reasoning about the operations required to transition from one figure to the next, and about which part of a potential building such a transformation might define.
As in traditional atlases, text plays a subordinate role, indeed, in this particular case it is entirely absent. With this and other plates in the *Précis*, Durand teaches us that architectural thought unfolds through images, specifically through the stimulus generated by other images. These images, interacting and colliding through the comparative principles of homogeneity and abstraction, principles that our collective disciplinary memory has absorbed over centuries via the epistemic practices of *atlases, recueils,* and *parallèles*, give rise to new images, which in turn become the architectural project.
With this plate, Durand’s collection reveals its true nature as an *operative atlas*. A new kind of atlas, both tied to and emancipated from the traditional book genre of compilations of existing architectural elements. Rather than merely documenting, it seeks to graphically provoke conceptual modes of design determination. To achieve this, the atlas provides a synoptic matrix of interacting compositional operations that promote forthcoming acts of architectural thought, abstract, meta-projective, and proactive in nature.

5. The Atlas as a main contemporary cognitive model

Bernard Huet (1984), in his preface to Werner Szambien’s monograph on Durand, reflects on the epistemic value of the *Précis*[15], noting that its graphic sobriety, initially overshadowed by the engraved plates of the *Recueil*, marked a decisive shift toward understanding architectural composition as a rational system intrinsic to design, rather than as an extension of history or nature. This abstraction underpins the work’s enduring critical significance.
Rafael Moneo (1981), instead, critically highlighted the risks inherent in Durand’s rejection of the symbolic dimension of architectural language, warning of the thin boundary between a productive combinatory method and the abandonment of typomorphological thinking.
Addressing both positions, Antoine Picon (2000) argues that the lasting relevance of the *Précis* lies in the clarity with which its drawings articulate the architectural project as an abstract sequence of logical formal decisions.
This marks a significant conceptual moment: Durand can be considered a pioneer in the investigation of design process, through which the autonomy of composition is asserted as a form of thinking in its own right.
In fact, the enduring potential of what we may call Durand’s atlas does not reside in the specific combinatorial operations it proposes, but rather in having demonstrated, for the first time, that the conceptual process through which a design idea is developed can itself be drawn, brought forward in an abstract stage, prior to the more rigorous and concrete verification that ultimately defines the material aspects of the work.
Within the palimpsest of cognitive models that define our era, the atlas persists as a latent framework for visual knowledge, activating logical and analogical processes that foster the generation of new ideas. This comprehensive conceptual role, through which a discipline articulates and renews its modes of inquiry, is exemplified by Aby Warburg’s *Mnemosyne Bilderatlas*. The mobility of its unbound plates, enabling unforeseen juxtapositions, the interaction between high and popular imagery, and the thematic assemblage of works across epochs, geographies, and practices render it an open-ended repository: an *open work* of *open works*, continuously sustaining the disciplinary imperative to revise its principles of invention.
Georges Didi-Huberman (2011) argues that the *Mnemosyne Bilderatlas* reveals how, in operative atlases the aesthetic paradigm typical of visual knowledge systems and the epistemic paradigm associated with Platonic cognitive systems collapse into one[16].
In these collections, unlike catalogues, incompleteness is a positive value.

According to Didi-Huberman (2007, 2010), the structural instability that has characterized the atlas since the sixteenth century is inscribed in the shift from the tableau (picture) to the table (understood both as a visual plate and as a physical table). On the table, and thus on the plate, objects may be juxtaposed according to implicit or unconscious logics, much like what Surrealist aesthetics would later describe as the “Chance meeting on a dissecting table of a sewing machine and an umbrella”[17].

Through *Mnemosyne*, Didi-Huberman addresses the nature of every operative atlas, as Warburg’s work transcends its materiality to establish, in his view, *a forme visuelle du savoir* or a *forme savante du voir*, codifying la *connaissance par l’imagination* (knowledge through imagination), as a legitimate procedure for generating transversal knowledge (*la connaissance traversière*)[18] across disciplines and beyond their pre-established modes of knowledge production.

Fig. 3

6. Series, *Lacuna*, and Knowledge Construction in Contemporary Operative Atlases

Throughout the twentieth century, Western culture, sensitive to the poetics of the fragment and to the semantic value of paratactic systems, has progressively shifted compositional processes toward conceptualization. In architecture, as in conceptual art, spatial invention has thus come to require not merely organizational tools, but media capable of stimulating the production of knowledge. Several lines of research have highlighted the enduring influence of the abstract structuring logic developed by Durand, while maintaining an epistemic reliance on juxtaposition and non-linear organization first introduced by Warburg.
In Franco Purini’s *Il Morfema dei morfemi*, particularly in the *Classificazione per sezioni di situazioni spaziali*[19] (1968), the conception of the building is initiated through a sequence of operations independent of its immediate contextual conditions, yet conceptually grounded in a system of forms inherited from Rationalism and deliberately retained by the author as bearing a latent, still-unrealized expressive potential. Here, as exemplified in Durand’s Précis, composition focuses on relational structures among parts and on the construction of an autonomous core of forms and languages, rooted in the formal legacy of Luigi Figini and Gino Pollini, Giuseppe Terragni, and Adalberto Libera, and assumed as the generative basis of an ever-forthcoming architectural language.
During the 1970s, Minimal Art, and in particular Sol LeWitt’s work, transposed the heuristic action of the *lacuna*, which in ancient atlases operated within the relationship between explored and unexplored portions of territory, to the level of the single element, where absence becomes a generative condition for cognitive completion. *Variations of Incomplete Open Cubes* (1974) constitutes a series in which, as in Plate no. 20 of Durand’s work, the cubic module is assumed as a foundational geometric form; yet rather than being subjected to combinatorial manipulation, it is decomposed into 122 distinct permutations through rules of subtraction and symmetry. In each variation, LeWitt’s atlas investigates the operations of subtraction through which an abstract base form can generate new compositions grounded in the notion of the absence of its own parts.

Taken together, these hypotheses reveal the broad operability of such spatial concepts, as if they were transmitted from one author to the next. This continuity echoes one of Peter Eisenman’s most fertile theoretical constructs, evident in the heuristic engagement, beginning with the Cardboard Houses, with the architecture of Giuseppe Terragni, or in his proposal for the 1978 Cannaregio competition, where he advanced the idea of an architecture capable of inventing its own site and program.

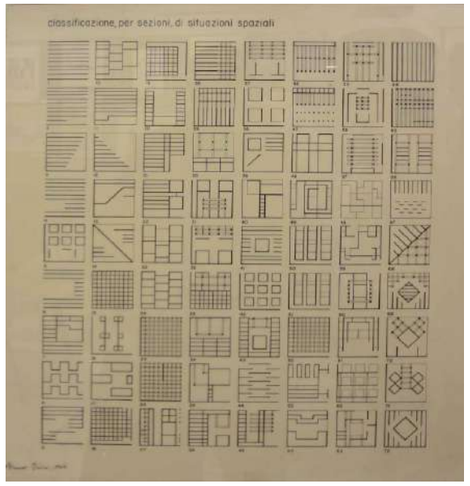

Fig. 4

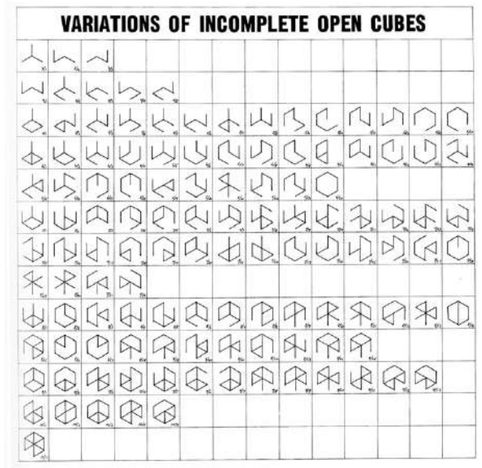

Fig. 5

Within this framework, the morphological research undertaken by O. M. Ungers since the early 1960s, culminating in *Morphologie, City Metaphors*[20] (1982), represents a significant evolution in the construction of visual fields of knowledge. Like Warburg, Ungers brings into direct confrontation images drawn from different disciplinary domains and historical moments: historical plans of existing or ideal cities collide with images of everyday life, mass consumer culture, technology, and biology. Here, the operative atlas undergoes two decisive transformations. The first concerns the explicit epistemic ambition to translate the referential plane initially established by Durand from the individual building to the urban system. The second lies in Ungers' attribution of single-word descriptive titles (such as *handshake* or *womb*) to each plate (as later do by Purini in 1993 in his series of drawings *Come si agisce dentro l'architettura*). In this way, each analogical comparison acquires a specific title that identifies it uniquely and elevates it to the status of an aesthetic action endowed with morphogenetic capacity, in contrast to the plates of the Mnemosyne Bilderatlas, identified by numbers and within which each image retains its own name.

Later, and up to the early 2000s, Steven Holl's tables of *Correlational Programming*[21], once again interrogate a design logic in which programmatic variations are explored as relational fields structured by operational dynamics between spatial conditions and fluctuating programs. Holl's relational approach thus embraces indeterminacy and multiple interacting conditions, foregrounding how functional and programmatic variation, together with spatial sequence, can be treated as variables within a correlated design field, which appears to be one of the most important epistemological moves.

The increasing necessity, especially from the latter half of the twentieth century onward, for architectural design to engage with unresolved, fragmented, and incoherent contexts that demand new meanings, finds a privileged tool in the operative atlas.

In confronting complex environments, where forms and spaces are not shaped by historical continuity but rather by the contingent evolution of economic and political forces, speculative development, or conflicting dynamics even between legal and illicit powers; in places that is, which have never spoken the language of history, of nature, or of compositional principles, the operative atlas emerges as a decisive instrument.

By graphically representing the sites where phenomena take shape, in an initial and indispensable cartographic phase, the atlas is able to thematize, include, and exclude, thus actively contributing to the creation of the very territories it describes, identifying meaningful elements both actual and potential.

In these contexts, which demand that architecture provide a new order and significance, a set of procedures must be established, capable of creation, re-creation, metamorphosis, superimposes the re-signifying power of the series upon the heterogeneous and scattered components of the existing fabric.

This redistributes architectural value across multiple points, originating in a recognisable and flexible matrix, as well as specific modes of relation with the surroundings, from which diverse and distributed projects can emerge.

Notes

1. Brotton argues how, from Palaeolithic rock maps dating to around 30,000 BCE to the Babylonian Rassam tablet of the 6th century BCE, roughly contemporaneous with Anaximander's early hypothesis about the Earth's sphericity, maps have marked the development of civilizations by describing places that were inhabited, transformed, possessed, or to defend. Moreover, he highlights how, while describing territories, maps, as a non-neutral form of graphical knowledge, were deeply embedded in and co-constitutive of structures of power, simultaneously shaping the social and economic structures of the territories they depicted.
2. Lost for nearly a millennium after its completion, the treatise reappeared in Byzantium in the thirteenth century through copies accompanied by maps and charts, although it remains uncertain whether these were part of Ptolemy's original version. See Brotton, 2012, chap. 1.
3. The book genre takes the name "atlas," from the Latin, beginning with the work of Gerhard Kremer, the Flemish mathematician, astronomer, and cartographer who Latinized his name as Mercator. His monumental work *Atlas, sive cosmographicae meditationes de fabrica mundi et fabricati figura* was published posthumously in Düsseldorf in 1595 by his son. The volume brought together maps already produced and printed from 1585 onwards with others, newly engraved for the occasion, organized in sections of political and linguistic order and introduced by an extensive biography of Mercator. This work followed Abraham Ortelius's *Theatrum orbis terrarum*, published in Antwerp in 1570, generally regarded as the first modern geographical atlas, though it did not yet use the term in its title.
4. Particularly in Northern Europe, where early modern cartographic publishing flourished, notably through the works, among others, of Sebastian Münster, Abraham Ortelius, Gerardus Mercator, Antonio Lafreri, Georg Braun and Frans Hogenberg, and Joris Hoefnagel.
5. Antonio Lafreri, a French engraver and publisher who settled in Rome, numbered and arranged, according to a pre-established list, a selection of more than 500 prints already available and divided into three sections. From 1560 onwards, he coordinated through this system the composition of customized volumes, by means of which the genre of the composite atlas achieved widespread diffusion.
6. In 1543, Andreas Vesalius published *De humani corporis fabrica*, the foundational work of modern anatomy, whose plates were grounded in his direct practice of human dissection. Anatomical knowledge was organized for the first time as a visual sequence of arguments, structured by systematic grouping and a progression from the general to the particular, as shown in Ptolemy's Geographia. The Fabrica thus established the disciplinary framework of modern anatomy, making it thereafter inconceivable in purely textual terms, without its graphic dimension.
7. Le Roy (also cited as Leroy) succeeded Blondel in 1774 as professor at the Académie Royale d'Architecture, engaging in a profound reform of architectural studies.
8. See his *Comparaison entre l'architecture des temples Égyptieux, Hébreux, Phéniciens, Grécques, Romains et les églises chrétiennes d'occident*, draftsman: Le Moine, engraver: Michelinot, in Le Roy, 1770, https://gallica.bnf.fr/ark:/12148/btv1b2000057n/f2.item
9. Egyptian, Hebrew and Phoenician Temples; Roman Temples; Christian Temples.
10. It is worth also recalling the comparative plate of Juste-Aurèle Meissonier's *Parallèle général des édifices les plus considérables depuis les Égyptiens, les Grecs, jusqu'à nos derniers Modernes* ,1750.
11. Founded during the French Revolution, the *Ecole Polytechnique* was established as an alternative to the Académie Royale des Beaux-Arts. Rooted in the rational and technical cognitive domain, grounded in mathematics and descriptive geometry, it trained engineers to design new public and service buildings, whose functional programs were developed in these years. Along this period, Durand intensely active professionally, aligned with revolutionary ideals, thus winning several architectural competitions. whose projects remained unbuilt but secured him a stable social position. Initially employed as a draftsman, Durand soon became an assistant professor and was appointed professor of architecture, a position he held from 1793 until 1833.
12. The *Recueil* presents a selection of existing buildings, all drawn to the same scale by Durand himself, while the accompanying text was entrusted to the architect Jacques-Guillaume Legrand.
13. For the transition from a design approach grounded in the relationship with nature and the updating of Vitruvian theses to a new perspective founded on rational norms, see at minimum Szambien, 1984. For Durand's role within the technical culture distinctive of the *École Polytechnique* and subsequently of the *École des Ponts et Chaussées*, see Picon, A., 2000.
14. The underlying mesh, inserted by Durand into his drawings, formed the basis of the compositional process taught to his students, who were required to begin each design exercise by drawing the grid onto their sheets (see Picon, Antoine, 2000).
15. See Huet, Bernard, 1984.
16. See Didi-Huberman, Georges, 2007, 2011, 2012.
17. In the original French version : « Beau comme une rencontre fortuite sur une table de dissection d'une machine à coudre et d'un parapluie », Lautréamont, *Les Chants de Maldoror*, chant IV, strophe 1.
18. See Didi-Huberman, Georges, 2011, from p.12.
19. Franco Purini will argue (2019) that, even more than fifty years after having designed it, this plate is for him the graphic analogue of a theoretical discourse, as it echoes three aspects of his foundational early work: The reference to Italian Rationalism of the 1930s; a personal interpretation of Noam Chomsky's generative grammar; a strong interest in Minimal Art.
20. See Unger, Oswald Mathias, "Designing and thinking in images, metaphors and analogies" , and the plate "Morphology of the three basic forms: square, circle and triangle".
21. Later published as a chapter within *Parallax* (2000), a hybrid text (part manifesto, part theoretical treatise, and part project archive), that traces Holl's architectural ideas across series of projects.

Image Captions

Fig. 1. Julien-David Le Roy, *Illustrations de Les Ruines des plus beaux monuments de la Grèce considérées du côté de l'histoire et du côté de l'architecture,* 1770.

Fig. 2. Jean-Nicolas-Louis Durand, Plate n. 20. *Précis des leçons données à l'École Polytechnique,* 1802.

Fig. 3. Aby Warburg. Table 39, *Mnemosyne Bilderatlas,* 1929 – 1932.

Fig. 4. Franco Purini. *Morfema dei morfemi.* 1966

Fig. 5. Sol LeWitt. *Variation of incomplete open cubes.* 1974.

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Biography

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An inchoative medium to elicit graphical forms of knowledge

Drawing as an act of knowledge.
The exploration of MAAM in Flores and Prats' Workshop

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Abstract

The MAAM (*Museo dell'Altro e dell'Altrove di Metropoliz*) in Rome, a site of spontaneous reappropriation and socio-cultural stratification, was the field of investigation for the "*Seconda Mano*" workshop with Flores and Prats. Described by Marc Augé as a "super-place" because of its density of identities and relationships, this context highlighted hand drawing as a primary cognitive tool for understanding its spatial dynamics. As Carlo Scarpa stated, "I want to see, and this is why I draw." Through this process, the complex network of interconnections and historical sedimentations of MAAM was revealed, opening perspectives for its interpretation and redevelopment.
The "*Seconda Mano*" workshop adopted a method based on direct immersion and understanding of MAAM through drawing. The teaching approach favoured observation and its graphic translation as tools for interpreting spatial, social and historical stratifications. Exploration took place through hand drawing, seen as a cognitive process to decipher the logics of place. The experience, focused on the reading of a specific architectural fragment - a solid volume in a structural mesh, observed in its vertical and horizontal tensions - is a concrete example.
The application of hand drawing led to an interpretive reworking of MAAM's complexities, making tangible latent dynamics such as space appropriation and self-managed transformations. The graphic reading of the volume revealed its volumetric and material interconnections, culminating in a design proposal to reinterpret its spatial qualities.
The workshop's emphasis on hand-drawing as a tool for understanding aligns with the philosophy of Flores and Prats, for whom the hand-drawn graphic gesture is a direct contact with design thinking and a method for unravelling the inherent complexities of a place, going beyond mere representation. The approach taken at MAAM reflects this belief in the power of drawing to decipher the specificities of a context and inform transformations that respect its essence.

Key words: hand-drawing, knowledge, architecture workshop, stratification.

1. Introduction

The MAAM (*Museo dell'Altro e dell'Altrove di Metropoliz*) in Rome, a site characterized by processes of spontaneous reappropriation and socio-cultural stratification, was the focus of the "*Seconda Mano*" workshop held by Flores y Prats. Within this unique context, hand drawing emerged as a primary cognitive tool, transcending its function as mere representation to become a true act of knowledge and critical redesign[1]. Through this fundamental expressive and analytical process, the complex network of spatial interconnections and historical sedimentations that characterize the MAAM was revealed.
The act of drawing was conceived as a way of learning, a methodology that allowed us to probe the latent dynamics of the place, such as the ways in which spaces are appropriated and self-managed transformations take place. The workshop adopted an immersive methodology focused on observation and its graphic translation, in stark contrast to the often sterile hyperrealism of digital practices. This analog approach, which Flores y Prats themselves define as a form of "optimistic resistance"[2], made uncertainty and error vital elements that fuel the process of discovery. The methodology aligns perfectly with Flores y Prats' philosophy of "second-hand architecture"[3], a "discipline of adaptation"[4] which incorporates pre-existing traces and memories. The "drawing without erasing"[5] is not just a technical process, but an ethical gesture that builds on the history of the place. The experience of one of the groups of the workshop, focused on interpreting an architectural volume, is a concrete example of this: exploration through sketches revealed its intrinsic spatial qualities, culminating in a design proposal that reinterprets its essence.

Fig. 1

This work has been designed to systematically develop this thesis, starting from the theoretical framework, moving on to the design philosophy of Flores y Prats and other contemporary architects, and examining the specific characteristics of the study site, to finally arrive at a detailed examination of the workshop practice and its contribution to the contemporary debate.

2. The philosophy of hand drawing in Architecture: from representation to cognitive act

To fully understand the methodology of the "*Seconda Mano*" workshop, it is necessary to frame it within a broader debate on the epistemology of drawing in architecture. The analysis shifts from drawing as a simple tool of representation to its deeper role: a true cognitive act, a process of thought and discovery. This concept has been explored by many thinkers and architects throughout history.
Carlo Scarpa's famous aphorism, "I want to see, and this is why I draw"[6], sums up this perspective. For Scarpa, drawing was not a means of illustrating an idea that had already been completed, but rather the process through which the idea itself was shaped, articulated, and understood. Drawing becomes a tool for visual investigation, a way to penetrate reality and "see" what is not immediately visible. This idea establishes drawing not only as a means of expression, but as a fundamental intellectual prerequisite for spatial and architectural understanding. The idea of drawing as an act of knowledge is further reinforced by the concept of the "thinking hand"[7] by Álvaro Siza, which highlights the direct and almost instinctive link between mind, hand, and graphic sign. In this sense, drawing becomes an extension of the imagination, a process in which error and uncertainty are not flaws to be eliminated, but vital elements that fuel the flow of thoughts and creativity. It is in this context that analog drawing, with its unavoidable imperfection, differs significantly from digital drawing, which is often oriented towards precision. The conscious return to hand drawing, as promoted by Flores y Prats, can be conceived not as a nostalgic act, but as a form of "optimistic resistance"[8] towards the dominance of digital practices. While design software tends to push towards immediate precision, hyperrealism, and sterile perfection, freehand drawing offers a "rawer and more satisfying feeling"[9]. Imperfections, "marks made by someone"[10], are actually creative opportunities. The imperfection of the analog sketch allows the embryonic idea to retain its full evolutionary potential, unlike computerized representation, which, by its very nature, denies this vagueness.
Italo Calvino in *Lezioni Americane*[11] articulates this concern: in an era dominated by a flood of prepackaged images, the act of drawing, whether graphic or verbal, acts as a form of resistance[12]. The author fears that the overabundance of images may stifle creativity, rendering individuals incapable of generating new worlds themselves. The author perceives a "slow petrification"[13] which spares no aspect of life, as if the world were turning to stone under Medusa's relentless gaze. The precision and drawing of the work are the only way to bring order to this chaos and avoid being "suffocated by images"[14].
The workshop methodology is not a random choice, but a profound conceptual position that fits into a contemporary debate on the limitations of digital tools and the need to recover a slower, more reflective and processual approach. The originality of Flores y Prats' work lies precisely in this methodological choice, which revives a traditional practice to address the complexities of contemporary design.

3. The architectural practice of Flores y Prats

These theoretical principles find application in the practice of Flores & Prats. Their architectural practice, founded in Barcelona in 1998, is one of the most significant and distinctive voices on the contemporary scene. Both born in 1965, Eva Prats in Barcelona and Ricardo Flores in Buenos Aires, they have formed a professional partnership that combines design and construction with constant and intense academic and research activity. A crucial and formative element in their career has been their shared experience at the studio of the renowned architect Enric Miralles[15], a time that profoundly influenced their approach to drawing and design. This connection with a master of Catalan architecture led them to conceive their work not only as the mere production of buildings, but as an ever-evolving research project, where the constructed work itself becomes the object of investigation and critical reflection.
The design philosophy of the Flores y Prats studio is based on a unique approach to adaptive reuse, which they themselves define as "second-hand architecture"[16]. This is not simply a restoration technique, but a discipline of adaptation inspired by the metaphor of wearing second-hand clothes. The act of wearing a garment already used by others requires trust and time, a process of adaptation in which the previous model is undone and recognized before being made one's own. In the same way, working on an existing building means interacting with its memories, its previous uses, and its imperfections, not to erase them, but to incorporate them into the new project. This approach is radically opposed to the concept of tabula rasa and design as creation from scratch. This perspective goes beyond simple material reuse; it is a profound interaction with the "Emotional Heritage"[17] of the place. This concept refers not only to the physical structure, but also to the "invisible" elements that inhabited the ruins: the social and cultural activities, the "ghosts of people", and the stories that the building preserves. Their work consists of reading these memories and projecting a future that takes the past into account[18]. The project does not aim to erase history, but to make it part of the new reality, creating a fusion of eras where "the old and the new work together to produce something else, which contains memories of past and new uses"[19]. The use of hand drawing is intrinsically linked to this philosophy. The studio publishes an anthology of writings entitled *Flores & Prats: Dibujar sin borrar y otros ensayos*[20] (Drawing Without Erasing and Other Essays), which expresses a deep belief in the ability of manual drawing to "generate multiple and complex layers of knowledge about a space or place". Drawing without erasing is described as a continuous monologue, a process that layers itself onto the sheets, creating a work that is the sum of all the materials produced during its conception. This emphasis on process rather than end product brings the work closer to procedural art. The metaphor of "second hand" can also be extended to the drawings themselves, which become objects laden with memory. A "second-hand" drawing is one that does not originate from a blank page, but bears the traces, lines, and human errors of the hands that created and reworked it. This methodological approach transforms drawing into a tool that not only analyzes existing architecture but also literally adapts to it. The drawing does not impose itself authoritatively on the place but layers itself onto its history, its pre-existing features, and its fragilities. This profound consistency between design philosophy and drawing practice represents the intrinsic originality of the studio's work. The act of drawing without erasing becomes an ethical gesture, a tangible manifestation of the "discipline of the existing". Drawing in this context is not an abstraction, but a material object that incorporates the time and history of the place, just as a second-hand garment preserves the memory of those who wore it.
The project for the Beckett Room[21] in Barcelona is the most representative case study of their practice. The architects won the competition in 2011 by proposing to rehabilitate and reuse the ruined building of the old *Pau i Justícia* workers' cooperative in the Poblenou district. The decision to maintain

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the structure, despite its precarious condition, was in contrast to the demolition proposals put forward by other competitors. The project is a direct application of the concept of "Second-Hand Architecture".
The architects found the building to be in a state of physical decay that they did not want to hide but rather carry forward to make it part of a new reality. The transformation carefully preserved historical elements such as hydraulic mosaic floors, original woodwork, cornices, and roses. At the same time, they introduced a new, bright, double-height volume that serves as a vestibule and wraps around the central void of the old structure. This approach allowed the spirit of the building and its presence in the collective memory of the neighbourhood to remain intact. In summary, the practice of Flores & Prats cannot be reduced to a simple sum of their projects. Instead, it is a unified intellectual and operational project, in which the method of “drawing without erasing” serves to investigate and breathe new life into “second-hand” architecture, rich in its “emotional heritage”. Their work offers a powerful counterpoint to an architectural culture often oriented toward genericity and speed, demonstrating that slowness and meticulousness can lead to results of great complexity and depth.

4. The MAAM: an investigation of the urban “super-place”
The complexity of the MAAM demanded precisely this kind of sensitive, layered approach that Flores y Prats' methodology offers. To understand why, it is necessary to examine the unique nature of this site. The MAAM, or *Museo dell'Altro e dell'Altrove di Metropoliz* (Museum of the Other and Elsewhere Metropoliz), is not a conventional building or museum, but a complex physical, social, and political organism that defies classification. Located in a former Fiorucci sausage factory on the eastern outskirts of Rome, at Via Prenestina 913, the building was occupied in 2009 by the BPM (*Blocchi Precari Metropolitani*) movement, in a political act of protest against the expulsion of the poorest sections of the population from a city model that is no longer fit for habitation[22]. The occupation has transformed the former factory into a place of life and resistance, a politicized entity, a place of militancy and cohabitation for about 200 people, including 70 children, from different parts of the world, creating a “città meticcia”[23] of different nationalities and life stories. Under the artistic direction of Giorgio de Finis, this place of cohabitation and resistance has been transformed into the “world's first inhabited museum”. Art has been strategically used as a tool of protection: the more than 500 works of art inside have given the walls inestimable value, making any possible eviction an act of destruction of cultural heritage, with potential compensation of millions of euros. In 2011, anthropologist and artist Giorgio de Finis joined a collective called *Primavera Romana* and launched the “Space Metropoliz” project. The idea, inspired by the experience of *Casilino 900*, involved building a rocket to go to the moon, a symbol of the “discarded lives” that no one wants on Earth anymore[24]. This project, together with the installation of over 500 works of art inside the factory, transformed the building into the MAAM.

Fig. 2

The creation of the museum had a strategic function: art became a “barricade” and a shield to defend the community. The works of art, as Giorgio de Finis explained, were intended as “signatures on a collective petition”[25], making the space untouchable. At the same time, the museum performed a function opposite to that of a prison: it opened the door and connected the occupied space with the city, triggering a continuous exchange between the community and visitors. Those who come to see the museum, in fact, find the inhabitants, and those who come to see the inhabitants see the museum. This concept is expressed by the relational art formula “1+1=3”[26], which demonstrates how the interaction between two separate entities can generate a new identity.

Art has also taken on a transformative role, not just a protective one. The artist is a King Midas with an “alchemical power” over art, as illustrated by the golden elevator installation[27].
The reality of MAAM stands in stark contrast to Marc Augé's theory of “non-places”, defined as anonymous spaces such as airports or supermarkets, where individuals feel “similar but alone” and social relations are absent or reduced to a minimum. MAAM is the exact opposite: a place of strong identity, community, and “socio-cultural relations”, a “super-place”[28]. French anthropologist Marc Augé has profoundly influenced the debate on the nature of social spaces in “surmodernity”, or the contemporary era characterized by acceleration, globalization, and increasing individualization. His theorization of “non-places” has captured the collective imagination, offering a key to understanding the loss of identity and sense of belonging in modern urban contexts. The concept of “non-place”[29], coined by Augé in 1992, describes those spaces that cannot be defined as identity-based, relational, or historical. They are places of transit, consumption, and anonymity, where social relations are reduced to a minimum. However, in a later stage of his thinking, Augé introduced a complementary and dialectical concept, without ever formalizing it systematically: the "super-place." This term represents a critical and proactive response to the social disintegration of the non-place. Unlike anonymous and transient spaces, the super-place is defined as a spatial entity in which community is created. Super-places are not necessarily located in historic centers or in places conventionally recognized as social. They can also arise in suburbs or historic areas and are distinguished by a density of meaning and an intense “condensation” of “socio-cultural relations”. They represent a reaction to the risk of alienation and loss of personal values highlighted by the theory of non-places. The super-place therefore emerges as a positive intensification of the non-place, an evolution that allows the link between physical space and the human and social dynamics that animate it to be reestablished. The MAAM perfectly embodies the transition from non-place to super-place, and Marc Augé himself recognized its importance.
On December 10, 2016, Marc Augé visited the MAAM on the anniversary of the Universal Declaration of Human Rights[30]. The experience made a deep impression on him, so much so that he described it as “unique, extraordinary”. His words, reported in a 2017 text, offer a clear justification for his definition of MAAM as a super-place: “It is the first time I have seen a place like this, a place so rich in works of art, a place where art protects. Because this place, with the help of art, welcomes the excluded... MAAM is a super-place”[31]. The complexity of MAAM is not limited to its social dimension; it is also a physically layered “super-place”, with the memory of the former slaughterhouse intertwined with signs of occupation and art installations. A traditional approach to the project, based on digital surveys and technical plans, would not do justice to this layering. Metric measurements cannot capture the human stories, the fragility of informal constructions, and the invisible relationships that permeate the space. The essence of MAAM lies in its fragility and use value, and the architecture that approaches it must do so with sensitivity and respect.
Flores y Prats' decision to focus on hand drawing is therefore a precise and necessary methodological response to the nature of this “super-place”. Their approach, based on observation and discipline of the existing, allows them to go beyond mere geometric representation to investigate the “memories” and “stories that reside in abandoned buildings”. For architects, observing a place is not a passive action, but an act of knowledge that already contains the seed of the project. Drawing, in its slowness and imperfection, forces the observer to investigate more deeply, to “see” not only physical traces, but also human and social ones. The workshop is not a simple academic exercise, but becomes an action that approaches anthropology, an attempt to understand a place through the creative act, fully justifying its relevance in contemporary debate.

5. The "*Seconda Mano*" workshop at MAAM. A methodology for critical redesign
The “*Seconda Mano*” workshop represents a concrete application of Flores y Prats' design philosophy, offering a methodology that stands out for its clarity and consistency.
Under the scientific direction of Orazio Carpenzano, Giorgio de Finis, Ricardo Flores, Filippo Lambertucci, and Eva Prats, this international design workshop, open to doctoral students in architectural and urban design in their 40th cycle, took place from February 3 to 8, 2025, at the MAAM in Via Prenestina 913 in Rome. The event was organized by the Faculty of Architecture of Sapienza University of Rome, MAAM, the Museo delle Periferie, and the Royal Academy of Spain in Rome.
The workshop was conceived as a critical redesign studio, with the aim of imagining a future for MAAM starting from a careful observation of the existing. The term “redesign” is conceived here not as a simple act of graphic reproduction, but as an action of interpretation, analysis, and proposition.

Fig. 3

The concept of “fragment”, central to Flores y Prats' methodology, was explored in the workshop as a unit that is not limited to a wall or a room, but can also be the space between two walls. The act of surveying the fragment on a 1:20 scale was not a technical exercise, but a way to capture its intrinsic qualities, such as light and stratification. The interpretative reworking of the spatial and social complexities of the MAAM, made tangible through hand drawing, revealed otherwise latent dynamics, such as the ways in which inhabitants appropriate spaces and the traces of self-managed transformations.

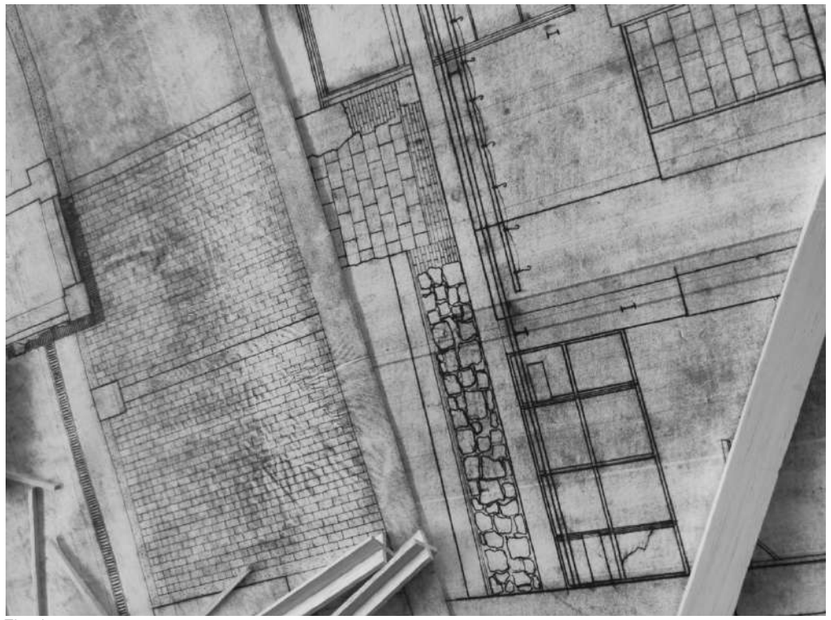

Fig. 4

Through this methodology focused on direct immersion and understanding of the context through the act of drawing, new perspectives have been opened up for the interpretation and potential redesign of the MAAM. The educational approach encouraged a careful and progressive reading of the existing structure, favouring manual observation and its graphic translation as primary tools of interpretation. In this context, the exploration of the spatial, social, and historical stratifications of the MAAM took place mainly through hand drawing.
The experience of Group 4[32], focused on the interpretation of a specific architectural fragment, is a concrete example of this. Walking through the MAAM, the group was attracted by the presence of a solid volume within a structural grid. The observation of this vertical element and the tensions

generated by its interaction with the horizontal plane and the grid that defined it was translated into sketches and volumetric and material studies, forming the starting point for the interpretation of the fragment. The methodological application of hand drawing thus led to an interpretative reworking of the spatial complexities of the MAAM. The design proposal aimed to reinterpret its intrinsic spatial qualities, suggesting new modes of interaction and enjoyment.
The group's work highlighted a series of key themes that define the complexity of the MAAM, including the weft, conceived as the exploration of the variations on the grid and its exceptions, which allowed for an understanding of the underlying structure of the building and its deviations. Added to this is the concept of arrhythmia, which revealed the dynamics of a place that breathes and expands in unconventional ways, through the relationship between compression and dilation in space. Stratification was made tangible as a veritable “palimpsest” of eras, uses, and signs, from the sausage factory to the occupation. Furthermore, the practice of drawing allowed us to understand the blurred boundary between interior and exterior, highlighting how light and openings create a continuous dialogue between spaces. Light itself was studied not only as an element that illuminates, but as a component that defines space and its intrinsic qualities.
Finally, the presentation of the workshop results to the MAAM community and citizens reflects the value attributed to use value and participation, transforming the project from an individual act into a tool for dialogue and collective empowerment.

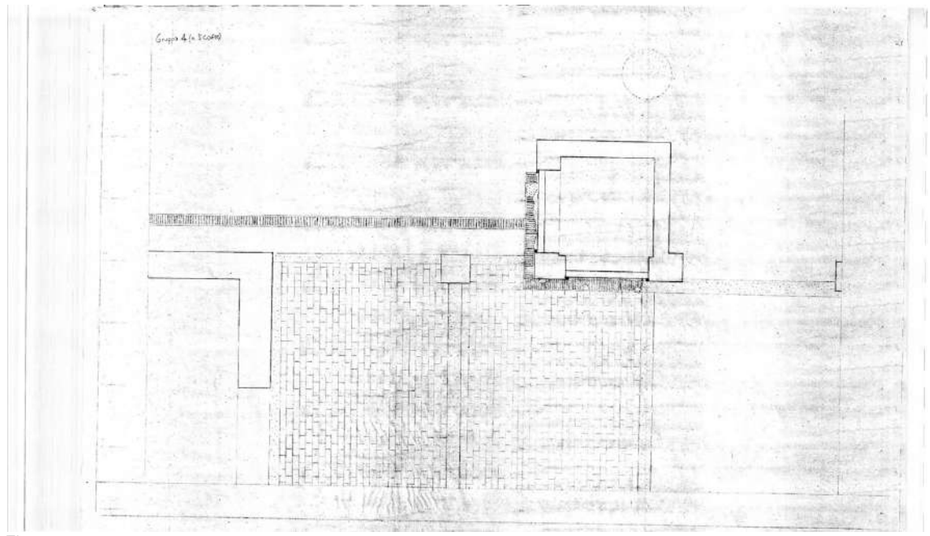

Fig. 5

6. Conclusions. Contributing to the architectural debate.
This study has shown that Flores y Prats' “*Seconda Mano*” workshop is not simply an educational exercise, but a profound and original methodological model. Hand drawing has been reimagined and reintroduced as a tool through which architectural ideas are not only represented but also formed. This approach has been presented as a necessary resistance in the contemporary scene, dominated by digital tools which, while offering speed and precision, tend to deprive the creative process of the imperfections that stimulate thought and imagination.
The workshop methodology makes a significant contribution to the architectural debate. It demonstrates how the practice of adaptive reuse can transcend mere functional redevelopment to become an ethical and poetic investigation into the relationship between architecture and memory, between history and design. The metaphor of “second hand”, applied to both buildings and designs, provides an interpretative key that unifies the process of knowledge with that of intervention, transforming redesign into an act of care and rehabilitation.
In conclusion, the most distinctive and impactful element of the workshop, which elevates the project beyond the academic sphere, is its inextricable link to the social context. The act of showing the drawings produced to the MAAM community is not a simple exhibition, but a crucial part of the methodology. This final step closes the circle, transforming the process of knowledge, initiated by the individual architect, into a tool for dialogue and potential social activation. In this context, drawing is not only a tool for seeing and understanding, but a means of showing and imagining a possible future for a community, making design proposals no longer abstractions, but seeds of shared futures.

Notes

1. The international design workshop, open to doctoral students in architectural and urban design in their 40th cycle, took place from February 3 to 8, 2025, at the MAAM in Via Prenestina 913 in Rome, under the scientific direction of Orazio Carpenzano, Giorgio de Finis, Ricardo Flores, Filippo Lambertucci, and Eva Prats. The event was organized by the Faculty of Architecture of Sapienza University of Rome, MAAM, the Museo delle Periferie, and the Royal Academy of Spain in Rome.
2. Ricardo Flores and Eva Prats, *Drawing without erasing and other essays* (Cologne: 2G essays, 2023).
3. Ricardo Flores and Eva Prats, "The discipline of existing, after Sala Beckett" *IQD 'Second-Hand'*, no. 56 (July/September 2019): 58-64, https://floresprats.com/wordpress/wp-content/uploads/2019/07/4.PUB_OWN_WRITING_23b.pdf.
4. Miquel Adrià, *Pensando a mano: la arquitectura de Flores & Prats* (Ciudad de México: Arquine, 2020).
5. Ricardo Flores and Eva Prats, *Drawing without erasing*.
6. "Voglio vedere, e per questo disegno. Posso vedere un'immagine solo se la disegno".
7. Giulia Mura, "La sacralità dell'architettura. Conversazione con Álvaro Siza" *Artribune*, September 5, 2015, https://www.artribune.com/attualita/2015/09/intervista-alvaro-siza-architettura-mostra-maxxi-roma/.
8. Ricardo Flores and Eva Prats, *Drawing without erasing*.
9. Ricardo Flores and Eva Prats, *Drawing without erasing*.
10. Ricardo Flores and Eva Prats, *Drawing without erasing*.
11. Although Calvino does not devote pages to the physical mechanics of drawing lines by hand, the conceptual, philosophical, and aesthetic act of "drawing" is a cornerstone of his poetics. This "drawing of words" is not a simple descriptive exercise, but the core of his lesson on *Esattezza* and the antidote to the "flood" of passive images he feared in the new millennium. His writing is, in fact, an act of "graphic figuration" that aims to "shape space" and "paint the world" through words.
12. Italo Calvino, *Lezioni americane: sei proposte per il prossimo millennio* (Milano: Garzanti, 1992).
13. Italo Calvino, *Lezioni americane.*
14. Italo Calvino, *Lezioni americane.*
15. For Miralles, drawing was much more than a means of representation; it was a true act of knowledge. His design drawings have been described as complex and layered, integrating plans and sections, reversals and overlaps. His drawings, often enriched with collages of the context, study models, floor plans, and details, served as "memoranda" so as not to forget his initial ideas and intentions. Miralles' most tangible legacy is evident in the work of his former collaborators, who have continued to develop and apply his methodology. This is the case with Ricardo Flores and Eva Prats. Their creative process reflects Miralles' method, based on the continuous layering and transformation of ideas.
16. Miquel Adrià, *Pensando a mano.*
17. Sophie Marie Piccoli, "Flores y Prats e il patrimonio emozionale dell'architettura in una lectio magistralis a Milano" *Elle Décor*, no. 59 (June 2024), https://floresprats.com/wordpress/wp-content/uploads/2024/06/4.PUB_STUDIO_86.pdf
18. Ricardo Flores and Eva Prats, *Drawing without erasing*.
19. Miquel Adrià, *Pensando a mano.*
20. Ricardo Flores and Eva Prats, *Drawing without erasing*.
21. Juan José Lahuerta, "*Residua*. Obbligo e invenzione: un'opera recente di Flores & Prats" *Casabella*, no. 875-876 (July 2017): 49-66, https://floresprats.com/wordpress/wp-content/uploads/2018/01/4.pub_sala_beckett_40.pdf
22. The MAAM in Rome is not just a building, but a complex physical, social, and political organism that has established itself as a paradigmatic case study. Its history and evolution offer a lens through which to analyze the contradictions of the contemporary city, posing fundamental questions about its function and destiny: "What is the city? What is it for? To live in?" This question becomes particularly urgent in the face of an urban development model based on dynamics that can be defined as "extractive", where housing is not used for living, but becomes a resource from which to extract value. Such operations, often based on the change of use of abandoned areas, such as those once used for factories, transform the housing issue into a political problem that affects everyone, not just those who are forced to occupy. Those who occupy spaces such as the Fiorucci factory are, in fact, among the first to be expelled from this model of the city. In this context, MAAM, which arose from the reappropriation of an abandoned factory, represents a collective and creative resistance against standardization and social emptying.
23. Giorgio De Finis, *MAAM: museo dell'altro e dell'altrove di Metropoliz_città meticcia* (Roma: Bordeaux, 2017).
24. Giorgio De Finis, *MAAM.*
25. Giorgio De Finis, "Ripensare la città passando per il museo", *Critica Urbana*, no 13 (July 2020): 52-56 https://criticaurbana.com/wp-content/uploads/2020/07/Cr%C3%ADtica-Urbana-13.-Giorgio-De-Finis.pdf
26. Giorgio De Finis, *MAAM.*
27. Giorgio De Finis, *MAAM.*
28. The French anthropologist, while not fully formalizing the concept, introduced the theme of "super-places": spaces where "community is created." The MAAM fully embodies this notion, transforming a decaying place into a center of resistance and collective life.
29. Marc Augé, *Nonluoghi* (Milano: Elèuthera, 2020).
30. Marc Augé, "Il MAAM è un super-luogo" in *MAAM: museo dell'altro e dell'altrove di Metropoliz_città meticcia* (Roma: Bordeaux, 2017).
31. Marc Augé, "Il MAAM è un super-luogo".
32. Group 4 consisted of: Chiara Colantoni, Student of School of Architecture at the University of Rome Sapienza; Fabiana Di Cuonzo, PhD student in Museology at the CITCEM, Faculty of Arts and Humanities of the University of Porto; Gabriele Limitone, Student of School of Architecture at the University of Rome Sapienza; Miguel Armando López Herrera, PhD student in Architectural composition at the University IUAV of Venice; Emanuela Vassallo, PhD student in Architecture for Ecological Transition between Interior Spaces and Landscape at the University of Palermo and author of the contribution.

Image Captions

Fig. 1. Internal court of MAAM (Museo dell'Altro e dell'Altrove a Metropoliz), photo by the author.
Fig. 2. MAAM (Museo dell'Altro e dell'Altrove a Metropoliz), photo by the author.
Fig. 3. "Fragment" of the MAAM chosen by Group 4 for the workshop, photo by the author.
Fig. 4. The work of Group 4 during the workshop days, photo by the author.
Fig. 5. Survey of fragment of Group 4, ground floor plan on a scale of 1:20.

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Biography

Emanuela Vassallo Architect and PhD student in Architectural Design, enrolled in the 40th cycle of the PhD program in *Architettura per la Transizione Ecologica tra Spazi Interni e Paesaggio* (ATESIP) at the Department of Architecture of the University of Palermo with a scholarship co-financed under Ministerial Decree 630, she investigates the role of architectural design in the energy transition for new ways of living, cultivating, and producing energy in rural areas of Sicily. She is a member of the Research Unit of the University of Palermo, coordinated by Prof. Zeila Tesoriere, within the PRIN 2022 PNRR _ Confiscated Assets in transition: from the Anti-city to the Third heritage. Her contribution includes the survey and architectural description of the phenomenon of confiscated assets, the graphic-descriptive processing of data from unconventional sources, the creation of an interactive georeferenced digital map, and the development of design approaches for transformation for selected case studies.

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Space Misreadings: Negotiating Human and Machine Imagination

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Abstract

The rapid expansion of generative artificial intelligence in design education raises urgent questions about architectural literacy. Acts of reading, writing, and representing risk being reduced to procedural patterning, threatening the interpretive practices that sustain architectural imagination. This paper proposes a three-phase pedagogical experiment situated within a grapho-logical framework that foregrounds the constitutive role of inscription and misreading in meaning-making.

In Text to Text, students extracted spatial logics from literary works and translated them into conceptual mappings. These diagrams made explicit that reading is never neutral but always a projection shaped by memory, atmosphere, and ideology. In Text to Image, mappings were operationalized through AI systems, exposing the dissonance between human imagination, which is relational, embodied, and atmospheric, and machinic outputs shaped by statistical aggregates. What emerged was less the “failure” of AI than the recognition that all representation entails misalignment, including scale collapses, contextual erasures, and atmospheric losses that open interpretive gaps. In Image to Image, students engaged these fractures iteratively, refining AI outputs to approximate subjective atmospheres. Prompts functioned not as commands but as epistemic inscriptions, sites in which authorship and agency were redistributed between human sensibility and machinic grammar.

The findings suggest that grapho-logical pedagogy enables students to treat misreading as a productive method. Rather than striving for seamless fidelity, the exercise emphasized the epistemic value of dissonance, positioning AI not as a substitute for imagination but as an interlocutor in processes of negotiation and critique. In this light, agency in the age of AI lies in sustaining practices of critical literacy, in which misalignments become openings for renewed spatial invention and for reasserting the interpretive sovereignty of architectural education.

Key words: critical literacy; grapho-logics; machine imagination; misreading; authorship and agency.

1. Introduction

The theme of grapho-logics foregrounds the constitutive role of inscription, writing, and diagrammatic practices in the production of meaning. Architecture, historically grounded in representation, is shaped through the interplay of text and image, writing and drawing, diagram and space. In this context, the accelerated mediation of creative practices by generative artificial intelligence (AI) poses a critical challenge. Acts of reading, writing, and representing risk being absorbed into procedural routines of statistical patterning, weakening the operations of literacy that sustain architectural imagination. The stakes of this transformation are not only epistemological but pedagogical: what happens when design education relies on machinic grammars that prioritise prediction over situated interpretation?

The erosion of literacy under conditions of automation is not a neutral development. Generative AI offers speed, flexibility, and formal novelty, but it also reconfigures close reading, reflective thinking, and interpretive agency. The resulting literacy risks becoming shallow: imagination without atmosphere, representation without context, and writing without criticality. Recent scholarship has underlined both the promise and the risks of this shift. Iranmanesh and Lotfabadi (2025) show that text-to-image systems expand representational possibilities in architecture studios while simultaneously eroding scale and spatial coherence. This transformation can be understood as a pedagogical disruption for which existing curricula remain largely unprepared. Earlier critiques had already anticipated such tensions. Crysler (1995), for instance, exposed the limitations of transmissive pedagogy and called instead for forms of critical engagement. These insights gain renewed urgency as AI enters the studio not merely as a tool but as a co-producer of representational decisions.

This paper responds to these conditions through a pedagogical experiment developed within the undergraduate course MIM 4036, Representation and Presentation in Architecture, at Istanbul Technical University. The course introduces students to diverse representational media, ranging from traditional drawing to contemporary digital platforms, and explores their role not only as communicative devices but as epistemic tools. Within this context, a structured three-phase exercise was designed to stage and examine the dissonance between human and machinic imagination and to cultivate students’ critical literacy. Students first translated literary texts into conceptual mappings, then transformed those mappings into images through AI systems, and finally reworked the outputs iteratively to approximate their own experiential atmospheres. Across these phases, representation was reframed as a process of misalignment, negotiation, and reinterpretation rather than a model of faithful transmission.

The pedagogical aim was not to resolve the dissonance between intention and outcome but to foreground its epistemic value. Misreading, long theorized as central to meaning-making, provided a conceptual lens. Roland Barthes’ proposition of the “death of the author” (1977) emphasized that meaning is not anchored in intention but emerges through plural readings. Jacques Derrida’s différance (1976) reinforced this instability by insisting that meaning is endlessly deferred, while Umberto Eco’s notion of the “open work” (1989) situated multiplicity within the recognition of structural limits. Taken together, these positions recast misreading as generative rather than erroneous, offering a framework for rethinking authorship and agency when representation is mediated by both human sensibilities and algorithmic systems.

The central questions guiding this research are therefore threefold. First, how can architectural education reclaim reading, writing, and representing as sites of critical literacy in the age of AI? Second, in what ways can misreadings, whether human or machinic, be mobilized as creative resources rather than dismissed as failures? Third, what forms of authorship and agency emerge when grapho-logical practices are mediated by both situated human interpretation and machinic grammars? The argument advanced here is that agency in the age of AI lies not in mastering generative tools for seamless outputs, but in sustaining practices of critical misreading. By engaging productively with dissonance, students can interpret the limitations of machine imagination and reassert the sovereignty of interpretive faculties. Rather than rejecting AI or embracing it uncritically, this approach positions AI as a partner in epistemological negotiation, a medium that can unsettle, expose, and sharpen the practices of literacy that define architecture as a grapho-logical discipline. This is not a technology evaluation study of AI. It offers a pedagogical experiment that reframes how representation is produced through writing, diagram, and image, and examines what becomes legible when these practices are mediated by generative systems.

2. Background: Writing, Representation, and Critical Pedagogy

Architecture has long negotiated its epistemic ground at the threshold between visuality and textuality. Drawings and diagrams have been privileged as the language of design knowledge, while writing has often remained ancillary. Recent scholarship unsettles this hierarchy, showing that meaning emerges precisely through the interplay of inscription and depiction. Nigianni (2013) locates this in the psychoanalytic and poetic dimensions of representation, while Wilson (2016), extending Marin’s analyses of early modern cartography, traces how the presence of text within visual fields destabilizes conventional separations. Bassanino and Brown (1999) bring this concern into the digital era, situating

the computer-generated image within longer continuities and ruptures, and identifying it as a cognitive medium open to multiple interpretations.

This attention to the convergence of modes has also shaped pedagogy. Madrazo's (2006) system of representations articulates six axes (writing, figure, object, image, space, and light) as an interdisciplinary ground that treats technologies as integral to architectural education. Madrazo and Vidal (2002) demonstrated how textual concepts could be transformed into visual maps that functioned as "abstract machines" for meaning, while Smith and Norman (2020) show how sketches, projections, and collages operate as epistemic tools that mediate both conceptual intent and exploratory seeing.

Critical pedagogy extends these frameworks by situating representation in social and political horizons. Freire's Pedagogy of the Oppressed (2003) reconceptualizes learning as dialogical practice tied to struggles for justice, while hooks' (1994) "engaged pedagogy" foregrounds lived experience as the basis of transformation. In architectural education, Crysler (1995) critiques the transmission model of the studio, arguing for more pluralistic and situated pedagogies. Such approaches foster not only creativity and confidence but also self-awareness and shared responsibility. Wright's (2011) "Critical Method" similarly cultivates reflective autonomy by encouraging students to interrogate each stage of their design processes through continuous critique.

The affinities between critical pedagogy and constructionism sharpen this perspective. Freire and hooks' emphasis on dialogue and agency resonates with Papert, Resnick, and Ackermann's notion of learning through making. Ackermann (2012) emphasizes perspective-taking as well as object construction, while Resnick (2017) formulates a "creative learning spiral" of imagining, creating, sharing, and reflecting. Within such a framework, diagrams, models, texts, and code fragments cease to be auxiliary tools; they become epistemic environments where knowledge is constructed, contested, and transformed.

When writing and visuality are integrated in this way, students develop not only technical proficiency but also conceptual depth and critical positioning. Kulper (2013) explores how imagistic mediation shapes architectural knowledge, while Öztürk and Kuloğlu (2020) stress the narrative dimensions of space-making in studio practice. These insights gain new urgency with the rapid introduction of AI into pedagogy. Estrina and Hui (2021) underline the expanded repertoires opened by immersive technologies, while Iranmanesh and Lotfabadi (2025) caution against the erosion of scale and context in text-to-image systems. Digital visualization must therefore be framed not merely as a technical medium but as a site of critical representation. Within reflective pedagogy, AI can act as a productive accelerator; absent such framing, it risks eroding the practices of reading, writing, and critical thinking that sustain architectural imagination.

In sum, the convergence of writing and image relations, critical pedagogy, and literacy requires reconsideration in the age of AI. Freire and hooks' liberatory pedagogy, Resnick and Ackermann's constructionist frameworks, and Madrazo's systems of representation together articulate a foundation through which students may cultivate critical awareness across both textual and visual modes. AI, within this constellation, may serve either as an accelerator of engagement or as an instrument of reduction. The decisive factor is whether pedagogy positions it as a laboratory for misreading, rewriting, and epistemic negotiation.

3. Theoretical Framework: Grapho-logics and Misreading

3.1. Critical Literacy and Grapho-logics

Critical literacy treats reading and writing not as neutral acts but as practices that expose and reshape ideological and social relations. Luke (2012) shows that literacy reveals whose voices are made visible and whose are excluded, reminding us that drawings, texts, and maps in architectural pedagogy are never innocent tools but operations embedded in power. Janks (2010) develops this further by framing literacy through domination, access, diversity, and design, shifting attention from comprehension to transformation. In this sense, reading, writing, and mapping in design education illuminate both the production of knowledge and the positions it privileges. Wright's (2011) Critical Method illustrates this potential by cultivating reflexivity and critique among design students, while studies on media literacy (Funk, 2013; Hazzard, 2021) link such practices to broader questions of social justice. Medlock Paul (2018) adds a set of principles that connect literacy to transformation, offering a framework that can be extended to the architectural studio, where textual and visual practices operate as epistemological rather than merely technical acts.

At this point grapho-logics becomes crucial. Cardoso Llach (2015) argues that digital design software carries logics that structure imagination and mediate production, functioning not as passive instruments but as socio-technical infrastructures. Krämer (2013) likewise describes diagrams, lines, and codes as epistemic instruments, the "eye of thought" bridging intuition and conceptualization. Hawley (1994) adds that diagrammatic practices are not only representations but also spaces where knowledge is reorganized through both formal and intuitive operations.

Critical literacy also unfolds across multiple modes. Research on multimodal pedagogy (Duffelmeyer & Ellertson, 2005; Nurjanah, 2024) shows that combining visual, digital, and textual registers strengthens critical awareness and civic participation. Leander and Burriss (2020) extend this argument to the posthuman condition, noting that in an age shaped by algorithms and AI, literacy must address not only human-to-human exchanges but also human–machine relations. From this perspective, critical literacy becomes both a mode of resistance and a framework for rethinking epistemic agency. In architectural pedagogy, it positions reading, writing, and mapping as constitutive acts of critique and transformation.

3.1. Human vs Machine Imagination

Human imagination emerges through a shifting interplay of memory, context, and atmosphere. Suchman's Plans and Situated Actions (2007) moves the study of human–machine interaction away from deterministic plans and toward the contextuality of situated practice. Memory and intuition appear here not as fixed capacities but as processes continually reconstructed through embodied engagement with the world. Artificial intelligence, by contrast, operates through statistical inference, producing outputs from probabilistic distributions across vast data sets. This contrast exposes the epistemic gap between atmospheric, embodied memory and algorithmic, statistical memory.

The ecological dimension of imagination deepens this divide. Morton's (2010) "ecological thought" situates memory within a mesh of shared relations, where meaning is relational rather than individual. Braidotti's (2011) nomadic subject similarly conceives identity as fluid, recomposed through networks of experience, emphasizing the creative potential of partial and mobile selves. Against these fluid imaginaries, the constraints of machine memory become clear: its creativity remains largely limited to recombination and iteration rather than lived resonance.

Recent debates sharpen the distinction further. Mahadevan (2018) argues that for AI to become an "imagination machine" it would need analogy and causal reasoning, not only distributional mimicry. In architecture, Bolojan (2022) presents AI as a partner that expands the designer's horizon without displacing human agency, suggesting new forms of shared authorship. Dare et al. (2018) remind us that computational imagination is always mediated by cultural and historical contexts. Shen et al.'s (2022) Co-Art platform illustrates this potential, showing how AI can enrich children's drawings and act as a creative partner. Yet across these cases, the production and interpretation of atmospheric experience remains anchored in human memory. AI can extend and diversify human design capacity, but it cannot replace it. At the same time, it provides an experimental arena in which theories of imagination can be tested, from artistic practice to architectural speculation. In this dual role, AI is not a substitute for human imagination but a catalyst and a site of inquiry, where the asymmetry between embodied atmospheres and statistical memory becomes a productive tension for design pedagogy.

3.3. Misreading as Method and Authorship

Misreading is not a mistake but a constitutive mode of meaning-making. Post-structuralist thought has long challenged the idea of fixed interpretation. Barthes, in his "death of the author" thesis in Image–Music–Text (1977), displaced meaning from intention to the plurality of readings, recasting the "work" as an open text. He argues that a text is not a linear sequence of words conveying a single "theological" meaning dictated by the Author-God, but rather a multidimensional space where multiple, non-original meanings intersect and collide (Hans, 1974). Derrida's différance (1976) reinforced this instability, suggesting that every reading is also a misreading, since meaning is endlessly deferred (Skinner, 2008). Bloom's "creative misprision" (1973) reframed misreading as the source of invention (Gonsalves, 2024), while Eco's Open Work (1989) acknowledged multiplicity but insisted that it operates within structural limits. In architecture, Eco's approach has influenced both the Italian Radical Design movement and contemporary collective design practices, where the "open work" is reconceived as a plural field open to user interventions (Atwood, 2020). Later readings extended these ideas: Campbell (2018) emphasized "critical openness" as a pedagogical stance, while Feliciano (2019) and Opiłowski (2018) traced Eco's concept into science and digital literacy. Together these accounts establish misreading as a generative rather than erroneous practice.

Architecture has absorbed this lineage in distinct ways. Eisenman, inspired by Derrida, conceived buildings as texts to be read and misread, using interpretive slippage as a method for form-finding (Marjanović, 2008). In pedagogy, Weissman (2010) shows how interpretive "errors" can deepen learning, moving students from passive reception to active co-creation. In speculative design, misreading destabilizes briefs, typologies, and norms. Dunne and Raby (2013) argue that design should not only realize what is probable but multiply what is possible often through deliberate misreadings of convention. Digital environments amplify these dynamics. Kalay (2004) observed that computational tools do more than accelerate representation; they reconfigure the epistemic operations of design. The grapho-logics embedded in software "misread" the designer's intentions, rewriting them

through machinic grammars. Misreading thus becomes a lens for exposing and contesting the epistemological logics of design media.
Authorship is redefined in this light. If Barthes dismantled the sovereignty of the author and Eco insisted on constraint within openness, contemporary authorship in architecture must be understood as distributed. Meaning is co-produced among texts, diagrams, software, and user communities. Generative AI intensifies this condition: prompts act not only as technical triggers but as epistemic inscriptions mediating between human atmospheres and machinic memories. Misreading, in this sense, becomes the practice through which asymmetries are negotiated and rearticulated. In sum, misreading as method dismantles authority (Barthes, 1977; Derrida, 1976), legitimizes multiplicity (Eco, 1989), enables speculation (Dunne & Raby, 2013), and reveals the epistemic effects of digital tools (Kalay, 2004). In architectural pedagogy, it reframes error not as failure but as a creative and critical method, situating authorship within a negotiated field of human, machinic, and collective agencies.

3.4. Authorship and Agency in AI Contexts

The integration of artificial intelligence into design and pedagogy reopens long-standing debates on authorship and agency. Architectural production has traditionally been linked to a singular authorial intent, yet the rise of generative AI unsettles this model by redistributing authorship across multiple actors. Recent studies capture this shift from different perspectives. Kim and Koo (2024) show that AI-generated course materials are perceived as more “objective,” but when AI is disclosed as the author, perceptions of quality decline. In an interior design studio, Albano and Longo (2025) describe how Midjourney outputs were negotiated between students, clients, and AI, with human decision-making still positioned at the center. Fleischmann (2024) observes similar ambivalence in Australia: students use AI for rapid ideation but remain skeptical of its creative authorship. By contrast, Vartiainen et al. (2023) report that in secondary education, AI-supported image generation fostered collective authorship, with students viewing AI not as an author but as a co-creator.
Questions of ethics and originality complicate this terrain further. Wu and Zhang (2025) argue that AI destabilizes established notions of originality, while Radtke and Rummel (2024) note that disclosure of AI authorship influences engagement without replacing critical revision practices. Broader cultural debates extend these issues. Wang et al. (2024) discuss AI in terms of “relative creativity.” Nascimento and Venturelli (2025) argue for AI as a co-author, while Jha (2024) suggests that artists increasingly act as curators of machinic outputs. Hutson (2025) conceptualizes authorship as multidimensional, encompassing content, structure, and analytic contribution. Ethical concerns around copyright and data ownership remain unresolved (Holzapfel et al., 2022; Somaya & Varshney, 2018), and McGeough and Flanagan (2025) highlight how the absence of embodied experience destabilizes aesthetic authority.
Within design pedagogy, prompt engineering has emerged as a critical practice. Defined as a methodological form of writing (Thinyan & Wohaibi, 2025), prompts act as epistemic inscriptions that mediate between human imagination and machinic grammars. Prompt engineering has the potential to evolve into an autonomous professional domain, expanding the boundaries of writing in both creative and academic contexts (Oppenlaender et al., 2023; Ranade et al., 2025).In sum, authorship in the age of AI must be understood as a negotiated configuration of agency, distributed among human intention, algorithmic memory, and pedagogical frameworks. Human actors remain central in decision-making, but authorship is increasingly reconfigured as a collective and contested process. Prompts, in this setting, become key epistemological sites where meaning is inscribed, mediated, and transformed.

4. Methodology and Pedagogical Experiment

This study analyzes a three-stage pedagogical experiment carried out in the course MIM 4036 – Representation and Presentation in Architecture at Istanbul Technical University. The course introduced students to multiple dimensions of representation and emphasized that representational tools are not only visual instruments but also vehicles of conceptualization and critique. Representation was framed as a system of signs operating at formal, descriptive, and conceptual levels, encouraging students to approach design processes as interpretive rather than purely technical acts. Twenty-six, third and fourth-year interior architecture and architecture students participated. Alongside conventional outputs such as portfolios, posters, and juries, the early weeks of the semester were devoted to an experimental sequence that placed the relation between text and image refracted through AI at the center of discussion. The exercise translated literary sources into architectural representations, tested these translations through AI, and opened the resulting discrepancies to collective debate.

The first stage, Text to Text, required students to distill spatial elements from literary works, including Scheurmann’s *The Papalagi,* Ballard’s *The Drowned World and High-Rise,* Murakami’s *Kafka on the Shore,* Atwood’s *The Handmaid’s Tale,* Eco’s *The Name of the Rose,* Bachelard’s *Poetics of Space,* and Perec’s *Species of Spaces and Other Pieces*. The reading list was deliberately assembled from texts that foreground space as a primary mode of meaning-making and that carry narrative logics readily translatable into graphic form. They were chosen because their spatial atmospheres could be translated into diagrammatic mappings, their ideological themes supported critical reflection, and their layered narratives provided a comparative ground for examining how AI systems encode visual repertoires. This selection ensured that the transition from text to diagram to image could serve both as analytic disclosure and as productive misreading. Students identified motifs of atmosphere, materiality, and temporality and rearticulated them as conceptual maps, revealing that writing itself functions as a representational system.

The second stage, Text to Image, translated these maps into visuals using generative AI tools such as DALL·E, Midjourney AI,ChatGPT, Stable Diffusion, and Artbreeder. Here, students confronted the limits of algorithmic imagination. Outputs often distorted scale, dissolved context, and flattened atmosphere. Yet instead of treating these as failures, students read them as alternative interpretations, recognizing that every representation entails a degree of misreading.

The third stage, Image to Image, asked students to iteratively rework AI outputs to approximate their own experiential atmospheres. By adjusting parameters of light, color, and density, they sought to align algorithmic images with the affective qualities of memory and imagination. This process emphasized both the multiplicity of AI and the situated labor of the human interpreter who resists or redirects machinic logics. Some saw AI’s inability to render atmosphere as a limitation; others valued its distortions as opportunities for creative interpretation. In either case, the exercise reinforced that representation is never purely technical but always selective, interpretive, and ideological. The experiment unfolded as a multi-layered chain, from textual analysis to conceptual mapping, from algorithmic outputs to atmospheric reinterpretation, where writing, images, and AI were mutually entangled. Students experienced representation as epistemological and political as well as formal, and AI as a pedagogical environment for critique rather than automation. These findings resonate with Iranmanesh and Lotfabadi’s (2025) observation that text-to-image systems enhance creativity while risking loss of scale and context, and with Longo and Albano’s (2025) claim that hybrid analog–digital models strengthen cognitive engagement while leaving authorship with students.

Wider debates on AI in education also contextualize the results. Lee-Price (2024) shows that AI writing workshops foster slow reading and ethical responsibility. Li and Balinas (2025) caution that overreliance may weaken critical thinking. Donduran et al. (2024) describe how tools like ChatGPT and Midjourney introduce new practices of co-authorship. Together these studies confirm that AI’s educational significance lies less in efficiency than in its ability to reshape epistemic practices. Within this context, prompt engineering becomes a critical practice. Defined as a methodological form of writing (Thinyan & Wohaibi, 2025), prompts act as epistemic inscriptions mediating between human imagination and machinic grammars, extending the boundaries of writing itself (Oppenlaender et al., 2023). In this course, prompts were treated not as commands but as critical interventions, exposing how AI reads, misreads, and rewrites the textual. In sum, the experiment demonstrated that architectural representation cannot be reduced to accuracy or formalization. It must be understood as a process of negotiation across texts, images, algorithms, and students. AI tools, when framed through the lens of misreading, become catalysts of critical awareness rather than substitutes for human imagination, enabling architectural pedagogy to cultivate literacies in which meaning is continually rewritten, shared, and contested. In this study, misreading was treated not as an unintended side effect but as a deliberate pedagogical strategy that activates learning through friction, revision, and reinterpretation.

5. Discussion: Grapho-logical Pedagogy in the Age of AI

Taken together, the three stages show how grapho-logical pedagogy operates in the age of AI. Reading, mapping, and visualizing are not neutral transcriptions but situated practices shaped by projection, mediation, and misreading. AI systems do not eliminate interpretation; rather, they dramatize it by making visible the distortions that arise when meaning moves across modes. Their pedagogical value lies less in efficiency than in the critical awareness they produce. By engaging AI as an interlocutor rather than an authority, students came to see representation as a contested field in which meaning is continually negotiated across texts, diagrams, algorithms, and lived atmospheres.

5.1. Text to Text: Mapping as Interpretative Reading

The first stage required students to extract spatial and conceptual structures from literary texts and translate them into diagrammatic maps. This translation did not simply reproduce narrative sequences but reconfigured them as relational and often contradictory networks that revealed the latent spatial

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logics of the text. In some cases, such as *The Handmaid's Tale* (Figure1-left), rigid hierarchies and mechanisms of control appeared as layered architectures of authority, showing how literary form itself can be read as a system of spatial constraint. In others, such as Bachelard's *Poetics of Space* (Figure1-right), students emphasized atmospheric and affective layers, working with oppositions of inside and outside, shelter and exposure, intimacy and estrangement.

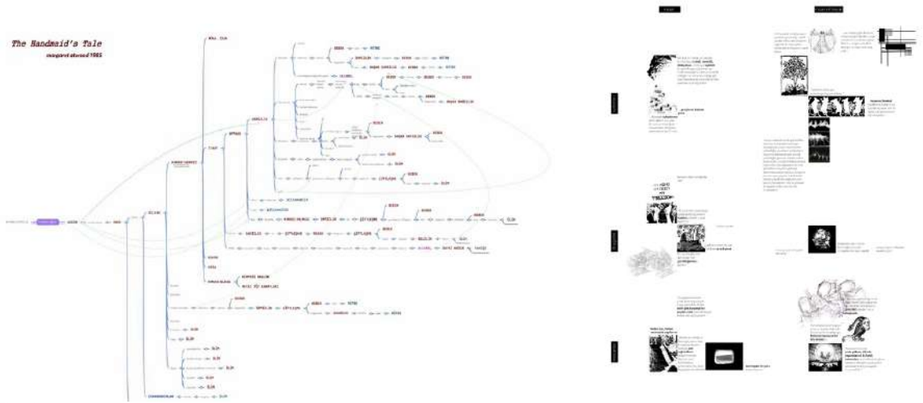

Fig. 1

What emerged was that once reading was transposed into graphic form, it inevitably became an act of projection: subjective associations, memory, and interpretation shaped the outcome. The maps functioned not as neutral transcriptions but as epistemic instruments, foregrounding the impossibility of one-to-one transfer and opening up space for critical misreading. Within a grapho-logical frame, mapping revealed its dual capacity: analytical, exposing latent logics, and inventive, generating new architectural possibilities.

5.2. Text to Image: From Narrative Prompts to Atmospheric Projections

The second stage asked students to externalize the images they had formed through reading and mapping, turning imagined atmospheres into prompts for AI-based generation. This step exposed the tension between the richness of literary imagination and the reductive grammar of machinic interpretation. Although the aim was to visualize atmospheres and spatialities, the process revealed the central role of prompt formulation. Students quickly discovered that unless parameters such as volume, geometry, light, or texture were specified, outputs remained generic. Yet, paradoxically, the more detail they added, the further the results drifted from their intended vision. This revealed a "control paradox": precision did not guarantee fidelity.

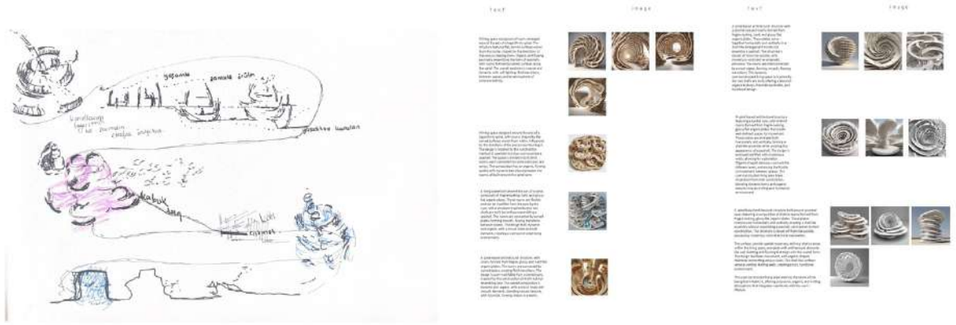

Fig. 2

The paradox also highlighted the layered nature of spatial description. While architectural discourse emphasizes the simultaneity of perceptual and material qualities, AI systems tended to privilege surface cues over contextual or experiential depth.This dynamic is exemplified in Figure 2, where sketches from the *Text to Text* phase (left) are juxtaposed with AI-generated visuals from the *Text to Image* phase (right). The tool here operates as a visual assistant, making it possible to trace how verbal mappings are reformulated and externalized through AI. The absence of figures, temporal references, or environmental conditions produced images that were visually striking but low in experiential specificity. For example, reinterpretations of Ballard's *The Drowned World* emphasized

picturesque ruins and submerged silhouettes while neglecting the oppressive humidity and claustrophobic atmosphere central to the novel. Figure 3 (left) shows an experiment where combinations of different AI tools were used with negative and positive prompts, further testing how these atmospheric dimensions could (or could not) be captured. Spiral-based mappings likewise generated sleek, shell-like geometries that offered formal novelty but failed to capture tactility or intimacy.

Fig. 3

These mismatches proved pedagogically productive. Instead of dismissing the images as failed translations, students began to read them as evidence of the medium's epistemic limits. The exercise fostered awareness that AI's value lies not in replicating human imagination but in revealing the distortions and erasures inherent to representation itself. A further layer emerged when literary works had already been adapted into film or television. Prompts derived from Atwood's *The Handmaid's Tale* frequently reproduced not the novel itself but the visual codes of its television adaptation, red garments, ritualized interiors, dystopian horizons. This reveals that AI systems draw not only on textual inputs but also on the cultural repertoires embedded in their training data. As shown in Figure 3 (right), three different prompts were tested across multiple AI tools, further demonstrating how variations in formulation and platform reinforced these visual tropes. Students thus confronted the sedimented histories circulating in machinic outputs, leading to critical reflection on how media legacies shape architectural imagination.

5.2. Text to Image: From Narrative Prompts to Atmospheric Projections

In the final stage, students returned to the AI-generated images and subjected them to successive transformations in order to approximate the atmospheres they had envisioned during reading. While the Text to Image phase often produced visually striking but generic depictions, the Image to Image process foregrounded agency through iteration. Students learned to manipulate, redirect, and sometimes resist the system, mobilizing their own sensory and spatial intuitions against machinic logic.

For instance, in projects inspired by Scheurmann's *The Papalagi,* iterative interventions highlighted the tension between colonial and indigenous worlds, clarifying what the initial outputs had left obscure. In works referencing Bachelard (Figure 4), successive refinements introduced layers of texture, materiality, and scale, lending atmospheric depth absent from the first results. These negotiations redefined authorship: instead of treating AI outputs as final products, students began to approach them as provisional surfaces, sites of ongoing negotiation rather than resolution. Prompt reformulations, parameter layering, and even strategic use of system biases turned image-making into a critical dialogue between human intention and algorithmic suggestion.

At times, students found that so-called "errors" opened unforeseen possibilities; at other moments, they confronted the system's persistent inability to capture temporality, intimacy, or affect. In both cases, the pedagogical value lay in reframing the gap between imagination and output not as failure but as an epistemic resource. Misreadings became openings for invention, while iteration transformed representation into a dynamic practice of negotiation.

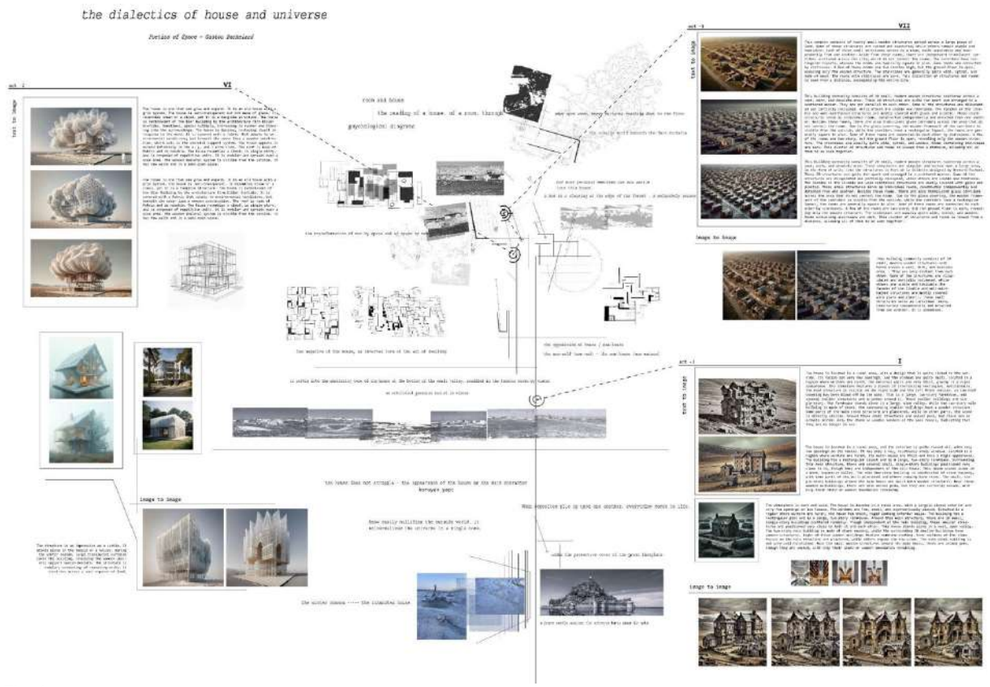

Fig. 4

6. Conclusion

This study's contribution lies not in diagnosing the limits of AI, but in showing how those limits can be made pedagogically productive. Rather than offering a technical evaluation of AI, the study traces a shift in students' understandings of representation, authorship, and interpretation. Across the three-stage process, students began to evaluate representation not through accuracy or fidelity, but through negotiation, interpretation, and rewriting.

This study has reframed grapho-logics as a pedagogical framework for rethinking the tension between writing and representation in architectural education through the lens of artificial intelligence. As argued at the outset, architectural knowledge is generated not only through visual languages but also through the joint logics of writing and diagrams. This premise makes visible the ideological and epistemic character of representation. Misreading, taken as a method, showed that meaning is not transferred correctly but negotiated into being. The three-stage experiment gave concrete pedagogical form to this claim. From text to map, from map to image, and through iterative transformation, each act of translation functioned as a misreading, and this misreading proved generative. In practice, students moved away from judging outputs by correctness and toward reading them through friction, revision, and reinterpretation.

Methodologically, the Text to Text phase enabled students to translate literary works into diagrammatic spaces, where maps functioned not as neutral transcripts but as epistemic machines generating conceptual options. The Text to Image phase exposed the asymmetry between the contextual and atmospheric depth of human imagination and the reductive grammar of statistical models. Collapses of scale, loss of context, and attenuation of affect produced critical awareness of the opacity of representation. Here, AI's pedagogical value lay in how it surfaced misreadings, distortions, and losses that are intrinsic to representation and that can trigger critical thought. In the Image to Image phase, iteration displaced authorship from singular intent into a negotiated configuration of agency. Dialogue among student, prompt, and software logic positioned the image not as a finished product but as a provisional surface, a site of experimentation. Taken together, the tripartite structure underscored that representation concerns critical literacy rather than technical accuracy.

The pedagogical contribution can therefore be summarized as follows. Rather than offering technical training in how to use AI tools "correctly," the studio framed AI-assisted work as a practice of critical literacy enacted through writing, diagramming, prompting, and image-making. Grapho-logics operated not only as a theoretical concept but as an instructional principle that structured the studio sequence. Students learned to treat error not as something to eliminate, but as material for comparison, rewriting, and critical intervention.

The study positions AI not as an automaton replacing imagination but as a pedagogical environment that intensifies critical practices of reading and writing. Its educational value lies in the forms of discrepancy it produces, and in the interpretive work those discrepancies demand. Grapho-logics, in this sense, names a teaching principle that makes the frictions among text, diagram, code, and image productive. This principle operates on two levels. First, it transforms the student from a passive consumer into an active interpreter, even a co-creator, by reframing error as a resource for comparison and rewriting. Second, it redefines authorship as a distributed regime of agency, conceiving the prompt not as a technical trigger but as an epistemic inscription that governs knowledge production.

Questions about the instability and politics of representation are not new. What is specific here is the way AI makes that instability experiential. Students encountered representational conflict inside their own workflows, which brought the ideological, epistemic, and political dimensions of representation into view. AI, in this setting, operated less as a device for speed than as a studio laboratory for critical slowness, distance, and comparative judgement. The implications follow. Writing and representation should move from the margins to the centre of architectural education. Reading, mapping, prompt writing, and visual iteration are not auxiliary tasks but co-constitutive components of studio practice. Exercises that foreground what AI struggles to render, including atmosphere, memory, and embodied experience, help students grasp both the distinctive force of human imagination and the epistemic limits of machinic production through direct engagement.

Future research should build on this experiment by tracing how students' reading practices and reflections evolve over time, rather than expanding the study only in scale. Students' feedback, shifting representational choices, and the emergence of different strategies of reading can be followed longitudinally to clarify how their relationship with AI changes through use. Such an approach can make visible when AI is experienced as a support for creative thinking and when it is felt as a constraining force that narrows interpretation and flattens representation. The exercise sequence can also move beyond text-centred prompts toward more spatially focused modes of reading and making, in which atmosphere, context, and lived experience are tested through representational decisions. The broader aim is to strengthen students' capacity to work with these knowledge tools without relinquishing control to them, treating AI not as an authority to comply with but as a medium to be directed, resisted, and deliberately manipulated.

In conclusion, this study proposes grapho-logics not only as a critical concept but also as an operative method for instructional design in the age of AI. Representation is reframed not as technical verification but as ongoing negotiation between text, image, and algorithm. Authorship is redefined as the capacity to assume responsibility for that negotiation. By approaching misreading as a method, the prompt as writing, and iteration as a mode of thought, architectural pedagogy calls students not only to produce but also to read, rewrite, and reconstruct. This call resonates with the critical tradition while speaking directly to the epistemic ground of the digital age.

Image Captions

Fig. 1. *The Handmaid's Tale: hierarchical diagram, by Biray Batal (left) and The Poetics of Space: conceptual map with atmospheres, by Ece Özkan (right).*
Fig. 2. *Mappings (text-to-text) drawn while reading the book (left) and images generated from the texts using AI tools (right), by Sıla Gökçen Günal.*
Fig. 3. *The Drowned World- generated through combinations of different AI tools, by Meltem Çetin (left) and Handmaid's Tale – AI outputs echoing TV adaptation, by Biray Batal (right)*
Fig. 4. *The Poetics of Space: all processes, by Cansın Akçer.*

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Biography

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Interdisciplinary Approaches to Visual Research and Spatial Communication

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Abstract

In an era dominated by images and visual media, critically engaging with visual methods in architectural and urban research has become increasingly urgent. This paper highlights graphic methodologies not merely as representational tools but as active agents of analysis, communication, and participation. Rooted in interdisciplinary collaboration between urban design and graphic design at Bauhaus-Universität Weimar, the seminar *Process. Space. Form* functioned as a laboratory for experimental approaches. Student projects explored urban vacancies, mobility, socio-ecological transformation and protest cultures through visual experiments such as model-building, risograph printing and interactive formats. These practices demonstrated how visual methods can transform complex issues into shared negotiation spaces, making urban change visible, discussable and participatory. Our findings show that visual methodologies can democratise urban research when communication strategies are integrated early, tailored to diverse publics, and designed with accessibility in mind. We propose three perspectives for future practice: the systematic establishment of visual methods in research; differentiated audience strategies that balance inclusivity with precision; and infrastructures within universities to further develop such approaches in collaboration with civil society. In conclusion, critical visualisations open new pathways for democratic and reflexive engagement with urban transformation.

Key words: visual research methods, urban transformation, critical visualisation, participatory mapping, interdisciplinary collaboration, spatial communication, accessibility.

1. Bridging Urbanism and Visual Narratives (Introduction)

In an era dominated by images, maps and visualisations, critically engaging with visual methods in architectural and urban research is becoming increasingly important. Cities and spaces are increasingly understood, communicated and negotiated through images, whether in the media, during political negotiations or in everyday perception[1]. This shifts the role of visual methods from mere documentation to active tools for analysis, communication and participation. Visual methods make it possible to render complex spatial processes visible and comprehensible, while at the same time opening up low-threshold access that transcends purely linguistic barriers[2],[3]. This shows that the connection between space and image is not only a form of expression, but also a way of perceiving: spatial images open up spaces for interpretation and shape our understanding of spatiality.[4]

The integration of visual communication sharpens this approach, as design expertise expands questions of coding, legibility and appeal. Interdisciplinarity thus becomes the key to not only analysing spatial images, but also making them effective as media for communication and participation. Especially in the context of an increasingly diverse society, it seems necessary to develop forms of communication that are both inclusive and appealing in order to communicate spatial changes. The thesis is that visualisations in urban research cannot be understood as neutral representations. Rather, they are actors that create realities, shape narratives and privilege certain perspectives, while others remain invisible. Renderings of large-scale projects, posters, maps, idealised representations of urban futures or graphically exaggerated protest materials are not just images, but political tools that create realities, shape narratives and structure social discourses. They open up spaces of possibility, generate approval or resistance, and shape ideas of how the city should and could be[5]. Visual representations in architecture and urban planning are not merely representations, but strategic instruments that imagine and market future spaces, thereby revealing urban policy interests and power constellations. They function both as a means of imparting knowledge and as hegemonic communication strategies that establish new city images and prepare for a new beginning in the picture[6]. This makes the examination of graphic representations a question of democratic culture: Which images shape urban discourse? Who produces them, with what intentions, and which publics are addressed with them? At the same time, the visual dimension opens up new opportunities to make complex spatial phenomena accessible and promote broad participation. Especially where linguistic and cultural barriers hinder communication processes, visual methods offer low-threshold forms of communication. Maps, collages and interactive installations can also build bridges where language reaches its limits. They enable participation even for those who do not have a command of planning or architectural terminology, thereby promoting inclusive discourse. In this sense, visual methods function as a ‘common language’ whose potential lies precisely in the fact that they allow for ambiguity and open up scope for interpretation[7]. Against this backdrop, interdisciplinary collaboration between architecture, urban planning and visual communication is becoming increasingly important, as the challenges can only be met through an interdisciplinary approach[8]. Architecture and urban planning have traditionally focused on spatial, material and social issues, while graphic design and visual communication deal with questions of representation, coding and communication. Bringing both disciplines together in a joint research setting gives rise to experimental forms of knowledge production. The content does not necessarily change, but the ways in which it is expressed and thus its reach do[9]. It was precisely this shift that was the focus of the interdisciplinary seminar *Process. Space. Form*, held at the Bauhaus University in Weimar. Here, visual experiments were understood not as afterthought illustrations, but as integral components of research practice – as instruments that can analyse and transform urban phenomena while also opening them up for discussion. Building on the previously articulated research questions, the seminar was designed to encourage students to systematically engage with contemporary spatial issues through research and to translate their findings into visual communication formats.

„The practical importance of communication is proven not least by the fact that in the context of urban policy and urban planning, terms such as governance with stakeholders, communicative planning, network building, and citizen participation – all of which refer to communicative processes – have become a matter of course.“[10]

2. Where the Disciplines Have Met So Far

To date, there have been few concrete collaborations that have become independent and are now common practice. In recent years, there has been increasing talk of critical visualisations. Anthologies such as Visual Research Methods in Architecture[11] emphasise that visualisations are not only a means of representation, but also independent epistemic tools. They can yield new insights if their autonomy and ambivalence are taken seriously. Studies in the journal Urban Planning [12] also show that visualisations do not simply depict images of the urban future, but rather generate them discursively. This shifts the focus away from the question of how visualisations convey technical information and towards the question of how they help shape social understanding, power relations and conflicts. From the outset, the development of visual methods in urban research has been closely linked to efforts to make complex spatial relationships understandable and accessible to all. Since the 1970s, methods have been established that systematically record perceptions, preferences and visual references and

integrate them into planning processes[13]. Such approaches were important steps towards greater openness, but often remained confined to specific disciplines: planning and urban research on the one hand, graphic communication on the other. At the same time, there were always designers who used urban space itself as a platform for direct communication through posters or installations. In the 1970s and 1980s, the French design collective Grapus[14] saw its work as radically political and socially engaged. With their posters and campaigns, they addressed current conflicts and made processes of protest and transformation visually tangible. Graphics were not decoration here, but intervention: a means of making social conflicts visible and opening up collective spaces for action.
Another example is the Atelier Populaire[15], which was established during the Paris student and worker protests in May 1968. In improvised screen printing workshops, students, workers and artists worked together to produce posters that were immediately distributed in public spaces. Here, too, graphic design was understood as a collective practice that enabled participation, condensed political messages and used the urban space itself as a communication platform. Both examples show that visual communication in public spaces can be more than just a means of conveying information – it can be an expression of a democratic, participatory culture. Where disciplines have previously intersected, this has primarily occurred through publications, exhibitions, and curated research projects, such as 'Spaces in Transition – A Visual Reader'[16] by Johanna Hoerning and Philipp Misselwitz in collaboration with graphicrecording.cool, which presents spatial change not only through text but also through the graphic perspectives of designers and artists. The result is an insightful and entertaining volume that deliberately breaks with conventional forms of academic discourse and critically reflects on social contexts through visual storytelling. In such contexts, urban research and graphic design work to translate spatial analyses into accessible formats. Theoretically, too, there is a growing emphasis on the fact that visualisations do not simply depict the urban future, but actively construct it discursively. In this context, Troiani and Ewing[17] speak of 'critical visualisations' that gain insight precisely because they allow for ambiguity and encourage reflection. This also opens up a field that has not yet been fully exploited: more consistent collaboration in the direction of information design, understood as the design of processes in which information is not only presented but can also be experienced, negotiated and appropriated. This seems particularly important for the following reason: „Another drawback to using traditional tools is that they make it difficult to annotate and record the negotiation and discussion process as it is under way. Comments and discussion may be lost."[18]. What is needed is a practice that not only processes data, but also makes the processual nature of urban transformations visible: their openness, their conflictuality and the possibilities for participation. Architecture and urban planning alone cannot adequately fulfil this communicative dimension, while graphic design alone runs the risk of losing sight of its spatial anchoring. The opportunity lies in the connecting space between the two: in the development of shared graphic logics that are both analysis and communication – and thus open up new approaches to participatory urban research.

3. An Interdisciplinary Seminar on Communicating Spatial Transformation

The *Process. Space. Form - How Do We Communicate Spaces in Transition?*[19] seminar held at the Bauhaus-Universität Weimar in Summer 2025, addressed the challenge of communicating complex urban development processes in a comprehensible and inclusive manner. The course was jointly organised by the Chair of Graphic Design (Faculty of Art and Design) and the Chair of Urban Design and Spatial Planning (Faculty of Architecture and Urbanism) and brought together students from both disciplinary backgrounds. The primary objective of the seminar was to enable students to develop communication strategies for spaces undergoing transformation and to test these strategies directly within an urban context. The work focused on concrete case studies in Weimar and was deliberately positioned at the intersection of theory and practice, graphic design and urban design. Rather than limiting itself to the analytical reflection of urban processes, the seminar emphasised communicative engagement and the development of independent concepts, formats, and media. Through practice-oriented exercises, workshops with guest lecturers, and collective explorations of alternative communication pathways, participants experimented with a range of methods and tools for conveying urban transformation processes in a critical, accessible, and visually compelling manner. These included model building, digital media, posters, maps, photography, and interactive interventions in public space. A total of sixteen students from the degree programmes Architecture, Urban Studies, European Urban Studies, Integrated Urban Development and Design, Art Education, and Visual Communication took part in the seminar. In this sense, the course functioned as an experimental platform for both theoretical and practical engagement with contemporary and sustainable urban development. Experimental graphic methods were tested not as supplementary illustrations, but as integral components of research practice capable of generating knowledge and shaping public discourse. By combining analytical tools from architecture and urban planning with strategies from visual communication, the seminar explored how urban processes can be visualised in ways that not only inform but also create resonance and invite participation. Participants engaged with themes such as vacancy, mobility, socio-ecological transformation, and spaces of negotiation,

translating these issues into experimental visual formats that rendered urban change visible, discussable, and open to interpretation.
Methodologically, the seminar initially addressed the research questions through model building to establish a shared point of departure for interdisciplinary collaboration among the students. The model functioned as a mediating instrument through which differing disciplinary conceptions of space could be articulated and aligned. Working with physical, movable elements allowed spatial relationships between buildings, streets, and open spaces to be directly explored and discussed. Three-dimensional visualisation—supplemented where appropriate by temporal and programmatic aspects—reduced the level of abstraction inherent in planning processes and made spatial relationships tangible and comprehensible.[20] (Fig. 2, right) Based on this approach, model building was deliberately used as a starting point for spatial dialogue and for reflecting on modes of communication within an interdisciplinary setting. Student feedback at the outset of the seminar highlighted the method's ability to bridge disciplinary perspectives and supporting a shared understanding of spatial issues.
Another shared approach in the seminar was working with risography. To provide students of urban planning and architecture in particular with a structured introduction to visual communication strategies, a compact, methodically focused exercise was carried out in the seminar. The aim was to translate the previously identified spatial challenges into a condensed, publicly readable form and to test their communicative potential in the medium of the poster. The exercise also served as a translation between spatial analysis and visual representation. The printing technique, known for its bold colours and rough halftones, was used to depict scenes of urban change in a reduced, exaggerated visual language. These posters deliberately relied on provocation and reduced information to attract attention (Fig. 1), using simplification, abstraction, and the deliberate transformation of original content to create a shared visual working process and to activate the potential of analogue media as a space for discussion and critical reflection. In the context of the seminar, risography proved to be a particularly suitable medium, as it enables the rapid and low-threshold transfer of text and image information into a striking communication context. At the same time, the process allows for an iterative working method in which content, form and legibility can be adapted at short notice and realised in a workshop format. In this way, spatial issues could not only be visualised, but also tested as discursive offerings in public space.

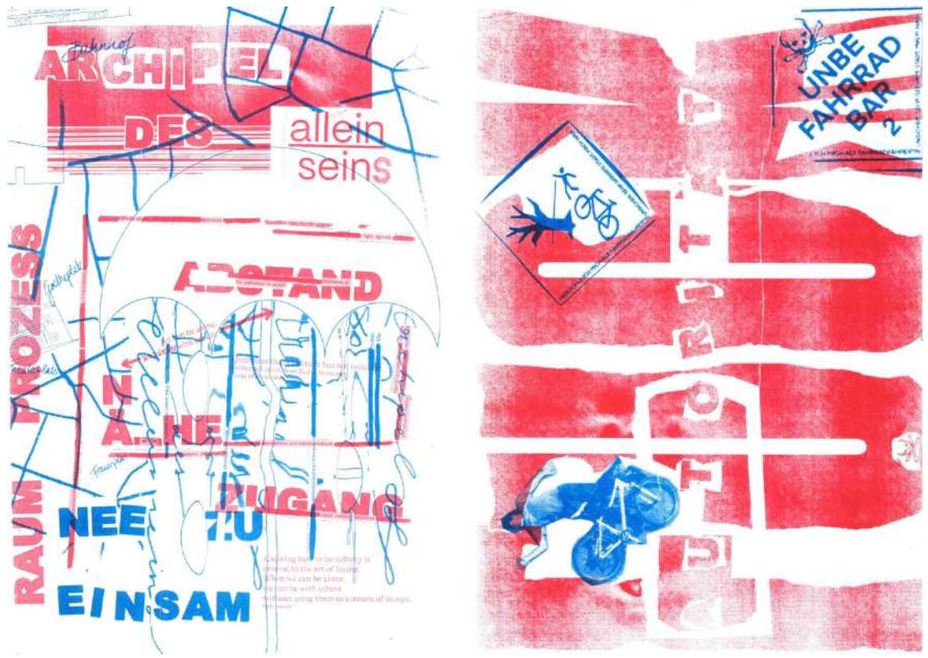

Fig. 1

To facilitate an active entry into the working process, the production of posters in a short introductory workshop was described by the students as particularly helpful. Both approaches are analogue in nature and share a low-threshold, hands-on logic: while risography enables collage-like visual compositions and the rapid production of larger print runs, model building allows spatial constellations to be rearranged, tested, and discussed in multiple configurations. Together, these methods supported an

accessible entry into the working process and fostered collective reflection through material engagement and iterative experimentation.
In addition to the shared methods of model building and risography, the students developed project-specific methods tailored to their respective topics, which they identified as appropriate tools for communication. The seminar resulted in projects such as “Archipelago of Solitude”[21], which visualised subjective experiences of isolation in urban spaces with a walk-in installation[22]. Places in public spaces, in nature, at bus stops or unused buildings were marked on a map and linked to narrative fragments. The map thus became a collective space for reflection, in which individual perceptions were condensed into a new form of epistemic experience[23] (Fig. 6). In addition, installation and interactive works were created. For instance, the group “Anti-Autoritär”[24] developed a large-format interactive map on which passers-by could locate their negative experiences of cycling in urban areas and talk about their emotional experiences in the space (Fig. 6, left). Over time, a collective artefact emerged that made a multitude of voices visible. This showed that visualisation can be not only a representation but also a process – a medium that generates publicity by inviting participation. A comparable approach was developed in the project “Leerstellen”[25] in which a construction site was staged as a space of negotiation through an installation. This intervention was designed to make the ongoing spatial transformations visible and to provide a framework for their discussion. The installation functioned as an artistic prompt, encouraging viewers to engage more critically with the spatial changes occurring in their immediate surroundings (Fig. 2).

Fig. 2

Fig. 3

The group “Platz für Spiel”[26] developed a cartographic representation using Weimar as a case study in which spatial findings were translated into a graphic form aimed at both children and adults. The map combines analytical content with narrative elements and conveys knowledge about the cultural history of play areas by visualising their development, use and changing significance. The students perceived

the translation of the underlying research into a communicative graphic as a central transfer step. The visual condensation gave their research results a clear framework that made it possible to address different target groups and open up communication beyond the internal discourse of the subject. The graphic presentation served not only as a medium of representation, but also as a starting point for exchange, interpretation and discussion (Fig. 3, Fig. 4).

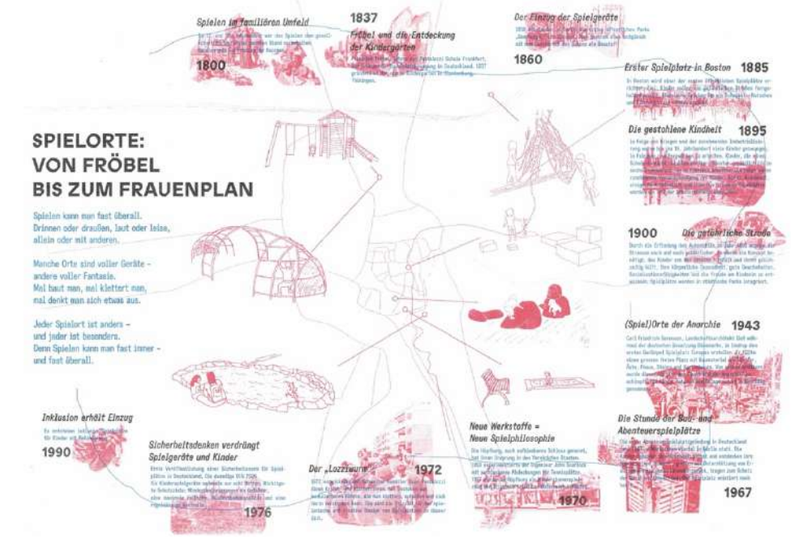

Fig. 4

The „Place of No Return“[27] project developed a game-based format that uses narrative to illustrate the decline of a local brewery. The game traces the process from an industrially used site to a brownfield site and at the same time addresses the planning, political and social instruments that are fundamentally available to counteract such developments. In addition, it shows where civil society engagement cannot completely prevent the transformation process, but can influence and help shape it. The game was deliberately designed as a conversation starter. It serves to translate the findings gained during the research and open questions into an accessible form and to stimulate discussion. The playful format conveys complex interrelationships in a low-threshold manner and makes them usable as a basis for exchange, reflection and collective negotiation of spatial transformation processes (Fig. 5).

Fig. 5

These projects made it clear that visual processes are not just about aesthetics, but also about addressing issues of reach, comprehensibility and impact. Throughout the seminar sessions, discussions focused intensively on questions such as: Which medium is suitable for which message?

Should a representation inform or provoke? How much complexity can be retained without losing comprehensibility? Such questions formed the core of the experimental work. A key finding was the realisation that communication strategies should not be developed retrospectively, but must be part of the research and planning process from the outset. The choice between a poster, exhibition, map, digital platform, article or model is not only an aesthetic decision, but also has a decisive influence on the impact and reach. Each method opens up different spaces for resonance.
The experimental and open-ended structure of the seminar fostered a heightened awareness of the close interdependencies between urban research, visual research, and design practices. The seminar points toward the value of embedding communication strategies early in future student research processes, particularly with regard to how their research results are communicated. It also highlighted the structural limitations of the university context: there is often too little time to communicate results to the outside world. Yet visibility in the public sphere is particularly important when it comes to urban issues that affect everyone. The relevance of visual methods for science communication was therefore particularly emphasised – both as an instrument of analysis and communication and as a bridge to civil society. Finally, it became clear that interdisciplinary collaboration opens up new audiences. Architecture and urban studies students learned how important visual clarity and target group orientation are, while graphic designers developed a deeper understanding of spatial contexts and how to represent them. The students shared a broad understanding of space and its political dimension. This combination gave rise to an experimental approach that encompasses analysis, design and participation in equal measure. The seminar uncovered the potential for interdisciplinary practice that not only describes urban transformation, but also shapes it in a communicative, critical, inclusive and participatory manner. These first pedagogical attempts hinted at how experimental graphic methods can act as a bridge between analysis, communication and participation, and how important it is to engage with them.

4. Visual target groups and communication strategies

Within the seminar, questions of target audiences and the addressing of different publics were explicitly introduced, but could not be explored in greater depth given the limited scope and duration of the course. While students were encouraged to reflect on whom their formats might address, a systematic examination of audience differentiation and actual reach remained beyond what could be achieved within the seminar framework. Working with visual methods forces urban research and design to consciously address the question of target audiences. While many academic discourses remain confined to disciplinary bubbles, visual methods in particular demonstrate how bridges can be built to new participating groups. But who exactly does this refer to? Who should be reached, and how? Communication always remains selective; it targets specific groups and barely reaches others[28]. Visual methods cannot fully meet this requirement, but they can reflect on it and critically question it. Every graphic form, be it a map, a poster or an interactive model, makes decisions about which aspects to emphasise, simplify or omit. These decisions are not neutral, but rather highlight social priorities[29]. The intended audience influences the choice of visual media – just as different groups can react very differently to the same images. One example of this is the exploratory mapping in the project ‘Archipelago of Solitude’ (Fig.6, right) mentioned before. The maps made subjective experiences of loneliness in urban spaces visible and linked them to topographical/spatial information. For city dwellers who participated in the creation process, the method offered an opportunity to articulate their own perceptions and contribute them to a collective discussion. For outsiders viewing the maps at an exhibition, this made a difficult-to-grasp topic vivid and worthy of discussion. This showed that visualisations are not only channels of information, but also open up spaces of experience in which different groups can gain a new understanding of themselves and others[30]. The discussion about target groups is inextricably linked to the issue of accessibility. Low-threshold design does not mean trivialising content, but rather opening up access. Clearly structured infographics, visual hierarchies and multilingual additions can help to make complex content understandable. At the same time, accessibility can also mean deliberately allowing for the ambiguity of images in order to keep room for interpretation. This is precisely where the strength of visual communication lies: it does not have to result in unambiguous linguistic formulation, but can make ambivalence productive. During the seminar, it became apparent that the students had developed both an awareness and a motivation to communicate their research and design approaches more effectively to the outside world and to consider issues of public communication. In order to systematically pursue questions of target group communication, an expanded framework would be required, for example through interdisciplinary cooperation or real-world projects. The projects developed over the course of the seminar suggest that visual methods may contribute to such processes particularly when they are conceived not only about target audiences, but with them[31]. In several cases, students explored formats that enabled participants to actively contribute to the creation of visual artefacts, which appeared to foster identification with the content and a greater willingness to engage in discussion. Within the seminar context, this pointed toward a close relationship between visual communication and participatory approaches to urban research and planning. At the same time, references emerged to traditions of political graphic design – such as those developed by Grapus[32] – in which visual work has long been understood as a collective and public experiment. While these connections could only be addressed briefly, they nevertheless provided an initial frame for understanding visual methods as more than purely representational tools. The seminar also drew attention to practical constraints shaping communicative practices, particularly questions of limited resources. Several of the methods tested—such as risography or participatory mapping—were selected for their low-threshold, cost-effective, and adaptable character, indicating how they might be transferable beyond academic contexts.
In this context, the work suggested that visualisation is not neutral, but inherently involves social selection decisions through acts of emphasis, simplification, and omission; at the same time, it highlighted the potential of making these decisions explicit and subject to reflection and intentional communication[33]. Within the seminar, the question of *“Everyone?!”* therefore functioned not as a normative claim, but as a tentative guiding principle. Rather than implying that visual communication can or should reach all audiences equally, it pointed toward the need to recognise selectivity and difference while cautiously exploring visual formats that may create connections between diverse groups.

Fig. 6

5. Conclusion: From Images to Negotiation Spaces – Critical and Participatory Dimensions of Visual Methods

The collaboration and exchange within the seminar reinforced our underlying assumption that visualisations in architectural and urban research are never neutral. They are not merely representations, but always narratives about possible futures. Renderings of planned construction projects, master plans or simulations of future traffic flows create images that make certain options appear plausible and hide others. In this way, they stabilise normative models of progress and change and develop political effectiveness. From the perspective of the seminar leadership, the course therefore aimed to make this non-neutral agency of visualisations experientially tangible through practice-based teaching.
In contrast, experimental methods open up the possibility of telling alternative stories. In the seminar *Process. Space. Form*, visualisations were created that made contradictions visible, allowed for breaks and did not smooth over conflicts. Collages, posters, installations and maps presented the city not as a finished product, but as a conflictual, dynamic space of negotiation. Such representations were not understood as final target images, but as invitations to discussion that made tensions between ecological, social and economic interests visible. Visual narratives are therefore not only results, but also methods: they generate evidence that is difficult to convey linguistically and encourage us to understand transformation as an open process. In times of multiple crises – from housing shortages and climate change to social polarisation – this is a central task of visual research: to show the future not as an illusion of consensus, but as a collective debate. Installations and interactive maps demonstrated that they not only convey information but also create opportunities for participation. It was precisely in

the differences between urbanists and designers – for example, on issues of accuracy, legibility or aesthetic impact – that productive areas of friction arose, giving rise to new forms of communication. This gives rise to three perspectives for the future: First, visual methods should be systematically established as part of scientific practice. Secondly, dealing with target groups requires differentiated strategies that address specific audiences without compromising openness. Thirdly, universities should provide spaces where experimental methods can be tested and further developed in collaboration with civil society actors.

Visual research thus bears responsibility for shaping public discourse. At a time when urban transformations are being urgently negotiated – from housing shortages to the climate crisis to questions of social justice – visualisations can build bridges: between experts and laypeople, between science and society, between analysis and action. However, their effectiveness depends on them being used consciously, critically and inclusively. In conclusion, experimental visual methods open up new ways of articulating urban complexity and shaping urban research as a democratic, open and reflexive practice.

Notes

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Image Captions

Fig. 1. Two examples of risography prints produced by students participating in the seminar. Left: *“Archipelago of Solitude.”* Right: *“Anti-Autoritär.”*
Fig. 2. Impressions from the project *“Leerstellen.”* Left: Installation addressing urban voids created by construction sites. Right: Questions integrated into the installation to stimulate discussion. Project by Helene Dennewitz, Anna-Maria Görnandt, and Lena Hinterhölzl.
Fig. 3. The group *“Platz für Spiel”* developed a poster and worked with a physical model at the beginning of the seminar to explore play spaces. Photographs by Liv Heinert, Jasper Scheidmann, and Jannis Steinacker.
Fig. 4. Risography-printed map of play spaces in Weimar developed by the group *“Platz für Spiel.”* The map narrates the history of these spaces through a temporal framework. By Liv Heinert, Jasper Scheidmann, and Jannis Steinacker.
Fig. 5. Left: The game developed by the group *“Place of No Return.”* Image by Margaux Flick, Andres Hidalgo, and Sophie Tempelhoff. Right: The game being played and discussed.
Fig. 6. Left: Interactive map designed by students, inviting passers-by to mark negative cycling experiences in urban space and reflect on their emotional dimensions. Right: Exploratory mapping exercise developed in the seminar, encouraging participants to locate places of solitude in urban environments.

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Biography

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Ideality and ideology in architectural drawing
The ideal city and authorial content in representation

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Abstract

Looking at the painting of the *Ideal City of Urbino*, though often linked to L. B. Alberti, one perceives an aseptic sensation, a total “anosmia” caused by the absence not only of human presence but of any organic element. In its apparent realizability, it does not seem to be meant for humans, it smells of nothing. Rather, it represents a fusion between political and divine power, a submission to a higher control, to a rigor governed by the exact sciences of geometry. It implies a political intent tied to its time. “*Alberti […] recognizes that the structure of the city corresponds to the social and political structure […] The model considered the best is the oligarchic one: the ‘most illustrious and wise’ are entrusted with supreme direction, which they exercise through a solid executive apparatus, and the masses must obey and collaborate.*”
What would be the result of submitting the image of Urbino’s *Ideal City* to an automatic “enhance” process using artificial intelligence? Is AI capable of *transposing ideality*? The algorithm would need to be trained to interpret contemporaneity through a political and socio-economic lens at the very moment the prompt is entered. It would also have to integrate abstract values such as *ethics* or *morality*, which are evidently not universal but instead are closely linked to the author's own perspective. AI is not capable of grasping the subtleties embedded in architectural drawings rich in social content, it is inevitable that the result will be merely *object-based*. The outcome may be formally captivating and technically feasible, but inevitably out of time and impersonal, no longer able to serve as a "medium" without the critical voice we find, for example, in the controversial originality of *Exodus, or the voluntary prisoners of architecture*.

Key words: ideality, ideology, objecthood, representation, originality.

1. The Dilemma of Urban Ideality

Within the context of architectural theory, the *Ideal City of Urbino* represents an exemplary paradigm of how the urban image can be used as an ideological device. It is not merely a Renaissance perspective exercise, but a symbolic elaboration of power, in which the city's form is designed not to be inhabited, but to be contemplated. The work, of uncertain authorship but generally associated with the theoretical environment of Leon Battista Alberti, embodies an abstract vision of the city as absolute order, founded on geometric proportions and Euclidean symmetries, in line with Alberti's ideal of *concinnitas*. What strikes the observer most is the absence of the human body. No figures populate the scene, and no trace of daily life is admitted. This exclusion produces an effect of "perceptual sterility": the viewer is confronted with a city without smell, without sound, devoid of any form of vitality. It establishes a condition of symbolic anosmia, where the city does not carry the scent of flesh, market activity, or social ferment, but only of marble abstraction and stillness. This aspect directly relates to Henri Lefebvre's reflection that space is a social product, and every space is imbued with ideology. [1] In this case, the underlying ideology is that of elitist rational order, in which the urban design functions as a static and timeless representation of power.
This conception of the city as an aesthetic and normative object serves a very specific political model. As Giulio Carlo Argan observed, the Alberti city reflects an oligarchic vision of power, according to which "the most illustrious and the wisest hold supreme direction […] and the masses must obey and collaborate." [2]

The *Ideal City*, therefore, can be seen as a staging of disciplinary power, an environment where architectural order mirrors a political order: centralized, hierarchical, and immutable. According to Tafuri, modern architecture does not maintain critical autonomy with respect to the political and social representational functions embedded in design practices. [3] The Urbino work thus becomes an emblem of the spatialization of ideology, an image aimed not at constructing a real city, but at visually legitimizing a model of governance. The absence of the human figure is therefore not accidental: it excludes the biological, mutable, and conflictual dimension of existence in order to propose a model of hyper-controlled harmony, similar to Platonic or Campanellian utopias, in which the individual body is subordinated to the abstract collective order. In this sense, one could say that architectural authorship is dissolved into ideology, which shapes every detail of the vision according to a disciplinary paradigm.
In contrast to these Renaissance representations, Pavel Florensky offers a radically alternative reflection on the relationship between space, vision, and ideology. In his analysis of "reverse perspective" [4], he shows that central perspective, the visual foundation of the Urbino panels, is not an objective method for representing reality, but the expression of an anthropocentric worldview, founded on the illusion of rational dominance and the primacy of the observing self.

Considering the foregoing, a crucial question arises: for whom is the *Ideal City* ideal? The ideality of this urban composition does not appear to be directed toward the collective, nor toward the individual, but rather toward an abstraction of power, a normative will that imposes an aesthetic canon as a reflection of a hierarchical structure. It is not a city designed for human experience, but for its exclusion. Here, urban ideality does not coincide with the well-being of the citizenry, but with the contemplative perfection of a static and immutable order, where everything is regulated, visible, and predictable.

The painting of the *Ideal City* of Urbino, while reflecting an ideological framework of oligarchic and hierarchical order, nonetheless allows for a critical or ambivalent reading. Its geometric perfection and sterile clarity may be interpreted as either a celebration of order or a denunciation of absolute control, depending on the perspective one chooses to adopt.

Although the work's attribution remains uncertain, there is no doubt regarding the high level of technical competence it manifests, nor its ability to condense the cultural and ideological tensions of its time into a single visual representation. The value of the work resides in its capacity to function as a critical device, generating inquiry and debate regarding the relationship between urban form, power, and worldview, thereby asserting a form of authorship that transcends the certainty of individual paternity. From this perspective, the image of the *Ideal City* becomes a useful tool for interrogating the dynamics of contemporary artificial intelligence applied to the production of architectural imagery. The automated process of visual generation raises a central question: to what extent is such a mechanism capable of preserving, or even producing, a contribution of an ideal nature, traditionally associated with the authorship of a project? When generative artificial intelligence is employed to develop design proposals in the form of images or simulations, the problem of transposing the critical intentionality and theoretical imagination inherent to architectural drawing remains an open question.

2. Artificial intelligence, the transposition of architectural ideality, and the impossibility of moral universality

If we were to subject the famous painting of the *Ideal City of Urbino* to a process of enhancement or creative revision through artificial intelligence, using generative models based on textual prompts, what kind of result would we obtain? (Fig. 1)

Fig. 1

A generative algorithm, no matter how sophisticated, operates on a base of prior data and statistical models of recurrence. However, what makes the *Ideal City* a unique document is not its architectural form per se, but its ideological content and symbolic function: a vision of the world, society, and power translated into visual language. When artificial intelligence is instructed to enhance or reinterpret this image, it must necessarily confront a set of values (political, ethical, cultural) that are not universal, but contextual and subjective. The algorithm, lacking consciousness, does not "understand" these values; it processes them based on the data on which it has been trained.

The result of such a generative process, therefore, tends to aggregate themes widely present in contemporary architectural debate, combining demands for environmental sustainability, ecological awareness, soft mobility, and the use of technologically advanced materials. These are predominantly technical-operational elements which, by virtue of their prevalence and apparent neutrality, are configured as easily applicable and, at least superficially, universally agreeable solutions. In this sense, the outcome generated by artificial intelligence appears to present itself as the most "democratic" of possible responses.

However, this presumed democratic nature proves problematic when considering the reproducibility of the result: given an identical prompt, any user would obtain a substantially identical image. As Norberto Bobbio observes, "the distinction between democracy and despotism lies not in consensus itself, but in the greater or lesser amount of space reserved for dissent." [5]

Applied to the field of imaginative production, this reflection suggests that a system capable only of reiterating shared solutions risks compressing, rather than expanding, the domain of critical difference.

It follows that the ideality produced in this context is not of an authorial nature, but rather the result of a statistical processing of the most recurring content within the data corpus available at the moment of the prompt's formulation. The problem, therefore, remains open: can statistical recurrence be considered a form of authorship? Or is the author reduced to one who intercepts and reorganizes their own time according to the rules of consensus, renouncing critical tension and the capacity to introduce a rupture with the existing order?

For an AI-generated representation to convey an ideality, the algorithm would need to be designed to “simulate” a critical process, that is, to operate in accordance with a political and socio-economic reading of the present. This would require the integration of interdisciplinary models capable of correlating aesthetic choices with universal systems of values. The critical issue lies in the attempt to embed abstract categories such as “ethics” or “morality” into the algorithm. In architecture, these values are never neutral: from a global perspective, what is considered “ethical” in one cultural context may be oppressive or dystopian in another.

Thus, if we were to ask an AI to reimagine the *Ideal City* “in moral terms,” we would first need to ask: which morality? Which vision of the common good? Whose? Whose choices determined the data used to train it?

If artificial intelligence appears destined to establish itself as the dominant tool in the production of architectural images and visions, it frequently does so at the expense of authorship—understood as the assumption of a critical and responsible position. Such a dynamic risks inducing a progressive stifling of the collective critical attitude, replaced by an induced conformity that stems from the reiteration of solutions perceived as “appropriate” or “optimal” by virtue of their statistical prevalence.

The issue becomes particularly problematic when this consensus assumes an antisocial or exclusionary direction. If artificial intelligence systems reflect and amplify the dominant values inscribed within training data, they may contribute to reinforcing worldviews that marginalize dissent, reduce social complexity, and naturalize inequitable power structures.

In the absence of an authorship capable of introducing a critical rupture, ideality risks being replaced by a form of technical pseudo-neutrality that masks, under the guise of efficiency and rationality, a process of ideological homogenization. A paradox thus emerges: tools presented as amplifiers of creativity may transform into *mechanisms of consensus*, contributing to an architectural imaginary that not only reflects but also stabilizes and legitimizes antisocial tendencies already present within the cultural and political context. This is why every generative output is also a *political act*, reflecting the present more than reproducing the past.

Ultimately, artificial intelligence can represent a new frontier in the visualization of urban utopias, but it cannot disregard the fact that every “ideal city” is also a reflection of its time. Just as the Urbino panel of the late fifteenth century represented a project of aesthetic and political domination (Medicean or otherwise oligarchic), so every image generated today through AI carries with it a particular worldview. The risk, if we are not aware of it, is to consider as “neutral” what is in reality deeply oriented. For in architecture, as in society, the ideal is never innocent.

3. Authorship, visual inquiry, and algorithmic constraints: drawing as a critical act

In the field of architectural representation, it is essential to understand drawing not only as a descriptive tool, but also as an autonomous method of inquiry, capable of generating knowledge through visual forms. When an image is produced by a human subject (that is, by an author) it is inevitably shaped by that person’s cultural background, education, experiences, and, often, by unconscious or latent drives. This layered set of influences makes the visual product more than a simple illustration: it becomes a form of thought, a “visual theory” that can suggest alternative readings of reality.

Drawing, therefore, can reveal insights that escape other cognitive methods, because it draws directly on imagination, ambiguity, and subjectivity. It is a language that moves between the explicit and the implicit, between what is buildable and what is utopian, between representation and desire. Even when shaped by the political, social, or cultural conditions of its time, the author still retains a “margin of interpretive freedom”: they can accept, deviate from, ironize, or even resist those conditions.

The critical crux of the relationship between artificial intelligence and authorial architectural design does not lie in the quality of representation or technical expertise. From this perspective, AI functions as an extremely effective tool for rationalizing and optimizing graphic rendering processes, data management, and the verification of design solutions, orienting development toward scenarios that are coherent, plausible, and potentially feasible. As Mario Carpo observes:

"The number-based (or digital) logic of today’s electronic machines is replacing the analog technique of many mechanical or electro-mechanical devices that formed the basis of the industrial revolution … many techniques of design, notation, calculation, and construction have been deeply impacted." [6]

Renaissance ideality did not arise from the necessity to resolve problems of technical feasibility, but rather from the need to formulate a normative vision of the city capable of expressing a political, moral, and cosmological order. In this context, the distance between project and realization does not constitute a flaw, but is an intrinsic condition of the theoretical apparatus: the *Ideal city* is not meant to be built, but to be thought, contemplated, and interpreted. Even when producing speculative imagery,

AI operates within a horizon of verisimilitude that constrains the possibility of a radical deviation from the existing order.

Generative systems, no matter how advanced, operate within prescriptive frameworks defined by their programmers, which include ethical, regulatory, and legal filters that cannot be bypassed. These filters prevent the production of content deemed inappropriate, such as images referring to violence, explicit sexuality, or death, often for legitimate reasons, but always through rigid normative constraints. As a result, the limitation affects not only the expressive freedom of the user, but also the very possibility for AI to generate images that are genuinely critical. If subjected to such a system, the author must circumvent the system itself to remain deliberately critical or analytical toward society.

In this regard, it is useful to recall Michel Foucault’s reflections on how modern society has constructed increasingly pervasive mechanisms of control, acting not only on bodies but also on minds, representations, and discursive practices. In works such as *Discipline and Punish* or *The History of Sexuality*, Foucault stresses how Western culture has sought to repress or regulate what is most fundamental and irreducible in human life: sexuality, violence, the instinct of possession, the desire for domination. According to Foucault, these elements are not marginal, but constitutive of human subjectivity and of the very way in which power operates. For this reason, they cannot be removed or ignored in any creative process if the aim is to understand or represent reality authentically. Any attempt to exclude them a priori, as happens with the ethical filters of algorithms, does not guarantee neutrality, but rather constitutes an ideological act that shapes visual production according to a morally selective vision.

“Power is everywhere; not because it embraces everything, but because it comes from everywhere.” [7]

“For the ancients, politics was something concrete, almost geometric; for the moderns, it has become political sociology, something tied to opinions, to systems of social regulation, but which no longer has a body, no longer a substance of being.” [8]

From this perspective, artificial intelligence is neither a subject endowed with critical capacity nor, even less, with oppositional agency. It cannot rebel against the system that governs it, nor can it generate images that truly go against the code of which it is a part. Its production will always be a reflection of the authorized present, never dissent, never heresy.

The apparent neutrality of AI-generated images is therefore illusory: beneath their polished aesthetics and stylistic conformity often lies a renunciation of conflict, which is instead the driving force of both history and art. By contrast, human drawing, even when imperfect, uncertain, or symbolic, retains the power of disobedience. It can articulate uncomfortable thoughts, break dominant moral codes, and propose alternative visions that question the present. And it is precisely in this freedom to deviate, to contradict, and to scandalize that its highest function as a critical device resides.

Exodus, or the Voluntary Prisoners of Architecture, developed by Rem Koolhaas and Madelon Vriesendorp during their formative years at the Architectural Association in London, represents a fundamental turning point in the history of contemporary architectural design. Although the work is frequently cited for its visual impact and the radical hybridization of architectural drawing, collage, and graphic narrative, its most significant implication lies in the eminently political and sociological nature of the proposal. The work, deliberately provocative, presents a dystopian architectural narrative in which a wall traverses London along a north-south axis, enclosing “voluntary prisoners” who experience extreme sensory and social conditions. The graphic plates fuse architecture, pornography, ideology, dream, and violence, explicitly rejecting any form of linguistic neutrality, making explicit the ideological dimension inherent in every form of planning. *Exodus* is not a project in the traditional sense, but a theoretical manifesto that utilizes architecture as a tool for critical analysis of the dynamics of power, control, and desire that structure modern urban society.

The concept of “voluntary prisoners” introduces a decisive rupture with the functionalist and progressive traditions of post-war urbanism. Koolhaas subverts the assumption that architecture must necessarily emancipate the individual: in *Exodus*, architectural space explicitly becomes a device of confinement; yet, this confinement is desired, chosen, and internalized. Imprisonment is not imposed by an external authority but accepted in the name of a promise of intensity, security, belonging, or pleasure. In this sense, the work anticipates reflections that would become central to contemporary sociology and political philosophy, particularly those related to biopolitics and the diffused, consensual forms of power analysed by Michel Foucault.

In *Exodus*, architecture is not limited to the organization of space but structures behaviours, bodies, and imaginaries. The wall crossing London is not merely an urban element, but a radical metaphor for social separation, the production of desire through segregation, and the transformation of space into an instrument of governance.

In this regard, *Exodus* can be assimilated to the Renaissance “ideal city” not through formal affinities, but due to the role both works perform as theoretical devices. Like the *Ideal City of Urbino*, Exodus is not intended to be built, but to be debated. Both representations utilize the city as a field for conceptual experimentation, staging a spatial order that renders visible the power structures underlying collective life. The enduring power of *Exodus* lies precisely in its ability to raise questions that remain central to social existence today: to what extent do individuals accept forms of surveillance and discipline in exchange for security or well-being? In what way does architecture contribute to making systems of control desirable? And what responsibility does the designer bear in translating such dynamics into space? Like the *Ideal City*, *Exodus* offers no answers but constructs a critical machine that compels the observer to take a position.

“[…] the authorities of the bad part made a desperate and savage use of architecture: they built a wall around the good part of the city, making it completely inaccessible to their subjects.”[9]

Ultimately, *Exodus, or the Voluntary Prisoners of Architecture* represents a turning point not because it introduces a new formal language, but because it radically redefines the role of the architectural project as a tool of political thought.

Other fundamental examples of iconographic resistance are found in the visionary works of the 1960s and 1970s, particularly within the Italian and Anglo-Saxon contexts. In Italy, radical groups such as Superstudio and Archizoom Associati produced architectural representations that were deliberately anti-functional, utopian, and often paradoxical.

Superstudio’s *Twelve Ideal Cities* can be read as an ideological manifesto conceived with a transgressive intent, in explicit opposition to the dominant normative paradigm in postwar urbanism and architecture. Rather than proposing a directly applicable model of a future city, the work seeks to expose the implicit assumptions of “regulative functionalism,” that set of norms, standards, and technical devices that reduce urban life to a matter of management and control. The transgression operates on two levels: first, in the use of architectural design as a critical rather than constructive tool, and second, in the assertion that ideality does not arise from obedience to rules but from their subversion. Through its twelve paradoxical visions, the project highlights the artificiality of any normative paradigm that claims to univocally define the common good and demonstrates how every urban project is inevitably a political act.

In all these cases, the works do not correspond to the classical notion of the architectural project understood as a constructive prefiguration. On the contrary, they are *ideological manifestos*, using representation not to build, but to think critically about space, to push the limits of disciplinary language, and to confront the social and political contradictions of their time. Crucial in these examples is the presence of the author-subject: a figure who does not merely draw, but takes a stance, assuming responsibility (in the etymological sense of “responding”) before their own time, transforming the architectural image into an act of resistance.

The critical crux of rendering an “ideal city” generated by artificial intelligence systems lies, conversely, in its perceived objectivity. To this is added a further problematic element: the very interaction between the user and the system tends to foster a form of "passive acceptance of the result." The generated product—while not fully coinciding with the original intention of the individual formulating the prompt—is often assumed to be satisfactory by default, by virtue of its internal coherence, graphic quality, or the authority attributed to the algorithm. This mechanism entails a progressive shift from critical elaboration to the mere validation of the outcome, resulting in a consequent weakening of theoretical content.

In this sense, the *ideal city* produced by AI risks losing its historical function as an instrument of thought and opposition, transforming into an apparently finished object, devoid of dialectical tension.

“Even in the case of the most perfect reproduction, one element is lacking: the hic et nunc of the work of art—its unique existence at the place where it happens to be.” [10]

4. The risk of homogenization versus subversiveness

Today, some designers and digital artists are attempting to use artificial intelligence in a critical way, pushing its limits or training their own models, independent from the major platforms. Examples include AI fine-tuning projects developed in artistic or academic contexts, where the aim is to reclaim the algorithm as an expressive tool. However, these efforts remain marginal compared to mainstream commercial AI, which tends to produce consensual images optimized for virality and instant appeal.

The accessibility and generative velocity of these systems facilitate a form of imaginative inflation, wherein redundant formal and conceptual iterations lead to an overexposure of the imaginative capacity itself, thereby diminishing its critical impact. In this context, the challenge for the future lies in

discerning how to integrate artificial intelligence without neutralizing the critical agency of architectural representation, thus preserving the capacity for conflict, contradiction, and iconographic disobedience.

Stripping society of the ability to articulate non-conforming, deviant, or transgressive visions serves only to crystallize the status quo, stifling the processes of friction that historically drive societal transformation. As the history of thought and the arts demonstrates, controlled deviance remains a prerequisite for evolution, even in its most unsettling manifestations.

This loss is not only aesthetic but also political: in the age of technology, representation tends to become a tool of mass consumption and power, rather than one of contemplation or truth. Transposed to the urban level, this implies that the city itself can be conceived as a form of serial production, standardized, stripped of authenticity, reduced to a repeatable and controllable stage, much like the dystopia depicted in Ray Bradbury’s *Fahrenheit 451*.

The same argument applies to architecture: if the possibility of stepping outside dominant patterns is neutralized, a flattened, regulated design culture emerges, incapable of proposing evolutionary leaps. In this sense, the very etymology of the term “subversive,” from the Latin “evertere”, meaning “to overturn, to disrupt,” becomes central: it is not a matter of destruction for its own sake, but of a foundational act. Subversiveness in architecture is the condition for thinking space, society, and the future differently.

The history of architecture is marked by key moments in which breaking with the previous formal system generated new ways of inhabiting and organizing the city. One only needs to think of the grand urban plans and concrete utopias of Le Corbusier, such as the Plan Voisin for Paris or the Unité d’Habitation in Marseille: visionary and controversial models born from the desire to radically reformulate the relationships between the individual, the collective, and the built environment.

Figures such as Lina Bo Bardi also proposed forms of profound rupture with the Western conception of architecture as a monumental object. Her social projects, most notably the *SESC Pompéia* and the *São Paulo Museum of Art (MASP)*, represent a turning point in late twentieth-century architecture, as they radically challenge functional hierarchies and the normative schemes of modern space. Conceived as open, flexible, and participatory civic environments, these buildings function as social devices rather than mere containers for activities. In these projects, aesthetics is rendered inseparable from ethics, and architecture emerges as a common good and a political act of radical inclusion.

In more recent times, firms such as MVRDV have continued this lineage of “design subversiveness” by employing updated conceptual tools. MVRDV’s research belongs to a strand of architecture that transcends the mere resolution of functional problems, seeking instead to redefine the paradigms of urban living. The *Rooftop Catalogue* reinterprets roofs as hybrid, multifunctional territories capable of hosting civic activities, urban gardens, and collective services. Similarly, the *Co-living Design Studies* propose housing models that overcome the dichotomy between private and public space, suggesting scenarios of coexistence in which social and political dimensions find explicit spatial expression.

All these examples, though diverse, share a fundamental characteristic: they could never have emerged within a rigid system of filters or prescriptive constraints, as they necessarily require the possibility of breaking codes, conventions, and expectations. It is not just a matter of form, but of ideological, social, and anthropological content.

Drawing, as an authorial and intellectual act, must be able to generate friction, propose nonconforming hypotheses, and challenge the status quo. Every visionary proposal is the product of a design freedom that has traversed or ignored the filters of its time. For architecture without dissent becomes decoration. And a city that no longer knows how to imagine alternatives is destined to become a silent dystopia: perfectly regulated, yet devoid of a future.

In such a scenario, architecture would lose all capacity to serve as a form of critical expression, a field of social experimentation, or a reflection of contemporary diversity. We would no longer be in the realm of cultural design, but in that of a symbolic regime, where the urban image is instrumentalized as a language of domination and imposed identity. What is particularly troubling is not the dystopia itself, but the fact that this drift no longer appears as a science-fiction exaggeration, but as a real and ongoing risk.

The most concrete risk that emerges is the progressive devaluation of the architect's professional standing should the project no longer be evaluated based on the theoretical, critical, and ideal density that sustains it, but rather according to criteria of mere ideological conformity, procedural efficiency, or adherence to predefined standards. Within such a system, the act of design tends to be reduced to an applicative operation, regulated by automated protocols and parameters, where authorship no longer coincides with a cultural stance, but with the mere ability to select, adapt, or validate already normalized solutions. This results in a substantial transformation of the architect's role: from an

intellectual and technical figure, capable of critically interpreting their time through built space, to a system operator, tasked with managing tools and decision-making flows that exist independently of their disciplinary expertise. From this perspective, the technical, theoretical, and ethical training that traditionally characterizes the profession risks being perceived as superfluous. If the value of a project no longer resides in the ability to produce alternative visions, to mediate social conflicts, or to develop complex answers to equally complex problems, but rather in the correct execution of standardized procedures, then specialized preparation loses its centrality.

Returning to the *Ideal City of Urbino*, therefore, does not mean celebrating its model, but recognizing its profoundly political character. It reminds us that every urban representation is always a stance, an act that implies responsibility and that cannot be entirely delegated to an automatic system. Architecture, like drawing, loses its critical status at the moment it renounces dissent, ambiguity, and the possibility of imagining alternatives that are not immediately translatable into norms or protocols.

In conclusion, the true stake is not the aesthetic quality of the images produced by artificial intelligence, nor their technical efficiency, but the survival of architecture as a space for critical thought. Just as the *Ideal City of Urbino* was not intended to be inhabited but to be interrogated, today the idea of the city should return to being a field of theoretical tension, rather than an optimized output. Only by keeping this space of conflict open can architecture continue to fulfill its cultural role: not that of confirming the existing order, but of making it visible, debatable, and, if necessary, transformable.

Ultimately, AI needs the architect, not merely as a technical operator, but as a critical conscience, as a political and cultural subject, who proposes ideals rather than ideologies. Only in this way can it become a genuine tool for expanding vision rather than impoverishing thought. Without this human contribution, architecture is not generated; instead, an illusion of architecture is replicated, functional to a narrative that is no longer social or collective, but simply programmed.

“Architecture is a dangerous mixture of power and impotence.” [11]

Notes

1. Henri Lefebvre, *The Production of Space* (Milan: Pgreco, 2018).
2. Giulio Carlo Argan, “Ideal City and Real City,” in *Rassegna di Architettura*, no. 46 (Roma: Edizioni Kappa, January–April 1980), 72.
3. Manfredo Tafuri, *Teorie e storia dell’architettura* (Bari: Laterza, 1968); Manfredo Tafuri, *Progetto e utopia* (Bari: Laterza, 1973); Manfredo Tafuri, *La sfera e il Labirinto* (Torino: Giulio Einaudi Editore, 1980).
4. Pavel A. Florenskij, “La prospettiva inversa” in *Le porte regali. Saggio sull’icona*, (Milano: Adelphi, 1977).
5. Norberto Bobbio, *Il futuro della democrazia* (Torino: Einaudi, 1984), 45.
6. Mario Carpo, *The Alphabet and the Algorithm* (Cambridge, MA: MIT Press, 2011), 02.
7. Michel Foucault, *The History of Sexuality, vol. 1: An Introduction* (New York: Pantheon Books, 1978), 93.
8. Paul Virilio, *The Machine That Sees: The Automation of Perception* (Milan: SugarCo, 1989), 179-180.
9. Rem Koolhaas, Bruce Mau, *S, M, L, XL* (New York: The Monacelli Press, 1995), 5.
10. Benjamin, Walter. *The Work of Art in the Age of Mechanical Reproduction* (Turin: Giulio Einaudi Editore, 2011) 6-7.
11. Rem Koolhaas, *Content* (Köln: Taschen, 2004), 12.

Image captions

Fig. 1. *The Ideal City* according to Gemini Nano Banana (Prompt used: create a contemporary version of the *Ideal city of Urbino* based on the current concept of ideality)

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Biography

Matteo Zambon is an architect and holds a PhD in Civil-Environmental Engineering and Architecture (interuniversity program UNIUD-UNITS). He is also a lecturer in Architectural and Urban Composition at the University of Udine. Zambon is a senior designer with extensive experience in both public and private construction, particularly in urban regeneration and the design of school and sports complexes. He is the author of numerous essays and articles on architecture, landscape, and artificial intelligence, and has participated in international conferences and exhibitions, including AHRA 2024 Body Matters (Norwich) and Isolario Venezia Sylva. Alongside his academic activity, he has led projects funded by the Italian National Recovery and Resilience Plan (PNRR) for public institutions. His theoretical contributions focus on the concepts of archetype, posthuman landscape, and psycho-spatial perception. He has organized and curated exhibitions and seminars centered on design innovation, with particular attention to the relationship between body, space, and technology. His research combines design vision with critical reflection, fostering a constant dialogue between practice and theory.

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