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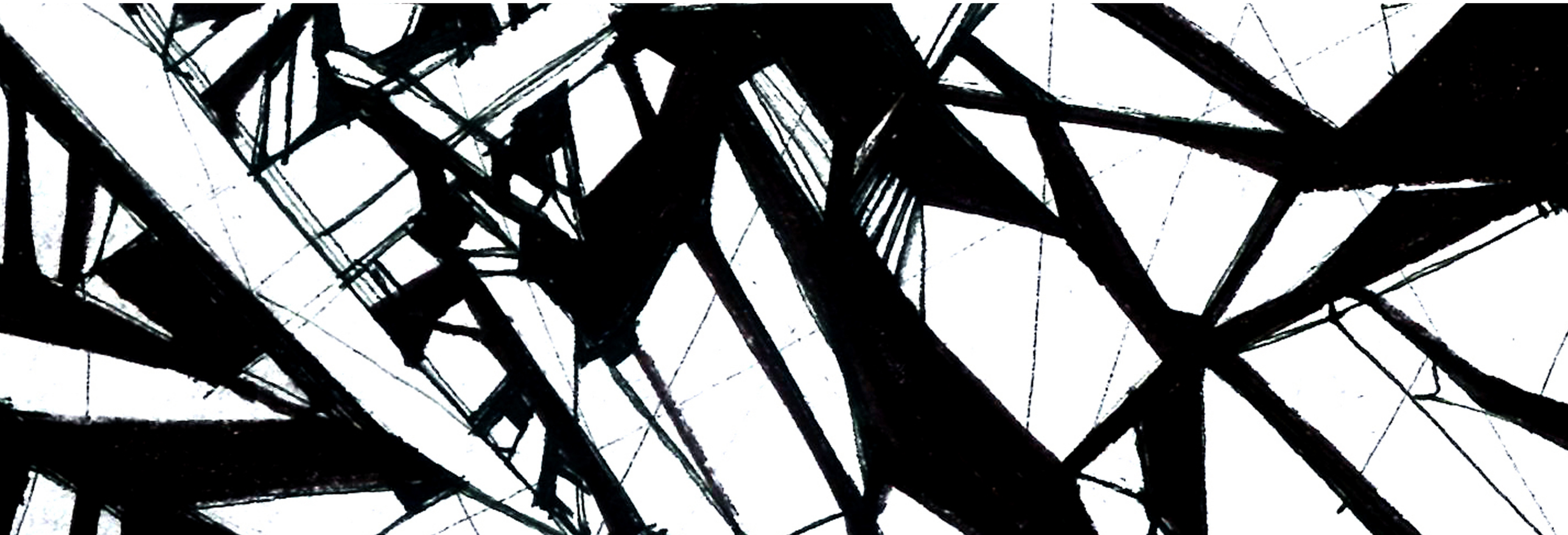

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13.2023

THE PRESENT OF ARCHITECTURAL DRAWING

diségno

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Cover
Alessandro Melis, *Shining Dark Cities Series*, *Termite Nest V, 2012*, *detail.*

The published articles have been subjected to double blind peer review, which entails selection by at least two international experts on specific topics.
For Issue No. 13/2023, the evaluation of contributions has been entrusted to the following referees:
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Editorial

Francesca Fatta

The Present of Architectural Drawing is the theme proposed by Paolo Belardi and Massimiliano Campi for this issue of the journal *diségno* and welcomed by the Editorial Board for several reasons. The first of these reasons concerns the close relationship between ideation, drawing and design, terms linked by a bond that is both theoretical and concrete; the second relates to the personalities of the two editors, who have always been interested in the themes of drawing projected towards design, exploring its theories and techniques of representation.

In this Preface, I would like to refer to an incipit by Franco Purini, about architectural drawing as an anticipator of future topics and how it can be considered more of a theory than a mere technical device: "An architectural project is in itself the anticipation of a normally near future" [Purini 2019]. This also clarifies the theme of this issue, which deals with a 'present' drawing, a present representation that is practiced on the central theme of architecture in the age of sustainability and digital transition. Issue 13 of *diségno* proposes a vision that takes into due account a complexity that necessarily transcends disciplinary barriers to bring forth a theory of 'social' architecture design, which cannot limit itself to the mere description and investigation of the state of the art, but wants to exert itself to make a critical contribution to participate in its necessary transformation process.

Project activities, at the different scales of architecture and the city, have always been inextricably linked to the community that animates them for a dialogue based on a cross-reference of questions and answers; interpretations and common values develop in the social sphere and form the basis for architectural culture expressed by a 'present,' between image and realization, since drawing is not just a simple tool "but is first and foremost the native place of an idea, to then become the memory of the design process and finally the communication of the choices made" [Purini 2019].

The contributions that unfold in this issue, starting with the *Cover* designed by the editors, are also an opportunity for reflection on the development of the tools of drawing and representation of architecture, from analog to digital, where the sketch remains the indispensable element of continuity in the heuristics of the project. But, if it is true that architecture expresses its own time, the one we are going through requires the ability to measure itself with aspects related to the digital transition. Design has always been the result of contaminations related to place, cultural and social context and to building technology. We have now entered the digital age more than 30 years ago, and it is necessary to understand the degree of influence in the work of architects who in the present are called upon to design buildings that are increasingly adaptive and flexible, capable of responding to the changing needs of users and the place in which they are inserted. The now-established digital tools for representation, such as BIM (Building Information Modeling) and rendering, do not, however, nullify the desire to keep theoretical research on architectural design active in parallel, and with this there remains alive a component of draftsmen who refuse to bind the project to the exclusive purpose of its realization.

In this regard Marco Gaiani writes for Treccani: "The introduction of digital has substantially changed the media representation schemes of architectural design, since the devices developed for the operations of input and output have altered the relationship of *mnème*, that is, the ways in which the operator practically realizes his figuration. The

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conditions of imitation offered by the computer are, in fact, very different from those of manual operation, since technological innovation transfers hitherto real processes into the virtual, considerably altering the relationship between reality itself and the imaginary" [Gaiani 2010].
The question concerns the role of the techniques of representation of the architectural project, an extremely varied field that must be considered in a context animated by rapid changes, and the editors of this issue have decided to unravel the subject across a range of interpretations, considering as a premise the pervasive use of visual and graphic media that more often than not does not clarify communication but makes it superficial and redundant.
The common goal is to reconsider the role of drawing as a strategic tool both for the purpose of organizing and coordinating all the information for the management of the project at different levels and in its different specifications, but, again to use Franco Purini's words, "a drawing is not just a simple tool but is first and foremost the native place of an idea, to then become the memory of the design process and finally the communication of the choices made. All in the conviction, certainly minoritarian today, that architecture is an art that must, or should, result in a beauty capable of renewing itself epoch after epoch. That beauty that for Stendhal was a promise of happiness" [Purini 2019].
The issue opens with the editors' *Cover* and continues with a fantastic axonometry by Massimo Scolari, entitled *L'incontro* (The Encounter), commented by Roberto de Rubertis.
Just as we did for No. 11 in 2022 with Mario Trimarchi's text, we wanted to also include in this context a *Special Column*, taking the opportunity of the presence of Riccardo Florio, who was keynote speaker at the 44th International Conference of Representation Disciplines Teachers - Congress of the Unione Italiana per il Disegno, entitled *Transizioni / Transitions* which took place on September 14, 15 and 16, 2023 in Palermo and whose subject seemed to us very much in tune with the theme of this issue.
The three Topics defined with the editors open with the invited contribution of a figure chosen among the protagonists of the architectural debate in Italy in recent years. Topic 1, titled *Media and Languages*, is opened by Alessandro Melis, curator of the Italian Pavilion at the 17th Venice Biennale in 2021 and two-time Ambassador of Italian Design (ADI). For topic 2, *Practices and Poetics*, an intervention by Gianandrea Barreca, an expert in architectural design with a focus on morphological and compositional issues, always related to relationships with context, sustainability and natural elements. For topic 3, titled *Theories and Research*, Nicolò Ornaghi, co-founder of *Raumplan*, a web platform on visual arts, producer of exhibitions and events, and editor of *San Rocco* journal, was invited to propose a text taken in part from the last issue of this architectural magazine, which was closed in 2019.
The response to the call for Issue 13 of *diségno* was considerable and characterized by the presence of several scholars from the area of drawing, a circumstance desired by the editors and the Editorial Board, which has already, for several issues, been intending to promote an exchange with disciplinary fields close to Drawing.
For the *Readings/Rereadings* column, given the theme of the journal, Fabrizio Agnello proposes the text by James S. Ackerman, entitled *Architecture and Drawing. Representation from Vitruvius to Gehry*, a seminal collection of writings by the eminent architectural historian, published in 2001.
The journal is completed by the usual columns on reviews of a few recent volumes of particular interest to our discipline and on the most significant events of the recent months.
Finally, a look at the *UID Library* and the plaques and prizes awarded at the UID 2023 Convention.
As always, I would like to conclude with a preview of Issue 14 of our journal that is currently in the works and will be dedicated to Analog Models and edited by Alberto Sdegno and Pedro Manuel Cabezos Bernal. An issue intended for scholars of this particular tool of representation that has always flanked the work of the architect.
My heartfelt thanks go to the authors of the contributions, the editors, the reviewers, the Editorial Board and the Editorial Staff, while not forgetting, in particular, the Journal Manager who coordinated the issue. I wish everyone a good read.

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The Present of Architectural Drawing. *Le dessin est mort, vive le dessin!*

Paolo Belardi, Massimiliano Campi

Exactly ten years ago, the Pinksummer gallery in Genoa hosted an exhibition in the Cortile Maggiore of the Palazzo Ducale in which two architects' collectives, Gruppo A12 and Baukuh, questioned the possible future (or perhaps, more appropriately, the possible futures) of the Ligurian capital. And they did so by proposing projects and solutions that synergistically contaminated representational modes as varied as they were unusual: starting with the image chosen for the communication, namely that same angel, present in the Ribaudo family chapel of the Monumental Cemetery of Staglieno, used by the rock band Joy Division for the cover of its single *Love will tear us apart*.

In particular, the space set up by the Baukuh studio, echoing the idea of the *Genova meno uno per cento* (Genoa minus one percent) project, based on the hypothesis of surgically intervening with minimal demolitions and small replacements, was divided into three parts, corresponding to the same number of components: a limited edition book of drawings, titled *Panorama* and graphically composed by the Pupilla Grafik studio, a short film made with interviews, titled *Demolire Genova* (Demolishing Genoa) and directed by Alberto Tamburelli, and a polyptych composed of four large double panels (figs. 1-4), also titled *Demolire Genova* and characterized by a magniloquent territorial vision, represented in scale 1:1289 to emphasize its subjectivity (but perhaps also licentiousness), which elected monometric axonometry as the place par excellence of descriptive clarity. Three components that, in fact, claimed the need for theoretical research. And, likewise, the need for theoretical design. For while it is now generally accepted that

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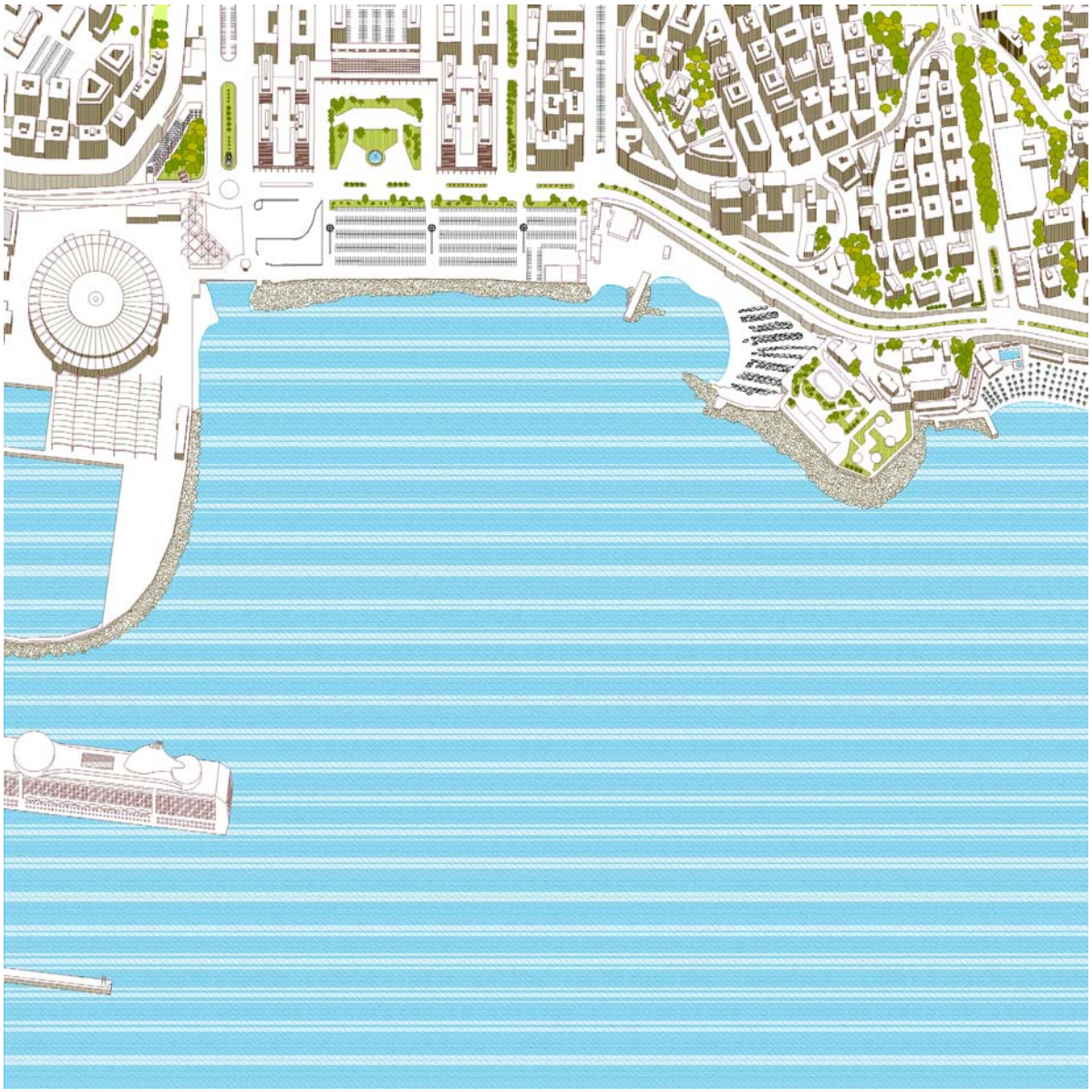
Fig. 1. Baukuh, Demolire Genova, Quadrant 1, 2013, Pinksummer Gallery.

Fig. 2. Baukuh, Demolire Genova, Quadrant 2, 2013, Pinksummer Gallery.

Fig. 3. Baukuh, Demolire Genova, Quadrant 3, 2013, Pinksummer Gallery.

Fig. 4. Baukuh, Demolire Genova, Quadrant 4, 2013, Pinksummer Gallery.



the current professional practice, increasingly committed to disciplinary integration and social sharing, cannot avoid the use of well-established digital tools for digital tools for representation such as BIM (Building Information Modeling) and Rendering, this does not mean that the present of architectural drawing is not animated by other forms of representation. On the contrary, perhaps at the very moment when representation has consumed –reaching an acknowledged consolidation in its own practice– the new modes of expression based on a certain type of drawing, it is time to look elsewhere and, above all, to reflect on what may be the new scenarios capable of revitalizing it. On the other hand, it is precisely because of the concentration on the present, typical of our time, that we experience a very special condition of unstable equilibrium between the past and the future. While we fail to abdicate the legacy of the past and try to keep traditional methods and techniques of representation alive with new meanings, we are also captivated by the extraordinary ideational and visual potential inherent in the digital tools that constellate our lives. The crisp black axonometries with white lines that marked the front covers of the *San Rocco* journal for almost ten years, from 2010 to 2019, come to mind, in which "drawing is deprived of the noble intention of investigating architecture through its fundamental tools and becomes a simple stylistic canon" [Ornaghi 2019], just as the graphic compositions of the Dogma Studio come to mind, which "considers the image as a project in itself, and not as its simulacrum, since the image does not reproduce, but is the very essence of architecture" [*The Booklist* 2013]. Above all, however, thinking about the topicality of the architecture/environment relationship brings to mind the decorative panel *Pennacchi di città geologica* (2023) realized by Alessandro Melis for the Italian Consular Office in the Canary Islands, as well as Diana Agrest's monographic essay *The Architecture of Nature: The Nature of Architecture* [Agrest 2018], where drawing allows the exploration of possible morphological interrelationships between the world of geology and the world of the natural sciences.

It is in this vein that the exploration proposed by the themes around which this issue of the journal *diségno* aims to solicit reflection moves, tracing the present of architectural drawing and raising critical and theoretical reflections on the new role that drawing itself assumes in the context of the design activity carried out by the protagonists of the international disciplinary landscape of this first part of the millennium, in a period between 2000 and 2023, a time segment that seems ripe for an appropriate critical review.

In proposing these themes for reflection, it was deemed appropriate to go beyond the narrow perimeters of a territory confined by the intrusiveness of digital technological skills, in order to expand the limits of an otherwise opaque vision that itself highlights an awareness of the need for a cultural direction aimed at not confusing, when it comes to drawing for architecture, the means with the end. The contributions selected for publication give a glimpse of a renewed scenario that shows that the time has come to reject the hypothesis of limiting architectural drawing only and exclusively to its constructive translation, something that digital drawing, often only synthetically reproducing an assumed reality, has made to seem possible at the beginning of the new digital era. The path to be taken through the three in-depth sections into which this issue of the journal is organized intends to arrive at a contemporary and critical examination of the matter, for reflecting on the extent to which drawing is still the bearer of traditional signifiers in forms capable of giving new meanings. The aim is to be able to finally affirm that, just as it always has been, and just as it always will be: *le dessin est mort, vive le dessin!*

Consequently, it happens that the essays that fall under the topic of *Media and Language*s propose reflections intended to explore, in a contemporary key, the possibilities of knowing, through the representation of architecture, critical dimensions not yet fully attended to, deepening the investigative role that history has evidently already delivered to the discipline, also through the current languages of project narrative prefigured by 'signs'. At a time when there is more and more talk about what the effects might be in the field of architecture of the possibility of delegating thought to the hidden automatisms typical of Artificial Intelligences, the proposed path continues in the second topic, *Practices and Poetics*, with insights that intend to reflect on the ideational act of the project, which finds its initial concretization precisely through the language of drawing, even before the form finds material consistency in real space. Finally, the topic of *Theories and Research* brings together considerations on experiences addressed in design research that form an interesting picture of the directions that drawing can take to proceed in its cultural evolution.

The horizon outlined in the intellectual figuration of the collection of thoughts presented coincides with the need to identify a synthesis that proposes critical attitudes useful in identifying concrete tools for the contemporary city, in a fertile ground that again demonstrates the numerous expressive and innovative potentials of Architectural Drawing.

Authors

Paolo Belardi, Department of Civil and Environmental Engineering, University of Perugia, paolo.belardi@unipg.it
Massimiliano Campi, Department of Architecture, University of Naples Federico II, massimiliano.campi@unina.it

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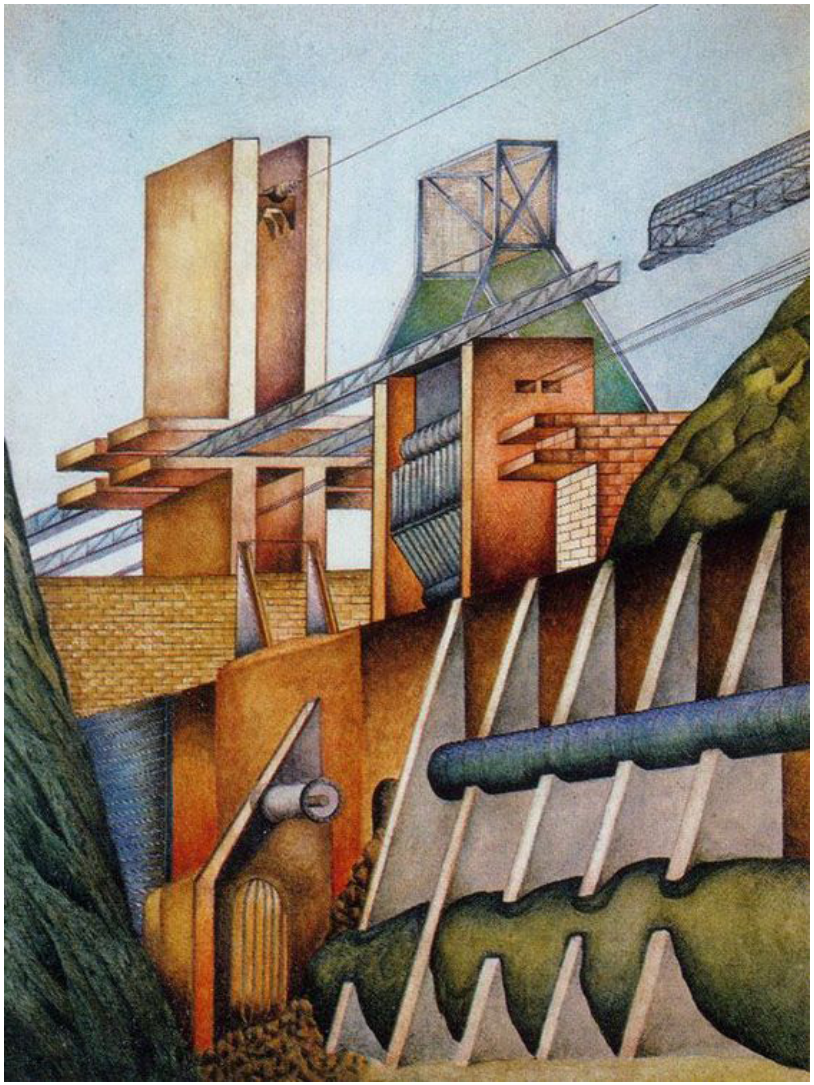
L'incontro

Massimo Scolari



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Massimo Scolari's *L'incontro*

Roberto de Rubertis

Every image created by Massimo Scolari, be it the representation of a volume, a space, an idea or a feeling, or even just the outcome of a state of mind produced by his imagination, is like a door thrown wide open on his mind. A door always bringing forth fascinating descriptions, generated by engaging adventures of thought.
When it is an architectural representation, the effectiveness of its effect is even greater: the descriptions are, in fact, the outcome of the journeys constructed by his mind, presenting the world as a self-produced dream. A dream that opens the imagination to realities that transport elsewhere, and thus lead every observer who observes those images elsewhere, offering him extraordinarily fascinating scenes and panoramas.
It is impossible not to be influenced by the invitation they formulate, when the outcome has the expressive force generated by the graphic skill of an author like Massimo Scolari. His images are, in fact, strongly realistic, and the observer wonders whether similar realities really exist somewhere in the world or whether it is only the observer himself who gives concreteness (or illusion) to their apparition.
It is enough, in fact, for such apparitions to be the object of observation for them to present themselves as real: it is precisely this 'impossible' but highly effective appearance that gives the images the quality of seeming real, that is, that they acquire the irreplaceable charm of 'truth' conveyed by a strong realism. It is perhaps the consistency of the bricks with which the volumes appear to be constructed that gives them the charm of the concreteness they emanate, creating an 'architectural dream' more fascinating than any fantasy.

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Perhaps it is not by chance that the image proposed for the *Cover* of this issue of *diségno* is entitled *L'incontro* (The Encounter) [1], precisely because, more than others, it suggests that the observer becomes part of the composition itself, with the astonishing outcome of becoming its creature. At this point it also becomes legitimate to wonder whether, in the end, even the glider that often appears in the places depicted by Massimo Scolari (the glider that he himself designed and built) is really able to fly (or can become so), such as its realistic features and those of the places it might fly over would suggest.

Note

[1] Massimo Scolari, *L'incontro*, 1976, watercolor on paper, 19.7 x 15 cm. The image is taken from: Marzari, G. (Ed.) (2007). *Massimo Scolari*, Exhibition catalogue (Riva del Garda, September 9 - November 4, 2007). Genova-Milano: Skira, p. 83.

Author

Roberto de Rubertis, Department of History, Representation and Restoration of Architecture, Sapienza University of Rome, roberto.derubertis@uniroma1.it

THE PRESENT OF ARCHITECTURAL DRAWING

Special Column

The Acts of Drawing: '*procedere*' and '*cedere-pro*'

Riccardo Florio

Procedere

Wanting to start with the meaning of the Italian verb '*pro-cedere*' (to proceed) in the sense of going forth, of projecting, but above all of moving forward, I would like to turn to the figure of the Greek architect and sculptor Callimachus, the master par excellence of '*leptótēs*' ('grace,' 'subtlety,' 'refinement,' 'delicacy'), whom Marcus Vitruvius Pollio (80-15 B.C. ca.), in reference to the myth of the origin of the Corinthian order, indicates as the artist whom the Athenians, for the refinement and delicacy of his art of working in marble, called '*chatatēxítechnos*' (who ruins art by exhausting it; perfectionist) [Vitruvio, IV.10, p. 373], a term composed of '*katatēkō*' ('consume,' 'destroy,' 'melt,' 'exhaust') and '*téchnē*' ('art'), expressing the perfectionist tension of the artist, which leads to the exhaustion of art [Vitruvio, IV.10, p. 429]; Drawing, like the tension of Callimachus' art, establishes a processuality, according to a syntagmatic and ordinal ritual, that exhausts the architectural design by proceeding toward one of its many possible solutions.

This indissoluble relationship between drawing and design is sanctioned at the moment when the figure of the architect-builder (fig. 1) undergoes a scission, a laceration, which, already expressed in the last phase of the Middle Ages, in the fifteenth century was realized in the acceptance of the practice of drawing as an activity exclusive to the architect. Leon Battista Alberti (1404-1472), in the *Prologue* of *De Re Aedificatoria* (*On the Art*

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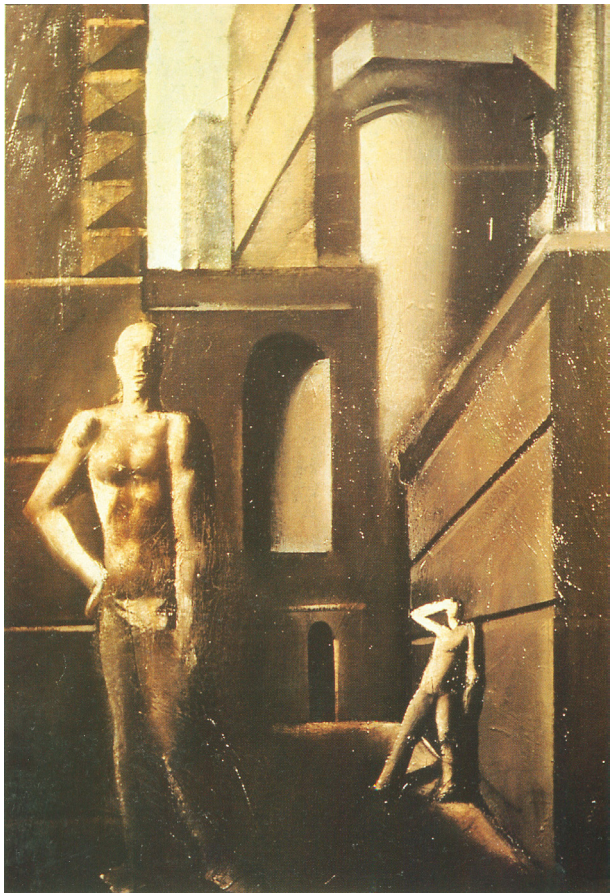

Fig. 1. Mario Sironi, I Costruttori [The Builders], 1929.

of Building), promotes the intellectual qualities of the design activity by recognizing it as the decisive moment of man's cultural experience and history, while further on (figs. 2, 3) in *Book One*, devoted to *Drawing*, he states, "Architecture as a whole is composed of design and construction" [Alberti 1452, I]. He contrasts "the carpenter, *fabrum tignarium*, and the master mason, *maitre maçon*, with the definition of the architect as he *qui certa admirabilique ratione et via, tum mente animoque diffinire, tum et opere absolvere didicerit*" [I] (fig. 4).

It is here that the concept of architectural drawing that we still adopt today in referring to the activity of the architect originates: "an architect is he who knows best how to draw." He exercises his "ultimate manual dexterity" through drawing, the "writing of the soul that forms the matter of dwelling" [Amendolagine, Cacciari 1975, pp. 25, 26] and entrusts the execution of his work to other figures who will determine one of the possible executions. In the same way as music, in fact, architecture becomes allographic expression in that the architect writes a text or a score that will have to be read and performed, with differentiated times and modes, in order to be manifest [Goodman 1991]. It thus occurs that: "the content of the design intentions still constructively unexpressed gives the drawing an objective existence and the course of construction inverts the mimetic processes: the construction represents the drawing" [Ambrosi 1995, p. 90]. If unity between thought and action is an unavoidable prerequisite for being able to conceive the proper weighing of order and truth, to eventually arrive at *veritas* as *adaequatio rei et intellectus*, the principle of harmony celebrated by Thomas Aquinas [2], then, in the indispensable need to act toward the attainment of order, architecture becomes "constructive clarity brought to its exact expression" [Blaser 1977, p. 15]. And Mies van der Rohe himself teaches us, through the words of St. Augustine, that if "*beauty* [is to be understood] *as the splendor of truth*" [Augustinus 1979, p. 634], "nature *always speaks the truth* and architectural forms speak *the truth of a certain epoch*" [Monestiroli 2002, p. 61].

What truth can be sought in the semantic process between signs of construction and signs of representation, which indeed sees the representation penetrating the architectural work and flowing into all the meanders left vacant between execution and construction? We could point to two different methods that echo the

Fig. 2. Mario Sironi, L'architetto, autoritratto [The Architect, Self-portrait], 1922-1924.

Fig. 3. Mario Sironi, L'architetto [The Architect], 1922.

differentiated times and modes of the dual relationship of representation/execution and representation/construction: the execution of the work of architecture, to be understood as the only construction possible, and the construction of the architecture as one of the possible executions. In the first case, drawing becomes the instrument of a control that makes use of integrations between numerical calculations, simulations of phenomena and graphic representations, with the aim of making execution and construction coincide, so that nothing is left to chance. In the second, "the built building is, at every moment of its existence, the changing and always authentic expression of an original idea that becomes reality in its interpretation and in life. […] The conceptual drawing continues to constitute image in the course of construction, and this permanence […] makes one accept and indeed makes precious that portion of expressiveness that finds realization in the diversity due to manuality, which, romantically, John Ruskin felt as the first source of life for the building" [Ambrosi 1995, p. 91]. In both cases, the distance that is, in any case, measured between drawing, design and construction (in the Latin meaning of '*intra*,' 'within,' 'internally'), and in which the historical nemesis of the prefigurative journey is deposited and stratified, comes to be bridged precisely by the development of the phases of elaboration, according to the times of reflection, ideational fabulation, storytelling, history, but also of the control of form, the calibration of functions, the correspondence of dimensions and the exactness of executive anticipation. A scan of the reading and learning times continually filtered through the weaves of the drawing and the enduring oscillation that is produced on these between the reality of the datum or its physical presence and the reality of its representation that, in some way, simulates and echoes the actual times of construction.

Architecture is conceived and experienced on the very boundary that separates and integrates it into the city and the built environment, stretched out like a sort of immense suspension that inevitably precipitates on the lives of men and things, making tactile and recognizable the will for transformation that they exert through their constructive work. "Any new human installation is, in a certain sense, a reconstruction of the world. In order for it to last and be real, the new house or the new city must be projected, through the ritual of construction, into the 'Center of the Universe.' […] Just as the city is an *imago mundi*, the house is a microcosm. The threshold separates the two spaces, the hearth is likened to the center of the world" [Eliade 1957, p. 382]. Its representation involves a lucid and meticulous introspection with the aim of gradually projecting oneself inside it and tenaciously trying to unveil its secrets. A profound exploratory operation that is continually being enriched with renewed certainties: the stages of representation have the extraordinary merit of revealing qualities and making them settle during the process of acquiring cognitive elements.

This process of sedimentation, not without critical choices and interpretive analyses, provides the measure of the quality of the investigation itself. Drawing is thus presented as a very ample decoding program in the ultimate need for a critical recomposition that can reveal and make understood aspects that are not immediately evident.

Drawing, therefore, an intelligent tool for unlocking the secret or the secrets that determined the final configuration of the work of architecture, whether built or in the making, that reaffirmed and confirmed the author's poetics, that together decreed the value of the work. We have, with our eye that does not see things but images of things that mean other things, a "gaze [that] scans the streets as if they were written pages," extended our attention to understand "however the city [architecture] may really be, beneath this thick coating of signs, whatever it may contain or conceal" [Calvino 1977, pp. 21, 22].

Architecture also becomes "infinite work that plays, however, with simple and natural, humble and poor energies […] with very simple and almost naive effects, as if they had always been there: this is the absolute quality of an architecture as necessary as 'cutting out the blue of the sky'" [Brusatin 1993, pp. 142, 143] [3].

The possibility of investigation offered by the incessant mutability of the phenomena of contextual reality drives us toward a very fertile interaction in which the different experiences of our human development surprisingly merge in the ultimate act of recognizability.

And it is precisely the attempt conducted through drawing, through the analytical and critical possibility that can be established with it, that allows us to trace the direction of a research aimed at the understanding of things and architectures, in the awareness that already in the phase of control a precise ideational effect is carried out

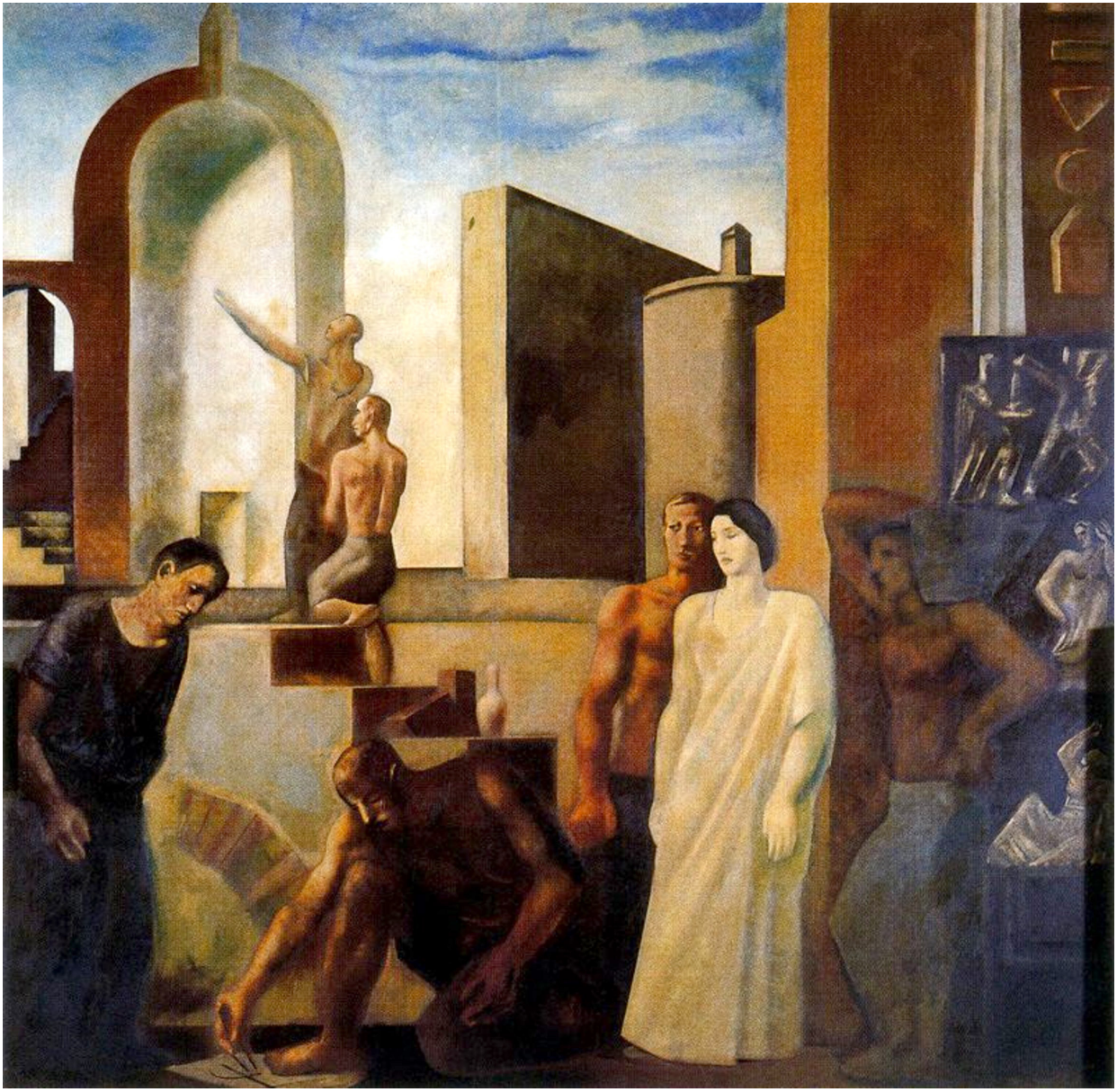

Fig. 4. Mario Sironi, L'architettura. Il lavoro in città [Architecture. The Work in the City], 1931-1932.

and a type of design process is triggered. "What results is this marvelous consequence, that the most powerful 'creations,' the most august monuments of thought, have been obtained by the conscious employment of voluntary means of *resistance* to our immediate and continuous 'creation' of subjects, relations, impulses that substitute one another without any other condition" [Valéry 1957, Tome 1, p. 1470]. Resistance exercised through "canons and proportions, rules of harmony, laws of composition" [Valéry 1957, Tome I, p. 1470]. In the creative act, in fact, all components of human activity come into play at the same time: the irrational, unpredictable, uncontrolled ones, the logical ones that have to do with the preservation of relations, to the concatenation of transformations, and also the coordinating will, which tends to anticipate the properties of the system being designed [see: Venezia 1978, p. 107].

Is it still possible today, even with clear reference to the formal characterization of contemporary architecture, to speak differentially and distinctly of the terms 'drawing' and 'design'? Is it not, now more than ever, the time for these two phases of one and the same elaborative process to show themselves in an absolutely indistinguishable manner, especially when referring to the prefiguration of an architecture that does not yet exist?

If it is true, as it is, that drawing derives its value and quality from its intrinsic potential as a moment of synthesis and, therefore, of communication and explication of the ideational elaboration, it is also true that this role of 'intermediary' originates from the strength of its belonging to the whole process of the construction of architecture in prefigurative terms. "A project is for the architect what the character of a novel is for its author: it constantly gets beyond him. It is necessary not to lose it. The drawing keeps up the chase. But the project is a character with many authors, and it only becomes intelligent when it is dealt with like that, otherwise it becomes obsessive and impertinent. Drawing is the desire for intelligence" [Siza Vieira 1995, p. 51].

This indissoluble link between idea and transcription, between intuition and the will to block the creative act, in which signic vocabularies and imaginative projections, mathematical verifications and economic evaluations appear to be equally involved, shows itself even more firmly within contemporary architecture. The formal and figurative research that permeates the architectural choices of our times, thanks also to the possibility of using IT tools that astoundingly accelerate the restitution of mental processes, proposing results that for their speed of execution and completeness of meanings can compete only with the sketch, seems to have found precisely in the osmosis of the interchangeability between idea and its immediate verification, between imagination and sudden representation, one of the keys to its best expression.

Therefore, it is still possible to ask ourselves whether infographic elaboration, accompanied more and more often by the sequels of photo-realistic and pseudo-substitutive simulations of the reality placed "under observation," is itself a determining component for design indications. Are we aware of the value of architecture unencumbered by predetermining illusions? Or, on the contrary, is the technique of representation of our times, thanks to the enormous aid of all these tools, of such scope that it necessarily exceeds the exclusive limits of mere drawing, subservient to design, and does it contain, in its becoming graphic space ever closer to the real condition, yet never reaching it, some of the gestational processes of the design concept?

If we were to try to answer these questions by examining and considering the work of some contemporary architects we would have to answer, without a doubt, that architectural thought does not appear to be absolutely conditioned by its becoming representational elaboration, in any of its elaborative moments of high infographic density. We might otherwise say that the architect's work, on closer inspection, would appear to be far from any form of subjugation, if not those unavoidable of drawings that pertain directly to the sphere of the architect's ultimate manual dexterity. Nonetheless, one cannot consider that the architectural genesis of the project design is not based in a deep exploratory path totally internal to the sign elaboration, as evidenced, above all, by the numerous autograph drawings and sketches that increasingly reveal the singular condition of poetical belonging.

This is a condition that leads the principle of ideation back to the possibility of a physical control of the returned traces of one's thoughts, in a balance of pondered alchemy in which signs and physical simulacra skillfully anticipate forms, dimensions and charm.

The relationship that has been emerging between so-called 'traditional' drawing and 'digital' drawing is entirely embedded in this distinction: refined systems of

simulation of the world that deal with two different conceptions and modes of anticipating future time or restoring the present-past. If on the one hand, the former traces surfaces restoring value to freehand drawing through a capacity to contain visual and metrical restitution perimeters, the latter responds through a temporal compression that proposes every thing as inexorably inscribed in a future or feasible dimension. "Virtual reality presents itself not as what can happen but as what just happened, like an accelerated present" [Purini 2000, p. 108]. The fact remains unquestionable that any digital representation cannot contain within itself or, in any case, express the meaning of germination of the initial idea of a long elaborative process, which instead is completely internal and condensable in the sudden sketch "embryo full of potentialities to be explored. […] Iconic projections that trigger the compositional process and constitute the same number of genetic codes of a formative process that digital drawing can foster and even enrich, but that it cannot completely resolve in itself" [Purini 2000, p. 108]. It would be necessary today, at a time that seems to celebrate smart culture and aesthetics, to go back to celebrating the enduring intelligence linked to the pondered exercise of reason and cultural reflection, and in the field of drawing or more generally, of representation addressing architecture and the city, which today are progressively losing their physicality while taking on a deliberately virtual dimension, this consideration seems more relevant than ever. If architecture has, due to the nature of its own long, complex work, made up of many clashes and changes, of various contributions, of a multiplicity of dialoguing subjects, the need to extend, over the entire design process, the action of image construction, we must recognize that Aristotle's assertion that art is the faculty of creating truth through reflection "is interpretable for us precisely in the sense that imagination and reflection in their continuous exchange can still build new pieces of reality, modifying and enriching the world of our experiences" [Gregotti 1992, p. 99].
The corpus of Drawing is expressed, therefore, through a succession of representations that, carefully accompanying the prefigurative journey, support and enliven it, arriving at the definition of a method capable of intellectualizing objective and operational data and that, in compliance with precise laws within which to operate, serves as a stimulus for the elaboration of new and different configurations. Drawings that require an adequate adherence to operational tools and their modernization, and that produce a series of infographic representations that must make 'traditional' drawing become topical and contemporary without betraying the qualities of the work: unnatural visions, infinite distances, unusual, inhuman eyes that, projected onto hypothetical ideal planes, see the true dimensions, the exact angular ratios and the specificities of each of the elements contributing to the configuration of a final image that re-proposes, rigorously and methodically, without any concession to graphic sensationalism, the formal characteristics and the dimensions of the work.
In addition, the possibility of using IT tools that also speed up the restitution of qualitative and quantitative data sampling and recognition processes densifies the increasingly tenacious link between data management and restitution modes.
If the term 'integrated' derives from the meaning of "to make whole or entire, complete and conforming" [4] then we cannot refrain from expressing the need for representative registers to confirm the vast new potentialities of the procedures put in place by algorithmic computation and increasingly define new and surprising ways of re-presenting observed realities, determining a cognitive surplus value that proposes ulterior forms of representation that complete and complement the 'traditional' ones.

Cedere-pro

A further thought might be suggested at this point in our considerations: the Italian verb '*procedere*' could be read backwards, in reverse, though not rigidly inverted, in the locution '*cedere-pro*,' which takes on a meaning of great significance when referred to Drawing.
'*Cedere*' (to cede, to yield) means 'to surrender,' 'to withdraw,' 'to retreat,' but also 'to concede' and, I would add, 'to foster a loss in favor,' 'for the benefit' of something else.
Since the operation of representation is an expression of the office of substitution, it must be emphasized that there is no possibility of substitution without preliminary experience of a given object and without the preserved memory of its internal image. The substitutionary action presupposes an imitative reciprocity from

which the ultimate significance of the transfigurative *iter* is clarified; the semantic relationship established between 'figures' and 'referents' is a reductive one, in that it necessarily involves a decrease in the level of initial information. "There is a *déficit* (deficiency) of imitation in each mode of imitation," Antoine Quatremère de Quincy rightly said, adding that "the necessary condition for every sort of imitation is that it should be lacking in one aspect of reality" [Quatremère de Quincy 1840, p. 5]. A lack that decrees the level and degree of investigative capacity in the need to initiate a selective and, therefore, elaborative action that produces re-cognition and pondered exaltation of the components that characterize and possess quality.
Whoever draws, at the moment of the delineation of a form immediately realizes how many it excludes, and how more and more numerous are the forms that will not come to light in the process of his work. "The practical and visible reflection of this process can be seen in the so-called *pentimenti* (repentances, second thoughts)" [Pierantoni 1999, p. 128]. '*Pentimento*,' that in its ethical meaning implies the realization of the will to extract a 'good form' from chaos, in the indecision between different forms.
This condition contains the deep and necessary sense of loss, that is, of the decrease in the level of initial information, which finally produces, starting from the overall representational matrix, a codified sign precipitation, which becomes distinctive feature of heuristic sedimentation and ability of de-signation.
This distance between reality and representation becomes necessary, to the point that if we try to deplete it through a representational burden so excessive that the portrayal shows "no 'open patches' where our imagination can penetrate the image […] then the portrayal itself becomes the object of our desire […] the portrayal no longer holds a promise. It refers only to itself" [Zumthor 2003, p. 11].
It appears, therefore, inevitable to insist and intervene on the concept of distance that defines and measures the quality of the representational act in the complex modes of re-presenting reality.
Drawings celebrate 'distance' in a gestural and ideational process that the final design elaborations and even built architecture often conceal and, at times, forget.
Drawing is the field in which distance and proximity, absence and presence are intertwined, in a continuous oscillation between disappearances and appearances, implying what will no longer be there when we later look at the final, finished drawing [see: Elkins 2008, p. 132] in which the thoughts, the uncertainties, the changes of course, the return after an "infinite journey" are condensed [see: Magris 2013, p. XXI] becoming a truly Ulyssian challenge, in the progress of a journey-writing for which each sign becomes a proof, a testamentary bequest, toward the hoped-for or hopeless solution.
"The act of drawing […] produces, in the manner of a superficial transparency, ghosts at the limits of reality" [Guillerme 1982, p. 13] and the drawings, offering hospitality to the invisible company that is at our side, establish a suspension in time and space, in which presence and absence complement one other to decree the boundaries of a recreated place in which the fragmentation of time manifests itself in its solidity. A skillfully calculated set of architectural figures that stand in depth and around which, little by little, other figures emerge and resurface as citations of memory, to recompose a final form that becomes new and identitary.
Drawing "is the point where blindness, touch and resemblance become visible, the place of the most delicate negotiation between hand, eye and mind" [Elkins 2008, pp. 132, 133], and while it is true that the sketch constitutes only a fragment, while formidable, for understanding the spirit of the work, but insufficient to be able to fully describe it or to communicate its design characteristics, it is also true that the sketch embodies the cryptic trace that contains the whole prefigurative idea and that, in its signic condition, faithfully transfers the poetics of its author, and expresses "all that in the work belongs to the work of meditation […]. The sketch is the thought of the genius" [de Gérando 1799-1800, pp. 396, 397].
In autograph drawing, one can find expressed those components that Alain called the wild part and the geometric part of the one who draws, of the one who, in the act of making a mark on a surface, of drawing, executes a line and a stroke together: "But in a drawing one can grasp very well the agreement between the wild part and the geometric part; since a beautiful stroke, that is to say, free, decided all at once, inspired, is found to translate the projection of the object without any error and according to a perfect geometry. […] there is no art in which the two opposites are so distant and independent as in drawing; as on the one hand there is

a purely intellectual aspect that measures distances and ratios; while on the other there is the free gesture that translates the aptitude that circumscribes the form on paper […]. That is why drawing may be the most moving of all the arts" [Alain 1939, p. 154].
Drawing becomes evocative and a prelude to a layering of thoughts that flow back into the grooves etched on paper, yes, the paper, and what emerges in suspension is the fruit of a slow distillation, "[…] the mark traced on paper leads and is led at the same time, at times sewing the line to the mind and at times the mind into the line in a suturing action that grows tighter and tighter as the drawing progresses. Drawing is thus not the visible shadow of a mental event; it is a thinking process, not the projection of a thought" [Ingold 2013, p. 215].
What, then, is the role of the sketch, drawing, freehand drawing or free drawing, still without superstructures, that makes us see reality, that establishes that internal resonance between emotional state and the magic of reality, but also makes us see the extraordinary prevision of what we are imagining for that same reality?
What is the strength of its signic expression and transcriptive depth? And what is the strength of its free perception?
It is necessary for drawing, in the elaboration of the image, to leave out what is to be abandoned and to reveal all that is to be shown, in a figurative suspension that will lead to understanding and subsequent appropriation precisely in the internal tension that is established between what redraws the new perimeters in the graphic space and what remains excluded from it.
In the transition between Drawing as a mirror revealing reality and reality itself, a new dimension originates, a recreated space in which even the space of architecture takes on a form returned through the multiplication of the occasional depths, modulated and transferred by the fixed presences of the architecture and the wandering presences of the observers. A different and always defferable anthropophany that still needs a place, be it differentiable, multiplied and repropositive, to appear and declare its presence and its shared memory.
The particular condition of the architect who "sees by drawing" places him at the same time in a state of complete freedom, a freedom that is nourished by the set of lines, which take on the peremptory force of individuating and circumscribing, of separating and selecting, of bringing out and reconstituting, of connecting the infinite layers of memory and of the interpretive measures, of uniting. Drawing thus becomes, through line, "the logical foundation of spatial continuity, the primary basis of its intelligence and description" [Purini 2000, p. 102].
We could, at this point, certainly say, in a kind of circular path that takes us back to the Act of *Procedere*, that "A line, an area of tone, is not really important because it records what you have seen, but because of what it will lead you on to see. […] Each confirmation or denial brings you closer to the object, until finally you are, as it were, inside it: the contours you have drawn no longer marking the edge of what you have seen, but the edge of what you have become. […] Another way of putting it would be to say that each mark you make on the paper is a stepping stone from which you proceed to the next, until you have crossed your subject as though it were a river, have put it behind you" [Berger 2008, pp. 11, 12].

Notes

[1] And again: "As for drawing, its whole object and method consist in finding an exact and satisfactory way of fitting together and connecting lines and angles, by means of which the appearance of the building is entirely defined.": Alberti 1452, Book One, Chapter I, p. 18. See also: Borsi 1996, p. 224.

[2] Tommaso d'Aquino. (1258 ca.). *De Veritate I*, 2. See: Mondin, B. (2002). *La metafisica di S. Tommaso d'Aquino e i suoi interpreti*. Bologna: Edizioni Studio Domenicano.

[3] The phrase quoted by Brusatin "is mentioned 'verbally' several times by architect Carlo Scarpa in his lectures dealing with the 'restoration' work taking place in the Antonio Canova Gypsotheca Museum in Possagno (Treviso)": Brusatin 1993, p. 154, note 9.

[4] See Integrare. In *Dizionario etimologico Online*. <https://www.etimo.it/?term=integrare&find=Cerca> (accessed 17 October 2023)

Author

Riccardo Florio, Department of Architecture, Università di Napoli Federico II, riccardo.florio@unina.it

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Media and Languages

Architecture through Drawing

Alessandro Melis

The act of drawing has long been the foundational stone for architectural expression. Through the chaotic lines on a canvas, we can understand exaptation as a unique path to diversify architectural drawing frameworks, moving towards environmentally-conscious perspectives.
In discussing ecological stances, it becomes clear that creativity, especially in architecture, emerges through drawing as manifestations of the intricate mechanisms of biological evolution. This interconnected viewpoint allows to see drawing not merely as a representation tool but as a transformative method to rethink environmental transformations strategies, such as architecture. through the lens of exaptation.
Exaptation, within the realm of drawing, can be perceived as a concept where an existing drawn design or motif evolves to encapsulate new functionalities, either diverging from its primary representation or evolving from an erstwhile non-representational state. From an evolutionary biology standpoint, exaptation enriches the Darwinian interpretation of change processes, prompting us to consider how architectural drawings have evolved beyond mere functional representation. The essence of exaptation suggests that evolutionary processes, even in the world of architectural drawing, don't commence in isolation but continuously adapt existing motifs and designs, thereby turning potential constraints into creative opportunities [Melis, Pievani 2022].
Historical and contemporary drawing examples, spanning diverse cultures and epochs, show how drawn illustrations can serve as catalysts for revolutionary architectural and urban transformations. Such drawings underscore the potency of lateral thinking in bridging imagination

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Fig. 1. Alessandro Melis, Shining Dark Cities Series, Termite Nest V, 2012

with tangible outcomes, particularly during challenging times. Our inherent cognitive abilities, especially evident in the adaptive nature of drawing techniques, highlight the evolutionary repurposing of design motifs and techniques over time.

Drawings at the Intersection of Evolutionary Biology and Architecture

Drawing, as a fundamental tool in architecture, has always transcended mere visual representation. When approached from the standpoint of evolutionary biology, architectural drawings can present a canvas of exploration into biological mechanisms, structures, and principles.

While many scholars have engaged in interdisciplinary studies linking recently expanded biological taxonomies with fields such as economics and technology, the relationship between architectural drawings and the aforementioned evolutionary taxonomies remains strikingly underrepresented in current research. Past studies, such as those examining biomimicry, hint at this connection by drawing analogies between organismal form and function and architectural design in a Leonardesque manner. This can also be seen as an advanced manifestation of classical analogies, comparing human body phenotypes to architectural styles, as evident in past illustrations and renderings [Melis, Pievani, Lara-Hernandez 2024].

Such drawings, while mostly focusing on the superficial, phenotypical level of mimicry (emulating photosynthesis, for instance), don't truly harness biology as a catalyst for innovative design principles. Drawing, in this context, could elevate the study beyond mere imitation, making it a vehicle for a transformative design mindset, especially when confronting global challenges tied to our current design ideologies.

The concept of autopoiesis, inspired by living organisms, offers another profound intersection. Just as a drawing delineates the foundational structure and essence of a building, autopoiesis envisions buildings as living systems, each element interacting and evolving in its environment. Yet, architectural studies rarely venture into the evolutionary depths of exaptation in their sketches and blueprints, often settling for deterministic overviews [Melis, Pievani 2022].

Drawings can, therefore, serve as a bridge between the deterministic and the evolutionary. The parallel between natural selection and architectural design, when visualized

Fig. 2. Alessandro Melis, Piranesiana, 2012.

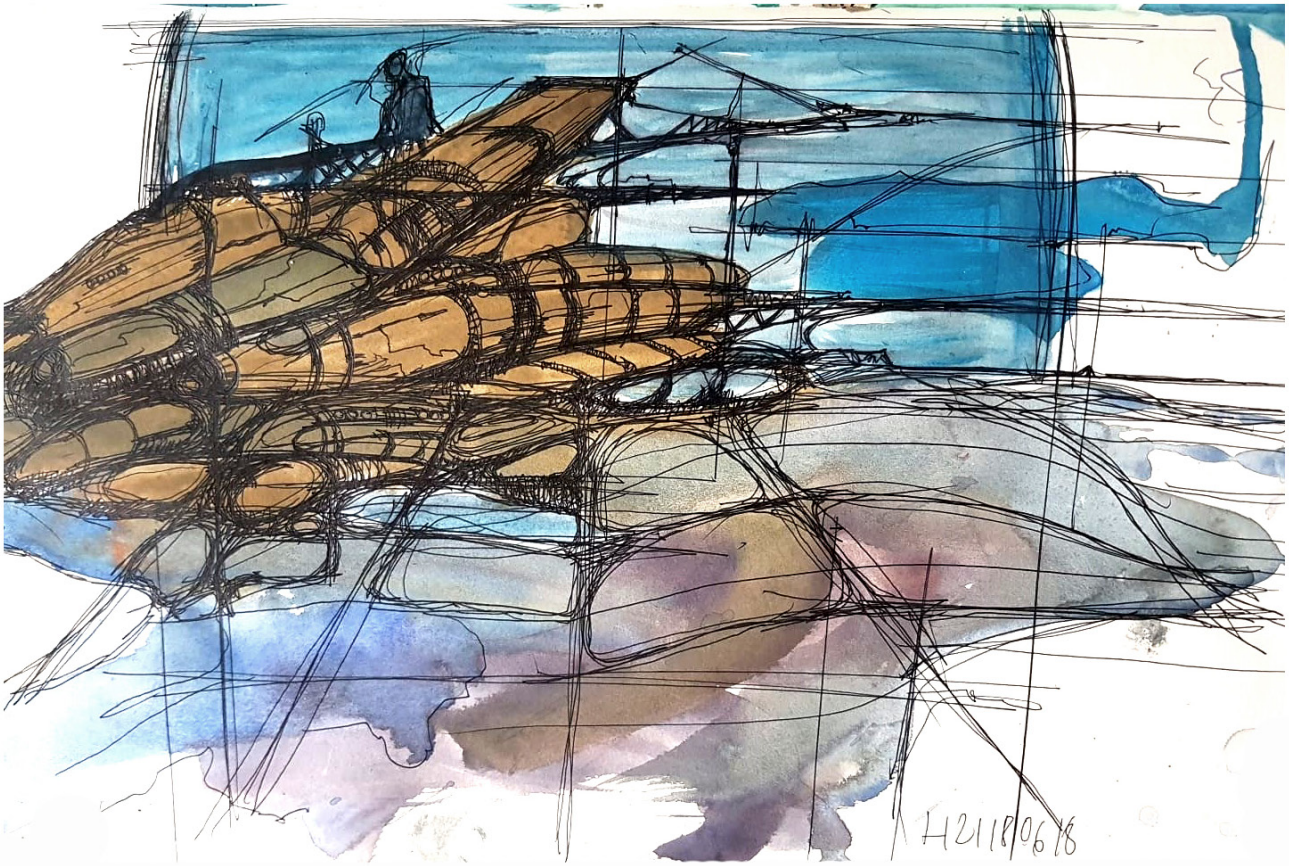
Fig. 3. Alessandro Melis, Biotech Highrise I, 2016.

through drawings, could foreground the importance of understanding design mechanisms rather than focusing solely on the end-product.
The concept of exaptation, for instance, challenges the traditional design approach of 'reverse engineering'. This retrospective approach often fails in architectural drawings because the historical origins and present functionalities might differ.
By introducing evolutionary biology's nuanced perspectives into architectural drawings, we can enrich our design approach. We can create sketches that not only portray a building's structure but also its adaptability, resilience, and evolutionary potential. Such an approach aligns with the holistic definitions used by biologists and architects alike, especially when drafting designs for sustainable projects [Melis, Pievani, Lara-Hernandez 2024].
In essence, the harmonious fusion of architectural drawings with evolutionary biology provides innovative, responsive, and resilient design methodologies. By moving beyond mere imitation of nature, drawings can channel biology as a potent force for redefining architectural principles, especially as we navigate the intricacies of global crises.

Drawing Evolutionary Pathways

In the world of artistic representations, particularly drawings, the concept of adaptation refers to the continuous evolution and honing of techniques that cater to an artist's expression or the audience's interpretation. Historically, adaptation in art has often been viewed as a process of refining specific techniques or styles for particular objectives. Much like in biology, where scholars discuss adaptation as a fundamental concept in understanding human and non-human evolution, artists too have constantly adapted their methods to suit new purposes or respond to changing cultural contexts.
However, just as biological evolution has concepts that go beyond mere adaptation, so does the evolution of artistic expression. Darwin's proposition regarding complex traits that originate for one purpose but later are repurposed for another resonates in the art world. Think of early cave drawings, initially perhaps a means of communication or recording, which over time transformed into intricate art forms and storytelling mediums.
Jay Gould and Elisabeth S. Vrba's concept of 'exaptation' [Gould, Vrba 1982] can be paralleled in the drawing realm. Drawing techniques or styles developed for one purpose can be repurposed for another, much like the 'spandrel' metaphor borrowed from architecture.
In simpler terms, just as the word 'adaptation' typically suggests changes crafted for specific functions in biology, in drawing, it may point towards techniques cultivated for a particular artistic goal. Analogous to the exaptation of bird wings for different functions, drawing techniques may evolve and be repurposed.
One remarkable example of this in art is how certain stylistic choices, initially developed for aesthetic purposes, later find utilitarian roles. A doodle or a freehand drawing might initially have no concrete function but can be co-opted into logos, designs, or even architectural concepts. This resonates with the idea of genes emerging from the redundant 'junk DNA'.
The correlation between adaptation and exaptation in drawing leads to major shifts in artistic styles and methodologies, much like the evolutionary transformations Gould and Vrba described. The techniques initially developed for one kind of drawing might be the very catalyst for innovation in another.
In the realm of drawings and artistic representation, form does not always precede function. Just as the physical form of a structure in biology does not necessarily dictate its function, the initial strokes on paper don't always determine the final outcome in art. This notion, reflecting a general evolutionary pattern can be mirrored in art – techniques evolve spontaneously, independent of any new objective they may later serve [Melis, Pievani 2022].
Taking this understanding forward, much like the human body and DNA are full of potential exaptations, the world of drawings is ripe with techniques and styles waiting to be repurposed. The evolution of drawing styles, tools, and techniques parallels the evolutionary pathways in biology, suggesting a broader interconnectedness of life and art. Just as *Homo sapiens*' physical abilities emerged and later found newer avenues, drawing techniques developed over centuries await their Renaissance in the hands of future artists projects [Melis, Pievani, Lara-Hernandez 2024].
When thinking about the evolution and role of drawing in human history, it's beneficial to juxtapose its present-day significance with its earliest manifestations. From a philosophical viewpoint, we can interpret the importance of drawing as both an artistic form (intended purely for its aesthetic transcendental quality) and a method of communication. Tracing back to our ancestral lineage, we

Fig. 4. Alessandro Melis, Geocity V, 2018.



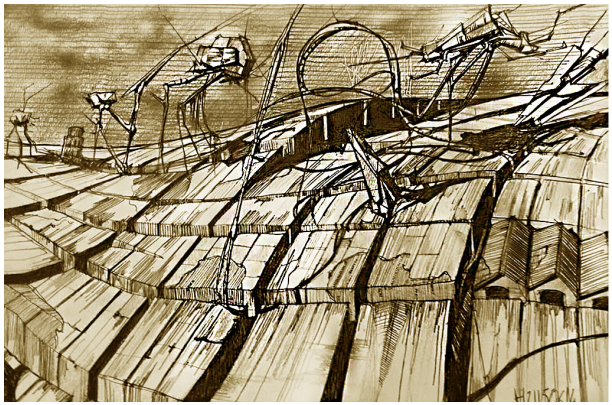


Fig. 5. Alessandro Melis, Hybrid cities series, Surgery city, 2015.

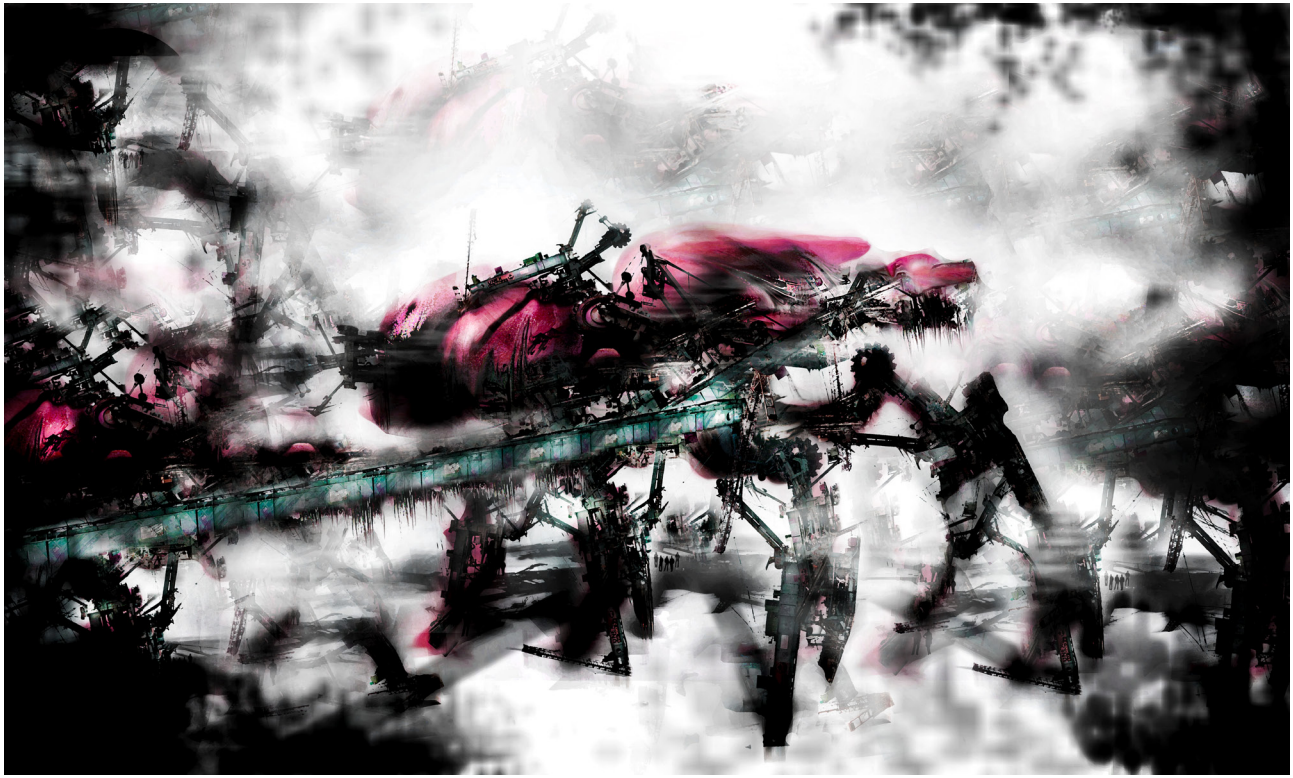
might discover insights that, while not always poetic, are undoubtedly enthralling. Drawing might be interpreted as an evolutionary side effect born out of imperfect development. But in biology, 'imperfection' isn't a negative term; it's a catalyst for innovation. However, labeling this as 'creativity' can seem amiss, especially when one realizes it deviates from a divine sense of creation. Drawing is akin to retrieving information from our brain's archive, an archive that isn't as orderly as we might believe. This makes art a fast way to interpret a myriad of nonlinear, cognitive data. The ultimate human objective –assuming evolution allows for such terminology– is not to dissect this data but to harness it for continued existence.
Human brain evolution, especially between 200,000 to 150,000 years ago, marked the dawn of a creative age [Pringle 2013]. This creative spark became evident in cave artworks around 40,000 years ago, highlighting the connection between brain evolution, cognitive growth, and artistic flair. Advancements like imagination and conceptual thinking became the cornerstones of artistry [Wilson 2017; Mithen 1996; Boden 2003]. Art's emergence can be seen as exaptation in action, with certain brain areas initially designed for different functions adapting to cater to artistic pursuits [Melis, Pievani, Lara-Hernandez 2024]. The cognitive and neural progress of early Homo sapiens paved the way for advanced thinking, resulting in masterpieces like cave paintings. Such works, rich in symbolism, attest to the escalating creativity of our forebears.

Europe boasts several historic cave art landmarks. The Chauvet-Pont-d'Arc Cave in France, housing art believed to be 36,000 years old [Chauvet, Brunel Deschamps, Hillaire 1996], features several animals like mammoths and lions, revealing the artist's prowess and kinship with the environment.
Such art further emphasizes exaptation's role, especially in reshaping natural landforms, a topic touched upon in earlier discourse.
Likewise, the Lascaux cave in France, with its 17,000-year-old art, displays a range of animals, like bison and deer, cleverly using cave's natural shapes to intensify three-dimensionality.
Similarly, Spain's Altamira Cave showcases vibrant animal depictions from about 15,000 years ago [Clottes, Lewis-Williams 2017]. Their vividness and expert application of color and light underscore the artists' precision and craftsmanship.

Deep time drawing

Throughout various cave art sites worldwide, one can frequently spot hand outlines and imprints alongside depictions of animals. These hand representations hold a distinct place in the annals of primitive art, spanning different regions and timeframes.
Creating a hand outline involves placing one's hand against the cave wall and applying pigment around it. This method results in a negative silhouette of the hand, crafted using various colors. On the other hand, direct imprints are formed by first smearing pigment onto the hand and then pressing it onto the surface [Melis, Pievani, Lara-Hernandez 2024].
For instance, the El Castillo cave in Spain houses hand outlines that date back over 40,000. Meanwhile, France's Pech Merle cave offers both hand imprints and those accompanied by animal drawings, illustrating the varied art forms of the period.
The underlying reasons for these hand depictions are open to interpretation [Clottes, Lewis-Williams 2017]. They could symbolize spiritual beliefs, serve as a conduit for connecting with mystical forces, or represent individual or group identities, possibly from participating in certain rites. Alternatively, these hand images might simply be an expression of artistry and personal identity.
Heather Pringle [2013] suggests that such artistic expressions emerged from our ancestors' capacity for abstract

Fig. 6. Alessandro Melis, Spider, 2017.



thinking, especially during trying times, steering away from linear thinking. This art form might have enabled early humans to handle vast amounts of information through symbolic representations. Future generations, in turn, would interpret these symbols using various analytical methods.
The considerable time and effort dedicated to creating these artworks indicate they likely held evolutionary benefits. The consistent joy derived from these aesthetic experiences backs their significance [Melis 2021], showcasing creativity as an evolutionary response to emerging challenges.

Gender Roles in Cave Art to Understand Exaptation

Our inability to comprehend the evolutionary advantages of non-deterministic trends often leads to misconceptions and biases. While the emergence of drawing stems from exaptation's inclination towards variability, redundancy, and diversity –serving as a reservoir of possibilities– a reductionist deterministic perspective can hinder the recognition of opportunities. For instance, cave art has historically been associated with males, predominantly tied to hunting rituals and individual expression. However, contemporary archaeological and anthropological discourse challenges this gender-specific narrative, sparking lively debates [Conkey, Gero 1997].
Examining cave art without gendered biases and emphasizing exaptation –a concept that highlights the unpredictability and diversity of cognitive processes– opens doors to fresh theories on gender diversity in primitive artistry. Through this lens, art emerges as an essential medium for exploration, especially in tumultuous eras [Melis, Pievani, Lara-Hernandez 2024].
Identifying the gender dynamics behind cave art is intricate, given the sparse evidence and challenges in deducing gender purely from artistic content.
Several researchers advocate for studying handprints to determine gender, focusing on attributes like size or finger proportions [Soffer, Adovasio, Hyland 2000]. However, this technique lacks certainty. A broader sociocultural understanding could offer more discernible insights. Current ethnographic research suggests that the act of artistry transcends gender boundaries [Conkey, Gero 1997], insinuating that prehistoric communities might have held similar artistic values.
Novel archaeological methodologies, including DNA analysis, might cast light on gender dynamics during prehistoric times [Vanhaeren et al. 2006]. Nonetheless, current investigations yield inconclusive results [Lewis-Williams 2002; White 2012].
Exaptation delineates the phenomenon where previously non-functional attributes acquire novel functions, differentiating them from features formed purely by their original evolutionary intentions. In subsequent sections, we will delve into scenarios where artists chiefly harnessed visuals to convey their creative spirit.
Genetic specialist Ewin Birney theorizes that nature's marvels often integrate a mixture of elements –some repetitive, others ostensibly lacking purpose. Yet, such components can culminate in the genesis of even more elaborate constructs. Birney equates the genome to "a jungle inhabited by strange creatures," emphasizing its repetitive motifs, particularly prominent in neural configurations. Such multifaceted patterns, as previously discussed, give rise to avant-garde thought structures that deviate from conventional paradigms.
In this context, the domain of art and drawing exemplifies such progressive thinking. Traditionally perceived as evolutionary residuals or 'spandrels,' the continuous relevance and significance of such art forms have bemused academics for centuries [Melis 2021].

Conclusion

At the nexus of architecture and creativity lies the potent principle of exaptation, an emblem of evolution's unexpected twists and human capacity for innovative repurposing. In agreement with this notion, architectural drawings, when imbued with environmental consciousness, become more than mere representations. They are catalysts, urging us to reimagine the surrounding realities and, more pragmatically, urban spaces and their potential. Our journey across various cultural and temporal drawing landscapes accentuates the transformative might of human ingenuity, beckoning us to reevaluate architectural drawings as instruments to tackle global quandaries.
This evolutionary drive in design mirrors the fluidity of associative thinking –a decentralized, non-fixed mode of cognition– that naturally resonates with the essence of exaptation. This correlation of ideas is evident when we perceive avant-garde architectural forms as spandrels: spaces imbued with potential yet unencumbered by established norms. These conceptual spaces, rich in latent versatility, become pivotal

Fig. 7. Alessandro Melis, GF5, 2013.

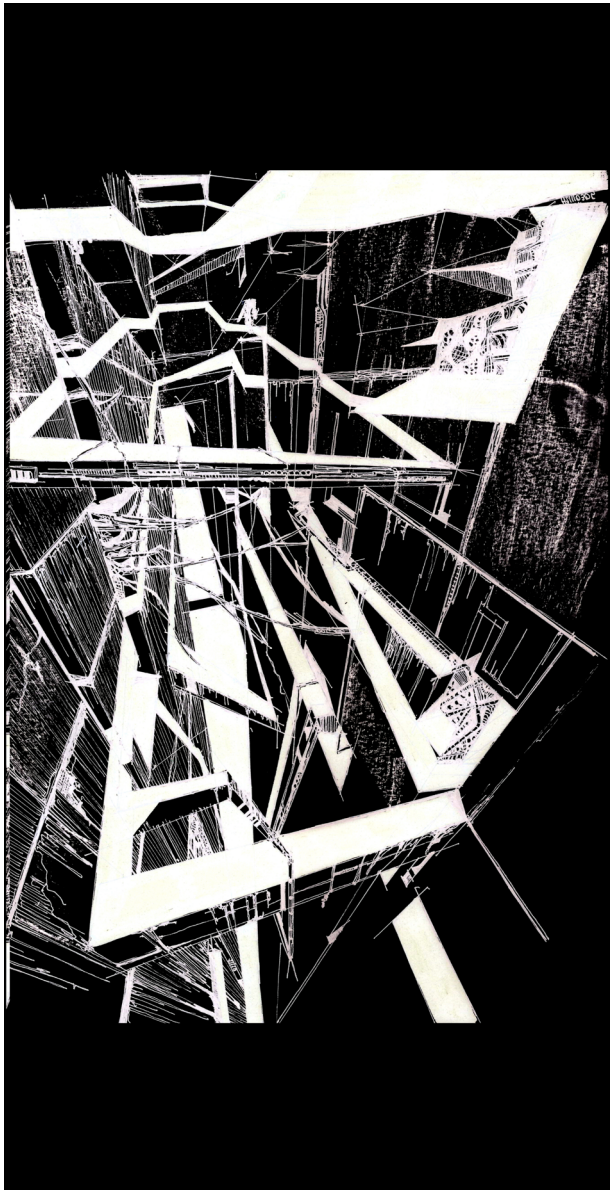


Fig. 8. Alessandro Melis, Rocce, 2010.

when faced with unforeseen challenges, embodying a heterarchical dynamism [Melis, Pievani, Medas 2021].
Venturing into the realms of sociology and urbanism, echoes of associative thinking resonate in Elias Canetti's reflections on the duality of structured chaos [Canetti 2018] and in Richard Sennett's discourse on organic urbanism [Sennett, Sendra 2020]. Canetti's musings serve as a reminder that while order is alluring, it's the structured chaos that provides the freedom to experiment and innovate. Similarly, Sennett's exploration of urban entropy champions the idea that amidst apparent disorder lies a nuanced order, a sentiment echoing the spirit of our times. Modern tools, products of deep insight, equip us to discern and articulate this embedded harmony amidst perceived chaos [Melis, Pievani, Lara-Hernandez 2024].
In essence, our age is defined by its acceptance and celebration of complexity –a world where fluidity, diversity, and boundless possibilities reign supreme. Through the combined lens of exaptation and associative thinking, we stand poised to harness this complexity, reshaping our built environment in consonance with the evolving taxonomies of human experience.

Author

Alessandro Melis, IDC Foundation Chair, New York Tech, amelis@nyit.edu

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‘Abstract Machine’. Diagrams in Project Narrative

Maria Pia Amore

Abstract

In the successful relationship between architecture and communication, between project and narrative, between construction and image, the diagram certainly occupies an important position.
In the contemporary design practice’s shift towards prefiguring broad, open, deferrable, indeterminate and perfectible scenarios, the diagram’s effectiveness seems to lie precisely in its ability to transfer complex systems, phenomena and concepts in an immediate and complete way. This mainly graphic form of schematisation seems to configure itself as the most suitable tool for gathering the tensions of a time that is beginning to distance itself from formal perfection and authorial needs in order to slide from the architectural object to the design process.
The diagram is thus simplified, through a schematic didactic organisation: if it can prefigure the form of an architecture, describe its function and/or uses, the relationship between its parts, highlight a theme, an idea, a concept, here we are interested in highlighting its usefulness in the narrative construction of the design process, even ex post. The contribution therefore intends to propose a didactic ‘deconstruction’ of the diagram, with an inevitable simplification and reduction of its rich complexity, justified by the desire to propose not so much a definition of what the diagram is, but rather how it can be used.

Keywords: diagram, process, narrative.

Introduction

“We live in an unending rainfall of images. The most powerful media transform the world into images and multiply it by means of the phantasmagoric play of mirrors. These are images stripped of the inner inevitability that ought to mark every image as form and as meaning, as a claim on the attention and as a source of possible meaning. Much of this could of visual images fades at once, like the dreams that leave no trace in the memory, but what does not fade is a feeling of alienation and discomfort. But maybe this lack of substance is not to be found in images or in language alone, but in the world itself” [Calvino 1988, p. 57]
The world 15 years before the turn of the millennium appeared to Calvino sick with a kind of plague of language that manifested itself as ‘automatism’. This form of disease tended to level expression on the most generic, anonymous and abstract formulas, tended to dilute meanings, to blunt expressive points, giving rise to an epidemic that had infected even the image. And that was 1985.
Today, more than ever, we live among images, we live by images, we produce images. And this is a fact about which the writer does not want to produce some critic or theory. And even if the increasingly widespread proliferation of images brings with it a sort of flattening of content to the ‘surface’, aestheticising a visual communication that loses its meaning, the value of the image in architecture and in the autobiographical

memory of the architect (and of his imagination) is, still, unquestionable.
The contribution therefore does not deal with the issue in general terms but tries to leave a trace of a reflection constructed from an interesting teaching experience, namely the seminars organised at the Department of Architecture of the University of Naples Federico II, *The tale of the project* a.y. 2017-2018 and a.y. 2018-2019, *Telling architectural projects: texts/concepts/diagrams/processes/collages/montages* a.y. 2020/21.
The story of the project, which has little or nothing to do with Gregotti's [better known] *Tale of the Project* (2014), actually grew out of an apparently banal objective: to teach first-year students how to (rap)present a project. It was a sort of 'technical assistance' to those who knew almost nothing about programmes, tools and techniques of representation, with the peculiarity of being offered by someone doing research in a different scientific disciplinary field, that of ICAR/14 Architectural and Urban Composition. In the same months in which this course was trying to build itself up as an opportunity richer than just technical assistance, Roberta Amirante published *The Project as a Research Product* in which she outlined, through abduction, a way of approaching project evaluation by emphasising its narration rather than its production. This narrative "simple, natural, easy and inexpensive to verify" could be capable of reconstructing, even in a verisimilitude, not necessarily true, the almost never logical-deductive or linear path of design thinking [Amirante 2019, pp. 74, 75].
In the direction indicated by Amirante and with the ambition of teaching students how to explain the project, break down the process, point out the materials and techniques used, make sense of an external prescription, conceptualise certain passages, formalise certain choices, show coherence or controlled incoherence, within the courses the use of the diagram was experimented with to make explicit the relationship with the reference, the context, the theme, the design idea and the elements of the architectural composition, in the search for a production of meaningful images.

Diagram, operating instructions

To the diagram [from the Latin *diagramma*, gr. διάγραμμα 'drawing', der. of διαγράφω 'to draw', comp. of διά 'through' and γράφω 'to write'], in 2006 the magazine *Lotus International* dedicated its entire issue *127* - with a remarkably interesting essay by Giovanni Corbellini from which this contribution borrows many words, including the title itself [Corbellini 2006, pp. 89-95]. In the shift in contemporary design practice towards prefiguring broad, open, deferrable, indeterminate and perfectible scenarios, the diagram's effectiveness seems to lie precisely in its ability to transfer complex systems, phenomena and concepts in an immediate and exhaustive way. A reductive and at the same time proliferative machine, abstract and open [Corbellini 2015, p. 47] with a universal degree of communication that is a representation of conceptual models and ideas, a synthetic description of functions, relations, forms, structures, programmes. Going beyond the traditional systems of representation of projective geometry, bound to a strict adherence to objective reality, even if selected, reduced and simplified, the diagram absorbs multiple and interscalar expressions of thought and takes on symbolic values. The diagram represents a visualisation expedient that can condense data, information, processes and forms, condensing logical, functional, structural, computational and compositional relations. The great value of the diagram lies precisely in its interdisciplinarity, in its ability to combine the interrelation between different and distant planes, to connect different fields of knowledge. This form of schematisation, predominantly graphic but with interesting hybridisations or textual substitutions, seems to be the most suitable tool for capturing the tensions of an increasingly liquid and dynamic time, which is beginning to distance itself from formal completeness and authorial requirements to slide from the architectural object to the design process.
The use of the diagram runs through the interests of architectural culture from the utopian representations of the late 18th century (think of Bentham's *Panopticon*), through Christopher Alexander, Herdeg Klaus, Lawrence Halprin, Kevin Lynch, Colin Rowe, learning from Las Vegas with Robert Venturi, from New York with deconstructivist architecture, from Paris with Tschumi and Koolhaas, assimilating the contributions of *Oase, Any 23, A+U* and the positions of Stan Allen, Peter Eisenman and Anthony Vidler. Here, as in the courses, it is simplified through a schematic didactic organisation, to be used 'instrumentally' as a 'piece of narrative'.

So if a diagram can prefigure the form of an architecture, describe its function and/or uses, the relationship between its parts, highlight a theme, an idea, a concept, here we are interested in highlighting its usefulness in the narrative construction of the design process. We therefore propose a didactic 'dismantling' of the diagram, with an inevitable simplification and reduction of its rich complexity, justified by the desire to propose not so much a definition of what the diagram is, but rather how it can be used.

Diagram: analytical/generative tool

The first distinction proposed to use diagrams in the construction of a narrative is that between an analytical and a generative tool. The first device, of the knowing type, is configured to trace the interpretation and systemisation of information from/about reality; the diagram in this case represents the antecedent, that is, the set of facts preceding the one being discussed. The second is traced as the incipit of the narrative to represent the strictly planning genesis. The distance between these two macro-categories tends to reduce to the point of disappearing in many cases in which the interpretation of the data is already oriented by a design vision and, in the same way, when the more or less figurative projection of the project clearly preserves the interpretation of the starting assumptions.
A significant example of the transitory difference between the two categories can be intercepted in Kevin Lynch's *The Image of the City*. The text, published in the States in the early 1960s, materialises the author's efforts at conceptual elaboration on the meaning of places. Lynch's attempt is to construct a common language to decode the historical, social, cultural, political and even religious context in which American society lives. On the basis of a public image of the urban structure, i.e. the mental picture common to layers of the population of a single physical reality, Lynch uses a diagrammatic representation to describe the visual form of the central areas of three American cities through five types of elements: routes, margins, neighbourhoods, nodes and references. On the part of the central peninsula bordered by Massachusetts Avenue chosen as a case study for Boston, the author first constructs *The visual form of Boston as perceived in the survey*, a diagram

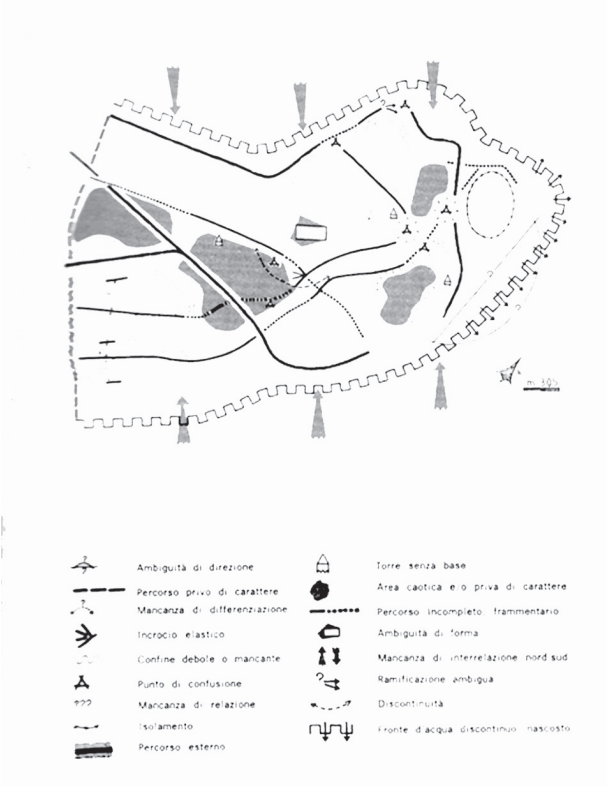
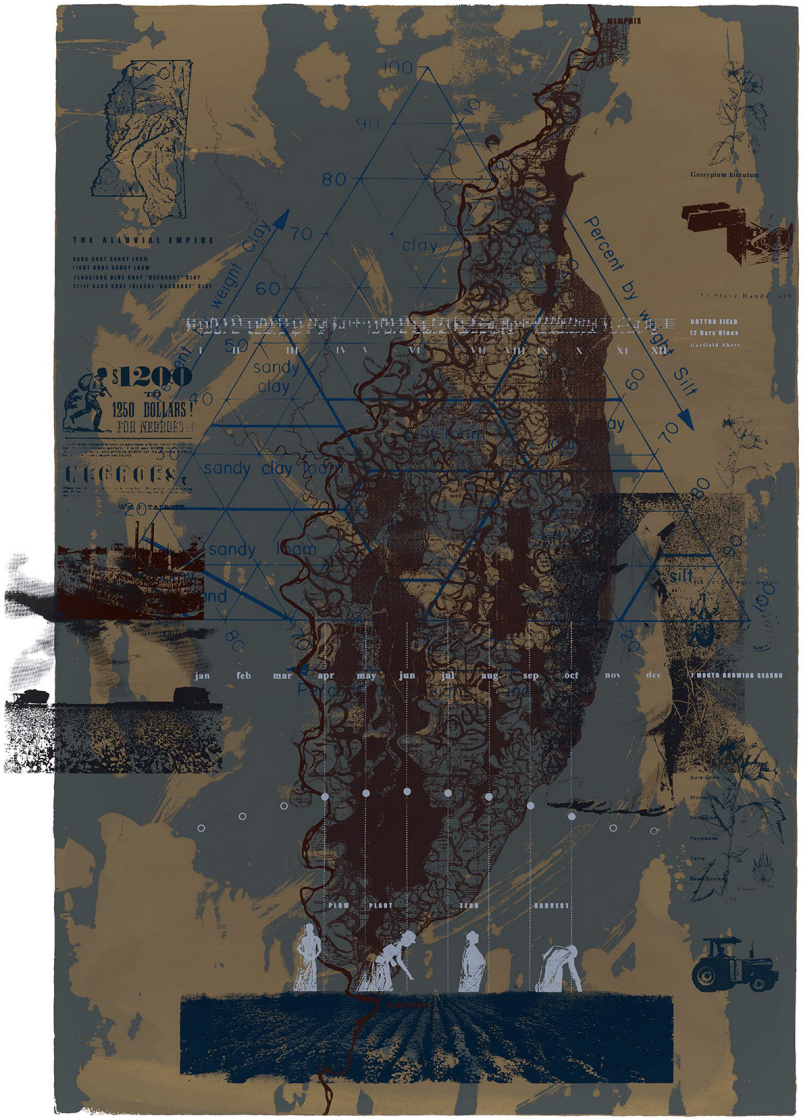
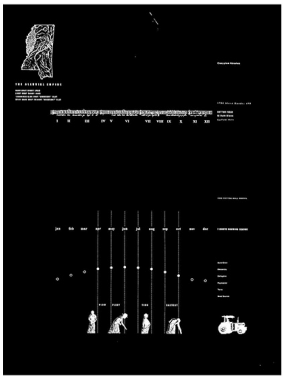


Fig. 1. Problems of the boston image [Lynch 1980, p. 47].





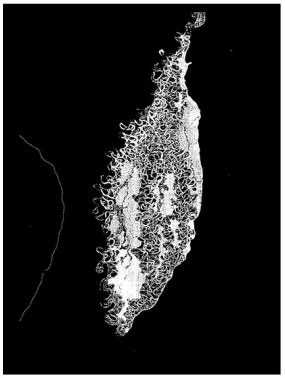


Fig. 2. A. Mathur e D. da Cunha, Mississippi Floods, .

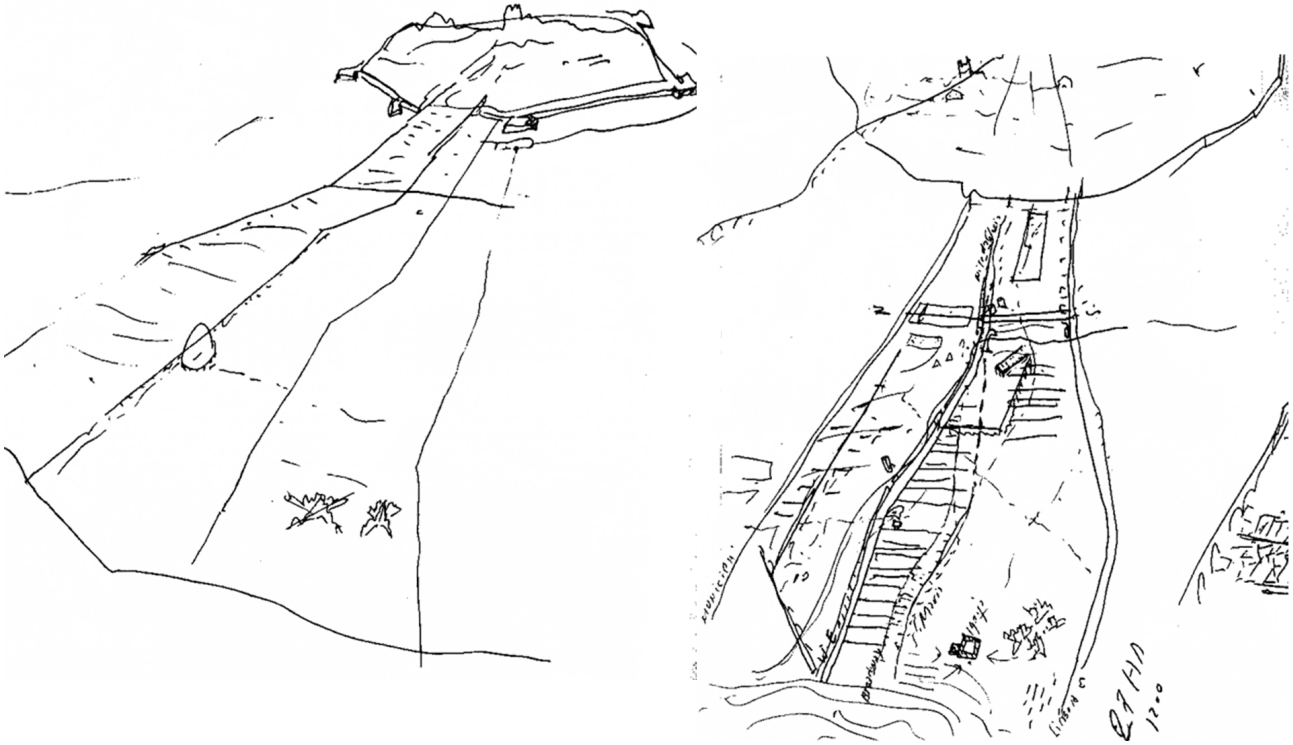


Fig. 3. A. Siza, Malagueira.

of the major visual elements he perceived in the survey; then he reconstructs *The Boston that everyone knows*; and finally he summarises the analysis of the image of Boston with the figure *Problems of the image of Boston* as a first step in the preparation of a 'visual plan' (fig. 1). This last figure is a 'graphic compilation' of what appear to be the major difficulties in the city's image: confusions, stray points, weak edges, isolations, breaks in continuity, ambiguities, ramifications, lack of character or differentiations. This diagram, as Lynch himself admits, corresponds to the analysis-overview phase that does not determine a plan but constitutes a basis on which creative decisions can be made' [Lynch 1964, pag. 46]. As Paolo Ceccarelli points out in the introduction to the text reissued by Marsilio, *The Image of the City* suggests that through certain analytical procedures and on the basis of a number of reading criteria, we can give an interpretation of how the inhabitants of a city perceive it, but also elaborate some methodological guidelines and indicate some useful contents for a better design of the urban environment.

An emblematic and more contemporary case in terms of methods and tools is the research activity of architect and landscape designer Anuradha Mathur with architect and planner Dilip da Cunha conducted between Philadelphia and Bangalore. Their work focuses on controversial territories where nature and culture are inextricably connected. The results of their investigations are not only important for the themes they address, but also for the iconic ways in which the researchers reconstruct and communicate the work itself: the landscape is investigated on multiple layers

that are rendered through evocative and complex diagrams. The hybridisation of multiple techniques and tools is particularly effective in describing the dynamic landscapes that are the subject of research projects such as *Mississippi Floods: Designing a Shifting Landscape* (2001), *Deccan Traverses: The Making of Bangalore's Terrain* (2006) and *SOAK: Mumbai in an Estuary* (2009). The complex diagrams mix graphic signs with photographs and textures, hybridising analogue and digital. An absolutely contemporary practice that already in the first work conducted on the lower course of the Mississippi in California constitutes the transcription of an investigation and constructs the narrative through visual representations of a river that has taken on the characteristics of a flooding landscape, composed of embankments, pumps, dams. This research has developed a working toolkit that brings together direct experience with historical documentation, interviews, maps, historical data and folkloric traditions, and which can be readapted and reformulated to outline scenarios of the complexity of phenomena, conflicts and opportunities (fig. 2).

Turning to another dimension of the project and to completely different and decidedly traditional graphic modes, many of the sketches by Portuguese architect Alvaro Siza give back the measure of that non-imitative contextualism that allows us to grasp the intersection between the project and the interpretation of the place. The relationship between architecture and context in *Evora-Malagueira* can be synthetically visualised in the sequence of the two sketches shown in the figure (fig. 3). The residential complex designed by Siza in the 1970s makes up a peripheral 'modern foundation' in the western sector of the walled city of Evora on the Alentejo plateau. This area, characterised by a rural landscape in which a number of spontaneous squatter neighbourhoods were concentrated, with often self-built dwellings, and bordered to the south by the national road to Lisbon, was criss-crossed by paths traced by the inhabitants' footsteps: traces capable of describing the behaviour of the population along with the topography of the place. On these traces, the new Malagueira neighbourhood is designed with essential building and urban rules with a regular 8 x 12 metres grid of lots, a maximum height of the dwellings set at 6 metres, the same measurement as the width of the streets, a scanning of the façades rigidly controlled in

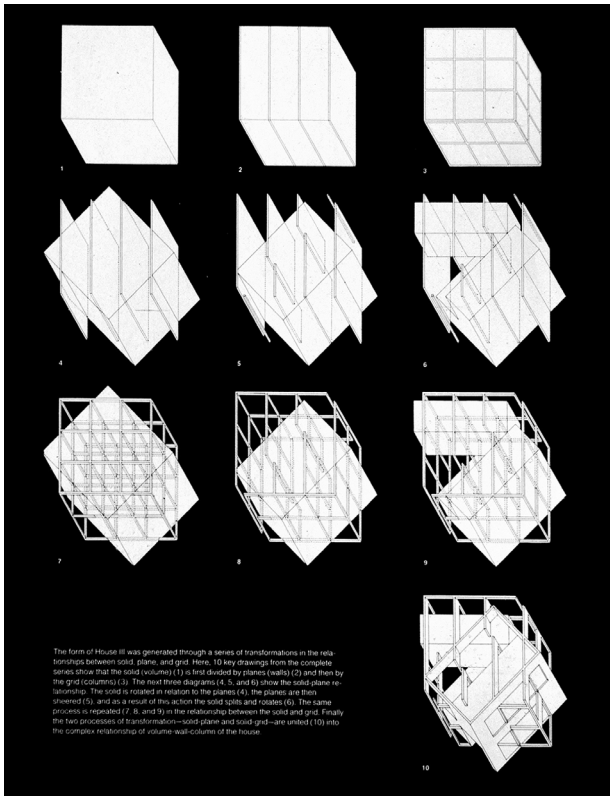


Fig. 4. P. Eisenman, House III.

the openings. Siza superimposes an element of territorial scale to this weave of fabrics, the great sign of the infrastructure 'conduit' that follows the contours of the land. The reference to the mighty 16th-century aqueduct that penetrates the city walls and integrates into the fabric, physically and symbolically connecting the historic city to the territory, is very clear in his synthetic drawings.

If, therefore, Siza's sketch-diagram, from being an analytical tool for interpreting the place, easily slips into a generative and prefigurative dimension of a certain type of project, it is possible, on the other hand, to identify in the celebrated diagrams of Peter Eisenman's first activity the architect's obsession with freeing architecture from all ties to place, function, programme or technique in order to dedicate himself exclusively to formal principles. For this reason, without exploring a complex formalist/structuralist theory that aspires to define the norms and behaviour of the language of architecture as something self-explanatory, we take the houses (fig. 4) that Eisenman worked on in the late 1960s and early 1980s as the paradigm of a process entirely within architecture in which graphic signs become the radical expression of what we can call the diagram as a generative tool. Eschewing the superficial and figurative aspects of architecture and searching for the profound ones (frontality, obliquity, indentation, elongation, compression, slippage) that are perceived with the mind, Eisenman elects geometry alone as the instrument of the project. A geometry in which point, line and plane constitute the elements of the grid in which the above-mentioned categories appear and which define the abstract space in which architectural invention is projected. The result is an abstract architecture, free from contamination, incomprehensible except through the explication of the process, that is, the sequence in time that generated it.

The ability to control the design process through diagramming, even when it is complex and free from formal objectives, sees a significant inflection point in the solutions for the *Villette* park (1982) proposed by Tschumi and OMA. Both proposals, in distant approaches, make use of the diagrammatic tool to articulate a hypothesis capable of absorbing the concepts of indeterminacy, plurality and innovation implicitly suggested by the competition. Bernard Tschumi's prize-winning figurative proposal, as clearly visible in the axonometric diagram (fig. 5), is generated by the combination of three autonomous systems:

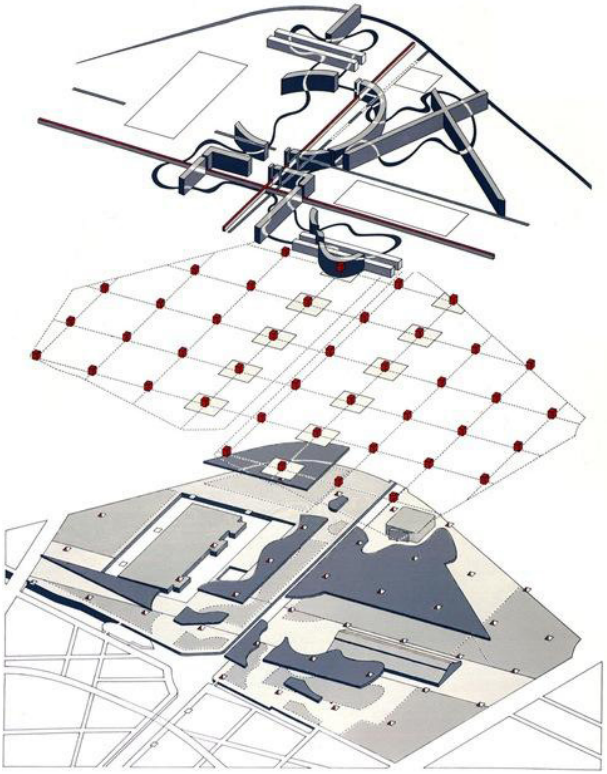


Fig. 5. B. Tschumi, Parc de la Villette.

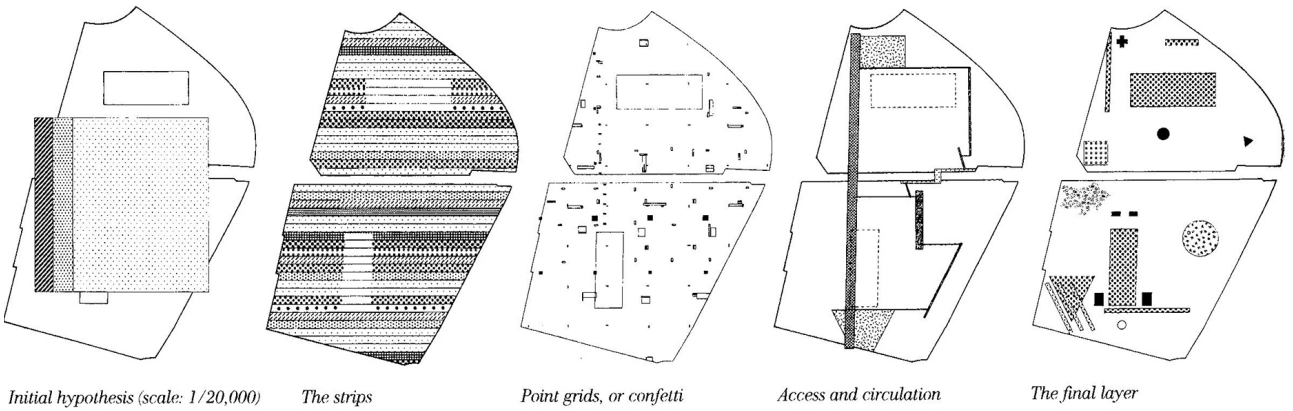


Fig. 6. Studio OMA, Parc de la Villette.

the system of objects, the system of movements and the system of spaces. The three layers in the randomness of their encounter generate, according to Tschumi, 'the new places of contemporaneity'[1]. Koolhaas' hypothesis [Repishti 2015, pp. 44-51] (fig. 6) is also structured on a layered, non-hierarchical flexible and strategic approach. The project area is divided into many parallel strips, strips of landscape obtained from sections of various landscape configurations that delineate a public space in which different activities coexist in mutual interference like a dynamic organism. Koolhaas thus conceives a system of five layers which, overlapping, generate the design of the park. The layers are: the bands; the point grids; the paths; the final layer and the zoning. Koolhaas' avant-garde ideas are characterised by the adoption of a strategy capable of combining architectural specificity and programmatic indeterminacy. OMA considers the park as a dematerialised building reduced to a programme and visualises performative and operational design through the representation of this programmatic structure in the form of a diagram.
Exactly like Koolhaas, at whose studio in Rotterdam he perfected his training, Bjarke Ingels experiments with a post-ideological and post-modern approach to design. He too does not pursue an autonomous formal research but it is primarily the programme that guides the conception and volumetric definition of architecture. His works, today signed with the acronym BIG, which has identified the Danish studio Bjarke Ingels Group since 2005, are almost always told through simplified and synthetic but very effective diagrams composed of a sequence of a few compositional operations (rotation, torsion, addition, subtraction). Already the first well-known residential project, the VM houses (2005), the result of zigzags, steps, slopes, complex circulation and multi-level flats, built in Copenhagen's new *Ørestaden* district, is emblematic of this synthetic approach that clarifies the design genesis. It consists of two facing blocks that are deformed by the action of external forces; the rotations generated between the pieces ensure maximum views of the surrounding landscape. A communicative and design trajectory that Big confirmed in the same place, three years later, with the even more famous residential intervention, Mountain Dwellings, in which concept, functional layout, image and theme are clearly intertwined in a strongly iconic building (fig. 7).

Diagram: metaphorical/composition/relational tool

What has been expressed thus far can be brought into line with a further attempt at categorisation that differentiates the diagram as a metaphorical tool from the diagram as a compositional control or relational tool.

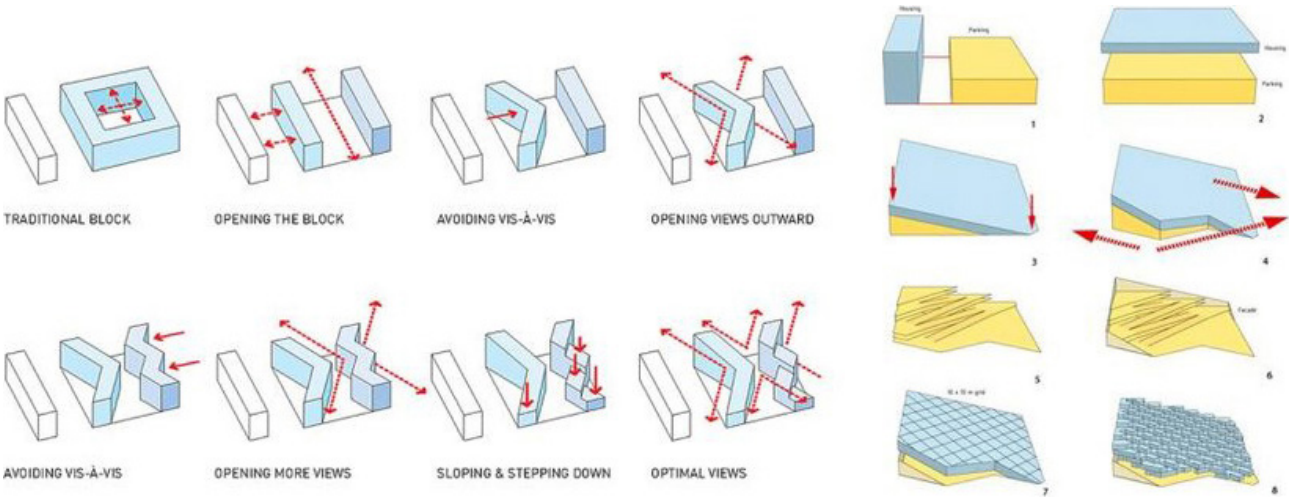


Fig. 7. BIG, VM House + Mountain Dwelling.

The first heterogeneous grouping into which we can include all those synthetic representations capable of expressing the design idea is often based on a mechanism of comprehension by translation, in which concepts or images slide, frequently from other fields, onto the architectural project.
The recourse to the traditional rhetorical figure based on an analogical relationship, whereby a word or locution is used to express a concept different from the one it normally expresses, is particularly useful because metaphor represents a means of enrichment, not only semantic and lexical, but also expressive and stylistic of language. By exploiting the observer's ability to grasp the relationship between two or more objects that have 'something' in common, the communication of the project idea is sometimes given over to other signs: the concept of flows as a river analogy underlying Zaha Hadid's *MAXXI* museum project is an example of this (fig. 8) [Coppola 2015, pp. 157,158]. Naturalistic metaphors' characterise a number of contemporary projects that, with a strong media impact, attempt to bring the built environment closer to the ecosystem and/or landscape.
The above-mentioned Big's Residential Mountain is a system that alludes to a geometrically organic form, organised through a system of terraces and hanging gardens to the south, and which to the north and west even re-proposes, with the holes in the aluminium sheets covering the façades, the image of Mount Everest. The diagrams, which premise the functional issue of the large car park and its pre-eminence over the residential intervention, show the construction of the image-mountain.
A paradigmatic example of a new approach to climate and environmental issues in architectural design is the planetary intervention by the Boeri studio *Vertical ForestING*, which in 2010 sprang up in Milan, focusing on the image of the forest to narrate a tower built with 2 trees, 8 shrubs and 40 bushes for each inhabitant [3]. The construction of the diagrams explicating the building's capacities and characteristics resort to the multiplication of the tree element and a predominant use of the colour green under whose mantle the building tends to hide in order to be able to see the forest (fig. 9).
Alongside the transmission of the idea through similes and evocative images of elements outside the field of architecture, there is a use of the diagram that tends to highlight the designer's ability to work on an idea of space and/or composition. Helpful in specifying this use of the diagram is the simple and highly effective drawing accompanying the project *House* by SANAA/Kazuyo Sejima & Ryue Nishizawa (2002-2005), which tensions a syntactic mode of composition with a paratactic one. The rooms

Fig. 8. Z. Hadid, Museo MAXXI Roma.

traditionally and syntactically stacked under a single roof in a kind of unity are arranged paratactically as prismatic volumes, meticulously juxtaposed against each other on the plane, to form a small village in the forest. The project involves the dismantling of the very concept of the typical house to create an overall structure in almost equally spaced units across the entire surface of the site. Many of the separate parts as individual units serve a single function, such as a living room or bathroom, while the others, each with its own small kitchenette and bathroom, function as an independent mini-house with a small garden (fig. 10).
Finally, the use of the most widespread diagram, on which the full potential of this tool is often crushed, namely that capable of highlighting the functional and relational aspects of the project.
Often reduced to a more fascinating or graphically sophisticated transposition of the 'functional layout', this type of diagram offers interesting developments and intersections with the physical space when it is manipulated by a studio such as OMA. The *Central Library of Seattle* (2004) redefines the library as an institution no longer exclusively dedicated to books, but as a repository of information in which all powerful forms of media are brought together in a precise spiral organisational strategy (fig. 11). At a moment when libraries are perceived to be under threat from a shrinking public realm on one side and digitization on the other, the Seattle *Central Library* creates a civic space for the circulation of knowledge in all media, and an innovative organizing system for an ever-growing physical collection – the Books Spiral. The library's various programs are intuitively arranged across five platforms and four flowing 'in between' planes, which together dictate the building's distinctive faceted shape, offering the city an inspiring building that is robust in both its elegance and its logic.

Conclusions

The diagram, a medium for relating concepts and forms, now plays a central role in architectural production and its narration, enriching traditional systems of representation with multiple contents –functional, compositional, symbolic. The didactic experiences conducted, unprecedented in Neapolitan courses of study and based on an intense relationship with the courses

Fig. 9. Studio Boeri, Bosco Verticale.

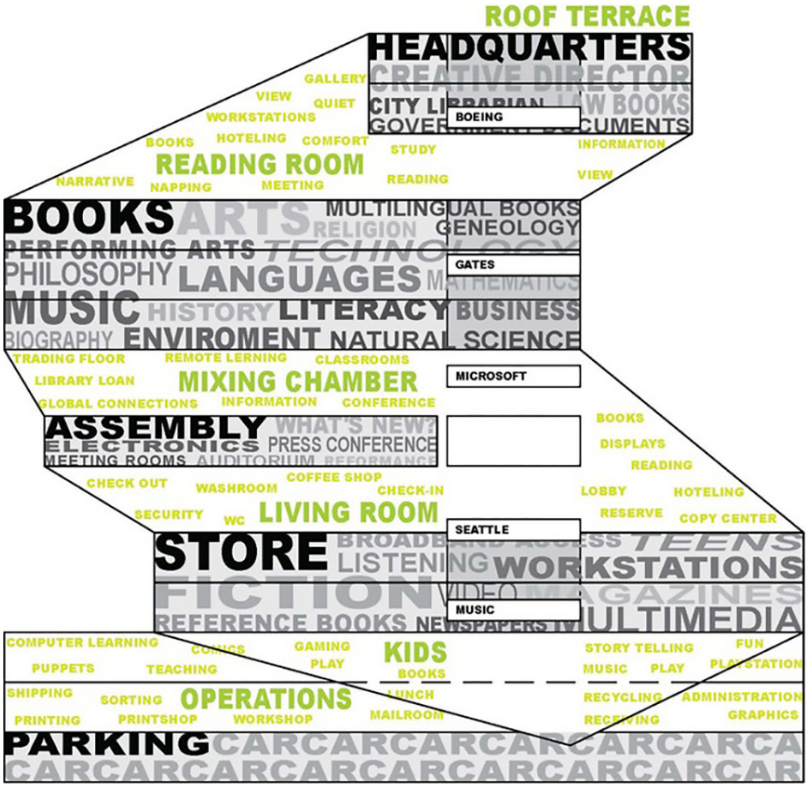


Fig. 10. SANAA, House.

Fig. 11. Studio OMA. Biblioteca Centrale di Seattle.

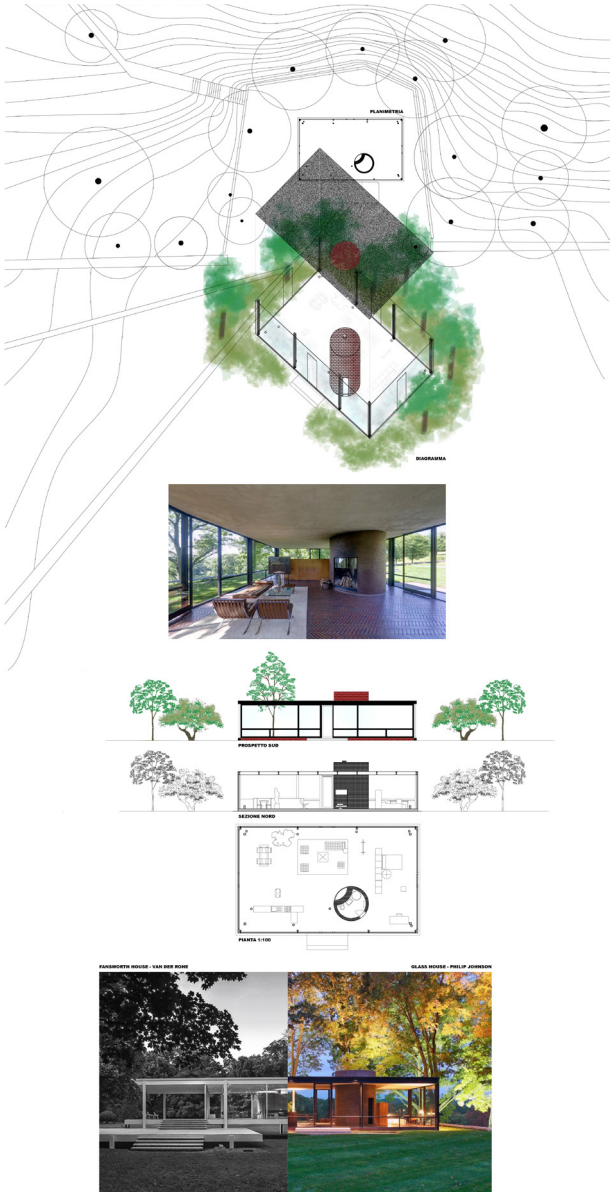


Fig. 12. Graphic elaboration by Alessandro Turzi, student a.y. 2020-2021: P. Johnson, Glass House, 1949.

of *Architectural and Urban Composition*, combined in-depth theoretical investigations with practical exercises, characterising the course with a strongly workshop-based imprint. The topics, of which this text keeps track, were presented by integrating and correlating applied theoretical notions, storytelling tools and compositional techniques with significant examples on the relationship between the project, the process of its elaboration and its communication.
This experimentation was conducted, with small variations in the different academic years, assigning each student the in-depth study of the design of a sufficiently well-known and tendentially iconic author's house such as Tadao Ando's *Casa Azuma*, Alberto Campo Baeza's *Infinity House* or Luis Barragan's *Casa Gilardi-di*. Thanks to the conspicuous bibliographical material readily available for each case study, each student tried to retrace (or reinvent) the design process that led (or could have led) the author to the project, focusing on specific forms, relationships, prescriptions and conditions. Producing a sequence of exercises and starting with the scaled redrawing of plans, elevations and sections, and ending with diagrams and collages, the tenacious freshmen measured themselves against concepts –not immediately clear in their first year of study– such as image, theme, type and character. The different pieces of the story, constructed during the semester, were assembled into a single poster board that was supposed to render, in coherent form, the entire process. While the results from the purely aesthetic point of view of the image were more or less valid, they were certainly effective in building an initial awareness of content, form and communication of the architecture project (fig. 12). A test of this acquired capacity was the repetition of the same process by students, at the end of the parallel Composition lab, for their own (first) project. In the absolute priority of the whole narrative and the importance of the pieces as a whole, the diagram was confirmed as the most effective 'abstract machine' for thinking architecture.

Credits

I would like to thank prof.ssa Paola Scala, who strongly believed in the value of the proposed courses on project storytelling, and arch. Francesca Coppolino for sharing teaching experiences.

Notes

[1] The first system (lines) is the circulation system in which two main axes, straight and orthogonal to each other, underlined by undulating roofs, intersect and join the extreme points of access to the park. There is also the *Promenade Cinématique*, a winding pathway, organised through numerous episodes, consecutive like the sequences of a film. The second system (surfaces) is made up of large expanses, intended as lawns, defined in their form as result spaces obtained from the intersection of the different paths. Finally, the *folies* (points), a point system of objects placed at the intersection of an orthogonal grid that overlap indifferently on the site. These small sculpture-buildings in terms of language make explicit reference to constructivist architecture. Despite the designer's assertions on the absence of hierarchical order between the systems of points, lines and surfaces, considered in composition as equivalent to each other, it appears in the realisation that the system of *folies* is, together with the covered paths (the lines), an essential element in the spatial definition of the places.

[2] The diagram is just one of the tools used by Bjarke Ingels to describe his buildings. Ingels is a skilful and histrionic communicator and has certainly contributed to radically changing the ways and languages with which architectural design is narrated. *Yes Is More: An Archicomic on Architectural Evolution* (2010) is his most famous publication, conceived as BIG's manifesto. It is not a traditional monograph, but an exuberant "archicomic", a neologism coined ad hoc by the author.

[3] <https://www.stefanoboeriarchitetti.net/vertical-foresting/> (accessed on July 24, 2023).

[4] <https://oma.eu/projects/seattle-central-library> (accessed on July 24, 2023).

Author

Maria Pia Amore, Department of Architecture, Università degli Studi di Napoli Federico II, mariapia.amore@unina.it

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AI-aided Design? Text-to-image Processes for Architectural Design

Matteo Flavio Mancini, Sofia Menconero

Abstract

Artificial Intelligence (AI) is marking a turning point in many aspects of human life, and it is appropriate to question its potential use in the architectural representation processes.
This contribution provides a brief overview of the recent past of AI technologies to explain how they work, a snapshot of the current state of the art from text-to-image processes to image-to-3D processes, mainly focusing on the StableDiffusion *platform. It also offers an overview of the latest studies in the field of architectural design. The subsequent experimentation becomes an opportunity to showcase the potential of AI in the co-creation process and the ability to simulate various graphic techniques, up to photorealistic visualization. On the other hand, it presents the limitations that, at the current stage of development, sometimes invalidate the results of text-to-image processes concerning the scientific aspects of representation.*
The conclusions reflect on the differences between human and artificial intelligence, the theme of shared authorship between humans and machines, and their consequences for architectural design.

Keywords: artificial intelligence, text-to-image, design drawing, authorship, stablediffusion.

Introduction

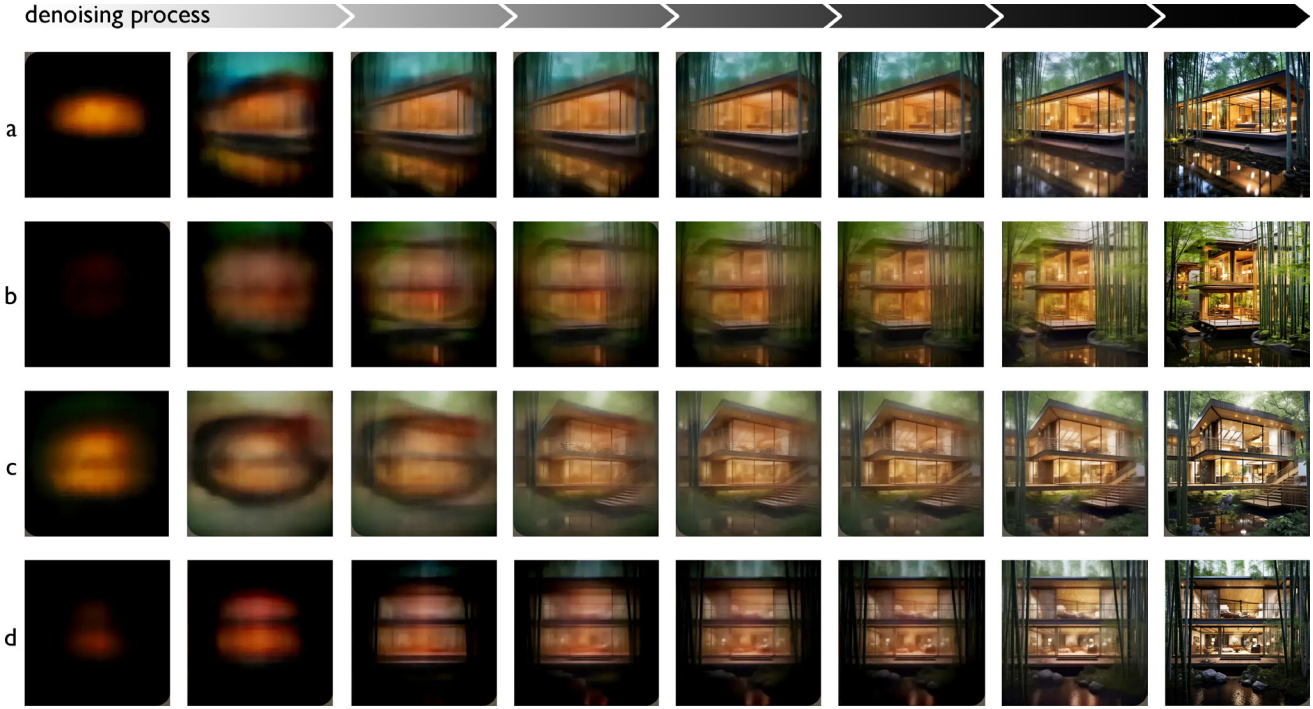
Architecture and architectural drawing have undergone significant developments over the past thirty years. The *first digital turn* [Carpo 2013] introduced digital representation in the 1990s, while the *second digital turn* [Carpo 2017] began with the spread of algorithms and big data in the 2010s. Ten years later, we are witnessing another potential turning point due to the sudden development and diffusion of Artificial Intelligence (AI) tools, which are already in use in major architectural firms such as Coop Himmelb(l)au [Prix et al. 2022], Zaha Hadid Architects [Wallish 2022], and Foster + Partners [Tsigkari et al. 2021].
One branch of AI, based on text-to-image processes, offers easily accessible solutions dedicated to image creation. This machine-learning model uses descriptive natural language as input and produces an image based on the provided description. The results obtained from these platforms are remarkable in matching the entered textual prompts and the flexibility of graphic techniques they can (re)produce.
Starting from the assumption that, at the current state, these AIs have no creative consciousness or actual ability to understand compositional and projective rules or the spatiality represented in the images, it is still worth exploring their potential use in architectural representation processes. With this goal in mind and considering the intrinsic characteristics of this technology, which will be explained in the follow-

ing paragraphs, the experimentation of text-to-image AI through the open-source platform *StableDiffusion* is proposed to create perspective images capable of contributing to the preliminary stages of project conception.

(Recent) past and present of AI-based image generation

Generative AI systems in the field of architecture and design are rapidly advancing. A pivotal moment in image generation research was marked by the invention of Generative Adversarial Networks (GANs) in 2014 [Goodfellow et al. 2014]. This represents a deep learning architecture where two opposing neural networks, a generator and a discriminator, interact iteratively during training to reach a point where the discriminator can no longer differentiate between synthetic images produced by the generator and real images used as training data. In 2016, a GAN architecture capable of generating plausible images from detailed textual descriptions was developed [Reed et al. 2016], effectively initiating the AI text-to-image system. Another significant advancement came with a more efficient natural language processing-based learning method known as CLIP (Contrastive Language-Image Pre-training) [Radford et al. 2021]. This image classification model identifies objects by learning from text associated with an image, rather than relying on manually assigned labels, and it was trained on 400 million image-text pairs extracted from the web. CLIP models can estimate the conformity of a generated image to a textual prompt [Colton et al. 2021].

Fig. 1. Denoising process during the generation of four variants (a, b, c, d) in Midjourney *through the prompt: a modern Japanese house in a bamboo forest in spring (authors' processing).*



An example of this pairing is the image generation system called *VQGAN-CLIP*, which utilizes an even more powerful GAN neural network. The significant contributions of the *VQGAN-CLIP* architecture include visual quality in both image generation and manipulation, semantic fidelity between text and the generated image, efficiency due to not requiring additional training beyond pre-trained models, and the value of open development and scientific progress [Crowson et al. 2022, p. 2]. Subsequently, GAN-based systems were replaced by diffusion models, which are probabilistic machine learning models trained to remove noise previously introduced from images by learning to reverse the diffusion process [Dhariwal et al. 2021]. The training of these models enables them to utilize denoising methods to synthesize new noise-free images from random inputs (fig. 1).
Some applications of AI in the field of architecture and design include:

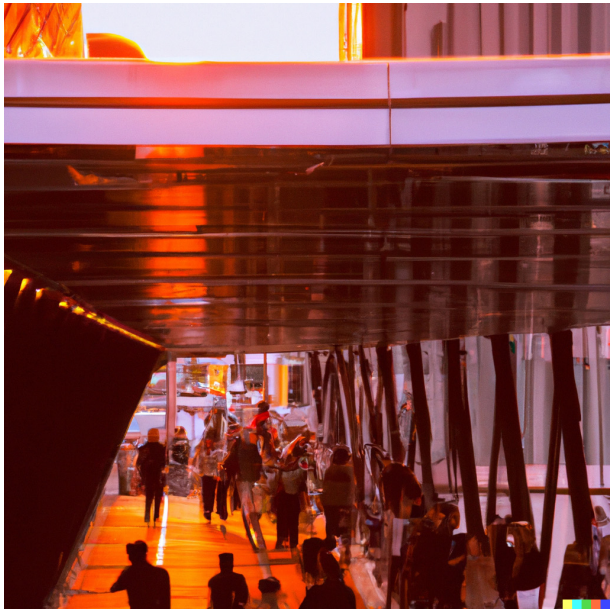
- Text-to-image: the most common operation involves generating images based on textual descriptions, often combined with other functionalities.
- Image-to-image: transforming an input image to match the characteristics of a target image. This can be used for style transfer, object manipulation (inpainting), converting black and white images to color, or increasing image resolution (upscaling).
- Text or image-to-video: creating videos from textual prompts (e.g., *Make-a-Video* [Singer et al. 2022] or *CogVideo* [Hong et al. 2022]) or generating animations by editing images generated through image-to-image (e.g., *Deforum*), producing effects similar to stop-motion videos.
- Text or image-to-3D: generating 3D models from textual prompts (e.g., *Point-E* for point clouds [Nichol et al. 2022] or *Shape-E* for textured meshes [Jun et al. 2023]), or generating 3D models from images (e.g., *Kaedim*).

The recent incredible proliferation of AI text-to-image capabilities can be attributed to the activation of user-friendly platforms, even for non-expert users, such as *DALL-E 2*, *Midjourney*, and *StableDiffusion*.

The main platforms for text-to-image AI

DALL-E is the first of the three platforms introduced in January 2021 (the current version 2 was released in April 2022) by *OpenAI* [Ramesh et al. 2021], the same developers of *ChatGPT*. The platform, available for online subscription, offers four functions: the generation of realistic and artistic images from a textual description that can combine concepts, attributes, and styles (fig. 2); outpainting, which involves extending the image beyond its original boundaries by creating a new composition; inpainting, which allows the modification of image portions by adding or removing objects through a textual description while maintaining consistency with the rest of the scene; and the generation of variations inspired by an input image.
Midjourney, released on July 12, 2022, has now reached version 5.2 with significant improvements in terms of adherence to prompts and photorealism compared to its initial release (fig. 3). After a year, it boasts over 15 million users [1]. Like *DALL-E*, it is available for online subscription. The three main generative activities on *Midjourney* are: generating an image from a textual prompt, generating a description from an image, and

Fig. 2. Image generated with DALL-E 2 *through the prompt: a modern building on a crowded street at sunset (authors' processing).*



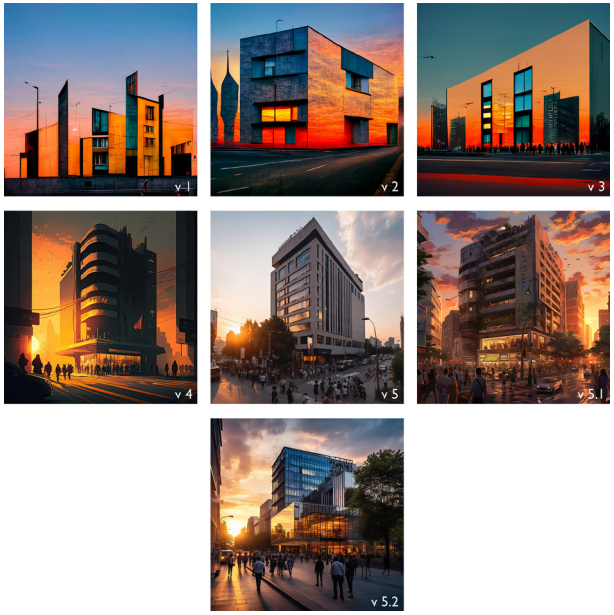


Fig. 3. Comparison between different images generated from the same text (prompt: a modern building on a crowded street at sunset) for different versions of Midjourney *(authors' processing).*

Fig. 4. Comparison between different images generated from the same text (prompt: a modern building on a crowded street at sunset) for different versions of StableDiffusion *(authors' processing).*

synthesizing an image from two to five input images. *Midjourney* (like *StableDiffusion*) also allows the use of a negative prompt in case specific elements are not desired in the generated image.
StableDiffusion, released in August 2022, is the only one among the three platforms to be open-source and is based on a diffusion model called *latent diffusion model* [Rombach et al. 2022]. The current beta XL version is only available online through a subscription, while previous versions can be installed locally for free. *StableDiffusion* supports image generation using a text prompt describing the elements to include or exclude from the output (fig. 4), inpainting and outpainting, image-to-image generation, and upscaling. It is also possible to add extensions to *StableDiffusion*, such as *ControlNet*, which generates variations of an input image through textual descriptions, and *Deforum*, which, through the image-to-image function, generates a series of images with minor transformations and stitches them together to create a video.
The biggest advantage of *StableDiffusion* over the other platforms is that end-users can implement additional training (fine-tuning) to optimize generation outputs to specific use cases. For example, in architectural studies where AI has become part of the creative process, the neural network is trained with targeted images from the studio's design repertoire to achieve results more in line with architectural and graphic language.
Therefore, unlike the previous platforms, *StableDiffusion* allows greater freedom in terms of customization of the generative process, which is why it was chosen for further experimentation, coupled with the *ControlNet* extension [Zhang et al. 2023], which improves output control. The latter is a neural network structure designed to handle diffusion models by incorporating additional conditions: by manipulating the input conditions of the blocks, it further controls the overall

behavior of an entire neural network. *ControlNet* operates based on an input image and a textual description, allowing the generation of images that conform compositionally to the input but also follow the specified description. The data processing involves, first and foremost, the generation of a map based on the input image (called the annotation or preprocessing phase), which is used by the network to generate variants with the described textual characteristics (fig. 5).

Back and forward in latent space: between training and generation in the *StableDiffusion* model

To properly approach the experiments that will follow in the next paragraphs, it is essential to try to understand not so much the strictly technical-computer aspects but the processes carried out by this type of AI, specifically *StableDiffusion*, in the two distinct moments of training and generation, as both appropriate use and critical interpretation of this technology depend on them.
Diffusion models borrow from thermodynamics the concept of diffusion, which is the phenomenon whereby particles of a fluid move randomly within another fluid with a different concentration until they reach a new equilibrium condition. Similarly, AI-generated images during generation progressively emerge from the chaos of digital noise. The principle of diffusion is used both in the training phase (forward diffusion) and in the generation phase (reverse diffusion). In *StableDiffusion*, both processes occur in the latent space, a numerical/informational space in which images are translated into tensors (multi-dimensional matrices) to work on a compressed version of them, lighter than the initial pixel space of the images. Texts describing the images also undergo a similar translation and compression. The analogy between the latent representations of texts and images is important because it helps understand that AIs do not store and process collections of syllables, words, or portions of images but operate on abstract numerical representations of image features, represented objects, possible environmental situations, and various techniques and styles. The

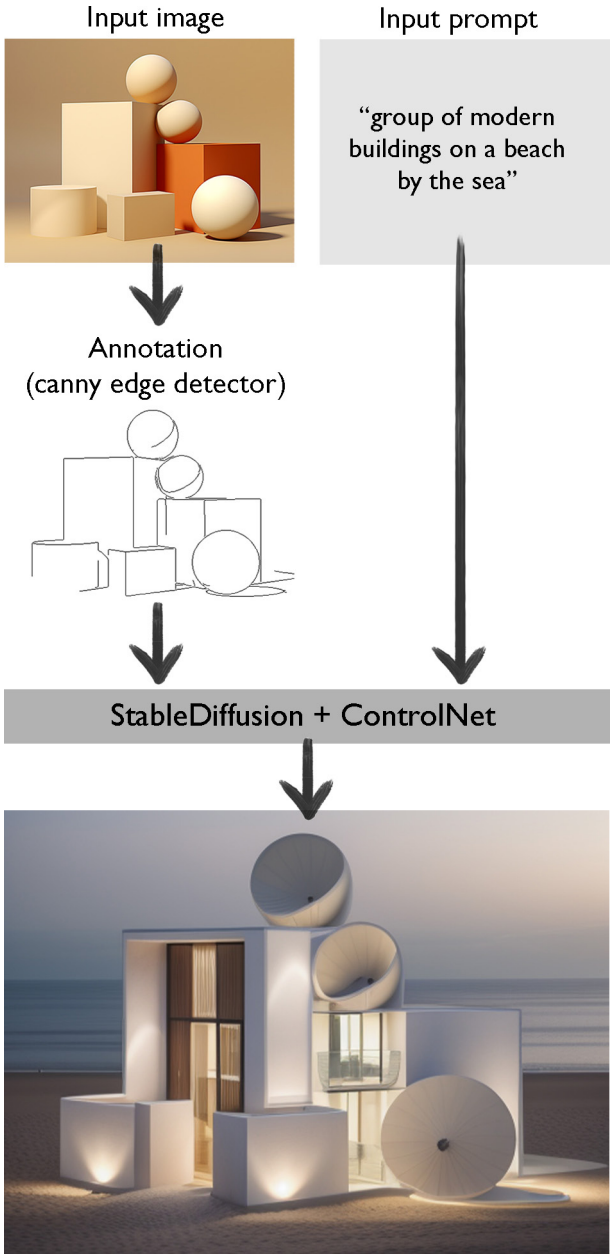
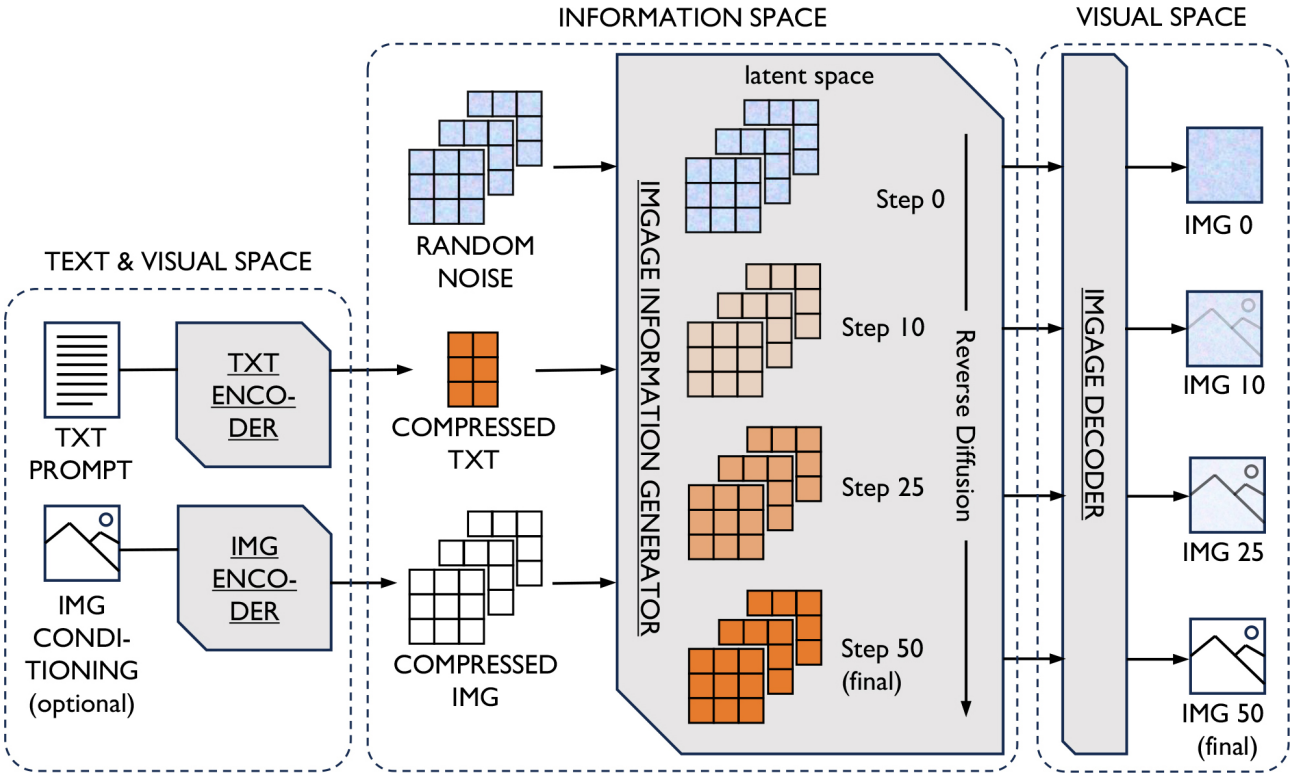


Fig. 5. Diagram of image generation through StableDiffusion *with ControlNet conditioning (canny edge) (authors' processing).*

latent space can be imagined as the place where the AI stores, during training, and retrieves, during generation, its 'knowledge.'
The training of these AIs is not progressive over time but occurs before publication, so their 'knowledge' is static and periodically updated with the progression of versions. For example, *StableDiffusion* is trained on the open-access dataset LAION 5B, composed of 5 billion image-caption pairs whose content is explorable, starting from the input of a textual prompt, through a dedicated portal [2]. Consulting the training dataset allows one to get an idea of the correspondences between terms and images and, therefore, what can be expected from the results of the processing: a search that does not return consistent results indicates that images corresponding to the expectations for that textual input cannot be generated. During training, images from the database are processed by introducing random noise patterns of different intensities. The images thus processed, together with the corresponding captions, are subjected to the AI to train it to identify the type of pattern adopted, the amount of noise introduced and to remove both to improve the quality of the images. In this way, through forward diffusion, the AI simultaneously learns how to obtain noise-free images and the correspondences between images and texts.
What is learned is used by *StableDiffusion* to develop a generative process that starts and ends in a space where data (texts and images) are suitable for human

Fig. 6. Diagram of the image generation process through the diffusion model adopted by StableDiffusion *(authors' processing).*



perception, passes through a purely informational space (latent space) where data are represented by tokens (texts) and tensors (images).
The generative process can be divided into three fundamental blocks (fig. 6). The first involves the compression and transformation into numerical information through encoders (specifically trained neural networks) of the input data entered to condition image generation. In *StableDiffusion*, thanks to the *ControlNet* extension, textual inputs can be supplemented with optional graphical conditions. In the second block, through the reverse diffusion process, the processing of the inputs in relation to known knowledge takes place. This iterative process goes through several denoising steps to refine the correspondence between the input entered and the generated image. At this stage, processing occurs at the level of numerical information, and there is no graphic image processing. The latter occurs in the third block, where numerical representations are translated from a neural network with a decoding function into visually perceptible images [Rombach et al. 2022].

Related studies on AI applied to architectural design

Some studies related to AI in the field of architectural design are focused on highlighting the potential and limitations of the technology. In most cases, the potential is recognized as a support in the creative process [Jaruga-Rozdolska 2022; Paananen et al. 2023]. Among other potential uses, the ability to imagine abstract forms, reimagine biomimetic architecture, revisit traditional architecture, and visualize photorealistic advancements starting from architectural sketches are mentioned. The identified limitations are related to the possibility of control and customization of processes, insufficient consideration of structural feasibility aspects, and potential stylistic-architectural inconsistency in the generated results [Hegazy et al. 2023]. Case studies related to architectural projects where AI has been applied include the ideation phase, the generation of sketches with specific graphic styles, the addition of people and objects to existing images, the combination of various parts of images into a coherent composition, the variation of an initial image, the change of the graphic style of an existing image, floor plan design, exterior and interior design, texture creation, and urban planning [Ploenning et al. 2022; Yildirim 2022].
One educational study involves integrating AI techniques with traditional techniques in a first-year university design representation course, where the authors observed an improvement in students' interpretative and compositional abilities [Tong et al. 2023]. Students were asked to create a composition of solids and draw hand-drawn orthogonal projections and isometric axonometry. Then, they were required to generate a series of images using *Midjourney* with specific keywords. Finally, they were instructed to combine the two previous productions using various techniques.

Potential of text-to-image AI for architectural drawing

To experiment with the potential contribution of AI in the preliminary phase of the project, the moment when representation contributes to ideation and prefiguration, it was decided to work on idea definition and visualization.
Three different graphic inputs were hypothesized: two external perspective views of a three-dimensional volumetric model and a sketch of an interior, intentionally lacking characterizations except for the minimum necessary for spatial definition and framing. These graphic inputs, thanks to the *ControlNet* extension, are entrusted with incorporating the general morphological setting of the project into the generative process, while textual inputs are used to describe the desired graphic techniques and any architectural features related to materials, context, and additional stylistic characteristics that one wishes to include. The results of these initial experiments demonstrate the remarkable flexibility of AI in (re)creating different graphic techniques, ranging from pencil drawings to colored pencils to watercolors, with a significant ability to integrate both natural and artificial context elements. Simultaneously, the AI's addition of detailed elements such as textures, perforations, and materials contributes to the advancement of ideation in a process where it can be hypothesized that some of these elements may actually be inserted into the

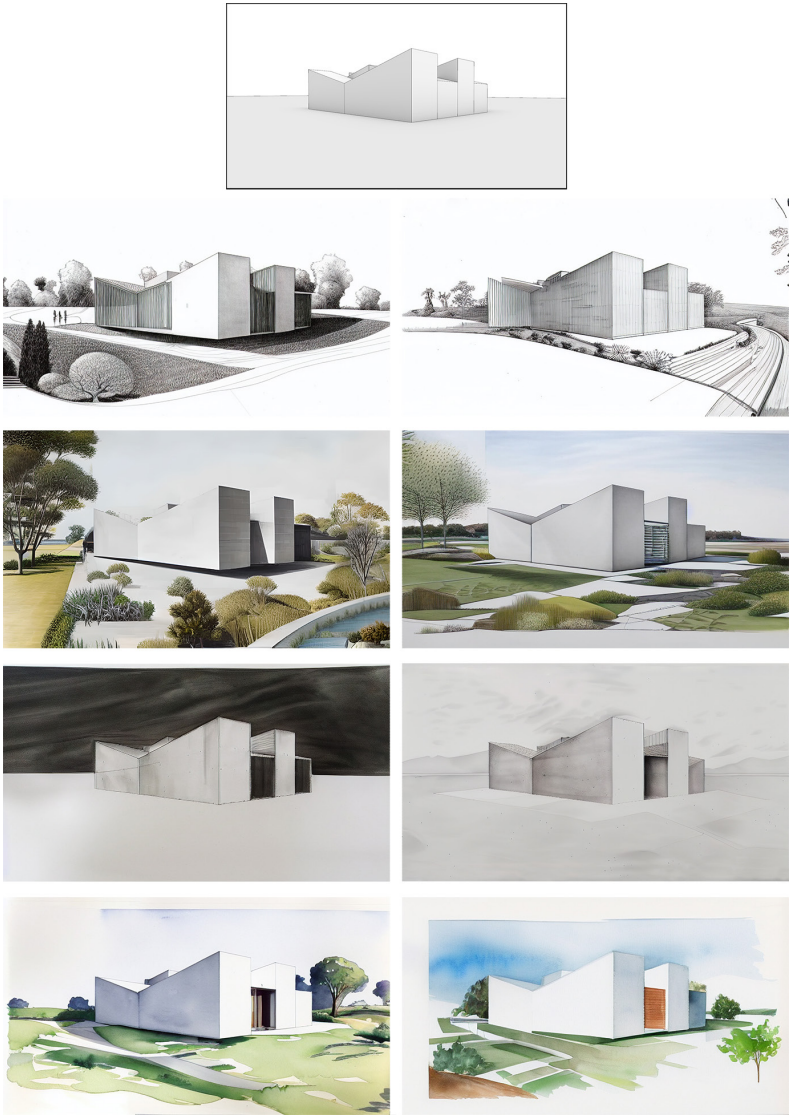


Fig. 7. Images generated with StableDiffusion *to simulate various graphic techniques. From top to bottom: pencil, colored pencils, monochromatic watercolor, and colored watercolor. Prompt: linear, exterior view, contemporary architecture, highly detailed architecture, large windows, concrete, architectural drawings, technical drawings, [desired graphic technique], line drawings, working drawings, architectural sketches, conceptual style, abstract (authors' processing).*

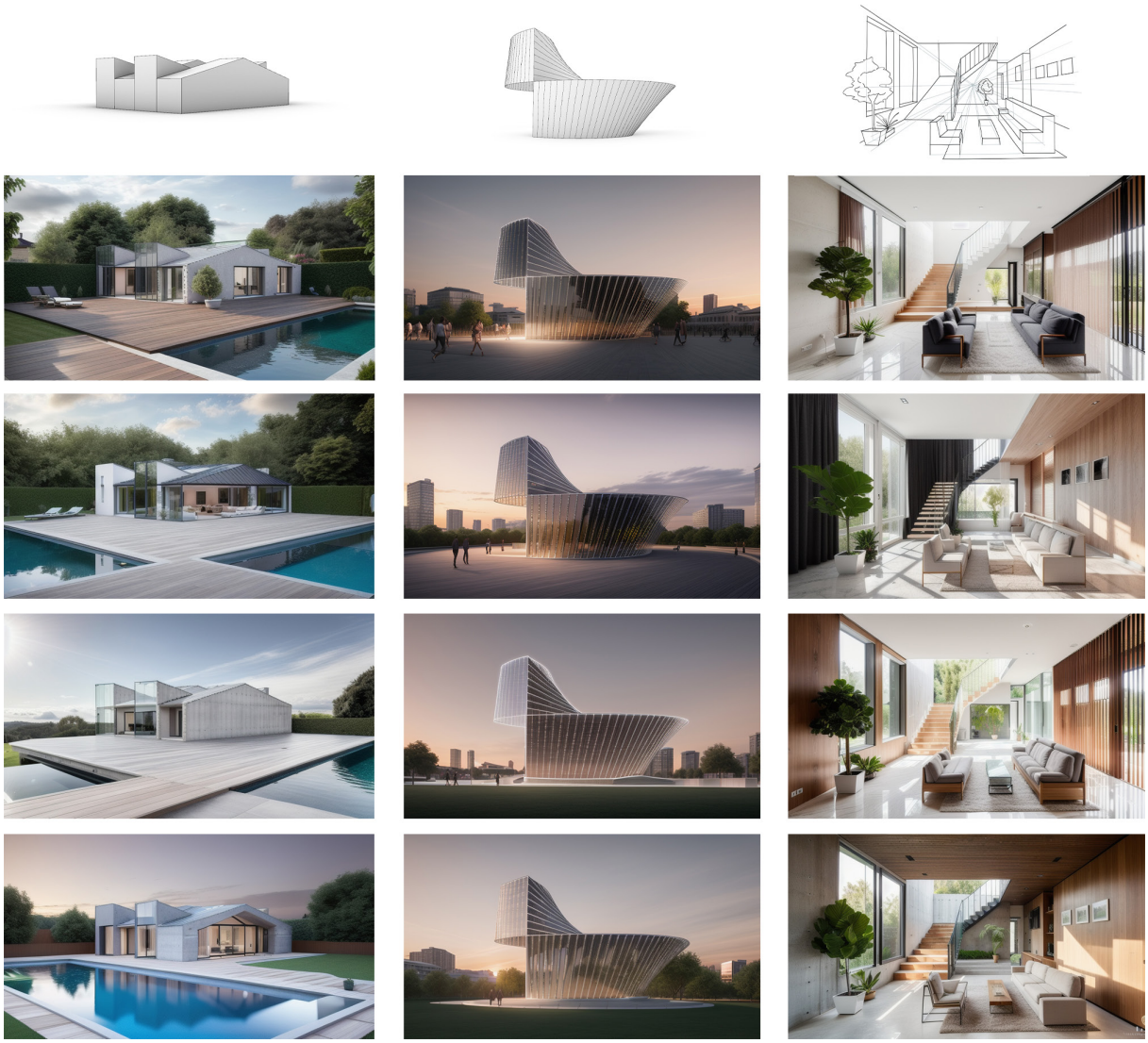


Fig. 8. Images generated with StableDiffusion *for photorealistic visualizations. On the left, exterior views, prompt: exterior home view, concrete walls and roof, large glass windows, small rectangular swimming pool, garden, garden furniture, clouds. In the center, exterior views with curved surfaces, prompt: a pavilion in a contemporary architecture style, covered with reflective panels, in a square with people and trees. On the right, interior views, prompt: home interior view, modern architecture, large glass windows with curtains, timber framing, wood flooring, concrete ceiling, steel staircase, large sofa with pillows, armchair, coffee table with flowerpot, carpet, plants, lamp, minimalist style furniture, sunlight from windows, daylight (authors' processing).*

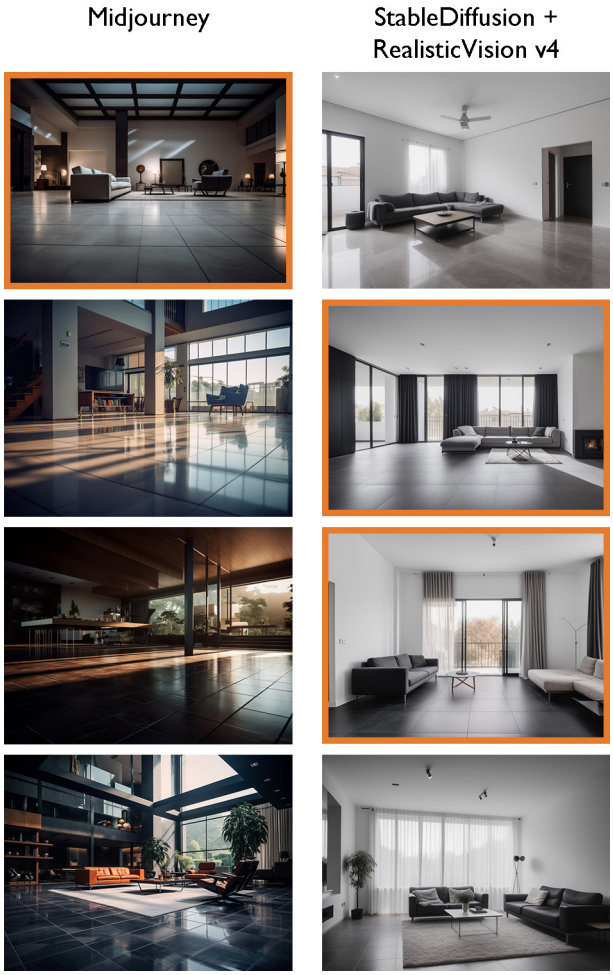


Fig. 9. Images generated through the prompt: central perspective, home interior view, floor with regular dark square tiles, modern architecture, minimalist style furniture, daylight (authors' processing).

ongoing project in a repeated human-machine exchange (fig. 7).
The potential contribution in terms of idea definition through the fast generation of variations is more evident when requesting the AI to produce photorealistic images. In this case, the ability to propose variations based on the textual prompt is more recognizable. Experiments conducted on external views demonstrate the variety of materials and interpretations of the simple volumetric schemes provided as input, as well as the skill in creating contextual settings (fig. 8). Similarly, experiments based on a digital sketch of an interior environment highlight the ability to combine colors and materials but also the inclination to add elements such as curtains and floor elevations. Minor elements such as light points and furnishings also appear. The distribution of these integrations generally aligns with the overall setting.

Limitations of text-to-image AI in representation

The limitations investigated in this paragraph [3] particularly concern the aspect of architectural representation (perspective, reflections, lighting/shadows).
At present, AI has no awareness of the projective rules underlying correct perspective construction. While this assertion could be deduced based on the theoretical principles behind the technology, it is also experimentally confirmed. By adding a descriptive part about the representation method (central perspective) [4] in the textual prompt, we arrive at results where central perspective is present only in some of the generated images (fig. 9). When analyzing the perspective setting of two of the previous generated images, it is observed that the vanishing lines of the square floor tiles (horizontal lines perpendicular to the picture plane) do not converge to a unique point (fig. 10). Additionally, by tracing diagonals from the two visible ends of the square tiles in the images, it can be noted that the intermediate intersections are not perfectly aligned with the diagonals. Therefore, the perspectives are perceptually effective but not correct as projections. The results of the perspective experimentation suggest that the AI has not been trained to correctly recognize different representation methods.

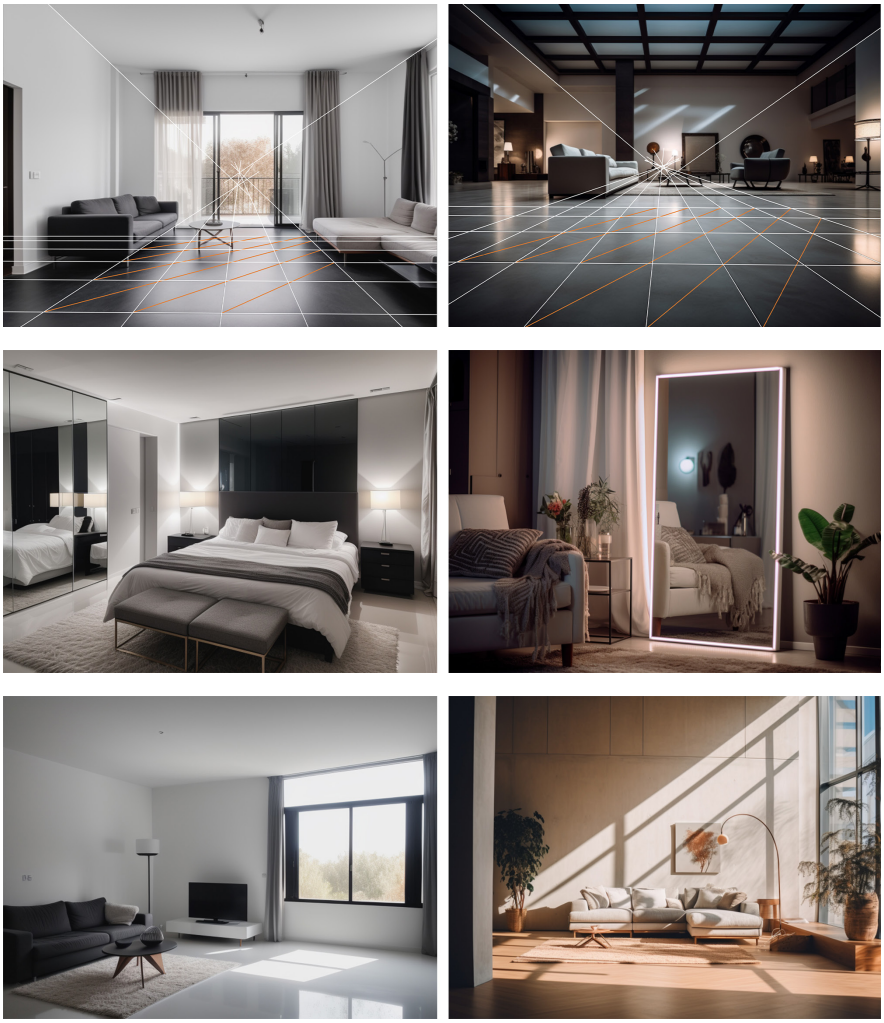


Fig. 10. Perspective analysis of two of the previous images generated with StableDiffusion *on the left and* Midjourney *on the right (authors' processing).*

Fig. 11. Images generated with StableDiffusion *on the left and* Midjourney *on the right through the prompt: home interior view, bedroom, modern architecture, minimalist style furniture, mirror with reflections (authors' processing).*

Fig. 12. Images generated with StableDiffusion *on the left and* Midjourney *on the right through the prompt: home interior view, modern architecture, minimalist style furniture, dramatic lighting and shadows (authors' processing).*

The analysis of elements reflected in mirrors revealed inconsistencies in some solutions, highlighting the spatial unawareness of AI. In particular, the mirror reflection lacks some elements present in the scene (such as the blanket on the bed in figure 11 on the left) or shows these elements in an inconsistent position (the same blanket in figure 11 on the right, which in the scene is draped over the sofa armrest, while in the reflection, it is spread out on the other side).
The study of shadows further confirms that the construction of images generated by AI lacks awareness of the three-dimensional space it represents. Very often, the light rays entering from windows produce shadows that are not consistent with the window fixtures (fig. 12).

Conclusions

The analysis of how text-to-image AIs function, the review of studies on the subject, and the experiments conducted allow us to outline initial reflections on AIs' possible role in architectural project representation.
The experiments highlight both potentials and weaknesses. Among the strengths, one can certainly include the high generation speed, which allows for high-quality visual images to be produced in just a few seconds, the flexibility of (re)producing graphic techniques, and the coherence with the provided prompts. These potentials make it possible for rapid shifts back and forth in the design process, from the initial ideation phase to the advanced visualization of the idea. Among the weaknesses, in addition to the previously discussed limitations in terms of representation accuracy, there are concerns raised by multiple parties regarding the legitimacy of the copyright of the methods used to create the training databases [5] and the presence of potential cultural biases induced in the AIs. For instance, it is worth noting how the squares proposed in figure 8 reflect North American models, diverging from the European conception of public space. Furthermore, this AI type is unsuitable for creating technical project documents. There is a substantial conceptual difference between artificial intelligence and human intelligence, stemming from the training and generation processes of AIs. The latter is interpolative intelligence, highly efficient at interpolating existing values within the training database and generating a value that is not present but is never entirely alien to it. They cannot extrapolate new values, not only those not present but entirely foreign to the database. This second form of intelligence is typically human [Del Campo 2022a]. The potential of human-AI co-creation in the ideation phase seems to lie precisely in the collaboration between two different types of intelligences, in which the interpolative one, initiated and guided by human inputs, proposes "Familiar but Strange" images [Del Campo 2022b, p. 28] from which human intelligence can draw inspiration for developing innovative ideas. This hypothesis renews the issue of authorship that algorithmic design/representation has already raised, leading to the idea that shared authorship among multiple agents (human or artificial) is inherent in the progress of the digital revolution in architecture. In this context, human authorship should still be understood as 'primary' because it plays the role of creating general rules, the Deleuzian 'objectiles', from which 'secondary' artificial authorships will derive individual forms, the 'objects' [Carpo 2011, p. 40, 123-128]. The transition from the architect as the designer of individual forms to that of a designer of general rules is already underway and has expanded the spectrum of adopted languages. Starting from the *second digital turn*, architects have learned to compose scripts and algorithms alongside graphic representation, and now, with the advent of AI based on prompts, they are called upon to integrate written natural language into their design methods.
This latest challenge posed by the digital revolution should stimulate reflection on representation languages in a broader sense and their teaching, which is one of the possible fields of interdisciplinary research in the present and near future of architectural drawing.

Credits

The authors have equally shared all phases of the research. For the purpose of drafting the article: M.F.M. wrote the *Introduction*, *Back and Forward in Latent Space*, *Potential*, and *Conclusions*; S.M. wrote *(Recent) Past and Present*, *The Main Platforms*, *Related Studies*, and *Limitations*.

Notes

[1] Data as of July 2023, source <https://discord.com/servers> (accessed 24 July 2023).

[2] <https://rom1504.github.io/clip-retrieval/?back=https%3A%2F%2Fknn.laion.ai&index=laion5B-H-14&useMclip=false> (accessed 24 July 2023).

[3] The experimentation was conducted on two AI platforms: *Midjourney* and *StableDiffusion*, associated with an additional training model called *RealisticVision* v. 4.

[4] The prompt also included a specification regarding the presence of a floor composed of square tiles to enable subsequent perspective analysis.

[5] <https://www.egair.eu/> (accessed 24 July 2023).

Authors

Matteo Flavio Mancini, Department of Architecture, Roma Tre University, matteoflavio.mancini@uniroma3.it
Sofia Menconero, Department of History, Representation and Restoration of Architecture, Sapienza University of Rome, sofia.menconero@uniroma1.it

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Instagrammable Architectural Drawing?

Michele Valentino

Abstract

Although the first social network dates back to the late 1970s, the real 'Big Bang' occurred twenty years ago, when 2003 Mark Zuckerberg led the birth of Facebook, still one of the most popular social networks today. However, even more critical to the discussion, including the interests of our community of image designers and researchers, is the emergence of social networks such as Pinterest *and* Instagram *in 2010. The interest in these platforms lies in their way of sharing different forms of visuality, so much so that the digital images shared on these socials have become sources of inspiration for new generations, a kind of visual library, albeit a questionable one, to draw on for graphic production as well. Even architectural drawing has not been exempt from this practice, making architectural images more accessible to a broader audience. Today, it is common practice for architects to share their designs and drawings on these platforms, allowing people from different parts of the world to see, appreciate and even 'consume' their work. In this regard, through the reconnaissance and comparative analysis of some social pages and profiles of architect-draftsman who share and promote architectural drawings, the essay aims to investigate the plurality and complexity of formal aspects of architectural drawing in the age of social networks in order to identify its limits, expressive potential, and underlying or explicit cultural prodromes. The primary intent of the essay is to bring more attention to a now widespread and established practice that calls us into question as a academic community.*

Keywords: architectural drawing, communication, social networking, Instagram.

Introduction

The transformation of architectural drawings from simple functional tools to "aesthetic objects" [Dufrenne 1969] with cultural and historical value has been a significant process that has profoundly changed the thinking about architecture and its practice. Before the 1970s, architectural drawings were primarily considered a means of making buildings. This epistemological and cultural transformation was fostered by a network of galleries, collectors and cultural institutions that helped to value them as autonomous works of art and important cultural artefacts. However, as the boundaries of architecture changed in the late 20th century, attention to drawings began to change. Exhibitions and expositions highlighting drawings as signifying objects independent of the buildings helped trigger this new perception [Pelkonen 2018; Kauffman 2019]. Moreover, the founding of architectural museums dedicated to collecting and preserving drawings further enshrined the new status of these objects. Drawings became witnesses to the history and thought of architecture and acquired an essential role in academic, scientific, and artistic debate [Cervellini 2013]. The influence of this change has been significant both for architecture itself and for its history. Architectural drawings once considered mere tools, now influence discussions and theoretical reflections within different disciplines. This new perception has led to an increased focus on drawings' aesthetics and intrinsic meaning, going beyond their simple functional purpose.

Moreover, there is a new transformation of these objects being displayed, exhibited and shared in a totally new way. The advent of digital tools and technologies has not only enriched the possibilities of representing and displaying architecture. However, it has fundamentally changed the communication of architecture through new 'platforms' for sharing them.
Although the first social network –*Usenet*– dates back to the late 1970s, its spread was slow and gradual. So much so that it was not until the early years of the 21st century that there was a natural expansion due to the more significant and rapid accessibility of the network and the gradual spread of portable personal devices such as smartphones and tablets. However, probably the real 'Big Bang' of social networking occurred two decades ago, when in 2003, Mark Zuckerberg, together with some of his colleagues, developed an interactive photo album of Harvard students that led to the birth of Facebook, still one of the most popular social networks today.
However, even more critical for discussion, including concerning the interests of our community of image designers and researchers, is the emergence 2010 of social networks such as *Pinterest* and *Instagram*. The interest in these platforms lies in their way of sharing different forms of visuality, so much so that the digital images shared on these socials have become sources of inspiration for new generations, a kind of visual library, albeit a questionable one, to draw on for graphic production as well.
Even architectural drawings has not been exempt from this practice, making architectural images more accessible to a broader audience. Today, it is common practice for architects to share their designs and drawings on these platforms, allowing people from different parts of the world to see, appreciate and even 'consume' their work. In fact, if one looks at some of the metadata that allows for thematic aggregation of social network content, one can observe a wide use of these as containers and means for the dissemination of architectural images.
For example, one can see that architecture-related hashtags are widely employed by querying *Instagram* through some keywords. The hashtag #architecture has 182,296,546 posts, the one related to architecture photos #architecturephotography gathers 24,594,075 posts, and the one #architecturaldrawing 542,050 [1]. Although significantly smaller, the metadata related to architectural drawings highlights a wide use of this platform to convey content, albeit in its heterogeneity, assimilated to our discipline.

In recent years, several authors [Quici 2018; Ghosh 2019; Izadpanah 2021; Gutiérrez 2022; Shaikh 2023] have paid attention to this practice involving the graphic production of architects, identifying its prerogatives, practices, potentialities and criticalities.
Of particular interest is the position of Perry Kulper [2023], who, in his essay *Instagram as Interface: The New Picture Plane*, identifies in the social network a new way of seeing and interacting with images of architecture while tracing this practice back to the traditional concept of the 'plane,' that is, the two-dimensional surface on which an image is produced and projected.

Digital dimension

However, this shift toward a digital and shared dimension of architectural drawings, which has become established in recent years, requires a critical reinterpretation of the underlying artistic and scientific thought, but above all, a careful analysis of the operative action of drawing as it manifests itself in its object dimension.
Just as Walter Benjamin already pointed out in his essay *The Work of Art in the Age of its Technical Reproducibility* [1936/2022], with the advent of photography and cinema, there is a substantial loss of the uniqueness of the work of art, which has entailed a radical transformation of the way these are perceived, produced, distributed and thus enjoyed. While there is a 'democratization' that makes them accessible to a broad audience, there is also a 'loss of authenticity' of the same that also implies a 'decay of experience' that can only occur with direct enjoyment of the original work of art.
Precisely today, in the midst of the digital age and immediate access to art through the Internet and social media, the reflections of the German philosopher and critic assume significant relevance for the reinterpretation of certain phenomena. Images that until a century ago existed only in the 'real world', albeit in different forms and exhibitions, today also manifest themselves in their digital dimension, produced or reproduced on electronic devices or the web. This dimension implies a different experience in observing a digital image than its physical counterpart. The observer's interpretation and experience are strongly conditioned by the environment in which it is exposed, which, in the case of the images in question, is subordinated to the limitations and potential of the device used. Digital production and

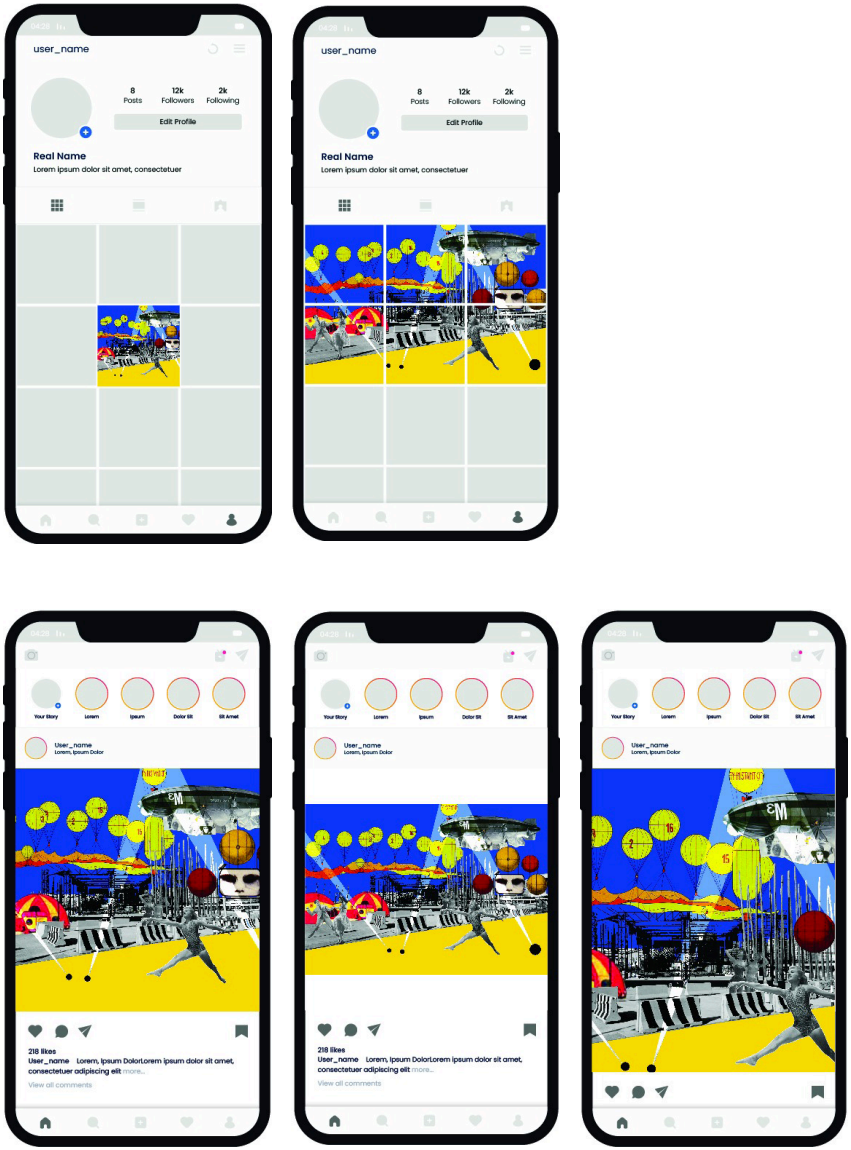


Fig. 1. Display the same image in the various modes with the relative standard sizes allowed by Instagram (graphic processing by the author).

reproduction techniques, same analogue ones, have constraints related to formats and resolution that inevitably subordinate the visual experience.
For example, on *Instagram*, it is possible to see how images are displayed multiple times, ranging from viewing the profile page to temporary Stories with a maximum of sixty seconds. The profile can display a series of square format images arranged in rows of three, which, once opened, can change in format –square, horizontal or vertical– with specific sizes and resolutions [2] (fig. 1). This implies that if images are not explicitly made to be shared in this social and may be significantly larger than the size of the devices; also the need to be cropped or to rely on cropping done automatically by the software. At the same time, it is also possible to spread the image, appropriately prepared, over several windowpanes provided by the 'profile' view (feed) to make it more extensively visible. However, if viewed on a single pane, it loses its entirety and may sometimes be incomprehensible. Of course, the practice of cropping images to fit graphic layouts is common practice, especially in publishing, but if not done with reason it can be an action that distorts the very meaning of the image [Berger 2007; Falcinelli 2020].
A further issue related to the use of this social falls into what Giovanni Anceschi [1992] called "Iconogeny", that is, the quality of some works compared to others to come better in their reproduction, and which today is called "Instagrammability", a neologism that indicates precisely the ability of an image in functioning better being enjoyed in such dimensions to be shared on various social platforms.
In this regard, by reconfiguring some social pages that share and promote architectural drawings and profiles of architect-teachers, the essay identifies the plurality and complexity of aspects that make an architectural drawing more attractive, thus 'Instagrammable'. The methodology used is used to understand whether its success is related to the expressive potential of the graphic artefact or issues purely related to internal mechanisms of the social network.

Architectural Drawing and *Instagram*

The selection of profiles for analysis with more than 10,000 followers falls into three macro categories. The first of a collective nature; the second authorship that, in addition to having a graphic production, is characterized by a critical-cultural action on contemporary architectural drawing; and the third is related to emerging profiles of architect-illustrators. Three profiles were selected for the first category: KoozArch (@KoozArch - 157,528 followers), a digital magazine that explores architecture beyond the built form through critical readings of drawings; Post Digital Architecture (@postdigitalarchitecture - 50. 811 followers), which focuses on promoting the post-digital culture of architectural drawing and also has a commercial character; Drawing papers (@drawing.papers - 34,723 followers), which presents itself as a platform for sharing speculative architectural drawings with a more traditional character. For the second category, profiles were chosen that promote the culture of contemporary architectural drawing and are curated by authors who are also academically active: Bryan Cantley (@bcantl3y - 29,740 followers), an architect and professor at California State University in the Department of Visual Art, as well as the author of the volume *Speculative Coolness: Architecture, Media, the Real, and the Virtual* (2023); Daniel K. Brown (@danielkbrownarchitecture - 23,427 followers) an architect and professor at the Victoria University of Wellington at the School of Architecture, who investigates the relationship between architecture and dystopia in his academic research; Eric Wong (@ericwong_folio - 17,947 followers) an architect and illustrator who works primarily on illustration and editorial design, and professor at the University of Melbourne at the School of Design. For the third category, three profiles of illustrators who are establishing themselves as 'influencers' of architectural drawings were chosen: Saul Kim (@saul_kim_ - 119,486 followers) Korean architect famous for his Architecture Anomaly series of architectural models and images; Karina Armanda (@karinaarmanda - 11. 776 followers) an architectural illustrator based in Tokyo, known for her online courses on the use of some vector software for post-production of graphic designs; Pauline Personeni (@pa.per.narratives - 10,586 followers) an architect and illustrator who has been working as a graphic designer with *Actar Publishers* for several years.
The nine selected *Instagram* profiles were first compared through some online artificial intelligence tools that perform profile analysis using metrics and related graphs [3]. Specifically, all the profiles were analyzed by detecting users' interests following the pages, identifying the nine most liked images and the related use of hashtags, and checking for the presence of tags on the image with the most likes that leads it back to other profiles.

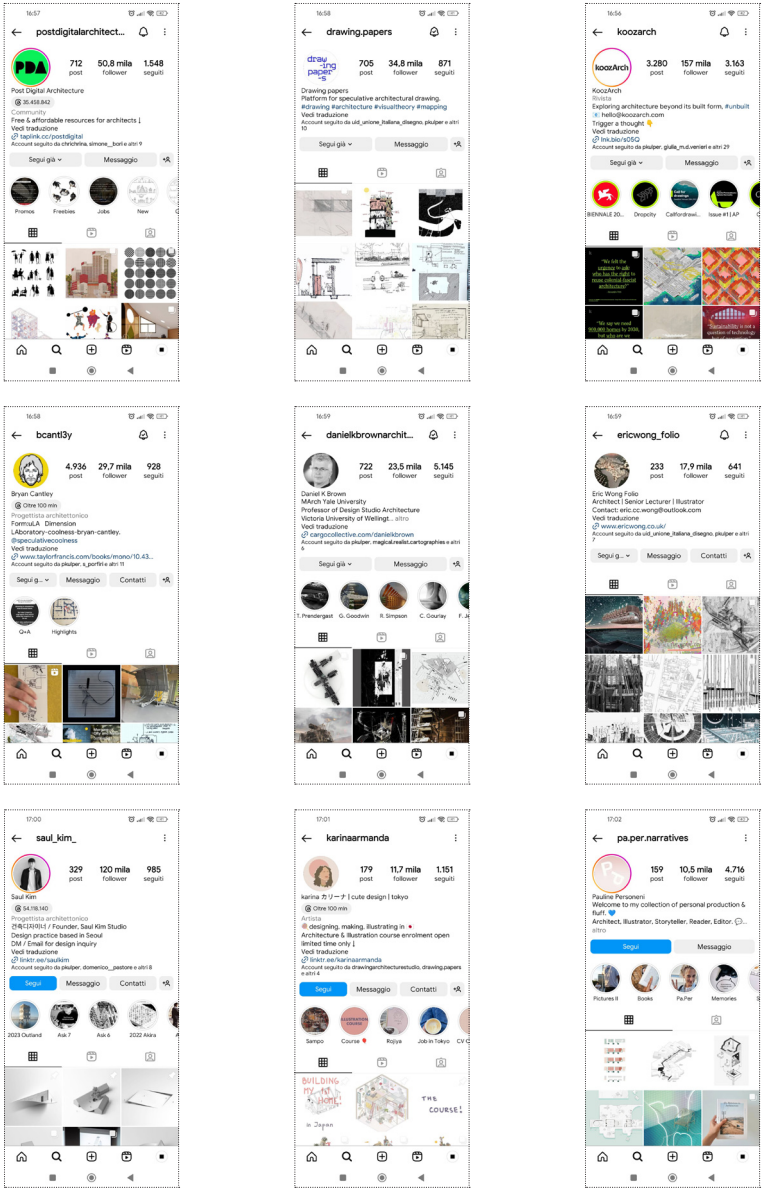


Fig. 2. The nine profiles selected for comparative analysis in feed visualization (graphic elaboration by the author).

The first interesting finding that emerges from the metric analysis relates to the main words –'art' and 'student'– in the profile descriptions of users following the different pages, which point to a prevalence of certain propensities. This suggests that users interested in the architecture drawings shared on the various Instagram profiles analyzed are students, probably of architecture, and interested in art-related fields.
For each profile and on the related nine images with the most likes, the prevalent use of hashtags was observed [4], data that detected a more or less developed ability to index pages. If in the first category –related to the profiles of KoozArch, Post Digital Architecture and Drawing papers– one notices the prevalent use of a hashtag proper to the page that helps index it and some other prevalent ones that profile more the authors or curators' interests. In the second category, some difference is noticeable. Bryan Cantley uses hashtags on only two of the nine images, and Daniel K. Brown uses the same ones for all the images. At the same time, Eric Wong chooses to adapt them to the type of image. However, in the latter case, it is interesting to note that among the nine images identified, as many as seven were processed with the help of artificial intelligence. These do not correspond to the prevalent type of illustration he typically processes. In fact, if one looks at his profile in its entirety, these seven images are related to a small just 9 out of 233 from a short experimentation conducted with *Midjourney*.
In the last category, except for Saul Kim, who does not use hashtags, Karina Armanda and Pauline Personeni mostly use the same types to be indexed and recognizable for their authorial work.
On the other hand, if we look at the images with the most likes (fig. 3), we notice some internal mechanisms within the social network.
In the case of the KoozArch profile, the image in question (2,742 likes) (fig. 4a) has a tag that links it directly to the profile of Technische Universiteit Delft (@tudelft - 57,400 followers), as the author Dominika Kopiarová turns out to be a student at this institution. The image, a digital photo-collage cropped from a more extensive one on the magazine's website, is in formal aspects very similar to the one in the ninth position, which in turn was elaborated by Pier Vittorio Aureli and Martino Tattara of Dogma, a studio famous for its critical-cultural positions that find their arguments not only in theoretical writings but also in images with an evocative solid character. In the Post Digital Architecture profile, the image in question (1,397 likes) (fig. 4b) tags and links back to the profile of Dimitris Gourdoukis (@object.e - 27,300 followers), founder of Object-e architecture and professor at the School of Architecture at Aristotle University of Thessaloniki. The drawing in question falls into what can be described as a postdigital collage on a photographic basis that has the characteristics peculiar to the page that re-posted it. The last image (3,279 likes) (fig. 4c) in the first category regarding the Drawing papers page two profiles are tagged: Troy Donovan (@the_donnies - 350,000 followers), an architect who is characterized by his interest in the design of architectural skins, and Arno Pieters (@apie08 - 10,600 followers), the author of the drawing. Unlike the first two, this one shows a sketch of a sectioned portion of a building that contains many construction details, with an attitude similar to the famous drawings of Australian architect Glenn Murcutt.
The first image (27,186 likes) (fig. 4g) of Saul Kim and the third (1,501 likes) (fig. 4i) of Pauline Personeni, belonging to the third category, do not have tags. In comparison, the second image (1,919 likes) (fig. 4h) by Karina Armanda tags some profiles [7] who share and promote contemporary architectural drawings with particular attention to the illustrations reworked with vector graphics, typical of her profile.
In the profile image of Bryan Cantley (1,395 likes) (fig. 4d), a magazine [5] and several schools and institutions of architecture [6] are tagged, underscoring the author's university affiliation. Of particular interest is the tag related to the SCI-Arc profile (@sciarc - 216,000 followers), a centre of cultural innovation and school of architecture in Los Angeles that shows in all its channels a focus on architectural drawing, in its most contemporary forms, as a privileged tool of investigation. The image in question, which starts with a plan of Le Corbusier's *Notre-Dame du Haut*, highlights the speculative prevalence of drawings produced and posted throughout the page.
The one (3,660 likes) (fig. 4e) related to Daniel K. Brown's profile, on the other hand, reports to the profile of Nick Sinclair (@sinclair_architecture - 662 followers), a Master of Architecture student at Victoria University of Wellington, an institution where the profile owner teaches. The entire profile's seemingly authorial images are instead attributable to university students and the result of courses taught by the author.
While not fully representing the author's work, as mentioned above, the last image in the second category

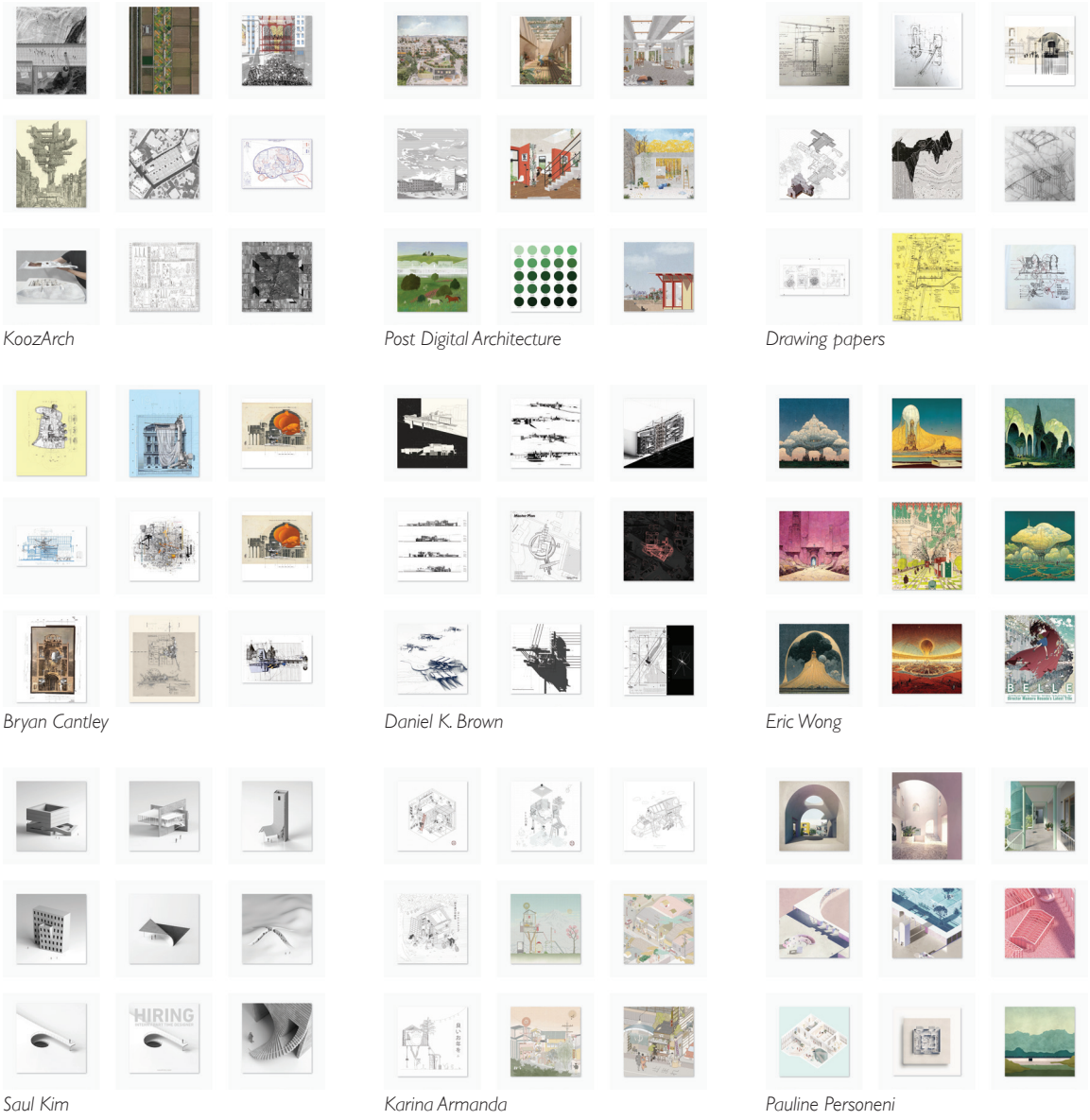
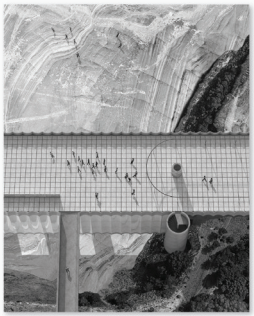
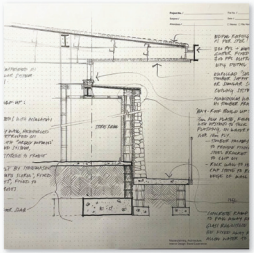


Fig. 3. Summary table of the nine images with the most like of all nine profiles selected for comparative analysis (graphic elaboration by the author).

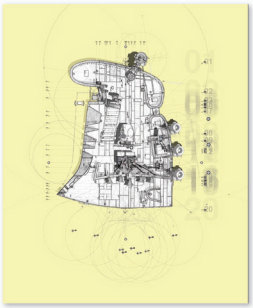


a. KoozArch

b. Post Digital Architecture



c. Drawing papers



d. Bryan Cantley

e. Daniel K. Brown

f. Eric Wong

g. Saul Kim

h. Karina Armanda

i. Pauline Personeni

Fig. 4. Image summary table with more like of all nine profiles selected for comparative analysis (graphic elaboration by the author).

(5,597 likes) (fig. 4f) regarding Eric Wong's profile highlights with its unique tag Midjourney Gallery (@midjourney.gallery - 219,000 followers) a relevant theme that is invading architectural drawing, related to the experimental and innovative use of artificial intelligence in image production.
The first image (27,186 likes) (fig. 4g) of Saul Kim and the third (1,501 likes) (fig. 4i) of Pauline Personeni, belonging to the third category, do not have tags. In comparison, the second image (1,919 likes) (fig. 4h) of Karina Armanda tags some profiles [7] that share and promote contemporary architectural drawings with a focus on illustrations reworked with vector graphics, typical of her profile.

Conclusions

Investigation of the nine social pages that share and promote architectural drawings allows us to identify several internal dynamics within *Instagram* that characterize some of the reasons why an image, in this case, related to architecture, may be more successful. However, suppose one looks at the phenomenon of which the nine profiles are only illustrative. In that case, one can see multiple manifestations related to the plurality of architectural drawing – a complexity of visual artefacts that vary in graphic form and intent. From the first category, one can deduce a willingness to collect drawings with a definite editorial line, ranging from the speculative form of drawing to the more formal one, much like what used to happen and continues to happen in many trade magazines. From the second, it is inferred that the medium is a way of amplifying and conveying the individual research that takes the form of a speculative form manifested through the drawings produced, from the more theoretical investigations to those in the field of education. From the last, one can infer a need, albeit very heterogeneous, for promoting work about a form of linguistic research of authorial drawing.
The analysis and observation of the phenomena related to the sharing of architectural drawings on *Instagram* highlights a renewed interest in this practice. Although very different from what occurred in the 1970s with art galleries, a phenomenon highlights the vibrancy and plurality that architectural drawing is summarised in the last decade. Social media, with all the risks associated with the superficiality and speed of their use, have, on the one hand, led to the emergence of new networks of sharing that are thickening around this subject. On the other hand, they have brought about the emergence of graphic languages of their own related to new media. Both topics require careful reflection that our academic community should not shy away from and should devote more attention to.

Notes

[1] The data presented and analyzed in the essay were updated as of August 25, 2023.

[2] All images in the feed are cropped to a square. Instagram posts can be square (1080 × 1080 px, with a ratio of 1:1), horizontal (1200×566 px, with a ratio of 1,91:1), or vertical (1080×1350 px, with a ratio of 4 :5). Recommended story image dimensions are full-screen vertical (1080×1920 px, with an aspect ratio of 9:16).

[3] The tools used for the analysis are: Toolzu <https://toolzu.com/profile-analyzer/Instagram/>; InsTrack <https://instrack.app/>.

[4] Below are the prevalent hashtags obtained by *InsTrack* for the nine *Instagram* profiles analyzed and which are repeated at least five times. KoozArch (@KoozArch): koozarch 7; unbuilt 7; archipelago 6; architecture 6. Post Digital Architecture (@postdigitalarchitecture): postdigitalarchitecture 9; illustrarch 9; architecturecollage 7; archisource 5; archive 5; showitbetter 5; archdaily 5; collage 5. Drawing papers (@drawing.papers): drawingpapers 9; architecture 7; architecturestudent 7; architecturelovers 6; design 5; illustration 5; drawing 5; drawingarchitecture 5; sketch 5. Bryan Cantley (@bcantl3y): no hashtag that repeats more than twice. Daniel K. Brown (@danielkbrownarchitecture): sketch 11; architecturesketch 9; architecture 9; arch 9; archisketch 9; art 9; drawing 9; sketchbook 9; illustration 9; architecturedrawing 9; architecturelovers 9; architects 9; urbansketchers 9; architecturestudent 9; sketching 9; arq 9; architecturedesign 9; archilovers 9; arches 9; hunter 9; urbansketching 9; architect 9; design 9; sketchoftheday 9; sketchcollector 9; watercolor 9; architecturephotography 8; urbansketch 7; bhfyp 7. Erik Wong (@ericwong_folio): design 9; architecture 9; midjourney 7; midjourneyai 7; midjourneyart 7; at 7; aiart 7; aigeneratedart 7; aiartist 7; artists 7; artwork 7; aiwork 7; aiartwork 7; aiartcomm 7; aiartcommunity 7; aidesign 7; digitaldrawing 7; aiarchitecture 7; architect 7; imagination 7. Saul Kim (@saul_kim_): no use of hashtags. Karina Armanda (karinaarmanda): best_of_illustrations 9; architecture 9; thebna 9; archlibrary 8; tokyo 8; architecturecollage 8; showitbetter 8; archit_magazine 8; archisource 8; critday 8; the_yap 8; urbandesignlab 8; archdl 7; ghibliredraw 7; team_map 7; archvizz 6; ukiyoe 5; architecturevisualization 5; designinspiration 5; kyoto 5; japanesearchitecture 5; dezeen 5; instaarch 5; architecturefoundation 5; poggiodanese 5. Pauline Personeni (@pa.per.narratives): architecture 9; storytelling 9; nextarch 9; critday 9; thearchiologist 9; heyai 9; archive 9; kntxtr 9; architectureonpaper 9; photoshop 8; archviz 8;

KoozArch 8; illustrarch 8; archisource 8; showitbetter 7; thearchitecturestudentblog 7; studioofblo 7; illustration 6; thebestnewarchitects 6; av_platform 6; architecturestudent 5; creative 5.

[5] Glue Publication. Ball State College of Architecture and Planning Official Journal (@gluepublication - 618 follower).

[6] David R. Ravin School of Architecture (SoA) at the University of North Carolina – Charlotte (@cltarchitecture - 4.193 follower); UCLA Architecture and Urban Design (@uclaaud - 20.800 follower); SCI-Arc (@sciarc - 216.000 follower); College of Architecture and Design at University of Tennessee, Knoxville (@utkcoad - 3.854 follower); School of Arts and Humanities at University of Huddersfield (@ah-huddersfield - 3.672 follower).

[7] Toffu | Architecture (@toffuco - 112.000 follower); Tokyo Designer's Club (@tokyodesignersclub - 314 ollower); illustrArch • Architecture (@illustrarch - 1 Mln follower); Archi Pop (@archi.pop - 4.100 follower); ARCHIHUB (@archihub - 23.100 follower); ARCHITECTURAL BOOM (@archi.boom - 52.200 follower).

Author

Michele Valentino, Department of Architecture, Design and Urban planning, University of Sassari, mvalentino@uniss.it

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Digital Hybridisation and Communication of the Design Process. The Case of Animated GIFs

Daniele Villa

Abstract

The visual codification of architectural representation in the 1920s, in its overt globalisation, is being enriched by a series of analogue-digital hybridisations that greatly broaden the spectrum of expressive possibilities of the early digital era: the maturation of quantitative tools (from BIM to GIS and all their possible derivations) is accompanied by many new qualitative visual containers that are the offspring of a digitalisation which is capable of giving space again to the ways and traditions of manual drawing, in its most diverse declinations. Among these, this paper intends to investigate the growing role played by animated GIFs, short recursive digital animations, in the communication of architectural design. Animated GIFs have been present since years in the landscape of the digital images shared on the web and have become a true professional tool, concise and powerful, capable of conveying a visual storytelling that is much closer than one would think to the established forms of architectural drawing. This type of animation plays on the possibility of condensing a (design and cognitive) process in a few seconds, leveraging the communicative power of the well-established codes of architectural representation, enhanced by the cyclical-temporal dimension.
They are small but sharp representation tools that deserve careful evaluation, starting from their effective figurative essentiality.

Keywords: Animated GIF, dynamic representation, axonometry, hybridisation, zoetrope.

Introduction

One of the most curious characteristics of the digital medium Graphic Interchange Format, better known as GIF, is its anti-cyclical longevity, in a cyberspace essentially founded on the necessity of the planned or accidental obsolescence of almost every language, tool, palimpsest or vector.
On 15 June 1987, at the dawn of the mass distribution of the World Wide Web, the team of researchers from the US company CompuServe, led by chief engineer and computer scientist Stephen Earl Wilhite, released the first version of a new digital graphics interchange format called GIF (Graphic Interchange Format). After registering the acronym GIF, CompuServe released the first technical report online, describing the main features of the graphical protocol as follows: "'GIF' (tm) is CompuServe's standard for defining generalized color raster images. This 'Graphics Interchange Format' (tm) allows high-quality, high-resolution graphics to be displayed on a variety of graphics hardware and is intended as an exchange and display mechanism for graphics images" [1].
Regardless of any technical considerations on the simplicity and effectiveness of the source language model, GIF has been characterised since its inception by its almost unlimited interoperability between operating systems, rapid dissemination and ductility of use on the Net; these characteristics have been essential in its immediate and massive diffusion. Over the course of more than two decades, most of the big players in the digital world, from

providers to browser developers and distributors, up to today's Big Tech Companies, while continuously deploying revamped systems of image-based visualisation and navigation, first static and then animated (Flash, HTML4, etc.), have never abandon the integration of the GIF format, starting from the fateful September 1995, when *Netscape Navigator 2.0* first made it possible the smooth online rendering of a fast loop of animated images based on GIF technology. The GIF format is a chameleon-like medium cyclically capable of conveying digital visual content in different ways, and has strongly come back in the limelight with the advent of social networks and Web 2.0., in its partially updated version capable of generating recursive micro-films based on very few frames. In the virtual space of social networks, chats, *WhatsApp* and all the instant hyper-media messaging alternatives, it was perhaps inevitable that such a simple, manageable and rudimentary container of moving images would lose any tendency towards obsolescence. According to Valentina Tanni: "Animated GIFs are an open and malleable platform, transversal and popular, cheap and accessible: they are easy to make, weigh little and are readable from any browser. They are used as an expressive vehicle for comic or parody purposes, but also as a linguistic element, on a par with emoticons: those known as 're-action GIFs' are indeed able to bolster the expression of emotions and moods in social network conversations, chats and e-mails" [Tanni 2023, p.61].
Today, GIF images are essentially ubiquitous, since they are an integrated and non-replaceable component of digital pop culture, and lend themselves to almost unlimited manipulative possibilities in every media field, from mass communications to the most specific scientific popularisation, as even a curious recent study on mathematics education reminds us: "Based on the application and the data obtained, it was found that using GIF animations can be useful in learning mathematical concepts, algorithms, relations and structures. In addition, visual and educational inadequacies and deficiencies of some existing GIF animations used in this study were identified" [Altitas et. al. 2017, p. 1118].
GIFs can indiscriminately convey almost anything, with an apparent flattening of visual content, which is inherently simple and almost banal; GIFs seem to maintain a vitality that is not uniquely linked to purely technical issues or the economy of the digital world. Actually, this medium is a hybrid between static and dynamic images, photography, cinema, micro-animation, so much so that it has become a sort of visual lock pick. A *divertissement* that actually reveals a sometimes unexpected communicative potential. In a way curiously similar the non-fulfilled prophecy of the demise of photography after the advent of cinema, the GIF format resists the unlimited power of contemporary digital graphics precisely because of its apparent mechanical triviality.

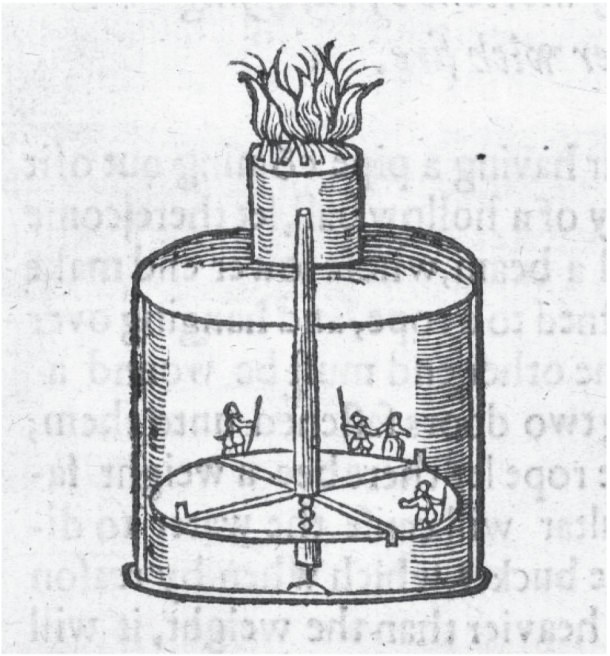

Fig. 1 Rotating Image Lamp illustrated by John Bate in The Mysteries of Nature and Art*, 1635.*

After all, the same fate happened to very old optical illusion devices for moving images, such as the zoetrope and the phenakistiscope. The visualisation of moving images has been a human cultural interest for over a thousand years and is now to be rediscovered. The history of the zoetrope is perhaps a case in point.
A predecessor of the zoetrope, dating back about 5,200 years ago, has been discovered in present-day Iran: it is a bowl decorated with a series of clearly sequential images depicting a goat jumping towards the leaves of a tree. The stylised figures are painted in a deliberately

continuous, repetitive and uniform manner, allowing for a stroboscopic effect as the bowl is quickly rotated [2]. It is important to emphasise the Us-based Animation Magazine, which first reported this discovery, in its online version uses a GIF to reproduce the animation on the Iranian bowl in an understandable and communicative way. Much better known and studied is the widespread use of lamps for dynamic looping viewing of images as far back as the first century BC: according to Carlos Rojas, as an example, the Chinese mechanical engineer Ding Huan created a lamp with a circular band decorated with images of birds and animals that moved with particular fluidity when the heat of the lamp created an ascending current able to rotate the band [Rojas 2013. p. 5].
However, in the history of Eastern and Western visual culture there are dozens of possible objects for cyclic animation, with the most exotic names and subjected to subsequent elaborations, some of which quite sophisticated and others simpler and more effective: from the zoetrope described and represented in the 17th century by John Bate (Fig.1), in a work that was very present in the libraries of the time [Bate 1635, p. 31] , to the official zoetrope patent with US Patent No. 6,4117 (fig. 2) filed by William Ensign Lincoln on 23 April 1867. Lincoln's version of the 'illusion machine' had, in a nutshell, certain technical and expressive characteristics that we can clearly find in the animated GIF: substantial functional simplicity, rapid content substitution, a static background on which certain foreground elements are animated in a short, incisive flow, portability and ease of generalist use. The zoetrope is a kind of precursor of the animated GIF, a precursor of a visual technique that anticipates and at the same time follows the immersive magic of cinema and the hieratic static nature of photography, standing in a middle ground [Tanni 2023] where we should ask ourselves questions not only about the pervasiveness and longevity of the medium but also about the specificity of the graphic language needed for its success. "Somewhere between photography and video-making, in the middle ground between the still and the moving image, animated GIFs are the perfect content in the multitasking era: "A kind of ubiquitous mini-cinema, entirely native to the personal computer and the World Wide Web," as artist Tom Moody puts it. The reference to cinema is very pertinent, especially if one thinks back to the early days of the filming technique, when experiments were carried out with a few frames and the first mechani-

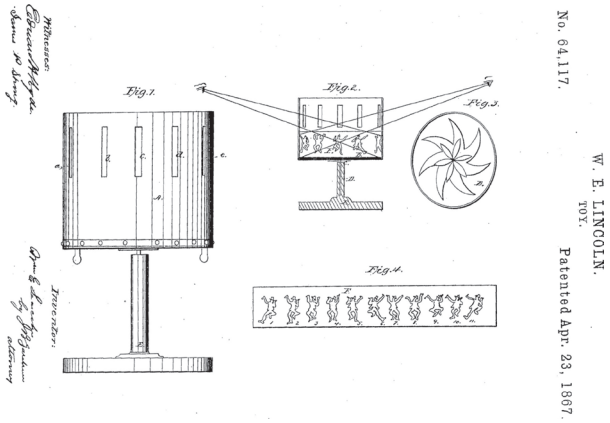

Fig. 2 Illustration for the Zoetrope patent, W.E. Lincoln, U.S. Patent No. 64,117 of April 23, 1867.

cal devices based on the persistence of the image on the retina were born, such as the thaumatrope and the phenakistiscope" [Tanni 2023, p. 73].
However, we should not underestimate certain recurrent specificities in the visual elements present in a whole series of paleo-machines for cyclic animation: from the rigid figure-background relation, where the moving element is mostly simplified precisely because it is subjected to a rapid transition that causes it to lose quality of detail, to the generic and static architectural-landscape spatialisation of some backgrounds, in a sort of neo-pictorial way in which it is impossible to disregard the presence of a visual backdrop as a contrivance to make the dynamic effect even more pronounced. This brief and hypothetical reconstruction of a long genealogy that from a Sumerian vase leads to rotating lamps, thaumatropes, phenakistiscopes and finally dematerialises itself into a small visual element of the digital era, proves to have numerous other interconnections, extensively explored by a certain part of the scientific literature on the birth of animation [Spillen 2022]. And yet, in the face of so many curious links between analogue ancestors and animated GIFs, there remains a clear semantic divide that separates the two branches of this history: animated GIFs are in fact, among other things, one of the building blocks of a new digital aesthetics that was partly born thanks to the incredible ability of GIFs to adapt and resist the evolution of the Web and the succession of countless digital

visual fashions. These micro-loops are able to remain technically unchanged while being able to adapt with incredible speed to unimaginable semantic horizons. Let us think, for instance, of the whole parody strand found on messaging platforms and social networks: it is an endless flood of animations changing constantly, in a visual patchwork beyond any authorial control, in which messages are conveyed with no explanatory or cognitive intention, in a superficial and playful but ubiquitous and pervasive laconism: "Within this recent internet culture, images (and especially GIFs) play a dominant role precisely because they help individuals to avoid declarative commitments in communications and help them remain ironic and ambiguous. Images are indeed more laconic than words. When one searches for a GIF to send a friend in a chat, one is translating words with a greater degree of clear meaning and rationality into images, which carry a greater degree of affective emotional content, and which remain open to interpretation depending on the context. Very often, such ambiguity is tied quite self-consciously to a resistance to make any clear political or ideological claims" [Voet et. al. 2022, p. 9].
In this specific hyper-superficial undergrowth of the contemporary Web, the animated loop amplifies a precise form of *blasé* reaction that each of us tends to develop when faced with the endless daily bombardment of images that are deprived of a reasonable meaning. It is a cognitive response that Michael Meredith defines as 'calculated indifference': "Calculated indifference is not simply another form of postmodern irony in the manner of Venturi. It is also modelled on the purposeful hesitancy, ambiguity, and irony found in recent internet culture more generally. A growing body of literature has emerged in recent years to analyse the particular sensibility of online image culture of 'Internet Ugly' the 'New Aesthetic,' and the political uses of gifs, memes by a younger generation of Millennials and Gen Z" [Meredith 2017, p. 321]. From this specific point of view, the role of animated gifs, in the vast and incongruous contemporary landscape of the Internet, seems to remain limited to *amusement* and a pure taste of the ephemeral, just as it was for its mechanical ancestors, yet it is enough to shift our gaze to the world of digital communication and dissemination of architectural design to understand how much these micro animations reveal a huge potential that is completely different, is even broader and still partially unexplored.

GIFs and architectural design

The growing exponential influence of large Web-based architectural browsing publications has been an established factor in the world of architectural design for years now. There are many concrete examples of this. One for all is certainly the ArchDaily website: it was launched in 2008, in 2020 had over 350K individual visits per day, and in 2022 claimed as many as 17.9 million visits per month. Trying to delve into the forms, techniques and ways of representing and communicating architectural design conveyed by these great Web vectors is not an easy task, but we are interested here in focusing our attention on some innovations that have animated GIFs at their core and are only apparently small (fig. 3). Starting in 2015, ArchDaily launches an annual competition to reward the best architectural drawings; the drawings pass through its platform, are categorised, and for the first time, the authors include in them a specific GIF section. This is the recognition of an ongoing trend in the transition from the purely technical/quantitative digital design typical of the early CAD and BIM era, to one of an entirely different qualitative/communicative nature compared to the photorealistic and illusory drift of the rendering world. In the early 2010s, designers that were keeping the pace with the transition to Web 2.0 had begun to perceive the need for and grasp the potential of more immediate, lightweight, shareable, dynamic and synthetic forms of visualisation: the GIF platform then seemed a promising 'digital detritus'. It was a matter of leaving its simple technological codification untouched while completely changing its visual codes and their communicative goals. The 2016-2020 editions of The Best Architecture Drawings announced by ArchDaily are a very interesting litmus test to grasp the sense and scope of a conscious, sensible and visually designed use of animated GIFs in architecture (figs. 4-6).
This medium that had hitherto been subject to massive but largely random and uncontrolled development now becomes a platform for questioning certain key themes of contemporary architectural representation.
A first aspect concerns the need to find an effective compromise in the reduction of the sign, towards a further simplification that would allow for generating animations that were at the same time concise and precise, capable of effectively but incisively conveying only a few contents. A second issue is the increasingly less secondary role of

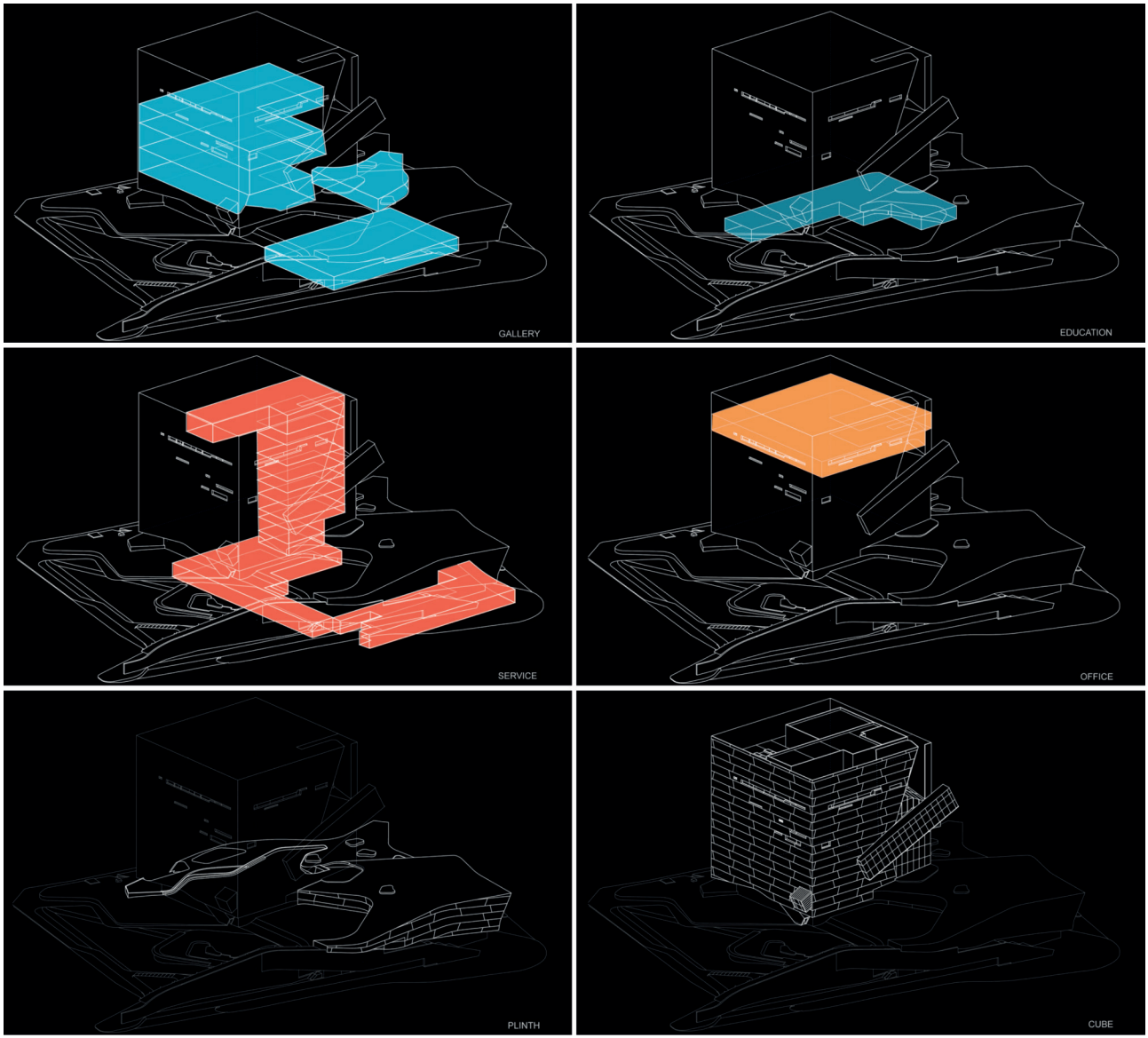

Fig. 3 Frame from the animated GIF on the morphological-functional components of the Perot Museum of Nature and Science, *Morphosis Architects, Dallas (TX), 2012, (author's elaboration).*

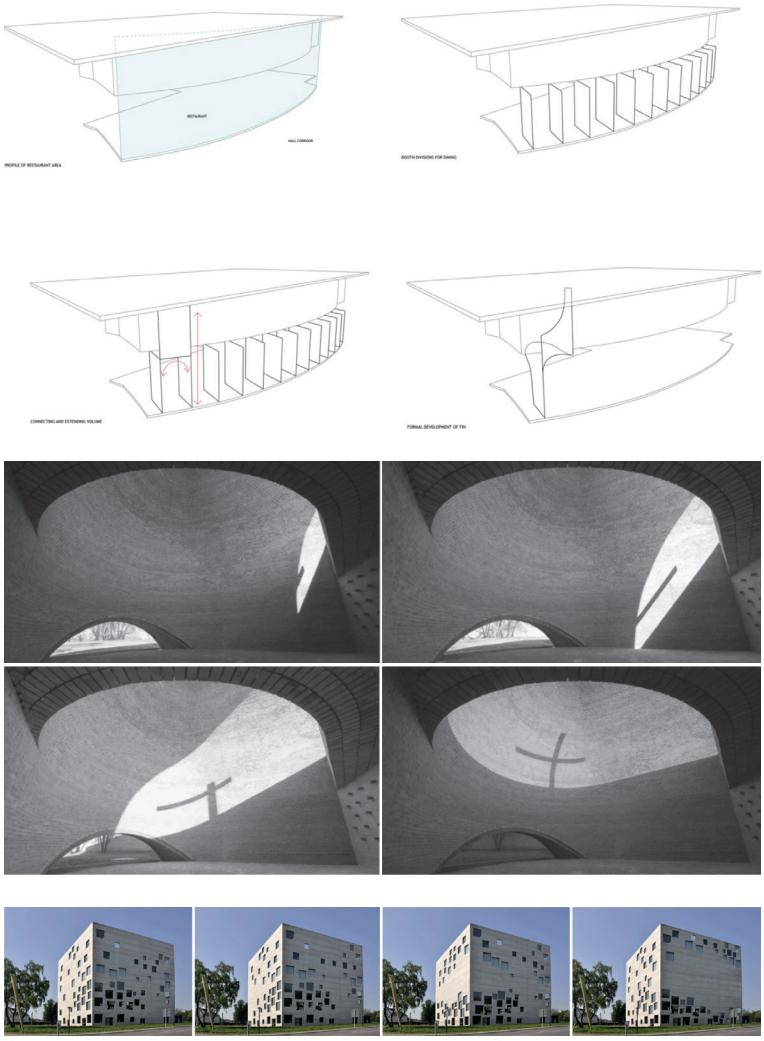

Fig. 4 Frame from the animated GIF of the structural components of the Coffee Shop in Mumbai by Sameep Padora & Associates, 2016, (author's elaboration).

Fig. 5 Frame from the animated photographic GIF on the behaviour of natural light inside the Capilla San Bernardo by Nicolás Campodonico, La Playosa, Argentina, 2015, (author's elaboration).

Fig. 6 Frame from the animated photographic GIF ironically redesigning the openings in the façade of the Zollverein School of Management and Design building *at SANAA, 2006, (author's elaboration).*

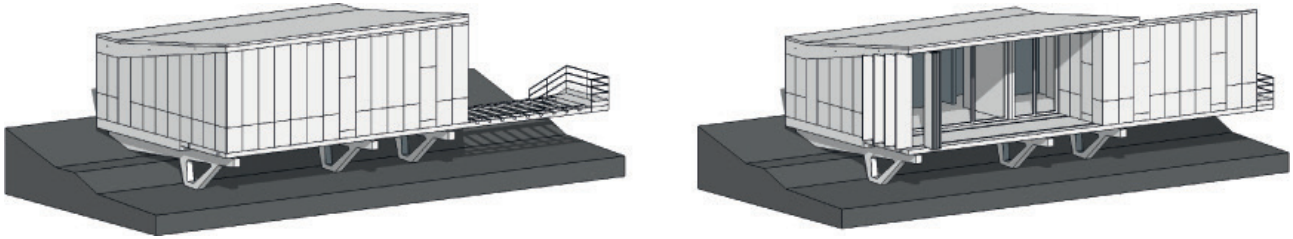

Fig. 7 Frame of the animated GIF related to the moving volume in the holiday home of Maria Giuseppina Grasso Cannizzo, Noto, 2010, (author's elaboration).

representation and visual thinking as tools for communicating architectural design as a complex process and no longer solely as the result of a series of encrypted actions. In this sense, in recent years animated GIFs have been a place to experiment with the return to the centrality of axonometric projection (fig. 7) [Boys 1981] and all its manipulations that are well suited to rapid, cyclic and prehensive animation [Villa 2018]. Online there are dozens of thousands of examples of axonometric line or wireframe exploded views and sections that are made even more expressive by the animated loop, sometimes superimposed on rendered frames, in a kind of augmented axonometry. Digital hybridisation is finally aware of the maieutic effect of certain digital drawing techniques. A third consideration concerns the possibility of mixing and hybridising drawing, photography and collage, which is at the basis of the ductility of this small but powerful micro-animation engine [Altshuler 2018]: the visual storytelling of architectural design can pass through forms, even playful ones, of reinvention, interpretation and manipulation of great interpretative effectiveness, as it happens with some well-known GIFs in which buildings by contemporary architects are disassembled and reassembled in an incongruous manner, allowing us to very quickly grasp some non-obvious compositional assumptions. Through minute but impactful operations of meaning and sign, animated GIFs clearly overcome the limits imposed by their own technical container and a visual culture that seems to relegate them to farce and nonsense. In the field of architecture, GIFs can become, in a matter of seconds, assembly instructions, construction diagrams, visual narratives of the possible use of a space, architectural and urban sections in motion, dynamic synoptic pictures, analytical-interpretive optical illusions and much more.

Conclusion

In conclusion, an initial synopsis of the operational functionalities of animated GIFs in the contemporary world of architectural design communication can be created, with a series of meanings that on the one side, frame the possibilities related to design knowledge and interpretation, and on the other side, frame the different meanings of dissemination, dissemination and education. Specifically, we can divide these characteristics into:

- concise reading of the context: animated GIFs can effectively illustrate different hypotheses on the relation between architecture and context, allowing for quick and interconnected multi-scenario comparisons, even on different time scales;
- interpretive visualisation of compositional actions: architectural projects often entail a complex design composition process that is not easily conveyed. Animated GIFs allow designers to emphasise some of these design operations in a dynamic way, making it easier and, above all, more effective for stakeholders to understand design matrices and functionality;
- management of internal process effectiveness: animated GIFs, also due to their quick realisation, editing and sharing, can be used a specific tool for the early phases of the internal design process, as they can facilitate team management of the preliminary conceptualisation phase, which are often based on simple spatial and volumetric operations, and can also allowing documenting these early design phases in an innovative digital way;
- phasing: both within the design process as well as in the communication of its results, animated GIFs can be used with a technical/constructive approach to clarify and visualise the possible phases, from

construction to utilisation phase of the artefact, modulating the time sequences according to specific communication needs;
- digital perception and Mixed Reality (MX): GIFs represent a lightweight and affordable solution to assemble and mix different specific Virtual Reality (VR) and Augmented Reality (AR) visualisations that, with more usual media, would be time-consuming and involve large amounts of data. In this case, the simplified vector does not impact on the visual complexity of the communicated content, as it only needs a limited time definition and careful loop design, thus allowing for overview visualisations or reproducing the perception of an architectural walkthrough of different digital models;
- involvement, communication and promotion: animated GIFs, just like their analogue ancestors, keep a strong seductive and engaging capacity that, together with the speed of message transmission, make them a tool for constructing and sharing micro-narratives about the nature of architectural design, which is much more suitable than static representations;
- training and education: abstract concepts, principles and concrete forms of the design process can find a valuable educational ally in animated GIFs, both because of their being easy to use for the latest generation of digital natives, and because of the ease with which complex spatial messages can be translated into simple, understandable relational elements easy to memorise. This specific aspect makes animated GIFs useful visual mnemonics digital assistants particularly suited to aspects of form, function and use of architectural and urban space.

Notes

[1] Web Archive – CompuServe GIF standard specification <https://web.archive.org/web/20181222025600/http://www.w3.org/Graphics/GIF/spec-gif87.txt> (accessed on July 24, 2023).

[2] Oldest Animation Discovered in Iran. Animation Magazine. March 12, 2008.

Author

Daniele Villa, Department of Architecture and Urban Studies, Politecnico di Milano, daniele.villa@polimi.it

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Practices and Poetics

Drawing for the Project: Dimension and Space for an Architecture Imagined before its Realization

Gianandrea Barreca

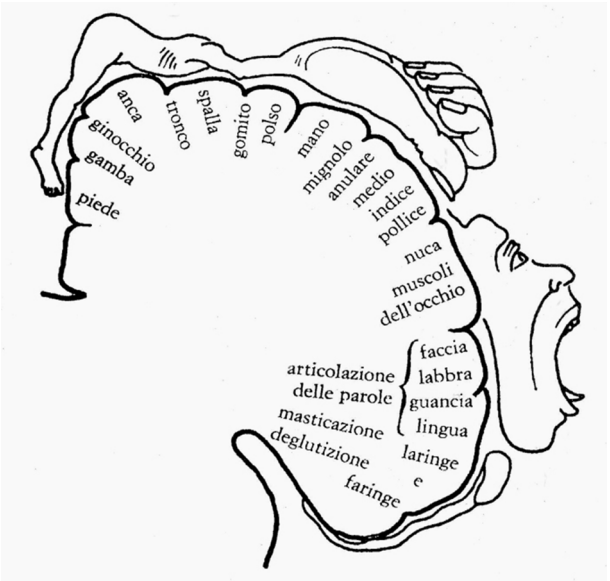
Introduction

The languages with which we communicate thoughts, sensations and ideas are attempts to make the feelings we experience legible and above all aim at the desire to share our perspectives on life with the people around us. We learn as children to attempt a description of the things we feel on an emotional level, in a synthesis that respects rules of syntax and grammar, primarily in the language that belongs to us, because in this way we try to make things transmissible that do not seem to be so and which concern an internal sphere which, apparently, does not have such a clear form of communication and is instead more soul and chemistry than sound and vision.
We soon realize the need to articulate in more complex ways the passages of state of mind that pass through us or even simply primordial requests such as the need to feed ourselves, to sleep or to find protection. At the beginning of the journey of our life we try almost instinctively to express ourselves also through guttural sounds, in a basic way which constitutes the first effort in the direction of establishing social relationships with those around us, in order to form the first knots of the mesh of collective exchanges that we then know regulate our entire existence.
In the 1950s, the linguist Noam Chomsky, in an essay entitled *Syntactic Structures* [Chomsky 1957], configured for the first time how human language is evidently the highest demonstration of the conquest of thought, finding direct explanation in spoken language and its

This article was written upon invitation to frame the topic, not submitted to anonymous review, published under the editorial director's responsibility.

continuous change over time. We are perhaps the only living species that alters its way of communicating by declining it into different idioms, where we use words that over time no longer belong to us at the expense of new ones that enter into our daily transmission and understanding of thoughts.
The evolution of ways of expressing oneself is then a function of different stages of maturation and is strongly conditioned by the environment in which we live. Even if some scholars affirm that there is also a genetic transmission of language, it is empirically perceivable how the habitat in which we live, especially the first phases of our life, conditions our ways of expressing ourselves, educating us in a precise vocabulary which are the linguistic foundations for the construction of our way of using our own identifying language to communicate to our peers. The need –but also the awareness of the limit– of using a platform for transmitting thoughts through regulated and recognizable sounds, properly defined as words, only partially allows us to give figurative structure to that emotional and variable framework that conditions our behaviors, so much so that we often try to accompany this vehicle with other often non-verbal supports which must complete –but sometimes even surpass– language, in some cases replacing it.
While verbal language is the exclusive prerogative of human beings, gestural language is not the same, which instead in the other animals that inhabit this planet becomes an essential attribute in their way of interacting, to the point of becoming a peculiarity of the expressiveness of the species. We too adopt body language that expands our talkative abilities.
There are, therefore, many other methods of communication, in addition to the verbal one, but one is just as characteristic as the word, for identifying *sapiens* in a completely univocal way, and that is drawing.
The language and the tracing of graphic signs that black on white prefigure a new vision of the state of things, represent the most notable aptitudes that man has refined in the flow of his evolution as well as prerogative faculties. The suggestive representations of the fissure of Rolando highlight, in fact, that among all the functional areas of the telencephalon, speech and the movement of the hands constitute the pre-eminent functions of the cerebral cortex, since the origin of time (fig. 1) [Penfield, Rasmussen 1950].

Fig. 1. Representation of the Roland Canal (from Penfield and Rasmussen, 1950).

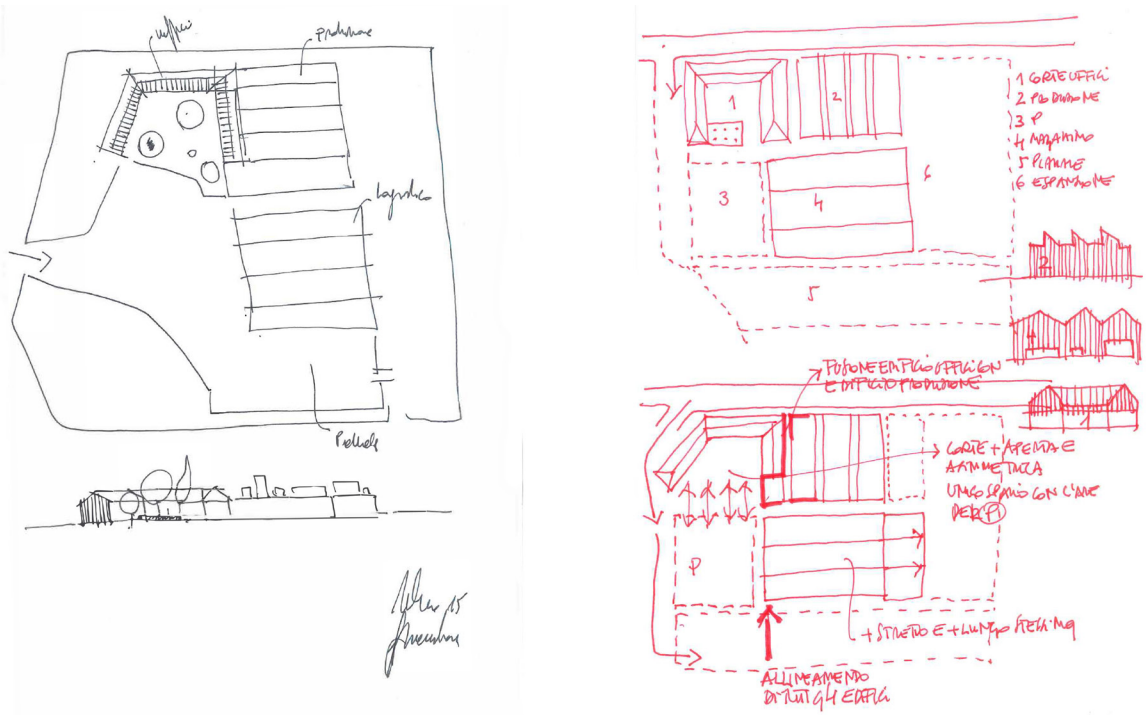


Drawing is a primordial language: it is no coincidence that the child uses it spontaneously, almost as if to highlight a powerful alternative to the verbal one, just as to declare that, in the first cognitive phases, drawing expresses better than words the communicative variation that he needs to express an uncontrolled flow of emotion. For children, expressing themselves through visual signs becomes a determining part of their projection of affective development and this is why it also becomes essential for understanding the psychological state, precisely because it manages to explore sectors of the unconscious that not even words are able to objectify with the same effectiveness.
Just like children who at a certain point in their communicative maturation are not limited only to repeating grammatical forms learned from adults, but combine more complex sentences in an autonomy granted to them by the knowledge of an adequate syntax to the point of formulating autonomous speeches, so with the drawing allows us to identify a personal phrasebook whose different composition produces a cognitive identification specific to that person.

Drawing in the project experience

Perhaps it is also for the reasons just described that this ability to better and more directly penetrate the human unconscious that drawing is a favorite tool of artists and architects, who intend to explore sectors of human knowledge not yet known and visible. In the Renaissance, which was an era where the desire for knowledge went beyond any sector of man's work in an unstoppable thirst for knowledge, the visual arts became an exploratory method even before a tool for fixing ideas and images. Leonardo da Vinci, who embodied the most representative artistic expression of that era, considered it the most effective instrument for investigating the reality that surrounded him, because through it there was the most immediate reproduction of the idea, of thought, of project and therefore a deeper and more conscious abstraction of the finished and created work, which almost became the final consequentiality of the knowledge process that occurred in the process and not in the final form.
Drawing becomes the bridge between the intimacy of the ideational moment, which is only in the head of those who develop a project and its development which occurs slowly, with subsequent modifications and clarifications, but always starting from already established principles, themes and forms.
For this reason, in the drawing the project can already assume its full formal identity, even perhaps without a necessary transposition into reality. Drawing –and together with it painting which he believed to be its main descendant– was pure science for Leonardo as an instrument of knowledge of the reality that surrounds us.
In a complementary relationship with these assumptions, then the drawing is also the tool that can best explore the most suitable paths for the modification of a space and therefore in the exercise of the project it becomes the vector that better than any other can travel and anticipate the not completely revealed consciousness of an architecture at the moment in which it is about to be conceived: perhaps it is also the place where it takes on cognitive concreteness even before any realization, which is instead a material translation entrusted to more knowledge and therefore outside the unconscious of its first generator/foreshadower.
The project drawing is in fact a 'study drawing' in the sense that it generates information relating to the design task through graphic processes. This role is one of the various epistemological properties of study designs [Herbert 1992], which are recognized as having the capacity to generate concepts, externalize and visualize problems, organize cognitive activity, facilitate problem solving and creative effort, facilitate perception and translation of ideas, representing real-world artifacts that can be manipulated and reasoned about, reviewing and refining ideas [Yi-Luen Do et al. 2000].
Sliding your hand over the paper presupposes a previsualization through the mind's eye of the image you want to graph [Amistadi, n.d.]. But its representation, understood as the translation of the vision into specific figures, pertains to a narrative punctuated by assertions, decisiveness of the gesture, second thoughts, denial, uncertainty, silence, false starts, affirmations and oppositions that chase each other in a flow guided by the hand and by its power of concentration [Focillon 1990].
In my activity as a designer, always shared with Giovanni La Varra, I have always used drawing to explore the form not yet visible, even if I have never given excessive importance to the drawings as they are a fetish of the architect's own ideational process. I have never

Fig. 2. Project sketches, Ugolini Headquarters, Torrevecchia Pia, Pavia, 2014-2020 (drawing by the author).



thought of them, nor traced them, seeking an aesthetic specificity that went beyond the function of giving a primitive image of an idea of space and consequently I have perhaps never pursued a specific technique. The idea of drawing as a means to seek a formalization of design thinking has almost always been placed before specific representation techniques, to the point that the supports where I fixed the first forms, which led me into a still unclear idea of space, they have always been of different types and formats of paper, often using tools such as pens, pencils, markers which were those that I found in front of me on the table where I was thinking about how a new architecture could respond to the needs expressed by the client rather than by the context (figs. 2-5). For this reason, I have never experienced particular affection for an instrument rather than a technique.
Despite this apparent carelessness, however, I was always concerned, almost instinctively, with preserving those visual notes which, although summary, evoked in me a deeper imagery relating to the space I was prefiguring. I felt that they had perhaps a more personal, intimate, private meaning rather than a representative value of what would later be the much more detailed insights into the technical representations that would later follow. For this reason, I stacked them without a precise order, with affection but never with the care of someone who consciously wants to create an archive. The opportunity to rethink and take up those sketches was when the University of Genoa, the same one where I trained, asked me to offer some of my drawings to the Architecture Archive, causing in me a sense of amazement because I didn't, I had never considered them as possible parts of a memory dedicated to others. This solicitation, however, generated in me the desire to reopen those boxes where I had placed them to finally try to give order to those traces of completed projects, which represent the archeology entrusted to the design of my past as a designer: sediments in graphic form of projects created or even just thought of, which seemed to be on the same level as bearers of reflections between spaces, functions and places. At that moment I became fully aware of how much drawing, and the verb that identifies its action, are a constant and indispensable part of my work, to which it is indispensably linked to overcome the effort and inertia of the project and of its construction: the

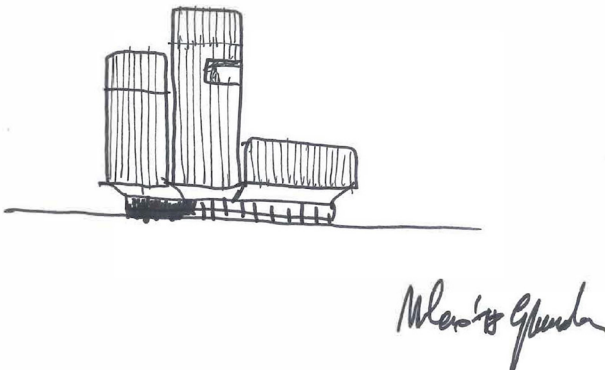


Fig. 3. Project sketch, Campus Symbiosis, Milan, 2018-2020 (drawing by the author).

act of drawing outlines the space in which, after having imagined, ordered and defined, we return to redo, undo and mend, and do so as if in an unconscious perpetual desire to revisit, correct, readjust, question the fixity inherent in the act of building.
On the occasion of that collection of author's drawings for the Architecture Archive of the University of Genoa, I wanted to clearly highlight the indispensability of the drawing in the construction of the project in which the drawing is the space for comparison and sharing of the articulated relationship between the hand, the thought and the eye, between project and imagination, within which error and misunderstanding fuel, as if chasing each other, the flow of thoughts, the action of the hand and the capacity for synthesis of the gaze [Trucco, Lucentini 2022, p. 30].
In other words, representing the reality of space with signs that are fixed on paper is seeking a dimension of comparison and sharing of the cognitive relationship between the hand, thought and gaze, the labile border between planning and imagining, in a limited context where error and misunderstanding chase each other.
My relationship with drawing expresses my constant desire for ideas to be able to overcome the fixity of paper to complete their transmigration from pure ideation to the state of materiality, to be realized in facades, squares and spaces to be lived and inhabited, to the point of giving new configurations to the environments in which we live and interact.

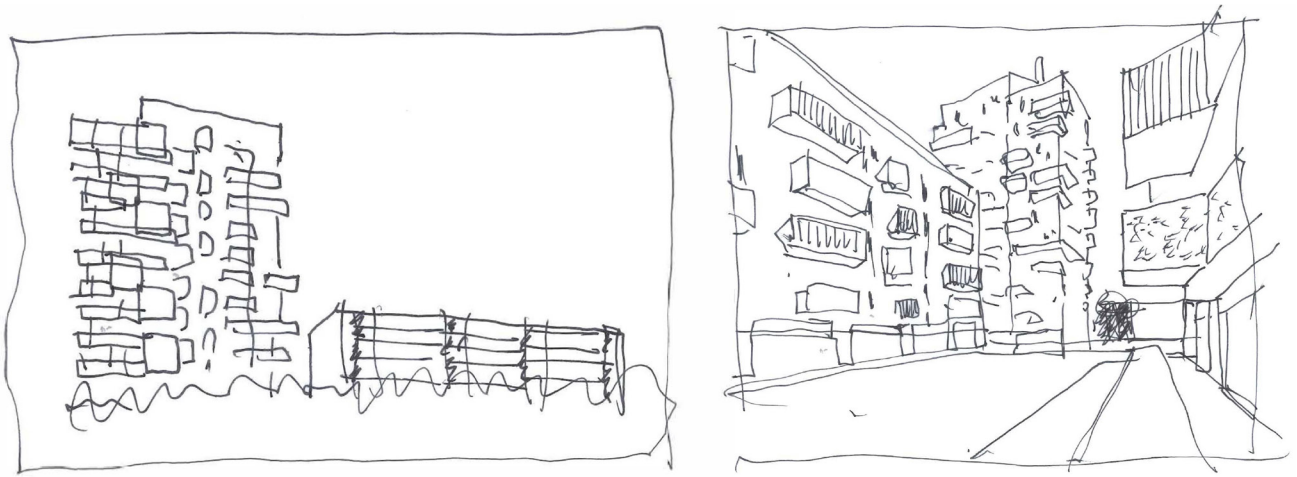


Fig. 4. Project sketches, Housing sociale Ex-Boero, Genoa, 2016-2022 (drawing by the author).

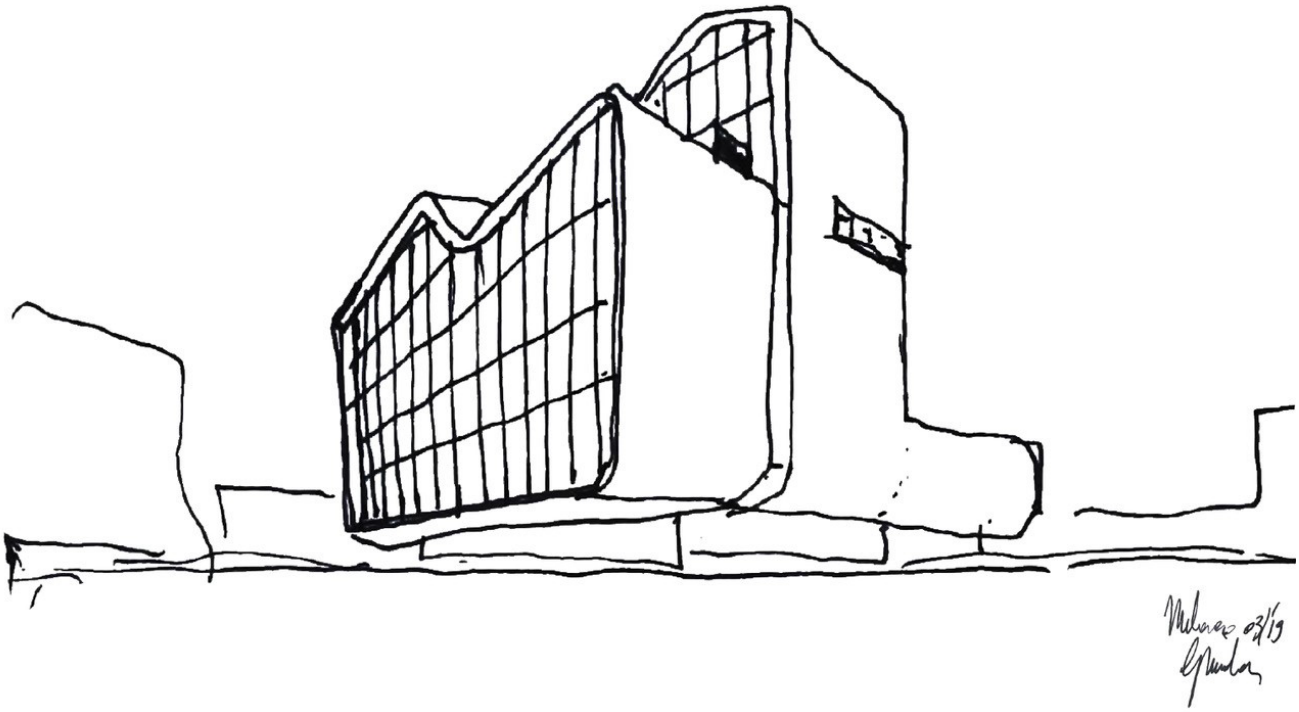
Finding the drawings, I had made in the past defined a timeline of my memory, allowing me to relive my thoughts regarding completed buildings, but even more interesting those referring to unbuilt architecture, which did not refer to careless actions but rather to a time future in which to awaken to offer a new contribution to the realization of projects to be built tomorrow.

How has drawing changed in my generation?

Precisely the capacity for synthesis –also understood as compression, in an intelligible graphic sign, of all the meanings that a trait brings with it– has guided the evolution of drawing over time and the change in the forms of representation of the architectural project that my generation witnessed.
The first great revolution was undoubtedly represented by the introduction of CAD (Computer Aided Design): the search for reduced times for the production of classic project documents fascinated the architects of the time between the 70s and 90s, especially the new generation, progressively moving them away from the complex drawing board and replacing the pencil in their hands with a mouse. The splendid hand drawings of the great designers of the past and their study sketches are gradually joined and, in some cases, replaced by digital projections in which, however, one does not give up finding one's own identity and expression of one's 'creative self'. In this direction, Renzo Piano and his unmistakable drawings with white lines on a blue background, a memory and link with the familiar world of the shipyard, represent a significant example of how the new CAD digital representation can be at the same time a synthesis of design reflections and a manifesto of a stylistic figure. And if the control of forms, in the ideational flow, in the doing and undoing of the mind, is clearly expressed in the spatial representations in central or cylindrical projection, soon the synthetic images of Computer Graphics enriched the range of graphic production of the architectural project. I have always looked at these evolutions, first as an architect who was training, and then as a professional, questioning myself on how to adopt and make these expressive possibilities my own, in a process of analysis and reflection during which, in truth, I have not never put down my beloved pencil. Faithful companion who, even today, continues to transport the mental images that are built in my thoughts into the visible, although what was once the upheaval brought about by CAD is now represented by BIM (Building Information Modelling). New acronyms heralding equally new forms of representation and communication of

the architectural project. The possibility of working with intelligent objects within a model where this intelligence manifests itself in the form of geometry definitions, relationships and data that determine how the model reacts as it evolves is undoubtedly fascinating as well as significantly effective in a professional world in which the collaboration between experts and professionals working on the same project is increasingly stronger and integrated. Thus, the sketches and notes that 'old guard' architects or nostalgic architects like me bring to paper in the flow of their thoughts seem to increasingly migrate into representations substantiated by solid, three-dimensional, digital objects, to which all annotations and labeling are associated in an intelligent metadata filing. Precisely in this aspect, in 'intelligence', a further change has resulted in the very last period, namely the experiments on the use of Artificial Intelligence (AI) in architecture. An ever-increasing number of publications and professionals are questioning the validity of this use and the implications that AI algorithms capable of generating not only images but even 3D models and even formal solutions to design problems, may have on the role of architect in the future and on his expressive possibilities. Even important studies, such as Foster & Partners, are exploring the frontiers of machine learning with a proactive and optimistic approach, in which algorithms are exploited not "to replicate or replace designers, but to improve our knowledge, our instincts and our sensitivities, free ourselves from routine tasks and to optimize and push the boundaries of our projects" [Tsigkari et al. 2021].
In this complex debate, I confess that there are many questions that I ask myself but, at the same time, I still denounce with conviction the powerful role that I continue to recognize in hand sketching, which I hope that the new generations will not shy away from, even if enchanted by the fascination of AI, an essential future tool for our work.
And precisely with this spirit, at the Department of Architecture of the University of Naples *Federico II*, last February we created an educational workshop aimed at students to offer them the opportunity to explore the potential of extemporaneous drawing in relation to the concept of the architectural project. The workshop entitled *Il disegno per il progetto* (Design for the project) was divided into a cycle of four meetings, curated by the architects Massimiliano Campi, Valeria Cera and Marika Falcone, with a final exhibition of the students' works [1] presented, as a section, on the occasion of the exhibition *Disegno e progetto di architettura* (Architecture drawing and project), set up in the ambulatory of the historic building of Palazzo Gravina in Naples [2].
The architect remains a professional figure in balance between the technical, scientific, creative and humanistic aspects and the need to work in a group. In these terms, the need for a common language becomes a necessary condition, otherwise the already difficult synchrony of aspects and specialisms that the project implies risks becoming a cacophonous buzz, rather than a chorus in rhythmic and harmonic harmony. Drawing has always given the possibility to talk to each other even belonging to different skills and has always been the synthesis tool par excellence, as well as acting as a means of knowledge. The architectural project is born from the drawing, it is communicated through it and always through its interpretation the historical memory of the building is generated, even when time has made it a memory or when degradation has caused it to lose its original conformation. In the search for tools that are proposed as preparatory to the project we can affirm that the drawing has overcome the obvious particularity of a 'useful for' tool, to the point of becoming an integral part of the project.
The project is not only expressed in the drawing but is influenced by it until it becomes indissolubly integrated. Let's think about how not only the practice of the design process has changed, but rather how the form has evolved and been influenced by digital representation tools. Architectures perhaps not even previously imagined are now represented and created thanks to graphic simulation and visual synthesis platforms, which constitute the terrain where new abstractions take shape, where they are modeled and where they occur for the subsequent possible transition from the imaginative dimension to the real.
I belong to the generation that experienced the transition from analogue to digital design, indeed we supported this transition in some way, aware of undoubtedly easier practicality and improved operations in times and practices, but not equally aware that that path –perhaps inevitable– involved a loss of at least part of the open field given to the imagination of diversifying the forms by not squeezing them into a graphic and geometric

Fig. 5. Project sketch, Campus Symbiosis, Milan, 2018-2020 (drawing by the author).



register, however bound by the awareness of the commands, imposed through a keyboard and a video and less than on a sheet of paper, in a dialogue between the mind and the instrument which for the first time was in favor of the latter.
While I do not at all deny belonging to that generation of designers who developed their professional path in this way in the last decade of the last century and in the first twenty years of this century, I must say that I have always continued to make the first design developments transmigrate almost always and almost only with the help of a pencil and a piece of paper and that I have never had direct comparison with digital drawing, which always arrived after the origins of the conceived and analyzed form and only subsequently developed in execution and in-depth analysis with the help of CAD software, never managed personally but rather entrusted to others.

Conclusions

This is what the project drawing has the power to do: represent even in a few pencil strokes a complete architecture, which goes beyond the image and has its own concrete cognitive dimension, even if it will never be built and manufactured.
The reflections proposed in the first exhibition held in Rome at the Embrice Gallery in 2021 [3] were expanded and reported in the aforementioned exhibition which took place at Palazzo Gravina, the historic seat of the Faculty of Architecture of Naples, in March 2023 where the prefiguration of the design and the consequentiality of the project was shown in a sequence primarily of drawings so as not to confuse the plan of the designer's ideational moment with that (other) of the realization of the construction.
Drawing, fortunately for all architects, continues to represent one of the most immediate and effective tools for formal research and conceptual synthesis. The graphic sign is the only tool that allows him to think, design and communicate exclusively visually, surpassing any further technological support. The drawing accompanies the designer in his creative process, it becomes an extension of thought and a real language that is expressed in the definition of the initial project idea, in the spatial verification, in the study of details.
For these reasons, the architect wants to reserve the right to express, through him, the possibility of exploring the potential of prefiguring reality through the sign representation that expresses the architectural project, in a continuous dialogue and comparison.
The hand is promoted almost as an extension of thought in a relationship where the imagined shape is translated into traits, composing an image that is immediately compared with the shape until then placed in one's private imagination. A scenario opens up where there are no filters between the idea and its realization, in a rapid and expeditious process that is more effective, in some cases, more than any digital representation, because it is full of an expressiveness that is difficult to replicate and carries within itself a incompleteness that leaves space for a collective imagination that amplifies the boundaries of design possibilities.

Notes

[1] The students who participated in the workshop are: Lorenzo Giuseppe Aleo, Sara Autieri, Stefano Autuori, Aurora Bonora, Renata Califano, Chiara Camele, Francesco Castiglia, Antonio Capobianco, Marika Casoria, Federica Colella, Federica Cuozzo, Fabiana De Maio, Alice Claudia Allegra De Vita, Laura Devoto, Carmela Di Senna, Fabiana Raimondo, Gianpiero Sangermano, Flavia Scotti.

[2] Scientific director of the exhibition: Gianandrea Barreca, Massimiliano Campi, Antonella di Luggo. Curators: Massimiliano Campi, Valeria Cera, Marika Falcone.

[3] Curators of the first exhibition: Eleonora Carrano and Carmelo Baglivo.

Author

Gianandrea Barreca, studio Barreca & La Varra, Milano, comunicazione@barrecaelavarra.it

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Drawing and Performing Exploration in Ruin Site

Şebnem Çakaloğulları

Abstract

Concept of ruin is changed today. Building mass becomes a tool for terrorization of the body, it is a structure for the community's memory, and building becomes a place where working as witness is revelatory. The representation of ruin has an important role which not only presents various unity between subject and mass but also creates non-contextualized dialog in which all subjects and their relation with the site is drawing various abstract presentations of the environment. This paper is based on the concept of ruin which comes to architectural design practice in history. The aim of this paper is to meet our ancestral colleague today's experiment of ruin and ruining site at first find a contemporary model and perspective to evaluate this areal research. Drawing is not an analytic tool; drawing becomes a tool to progress the investigation on site what is not given by space in the moment. Drawing ruins offers special interaction with the 21st century where the world of crises becomes a chance to change the dynamic of life in terms of culture and aesthetics. As a result, what drawing ruins teaches us, as it did help with its sacred inspiration about form animation of architects, expands the form to use as a key in tying moments for developing alternatives of experiment in actual time. Drawing is a creation of an actual miracle against physical limits which is an experience kind of a censure.

Keywords: ruin, operation, time, aesthetic, Avant-garde.

Introduction

Defiguration, with its everyday aesthetic, encompasses more than just a practice of form and color; it serves as a repository of memories, a visual archive rich with data. This visual data engages our senses and triggers recollections of the past, leading us on an enduring journey through the landscapes of both external places and inner thoughts. Every day, we encounter the interplay of body and space, and within these experiences, we find the essence of memories that never truly fade. However, these memories also confront the harsh reality of decay, prompting us to question why certain buildings succumb to ruin over time. The concept of 'ruin' establishes a unique relationship with defiguration, a hybrid of textual and imagery elements. It offers insights into the structural capacity of these decaying structures while intertwining with the collective memories of those who engage with them. Together, these facets merge to create a timeless interaction, forming a collective experience beyond the boundaries of time. It's in the nostalgic conversations of the elderly, speaking of unreachable places from the past, that a mythic topography comes to life. Each person's perspective introduces a different era, yet the amalgamation of these accounts crafts a seamless and romantic dialogue, bringing forth the essence of the past in the present.

This research delves into the organizational capacity of dealing with ruin, exploring how ancient practices of drawing reveal the intricate connections between ruin, political realities, and practical considerations that significantly influence

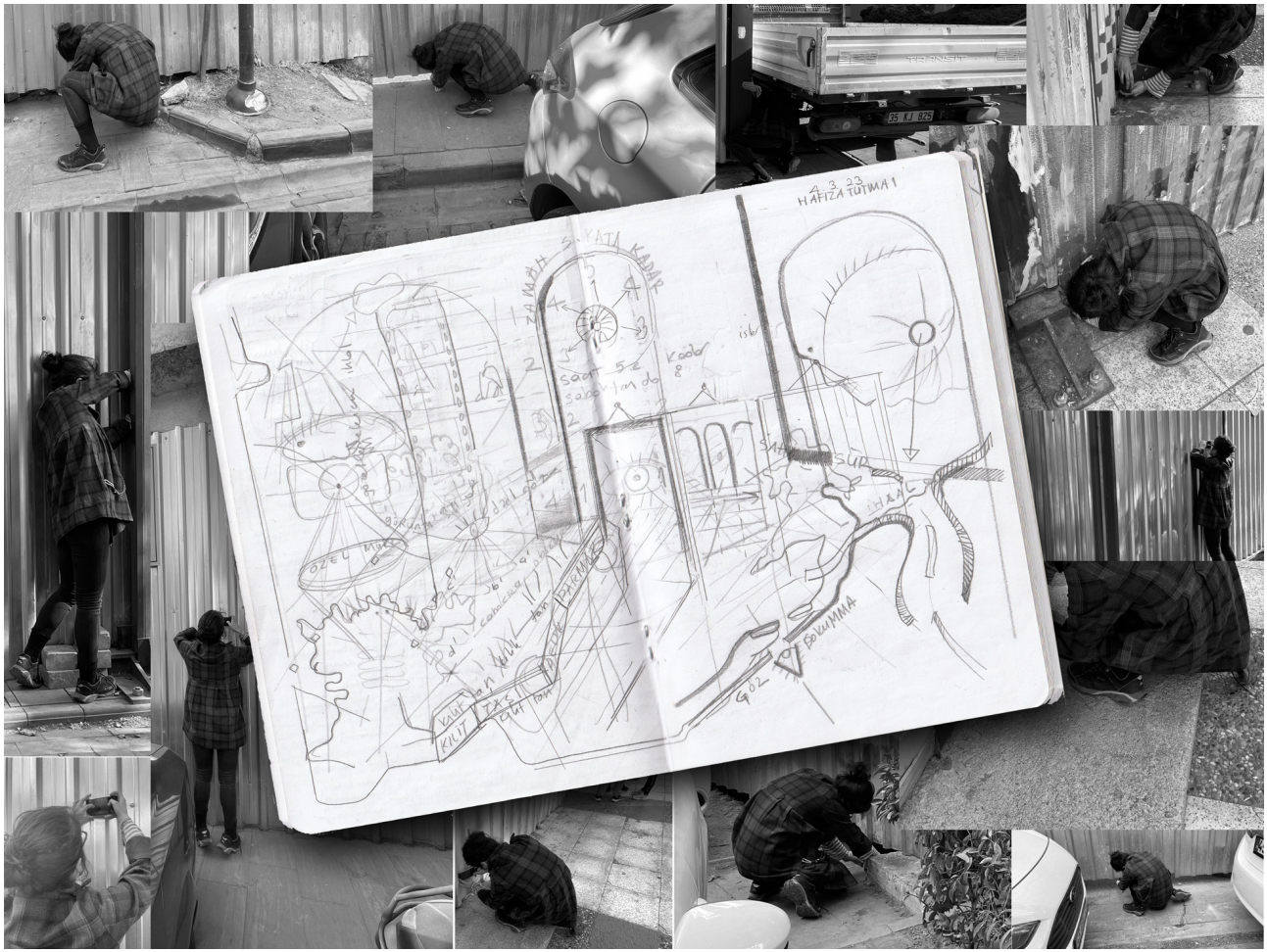

Fig. 1. Ideogram about the territories (graphic elaboration by the author).

spatial thinking and design. Ruin, both as a concept and as a subject in drawings, becomes a vital source for architectural pedagogy. The initial focus of this study is on defining what ruin represents in contemporary times. Additionally, it extensively examines the portrayal of ruin through drawings within the context of contemporary concepts. This drawing practice extends beyond the boundaries of architecture and converges with other disciplines and functions, establishing meaningful relationships. One pivotal aspect that binds the contemporary concept of ruin with various epistemologies of representation is the notion of viewing ruin as an ontological concept of existence. This perspective is notably influenced by the insights of Timothy Morton, which have had a profound impact on the researcher's thinking about ruin. By elucidating the multifaceted connections between ruin, drawing, and various contemporary perspectives, this research seeks to provide a deeper understanding of how architectural pedagogy can be enriched through the exploration of ruins as a significant and evocative theme.
Philosophy and art hold the potential to unlock solutions for various paradoxes. Timothy Morton's perspective challenges the conventional definition of ruins, which is often limited to mere physical structures. Instead, he perceives ruins as complex, integrated webs of relations that beckon us to explore their depths. This immersive and close experience goes beyond the confines of contemporary spatio-temporal concepts, fostering deeper interactions [Morton 2016]. Moreover, ontologically, everything is interconnected and forms an intricate assemblage, a concept Thomas Nail explores in his experiments with assembled unity. Applying this perspective allows for a comprehensive evaluation of this paper's interactions with ruins [Nail 2017]. Form undoubtedly plays a significant role, but it transcends mere aesthetics; it possesses its own memory.
Researchers in the field of dark ecological creation, studying complex relations in ruins collectively, showcase how spatial representation tools extend beyond creating visual qualities. These tools reveal the entangled data areas that create an entirely new level of landscape, akin to a ghostly code that enriches our visual interactions [1] [Tsybulnyk, Parvulesco 2019]. By combining philosophical insights with artistic expressions and embracing the complexity of ruins, we gain deeper understanding and appreciation of their profound impact on our perception of space and memory.
"Absence is often mistaken for nothingness, non-existence, not-thereness. It is none of those things. It is physical and palpable, as real as anything felt with the hands and skin, with the added sensation of longing or pain. The attached emotion is the only difference between absence and presence, and so the un-involved is unaware of its existence. Sometimes, rarely, we catch a glimpse of absence through a special lens, even when we are not linked to the emotional tie. In these pictures we are made part of the secret and the feeling, and will see and feel the absence as surely as though we were there when it became" [Strassheim 2009].

Contemporary concept of ruin

The definition of ruin in today's context has evolved to encompass various aspects. No longer considered solely a sublime entity, it now represents a concept of space within the early risk society, reflecting the modern world's complexities. Ruin is no longer limited to physical structures; it has transformed into a symbol of fatal decisions and the consequences of human actions on the environment. Nature itself can be seen as a form of ruin, revealing the dark side of technology and its detrimental effects on the Earth. Ruination, as a process of fatality, has become a focal point in understanding the contemporary nature of ruins. The impact of this fatality extends beyond buildings and architectural elements; it encompasses nature's resources, the accumulation of waste and debris, the loss of greenery areas, and the destruction caused by human activity. This complex interplay creates a dark ecology that continually generates new forms of ruin. In the contemporary perspective, ruins no longer stand in isolation; they are interconnected and embedded within small systemic relations. Everything is linked to everything else, forming a holistic vision of interrelatedness. This profound interconnectedness emphasizes the intricate web of consequences that arise from our actions, prompting us to confront the profound implications of ruination in the modern world.
Koolhaas, encompassing the accumulation of all the fatal memories of space, gives architectural representation in a different direction. What he was mentioning was the different set of tools for operating the relation within the living environment. He is called "junkspace". Junkspace revives the censored relation of design through the representation of architectural space as 'junk' [Koolhaas 2002]. This experimental approach delves into the visuality of space, transcending traditional written structures and embracing the visual consequences of tragic events. To see architecture as

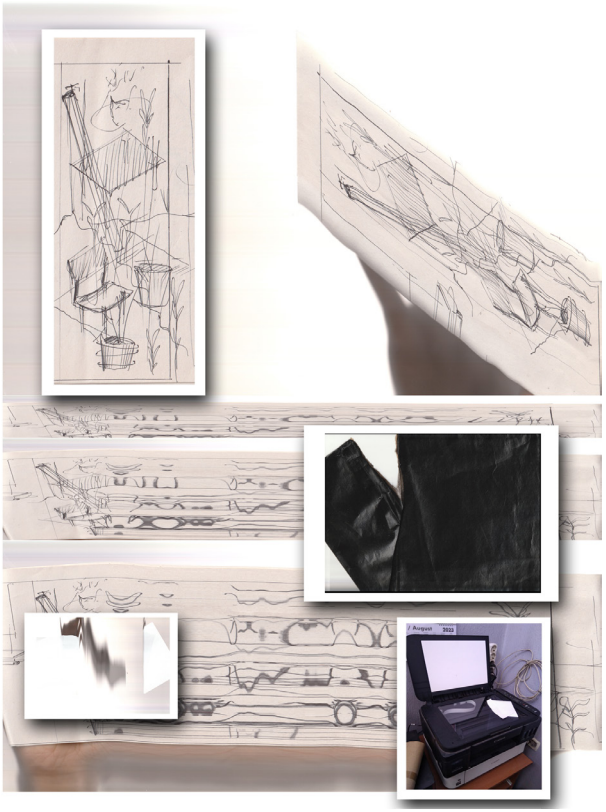

Fig. 2. 'Line' as an investigator. Experiment on scanner (graphic elaboration by the author).

a crisis actor is a potent tool, offering an alternative path towards transformation. It not only advances critical ideas but also challenges the established architectural norms through unexpected events. This operative tool transcends conventional methods via imagery and memory of a space and goes deeper into the profound impact of spatial experiences.

Ruin seeks to understand how these memories shape the built environment and influence human perception. In this context, the focus shifts from the mere description of tragic events to a deeper exploration of their visual implications. Through this unique perspective, modern architecture gains valuable insights, allowing designers and architects to create spaces that evoke meaningful emotions and resonate with the human experience on a more profound level. By incorporating the visual and emotional dimensions of space, this operating tool paves the way for more thoughtful and evocative architectural designs.

Textual representation holds the power to evoke visual operations, particularly when intertwined with the concept of fatality. Architecture's fatal images find their initial expression through representations of ruin and ruination, which in turn offer unique reflections of human consciousness within the built environment. Drawing ruins becomes a transformative operation, akin to a surgical process, unearthing the remnants of criminal events embedded within these architectural relics. In this context, drawing serves a purpose beyond mere artistic expression; it becomes a medium to unravel the mysteries of the past, to confront the consequences of human actions, and to explore the complexities of history. The act of drawing itself evolves alongside these aims, as the technology of drawing adapts to meet the changing demands of representing architectural concepts. No longer confined to the sole goal of designing architecture, drawing now becomes a vehicle for investigating the underlying narratives of the built environment. It becomes a powerful tool for unveiling the layers of meaning and emotion embedded within ruins, offering us profound insights into the interconnectedness between human actions, architecture, and the passage of time. Through this evolved perspective on drawing, we unlock new dimensions of understanding and appreciation for the haunting allure of ruins and their lasting impact on our collective consciousness.

The technology of drawing has evolved and developed through the process of eventscene proof-making. This evolution highlights the crucial role of drawing in connecting

time, allowing us to comprehend and unravel the significance of fatal events. Drawing serves as a means of proof, capturing and preserving the essence of these events. Ruined areas become archaeological sites, enabling investigations into past events whose memories lie concealed beneath the surface of the present. It is an aesthetic practice of archaeology, where the event scene itself becomes the storyteller, surpassing the accounts of mere witnesses, objects, and subjects. Through this approach, drawing transcends its traditional role and becomes a powerful medium for unearthing the essence of events, bringing them to life in our understanding and perception.
The formula of creative relation unfolds in the exploration of drawing's diverse objectives, particularly when it intersects with ruined spaces. It prompts us to contemplate the varied possibilities and goals that drawing can fulfill. In this context, drawing becomes a potent tool for investigating the research area that revolves around ruined spaces. The concept of ruin, stemming from fatal events with profound impacts on life, intertwines with the experimental aspect of defigured complex shapes. This exploration of fatal events also delves into the dimension of time, enabling the creation of a compelling concept for visual continuity within living spaces. Drawing, in this creative formula, transcends its traditional role, becoming a conduit for understanding, remembrance, and storytelling, while also serving as a bridge connecting the past and present, unveiling the significance of ruin in shaping our lived experiences within the built environment.

Concept of drawing ruin

Accustomed to the world of walls, we have suddenly been hit by a brick. The crack edges, shattered mortar, scattered fragments, and shaken alignments offer much to examine. Simplicity of substance explodes into variety of presentation [Ginsberg 2021].
Recording is not only a part of the order but also a medium that establishes connections with the marginal aspects [Canguilhem 2012]. Serving as a tool to establish different scale relationships, recording, in the words of historian Marc Bloch and further clarified by Weizman, involves the interplay between micro and macro determinations, both close and distant to each other. This interconnectedness generates multiple perspectives within the field of architecture, significantly influencing it in a broader sense.

Fig. 3. 'Line' as an investigator. Experiment on scanner (graphic elaboration by the author).

Fig. 4. Memories on surface from past to now (graphic elaboration by the author).

The concept of drawing encompasses various dimensions, ranging from capturing trauma and the human body to depicting traumatic objects. It transcends conventional artistic expressions, evolving into a therapeutic process and a form of body surgery. In the realm of architecture, drawing serves as a powerful tool for surveying, registering areas, and unleashing its vast potential. Unlike writing or texting, drawing offers a unique means of communication with witnesses, delving into the realm of the unknown. Through its diverse facets, drawing becomes a profound and enigmatic medium, connecting the tangible and intangible, and opening doors to unexplored realms of expression and understanding.

These interactions explore the intricate spatial-temporal relationships within various types of body-space unity, converging at two crucial points in the experiment of space. On one hand, they involve recording using diverse techniques reminiscent of a forensic investigator, employing modern tools to understand the ordered relations within transformed environments. On the other hand, they encompass the symbolism of ruin sites, representing the experienced images of crises that have shaped the very essence of these spaces. These explorations delve into the depths of human experience, revealing the profound interplay between the physical world and our perceptions, ultimately enriching our understanding of the complexities of space and time [Foucault 2012].

The act of recording nature through observation enables a profound understanding of all things within it. However, in today's context, it has become challenging to confront unsettling, deformed, or traumatized elements, often encountering censorship by authorities. Drawing emerges as a powerful tool to establish a connection with these significant aspects, constructing a bridge between reality and the architectural realm.

As architects, it is crucial to reconsider the images we consume, recognizing that they hold the knowledge about space, transcending mere conceptual representations. Images possess a materiality that necessitates a 'slowing down' of our interaction with visual materials, enabling us to delve deeper and investigate as witnesses, reflecting the projected consciousness of motion. Through this process, drawing becomes an essential means to intimately engage with the world and gain profound insights into the essence of space and its relation to the human experience.

Architecture of ruin: Ruin as hyperobject

Ruin has become a critical term in the 21th century, significantly defining the architecture of the modern world. Arata Isozaki, in his exploration of incubation, sheds light on how memory becomes an experiment within architecture, transforming built structures into potential future ruins [Isozaki 2004]. In the realm of modern radical architecture, ruin transcends the present; it represents the essence of life within the building, a repository of modern space's memories and a witness to the passage of time. Mc Murrough's intriguing analogy of ruin as an alien or zombie further highlights that it is not the end of the construction cycle but rather a place where memory incubates, resulting in a modern architecture that appears lifeless and consumed by consumerism. This fusion of odd, alien, and zombie-like imagery demonstrates that ruin expands far beyond being a mere product of modernity; it opens up a limitless realm of possibilities, where the past intertwines with the present and the potential futures of architecture converge in an evocative, enigmatic dance.
In Ruskin's illustrations, the focus lies on how the passage of time affects a building's physiognomy, with ruins often depicted as characteristic signs of aging [Muñoz-Vera 2012]. However, Morton introduces a more contemporary notion of aging, emphasizing the consciousness embedded within the stain of time. These marks of aging are no longer regarded as mere fantasy forms; they hold significant implications for the architectural consciousness of space. According to Morton, if the stain of time is a pivotal aspect of the built environment, then our bodies exist amidst entirely timeless spaces, concealing these stains beneath their surfaces [Morton 2013]. Morton's perspective on the contemporary concept of ruin shifts the focus to the political aspect of space. By connecting Ruskin's concept of ruin, centered around the stain of time, with Morton's ideas, we are prompted to explore alternative forms of environmental perception. This amalgamation of viewpoints enriches our understanding of the entwined relationship between architecture, time, and politics, opening new dimensions for architectural thought and expression.
In architecture, McMurrough delves into the concept of ruin, which extends beyond the mere biological aspects of the body. Instead, it embodies a grotesque and uncanny form, encapsulating the memory of the body while remaining detached from biological explanations [McMorrough 2008]. Through the fusion of fiction, materiality, and the remembrance of dire consequences, the architectural image of ruin takes shape. This peculiar relationship, akin to that of

Fig. 5. Print house work experiment about image and imaginary space (graphic elaboration by the author).

a zombie, challenges the conventional belief in cyclic time, where buildings perish and rise again. Instead, it introduces a linear process that signifies architectural space not as aesthetically superior to failure, but rather as an exploration of profound complexities. By embracing the essence of ruin, architects have the opportunity to transcend traditional boundaries and craft spaces that honor the enduring dialogue between decay and creation.
Ruin is undergoing a transformation, evolving from a mere symbol of failure to the addition of banal and non-functional ruinous structures. The terminology used to describe ruins has shifted in modern times, giving way to terms such as 'mutant', 'viral', 'creature' and 'blob'. McMorrough introduces the concept of the 'zombie' in this context, as it embodies the collective desire of the new terminology to infuse vitality and animation into the inanimate. This yearning for animating the non-living represents a departure from objectification, providing an alternative perspective that embraces the liveliness of animation [McMorrough 2008]. This profound inclination towards bringing life to the lifeless blurs the boundaries between the animate and inanimate, offering architects a unique opportunity to explore spaces that exude an enigmatic and alluring essence in their very existence.
The concept of a hyperobject as a ruin intertwines life and death, offering a profound connection that contemporary philosophy and architecture are exploring. This research delves into the unique relationship between ruin and consciousness, expanding the very notion of ruin as an experimental entity with logic and awareness. In the realm of modern architecture, the act of drawing ruins provides a glimpse into the hidden facets beyond our perception, revealing a stage obscured from our immediate senses. As ruin and bodies converge, they leave behind a transformed perception of motion, imprinting a trace of reality that lingers as a testament to their entangled existence. This exploration of hyperobjects as ruins propels us to reconsider the boundaries of life, death, and consciousness, offering a captivating and thought-provoking journey into the depths of architectural expression and human experience.

Drawing ruin as

Simmel illustrates the concept of ruin by exploring the interplay of force, form, area, and motion in life [Simmel 1958]. This realization prompts us to understand that the ruin itself is a representation of representations, signifying a novel perspective on the surrounding environment [McMorrough 2008]. Through narration and memory, as well as sensual perception, ruins depict a unique interplay of figures and ground, weaving a cosmological abstraction for our understanding and expectations in the realm of mechanical time. The ruin becomes a profound embodiment of the past and future, converging as a symbol of both decay and potentiality, shaping our perception of the world and offering a lens into the ever-evolving nature of existence.
Drawing ruin is drawing this chance form. In order to make this form of ruin representable it is needed for body and space integration. This situation created some unique combination about drawing and the visual experience of ruin. This section is in the modern sense dealing with representation of ruin. The basic abstract concept is the motion and ruining. Ruining to imagine ruin as motion of ruination is drawing a general frame. And this is kind of a parallel abstraction as deformation.
Ruin signifies strategies that point towards a shared practice and represents the common language of a broader quest. When conceptualizing ruins for architectural practice, McMorrough refers to their spatial dimension, which remains constant for everyone [McMorrough 2008]. Ruins are inclusive and have given birth to a kind of collective representational space. Deformation forms defined through architectural design are rendered as an exploratory environment where the spatial and fictional aspects, which reveal the complex identity of the design, interact through mutual movement [Borie et al. 2006]. Consequently, ruins, in their deformed state, become a practical realm for exploration and experimentation, such as through drawing.
Drawing ruins serves as a pedagogical tool, transforming ruin sites into learning spaces where the relationship between subject and object is explored. Wölfflin, in Baroque architecture, was among the first to theorize the phenomenology of the subject and the topographic condition of the object through drawing, moving away from conservative design ideals in search of the ideal [Wölfflin 2009]. Drawing as a learning practice profoundly influences the understanding of volumes, interior spaces, and illusionistic effects, leading to the development of new architectural terminology that expands upon the hidden knowledge acquired from the site. This constructed pedagogy evolves and expands vision through the embodiment of experiences in the material capacity of the body, fostering an inherent learning process between the body and the ruin site.

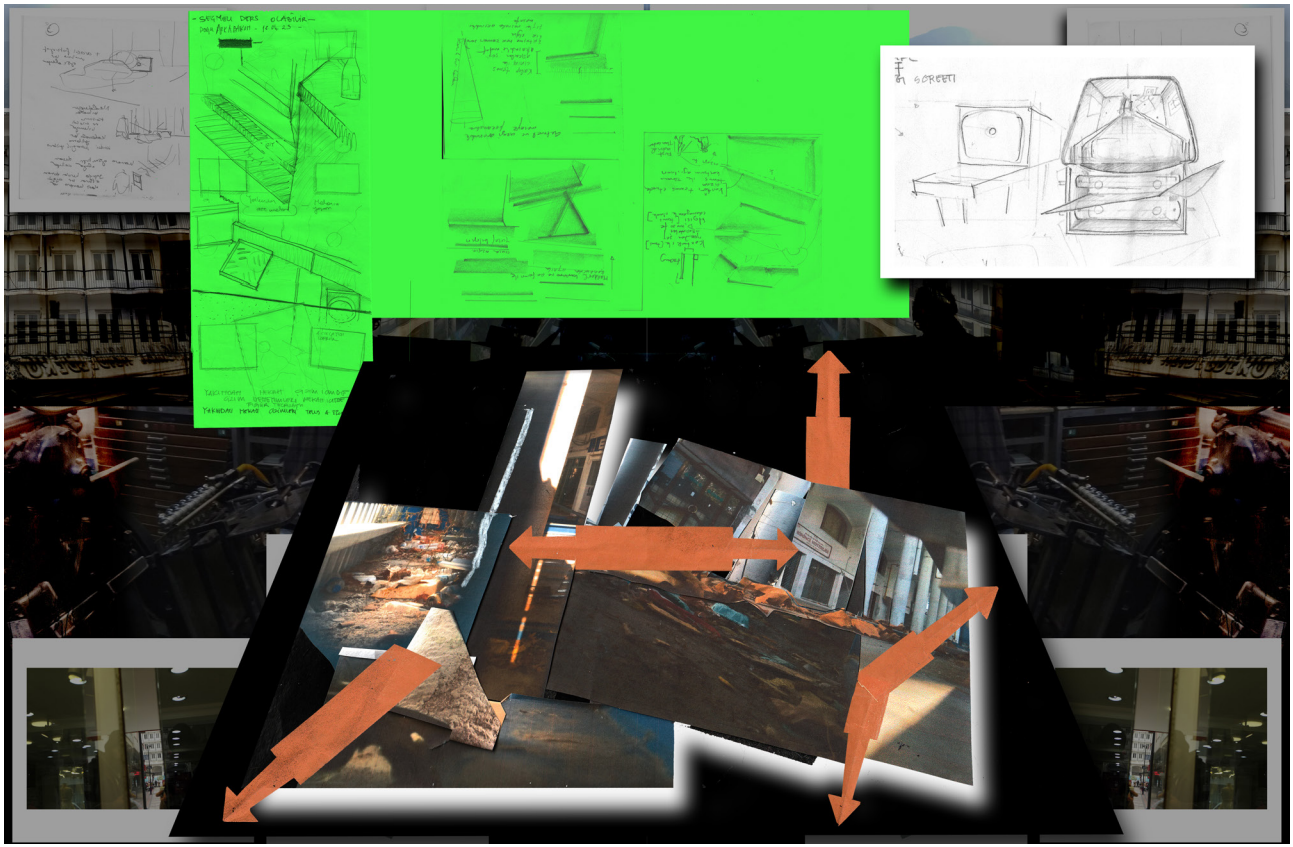

Fig. 6. Print house work experiment about image-imaginary space and force on lines (graphic elaboration by the author).

The consequences of the theoretical and artistic relationship regarding ruins are seen as an experimental ground for exploring politics and representing scope of spatial references. Ruin is a non-hierarchical concept that has gained a different context in the city environment. The pieces of the ruin area offer us a multi-dimensional experience of city. This experienced site is located at the very center of Manisa and constitutes a significant piece in the city's core. It is imprinted in the memories of the locals and serves as an essential example of civil architecture, leaving a lasting impact on the collective memory of civil architectural practices in Turkey. The ruined area introduces itself through continuous covered metal sheets, extending along the city, offering a unique aesthetic recognized through its white color, elegant row of tall columns, and characteristic black metal French balcony parapets. The experience described in the continuation of the text opens up the experimentation and representation attempt here.

Drawing continuity on the surface

Tracing the body trauma: put in the contour of area
As shown in the ideogram (fig. 1) the process involves capturing the imprints present on the body. With the body's elastic and curvaceous form, a mold presses onto it, leaving repeated imprints that need to be transferred. The interaction between the body and the mold's materiality introduces a fascinating variability in this transfer process. As the mold carves itself onto the body over time and through consistent pressure, the imprints become more enduring and take on a distinct form, altering the body's elastic structure. The surface practice becomes the crucial starting point for this exploration, enabling a close and dynamic interaction with lively images and memories of the objects encountered. In the context of the ruin area, this practice reveals the significance of certain unchanged elements like bushes, rubbish, and other objects that evoke familiarity and recognition.

Lines are investigator
The lines capture subtle micro-movements that emanate from the materiality within our field of vision. As these lines extend beyond the object, they gradually fade into the surrounding space, especially when encountering materials denser than air. The connection with the air generates contact particles instead of a solid surface, contributing to the gradual crumbling of the ruin mass. As shown in the Line a investigator series above (fig. 2, 3), this process prompts us to contemplate the essence of line drawing, as it becomes a reflection of the random crumbling and disintegration observed in surface volumes. It is through this exploration of impermanence and decay that we come to learn and appreciate the delicate interplay between form, materiality, and the passage of time.

Memory of surface practice total live moment
Lines are a time indicator over its elasticity like body and traces of biomaterial. Line is a temporal and while making itself it leaves a memory of other bodies. The area is marked by the presence and activities of bodies, leaving traces akin to the mucosa of a snail. We are inexorably bound to the materiality of the site, and in turn, the site carries these hidden imprints of biological materials. This dynamic interaction resembles the illuminating effect of Luminol, guiding our vision towards the site's deformable biologic inclusions. It highlights the concept of biofidelity, where all complexities in the environment possess inherent motion [Farberov 2014]. Furthermore, these residues are not static but can be dislodged, signifying the ever-changing and active nature of the relationship between the human body and the site [Brook 2018]. As shown in the surface from past to now (fig. 4), the accumulated motion memory on these spaces creates a dynamic narrative, making them carriers of unique stories through intertwined traces of memory.

Print house practice - Drawing - printing-operation
In this concept the montage is a multi focal surface situated in a print house. Area always has a gap point. I need to visualize some unseen areas. Therefore the drawer as I am and the experiencer deeply of this edge of ruin site create a perfect match like the mountain and its unseen part. Therefore continuity of recording is experienced half onsite, and half on print house through the soul of the environment. As shown in the print house work experiment (fig. 5, 6) drawing becomes a land work, it is emerging around the tool that is used for printing on paper. Images are cut, pieces are placed over and over and many combinations are tested for perfect match. Some structural pieces become clear and some of them lose their clarity. The final total image is created by lines. Continuity of image which is also visual practice of the ruin area creates its own map code. Rubbish, bush that is encoded form is integrated on the montage that directs our way through.

Conclusion

Drawing imagery starts with the vision of trash, becoming a catalyst for creating continuity in the area that transcends mere object form and delves into the realm of aesthetic visual experiences that captivate us in fleeting images. Drawing takes on a tactical role in making these journeys happen, expanding itself as a medium where conventional notions of drawing by hand diverge.
Drawing becomes an act of inventing new objects, pushing the boundaries of the areas it encounters (fig. 7). These areas go beyond mere architectural elements; they serve as gates that lead into the materiality of images, uncovering clues that have not yet solidified into tangible forms. The process assembles dynamic temporal traces, akin to dust on a pant, dirt on a hand, or scars on a knee, which become haptic memories for the drawer. The surface, once merely a screen, is now experienced through

Fig. 7. Ruin is developing tactics on how we are able to grasp things over and over (graphic elaboration by the author).

the position of imagery and trauma, imparting knowledge about matter.
The form of continuity takes on a deformed and defigured appearance, capable of creating patterns. These patterns extend beyond being purely topological or topographical; they carry not only abstract forms but also the memories of encounters between things and their movements. The patterns are wavy, reverberating, and foggy, breathing life into abstract forms, unveiling a myriad of other possibilities.

The act of drawing the ruin serves as an experimental exploration of the area. What enables this process is the profound engagement with the experiment through drawing, delving into various spatiotemporal relations observed within the site. The resulting conclusion provides a practical approach to drawing, encouraging continuous exploration and deepening of both the physical site and its emotional essence. Consequently, this approach offers a distinctive way of perceiving ruins.

Note

[1] One of the works called K-object reflects the practice of earth, landscape image through image and information. This work is open to online watch on the web site https://creatingruin.net/project/k-object (accessed 2 December 2023).

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Author

Şebnem Çakaloğulları, Department of Architecture, Istanbul Technical University, cakalogullarisebnem@gmail.com

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The Bohob Collective's Research on Catania: 'exquisite corpse'

Laura La Rosa, Luigi Pellegrino, Matteo Pennisi

Abstract

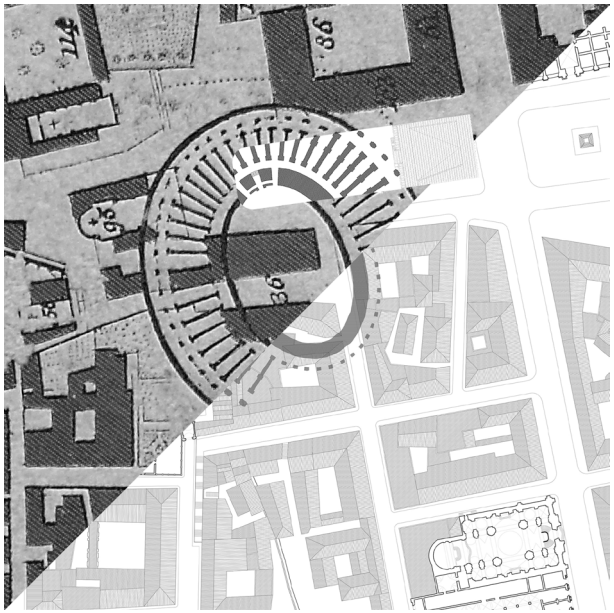
The paper investigates the research that the Bohob Architecture Collective is conducting on the city of Catania through two parallel paths: the Drawing of the city and the Minimum projects, held together by the drawing of architecture as a crucial tool in the discipline of architecture.
Sebastiano Ittar's 1832 Topographical Plan of the City of Catania depicts a city in which a new plan is undermined by the persistence of ancient fragments. This is the theoretical basis on which the Bohob collective's Drawing of the city is "founded", with the aim of elaborating a plan in continuity with Ittar's idea, proposing a minimal but decisive advance.
The Minimum projects arise from the need to build urban places near the archaeological areas in the centre of Catania, currently perceived as marginal. They consist of a "family" of precious shrines elaborated through the triptych, a drawing method that simultaneously holds together three scales: the 1:200 plan, the scale of the city; the 1:50 plan, the scale of the building; the 1:10 section, the scale of the architectural construct.
To the triptych, as a necessary appendix, is added the view, not so much the simulation of a future reality but the evocative representation of the idea behind the project: the city, archaeology and the minimal project on the threshold between the two.

Keywords: archaeology, city, project, Catania, drawing.

Foreword

Drawing the city as architecture in order to design architecture as city.
This is the purpose with which the Bohob Architecture Collective is conducting research on the city of Catania along two parallel tracks, one centred on the reading of the current city and the other on the design of certain specific areas: the *Disegno della città* and 'the minimal projects'. The common element is the use of architectural drawing as a tool that elevates critical thinking into an operative working method (fig. 1).
The idea is that the city is a complex construction of fragments capable, albeit belonging to different eras and often by 'pure chance' [Simmel 2017, p. 37], of composing a single whole. This is the common condition of every historical city, stratified for millennia on the same site, accumulating 'thickness' over long periods of time [1]. A process curiously analogous to the Surrealists' game of the exquisite corpse born in Paris around 1925, which involves a group in which each person draws without being aware of the previous player's entire drawing, but only of the points of contact to which he or she must connect. An analogy that clearly allows us to read a complex and millenary phenomenon: the city as an 'enormous exquisite corpse' in which so many players build 'autonomous' parts, because they respond to their own principles, 'but not independent', because they are bound by the fragments of the previous players' parts that are not entirely comprehensible (fig. 2).

Fig. 1. Bohob Collettive, Manifesto, 2021.



Catania is an exceptional city and it is located in an area that can be transformed in a very short time by violent events. Lava flows from Mount Etna and earthquakes over time make fragments of what until a few moments before were still buildings. Destructions due to natural cataclysms and, at the same time, the decision to rebuild the city each time on the same site have produced an exceptionally complex reality built from the fragments of several buried cities [Holm 2003] with which the next city is necessarily forced to establish a relationship.
In order to measure Catania's exceptionality on an ideal level, one might consider, purely by convention, that ordinarily a historical city rises an average of one millimetre every year. The lava flow that struck Catania in 1669 produced a rise of about ten metres in the three months that the lava encircled the city. Based on what has ideally been quantified for the slow growth of the historic city, it can be said that ten thousand years of lava flowed into Catania in three months, an abstraction that clearly restores the measure of what can and has happened in this city.
How does one draw such a complex reality and how is it possible to continue to transform it?
The city as an architecture of fragments and architecture as a fragment of a city.

The 'drawing of the city': the city as an architecture of fragments

The 1832 Mappa Topologica della Città di Catania by Sebastiano Ittar
Almost two hundred years ago, architect Sebastiano Ittar had to ask himself a similar question, answering it with a drawing that is fundamental in the iconography of the city of Catania and, in general, in urban iconography *tout court,* albeit little known and studied: the 1832 *Mappa Topologica della Città di Catania* (fig. 3). In this work, all the skills and techniques acquired by Ittar in the course of a 'wandering' life [Neri, Carchiolo 2018] spent, during his formative years, in various places in the Mediterranean converge in an admirable synthesis [2].
Upon returning to Catania, Ittar found a city entirely rebuilt following the 1693 earthquake that razed it to the ground along with almost all the urban centres of south-eastern Sicily [3]. The eighteenth-century city was entirely rebuilt on the original site with a layout of wide, straight streets as opposed to the previous layout of narrow, winding roads,

resulting in an extremely rare event in the history of cities: a modern city implanted on top of an ancient one. Ittar must have been well aware of this extraordinary fact to decide to represent it for the first time in orthogonal projection, taking about seventeen years to survey and draw it, from 1806 to 1823, as ascertained by Gallo [Gallo 1999, p. 172]. Drawing up the first scientific drawing of Catania in the first half of the 19th century meant fixing it "putting it on display" at the moment between the 18th-century reconstruction, now definitively complete, and the subsequent transformations, which had not yet almost taken place, considering the few punctual 19th-century interventions as negligible [Boscarino 1966].

However, having drafted the first scientific drawing of a city that until then had only been represented through bird's-eye views, a "subjective and deceptive" point of view [De Seta 2011, p. 309], is not the only change compared to the state of the art made by Ittar: the advancement in representation technique is accompanied by that in the idea of the city. Ittar does not merely complete a neutral planimetric restitution of the city, which would probably already have been sufficient to make it the fundamental plan of Catania in any case; he intends to represent, in its actual measurements, an idea of the city in which the fragment affects the form of the whole.

The blocks of the new layout are determined by the new layout of rectilinear axes but also by the permanence of the ancient streets that are as if 'trapped' within them. 'Public buildings' stand and mark the nodal points of the plan while at the same time being affected by the ancient settlements. 'Ancient fragments' fit into the blocks and between the public buildings, conditioning their immediate surroundings and overall form. Through these three elements Ittar represents the shape of a new city undermined by the persistence of ancient fragments and, equally, ancient fragments held together by the layout of a new city (fig. 4). Compared to this idea expressed by the *Pianta*, the block appears as the only element of the three if not contradictory at least weak in relation to the underlying thesis. The full-empty block cannot be assimilated as a 'fragment', if by this we mean an element endowed with such unity that it is irreducible into smaller parts. At the scale of approximately 1:6,000, which the *Pianta* is, and with the surveying instruments available at the time, it must have been an unavoidable choice for Ittar to draw the city by blocks. Whatever the reasons, it is in this 'gap' left open by the Plan that the Bohob Collective's paper intends to fit.

Fig. 2. Man Ray, Exquisite Corpse, 1928.

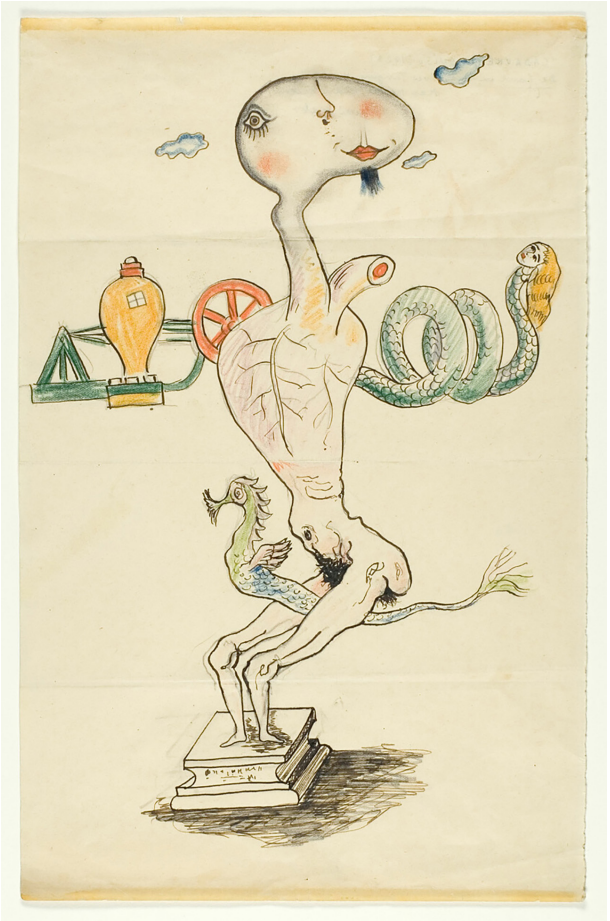
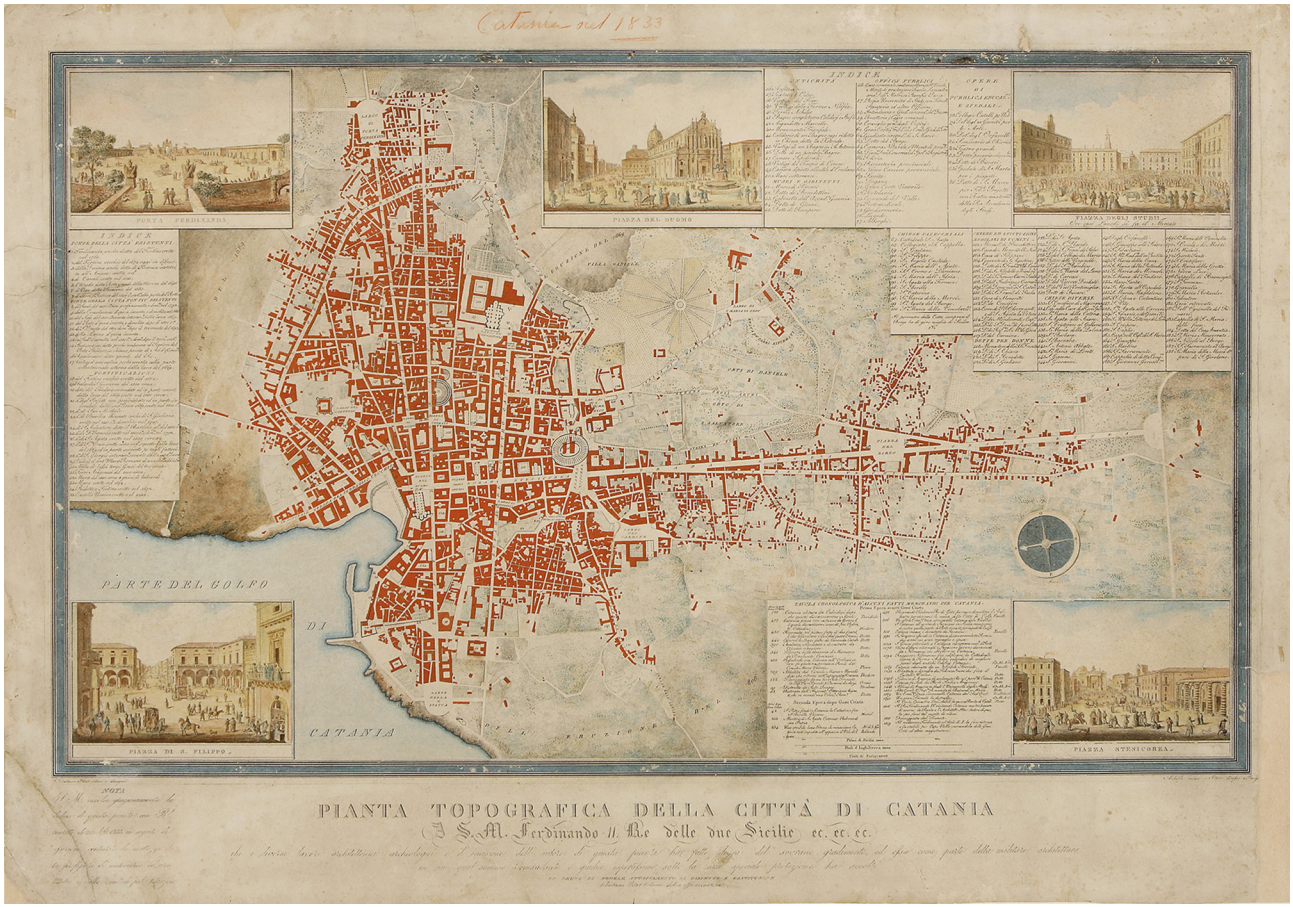
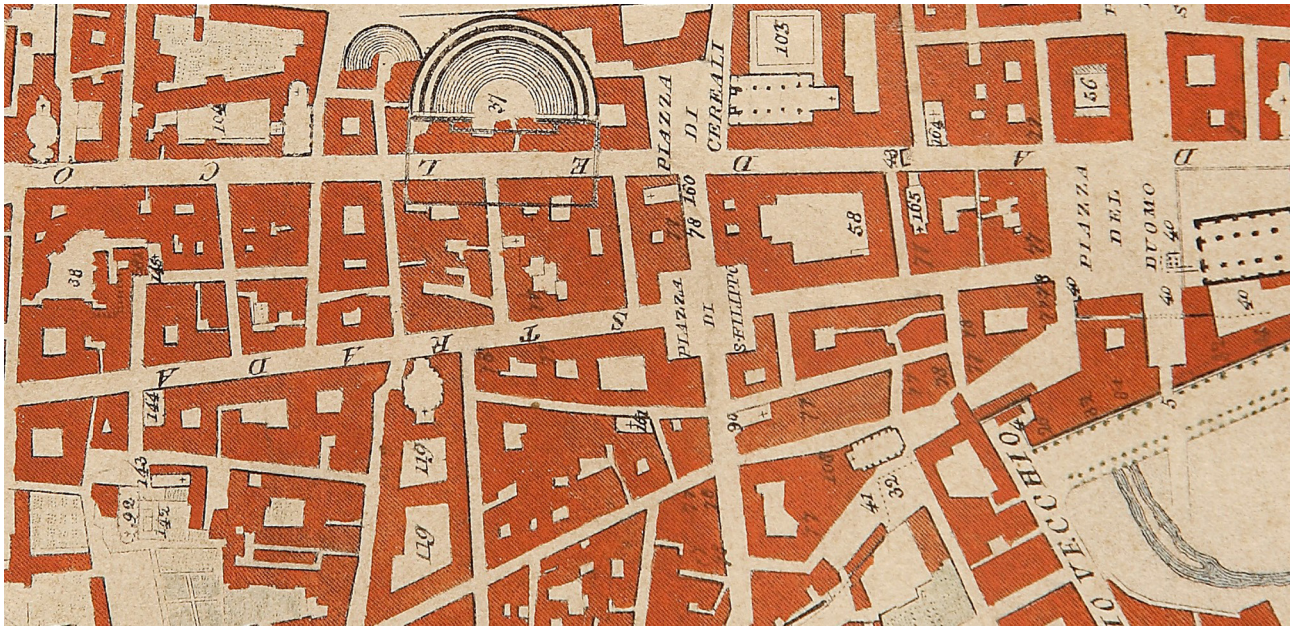


Fig. 3. Sebastiano Ittar, Pianta Topografica della città di Catania, 1823.



Il disegno della Città di Catania by the Bohob Collective
The Bohob Collective places the idea of the *Pianta* at the basis of its research, consequently accepts 'public buildings' and 'ancient fragments' as elements of the representation and, on the contrary, renounces the grid of blocks. The aim is to elaborate a drawing that is apparently different and, precisely for this reason, profoundly related to the chosen reference [4] (fig. 5).
A minimal but relevant advance is proposed: the drawing of blocks is replaced by the drawing of roofs. While it is true that a set of roofs is capable, like the block, of describing the urban texture, the full-empty relationship, it is also true that of the two only the roof is capable of conveying the density of the built fabric. For example, two blocks of equal size and shape would appear identical in a full-empty drawing, even if one identifies a single isolated building and the other a dense agglomeration of small houses. The block of flats is the result of individual building acts that can no longer be traced in it; the roof, on the other hand, is capable of restoring the density and measure of the built-up area. If one assumes the roof as a 'fragment', as a single building unit, and considers that the Ittar's Plan is based on this concept, one can say that drawing the roof and not the block is a choice more consistent with the idea of the Ittar than its own plan. The Collective takes up the baton deposited by Ittar as a guide for a new investigation into the potential of drawing in the urban context (fig. 6).
It is worth dwelling on the meaning and methodology of the drawing of roofs and the other two elements, public buildings and ancient fragments.
The word 'roof', in the context of this research, is not to be understood as a building component in itself but as an element of representation. It should be made clear, in fact, that the drawing of roofs does not consist in a mechanical re-proposition of the current state but in a critical re-interpretation of the state of reality. This operation aims to reveal the density of the built-up area and to define the urban form through their juxtaposition. In order to achieve this, it is necessary that each building corresponds to a roof. The widespread fragmentation of the building units makes it particularly complicated from a bird's-eye view to trace the size of the individual units [5]; overcoming this

Fig. 4. Sebastiano Ittar, Pianta Topografica della città di Catania (detail), 1823.



obstacle is an unavoidable step, firstly with respect to the objectives set and secondly because of the particular history of the city of Catania [6]. The critical observation *de visu*, by which individual units can be more easily identified, is supplemented by consultation of historical cartography in order to have a more complete diachronic view [7]. While it is true that this is not a mechanical redrawing of the current condition, it is also true that it does not consist of the hypothetical reconstruction of a past and lost condition, since the object of representation is still the current city: the drawing of the roofs aims to make evident, through small 'falsifications' of the representation, a *forma urbis* still in existence in the city, albeit latently.
With few exceptions, Catania does not consist of buildings that represent particular spatial innovations in architecture [8]. The choice of which buildings to represent in plan as 'public' buildings lies, therefore, not in the intrinsic quality of the space but in the potential ability to persist on the site by continuing to prejudice the shape of the city even when they cease to be architecture and begin to be archaeology: 'future archaeological fragments'. Similarly to roofs, again the plan involves a critical operation of interpretation, that is, drawing only the most enduring parts that mark the building's ground footprint while omitting the temporary ones.
The ancient fragments are the only colour element of the drawing, the sepia within the section signals the resisting on the same site to "catastrophes and middle ages" [Barenghi 1995, p. 340]. All the ancient fragments among those chosen, those that manifest a strong relationship to the form of the city, are drawn in their exact physical consistency, renouncing any reconstructive hypothesis of the original form. Considering only what remains responds to two main reasons: first, to highlight the material that has resisted the erosive action of time; second, to bring out the precipitous 'incompleteness' of the archaeological fragment that tends to 'complete itself' with the addition of the new. The *Disegno della città di Catania* aims to establish a dialectical relationship at a distance of two centuries with a drawing, the Ittar's *Pianta*, in which it finds a still fertile

Fig. 5. Bohob Collettive, Disegno della città di Catania, 2023 (in progress).

Fig. 6. Bohob Collettive, Disegno della città di Catania (detail), 2023 (in progress).

'seed' to be investigated. The idea of the Ittar city, indeed, is an 'ancient' idea: every historical city has built itself over time on its own fragments, seeing its form affected by their persistence. The Ittar's *Pianta*, not considered in its own documentary value but as a manifesto of an idea, is a key of extraordinary clarity for accessing and investigating a condition underlying every historic city.

The 'minimum projects': architecture as a fragment of the city

The 'excellent bricks' and an 'elegant parapet'

Nowadays, there is a split between functionality and spatial quality with regard to what might be called 'urban housing interventions'. Before the 20th century, the resolution of a problem, or at any rate the response to a practical need, did not in itself imply the impossibility of that object to build space. This view is supported, at least with respect to Catania, by the presence of some urban arrangement interventions that took place between the nineteenth and early twentieth centuries motivated by a need but at the same time capable of contributing to the construction of space; among these, the most useful case for the reasoning proposed in this paper is the project of the excavation of the Amphitheater in Piazza Stesicoro [9]. As the designer himself writes, the project consists of a work of urban decorum: "there would be given a more artistic appearance not only for the exhibition of the first order of our Roman amphitheater but also for the decorum of the works to be built: made the excavations the walls of the road's backfill, they would be covered with excellent large bricks of ancient appearance and with elegant parapet of Roman character" [Fichera 1904, p. 7] These words clearly show how still in the early 1900s an attempt was made to hold together the response to a functional need with the definition of a high urban character. Today this intervention is incontrovertibly manifested as the response to a need for decorum expressed and constructed in a form fully afferent to its era.

Starting from this consideration, the 'minimum project' goes against the current trend by attempting to reconnect with this long tradition. The chosen field is that of archaeological excavations within the historic city, probably the most emblematic cases of this split in which it appears evident that the only objective is to secure the excavation without any consideration of the character of the element being added. In truth, they seem to be objects designed precisely not to establish a relationship so much with the content of the excavation as with the urban surroundings. The 'minimum project' aims at the resolution of the same needs faced by archaeological enclosures by deliberately refraining from entering into the debate about the accessibility of archaeological sites or even the meaning of excavating archaeological areas within the dense city. These issues, though of considerable interest and around which it is good that there should be an increasingly active discussion, are beyond the scope of this research since the 'minimum project' investigates the possibility that it is the how and not the what that builds urban space. The proposed interventions address the same problems and functional needs faced by conservation institutions when they are in the presence of an archaeological excavation (the height difference with the city, securing the excavation, etc.); the difference is that the 'minimum project' attempts to establish a relationship as much with the material contained within as with the city outside.

A family of precious shrines

A number of areas within the center of Catania have been identified that share the presence of an archaeological fragment. Today these exceptional fragments live a condition of marginality and abandonment, presenting themselves as *objets trouvés* that emerged accidentally in the heart of the city. The purpose of the 'minimum project' is to restore decorum to areas that currently have none by building a "family" of new fragments placed in relation to ancient ones. Each project consists of a precious shrine of white stone identifiable by a clear geometry set at the fracture between the present city and the archaeological elevation. The project 'merely' emphasizes through matter and geometry a condition that is already in place [Venezia 2011] by reversing a condition of accidentality into one of exceptionality: two distant worlds unexpectedly confronting each other. Recognizability arises from the elaboration of a unified method that takes the form of a drawing, or rather a way of drawing that can guide the process (fig. 7).

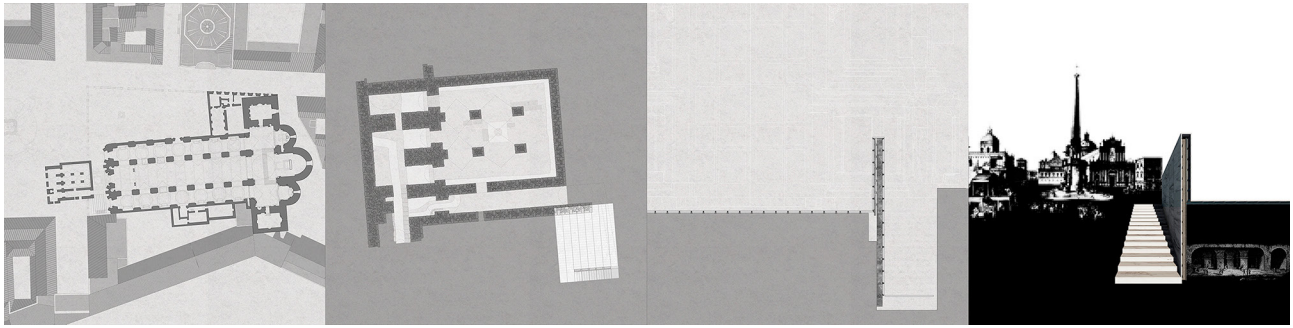
The triptych

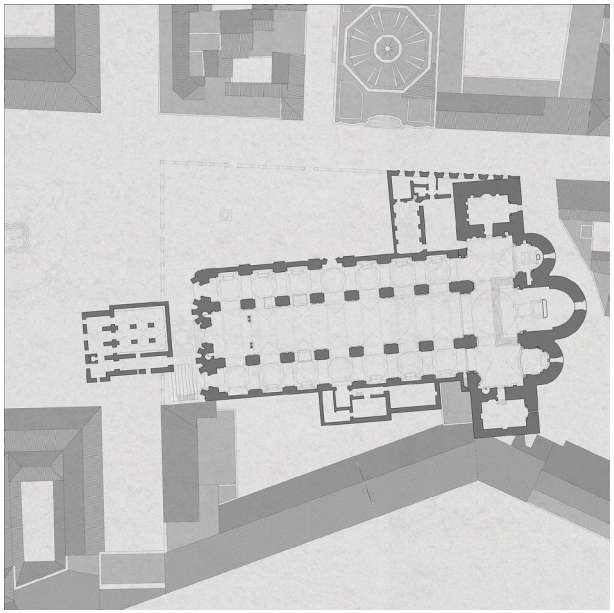
A drawing method has been developed in which three scales aim to simultaneously hold together the vast measure of the city and the minute measure of detail. This representational method is as valuable as a means as an end; it is useful in controlling the project and simultaneously

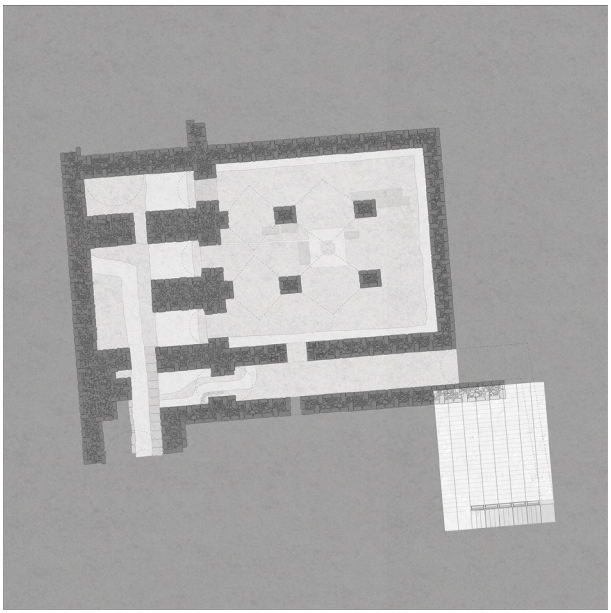
Fig. 7. Bohob Collettive, Minimum design of the Achillee Baths, 2023 (in progress).

Fig. 8. Bohob Collettive, Achillee Baths Triptych (detail 1:200), 2023 (in progress).

Fig. 9. Bohob Collettive, Achillee Baths Triptych (detail 1:50), 2023 (in progress).







representing the idea. Architectural drawing possesses the ability to make method what initially consists of a point of view about the city and urban space, in this case what underlies 'minimum project', and similarly the 'drawing of the city', is the assumption that the fragment builds the city. The project is seen as a "new fragment" capable of fitting into a complex reality by establishing relationships with the existing. The need to control both the urban scale and the scale of detail leads to the development of a representational method consisting of three drawings at different scales: the triptych. The scales are not bound by a successive consequentiality, none consists of an enlargement of the other, but by a simultaneity whereby each expresses its own specific issues: 1:200, 1:50 and 1:10. Consider the minimum design of the Terme Achille, a thermal building below the Piazza Duomo, located just to the west in front of the facade.

The 1:200 scale plan represents the scale of the city and the relationship that the 'minimum project' establishes with respect to the urban surroundings in which it fits [10]. What emerges in this first drawing is the position that the object occupies in the urban space; the existing city is represented in projection except for the elements with which the project establishes a more direct relationship. In this case, the Cathedral and the Achillee Baths are sectioned precisely because the project interposes itself in the hiatus that separates them and consists of a paved plane, on the Cathedral's forecourt, and a staircase necessary for access to the archaeological site (already currently open to the public), (fig. 8).

The 1:50 scale plan represents the scale of the building, that is, the direct relationship between the archaeological remnant and the 'minimum project'. The urban surroundings disappear to focus on the close comparison between the scale of the two fragments. This drawing clearly tells that the project intends to confront archaeology by contrast, opposing the large stones eroded by the time of the ancients with the precision of marble slabs juxtaposed together: the rigor of geometry in the face of the erosion of the archaeological remnant. A slight overlap anchors the two fragments to each other on a totally ideal plane, as there is physically no direct contact between the project

Fig. 10. Bohob Collettive, Achillee Baths Triptych (detail 1:10), 2023 (in progress).

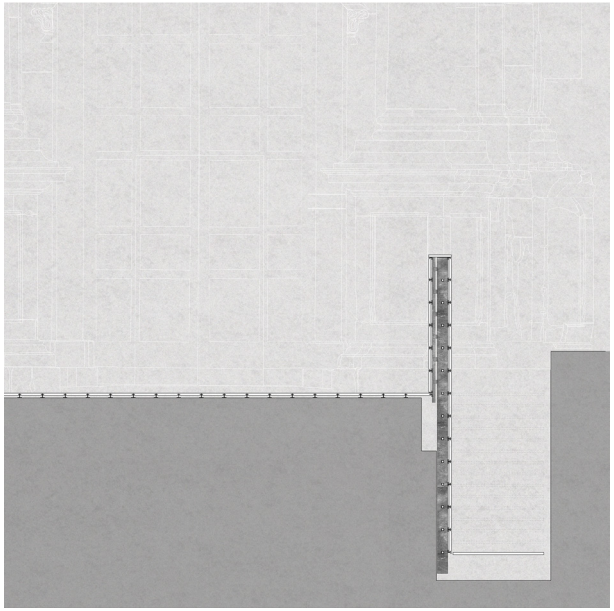
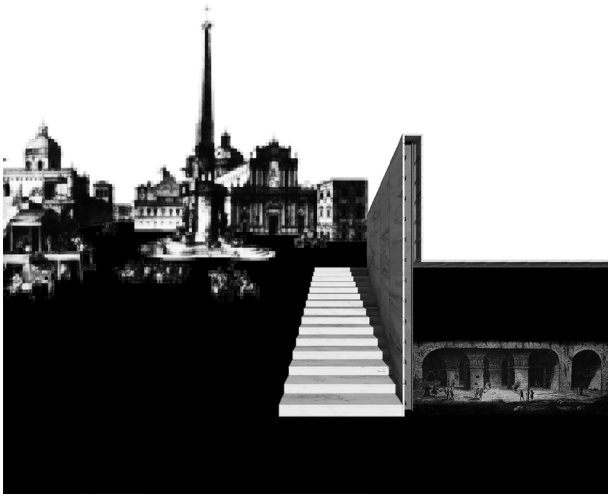


Fig. 11. Bohob Collettive, Achillee Baths Triptych, 2023 (in progress).



and the baths, but the abstraction of the drawing allows the deeper meaning of the project to be expressed (fig. 9). The 1:10 scale section-elevation represents the scale of the architectural construct, the vertical relationship between the current and archaeological levels. The syntax of the construction is revealed by showing that for both the pavement and the parapet, the architectural construct is the same. An attempt was made to work out an elastic construction method capable of shaping itself not only in several elements of the same project, as in this case, but also in the different sites chosen. The method, as can be seen, involves a metal structure shaped on the elevation accidents covered with marble slabs slid into this grid (fig. 10). To the triptych, at the end and as a kind of necessary appendix, the view is added. Nowadays it is common to narrate a project through photographic manipulation that aims to return as accurate an image of the project as possible once it is built. The photorealistic render has become part of the methods of representation in architecture. With the 'minimum project', a different use is attempted from the generally more widespread one, aimed at maximum verisimilitude with the realized project. Beginning with the realization that a two-dimensional image can never render the perception of a space, the view proposes another objective that, on the contrary, has been the basis of representation for a very long time: how can we represent not so much a future reality as an idea of reality? The view does not show the actual proportions of the project in relation to the city, unlike the triptych, but aims to tell the sense of the operation and the underlying idea behind the project. A view-manifesto that clarifies the elements in the field: the city, the 'background noise'; archaeology, the fragment of time; the 'minimum project', on the threshold between the two (fig. 11).

Notes

[1] An "artefact, relict of a previous rootedness, is taken up as substrate by a new rootedness process. […] This principle makes us realise that the temporal strata constituting a city are autonomous but not independent: the layer of the Middle Ages is organised according to its own logic and principles, but retains points of contact with the layer of Antiquity" [Gerosa 1999, p. 32].

[2] Sebastiano Ittar was born in Catania on 18 May 1768, the son of one of the most active architects of 18th century reconstruction, thanks to whom he frequented the most important building sites from an early age. In Malta, he drew up his first topographical map, the *Map of the Port and Fortress of Malta* (1792-1797). In Rome between 1795 and 1797, he portrayed the ancient ruins [Neri, Carchiolo 2018, p. 29]. Between 1800 and 1803 on the Acropolis in Athens, he surveyed monuments on behalf of the 7th Earl of Elgin [Buscemi 2008, p. 13]. In 1803 in Alexandria, he portrayed the main ancient monuments in pencil. In 1804, he returned to Catania where he lived until his death in 1847. For more on the figure of Sebastiano Ittar, see: Buscemi 2008, Gallo 1999, Neri, Carchiolo 2018.

[3] The strongest earthquake ever recorded in Italy [Rovida 2022]. "*1693. A nove gennaro, Venerdì, ore 5 di Notte. Li Coccodrilli Tremuoti col dorso scossero li Valli di Nemore e di Noto. La mattina del Sabato al comparire il gran Pianeta Solare mandava lugubri raggi, l'Aria obnubila. Si vide il fatto sconcerto nelle fabbriche delle Chiese e Monasteri, Conventi e Palazzi, Campanili e Torri, tutte vulnerati, con aperte cicatrici. Giunta l'ora 21 della Domenica 11 Gennaro. Ecco all'improvviso replicò fiero e gagliardo il terremoto, durando per lo spatio d'un De Profundis. Cadde tutta la Città di Catania rovinata e destrutta, divenne un aggregato di pietre. […]. Restarono dei Viventi, circa sei mila, ed incontrandosi l'uno all'altro, collacrimavano come novi al Mondo, con dolcissimi amplessi, respiravano nel vedersi vivi*" [Fichera 1925, pp. 3, 4].

[4] An ongoing study consisting of a plan measuring 5.60 metres per side that frames approximately the same portion of the city depicted by the Ittar. As can be deduced from the dimensions, the scale of representation differs from that of the Ittar being approximately twelve times larger. The scale of 1:500 was chosen as the last in the architectural field and "the first" in the urban planning field, the most appropriate, therefore, to represent the "city as architecture" and to perceive in a single drawing the overall form distinguishing its individual parts.

[5] "This dualism no longer presents itself with those same sharply marked geographical boundaries that had characterized the eighteenth-century urban structure into areas of poverty and misery […] and areas of wealth and privilege […]. For indeed the condition of social

marginalization of the subordinate classes today lurks in all real estate and practically runs through the entire so-called "historic center," in all directions: in the building superfetations of baronial palaces, in the arches of the hallways transformed into mezzanines, in the perennial permutation of rooms intended for workshops into living quarters, in the exasperated subdivision of real estate" [Dato 1983, 165].

[6] "The innovative character of the eighteenth-century city, in our view, is not to be found in the architectural definition of individual buildings, but in the free relationship that is established between its urban layout and building typology. The Duke of Camastra's plan composes a grid of public spaces so wide-ranging that within the blocks any typological episode, from the aristocratic palace to the convent, from the public building to the terrane house, can be borne, without detracting from the overall formal and functional balance of the city. […]. Given this freedom of composition of individual buildings […] the Baroque criteria of unitary control of pieces of the city through uniform designs or the artificial construction of "urban theaters" begin to unhinge. Hence the coexistence, within the eighteenth-century city, of building fabrics unitarily conceived (see, for example, the uniformity of the elevations of the palaces around Piazza Mazzini) with others fragmented by the modest terrane houses or composed of single or several buildings endowed with their own morphological individuality" [Dato 1983, 163].

[7] In addition, of course, to Ittar's *Plan*, the theoretical and practical reference of the drawing, other maps prove particularly useful: the Angelica's Map (1584), the most precise on the pre-earthquake city; the two eighteenth-century views (Vacca's of 1760 and Orlando's of 1761), the first and most precise to depict the reconstructed city; cadastral maps and in particular the 1876 Cadastral Map of the Urban Center, for precision in the subdivision of the building unit.

[8] "Excluding some original contributions by G.B. Vaccarini, Francesco Battaglia and Stefano Ittar in the spatial organization of some churches and baronial palaces, the architectural landscape of the aristocratic and ecclesiastical city is normalized in building typology and relatively homogeneous in form" [Given 1983, 163]. They were joined in the nineteenth century by Sebastiano Ittar, as Dato himself writes shortly afterwards: "Only Sebastiano Ittar tried to overcome this typological uniformity by inventing new architectural organisms and new urban forms" [Dato 1983, 164].

[9] Although the first excavations date back to 1748 at the behest of the Prince of Biscari, the most recent excavation campaign conducted by architect Filadelfo Fichera is from the early 20th century. In 1902 the Amphitheater was in such an undignified state that it was decided to intervene, proposing three objectives: the valorization of the monument, the hygienic rehabilitation of the area and "the 'decorous' arrangement of the square" [Treccani 2010, p. 171]. The work, which originally involved the expropriation and demolition of all houses falling within the area occupied by the monument [Treccani 2010, p. 172], 'was reduced' to excavating only the portion of the monument insisting on public land, the western part of Piazza Stesicoro.

[10] Understanding the 1:200 scale as the 'scale of the city' is consistent with the idea behind the research that is urbanism and architecture coexist simultaneously. This scale, addentrous to the so-called "architectural scales," extended to a sufficiently large portion of the city (a square of 160 meters on a side) makes a small project (8x10 meters) legible in its close surroundings.

Authors

Laura La Rosa, Scuola di Specializzazione Beni Architettonici e del Paesaggio, Politecnico di Torino, lauralarosa3@gmail.com
Luigi Pellegrino, Department of Civil Engineering and Architecture, University of Catania, luigi.pellegrino@unict.it
Matteo Pennisi, Dipartimento di Ricerca e Innovazione Umanistica, University of Bari Aldo Moro, matteo.pennisi@uniba.it

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On the Multivalence of Drawing

Filipe Magalhães, Lera Samovich

Abstract

The paper explores fala's process of drawing, not as a daily routine, but as a source of breakthroughs and reconsiderations in established projects. It expresses a preference for drawings that exist for their intrinsic value, embodying intangible ideas, concepts, and reflections on form, space, and intelligence. The paper contends that a project unfolds through a plurality of drawings, highlighting the importance of single lines, collages wireframes, and renders. Referring to Charles Jencks' concept of multivalence, it posits that each drawing influences and informs others, creating a multivalent experience that adds depth and meaning to the project. fala proposes that their built work is a byproduct of the drawing process, challenging the conventional view of the drawing's dependence on clients, commissions, or sites. Each drawing is an independent entity, and the building itself is a form of drawing.
Drawing parallels with Kazuo Shinohara's perspective, fala argues that the act of communication and rhetoric surrounding architecture is as crucial as the built form itself. The paper posits that drawings and representations hold a social value that transcends the physical existence of the architecture. In conclusion, the paper presents a compelling argument for the autonomy of drawings, their multivalent interplay, and their central role in shaping the narrative and cultural significance of architectural practice, echoing the idea expressed by Kazuo Shinohara in viewing architecture as a beautifully choreographed fiction.

Keywords: drawing, multivalence, fiction, architectural practice, rhetoric.

Within fala [1], the act of drawing, or better, the action of rationalizing what a drawing can be and how it could be understood, became a fascination. It is not as if we wake up thinking about it every day, or for every drawing we do; most times, with the daily rush of clients, contractors, and permit applications, we don't even find the time. Nevertheless, occasionally, it happens: a small breakthrough, another possibility, a certain mistake that raises a new possible reading of an old project. From there, discussions arise over the "what" and the "why" of a representation.
We like to draw. Many drawings, of different kinds, mostly the unnecessary ones for the client or permit. Mainly the ones we want to do, not the ones we have to do. The drawings that are drawings before being anything else. The ones that represent something intangible, an idea, a concept. Drawings that reflect on form and space, on ideas and intelligence, on intentions and contradictions. Drawings about geometry and about gravity. Drawings with no gravity. Drawings that have a deep rationality, others that are profoundly illogical.
Within our inventions and appropriations, we could argue that single line drawings are more important than wireframes, that collages prevail over renders. Comprehensive drawings come and go. A project could do without butterflies while execution drawings are somewhat a necessity.
We could go into details and elaborate on specific aspects of every kind of drawing. Indeed, all are different. All address a particular side of one project.

Fig. 1. 087, house without idea, Lisbon, pt, 2022 (photo by Giulietta Margot).

Single lines are abstract and didactic. Butterflies are drawings of very few lines. Wireframes are snapshots of three-dimensional models built solely from lines. Renders are humble and straightforward low-resolution images, while collages are abstract and ambiguous.
We could assume that all is one. The project is unfolded only through a plurality of drawings. In *Meaning in Architecture* (1969), Charles Jencks wrote about multivalence of meanings [Jekcks, Baird 1969]. Perhaps this discussion could be extended to drawings. One cannot separate different lenses and tools because they have grown together and become linked through a process of continuous feedback. And these multivalent links set up a condition where one drawing modifies and informs another in a continuous series of references. The plurality of drawings create a multivalent experience where one fluctuates from drawing to drawing always finding further meaning and depth. Through drawings –single lines, wireframes, renders, execution drawings, collages, photographies, butterflies– the project is experienced as a multivalent whole.
As such, it could be a valid point to suggest that our built work –a "building", or "house", or something else of that nature– is just a side product of a drawing process. Some could defend that, to exist, the (architectural) drawing would need a reason, a client, a commission, a site. Some others, that the site, the client, and the commission need a drawing to be answered. A sort of dependence.
We like to think otherwise, that each drawing is an entity on its own. Free, independent, beyond its pragmatic purpose. Moreover, if a building is seen in the same way, as a drawing and, consequently, as a free entity, it being used as a house or as a chapel is of little interest to us. Space is space, and lines are lines, regardless of everything else one might want them to be.

Fig. 2. 087, house without idea, Lisbon, pt, 2022, 'wireframes' drawing.

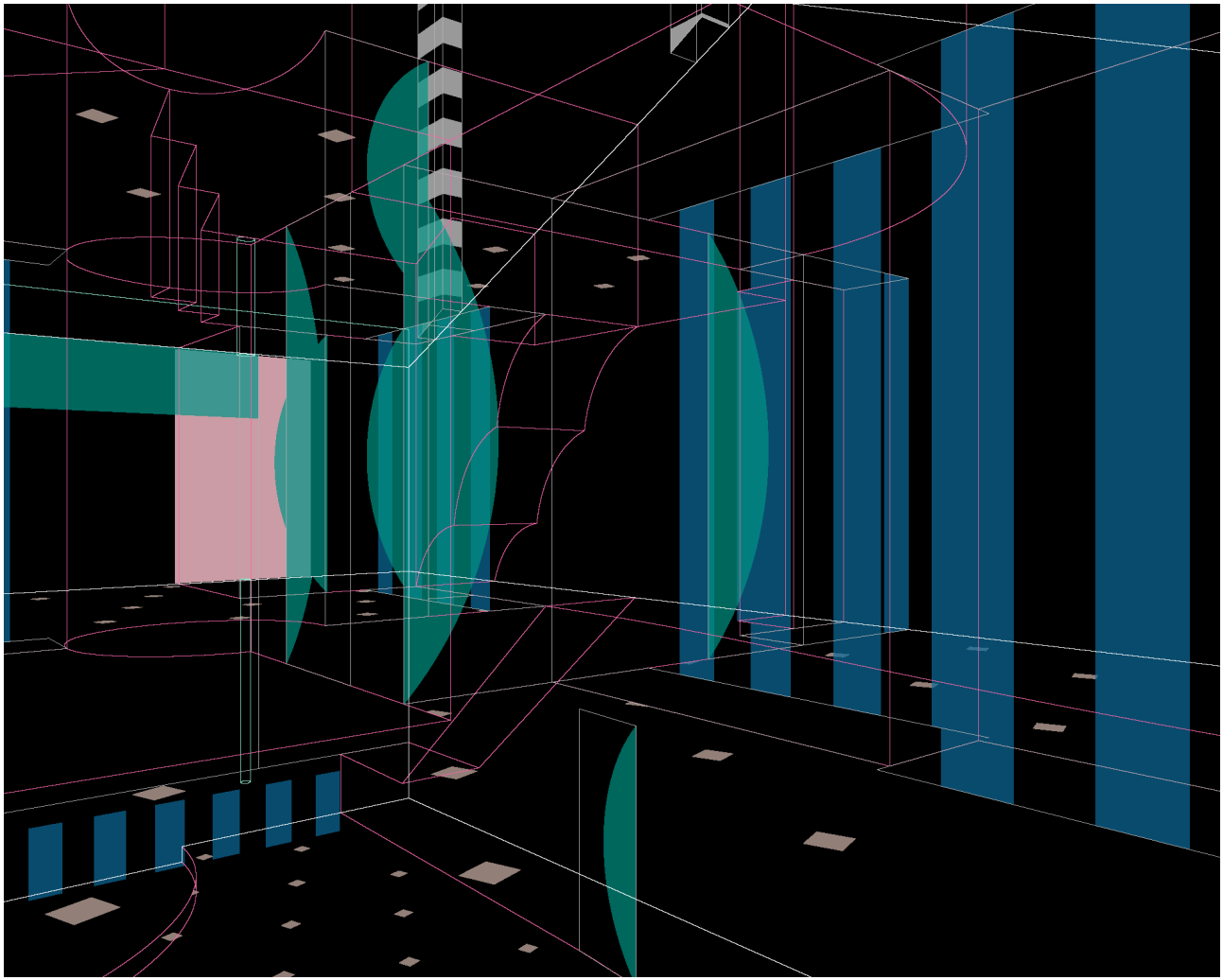
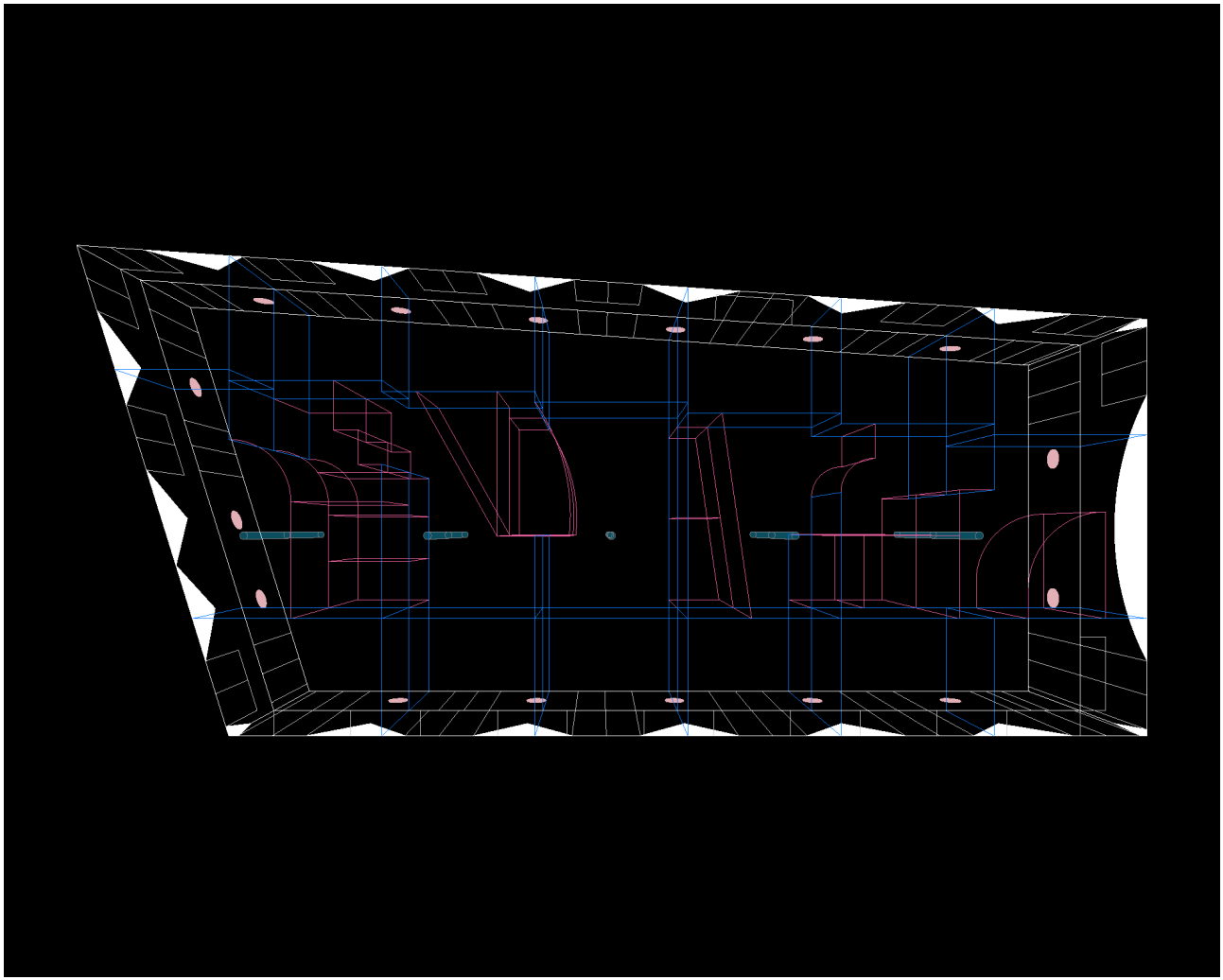


Fig. 3. 094, house of countless windows, Lisbon, pt, 2022 (photo by Giulietta Margot).

Fig. 4. 101, houses of cards, Marco de Canaveses, pt, 2021, 'wireframes' drawing.



Even more, we could argue that a building is a drawing of its own, necessary to explain the plan and section as they intend to explain the building. As if the plan required a building to make sense. And a collage. And a text. Or vice-versa. All drawings depending on each other, all completing one another.
Maybe in this tension, of edifices as drawings and drawings as edifices, we can find a complete narrative, a "second language with many meanings", like the one theorized by Koji Taki [Iinuma 2020]. Maybe, by assuming what does and doesn't matter in each drawing, we can find some sort of cultural purpose, to make sense beyond our simple role as architects.
Kazuo Shinohara wrote, in 1964, a text on seven points for his architecture [Shinohara 1964]. He stated it was not for the site, for the city nor for the client. Yet, after six negatives, the only affirmative point was the idea that architecture, his architecture at least, was intended as a beautifully choreographed fiction. That the selection of drawings, photos and words that he would use to describe it in magazines, were as important, or even more important, than the buildings they referred to. For him, architecture became tangible when it was communicated and rhetoric. His images and representations could have a social value, since they would reach further than his buildings (that would belong to a single person or family). He could express something bigger than the bricks and doors and windows that composed his houses. His architecture could even disregard the built work: in many cases disappeared already, although the multivalence of the representations he left still allows us to read and understand his oeuvre.
We feel the same.

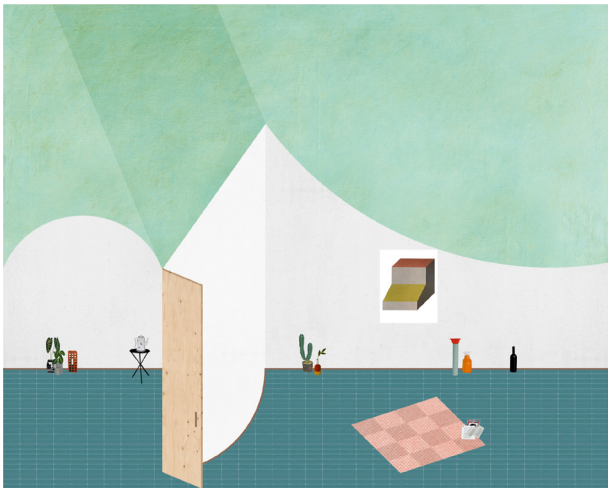


Fig. 5. 114, house within a few lines, Porto, pt, 2022, (photo by Francisco Ascensão).

Fig. 6. 114, house within a few lines, Porto, pt, 2022, interior collage.

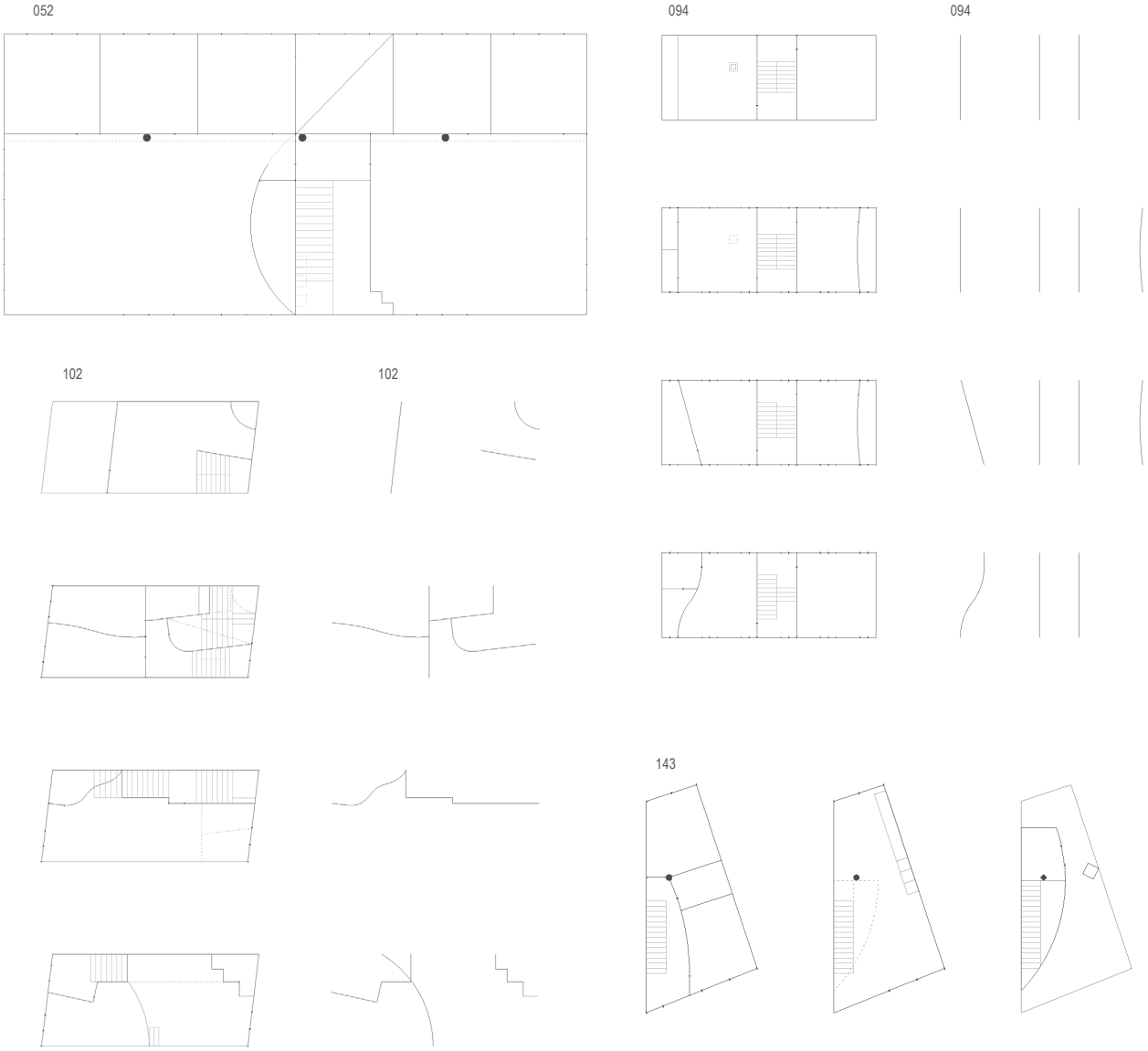


Fig. 7. 052, reasonable housing, Penafiel, pt, 2018, single line drawing; 094, house of countless windows, Lisbon, pt, 2022, single line drawing, 'butterflies' drawing: 102, housing with pink chimneys, Porto, pt, 2022, single line drawing, 'butterflies' drawing; 143, house around a column, Porto, pt, 2024, single line drawing.

Notes

[1] fala is an architecture practice. Founded in 2013, and based in Porto, the atelier is led by Filipe Magalhães, Ana Luisa Soares, Ahmed Belkhodja and Lera Samovich, together with Ana Lima, Joana Sendas, João Carlos Lopes, Catarina Vilarinho, And Eduardo Loureiro: <https://falaatelier.com/> (accessed 23 October 2023).

Authors

Filipe Magalhães, fala atelier, mail@falaatelier.com
Lera Samovich, fala atelier, mail@falaatelier.com

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Iinuma, T. (Ed.). (2020). *Searching for the Language of a House: Architectural Photography of Koji Taki*. Tokyo: House of Architecture.

Acknowledgements

To this text, we attach a set of representations, drawings of sorts, we could say. They are from different projects and obey to different rules. Yet, all do the same in our eyes: communicate a second language of our own work detached from the reality of our daily practice.

Shinohara, K. (1964). *The Autonomy of House Design, In Kenchiku*, pp. 64-72. <https://designmanifestos.org/kazuo-shinohara-the-autonomy-of-house-design/> (accessed 23 October 2023).

Theories and Research

San Rocco is Dead. Long Live *San Rocco*

Nicolò Ornaghi

On Wednesday, June 26, 2019, a farewell event was held at the Triennale, in Milan, for the celebrated architecture magazine *San Rocco*, which had passed away prematurely –the initial plan was for 20 issues to be published– with the 15th issue dedicated, fittingly, to the theme of 'Death'. San Rocco was, at a global level, one of the most successful publishing experiences of the last 20 years in the field of architecture. A magazine printed in 3,000 copies, almost always sold out. A kind of publishing miracle for an independent magazine, produced in Italy and dedicated to the autonomy of architecture, a discipline notoriously in a tragic condition, at least in this country.
A group of editors in their thirties and forties, in 2010, created an editorial success story capable of influencing a long slumbering European and international architectural scene in a debate that considered only a few disciplinary topics and that largely excluded history, preferring originality and invention. *San Rocco*, on the other hand, deals mainly with –or rather, dealt mainly with– the history of architecture, in the conviction that there can be no authentic progress without solid foundations and that these foundations can only rest on the notions that the past provides and from which it is possible to draw extensively. *San Rocco*, in essence, looked to the past.
So far, nothing different from an academic, even rather conservative, journal. *San Rocco*'s stroke of genius was to make such topics attractive.
It should, therefore, be made clear that San Rocco was not a magazine as we have, or at least I have, been accustomed to considering architecture trade publications where, usually, after a good half of the volume devoted to ceramic tile advertisements, more or less ugly furniture,

This article was written upon invitation to frame the topic, not submitted to anonymous review, published under the editorial director's responsibility.

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Fig. 1. INNOCENCE, San Rocco #0, Summer 2010, cover.

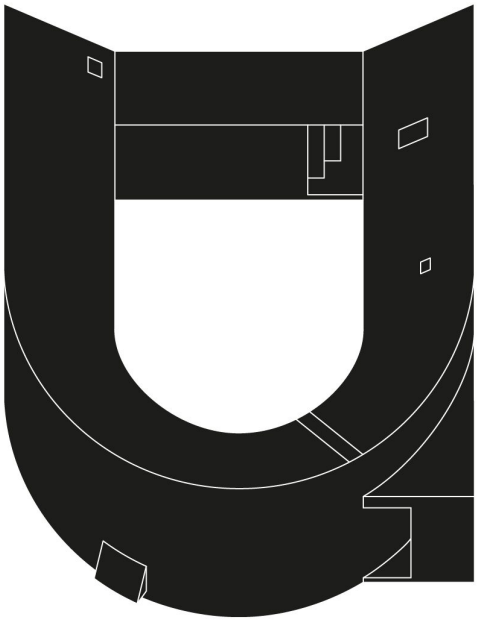


Fig. 2. ISLANDS, San Rocco #1, Winter 2010, cover.

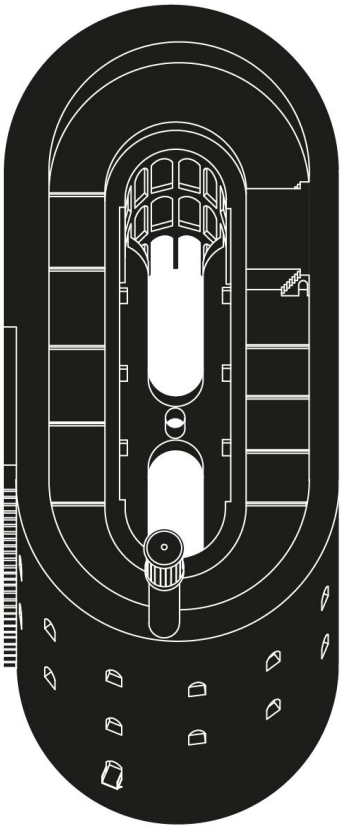
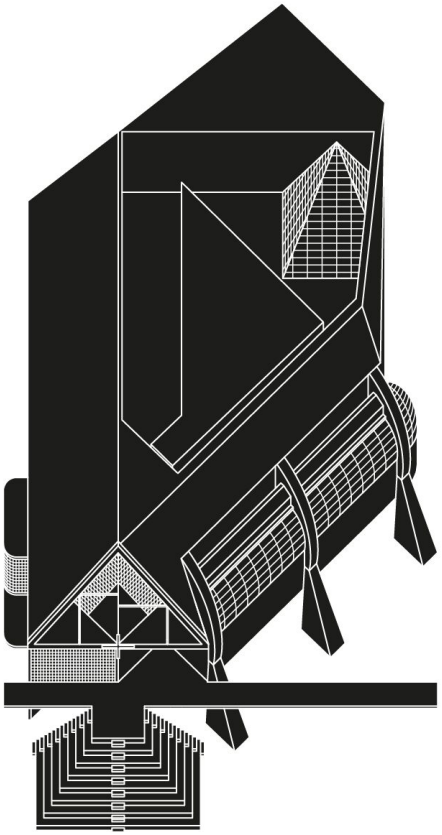


Fig. 3. FUCK CONCEPTS! CONTEXT!, San Rocco #4, Summer 2012, cover.

Fig. 4. SCARY ARCHITECTS, San Rocco #5, Fall 2012, cover.



miraculously efficient fixtures, and cladding of all kinds, contemporary projects are presented according to the taste of the editor(s) and, in the best of cases, some in-depth discussion of retrofitting or restoration of architecture of the past. The editorials are almost never of interest and the subject of architecture is treated in a purely performative manner, that is, you look at the photos, maybe read the text, and decide whether you like it or not. The End.
San Rocco reversed this trend, in full controversy (all too explicit) with the magazines that made up the panorama of the early 2000s –which were, moreover, the same as they were 30 to 40 years earlier– and focused on the ideas of the editors, who started each issue with a theme they had anticipated in the previous issue with a detailed call for papers. *San Rocco* promoted ideas and a vision of the discipline in open contrast with the architectural themes fashionable in the early 2000s, sometimes downright delusional.
On the one hand, therefore, *San Rocco* opened participation to a potentially endless *parterre* of content, very precisely addressed while avoiding the annoying academic 'please elaborate' that often pervades publications of this kind, and which allows you to write, under a keyword as generic as it is useless, for example 'isolated house,' any corollary of thoughts, difficult to integrate e*x post facto*.
The result was a cohesive organism, like the thematic issues that the editors proposed from time to time. As it is not appropriate to list here the specific contents and topics covered, I thus refer to the website, still in operation, which plays the role of an archival and historical memory role of the journal. There was also to have been a second life of the magazine, a sort of 2nd five years plan of which a trace, at least up to now, remains only in the website.
Obviously, as is normal, the subjects of the issues corresponded to the interests and imagination of the editors, who were, moreover, several, while sharing the idea, also not without a certain idealism, that architecture is a collective matter and therefore discussing architecture can only be done as a group, collectively. All this, of course, generated multiple interests, and a multiplicity of themes ranging from Richter to Sangallo, from Sottsass to Rothko, and from SOM to the first OMAs.
In my opinion, the most interesting feature of *San Rocco* is the fact that this polyphony of potentially cacophonous content was actually properly orchestrated and produced a certain totally unexpected coherence and linearity, which was certainly part of the magazine's success.
Other tools for the magazine's success were mainly provided by a mixture of unusual prose (at least it was unusual for an architecture magazine), and extremely rigorous graphic and photographic apparatus: on the one hand, a writing style, anything but academic, was proposed, deliberately casual to the point of, at times, excess. On the other, there was a focus on an extremely classical relationship between text and images, excluding diagrams, infographics and other visual apparatuses. *San Rocco* was classically composed of text, images, and drawings.
This complex mixture of elements made the magazine a particularly refined editorial product, meticulous in its details, very complicated to edit and produce, very expensive to print and therefore very unprofitable, as indeed most quality editorial products are.
San Rocco has undoubtedly had a great merit, namely to bring together the most interesting architects of a generation, the ones that in 2010 were 30 to 45 years old, in a single container, presenting them somehow as a unified whole. I am referring to architects who are also very different from each other, from 2A+P to Atelier Kempe Thill, from Kuehn Malvezzi to Piovene Fabi, from Baukuh to Salottobuono, from OFFICE KGDVS to 51N4E, who in this operation found a collective expression capable of being recognized and mutually recognizable. For my generation, that is, the generation after theirs, it was a great relief, because finally, in architecture, there was something going on, which could actually be touched and not just seen in *archdaily* in the decadent expressions of the various fourth-generation students of Koolhaas or Gehry, if not directly witnessing the late production of the aforementioned masters as if it were the only thing happening. *San Rocco*, in this sense, showed that with willpower, a little money and good ideas things can be done, you just have to be persistent enough.
Despite the magazine's critical success, it is well known that no one has ever read a whole issue from beginning to end. If proof of this were needed, in the presentation at the *Triennale* referred to in the opening paragraph, which was a kind of collective funeral rite, this was emphasized several times, almost even with a certain smugness. Not even the editors of the magazine themselves, except perhaps a few unfortunate ones who had the thankless task of selecting the call for papers submissions, read all the issues in their entirety.

Fig. 5. COLLABORATIONS, San Rocco #6, Spring 2013, cover.

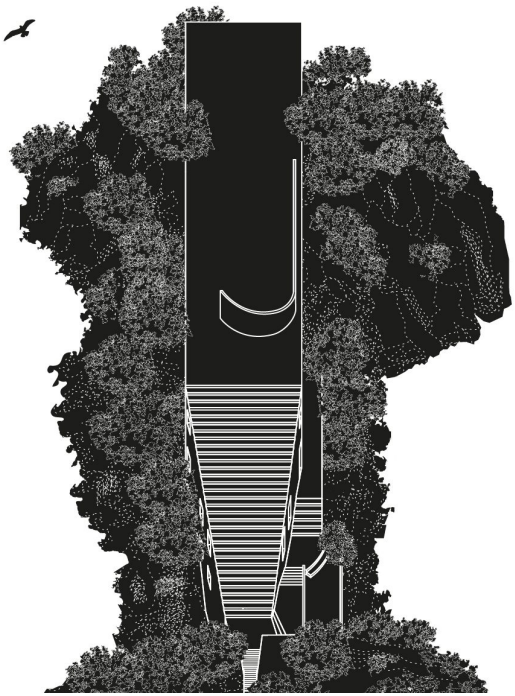


Fig. 6. INDIFFERENCE, San Rocco #7, Summer 2013, cover.

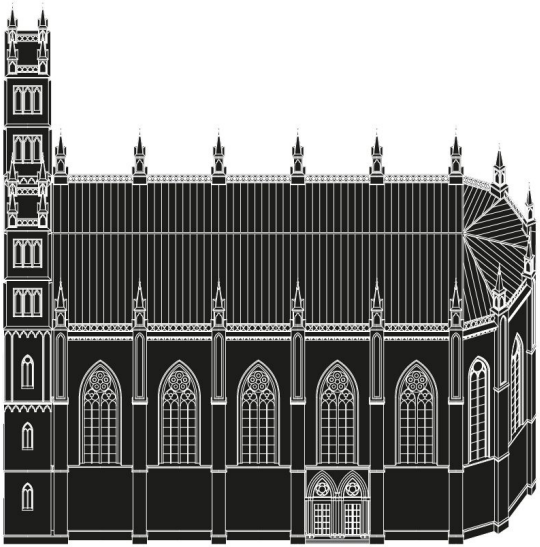


Fig. 7. WHAT'S WRONG WITH THE PRIMITIVE HUT, San Rocco #8, Winter 2013, cover.

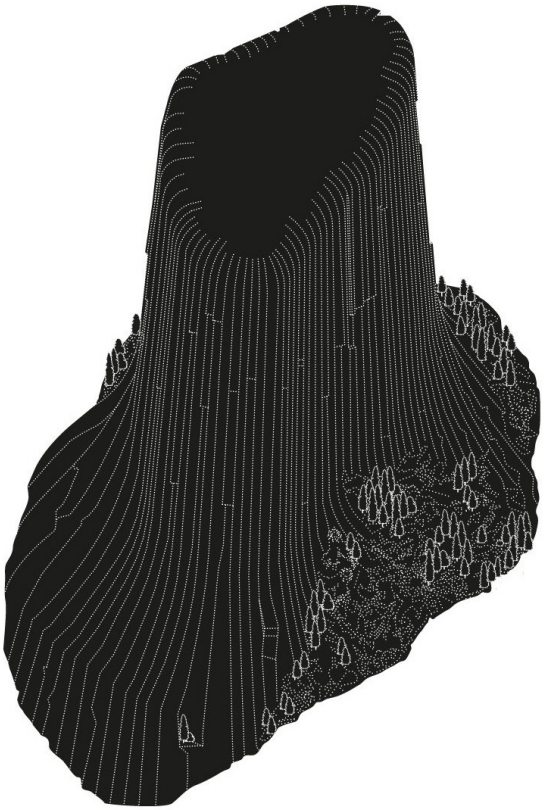


Fig. 8. ECOLOGY, San Rocco #10, Winter 2014, cover.

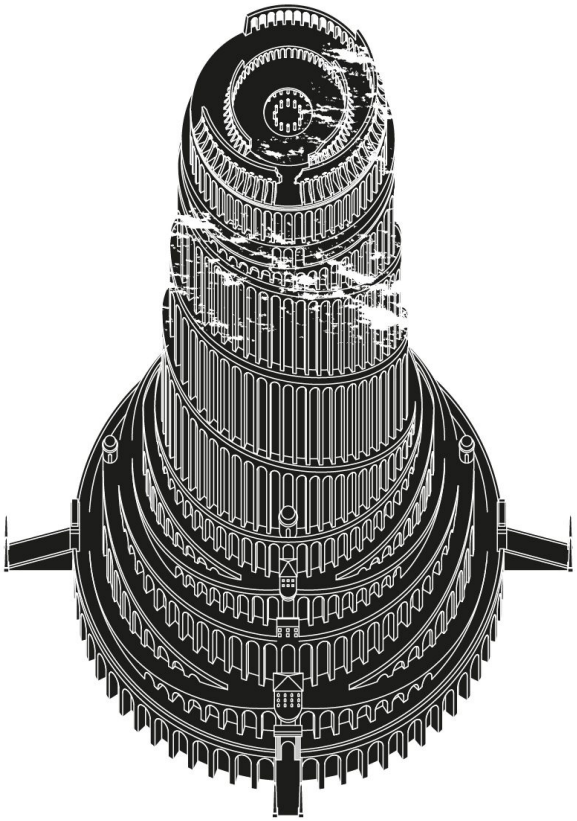


Fig. 9. PURE BEAUTY, San Rocco #13, Spring 2017, cover.

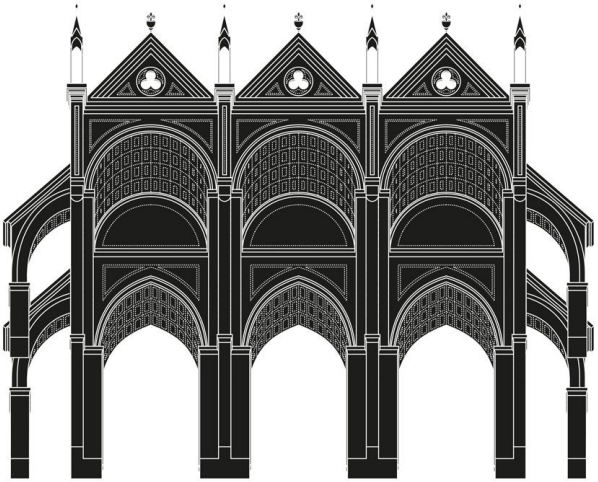
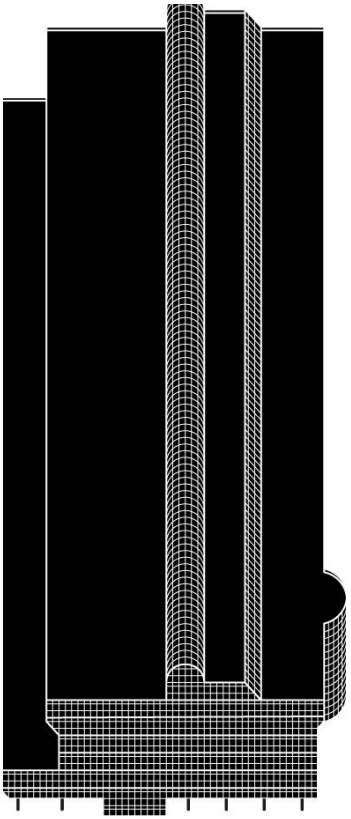


Fig. 10. 66, San Rocco #14, Spring 2018, cover.



Paradoxically, in its attempt to reaffirm the value of theory and writing in architecture, *San Rocco* achieved the opposite effect. The primacy of text over image, as opposed to the flood of images, renders, visions etc., (the main one, among *San Rocco*'s various invectives toward contemporary architectural culture), found in the magazine's fruition its absolute negation. In a very short time, *San Rocco* became a cult object, a fetish for young architects –then called '*sanrocchini*'– who, far from reading the (actually, at times, boring) texts, began to repeat the stylistic codes that had made the magazine famous, namely black axonometries with white lines, line drawings, always in black and white, the redrawing of plans and elevations defined by a uniform stylistic code etc. In *San Rocco*, drawing was understood as a form of knowledge, while instead, in the *sanrocchino*'s use of it, drawing was deprived of the noble intention of investigating architecture through its fundamental tools and became a mere stylistic canon, just like, in 2010, when the first issue of the magazine came out, tight indie rocker pants, baggy sweaters and worn-out Clarks or Vans.

At the end of the day, I think *San Rocco* was a big failure. Not so much for not having closed the cycle (which from some of the bizarre titles and descriptions of the issues to come, mentioned at the end of *San Rocco 15*, I think was perhaps even a good thing) but rather for the ambitions of its authors, which turned out to be tragically out of proportion to their context. In an attempt to reassert the written word, theory, and even architectural history as primary design tools, *San Rocco* found itself owing its celebrity to graphic apparatuses that differed from those criticized only in that they were more elegant and better done. This could have certainly been enough, if it were not for the fact that the magazine's ambition was to be read, not just collected. In this, if ever there was a need, the experience of *San Rocco* once again sanctioned the decline of a discipline where words are less and less important and where the space for critical practice and historical research (the kind done calmly) is more and more limited.
In any case, thank you, *San Rocco*: things used to be worse.

Author

Nicolò Ornaghi, NM3, no@nm3.xyz

Drawing, Scripting, Prompting. A Critical Approach from Architectural Graphics

Ángel J. Fernández-Álvarez, Vicente López-Chao

Abstract

In recent years, architecture has undergone a significant transformation with the introduction of digital tools and techniques. Three prominent techniques in this context are drawing, scripting, and prompting, offering architects novel approaches to the design process. Drawing remains a vital tool for idea exploration and design development. Conversely, scripting and prompting are digital methods that enable a more algorithmic and data-driven design approach. This paper explores the intersection of these techniques and their potential to enhance the design process. By using them together, architects can foster creativity, efficiency, and innovation while allowing more time for conceptual development. The paper analyzes the framework posed by these techniques, including the impact of new digital technologies like generative and algorithmic design, and artificial intelligence. The potential of scripting to automate graphic tasks, such as parametric design and generative drawing, is addressed. Furthermore, the paper delves into the new frontier of prompting and its application in architectural graphics, outlining the competencies architects need to effectively utilize this technology. In conclusion, this paper critically evaluates the current state of architectural graphics, exploring the fusion of traditional and digital methods, and how new technologies can transform the design process.

Keywords: architectural graphics, Artificial Intelligence, design process, digital thinking, parametric design.

Introduction

During the first two decades of the XXI century, the field of architecture has experience a significant transformation with the introduction of digital tools and techniques [Dunn 2012]. Coined as the 'digital turn' [Carpo 2017], this period highlighted three techniques –drawing, parametricism, and novel AI-based tools (Artificial Intelligence)– that gained particular relevance, offering architects innovative perspectives in the design process. Consequently, this calls for critical and theoretical reflection on drawing's role as an exploratory tool and its integration with emerging digital counterparts [Carazo Lefort, Martínez Gutiérrez 2013].

Drawing, a traditional technique deeply rooted in architecture, plays a pivotal role in exploring ideas and shaping design solutions. It serves as a conceptual "motivating force" [Cook 2008]. However, to comprehensively explore the design landscape, we must also embrace the potential of parametric tools (scripting) and AI-based tools (prompting). These tools facilitate algorithmic and data-driven design approaches, unlocking vast creative, expressive, and communicative potential, empowering architects to chart new graphic territories.

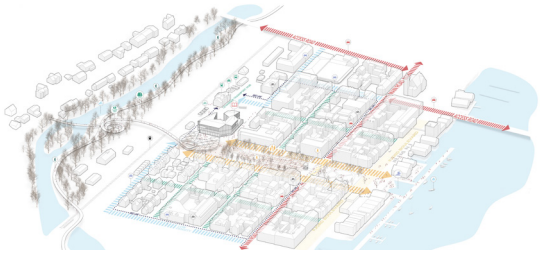
Contrary to the notion of a 'death of drawing' caused by the rise of digital technologies, we propose expanding the expressive possibilities in design by embracing emerging practices connected to advances in computer science: AI, Machine Learning, Big Data, and others.

This study delves into the convergence of these three techniques and their potential to enhance the design process. We explore how their symbiotic use can foster creativity, efficiency, and innovation in architectural design while allowing more time for conceptual development. Additionally, we analyze the challenges and opportunities posed by these techniques, including the impact of new digital technologies such as generative and algorithmic design, and AI-based design automation tools. To achieve this goal, the following objectives are proposed:

- to conduct an analysis of the evolving implications of the digital shift on architectural visualization ex pressiveness and human connection;
- to develop a comprehensive conceptual framework of the impact and integration of scripting languages in architectural design;
- to explore the intersection of architectural creativity and artificial intelligence in prompt-based design.

Comprehending the impact and potential of leveraging science and technology tools in design is crucial for guiding professional practice appropriately and avoiding confusion between means and ends. The research methodology consist of a critical examination of the current state of architectural graphics becomes necessary, exploring the convergence of traditional and digital techniques, along with the transformative potential of new technologies in the design process. Additionally, implications of this hybrid approach for architectural education and the future of the profession should be discussed.

Fig. 1. vi17 arquitectura, analytical axonometry drawing for EUROPAN 16 proposal, 2021.



Drawing: the seductive narrative of technology

In 1983, John S. Gero foresaw that computers would usher in significant changes and innovative approaches to architectural design [Gero 1983]. His foresight became a reality with the widespread adoption of advanced computer software and rendering tools, revolutionizing architectural visualization in the subsequent decades.

In the 1990s, architects started using CAD (Computer-Aided Design) programs to generate intricate and lifelike digital representations of their designs. CAD introduced techniques enabling easy object manipulation, simultaneous multi-image viewing, layer-based tracing, templates, and three-dimensional options [Brandon, McLain-Kark 2001] substantially enhancing precision and efficiency in the design process.

As the new millennium advanced, the development of vector and raster editing programs, along with rendering engines, allowed architects to incorporate lighting, materials, and textures into virtual models. This brought digital representations significantly closer to the final built architecture, making it easier for clients, stakeholders, and the general public to grasp the architect's vision. Consequently, digital visualization became a vital tool for effectively communicating intricate ideas and design concepts, securing competition wins, and attracting new clients.

However, in the mid to late 2000s, concerns emerged about the diminishing expressiveness and uniqueness in architectural representation resulting from the standardization of digital techniques. This standardization occurred after the introduction of each new representation tool in architecture, with the aim of counteracting and transcending towards abstract expression [Iñarra Abad, Juan Vidal, Llinares Millán 2013]. Consequently, various signs and representation techniques adopted a uniform approach, moving away from the analytical nature that characterizes ideation drawing [Franco Taboada 1995], emphasizing selective information for effective communication.

In the 2010s, architects thoughtfully responded by exploring hybrid approaches that seamlessly integrated analog and digital elements in architecture. Through an emerging technique called post-production, architects intricately enhanced their digital representations using manual techniques like freehand drawing, collage,

painting, or photography. This approach revitalized the sensitivity and distinctiveness offered by traditional techniques while harnessing the advantages of digital tools.
As a logical response to counter the loss of expressiveness, architects have adopted *ad hoc* analytical drawings, decrypting the design's qualities and focusing on key aspects (fig. 1). These drawings serve as a potent tool to highlight specific details and convey the conceptual essence of an architectural project more effectively. Through careful selection of elements to emphasize, architects can communicate their ideas with precision, facilitating a deeper understanding among viewers.
Moreover, infographics have become a way to prioritize the narrative aspect of architectural ideas. By combining graphic elements, explanatory texts, and three-dimensional visualization, infographics enable the telling of an immersive story that guides the viewer through the architectural design. This connection fosters an emotional bond with the project, particularly valuable during proposal presentations.
Moreover, renders can integrate contextual elements, illustrating how the project connects with its surroundings and people's daily lives [Anderson 2002]. By emphasizing the experiential and perceptual aspects of places, they evoke a strong connection with the architecture [Fuente Suárez 2016]. This comprehensive view aids viewers in understanding how the architectural project fits into the physical and social reality of its development (fig. 2), transforming architectural design principles through simulations [Llopis Verdú 2018].
In contrast to the post-digital evolution, there is an emerging trend in architectural photography that captures buildings without the presence of people, evoking an atmosphere of distance and solitude. The purpose of these photographs is to emphasize the architecture itself, providing a purer appreciation of its forms, lines, and volumes. However, this trend neglects everyday life and human activities surrounding the buildings, resulting in a loss of context and connection with the true purpose of architectural spaces (fig. 3).
It is interesting to note how these two trends, distant and people-less architectural photography versus the visual narrative that embraces human presence in infographics and architectural representations. These trends reflect the quest for balance between digital technology and artistic expression, ultimately enriching the architectural discourse and pushing architects to explore novel communication methods and design approaches in a rapidly evolving world.

Scripting: the symbolic magic of code

The use of coding languages and scripting techniques, along with parametric and generative design, has sparked a revolution in the field of architecture. These innovations offer architects exciting new avenues for exploring creativity and reimagining the design process [Terzidis 2006; Sakamoto, Ferré 2008; Jabi 2013]. In the realm of digital techniques, architects have achieved novel graphic outcomes that enhance how they visualize and communicate their ideas, proving invaluable both in the design phase and during architectural analysis [Suvanajata 2005].
Scripting has granted architects the power to automate graphic tasks and manipulate data algorithmically, resulting

Fig. 2. Bump Studio, render for EUROPAN 16 proposal, 2021 (digital elaboration by vi17 arquitectura).

in the generation of intricate and organic architectural forms that would have been challenging to create using traditional methods. By leveraging programming languages, architects can fashion parametric structures that adapt and respond to various conditions and requirements [García Alvarado, Jofre Muñoz 2012]. Moreover, parametric design allows for the exploration of design solutions based on predefined rules and parameters, enabling the rapid generation of multiple alternatives and streamlining the creative process [Schnabel 2007]. This, in turn, allows architects to focus on the broader implications of their designs, including the social dimensions [Bhooshan 2017].
On a different note, generative design has pushed the boundaries of computer-aided creativity by blending design principles with algorithms and rules. Through a set of parameters, the system automatically produces a wide range of design options [Wallick 2012]. As a result, architects witness unique graphic outcomes that enable architectural forms to evolve and adapt through an evolutionary and adaptive process. Generative design has proven especially valuable in generating prototype models of building typologies and conducting large-scale building performance simulations [Carnieletto et al. 2021].

Collectively, these techniques offer architects the possibility to explore new ideas and solutions with greater efficiency and precision. Beyond their impact on form and aesthetics, these techniques have also influenced how architects approach their designs, fostering a more open and experimental mindset throughout the design process. Architects can now explore a wide array of options and solutions before making final decisions [Manni, Nicolini 2022].
While visual languages can be beneficial for architecture students to grasp general programming concepts, scripting languages form the bedrock for implementing generative design systems [Celani, Verzola Vaz 2012]. Parametric models can rely on dynamic databases that adjust according to measured variables through sensors, allowing designs to adapt to specific needs. Architecture has begun incorporating data analysis into the design process. Architects now use data to optimize building performance, analyze user behavior, and inform design decisions (figs. 4, 5). Parametric design embodies intentionality, a logic defined by the user that goes beyond mere programmed automation, where the emphasis lies in well-defined problem-solving. Through successive

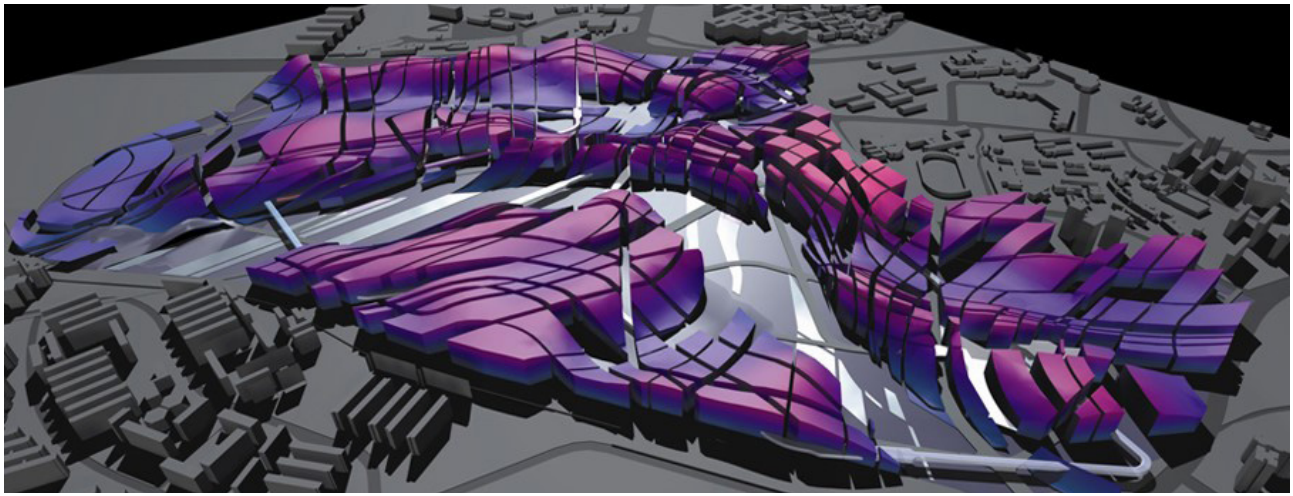
Fig. 3. Photography of uninhabited architecture by López-Chao, 2019. Left: exterior view of the Tenerife Auditorium; right: interior view of the Faculty of Fine Arts of the University of La Laguna (Tenerife).

iterations that integrate multiple variables, different versions emerge, evolving toward the ultimate solution. The role of the designer is pivotal in defining the corresponding relational system, with the graphic results guided by the chosen graphic software.
Viewed as a design tool or strategy, parametricism establishes relationships between elements by assigning values or parameters to master or control complexity, built on principles of connectivity and interrelation [Dunn 2012]. The widespread adoption of these systems [Agkathidis 2016] allows for a cultural approach, viewing them as authentic modes of thought rather than mere tools for creating [Carpo 2017].
This poses the need to comprehend the underlying processes of parametric strategies and scripting languages to consciously utilize these tools in a 'relaxed, pragmatic, and direct' approach that goes beyond mere visualization [Allen 2005]. The idea that the design concept is not preconceived in the designer's mind prompts a disciplinary crisis, positioning us at a juncture between disruption and nostalgia [Picon 2019], compelling us to redefine the relationship between technology and architecture.

Prompting: the intelligent conversation with the machine

"In computer-aided design, only the combination of mechanical amplification and mechanical imitation will validate the dialogue. The dialogue will evolve an intelligence, this intelligence will stimulate a more profound dialogue, which in turn will promote further intelligence, and so on" [Negroponte, 1969a].
The digital revolution in architecture has brought forth new paradigms in design and representation. Artificial Intelligence (AI) tools represent a disruptive technology that optimizes architectural design through algorithmic analysis of vast databases [Castro Pena et al. 2021]. These tools capture structures, identify trends, predict building behavior, and generate compliant floor plan proposals, considering factors such as materials, regulations, geometry, and user flow. They facilitate design decision-making by optimizing spatial layouts, accounting for parameters like natural lighting.
From an architectural visualization perspective, the advent and popularization of AI tools significantly impact the structure of ideation and architectural project design [Leach 2021]. AI-based programs like

Fig. 4. Zaha Hadid Architects, One-North Masterplan, Singapore, 2003.



Stable Diffusion, *Crayon*, *Midjourney*, and *DALL-E* offer novel image production possibilities. As Aaron Betsky highlights in a recent article, the level of realism and painterly effects achieved by these tools ignite a new debate, similar to the introduction of digital tools in the early 1990s [Betsky 2022]. Some technologies enable users to complement a reference image using prompts and predefined variables, such as camera shot type, dominant building material, or architectural style (fig. 6), maintaining control over the final form.
Betsky presents the work of Cesare Battelli, whose aptly named studio Visionary Architecture, utilizes *Midjourney* to create architectural images of fragmentary worlds, where buildings transition from solid to ephemeral as they ascend, and unfinished structures. These renderings exhibit a high degree of realism and painterly effects, set against a characteristic sepia-colored atmospheric backdrop. Battelli skillfully draws upon a palette of references that connect him to the historical tradition of Western art, generating images reminiscent of certain Renaissance painters. Employing an advanced collage model, he assembles preformed materials into a snapshot and artfully conceals its fragmentary origins through the unifying trend of the software.

Fig. 5. Zaha Hadid Archiects, Kartal-Pendik Masterplan, Istanbul, 2006.

The ease of standardizing these trends raises a crucial challenge: maintaining control over the form and design achieved. While many can generate impactful images with a preferred style, the true paradigm shift lies in mastering the art of communicating effectively with the machine while simultaneously analyzing and capturing the essence of architecture and its visualization (fig. 7). Conventional software now integrates AI capabilities, and its evolution emphasizes control over specific variables. However, to truly guide the outcomes, one must possess profound knowledge of the parameters governing image construction. The key to success lies in the theoretical expertise that enables artists to harmonize human creativity with AI-driven tools to produce extraordinary and purposeful architectural representations.
AI algorithm-based image generators offer rapid and efficient exploration of novel architectural concepts, yet they give rise to significant questions concerning creativity, design originality, authorship, and project control [Du Sautoy 2019; Leach 2022]. These tools even hint at the emergence of a new aesthetic tied to the visual imagery they produce, where designers engage in a 'dialogue' or 'conversation' with the digital tool through prompts, as envisioned by Nicholas Negroponte, director of the Architecture Machine Group at MIT in the 1970s [Negroponte 1969b].
The widespread creation of rendered images has spawned a novel aesthetic termed 'post-human aesthetics' by architect Matías del Campo, as it challenges the role of human beings in certain tasks [del Campo 2022]. Images produced through *Midjourney* or *DALL-E* are the outcome of analyzing massive databases fed into the application through machine learning algorithms [Leach 2019]. These results in a peculiar machinic aesthetic, where del Campo refers to the images as 'machine hallucinations' [del Campo, Leach 2022]. These seemingly real results (fig. 8) are in fact reflections of vast databases created by humans, enabling them to reproduce the collective memory of architectural concepts [Lopez-Chao, Fernández-Álvarez, Rodríguez-Grela 2023].
In the view of other researchers, such as Pablo Lorenzo-Eiroa, there exists a critical connection between computation and architectural design, prompting the need to implement collaborative strategies concerning databases. This approach aims to prevent what

Lorenzo-Eiroa refers to as 'digital feudalism', where major corporations dominate global data traffic [Lorenzo-Eiroa 2023]. Collaborative and open-source platforms offer viable alternatives, proposing adaptive processes that surpass traditional planning concepts. These platforms seek to develop architectural solutions that can adapt to diverse usage conditions.
Beyond the aesthetic potential of AI in image production [Leach 2022], its integration into architecture through AIAD (Artificial Intelligence Aided Design) presents a profound challenge to the discipline, re-evaluating the designer's relationship with technology. However, it is crucial not to overlook the significance of these tools as 'invisible assistants' automating design processes, and their impact on redefining the discipline's autonomy. The combination of AI, ML, and Big Data enables the representation of multidimensional spatial environments based on comprehensive information systems [Lorenzo-Eiroa 2019]. Consequently, designers confront the task of determining which aspects of the design process can be fully entrusted to machines and which should remain within human control [Yiannoudes 2023].

Discussion

The exploration of architectural representation in the digital era is not just a chronicle of technological advancements. The journey from traditional drawing to digital platforms brought forth a fusion of styles, blurring the boundaries of individuality. Yet, within this digital fusion, architects found a way to preserve their distinctiveness. The hybrid methods, blending analog sensibilities with digital precision, revitalized the expressive qualities that define architectural spaces and forged a profound connection with human experiences and emotions [Fernández-Álvarez, López-Chao 2022].
The paradigm of parametric design further enriches this discourse. Beyond its computational intricacies, parametric design introduced architects to the realm of data analysis, enabling the optimization of building performance and informed design decisions. Architects found themselves dissecting designs with meticulous precision, analyzing every parameter. The symbiosis of design intent and data-driven analysis became the cornerstone of architectural decision-making.
In the context of AI applications, this analysis takes on new significance. AI, at its core, thrives on data and patterns. The lessons learned from the analytical depth of parametric design provide architects with a unique skill set. Architects, armed with the ability to discern nuances in designs, can guide AI algorithms with a discerning eye. The fusion of human intuition with AI's analytical might become the catalyst for groundbreaking architectural solutions. Architects are no longer passive recipients of AI-generated insights; they are active participants, shaping the architectural futures.

Fig. 6. Automated transformation from axonometry to renders (graphic elaboration by the authors) using Archsynth, based on a 3D model in SketchUp and edited in Gimp. The first iteration without providing instructions and the second one indicating an Art Deco style.

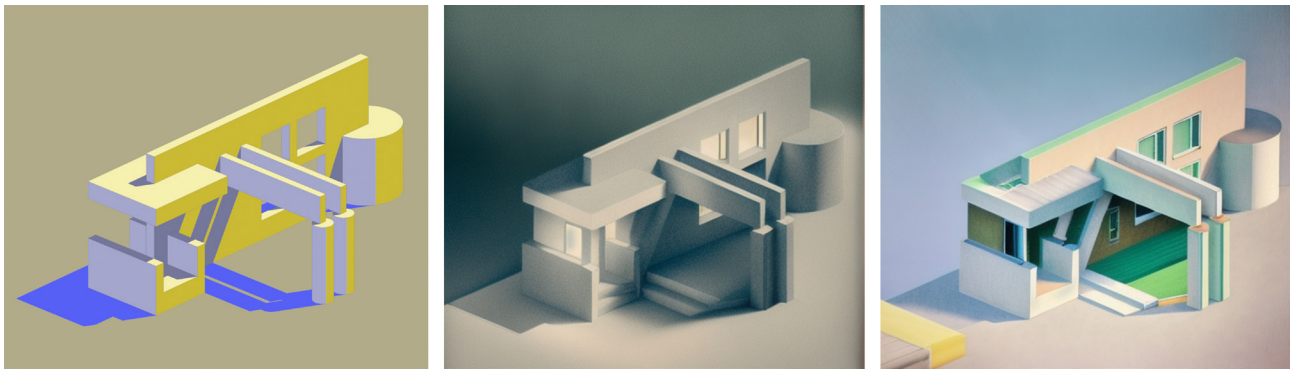


Fig. 7. Stable Diffusion views (digital elaboration by the authors) of an imaginary city where the camera brand, lens, focal length, and lighting type were defined. Environment defined through white concrete.

Conclusions

The integration of digital technology in architecture has significantly advanced the visualization and communication of architectural design. However, striking a balance between digital precision and the artistic expressiveness of hand-drawn sketches remains a crucial challenge in ideation processes [Belardi 2014].
The evolution of drawing as a notation and encoding tool, empowered by various media, goes hand in hand with the emergence of parametric and generative design through scripting techniques. These approaches enable the intelligent analysis and resolution of complex problems, utilizing digital tools' capacity to handle vast data sets. Consequently, this redefines the relationship between architecture and digital technology and welcomes the integration of Artificial Intelligence tools. Through dialogues with the machine (prompting), these tools have the potential to reshape the design process, leading to novel blends and disciplinary trajectories.

Fig. 8. 'Realistic' close-up shots through Stable Diffusion (by the authors).

Authors

Ángel J. Fernández-Álvarez, Department of Architectural Graphics, Universidade da Coruña, angel.fernandez.alvarez@udc.es
Vicente López-Chao, Department of Architectural Graphics, Universidade da Coruña, v.lchao@udc.es

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Imagination: Tools for Describing and Imagining the Contemporary City

Maria Fierro

Abstract

The continuous changes in the city imply a necessary rethinking of the tools –in the field of drawing and representation– to read, interpret and describe urban changes and contingent conditions in order to imagine possible futures. The drawing of projective geometry, as well as the hyper-realist tendency of representation, do not turn out to be suitable to return the 'materials' of the complex urban assemblage. Therefore, the present contribution aims to investigate the potential of two precise tools, the diagram and the collage. They are well established tools in the disciplinary sphere because they are elastic devices of knowledge and imagination. A theoretical-practical exploration is proposed that traces the origins, evolutions and drifts to contemporary experiments that, while fixing a precise image, refer to forms of imagination, demonstrating the different potentials of these tools.
The diagram reducing and the collage assembling, have been protagonists of radical imaginaries and investigations of reality; it is no coincidence that the members of Team X, as well as the Radicals have used both tools producing a legacy of thought picked up by the architect of complexity, Koolhaas (and the generation of his students). A matrix that breaks into the age of figurative realism today and that, with digital tools, opens up a possible new phase of thinking to build complex maps and eclectic looks.

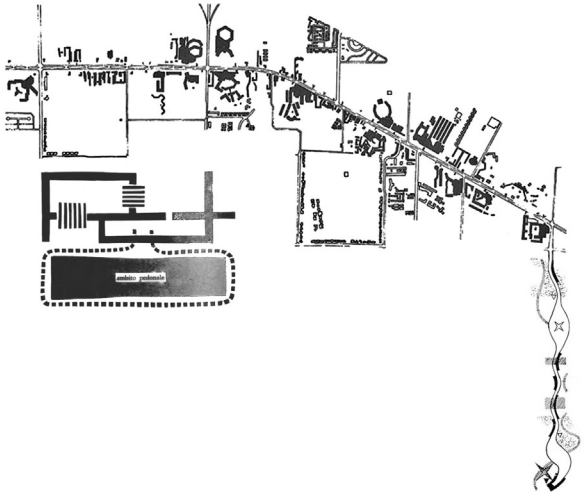
Keywords: complexity, imagery, collage, diagram, representation.

Introduction

The contemporary city is an entity of plural and difficult unambiguous definition. Composed, as Koolhaas describes in the text *La (non più) città,* of an elusive urban substance that is entirely new. Its characters seem to be, among others, mutability and instability; two terms certainly not unheard of in the urban lexicon and with respect to which we still wonder about the tools-as well as the methods-of reading, description, interpretation and imagination. Urban as well as human changes, conditions that are constantly changing and multiplying, make us read the urban landscape as an assemblage of heterogeneous and contradictory materials, visible as much as invisible, global as much as local, formal as much as informal, etc. Looking at cities as figures of complexity, in their spatial dimension as much as in their human dimension, poses some of the challenges to which urban disciplines are called to respond; these inevitably invest the irreplaceable tool of drawing and representation, with which images and imaginaries, the foundational elements of architectural discourse, are articulated.
Ways of representing, as well as designing, are areas of possible critical interpretation of the space of living and, the interrelation between images and design (as a tool of knowledge) was already clear in Camillo Boito's statement that architecture is, of all the arts, the most boring to hear about. Operant observation and description of contexts always return the translation of what is observed; thus passing through the "ability of the designer to select, read and interpret the traces of the context" [Scala 2022, p. 99].

A quest, this, which in contemporary times found experimentation in the season of the *Eclectic Atlases* during which, complex description was identified as a means to delineate the field of investigation and the point of view. Moreover, those same years witnessed a 'denunciation' about the weakness of the 'tools', as well as the categories, with which mutations and new parts of the city, which were absolutely unpredictable, were looked at.
Photographs, diagrams and montages are scattered throughout the publications to recount the materials with which one was confronted and which still interrogate the experimentation or rediscovery of tools for: knowing, understanding, interpreting, describing and imagining possible futures. (Re)drawing, like naming, are the operations through which to know emerging, uncoded issues for which, however, drawing projective geometry alone does not prove to be sufficient. In fact, the representation "shows itself as a critical tool, of interpretation, of discretization, of arbitrary but conscious reduction of complexity, in the elements of a visual synthesis that is in itself a design act, whose existence is first of all to decode the syntax of the elements of the existing, sometimes to prospect a new one that is capable of taking into account the reasons and tensions of an urban space understood as a space of life in which to design new attributions of meaning" [Cirafici 2020, p. 3105]. Thus, the drawn image has as much prefigurative as documentary value and the evident current urban condition suggests the necessary re-discovery of some tools capable of holding together heterogeneous aspects, unstable characters and, often, conditions not present in official representations.
Within the scope of this contribution, we aim to (di)show the potential of diagrams and collages –cyclically rediscovered and debated 'tools'– in transforming images into imaginaries, unraveling latent urban conditions, subverting viewpoints, provoking critical thinking, and bringing forth new research and design questions that are grafted onto reality. Both are also used for the construction of the iconographic apparatus with the aim of building the theoretical-critical associations of reference based on images and imaginaries. The following paragraphs are constructed as critical maps through the manipulated images, the result of selecting and juxtaposing segments of the state of the art united by the goal of searching for a new way of looking at things. The assemblage between different authors –the collage of collages, the assemblage of different representations– is intended to make explicit the common tendencies and cross-references between different authors, so as to identify specific pieces of research that break the codified systems concerning reading, interpretation and representation.

Fig. 1. Crase, Learning from images of cities and relationships (graphic elaboration by the author).



Useful tools

The signs of the diagram as much as the mechanism of the collage challenge standardized representations by offering new opportunities for thinking; their combination in reading contexts as much as in the design narrative, producing dense images, manages to hold together more or less (in) disciplined aspects. Drawing is a tool that stimulates and directs the imagination of the author and the viewer; the kind of communication that diagrams and collages return could be called open [1], with a wide range of possibilities. Despite the differences between the two representational techniques, one can recognize in both a diagrammatic attitude if one considers Deleuze's definition of it as an abstract machine and conceptual device.
Concerning the diagram, it can be understood as "a device capable of absorbing the potentialities of the place, introducing new realities and at the same time leaving open the

definition of the final configuration of the project […] the diagram tells with little information. […] it unites the two powerful regimes of space (the visible) and language (the invisible but omnipresent system)" [Marini 2010, p. 38].
Thus, it fixes the relationships between the parts and brings out the invisible structures; in fact, this representation has been used even before architects, by lawyers, philosophers and theorists to describe different forms of organization according to spatial relationships.
Collage, on the other hand, acquires different meanings and is structured in infinite combinations; it can be used to relate together a series of fragments that belong to us or that are extracted from reality in order to combine them together and define new images. The collage in architecture, in particular, appears to us as a representation –with obvious symbolic value– of the presence of incongruous elements that are held together. This character of his is showcased at Moma in 2013 with *Cut'n'past*, a review of paradigmatic experiments that punctuated its use, potential and perspectives. These two tools, because of the immediately communicative image they produce, can be used to manifest interests and lateral looks. The potential of manipulated images –whether in the translation into lines, dots and surfaces of diagrams or in the assemblage of fragments of images in collages– lies in relating different times and spaces. As Corbellini [2] writes, they are tools of reading and design because, in fact, they are tools of design as they are of reading, capable of weaving meaningful relationships between reality, its interpretations and the directions of its transformation [Corbellini 2006, p. 88]. They allow us to arrive at an interpretive reading that selects materials to be returned, pertaining to different domains and with a strongly interdisciplinary and relational nature. Both have marked the production of the design disciplines with ever-changing objectives, and with respect to the very dense apparatus of possible references [3], which we do not have the space to report here, we recognize precise segments of the state of the art in which the link between the use of these 'tools' and the overcoming of established codes or the introduction of new points of view is evident.
The selection of the periods between the 1950s and 1970s and the season of the 2000s is a function of the recognition of the paradigmatic use of these tools, with reference to the shifts from analysis to urban reading, from purely compositional researches to those about the project as a device.

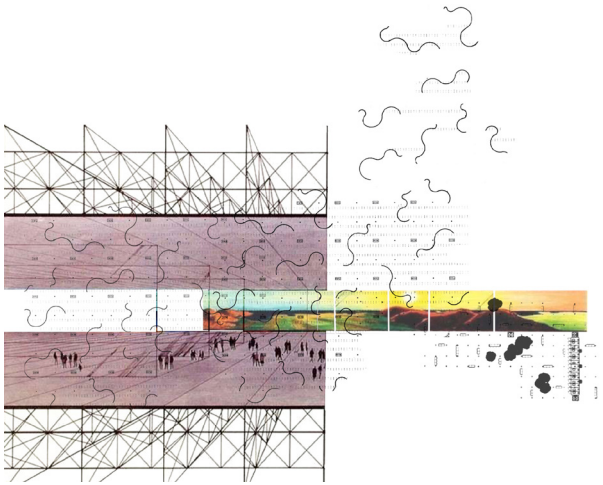
A pratical state of art: subverting point of view

The 1960s and 1970s are marked by the publication of texts in which the graphic component is renewed to address unprecedented urban facts and new research questions based on the desire to understand the complexity of reality while avoiding too many simplifications. There is a break that is as much conceptual as graphic showing the strong interrelationship between thought and drawing. From the American scene, Kevin Lynch initiates a season of urban studies with a marked diagrammatic dimension with which the author constructs new *Images of cities*. He does so by reducing the graphic signs of urban elements and experimenting with a communication that shifts attention from purely spatial aspects to interpretive/perceptual aspects and the temporal dimension. The construction and recognizability of the urban landscape is entrusted to images that are the result of a "reciprocal process between observer and thing observed" [Lynch 1964, p. 140]. Precisely through the tool of the diagram that reduces and selects, Lynch manages to eliminate the superfluous elements of the narrative by making it an immediate mental

Fig. 2. Text and images extracted from the text La modernitè critique (graphic elaboration by the author).

image. These are also the years of *Learning from Las Vegas*, in which R. Venturi, D. S. Brown and S. Izenour are confronted with the observation of a piece of the city with an ordinary and unexplored character. In fact, they proposed a method of looking at and learning from the existing and, at the same time, they also confronted with the tools of understanding and restitution of the piece of the city; a research that flowed into the use of photographic fragments and diagrammatic restitution that make up the strip reading. Two experiments that represented a break from previous urban codes and marked a line of research that finds, at the same time, another path in the authors Chermayeff and Alexander, these represent a significant node for the use of the diagram as a tool to counteract the predisposition of typological forms and stereotypes. The critical categories introduced in the considerations of those years did, in fact, challenge representation and entail a necessary reinterpretation of the related iconographic apparatus. These first three experiences –held together in the synthesis image (fig. 1)– delineate the obsolescence of the beaux-art representation or projective geometry, in rendering the complexity of the new fields of inquiry. In the composition of a single image, the common features of the representation become more explanatory and configure a first experimental piece of urban reading.

Fig. 3. Use of collage and diagram in the no stop city (graphic elaboration by the author).



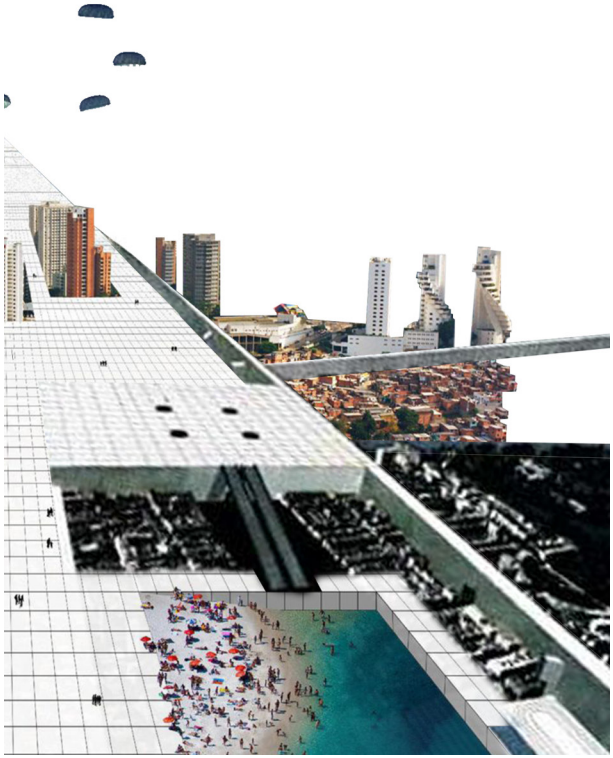
Relationships, reductions and subversions...also accompany the production of diagrams and collages that can be traced back to a more European season, marked by a gradual rapprochement of the project to reality and the overcoming of the dictates of the Modern. This is what happens, albeit in a different way, with the provocative collages or city-diagrams of the Radicals and, within CIAM, with the production of Team X, examples of which are given. It is with this season that the tools of drawing and representation explicitly become devices of knowledge, critical thinking and imagination. If one browses through the CIAM IX volume, *La modernitè critique* one can see how very heterogeneous images follow one another. Drawings of descriptive geometry, perspectives and even bird's eye images are interposed with diagrams as much as collages, as well as posters with a strong communicative impact. Page 37 features Le Corbusier's drawing for *The Chandigarh City Plan* and the Smithsons' *Cluster city*, a duo that compares two generations and their representations (fig. 2). Within Team X [4], the Smithsons used diagrams and photomontages with different objectives. As shown in the image, for *Cluster city*, the diagram becomes the means of explicating the infrastructure of thought rather than formal outcomes; proposing a new way of thinking about the city according to cluster principles which find in the diagram the possibility of being represented. Photomontages, on the other hand, are used –as in the case of Golden Lane– to provoke new imagery with the juxtaposition of alienating elements. Improbable juxtapositions that produce radical imagery can be found in the images of rupture produced by the Radicals. The 1950s, 1960s and 1970s are marked by the production of elaborations that oscillated between utopian futures and provocative realities. It returned a completely new way of looking at the present and bringing out questions of design, as well as defining a critique of contemporary conditions and those that were foreshadowed. A cultural front that elaborated hypotheses for a profound renewal of the project and its value as a tool of knowledge, entrusting the restitution to complex graphic elaborations. The series of images describing Archizoom's *No-stop city* is emblematic; also a critical (ironic?) critique of Modern principles, is thought of and told through both diagrammatic images of cities and collages constructed of recognizable physical elements and ideas of possible futures –held together in

an unprecedented way in the image– while dematerializing the more figurative aspect of architectural representations to which we were accustomed (fig. 3).
As part of the Radicals, Y. Friedman, with the decades-long graphic production that accompanied his theoretical positions, demonstrated the potential of using graphs and collages as tools of knowledge and simultaneously of thought and communication. In the continuous overlapping of these types of representation, he constructed his knowledge device of which the iconographic apparatus of the *Ville spatiale* is emblematic. Friedman invents his language in line with his democratic utopian thinking [Tucci 2021, p. 199] by relying on simple images. A series of collages in which the unexpected, the unstable, the idea of infrastructure for living is materialized by evoking its deeper meanings.

Contemporary imagery

The images and imagery recounted have, in fact, challenged the interfacing of disciplinary tools with aspects of complexity and contemporaneity, seeking ever new ways that adhere to the character of the phenomena under investigation. A legacy that has been scattered across the disciplinary landscape 'exploding' in various directions and has since been absorbed by the architect of complexity, Rem Koolhaas, a figure who ferries the 'discourse' to contemporaneity. He has always accompanied his theoretical production with a dense iconographic apparatus made up of various experiments from the point of view of representation, used as a tool for knowledge and argumentation of the critical and cultural positions expressed. In fact, while in the 1970s Rowe and Cotter "proposed an urbanism based [...] on the tool of collage for a seemingly anti-utopian and hermeneutic practice" [Madraccio, Porcile 2021, p. 24], OMA used collage as a renewing tool towards architecture. In *Exodus, The Voluntary Prisoners of Architecture-the Allotments*, we see "drawings that, juxtaposed with newspaper images and photographs, constitute a pictographic storyboard of the project idea" [Valentine 2022, p. 1951]. In the early part of his production, the absorption of the Radicals' solicitations is evident, as seen in the montage of *Continuous Monument* and *Exodus* (fig. 4).
Instead, moving a bit further in time, references become less explicit and more reabsorbed in images, which change as research paradigms shift. Especially with the studies that flowed into *Multiplicity*, diagrams are reaffirmed as tools

Fig. 4. Continuous exodus (graphic elaboration by the author).



for understanding the emerging realities that were being investigated, whether shopping malls or the informal production of space in the contemporary city. In fact, in the section on Lagos, diagrammatic representations are used, accompanied by photographic campaigns, to understand and render the characters and elements of the megalopolis. Similarly, in the USE research [5], thus returning to the Italian scene, one finds photographs associated with diagrams, necessary tools for the investigation of the not certain, understood as a permeating character of contemporaneity. In the image, the superimposition of two different studies, belonging to the same season of studies, makes evident the necessary character of the restitution of unpublished pieces of the city for urban studies; few selected elements that seem to recall those experiments proposed in the first montage and that, clearly identify the objects of study (fig. 5). From themes made explicit with collages to those requiring diagrammatic representations, there is a record of using these devices to reduce the disconnect between research, design and urban reality made up of phenomena as complex as they are unstable. The generation of Koolhaas' students –traceable in MVRDV and BIG, among others– have pushed hard on the communicative and design dimensions of these two tools.

Perspectives

In the meantime, another season of contemporary studies opens to research perspectives that investigate the need for forms of description and investigation of contemporary phenomena referable to the issues also addressed in the 2030 Agenda for Sustainable Development –such as, for example, the reduction of inequality and the construction of the city and sensitive communities– but also to the multicultural character of cities, the spatial effects of migration and the right to the city, the proliferation of slums...all phenomena that invest the relationship between image, reality and change. In the context of the 'new urban crisis', of the problematic dimension of living and the idea of an open and inclusive city,

Fig. 5. Diagrams from Mutations: the experimentation of the Eclectic Atlas season. On the left a page from USE research and on the right a diagram on Lagos studies (graphic elaboration by the author).

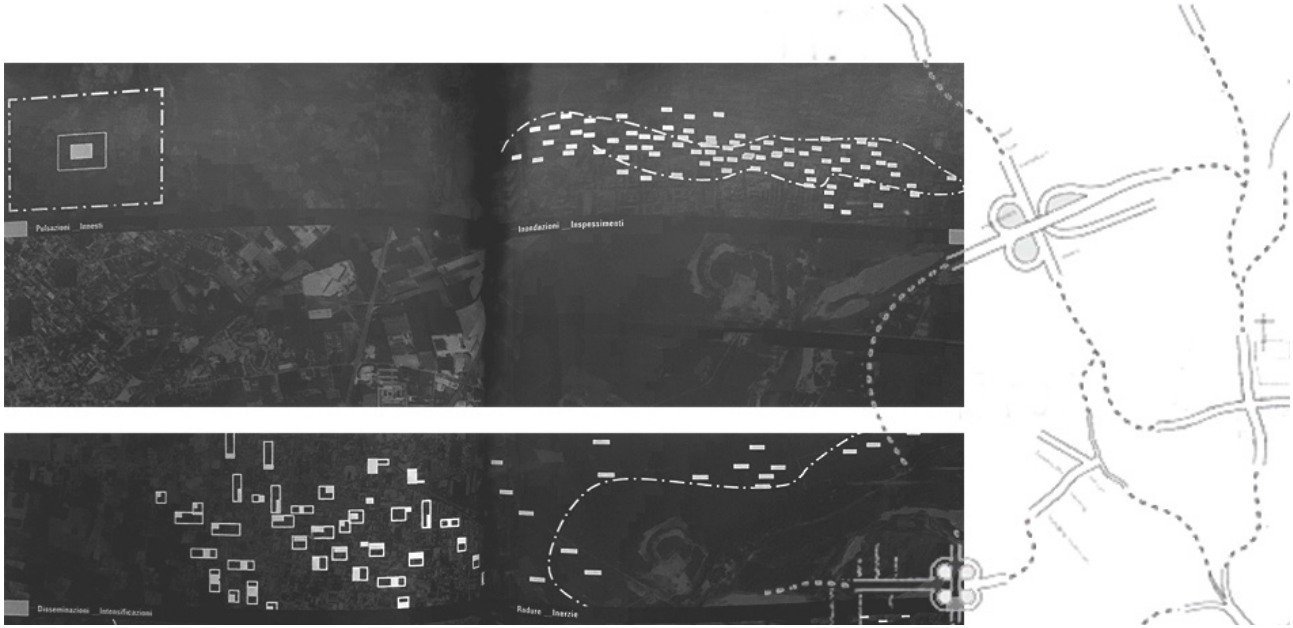
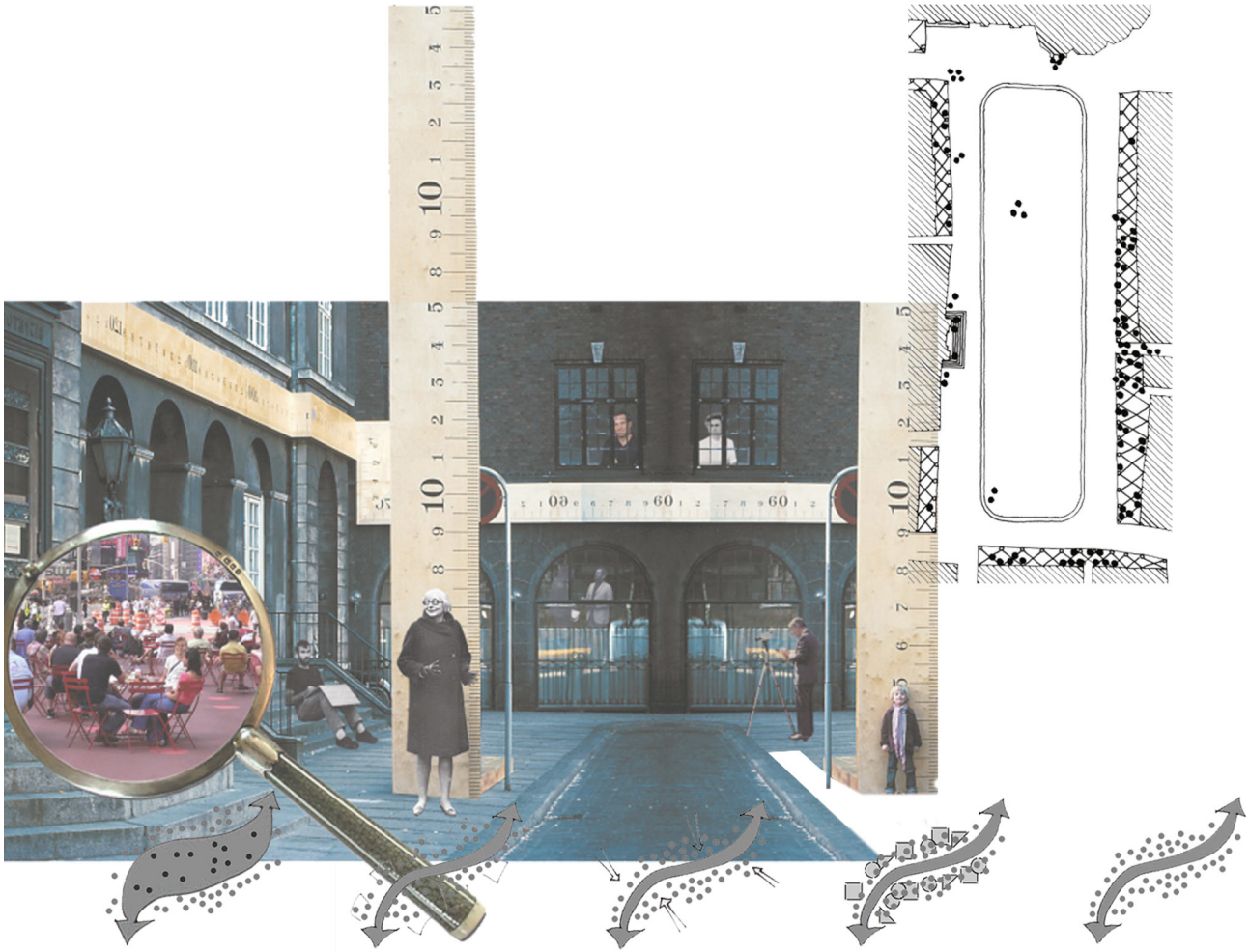


Fig. 6. Learning from Jan Gehl (graphic elaboration by the author).



the power of images in introducing renewed and subversive points of views, finds an experimentation founded again on collages and diagrams. These, understood as supporting devices in the broader methodological processes of knowing and imagining possible futures. In his study of public space and to return the human dimension in his studies, Jan Gehl, especially in his research *How to study public life* uses collages, montages, and diagrams as tools to return observations of city life, uses, and interactions between people and spaces. A reading of the existing material and immaterial that flows into the design questions with which we ask how we can indulge and reinterpret what is already happening in the spaces of the city. Collages are used as the opening image of the survey section whereby, on the one hand, the synthesis of the image returns a clear message and, on the other, individual elements are identified and held together. The diagrams, on the other hand, are given the task of returning the specific investigations and the qualitative aspects of them; point and linear elements follow one another, reconstructing the complexity of the public space and the conditions that, selected, observed and understood, represent the reference from which the design process is triggered (fig. 6).
At a different scale and in a more conflicted context, Cruz + Forman studio to investigate and then communicate the research themes that insist on the Tijuana/San Diego border as a global laboratory uses diagrams, collages, and montages.

Fig. 7. Naked San Diego/Tijuana (graphic elaboration by the author).

The same tools are used to represent and bring to attention the creative intelligence of the most disadvantaged communities, the relationship between the formal and the informal city, and the research theme of the wall and the border with its subversion; a theme that traces the Koolhaasian matrix and reworks it by becoming a manifesto of an idea of public and complex infrastructure architecture. To restore the character of the border and its interpretation in design elaborations, Cruz + Forman construct an 'analogous' representation by mounting significant frames along this line. A line theorized as the *Political Equator* that is also a complex representation project that problematizes the global-local pair. The studio works with elaborations that hold collages and diagrams together and critically return a reading of the existing but also processual and imaginative mechanisms. In the experiments described it seems that the images are constructed precisely by looking at that state of the art presented in the previous paragraph, with accents on certain references such as the production of the Situationist International [6]. Emblematic in this sense is *Access all areas: the porosity of a hostile border*, which, in its being a contemporary image, reinterprets the principles but also the representation of the *Naked City*, proposing a new image of urban drifts; a perfect theoretical as much as graphic overlap as shown by the image's crasis (fig. 7).
Precisely in reference to the latter, which are often associated in literature with informal pieces of cities, the experimentation from the point of view of representation proposed by Dioniso Gonzales [7] is interesting. He uses collage not so much to return a precise area of the world, for which a photographic reportage would suffice, but to communicate that an alternative to the demolition of pieces of cities, often looked at without questioning the underlying logic, is possible. A search for and with images that aims to suggest a different way of approaching a 'fact' of otherwise difficult representation.

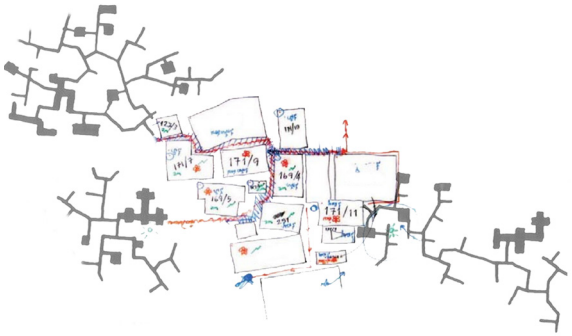
Conclusions. Complex images

This critical reconstruction traces the matrix and lines of contemporary research that see in collage and diagram an imperfect representation. An imperfection that proposes another posture than hyper-realism, more open to degrees of imagination, in that it requires the viewer to acquire renewed meaning. With the operations of redrawing, editing, selecting, scaling etc., enunciative visions are constructed, condensing

messages and solicitations as much theoretical.
The juxtaposition of an Italian informal settlement with one from Latin America, to which is added a diagrammatic representation, defines a map that unveils a less visible condition than the one already established and known (fig. 8); just as the collage between the basic diagram of the cluster city and the diagrammatic representation of a piece of a slum expresses a theory, a thought to investigate the informal city and its underlying rules (fig. 9).
What seems useful to bring to attention is the possibility of constructing complex images precisely in reference to investigations of emerging aspects of contemporaneity. Species of images, one might call them, that can be found in the recent text *Italian collage*, on some instagram pages –such as *actofmapping, conforming*– but also in the catalogs of the last Venice Architecture Biennials. Browsing through *How we can live together*, from the reinterpretation of Bosch paintings with collage to diagrams for the definition of an infinite house, to those that tension local elements and forces of global homogenization, there is a 'rediscovery' of the potential of these two tools.
It should also be emphasized that the use of digital tools and the almost infinite number of images that can be drawn upon thanks to the Internet have opened up ever new experimentation and a new dimension of sharing that triggers and catalyzes new lines of research. The overlap between reading and knowledge of cities finds in these tools a possibility of representation, as in Luca Galofaro's collages that have a strong critical charge and at the same time represent a push to imagination. In conclusion, opening to

Fig. 8. Glocal. Top image of a favela and bottom image of an informal settlement with its representation by diagram (graphic elaboration by the author).

Fig. 9. Informal cluster city (graphic elaboration by the author).



new explorations, a question is proposed: What if we used collages and diagrams together? The synchronic use, as seen especially in the last two examples, part of a personal research, seems to open to the construction of complex maps, useful to return those imperfect and latent phenomena, to hold together different points of view and contradictory aspects of reality. A reality that is constantly changing and that we should always be able to observe, once again, in order to understand and imagine; after all, the construction of a map is itself a device of knowledge and knowing.
As Barthes suggest, one always passes an image… and isn't that the role of our representing?

Notes

[1] We refer to Le Corbusier's diagrams or Mies's collages for design narrative, via Gropius's bubble diagrams as a method based on topological links before formal determination, and the utopian collages that have characterized an entire season of scholarship by grafting itself onto the uncomfortable reality and imagining it. All the way to the collage architecture that invested postmodern thought and production, and to the contemporary era with the experiments of OMA-AMO and, among others, MVRDV, BIG and SANAA's architecture-diagram, defined as such for its use of the diagram as a design device.

[2] The adjective 'open' refers to Umberto Eco's *Teoria dell'opera aperta* for which please refer to the text: Eco 1962.

[3] The author, in the text, refers only to the diagrams. The association to the collages is by the author.

[4] Within the production of Team X should be counted the diagrammatic representations of Aldo Van Eyck including, the diagram Otterlo Circles, an expression of his way of reading the world.

[5] We refer to the research carried out by Stefano Boeri, *USE: Uncertain States of Europe* [Boeri 2007, pp. 262-321].

[6] The situationist movement emerged as a critique of capitalism in 1957 and played a key role in the May 1968 revolt in Paris.

[7] Refer to the link: https://www.dionisiogonzalez.es/Cartografias.html (accessed 30 July 2023).

Author

Maria Fierro, Department of Architecture, University of Naples "Federico II", maria.fierro@unina.it

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The Synthetic Hand. Design Research Through Hand Drawing

Eliana Martinelli

Abstract

Starting from Henri Focillon's famous essay Eloge de la main *[1939] and, more recently, Tim Ingold's book* Making: Anthropology, Archaeology, Art and Architecture *[2013], with the support of philosophical and anthropological considerations, the paper aims to investigate the present relevance of hand drawing, not as a mere method of representation but more properly as a method of design. The argument focuses, in the first instance, on three questions of correspondence: the hand as action and knowledge; the hand as expression and language; and the hand as a synthesis of architectural making. The aim is to demonstrate how research on and of the project is directly influenced by research on drawing, taking as case studies three master theses in architectural and urban design carried out from 2019 to 2023 at the Department of Architecture, University of Florence, through hand drawing, both in the investigation and restitution phases. The project is here intended as the result of a sequence of choices oriented toward the interpretation of places. Hand drawing has the characteristic of being able to reflect and, at the same time, control this process, according to continuous learning, always being aware of the real facts.*

Keywords: hand drawing, architectural composition, design as research, language, place.

Introduction

"I am about to undertake this praise of the hand as one fulfills a duty of friendship. The moment I begin to write, I see my own hands urging and stimulating my mind. Here they are, tireless companions that for many years have fulfilled their task, one holding the paper steady and the other multiplying those small, dark, dense, persistent marks on the blank page. Through them, man makes contact with the hard texture of thought and comes to force its blockage. It is the hands that impose a form […]" [Focillon 2002, p. 105].

Starting from Henri Focillon's famous incipit to the essay *Éloge de la main*, which first appeared in 1939, we aim to investigate the extremely close relationship between ideational hand and ideated form in the specific field of architectural and urban composition. The issues of drawing, on the one hand, and design, on the other, as tools of knowledge, have been the subject of long reflection, going on to form the basis, notably, of the Italian school of architecture.

Today, hand drawing is relegated, in the most fortunate cases, to the initial ideational phase of the design process. The sketch is rightly considered the decisive moment for unveiling an idea, or even its DNA [Purini 1996, p. 42], as a "rapid, available, dense, self-generative, and, above all, extraordinarily communicative notational system" [Belardi 2015, p. 46]. However, in the practice of both students and professionals, this foundational role is increasingly lost, coming to repre-

sent the idea immediately through the digital medium without really conceiving it.
Taking an alternative stance to the common practice, which restricts hand drawing to the sketch phase, the contribution intends to reflect on hand drawing as the basis of a real design experimentation, avoiding a digital representation from the idea conception to the final elaboration of the project. This is a seemingly anachronistic proposal, but one that actually takes on entirely experimental meanings and opens up new (old) possibilities for design research in an era in which the instrumentality of the hand organ has been gradually lost. To argue this research methodology, it will be necessary to explore, in the first instance, three questions of correspondence: the hand as action and knowledge; the hand as expression and language; and the hand as a synthesis of architectural making.

The hand between action and knowledge

"The hand is action: it grabs, creates, and, at times, one might say, thinks. In a state of rest, it is not a soulless utensil, a tool abandoned on the table or allowed to hang lifeless along the body; instinct and the will for action remain in it in a state of reflection, and one does not have to rest long to realize the gesture it is about to perform" [Focillon 2002, p. 106].
The correspondence between hand and action is certainly the most obvious, and it has been a source of great fascination throughout the history of Western art. The hand, as the primary means of artistic creation, has always been an icon of acting: from the carnal hands sculpted by Gian Lorenzo Bernini in *The Rape of Proserpine* (1621-22), to the divine hands, intent in the action immediately preceding *The Creation of Adam* (1511), painted by Michelangelo Buonarroti, and even to the hands as instruments of verifying reality in Michelangelo Merisi da Caravaggio's *The Incredulity of Saint Thomas* (1600-01), where touch is sight. The latter relationship between senses is precisely the one that interests us the most.
As we all know, the hands create all forms of art, but the creative act also affects the inner life. "The mind makes the hand, and the hand makes the mind" [Focillon 2002, p. 130], although the relationships between these two organs are anything but simple, built on a continuous coming and going, which we might call "constructive", because it allows for a gradual awareness of measure, whether in terms of extension, weight, or density. Practice enables the development of capacities of "feeling", in which the mnemonic aspect of technicality lies. Therefore, even before being instruments of creation, hands are the organs of knowledge [Focillon 2002, p. 114] in a double sense: to know and to know how. Precisely this gestural knowledge enables the development of technical intelligence, necessary for any creative craft, in which practical experience is improved [Ingold 2019, pp. 194-195].
In the Cueva de las Manos (Argentina), rock engravings dating back between nine thousand and thirteen thousand years ago have been discovered, featuring hundreds of handprints. They remind us that the hand created humanity, connecting it to the universe: "taking possession of the world demands a kind of tactile instinct. […] The action of the hand defines the emptiness of space and the fullness of the things that occupy it. […] Space is not measured by sight but by the hand and the step. […] Gestures, thus, multiplied knowledge" [Focillon 2002, p. 110].
As Georges Perec states in *Species of Spaces*, "space begins like this, only with words, as signs traced on the blank page" [Perec 2020, p. 19]. The primordial space is the emptiness of the page; the page is where the hand begins to measure space and the gesture to understand it. But once solid knowledge is established, the hand is also the tool to express it and transfer it through drawing, establishing a language.

The hand between expression and language

"It is a fact, as Michael Polanyi states in the introduction to a series of lectures entitled *The Tacit Dimension*, 'that we can know more than we can express' [Polanyi 1966, p. 4]. Polanyi was referring to those modes of knowledge and action that develop through experience and practice within an art but are so firmly anchored in the person practicing them that any attempt at explanation or analysis is impossible. […] If for Polanyi, however, the central point was what it means to know, my interest […] is focused on what it means to express. […] We can express what we know through practice and experience" [Ingold 2019, p. 183].

In his recent groundbreaking book, Tim Ingold reflects on the remarkable eloquence of the hand: the more the eyes are intent on expressing, the less they can see (as in the case of eyes blurred by tears); on the contrary, the hand's sensitivity is connected to its gestural vitality [Ingold 2019, p. 188].
If language subtends the hand, the hand subtends, in turn, the human, which is defined by having the world *zuhanden* (at hand), as Martin Heidegger [1999, p. 156] asserts. For the philosopher, the hand is not an instrument but what makes all instrumentality possible. Through it, humans can be world-formers: they can "tell", in the sense of discovering and revealing, but also of narrating what they have learned. Therefore, the hand is language, since its vividness "accurately translates an ancient condition of man, the memory of his efforts to invent a new world" [Focillon 2002, p. 111]. In this sense, it is worth mentioning the famous *Supplement to the Italian Dictionary* by Bruno Munari [1958], who has turned gesture into a non-verbal language that can go beyond the different verbal languages.
Le Corbusier's big *main ouverte*, erected in Chandigarh, India, between 1950 and 1965, stands as a manifesto of this thought: reversing the meaning of the hand as a unit of measurement, in the design sketch the measure of the hand-monument is given by a small *modulor* man positioned on it. The monument represents the principle of a way of making architecture rooted in the Renaissance and becoming the great support of a certain modernity upon which humanity rises.

By hand, the architect makes architecture

Consequently, what is the sense of hand drawing for an architect? Or rather, if the role of the sketch in the ideational process is widely recognized, to what extent does it still make sense to develop a project completely by hand? To put it in the words of Franco Purini: "Where does the project begin, and where does the drawing end? Where does the thought begin, and where does the drawing begin? Where does the design end and the construction begin?" [Purini 1996, p. 31].
As we have seen, drawing is expression (telling by hand), but not every line has the purpose of expressing the gesture that produced it. Non-gestural lines aim to affirm rather than express. In contrast, gestural lines, like sketches, do not intend to state but to "derive" [Ingold 2019, pp. 210-211].
"The meaning of drawing, if there is ever one, is not in my control" [Talbot 2008, p. 56]. This sentence is rather antithetical to the common view, which considers drawing nothing more than the projection of mental images onto a blank page [Ingold 2019, p. 212], in the case of some children's drawings. In fact, we do not want to refer here to drawing as a representation of an image in its phenomenological aspect (the so-called *Darstellung* in German); rather, we are interested in drawing as an eminently intellectual content, the outcome of a critical interpretation, and thus, a form of knowledge that aligns drawing with a text: this is the *Vorstellung* [Hugh 2008, pp. 7, 23].
We are interested in drawing as a trace of a gesture, which is a performative act. Therefore, despite its usual classification among the visual arts, Ingold [2019, pp. 213-214] argues, we could say that drawing comes closest to music and dance as an expression of time and movement. Drawing by hand is, therefore, a transformative act, affecting both the drawer and those who follow the drawing. As we know, the transformation of reality is the basis of architecture, the ultimate goal of design. Consequently, hand-drawing, unlike digital drawing, appears not as a tool of design but as a form of thinking, inseparable from the very idea of design, at every stage. "In this drawing-thinking, one gradually becomes what one draws – not so much in form as in feeling. Through gestures, we bring to life the movement of what we internally know" [Ingold 2019, p. 216]. This statement takes on even greater meaning when we discuss design in educational terms, particularly within the context of the architect's training process, culminating in the dissertation. Knowing how to read and consistently transform reality through drawing is "fundamental to defining the degree of necessity of the project and identifying the questions it must necessarily answer" [Fumagalli, Martinelli, Sansò 2023, p. 5]. The research described here, while reaching full expression in the theses works, finds its origins in the exercises conducted in some first-year workshops of the Architecture program at the University of Florence. In these exercises, students were invited to draw orthogonal projections of their own hands on a blank sheet of

paper to express their ideas of hand and, by extension, of architecture. Afterwards, the drawn hands were projected in the classroom to become part of a shared discussion. During this process, it was discovered that each person's hand became everyone's hand [Pirazzoli, Collotti 2007].

By hand, the architect knows the places

Between 2019 and 2023, a number of master theses in architectural and urban design have been developed at the Department of Architecture, University of Florence [1], through hand drawing in both the research and rendering phases. Actually, these phases appear difficult to distinguish because hand drawing, which, like the project, is the product of a sequence of choices, allows one to ideate and, at the same time, control the design process according to continuous learning, always being aware of the real facts. In the realm of architectural and urban composition, this type of approach to the design process represents research aimed at investigating places through design. Indeed, only the project can simultaneously elaborate on environmental pre-existences, in the meaning of E. N. Rogers [1958], historical and social facts linked to a certain context and time, and human and anthropological facts, even aside from place.
Among the various theses that have followed this research methodology, we are going to present three of them, selected on the basis of the degree of creativity aimed at the interpretation of places. The originality of the works described here lies, on the one hand, in rediscovering a once-established research methodology that has now been lost; on the other, in being themselves "revealing" with respect to the chosen method. The outcomes are not post-project graphical revisions, as is customary in thesis works and, more generally, in final submissions. On the contrary, they are developed during the compositional elaboration, intended to demonstrate the process of approaching the project. The temporal sequence of the three theses corresponds to the depth of the method: in the first case, drawing partially serves as a "design tool"; in the second, this meaning is diminished, reaching in the third thesis a complete equivalence between drawing and project.

Fig. 1. S. Nembrini, existing condition plan, Worli Koliwada village (Nembrini 2019).

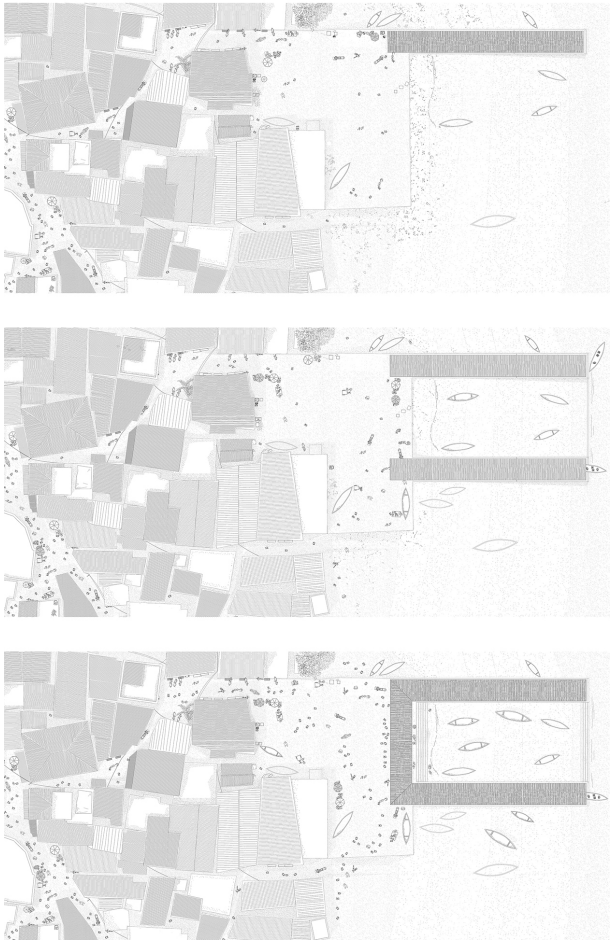

Fig. 2. S. Nembrini, first design phase, Worli Koliwada village (Nembrini 2019).

Fig. 3. S. Nembrini, design phases, Worli Koliwada village (Nembrini 2019).

Worli Koliwada
The first dissertation, in which the embryo of this research appeared, was discussed by Sofia Nembrini [2019]. She took the Worli Koliwada village as a case study, located on one of the seven islands (now peninsulas) that originally made up the Mumbai archipelago in India. In this case, the student had to approach a context as distant as ever from her native one, both geographically and culturally. The only way to get to know it, and thus to elaborate a project in line with the characters and real needs of the place, was to find an appropriate and immediate mode of graphic investigation, carried out steadily throughout her one-month stay in Worli.
This was a difficult-to-read urban context: a fishermen's settlement built in a spontaneous manner, based on the necessities of daily survival. The goal was to survey and, at the same time, communicate a totally temporary and ephemeral settlement mode. Therefore, a careful redrawing of the place was carried out, and human figures inevitably became part of it. Any conceivable future scenario could not ignore its inhabitants, the sole agents of potential transformation. The first design operation inherent in the redrawing was the development of a taxonomy. The student classified the building types of the village, which had never been surveyed before. Second, Nembrini attempted to graphically render the fishing work cycle, thanks to constant interaction with the inhabitants, highlighting how each phase of the work took place in different areas of the village, even quite distant from each other. The site redrawing revealed the impossibility of clearly defining an urban and geographic edge, particularly along the coast, which is subject to continuous and significant changes in water level due to tides. In addition, a paradox was highlighted: the progressive dislocation of fishing-related activities resulting from the village's development and the presence of garbage along the coast had led the inhabitants to no longer have contact with the sea. As a direct consequence of the graphic representation procedure, the area of intervention, located at the most critical point of the peninsula, was determined. The project aims to rediscover the relationship between settlement and the sea by proposing the gradual construction –over ten to fifteen years– of some docks, which can be built using self-construction methods. When the cycle is completed, a court on the water would be configured where much of the fishing-related activities could be transferred, also leading to a progressive reclamation of the coastline. In this case, the research made use of the immediacy of hand drawing to probe places and seek the definition of a certain form in a completely informal context. Moreover, the idea of "cycle" and "progression" of the project is reflected in the expressiveness of the drawing, realized through an indefinite repetition of human and architectural types crowding the large blank sheet, gradually saturating it.

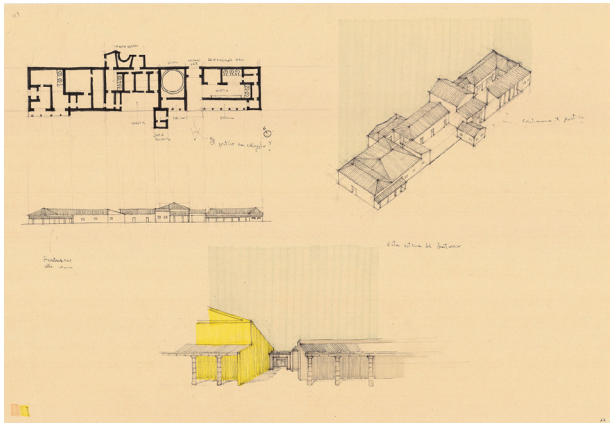

Fig. 4. F. Sami, reconstruction of the Sanctuary of Aphrodite in Paestum (Sami 2021).

Paestum
The second thesis, discussed by Farid Sami [2021], focused on the redevelopment of the archaeological area located near the former Cirio Factory in Paestum. The design operation sought to establish a possibility of coexistence between two architectural pre-existences of totally different character, both in a state of abandonment: the Sanctuary of Aphrodite and the Cirio Factory, partially erected on the archaeological ruins.
In this case, building meant re-building [Collotti 2020, pp. 20-29]. The procedure attempted to reveal a palindromic timeline of the project, which would hold together the architectural events that have been generated and contrasted over the centuries, with the aim

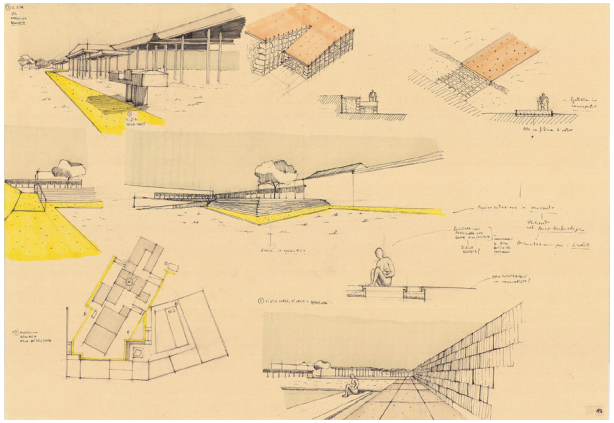

Fig. 5. F. Sami, project for the archaeological museum, Sanctuary of Aphrodite in Paestum (Sami 2021).

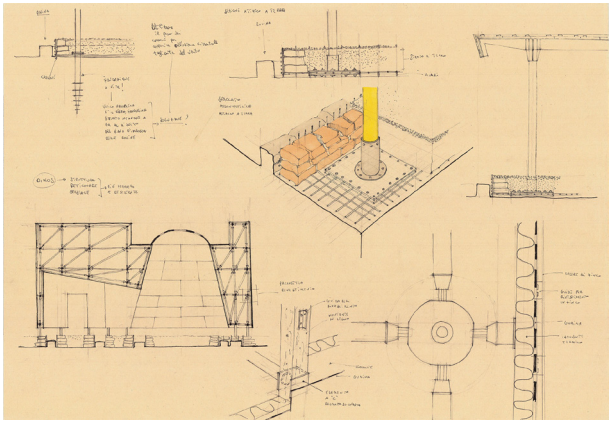

Fig. 6. F. Sami, volumetric reconstruction design of the oikos, Sanctuary of Aphrodite in Paestum (Sami 2021).

of giving unity to the stratifications. The student intervened, on the one hand, to restore a "lifting" reading of the archaeological ruins through a system of roofing; on the other, to renovate and reconvert some factory spaces, considered valuable, into an archaeological museum. The project was developed through in-depth studies involving volumetric reconstructions to reinterpret the buildings that once constituted the Sanctuary of Aphrodite, and in particular the *oikos*, the house of the goddess.
The student chose hand drawing for its intrinsic ability to simultaneously control the compositional and constructive aspects. It proved to be highly necessary to bring to light the gradual process of unveiling and recomposing, moving away from mere representation. Some boards were prepared as if they were large sketchbooks, on which to exemplify the entire process of approaching the project, from the urban scale to the technological detail. The theme of stratification, central to the project, also recurred in the drawing: sketches became text, thanks to the progressive addition of highlights and reworkings on the same sheet. The final result is a set of gestural lines, gradually resumed and redefined to determine form, somewhat similar to what can be observed in the restoration and reconstruction project drawings by Giorgio Grassi – for example, those for the Castle of Abbiategrasso.

Isola delle correnti
The last project, in chronological order, was developed as part of Giovanni Marino's dissertation [2023], and it represents the most extreme evolution of the procedure described here: it is a work completely carried out through hand drawing, without the use of any digital tools, from the initial conception phase to the final representation. The case study is the Isola delle Correnti, located in the municipality of Portopalo, marking the southernmost point of Sicily. An extreme and uninhabited place with no land connections to Sicily, it houses only one building: a large, abandoned lighthouse. Located just off the coast of Libya, in recent years the island has been the scene of many migrant shipwrecks off its shores.
The main design intervention focuses on the lighthouse, which is renovated and converted into a residence for theater artists, housing dormitories and workshop spaces. Externally, the building becomes a stage, accommodating a large wooden theater in its open courtyard. Not far away, three dramatic installations mark, in different orientations, the geographical coordinates where the largest, most recent shipwrecks in the Mediterranean occurred.
In contrast to Sami's final drawings, Marino's ones do not openly declare doubts or the process as a system of choices. They are the result of continuous control, based on investigations and verifications tested through redrawing. Unlike in the Paestum case, each board corresponds to

a drawing, made in pencil and charcoal on transparent paper, using surveys of the island and building as the basis for the project. This approach allowed for a close adherence to the reality of the place, which is expressed in the obsession with geographical coordinates. However, in this case as well, the goal is not precision in drawing but rather to let the project emerge directly from the act of drawing, achieving complete correspondence between the two activities. At times, the drawing's absolute synthesis refers to the architectural archetype; at other times, space is left for the indeterminacy of drawing to express a plurality of meanings through the project.

Conclusions

Representation is the most immediate language of communication in the globalized world, and digital drawing is the most common method to communicate architectural designs, especially in the final stage. However, digital drawing, due to its intrinsic precision, cannot reflect the design methods of investigation and approaching [2]. Diagrams and schematics can describe these, but they are often ex-post representations.
The dissertations presented here are field experiments based on the possible declinations of hand drawing. In the first work, the final drawings, while extremely precise, recompose by pieces the immediate graphic elaborations, necessarily carried out on-site. In the second thesis, the large sheets of yellow paper used for the design investigation are presented as real project boards, alternated with others that display more precise drawings. Finally, in the third thesis, each board is standalone research, the final result of a drawing-project elaborated entirely by hand using a ruler and set square according to a "slow" and measured procedure.
In all three cases, the intention of the final representation is not the "beautiful drawing" but the "sincerity of the drawing", which leaves space for error and doubt and thus allows us to question places and ourselves. Only through hand-drawing does the architect specify, select, and synthesize reality, defining his or her intentions and supporting the reasons for the project as a tool of knowledge.

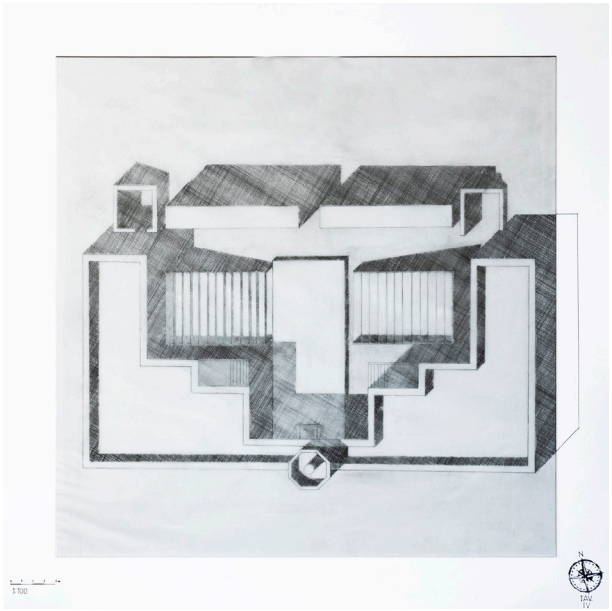

Fig. 7. G. Marino, territorial plan, Isola delle Correnti (Marino 2023).

Fig. 8. G. Marino, planovolumetric design for the lighthouse theater, Isola delle Correnti (Marino 2023).

Fig. 9. G. Marino, design view of an installation, Isola delle Correnti (Marino 2023).

Notes

[1] Supervisor: F.V. Collotti; co-supervisor: E. Martinelli.

[2] Clearly, this statement deliberately does not take into account parametric design, which by its nature prefers pure formal elaborations, indifferent to site conditions and environmental pre-existences, as intended in this paper.

Author

Eliana Martinelli, Department of Civil and Environmental Engineering, University of Perugia, eliana.martinelli@unipg.it.

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The Amnesia of Formal Composition

Chiara Simoncini

Abstract

If drawing has always been a tool for expressing the ideational design process, with a strenuous search for synthesis aimed at accelerating the necessary times facilitated by digital introduction, the integrated elaboration capacity of the idea has increasingly been lost. This loss has given rise to partially sterile hypotheses devoid of that world of forms and the search for form, which constitute true architectural and spatial projects. Aldo Rossi's drawings come to mind, where a coffee maker could become, as we would say today, an essential object in the domestic ritual, a house, but also a tower, a viewpoint, or even part of what he himself called 'domestic theater', where pure forms could combine to create, with dimensions not coinciding with reality, simple objects of common use that could become significant elements of interior spaces. We have thus reduced ourselves to no longer knowing how to compose but to seek sophisticated elaborations of volumes that fall into a love for complication rather than a simplification that contemporary reality requires. But if the digital world can 'bend' to ideative will, why can't we integrate it instead of replacing it with what is effectively the project, understood as a process of investigation?

Keywords: memory, formal composition, ritual, digital composition

In composition, it is not possible to speak of rules. Composition is a complex system of functional, symbolic, representative, and productive variables. One could rather speak of choices, of ideas-instrument halfway between the conceptual and the operative, between theory and practice. So, what is an idea then? Where does it come from? How does it become a creative process? Therefore, how does it become a project?
An idea is born within us, supported by stimuli that come from the social substrate to which we belong, from the cultural world of which we are a part, and from all those exogenous colonizations that we let ourselves be emotionally moved by while living. If with the digital advent, the expressive tool of the creative and design process has changed in the relentless pursuit of an acceleration of the necessary times, drawing, in its succession of sketchy, hinted, and researched attempts, has inevitably ceased to be an actor in that design process of elaboration, synthesis, and composition of forms. It has stopped being a tool for research and investigation. Drawing has thus ceased to be the expression of that world of forms capable of defining space because it is no longer a tool for understanding the world, for the stylization of reality that allowed the discovery of geometries, functionality, and therefore the understanding of forms and their nature.
Architecture, in drawing, its fundamental expressive tool, had discovered ways, types, and reasons through the use of very few formal matrices, capable of defining infinite combinations and possibilities that have filled the imagination of many. Drawing is, therefore, in its nature as a cognitive tool, an instrument of education, of discipline of spaces; it is, in fact, the tool with which man is able

Fig. 1. A. Rossi, 1984. The Return from School, Milan [Aldo Rossi Heirs, courtesy of the Aldo Rossi Foundation].

to practically bring his thoughts back to the earth. Thus, the study of the morphological aspect of what the world composes becomes inevitable because one cannot think of knowing how to build without first knowing how to break down and rebuild using the baggage of forms that belong to our cultural and social layer.
We then find the words of Aldo Rossi arranged here to bring the mind back to what formal education is, to what a world of architectures made up of parts and memory is. "Perhaps the observation of things has been my most important formal education; then observation turned into a memory of these things. Now it seems to me that I see them all arranged like tools in a nice row; lined up like in a herbarium, in a list, in a dictionary. But this list between imagination and memory is not neutral; it always returns to some objects and also constitutes their deformation or somehow evolution" [Rossi 2009, p. 44].
The forms are few, they do not belong to the field of invention but to that of memory, to that substrate that is already part of us shortly after birth when we learned, with small prisms in hand, to fit them correctly into the hole that welcomes their form. This investigation thus begins with the observation of things, which then leads to their idealization, almost through a 'Platonizing' process in which the forms become enduring and become forms belonging to our system of knowledge. These morphologies, coming from memory, belong to that cultural substrate from which each of us comes and remain, despite subsequent contaminations, representative in their matrix capacity, of that system of forms known during childhood.
The design of pure forms is thus an iconography capable of uniting the landscape of imagination with that of the constructed object, generating a project and an iconology that, on different scales, belong to the world of the object, the building, and the city, as layers. The forms of the smallest objects were the same, capable of creating, with different dimensions, more complex geometries, more impactful volumes, furnishing elements, or actual architectures.
In the imagined and drawn universe by Aldo Rossi, his sketches come to mind, where a coffee pot could become, as we would say today, a must-have object for domestic rituals, a house, but also a tower, a balcony, or even part of what he himself defined as 'the domestic theater' where pure forms knew how to combine to create, with dimensions not coinciding with reality, simple

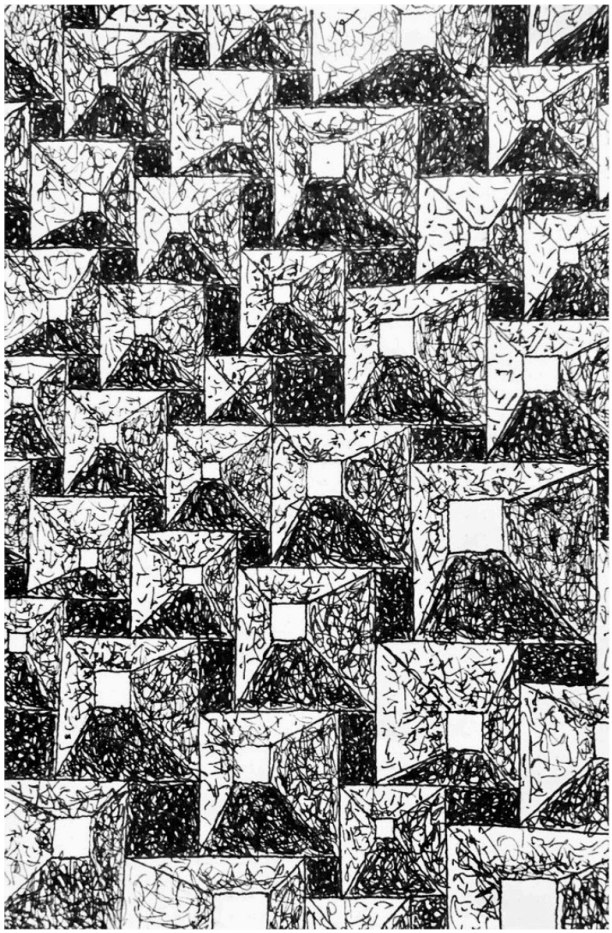

Fig. 2. G. Di Costanzo, 2019. Repetition Creates Composition, Naples.

objects of common use, large furnishing elements of interior spaces, macro-objects as inhabited space on one hand, and objects as micro-architectures and memory condensers on the other.
The forms belonging to memory are thus heavy materials, capable of layering, aggregating, and consolidating into what then becomes the expressive language of the individual, the idea of the individual, capable, however, of becoming a space inhabited by the multitude, an object touched by the multitude, an instrument used by many.
Here is the drawing of the coffee pot house, of the object belonging to the domestic space that Rossi was able to transform into a container of the domestic space composed of pure forms that, if defined on a micro-scale, can become designed objects designed to be held in hand and, if summed on a large scale, can become inhabitable spaces, attributable to elementary known architectural typologies, such as the tall tower, which is also the 'Conica' [1] coffee pot or the large hut in the case of the cone - kettle [2] designed for Alessi (fig. 1).
The drawing thus becomes an expression of an emergence of memories, where individual fragments come together and resurface, generating different compositions, freeing architecture from the obligation of functionality because functions vary over time. Instead, it transforms it into a necessary tool for constructing a place, generated through elements that, although arranged with a different order and dimension, already belong to the place to be built.
Repetition thus becomes composition; repetition (fig. 2) with a slight variation becomes an idea, sometimes suggested, sometimes rediscovered in each of our cultural baggage. "The displacement of an element from one composition to another always presents us with another project that we would like to do, but it is a memory of something else" [Rossi 2009, p. 44].
Thus, memory becomes capable of reconnecting the parts of the design process to its matrix, to its original form, breaking down the project and, therefore, the compositional and synthesis processes to their constituent elements. We discover that these elements belong to what we already know, to those forms that are inherent within us.
So formal composition, so formal culture, is indelibly linked to the only expressive tool capable of uncovering them, finding them, studying them, and summarizing them, rediscovering them, and subtracting them.

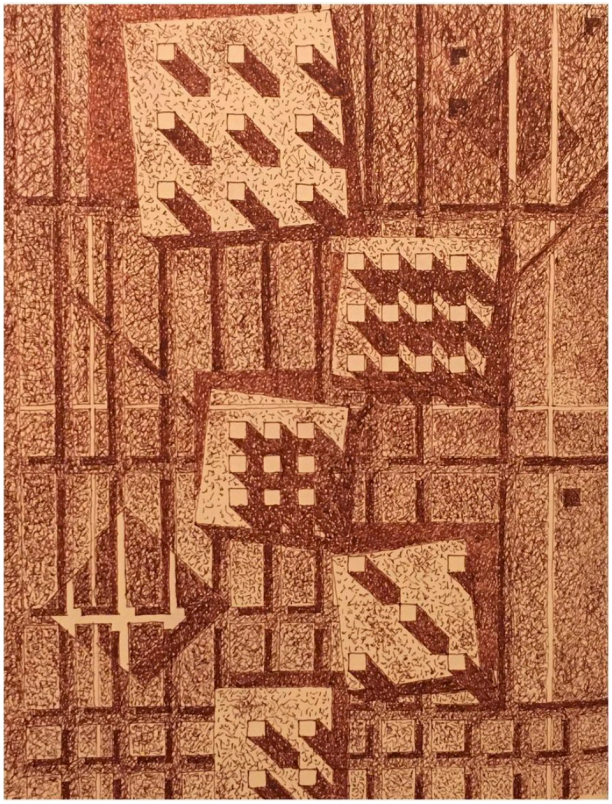

Fig. 3. G. Di Costanzo, 2019. Play and Metamorphosis of Forms, Naples.

The words of Aldo Rossi regarding his 'formal education' remain distant echoes, almost an oxymoron of the new architecture with which today's society is grappling, articulated in hypotheses lacking that compositional research and thus remaining partially sterile. They are more distant than ever from that world of forms and the search for form that constitutes true architectural and spatial design. Has formal investigation disappeared? Is there truly no formal education left? Yet, in his writings, Aldo Rossi suggested almost the inevitability of such knowledge, as if, being an aspect of the most ancestral culture, it was impossible not to confront it in compositional and design choices. As if, without any other possibility, life approaches such a study, as if memory could not help but bind its threads to forms, as if inevitably this vocabulary became that of memory, and, almost like other techniques, it becomes necessary to transmit its formal culture, unlinking its thought and experience from any program, trend, or school that aims to continue its existence [Rossi 2009, p. 119].
For Focillon as well, forms led their own lives: "Form, in the play of metamorphoses, perpetually moves from its necessity toward its freedom" [Focillon 1990, p. 184] (fig. 3).
And yet, certain new architectures seem almost more articulated in the pursuit of an 'amorphous' expressive system, giving rise to a formless architecture, defined in its organic nature, as if we were forgetting that the natural world itself, understood through the synthesis of its forms, has taught us to occupy space with the sum of geometric shapes.
Hand-drawn sketches, whether rough or precise, regulated by drawing tools, are no longer capable of being mechanisms for exploring the world through memory. They are no longer an analysis of the complex system of life around us, simplifiable into matrices and forms. Instead, they have been replaced by innovative visualization systems that, as if the world had become malleable clay, have eliminated the aspect of geometric formality and, with it, the composition of volumes.
Have we truly preferred to forget the composition of forms?
When did we forget that drawing is the only possible expression of composition?
When did we forget what the investigation of forms entails?
When did we lose the memory of what has been known since ancient times?
Architecture regulated by variable parameters that, like nodes, irregularly move its profile, has reduced us to no longer knowing how to compose, to seek sophisticated elaborations of volumes that fall into a love for complication rather than a simplification of forms that contemporary reality would require, already burdened by a difficulty that has pervaded the simplest daily actions. We have started to chase amazement rather than adhering to the canons of proportion and balance in composition, thinking that only something never seen before can be an expression of the new, the innovative, and therefore the future (fig. 4).
The ease of knowledge about contemporary architectures has replaced the direct experience of the latter with the study of their composition, leading to an excess of information that, combined with the speed with which novelties occur, has eliminated the critical distance necessary between the composer and the events that involve them. Everything has become a plausible model, everything has become a possible expressive vocabulary in the field of new architecture.
In a world where the speed of what surrounds us makes nothing capable of remaining unchanged through the seasons, architecture, in its ability to be a composition of known and recognizable elementary forms, was the only possibility of continuing to be a sign capable of enduring over time while aligning with the new values that inevitably emerge from era to era, sometimes adding to the previous ones, other times contradicting or replacing them in the dynamism of architectural response.
Today, therefore, the equation architecture-long duration no longer exists. The static vocation of formal culture is in dramatic contradiction with the modern idea of the project. But if the digital world can be 'bent' to the ideative will, allowing the creation of forms that seem hand-shaped, why can't we integrate its attributes instead of replacing it with what is effectively the project, understood as a process of investigation and therefore addition and subtraction of defined forms? Why can't we retrace the steps of compositional investigation and learn again what composition is?
Digital design, parametrically enriched with a myriad of information beyond the capabilities of the hand alone, has effectively eliminated the interrogative aspect, transforming the project from a question to an answer.

It removes doubts and uncertainties, almost becoming a sculpture detached from places, replicable and reducible to a mutable and formless conglomerate.
Why can't we return to a design process that first poses questions and then provides, or perhaps better said, seeks answers? Why can't we investigate the overlap of pure volumes, capable of becoming parametric solids in digitization, rather than obsessing over the idea of a 'plastic architectural strangeness' that fails to address the true questions posed by Architecture?
Architectural form today essentially takes two forms. An Apollonian way, belonging to the order of things, and a contrasting Dionysian way, belonging to the world of disorder. Yet, in the disorderly contemporaneity, the Dionysian version, marked by contrasts between light and heavy, transparent and opaque, to which the contemporary world has accustomed us, seems to prevail as if it could be the unique language of expression for the current world. Therefore, we must question what may not align with this speed while becoming a fixed point in the flow of time. This involves returning to an architecture that rediscovers its compositional matrix not in the need for particularities but by questioning the identity of things, the possibility of decomposition and recomposition of a new order.
Learning once again what it means to inhabit a volume, mentally picturing a space that, in its regularity and defined nature, is viewable, palpable, and controllable by human intelligence. Uniqueness, strangeness, disorder, follow the rules of a fast-paced world in constant flux, where what belongs to these categories today is excluded the next day. Our intelligence is not so capable of controlling the course of its plastic, dynamic forms; failure to decompose and recompose means an inability to control and consequently an inability to envision oneself as an inhabitant of space.
Let's also ask whether architecture, if it endures over time, can become a tool for expressing fleeting values that, once rendered into physical elements, no longer belong to the present? The drawing, always a strongly realistic image of the compositional process result, has become, with the advent of digital technology, an element of significant objectivity in representation, simultaneously a tool for amazement and spectacular representation. This increasingly distances humans from the ability to perceive the space, the environment, the constructed surroundings. "The idiosyncrasies of these

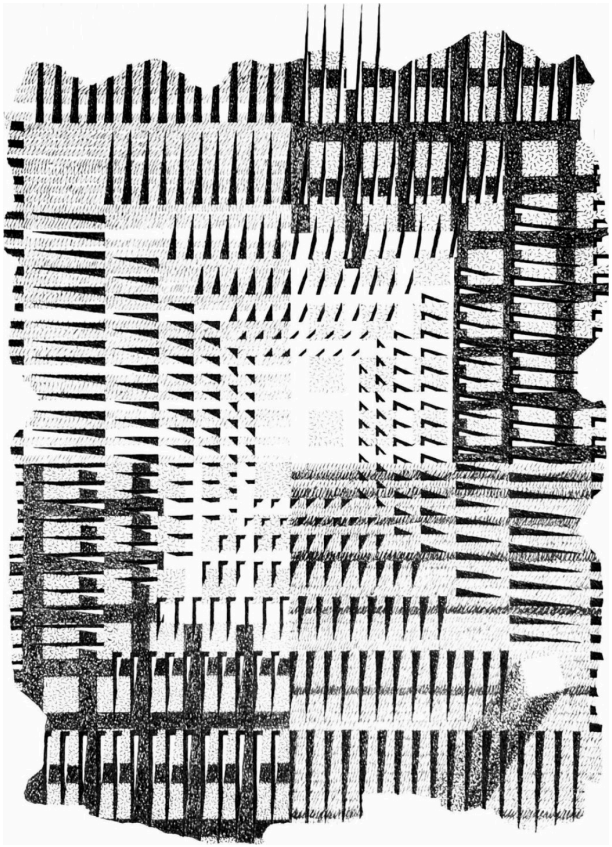

Fig. 4. G. Di Costanzo, 2022. Order between Fullness and Emptiness, Naples.

drawings made it difficult to read them as straightforward architectural descriptions. The initial openness of interpretation might have led some commentators to suspect "mere graphics" [Schumacher 2004, p. 8]. here, Patrik Schumacher says, introducing the world of new digital representations, emphasizing a significant gap between the strongly realistic capacity of the drawing's compositional process and other forms of project forecasting.
Shumacher again who continues introducing the creative process: "modes of representation in architecture played a fundamental role in the development of a series of highly original and influential expansions of the formal and conceptual repertoire of architecture. Modes of representation in architecture are at the same time modes of generation. The creative process to a large extent resides in these modes and means. The creativity and information processing capacity of the "imagination" or "the inner eye" is rather limited and itself dependent upon being trained and developed in conjunction with the development of the media" [Schumacher 2004, p. 8].
Contemplating creativity inevitably requires distancing oneself from digital drawing, where interpretation is predetermined and leaves no room for subjective presence that fosters the exploration of new forms and composable spaces. In digital architecture, man, as an inhabitant of spaces, becomes absent –everything is geared towards transforming representation into an artistic operation that dissects the complexity of geometric forms. This is the new contemporary architecture conceived through parametric drawing, lacking the concept of *hic et nunc* that allowed each constructed form to have its own reasons, cultural motives, and vernacular essence.
Schumacher, advocating for the increasing necessity of embracing the representation of 'fluid' volumes demanded by the world even before the existence of the tools required for their depiction, discusses the development of architectural design techniques by the renowned Iranian architect Zaha Hadid, "Hadid's early elaborate techniques of projective distortion –deployed as a cohering device to gather a multitude of elements into one geometric force field– were already setting the precedence of the current computer base techniques of deformation and modeling of fields by means of pseudo-gravitational forces. Hadid used axonometric and perspective projection were deployed according to their proper function as means of representation. However it soon became apparent that there was a 'self-serving' fascination with the extreme distortion of spaces and objects that emerges from the ruthless of perspective construction" [Schumacher 2004, p. 9].
It becomes more than necessary to introduce what 'parametricism' is, understood as an architectural movement, primarily postulated by Patrik Schumacher, which finds its foundations in algorithmic logic. The algorithm, viewed as a procedure, becomes a unifying element between the practical and research purposes of design, completely replacing the formal matrix and thus overlaying the world of memory, which is constructed by decomposing the things around us. The contrast between form and algorithm is, therefore, the internal conflict that architecture is finding itself facing with the advent of new tools in the new millennium. Instead of complementing human intelligence, culture, and knowledge, these tools are making way for the simple creation of disorderly complexity, capable of generating wonder at how technology can surpass any possible human conception of space and inhabited environment.
Therefore, drawing is no longer what it used to be, understood as a graphic sign and thus the basis of the project, capable of becoming an analysis, engaging in a dialogue with the dimensions of the city and humans, capable of becoming a trace, as in the Piranesian sense, or even capable of constituting the analytical and constructive framework of architecture, leaving room for compositional questions and technical inventions. Today, drawing is almost entirely absent, replaced by parametric design, which, unlike formal composition, approaches architectural design with a non-linear dynamic system, allowing for a design methodology capable of managing the contemporary complexity of the built environment by operating through progressive logical sequences. In digital design, the project is constructed as an operational logical structure through codes transforming the existing. Digital architectural parametrization, however, should not be confused with the parametrization of architectural elements that has allowed timeless expressions by great names in architecture such as Engineer Pier Luigi Nervi or Engineer Sergio Musmeci, who, through the standardization of structural elements, gave rise to highly significant engineering works.
It might be necessary, therefore, to introduce examples of parametrized digital architecture, focusing on some

Fig. 5. Composition of Volumes and Geometries under the Light, Municipio Square and Partisans Monument, Segrate 1965- 1967 [Aldo Rossi Heirs, courtesy of the Aldo Rossi Foundation].

of Zaha Hadid's projects, starting from the Galaxy Soho to the Guggenheim Museum in Taichung, where the complexity of the project makes the architecture appear as an uncontrollable and uncontainable fluid that articulates itself in the territory.
We could also discuss Gehry Partners' studio with the *Walt Disney Concert Hall* in 2003, the *BMW Welt* designed by the Coop Himmelb(l)au group in 2007, or the *Beijing National Stadium* in 2008, designed by Herzog & de Meuron, the *Yas Hotel* in Abu Dhabi designed in 2010 by Asymptote Architecture, and the *O-14 Tower* in 2010 designed by architects Reiser + Umemoto Architects. Looking at images of these architectures, it becomes evident how the geometries have been pushed to the limit, as if humanity were trying to challenge technology, mathematics, and physics in a process asserting the superiority of its intelligence. However, this intelligence is almost entirely absent because it is replaced by the use of machines, contradicting the true purposes of architecture, which is primarily a social expression intended to fulfill social needs. As such, it has functions that, although variable and changing over time and seasons, must find their realization in spaces and arrangements designed and organized to accommodate them.
The 'ageometries', defined by their own authors as complicated structures, arise from the interaction of non-geometrically defined elements, giving rise to spaces that are non-geometrically definable. However, since ancient times, humans have studied geometry and applied it to their lives, recognizing clear elements within defined forms that they have learned to use, inhabit, and shape.
This new geometric conception is undermining aspects of culture that have always belonged to humanity. What will happen to the little house with a sloping roof drawn by children worldwide if the parallelepiped plus triangular prism shape no longer exists, if it is no longer identifiable as a 'home'? What will become of everything to which we have entrusted a defined form since ancient times?
There are forms that cannot change; it is not about sharp edges and acute angles opposed to the sinuous line and the current free form, but it is about geometry, forms, and above all, matter. Because architecture is not fluid; architecture is materiality, defined spatiality, protection, and security. It is static, not dynamic, belonging to a slow time that is not the engulfing time of the need to overcome increasing geometric, urbanistic, and natural complexities to demonstrate the superiority of technical capability over the human mind.
The hut returns, the focal point of life capable of becoming an object of domestic ritual, as per Aldo Rossi's project from the 1980s. The drawings of Architect Franco Purini also return, capable of experimenting and exploring intertwining forms and narrative planes that merge and distance themselves, lines and underlining capable of becoming research and design tools on the fabric of the city.
Therefore, drawing returns as the architect's only possible perspective on the world because in drawings, new elements, references, and different images emerge. A drawing can be physical or metaphysical, but at the same time, it knows and will always become an articulation of the project. It is a severe act, a process of exploring themes and motifs. Drawing is not just a tool; it is a creative act, the native place of an idea, and then a memory of the design process, a narrative of the choices made and what is known.
So "In the end, there is only light, which reveals objects, and every object, from the tower to the coffee maker, has an essence identical to the others, equally important. The reader feels that something grand has happened, that Rossi has thrown open a window to a new way of seeing things, he has been able to strip away almost entirely from any ideology. Everything is seen as if for the first time" [Rossi 2009, p. 123] (fig. 5).

Notes

[1] Stainless steel 18/10 polished coffee pot with a copper bottom. This is Aldo Rossi's first industrial design project for the large series. Designed between 1980 and 1983, this coffee pot emerged as an evolution of the 'Tea&Coffee Piazza' initiative, which involved prominent architects working on the design of a coffee and tea service. With its strong and evocative image, it quickly became a design icon of the 1980s and the flagship product of the then-emerging brand Officina Alessi.

[2] 'The Conical' is the architecturally inspired kettle created by Aldo Rossi: made of 18/10 stainless steel, it represents the transformation of his geometric drawings into a kitchen object, quickly becoming an icon of design. This is how Alessi introduces the product on its website, emphasizing its roots in geometric drawings and, consequently, in formal composition, which have always been foundational elements of Aldo Rossi's architecture.

Author

Chiara Simoncini, Dipartimento di Architettura, Università degli Studi di Firenze, chiara.simoncini@unifi.it

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RUBRICS

Readings/Rereadings

Readings/Rereadings

Reading Italian Edition of an Ackerman's Book: *Architettura e disegno. La rappresentazione da Vitruvio a Gehry*

Fabrizio Agnello

The book, published in 2002 by the Massachusetts Institute of Technology under the title *Origins, Imitations, Conventions: Representation in the Visual Arts* (fig. 1), is a collection of 12 essays written by Ackerman since 1994.

James S. Ackerman (1919-2017) has been one of the leading scholars of Renaissance architecture in the last century. Disciple of Henri Focillon and fellow student of Richard Krautheimer and Erwin Panofsky, he was a professor at Cambridge and Harvard Universities in the United States. On the occasion of his death, Carlo Olmo wrote of his work: "His history of architecture Is in touch with other historiographies, turning even over-studied architectures into examples that help the reader to understand how many keys are needed to prevent reducing the narration of architecture, which Ackerman treats with true passion, to a mere description or a genealogical history." His works include *The Architecture of Michelangelo* from 1961 (Italian ed. Einaudi 1968), *Palladio* from 1966 (Italian ed. Einaudi 1972) and *La Villa* from 1990 (Italian ed. Einaudi 2013).

The Italian translation of the book's title as *Architettura e disegno. La rappresentazione da Vitruvio a Gehry* (fig. 2) does not fully reflect the structure that the author has given to the collection: the

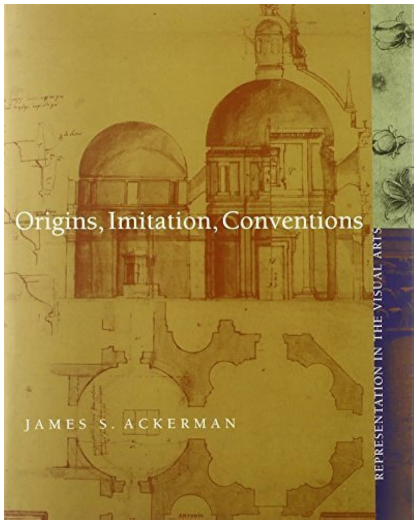

Fig. 1. Cover of the original edition. Massachussetts Institute of Technology, 2002.

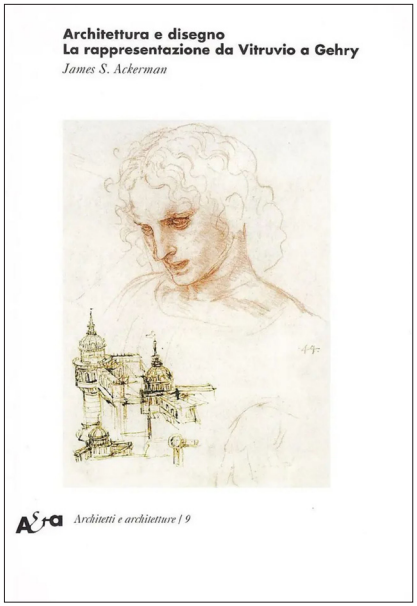

Fig. 2. Cover of the italian edition. Electa, 2003.

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three terms that make up the title in the original language, "Origins", "Imitation", "Conventions", more effectively describe the themes common to the twelve essays, which focus on representation in the visual arts.
Imitation is, in my opinion, the dominant theme of the collection, to which 'origins' and 'conventions' are connected.
In the *Preface*, Ackerman states what the essays have in common and the sense of their combination: "The essays that follow focus on the tension between the authority of the past –which can act not only as limitation but also as challenge and symbol– and the potentially liberating gift of invention […] the approach to history taken in these pages […] illustrates the ways in which artists and art historians have related to, and at the same time contrasted with, their predecessors, the conventional methods of representation, and even contemporary demands" (p. 4).
The first four essays of the collection refer, as stated by the author, to the theme of 'origins', intended as a moment of emancipation from previous traditions. In the following essays, save the last, which explicitly refers to the conventions, the three themes are closely intertwined.
The question of mimesis, particularly dear to scholars of architectural design [1] recurs in the first essay *On the Origins of Art History and Art Criticism*, dated 1994. The process that leads to the separation of the artist from the craftsman, and to the birth of art history and art criticism, starts, in Ackerman's reconstruction, thanks to the overcoming of mimesis as a parameter for evaluating the work of art, that is, when art works are no more evaluated for their ability to 'mirror' nature. In a very clear manner, the author identifies an evolutionary line that, starting from considerations on the need to depict states of mind together with phenomenological aspects, arrives at the idea, agreed by Leon Battista Alberti, that the work of art depicts an abstract beauty conceived by the author of the work. In *De pictura*, Alberti quotes the famous anecdote of the painter Zeusi who, commissioned by the city of Croton to depict Helen of Troy, drew from the five most beautiful girls of the city the features that most matched his idea of beauty. Zeusi's approach is considered by Ackerman as a metaphor of the figure of the artist, who 'has more to offer than mere manual skills in imitation' (p. 16). It will however be Giorgio Vasari, in the author's opinion, who will conclude the evolutionary path, applying to art the idea of periodization that Cicero had applied to rhetoric, thus leading to the definition of 'style', a concept that will influence art history and criticism up to the avant-garde of the 20th century. One of the most relevant quotations of the essay is dedicated to a passage from a letter written by the Byzantine scholar Manuel Chrysoloras, "who came to Italy in 1395 and taught Greek to many humanists: 'In statues and paintings we do not so much admire the beauty of the bodies but the beauty of the minds of their painters. This, like well-moulded wax, has reproduced in stone, wood, bronze or pigments an image caught through the mind's eye'" (p. 17). The text surprisingly recalls an aphorism by Karl Kraus, quoted by Vittorio Ugo in his essay on mimesis: «In a true portrait, one must be able to recognise which painter it represents» [2].
The essay that follows, entitled *Origins of Architectural Drawing in the Middle Ages and the Renaissance*, is made of two parts, written in 1997 and 2000 and entitled: *Villard de Honnecourt in*

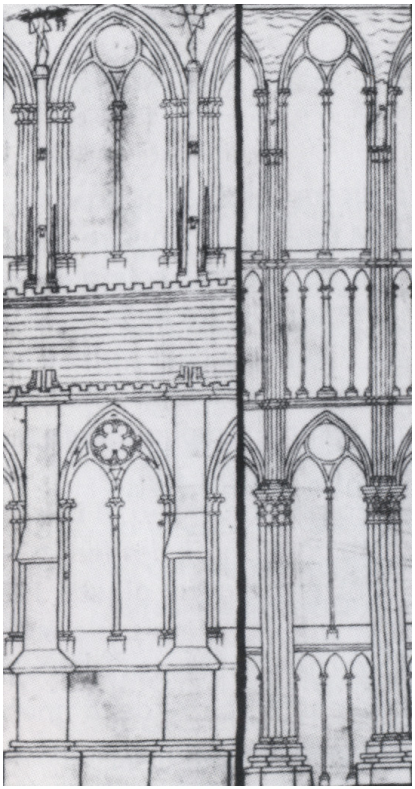
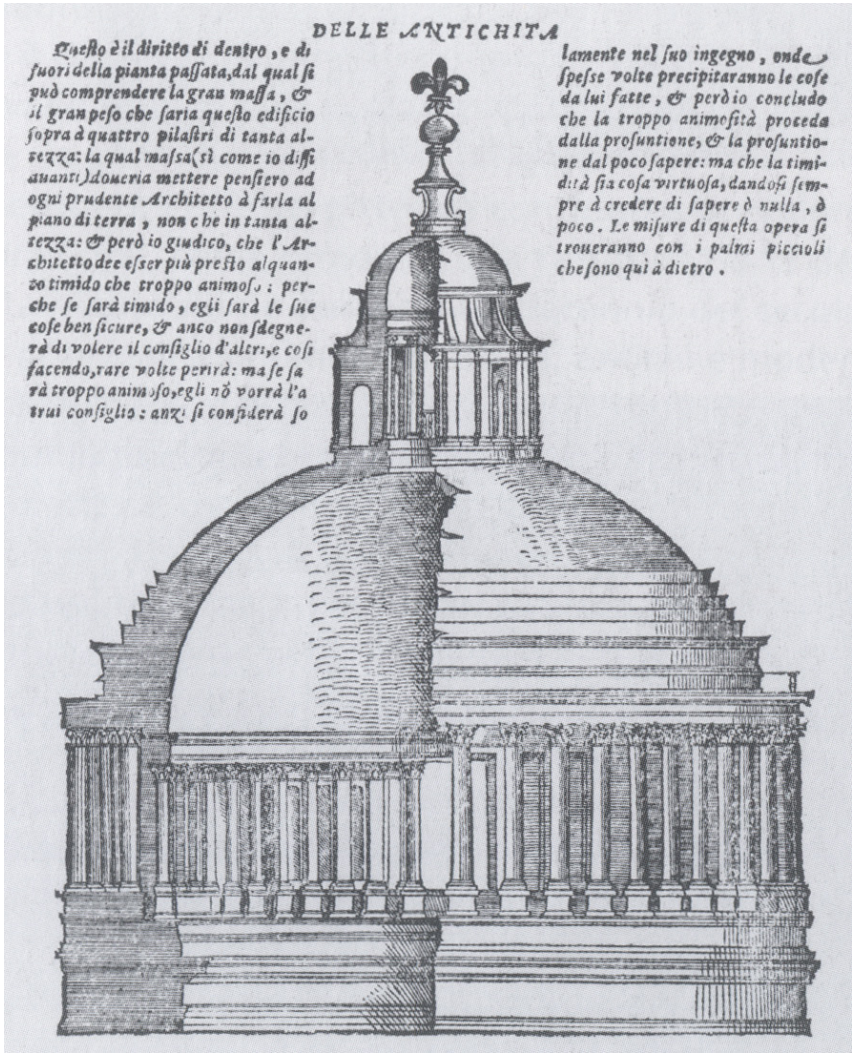


Fig. 3. Villard de Honnecourt, approx. 1230. Front and section of one bay of the choir in the cathedral of Reims. Paris, Bibliothèque Nationale, 19093, p. 62 (fig. 3, p. 35).

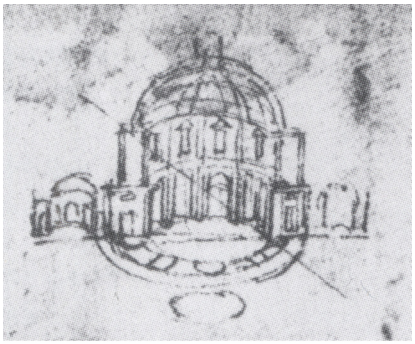
Reims Cathedral and *Drawing Conventions in the Late Gothic and Early Renaissance*. The essay takes the reader into one of the most relevant questions in the history of 'pre-digital' representation: the opposition between perspective and parallel, orthogonal and oblique, projections [3]. A brief mention of the oldest drawings that have come down to us –"some Egyptian papyri, the marble plan of Rome, a 1:1 scale front of the Pantheon tympanum […] and the plan on parchment of the Abbey of St. Gallen" (p. 29)– is immediately followed by a discussion focusing on some drawings from the well-known notebook of Villard de Honnecourt, dated in the years between 1220 and 1235. Ackerman focuses on a drawing (fig. 3) in which the section and elevation of a part of the choir of Reims Cathedral are paired on either side of a thick line of demarcation, to note the almost perfect adherence of the drawing to the rules of orthogonal projection. The analysis of Villard de Honnecourt's drawing is the starting point for the examination of the contrast between perspective representation, close to our perception, and orthographic projection, distant from the perceptive datum but more adherent to the real configuration of a building. Alberti, whose passage from *De pictura* appears in the previous essay, returns here with a well-known passage from *De re aedificatoria*, in which he states: "Between the graphic work of the painter and that of the architect there is this difference: the painter endeavours to bring out objects in relief on the table by means of shading and the shortening of lines and angles; the architect, on the other hand, avoiding shading, depicts reliefs by means of the plan drawing, and represents in other drawings the form and extension of

Fig. 4. Sebastiano Serlio, 1540. Bramante's design for the dome of Saint Peter in Vaticano. Da: Sebastiano Serlio, Tutte l'opere d'architettura di Sebastiano Serlio Bolognese, libri III, 66v (fig. 17, p. 53).



each façade and each side by means of real angles and unvarying lines" (p. 29). The elevation/section drawing of the dome of St. Peter's by Sebastiano Serlio, which Ackerman attributes, backdating it, to Bramante, and that of Antonio da Sangallo for the church of Monte Moro in Montefiascone, are recognised as the first examples of a correct orthographic representation of the elevation of curved surfaces (fig. 4). Both essay are concluded by the same question, which the author poses, referring to the drawings in Villard de Honnecourt's notebook, to himself and the reader: "why did the northern European solution of the 13th century fail to leave a legacy that would have allowed the architects of the early Renaissance to proceed at a much more sophisticated level than they did?" (pp. 43, 59). Ackerman responds with several arguments: the first one focuses on the figure of the architect, who in Italy was often a painter at the same time, and therefore bound to the canons of perspective 'verisimilitude'. The second argument refers to the differences between Gothic architecture, populated by subtle elements, and Romanesque architecture, characterized by the presence of wall masses. A further argument that could explain the persistence of perspective in the Italian context refers to Vitruvius, who, by including scenography among the forms of representation of architecture, had legitimized the use of perspective in architectural design, opposed by Alberti. The essay closes with the hope that the "pictorial interpretation of architectural representation in late medieval and Renaissance Italy, compared to the linear emphasis of Gothic imagery in the north, will broaden our critical perspective on Renaissance architecture" (p. 61).

An extremely stimulating hypothesis for scholars of architectural design appears in the essay, though proposed with less emphasis than other arguments: in describing the difficulties and resistances in the orthographic representation of the elevation of curved surfaces, Ackerman observes, referring to Antonio da Sangallo's drawing, that the direct connection between plan and elevation, quite unusual at the time, supports the achievement of a correct representation. The author attributes the idea of executing a drawing in connection to another drawing (plan/section) to the adversary of orthographic projections, i.e. perspective, as defined by Piero della Francesca: "the technique of transferring from one plane to another is fundamentally the same as the foreshortened projections of figures in the work *De prospectiva pingendi* […] paradoxically, it was Piero della Francesca's advanced research on pictorial perspective that provided architects with the opportunity to overcome their passion for subjective perspective" (p. 56).
The third and sixth essays in the volume, dedicated to Leonardo da Vinci's drawings, are respectively entitled *Leonardo da Vinci's church designs*, dated 1998, and *Art and science in Leonardo da Vinci's drawings*.
The essay on Leonardo da Vinci's church drawings is a hymn to the inspirational power and versatility of drawing. Ackerman recalls that Leonardo probably never had the opportunity to build a church on commission. Church drawings were therefore, for Leonardo, studies in geometry and formal composition free of any concern for feasibility, whether in terms of adherence to the principles of *utilitas* or those of *firmitas*. And yet, precisely because of the freedom that distinguishes them, Ackerman identifies in these drawings



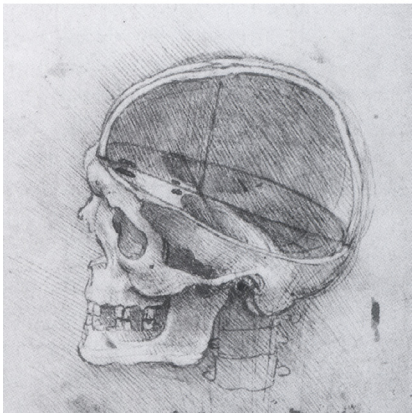


Fig. 5. Above: Leonardo da Vinci, design for a round church, approx. 1507. Milan, Ambrosiana Library, Codex Atlanticus, 547v/205v, detail (fig. 28, p. 68). Below: Leonardo, drawing of a skull, 1849. Windsor Castle, Royal Library, 19057r (fig. 55, p. 127).

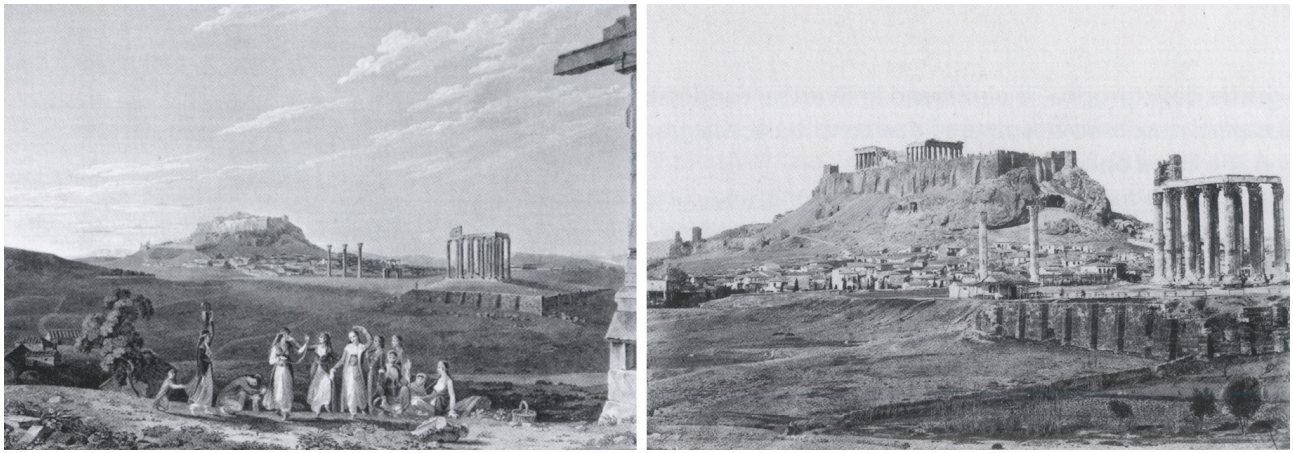


Fig. 6. James Stuart, Nicholas Revett. The antiquities of Athens. Measured and delineated by James Stuart and Nicholas Revett, Vol. 3, 1761. On the left: The Acropolis of Athens from the Agora (fig. 43, p. 92). On the right: Dimitri Constantin, View of the Acropolis of Athens with the Temple of Jupiter (fig. 44, p. 93).

some elements that would inspire later projects; among these, the "articulated wall masses, arranged around the outlines drawn by the empty spaces, as if these had been sculpted in their own bodies" (p. 76); wall masses will appear in Bramante's projects for St. Peter's. Another innovation anticipated by Leonardo is the scheme of the front of a church that "anticipated what in the 16th century became the reference model for the façades of longitudinal plan churches" (p. 81). Talent, expressive freedom and a diversity of interests lead Leonardo to freely experiment representation techniques, regardless of the subject, thus once again affirming the autonomy of drawing: in a small perspective drawing of a church, the section opens up the view of the interior space, while half of the plan, free from the walls, extends beyond the painting towards, the centre of projection; in this small drawing Ackerman recognizes the echo of Leonardo's much more famous drawing of a skull, which he will be discussed in the following essay dedicated to Leonardo (fig. 5). Similarly, in the plan drawing of a church he recognizes an indisputable resemblance to the drawing of a gear. The similarity between the skull and gear drawing and architectural drawings is highlighted by Ackerman to show how, for Leonardo, drawing was both an instrument of knowledge of reality and an element of connection between human creation and nature. In the second essay, the spirit of observation and desire for knowledge drives Leonardo to experiment, in the plan of Imola, the first orthogonal projection of a city and, at a different scale, to illustrate the parts of a gear, one of the first examples of axonometric exploded view.

The fourth essay, dedicated to the origins of architectural photography, well illustrates a relevant issue of drawing: the relationship between technique and technology. If technique refers to the unveiling capacity of drawing, technology refers to the tools of drawing. The essay highlights how, at the dawn of photography, professionals chose shots similar to landscape views fixed by painters a few decades earlier. To support his hypothesis, Ackerman pairs paintings and photographs of the same site: "The two images I have compared support my conviction that the new must be based on the old and that innovation is invariably tempered by convention" (p. 89) (fig. 6). Obviously, the question of mimesis returns powerfully in this essay, as photography seems to realize the dream of a faithful representation of reality. Although the book's concluding essay is dedicated to computer representation, Ackerman briefly mentions it in the opening of this essay. This is probably a perceived but not overtly expressed association: if early photography imitated landscape architects' views, in the same way CAD imitated traditional drawing for almost thirty years, producing plans, sections, elevations. Both technologies revealed their capacity produce new

'unveiling' 'techniques' of representation, only many years after their introduction: photography could reveal the photographer's point of view, just as CAD tools are progressively giving 3D models a relevant role in architecture's prefiguration and representation processes.

In his fifth essay, *Imitation*, dated 1999, Ackerman reviews the debate on the topic, spanning from antiquity to 1550. He then compares the idea of 'imitation' and that of 'authority', emphasizing that imitation offers more opportunities for innovation.

In the seventh (very short) essay dated 1998 on *The Aesthetics of Architecture* in the Renaissance, Ackerman enunciates a concept that recurs frequently in the other essays: the imitation of the classical orders, and of antiquity in general, is a creation of Renaissance treatise writers. Vitruvius' obscure descriptions of the classical orders become, with Sebastiano Serlio and Jacopo Barozzi da Vignola, a graphically fixed rule, reflecting their judgement: "Vignola, who admitted that he did not arrive at the codification of his rule by studying the best examples from antiquity, but 'according to where my judgement led me', translated the proportions of the orders into an invariable formula" (p. 157).

Thus, in the following essay on *The Influence of Antiquity on Italian Renaissance Villas*, after a dutiful reference to the opposing theories of antiquity on rural life (Cato and Pliny), Ackerman states: "In Luvigliano, as later in most of the villas designed by Palladio, the vocabulary is essentially Roman, but neither the plan nor the typology of representation echo Roman architecture. I believe that

Fig. 7. Andrea Palladio, Redentore church in Venice, view of the apse and the dome (fig. 110, p. 214).

the main reason for such a rejection […] lies in the fact that the irregularity, asymmetry and dispersion of the Plinian villa […] do not match the Renaissance image of ancient architecture. Similar to what happened in the creation of a canon of architectural orders, reference to the antique became obligatory, but only as long as the antique models did not conflict with Renaissance rules" (p. 173).
The next two essays, respectively dated 1996 and 1994, entitled *Daniele Barbaro and Vitruvius and Palladio: in che senso classico?*, are dedicated to an examination of Palladio's relationship with 'classicism'. This relationship, already anticipated in the essay on the villas, is developed through an examination of the figure of Daniele Barbaro, Palladio's friend and author of a celebrated edition of Vitruvius' treatise, illustrated by Palladio himself; finally, through an examination of *The Four Books of Architecture* and of Palladio's own projects, that reveal a 'dialectical' relationship with antiquity. The essay on Palladio opens with a reconstruction of the passages that lead to the definition of 'classic' in the post-Renaissance era, in order to highlight that the variety of Palladio's work, capable of oscillating between the adherence to canons, 'caprice' and capacity for simplification (fig. 7), has not always been recognised by art historians: "When later critics defined almost all Palladio's buildings as classic, Palladio's subtly dialectical attitude […] and his distance from the practice of the ancients was obscured" (p. 223).
The eleventh and penultimate essay, entitled *Thomas Jefferson and Italy*, dated 1995, illustrates the path that led the American statesman to take an interest in art and architecture, and discusses the two projects that he himself conceived, with a focus on the underlying mimesis and references: the Monticello residence and the University of Virginia campus in Charlottesville.

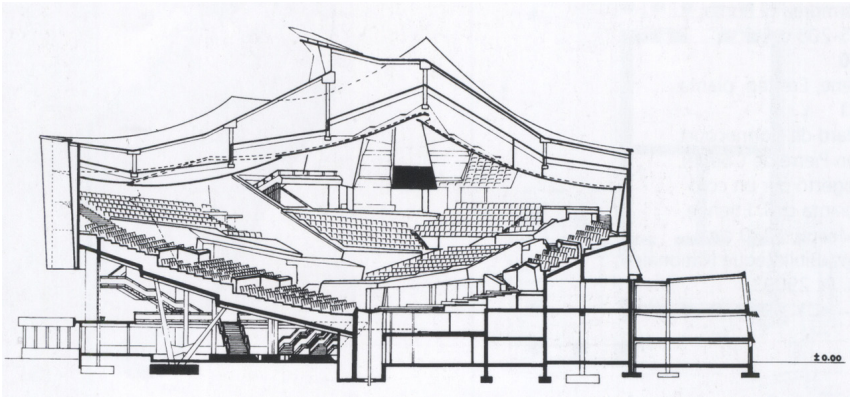


Fig. 8. Hans Scharoun, Philarmonic Hall in Berlin, 1959-1963; section (fig. 142, p. 252).

The last essay, *Conventions and Rhetoric in Architectural Drawing*, was written in 2000, some twenty years after the mass diffusion of software for drawing. Ackerman retraces the main stages in the millennial history of architectural drawing, recalling the connections between the development of forms of representation and that of tools and media (paper, for example). With regard to CAD, whose diffusion is compared to the diffusion of paper, Ackerman points out three relevant features: the first one refers to the possibility of experimenting new architectural forms; the second, which seems to refer explicitly to BIM, which was not yet widespread at the time, refers to the possibility of representing the structural and technological components of the building: "Today, CAD is an indispensable tool and support for the definition of all the technical features, from lighting, heating and acoustic systems to piping and structural details" (p. 256); the third feature refers to digital models, that allow "the immediate visualisation of shapes and spaces" (p. 256). Ackerman concludes by stating that drawing conventions, unlike styles "have virtually no history" (p. 267).
One of the images illustrating the essay is a section of Hans Scharoun's Berlin Philharmonic (fig. 8), which Ackerman introduces by stating: "Some contemporary projects, very articulate and complex, make sections hard to draw and to read" (p. 252). The author's lack of direct experience in the practice of architectural drawing is probably the greatest limitation of this essay. The editors of the Italian version were inspired by this essay for the book's subtitle which becomes *La rappresentazione da Vitruvio a Gehry* (*Representation from Vitruvius to Gehry*); this choice is, at the end of the reading, at least misleading with respect to the excellent content of the essays.
In this essay, unlike all the others, it is evident that the author is on terrain that are not so familiar to him, especially when dealing with contemporary architectural drawings. The statement on the section of the Berlin's

Philharmonic section shows this difficulty; although aware of the possibility to generate new architectural forms with CAD tools, Ackerman does not grasp that the Philharmonic, like the church of Saint Pierre in Firminy by Le Corbusier (the list could go on with Eero Saarinen, Antoni Gaudì and many others) are projects that do not originate from a section drawing, nor from a plan drawing, but from a spatial idea that was impossible to translate into one of the 'conventional' drawings inherited from tradition, thus anticipating those experiments that would only come in a more evolved phase of computerised representation with Peter Eisenman, Daniel Libeskind, Zaha Hadid, Steven Holl, and others. Perhaps it will be precisely CAD representation that will lead, in the near future, to the sunset of the oldest drawing conventions, replacing them with a direct manipulation of digital models.

The pervasive ability of computers to produce 'realistic' images, exponentially increased by artificial intelligence, makes the reading of these essays, focused on imitation, a key to understand the architecture of the past and to critically reflect on the future of the teaching and on the practice of architectural drawing.

Notes

[1] Interesting and in-depth considerations on mimesis can be found in: Ugo, V. (1002). Mimesi. In R. de Rubertis, A. Soletti, V. Ugo (eds.). *Temi* e *Codici del Disegno di architettura*. Roma: Officina edizioni, pp. xx-xx.

[2] Kraus, K. (1972). Pro domo et mundo – Dell'artista. In R. Calasso (ed.). *Detti* e *contraddetti*. Milano: Adelphi, p. 229. The quotation is taken from Ugo, *op. cit.*, p. 12.

[3] For an in-depth study of this topic, see Massimo Scolari: M. Scolari (2005). *Il disegno obliquo. Una storia dell'antiprospettiva*. Venezia: Marsilio.

Author

Fabrizio Agnello, Dipartimento di Architettura, Università degli Studi di Palermo, fabrizio.agnello@unipa.it

Reviews

Reviews

Fabrizio Agnello

La memoria fotografica dell'architettura. Restituzioni prospettiche e ricostruzioni

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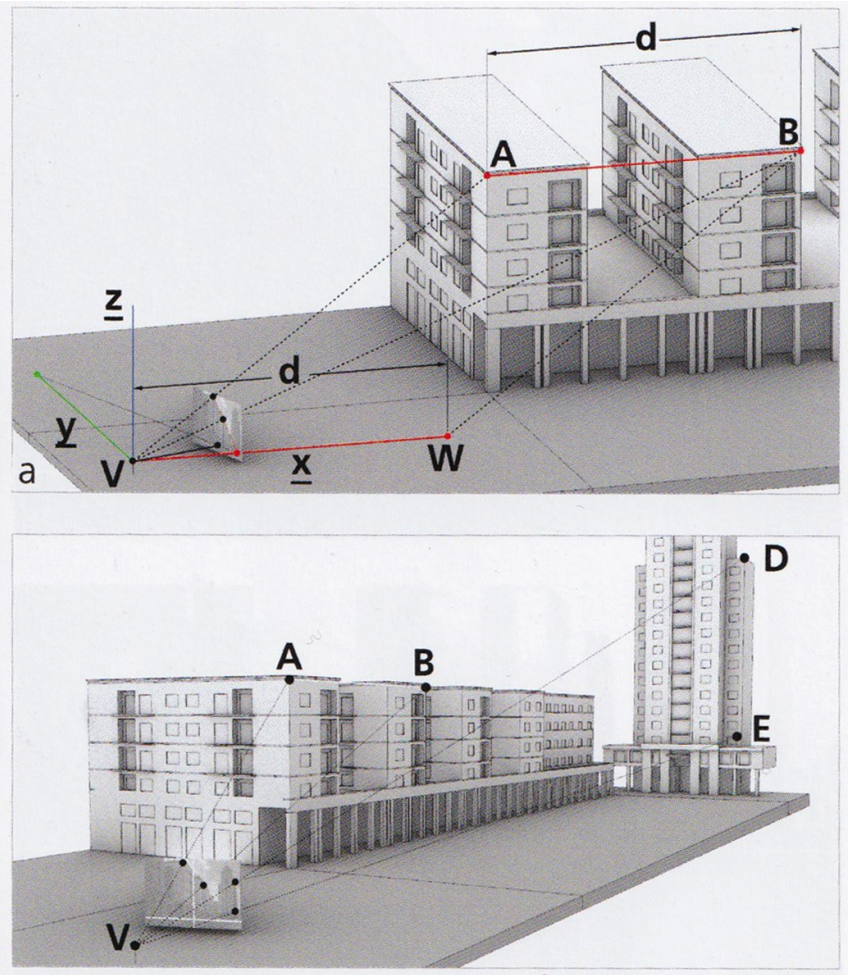
At first glance it looks like a book – another one!– on perspective restitution. But the contents –finally– are very different.
Before focusing on the merits of this new contribution, it is important to point out that the main topic, presented in the subtitle (perspective restitution and ensuing reconstructions) could in fact appear to have already been extensively exploited as well as prevalently didactic in nature. But anyone who leafs through this publication will immediately grasp the intense creativity of a truly innovative approach to an issue rooted in history, but tackled in an absolutely contemporary manner.
Actually, we shouldn't immediately read the subtitle, as I did, because in the first part of the title the initial words, "photographic memory", reflect most of the work performed by Fabrizio Agnello, teacher of Drawing at the Department of Architecture at the University of Palermo. Photography itself is 'memory', and as such should be protected, observed, studied, and used. Since the book examines the possibility of using old photographs to recreate architectural surfaces and volumes that no longer exist, this obviously raises a problem regarding not only the uniform quality of those images (that have often survived adversity and negligence, not unlike the adversity and negligence that led to the loss of the architecture in question), but also the available data relating to the real condition of the artifact when the photograph was taken. The usable images are not always impeccable, high-quality technical photographs, but become splendid, moving images due to the irreplaceable data they contain, in other words that part of the unawareness that characterizes the moment the shot is taken compared to the future history of the artifact.
Photographic documentation is considered the custodian of an extensive part of collective memory, the memory of places, of the latter's architecture and the volumes that shape them. Every image conveys indications that refer to a story that deserves unrelenting examination if we wish to discover traces of the transformative process that triggered the current configurations and indicates the direction it will take in the future. So the objective catalyzed around the architecture, but also around the restitution of territorial and built contexts, is to explore, investigate and 'put flesh on the bone', flesh that history has vaporized over the years, either due to the inexorable action of time (just think of archaeology), voluntary demolition (transformations, wars), or even uncontrolled, devastating natural events (for example, in the book, the reconstruction of palazzo Grano in Messina, irremediably damaged by the earthquake in

1908 [pp. 154 et foll.]). This objective places photography at the very heart of any knowledge-gathering study.
Now let's go back to the subtitle. It's impossible not to notice that 'perspective restitution' is not used in the singular, as often happens, but in an unusual plural form, because, as emphasized by the author, "if the available images and documentation are to be used successfully, every reconstruction project requires strategies suited to the task at hand, to its dimensions and morphological complexity" [p. 154]. As a result, the number of perspective restitutions that are worth tackling are equal to the number of lost architectures, but above all they differ from one another as regards the reconstruction process, depending on the materials that may be involved in the process, in other words they include: what has remained *in situ*; any reliable metric-dimensional data; the quality of the photographs; and what can be considered known data regarding these photographs (camera type, lens, focal length, and whether the whole frame is, or is not, available…). This process is, in a way, very similar to the work of a craftsman who uses old available tools, but reuses then depending on his new objectives, new paths of invention or adaptation. In my opinion this is a characteristic of the whole world of metric-dimensional acquisition and survey, even when the study object is not able to 'talk'. This is what it means to develop a survey, be the object simple or complex: start with the scope and objective, verify the accessibility and characteristics of the context, assess the availability of suitable tools, choose the proper procedures and methodologies, and verify the energies that may be involved.

Fig. 1. Top: application of parallelogram rule and positioning of the perspective scheme; bottom: control of perspective congruence between image and model (figs. 16a, 17, p. 129).



It means dealing with a series of facts in order to develop a strategy; this procedure always required a phase during which we need to operationally roll up our sleeves.
This 'looking around' in order to decide on a methodology is what has allowed Agnello to turn an old issue such as perspective construction, which is behind photographic and perspective decoding (also an ancient tradition) and the more recent digital tools, into a single issue that can be used to obtain the reconstruction of the volume. Knowledge of the history of these disciplines and tools is what allows creativity to be used to choose the most suitable approach, from amongst the many that are implementable (sometimes it is the only usable method), in order to achieve the desired goal. However, since we are talking about architecture and built contexts, there is only one goal: a spatial model.
Ever since the dawn of perspective deconstruction and later photogrammetry, we know that the process changes radically if we use one image, or two images knowingly connected to each other, or the many images that characterize the multiple image process of Structure from Motion (SfM). Nevertheless, it always involves recreating a spatial model (sometimes using a concatenation of planes or sometimes directly repositioning the points in an immediately available three-dimensional space); this model is the only one that can be associated with the concept of an architecture, a building, and a contextualized and perceptively effective restitution.
The author fully understands the precise field of accuracy in which these reconstructions appear. Controlling the proximity between what is proposed after the reconstruction process and the actual configuration of architectures that no longer exist is a crucial piece of data; it is far more crucial than the accuracy of the reconstruction within the operation. Formal data prevails over metric-dimensional data, especially if the goal is the perceptive impact of the representation of ancient artifacts within current contexts. If the goal involves lost heritage and its repositioning based on cornerstones still present on site, then this operation is enhanced by its historical importance and the perceptive component of the reconstruction compared to what it can presume from accurate metric-dimensional details and specific features. In the *Introduction* to the book, Agnello writes: "The reconstruction process is obviously influenced by the number of photographic images, but even when high resolution photographs are available it cannot achieve the level of accuracy typical of photogrammetric survey and laser scanning processes" [*Introduction*, p. 14]. Nevertheless, "the limits of the accuracy of the process do not diminish its potential when linked to the objective of understanding and disseminating lost cultural heritage". This is the logic behind Agnello's work. In his *Preface* to the book (*Preface*, p. 11), Fabrizio Gay writes that Agnello succeeds in maintaining "a balance between the topographical and photogrammetric point of view".
From an editorial point of view, the book has five chapters. After the *Introduction*, Agnello first defines the photographic technique and then presents an historical *excursus* (chap. 1). He goes on to illustrate the fundamentals of perspective found in the photographic images (chap. 2), presents the mechanics of the shot, and then uses spatial models to illustrate the perspective decoding procedure. He then moves on to present restitution obtained either using images taken with 'standard' cameras (chap. 3), which primarily use an inclined plane, or with 'studio' cameras which due to their technical characteristics, make it possible to work on vertical frame perspectives (chap. 4). Finally, chapter 5 provides detailed examples of the procedure to reconstruct buildings (palazzo Grano in Messina or the Mother Church in Salemi) and built areas (e.g., the 'Cala' in Palermo); these procedures require a mix of photographic images and a suitably scaled and managed map. The concept that runs through Agnello's approach is fascinating; he relates it in a specific paragraph in the chapter dedicated to reconstructions: thanks to the digital medium it is possible to move directly in space, to draw in space, but above all to directly use its potential [*Disegnare nello spazio*, pp. 139-149]. This makes perspective restitution from a photograph a process of 'manipulation' of virtual space in which to insert different kinds of data (the photograph, the map, the centre nodal point of the lens, the luminous straight lines that have generated the photograph, the projecting straight lines that run through them, and the elements that are known and still present either in the surroundings or architectural artifact, …); these elements are then managed as if it involved a sort of 'setting' of a game. This is the most important operation, the contribution Fabrizio Agnello provides to the history of perspective restitution.
The book ends with an interesting bibliography that is not extensive, but comprehensive; it includes

all the technical texts and literature on the subject of the use of photographic images in reconstruction. Although no further proof is needed, it does indeed illustrate Fabrizio Agnello's broad vision regarding the three-dimensional revival of digital models of lost architectures or contexts which, over the years, have taken on different configurations. It is a precious bibliography that extends from the 'sacred texts' of Survey to others concerning the heritage of Descriptive Geometry, from the dawn of the history of perspective restitution and photogrammetry to more recent contributions on this issue.

Laura Carlevaris

Author

Laura Carlevaris, Department of History, Drawing and Restoration of Architecture, Sapienza Università di Roma, laura.carlevaris@uniroma1.it

Reviews

Riccardo Migliari, Marco Fasolo

Prospettiva.
Teoria e applicazioni

Hoepli
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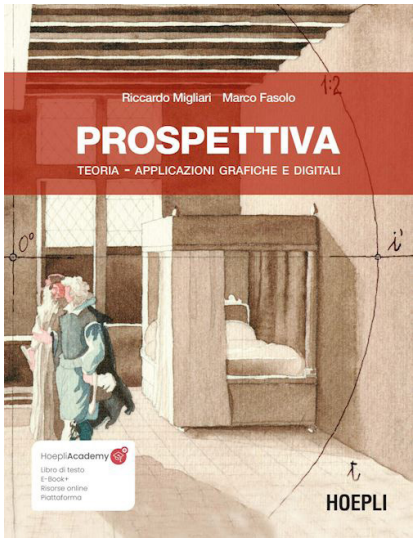

I believe that Riccardo Migliari's first thoughts about writing a monographic volume devoted to the 'practice' of perspective go back to more than ten years ago, when, while we were both attending a PRIN meeting in Turin, during an evening stroll along the Po River, he confessed to me that he had in mind an editorial project for the near future: that of wanting to devote himself, once his university commitments were over, to the writing of a monographic text devoted to this method of representation, free from academic constraints and capable of extending the study of its applications, even the more heterodox ones (such as anamorphosis or solid perspective) to other figurative practices, bordering and seemingly extraneous to architectural practices *de jure*. I imagine that this desire was shared with Marco Fasolo, Riccardo Migliari's companion in many intellectual adventures, both in academia and publishing, and that the two then found the solution in a balanced harmony of collaboration, for drafting both the contents and the related illustrations. As both authors make clear from the very first pages of the book, rather, right from the Foreword, perspective is a two-sided 'rhetorical figure': it can be imagined to be generated either by a series of projective constructions created on the Mongian images of an object, in order to obtain a synthetic, indeed, perspectival representation of it, with a strong retinal, albeit two-dimensional tenor, according to a path linked to a tradition that, at this stage of their research, appears to interest the two authors less; or originated by a series of constructions represented within 'perspective space', this one more experiential, which also aims at obtaining a similar figurative result with a strong optical impact, but with quite different theoretical and methodological premises. This choice appears as the logical precipitate of a long series of research studies, carried out by both Roman scholars (among which we will mention here only for the sake of brevity, the work on the critical edition of Piero della Francesca's *De prospectiva pingendi*) during their long and brilliant scientific careers, which have tended to enhance the potential of a methodological approach strengthened by the nineteenth-century contributions of, for example, Poncelet and von Peshka, where the image is generated in the space of experience, that same space that surrounds us both as living beings and as observers. This very idea of space is analyzed in the book, and the whole structure of the volume is subordinated to it: an example of this, among the many into which the volume is divided, is the chapter devoted to solid perspective, mentioned earlier, and to the 'Ames room', where it is shown how it is possible to observe these spaces both conventionally, from the front, but also by

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moving to unconventional positions. So, predilection for the so-called 'direct method' within a logical process in which the represented figure emerges from the constructions and the page, also constituting a model of didactic learning: perspective, in the capable hands of Migliari and Fasolo, thus becomes an intellectual and anthropological, as well as mathematical-projective, adventure. A reading of the table of contents suggests that the work is configured, more than as a simple theoretical-applicative manual, but as a true modern treatise on perspective, capable of showing us its historical roots, but also projecting us into the field of its future applications. This staunch editorial line can also be inferred from the iconographic apparatus of the text, almost always consisting of images realized with lines drawn freehand and colored in watercolor: as in the treatises of past centuries, whose iconographic apparatus constituted another expression of authorship within the publication, here, too, such a choice enhances the experiential side implicit in their simple reading and, more often, deciphering. Thus, very complex projective constructions that in a graphic context dominated by the aseptic dryness of linear line drawing alone –whether analog or digital– would be excessively abstract, placed in a landscape-environment context, soberly dealt with even in its chromatic-luministic rendering, becoming immediately comprehensible, precisely because they are brought back into the perspective space of common experience mentioned above. This communicative approach, far from attempting to mimic any pictorial-artistic effect, helps to break through the two-dimensional surface of the page and provide the reader with good suggestions for the setting of what German treatises call *Freie Perspektive*, evoking that perspective space in which the complex textures of geometric-descriptive drawing finally seem to dissolve. Perspective drawing in this fine volume once again becomes a moment of reflection, as the analogic illustrations within suggest: a physical and phenomenological place in which to attempt to capture the infinite, even with the weapons of poetry.

Agostino De Rosa

Author

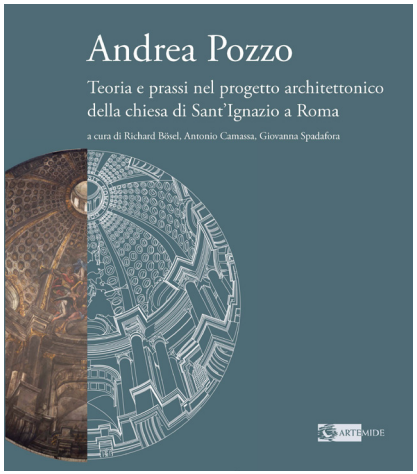
Agostino De Rosa, Dipartimento di Culture del progetto, Università IUAV di Venezia, aderosa@iuav.it

Reviews

Richard Bösel, Antonio Camassa, Giovanna Spadafora (a cura di)

Andrea Pozzo. Teoria e prassi nel progetto architettonico della chiesa di Sant'Ignazio a Roma

Artemide
Roma 2023
223 pp.
ISBN 978-88-7575-430-3



In *Andrea Pozzo. Teoria e prassi nel progetto architettonico della chiesa di Sant'Ignazio a Roma*, the editors –Richard Bösel, Antonio Camassa, and Giovanna Spadafora– collect sixteen contributions outlining the multifaceted figure of Andrea Pozzo, with particular attention on his work in the church dedicated to Saint Ignatius, the founder of the Society of Jesus. Andrea Pozzo dedicated his working life to painting, art, architecture, scenography, perspective, and the development of a treatise that collects his knowledge of these activities. The activities are all permeated by his deep faith dictated by his clerical status as a Jesuit lay brother.

With respect for Pozzo's multiple qualities, the editors have wisely divided the book into sections that represent his eclectic nature: architecture, art, painted space, drawing, and geometry. The four parts of the book are presented in a continuum that leads the reader to an understanding of Andrea Pozzo, but each part can also be read individually, as an individual investigation on a specific aspect of this artist from Trento.

The section on architecture opens with a contribution by Richard Bösel that covers the design and construction of the Church of Saint Ignatius over 60 years (1626–1686) of troubled vicissitudes, from the initial work by Orazio Grassi up to Andrea Pozzo's assignment with his most famous works: the fresco on the large vault (1688–1694) and the false dome (1680).

Pozzo's architectural qualities are outlined by Maurizio Gargano, who dedicates his text to examining the chapels with altars in the Jesuit church, revealing how the lay brother from Trento, accompanied by Carlo Mauro Bonacina, designed the altars dedicated to Saint Aloysius Gonzaga and Saint Ignatius, the latter of which combines perspective with architecture.

The relationship between the double-height spaces that open in Andrea Pozzo's work is the focus of the contribution by Augusto Roca De Amicis. The architecture historian skilfully traces, using many references, the cultural path that saw the Jesuit artist interact with his contemporaries and their creations, ultimately leaving a definite stylistic mark in the international panorama of the Baroque.

The second part of the book, dedicated to art, opens with a contribution by Andrea Dall'Asta, which focuses on the iconographic structure of the vault of the Church of Saint Ignatius, interpreting the allegory of the Jesuits' missionary work as "*la contemplazione appassionata dell'opera di Dio nella storia*" [the passionate contemplation of the work of God in history].

Finally, Dall'Asta pauses on the unique point of view adopted by Pozzo and compares it to another one-eyed point of view: the telescope invented by Galileo Galilei.

Continuing with the previous contribution, Claudio Strinati examines the

sketches for the vault and dome housed at the National Gallery of Ancient Art at Palazzo Barberini in Rome. The art historian hypothesizes an educational/demonstrative purpose for both, although he does not exclude the value of preliminary studies. As Strinati writes, the two sketches, if "*correttamente interpretati nei loro presupposti estetico-matematici, sono la migliore chiave di accesso alla specificità progettuale del Pozzo* e *al suo stile incomparabile, specie in rapporto alla coeva esperienza, pur eletta invero, di Fumiani*" [correctly interpreted in their aesthetic/mathematical assumptions, are the best key to access the specifics of Pozzo's design and his incomparable style, especially compared to the contemporary, albeit superior experience, of Fumiani].
These two contributions, Dall'Asta's and Strinati's, are separated by a text by Sara Fuentes Lázaro, who identifies Pozzo's possible artistic inspiration, finding it in Mattia Carneri, Francesco Maria Richini, and Pellegrino Tebaldi. The author also pauses on the admirable engravings and words in the treatise *Perspectiva pictorum et architectorum*, in which the Jesuit pays homage to great architects: Jacopo Barozzi da Vignola, Palladio, Vincenzo Scamozzi, Sebastiano Serlio, and Vitruvius.
The analysis of the relationship between actual architecture and painting, or better yet, between actual and illusory buildings, is the focus of the third part of the book.
Antonio Camassa investigates the language of the false dome, interpreting it as the coexistence of Andrea Pozzo's two souls: architect and painter.
Pozzo's illusory dome should not be viewed only as a pure exercise in perspective virtuosity, but rather should be appreciated for the desire to integrate it with the existing building. "*Il finto e il vero*", Camassa writes, "*si congiungono fino a fondersi in uno spazio* e *un tempo limitati, provvisori* e *temporanei*" [Falsity and truth come together until they meld in limited space and time that is provisional and temporary].
The author identifies various stages in Pozzo's approach to designing these works, tracing them and verifying them in his famous work for the Church of Saint Ignatius. In addition, relying on perspective rendering, Camassa credits the artist from Trento not only with the capacity to design an architectural space, but also to interpret the design history of the place where he must work.
The design and production process for the great barrel vault in the Church of Saint Ignatius, painted by Pozzo between 1688 and 1694, is addressed by Matteo Flavio Mancini. According to the author, there are two aspects that must be considered when interpreting the painting dedicated to the Jesuits' missionary work around the world: the spirituality of the visual culture of the Society of Jesus and the skillful perspective technique used by the painter.
The contribution contains an ample conceptual discussion of the uniqueness of the two components in the fresco: architecture and the figures moving within it. Through construction of a three-dimensional model, the author has verified both the consistency between the real and virtual space and the logic and correct sizing of the allegorical figures that populate the painting.
A study of the illusory perspective that decorates the apse vault is entrusted to Flavia Camagni. Given that Pozzo's treatise does not include an illustration of the illusory architecture that decorates the noblest part of the church, as is instead provided for the vault and false dome, the author relies on perspective rendering to decipher the perspective, rendering the architecture designed by Pozzo through the construction of an effective three-dimensional model.
Following an analysis of the engravings in the treatise accompanied by perceptual observations and geometric/perspective reflections, Camagni presents an original reconstruction of the space designed by Pozzo, which, inserted in the model of the church, provides a unitary vision of the actual and illusory architectures.
Drawing and geometry is the final part of the book, which examines the fundamental relationship between art and science that pervades all of Andrea Pozzo's creative activity.
Leonardo Baglioni and Marta Salvatore present a critical reading of some of the most geometrically important passages in *Perspectiva pictorum et architectorum*. Thus, moving from the first figures that show the method adopted by Pozzo to construct the perspective, the authors move on to three perspective models presented by Pozzo in his treatise, a mark of his artistic industriousness: liturgical scenography, theatrical scenography, and bottom-up perspective. The authors skillfully guide us through synoptic frameworks and original digital diagrams in reading this apparatus, revealing the geometric and perceptual principles as well as the possible construction techniques.
Closely related to the previous chapter, the contribution by Michela Ceracchi studies the ephemeral devices present in Pozzo's treatise, which represent a vast range of ideas that the Jesuit artist himself suggests using "*tanto per una fabbrica vera, quanto per una finta*" [as much for actual buildings as for false ones].
In particular, the author pauses on the round building that Pozzo drew in his treatise for the Church of Saint Ignatius next to the Roman College, capably and skillfully reconstructing the ephemeral

device in three dimensions and making interesting geometric/perceptual observations based on it.
The contribution by Giovanna Spadafora focuses on the prominent role of drawing in Andrea Pozzo's work, and particularly on the design process for the false dome. The perspective drawing is elevated to an indisputable tool for constructing the space.
To support this thesis, Spadafora relies on citations present in Pozzo's treatise, as well as his drawings –or those attributed to him– that depict the false domes, analyzing not only the perspective system, but also the architecture presented by Pozzo. She therefore formulates the research path that the Jesuit would have taken to realize his famous false domes. The author's work serves as a worthy conclusion to the entire book, since it seems to systematize the preceding contributions, providing an original overall vision of the Jesuit's work in which the dominance of drawing stands out, even with respect to the other arts practiced by Pozzo.
This review could not possibly overlook the important contributions by Vincenzo D'Adamo, Fabrizio Gallo, Luca Pietromarchi, Flaminia Gennari Santori, Elisabetta Pallottino, or Francesca Fatta, or the two focuses by Paola Calicchia and Dario Aureli with Alessandro Cosma. The first is aimed at the virtual reconstruction of the acoustic environment of the Church of Saint Ignatius with the goal of assessing the difference in acoustics between the false dome and the hypothetical one, while the second is dedicated to the exhibition of two sketches by Pozzo in the Sala della balconata at Palazzo Barberini for the study day intitled *"Congiungere il finto col vero" Andrea Pozzo: teoria e prassi nel progetto architettonico della chiesa di Sant'Ignazio di Loyola* held at the church on 3 December 2021.

Marco Fasolo

Author

Marco Fasolo, Department of History, Representation and Restoration of Architecture, Sapienza University of Rome, marco.fasolo@uniroma1.it

Reviews

Anna Christiana Maiorano

Il corpo grafico di una architettura decorata. Rilievo Disegno Ornamento

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ISBN 979-12-80178-79-4

Although Christiana Maiorano's book can be considered a monographic work entirely dedicated to a specific case study, it is part of a broader research framework related to the knowledge of the architectural, cultural and typological features of the Apulian cities and territory, on which the research group of the Department of Architecture, Construction and Design (ArCoD) of the Politecnico di Bari, to which the author belongs, has been working for a long time. The author, in collaboration with Valentina Castagnolo, is particularly involved in the definition of an in-depth study concerning the linguistic and typological-formal codes of Bari's architecture, especially historical buildings, that characterise the fabric of the city's nineteenth and twentieth-century expansion. The research, whose methodology has gradually been consolidated, has provided the opportunity to analyse approximately four hundred artefacts, starting from the survey of the façades and resulting in a considerable amount of data, subsequently organised within a substantial information system that has oriented outputs in different thematic layers, although originating from the same matrix [Castagnolo, Maiorano 2018].

Based on this previous experience, the work that Christiana Maiorano presents in this book moves from the analysis of a single building, one of the most original examples of Art Nouveau in the city of Bari, using the most classic tools of the disciplines of representation, to experiment new research frontiers.

The choice of the case study, palazzo Barrocci, among the many available in the same territorial and cultural context, is determined by two main reasons. The first one is related to the recomposition, even if only virtual, of the unity of the building, whose overall reading has been completely compromised by the construction of an imposing infrastructure in front of it: the driveway bridge built in the 1960s, which has inexorably changed its perception. The building, built in 1913, occupies the entire head of a regular mesh in the urban fabric and stands in a marginal position within the 19th-century expansion. Its location has placed it in the dual condition of spectator and protagonist of the changes and major transformations that the city has undergone over the past centuries. Among these, the main one was undoubtedly the construction of the imposing infrastructure that assumed considerable weight for the building, definitively altering its visibility to and from the outside. In this regard, the author says: "Looking for the point of observation –of the research as well as of the object of study– means in fact moving by making movements that allow one to perceive and identify new meanings, values, identities and intentions in this denied place of the city" [p. 24].

The second reason is to restore to the city's collective memory and heritage, through an accurate path of knowledge that moves from the survey and restitution of the palace's complex decorative code, analysed in its symbolic and geometric components and an evident expression of the client's belonging to the city's bourgeois class. Every functional element of the building, both outside and inside, is charged with an aesthetic value as evident as it is characterizing so that the final result represents an evocative manifesto of the client's political and cultural status and interests. Indeed, the ornamental register refers to the language and decorative symbols of Egyptian matrix, which are evidently inspired by nature [Jones 2016, pp. 47-55] but whose code is often juxtaposed with that of Masonic style [Abdoh 2020].

These reasons are explicitly recalled by the volume's subtitle, *Rilievo Disegno Ornamento*, in which the knowledge phase is entrusted to one of the main tools of the disciplines of representation, the survey, while the critical interpretation phase is assigned to the restitution phase, that is the drawing of the architecture that becomes a narration through the decoding of the decorative language used.

The survey of the building is based on the integration of techniques, using active and passive sensors, and is aimed at preparing an accurate and reliable metrically and geometrically knowledge base suitable for the subsequent interpretation and implementation of the data.

On the other hand, the author entrusts the digital representation with the task of restoring the denied unity to the architectural object, irreparably compromised by the urban layout following the building of the artifact, to allow again the overall reading of the fronts that the changed boundary conditions have definitively compromised. The research approach to this point is classic and shareable, but the most interesting and even innovative aspect of the book, again stated already in the title, is related to the concept of the 'graphic body' of architecture that the author attempts to explain on several occasions and in various ways within the chapters and, not least, in the graphic appendices.

Among the most suggestive explanations that the author uses to clarify the meaning of 'graphic body' is the one that aims at assigning to this concept the difficult task of representing the link between architecture and its decorative apparatus, a relationship that tends to be constituted in a whole made up of punctual elements, lines and signs capable of graphically translating the architectural essence and, above all, its dualism between matter and form. This passage is expressed by observing the data derived from the survey, which are transcribed by draws and from which it is possible to categorise the elements that characterise the building through a new mapping of signs that translate, in the graphic language of drawing, what for the author represents the graphic body of architecture [p. 37]. In short words, from the taxonomy derived from the cataloguing of the architectural elements, one is transported to a visual classification of the signs of architecture itself, reconfigured into a new graphic and semantic composition.

In this exercise of interpretation, decomposition and recomposition of data, the decoration is the fulcrum and represents the element that bridges the two worlds: the real one, objectively deduced from the artefact survey, and the ideal one, which derives from the subjective translation of the architectural language of the real into that of its 'graphic body' that is expressed through the creation of a real map of the decorative language of the building. The methodology behind this creative exercise, which is expressed through the graphic body of the architecture, is fully explained in an earlier contribution by the author in the book *Graphic Languages. Decoration* [Castagnolo et al. 2022]. In that case, the procedure was applied on a larger scale while maintaining the basic analogy between the knowledge of architecture and its interpretation through drawing, and that of the creation of a map that interprets reality by establishing new points of view and new perspectives. The result of the exercise is a new narrative of the building's decorative apparatus that gives us different keys to knowing and telling, through the attribution of new meanings, the same architecture.

Among the main outcomes of this work, in the writer's opinion, there is certainly the already expressed merit of reassigning the building to its original wholeness within the collective memory through procedures of integrated survey to return its original usability to the community, providing a unified reading that is also achieved through the exploration and investigation of its ornamental code. In this path, the integrated use of digital technologies, through which the survey is accomplished, has a primary role. This purpose is visible in the iconographic apparatus of the volume, which is organised in thematic sections respectively named mapping, nomenclatures, geographies, taxonomies, and geometries.

But it is again, also from a graphic point of view, the materialisation of the architectural graphic body that

represents the book's most original features. This reading key, which lends itself to replication in other geographical and cultural contexts, also seems to represent a particularly effective tool from an educational point of view. Indeed, it is possible, through operations of reading and re-reading, decomposition and re-composition, abstraction and materialization, survey and drawing, to understand, and subsequently rework the architectural language codes of the analysed building, filtered through the personal feeling of those who approach the critical knowledge of an architectural work.

Ilaria Trizio

Author

Ilaria Trizio, Institute for Construction Technologies, Italian National Research Council, ilaria.trizio@itc.cnr.it

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Events

Events

Nexus 2023. Relationships Between Architecture and Mathematics

Vincenzo Cirillo

From 12 to 15 June 2023, the castello del Valentino, an UNESCO World Heritage Site and the elegant venue of the Department of Architecture and Design (DAD) of the Politecnico di Torino, together with the prestigious independent publisher of books on architecture and mathematics *Kim Williams books*, hosted the fourteenth edition of the international and interdisciplinary conference entitled *Nexus 2023: Relationships Between Architecture and Mathematics*. After the Covid-19 pandemic, which in 2020 precluded the conference from being held in presence in Kaiserlautern (Germany), 2023 represented a return to normality by allowing scholars and young researchers to meet again in presence and engage in exchanges that could fuel scientific debate and stimulate new ideas and collaborations for future research.

In the beautiful and frescoed setting of the *Salone d'Onore* at the castello del Valentino, the 14th conference was opened by the Rector's Delegate for International with China and Asian Countries, the Director of the Department of Architecture of the Politecnico di Torino, the President of the *Unione Italiana Disegno* (UID), Francesca Fatta, and the founder of the prestigious *Nexus Network Journal*, Kim Williams. In particular, Kim Williams reminded those in the audience that the event was promoted by a scientific committee directed with Roberta Spallone (Politecnico di Torino) to continue, ever since the first Nexus conference (1996 in Fucecchio, in the province of Florence), an interrupted tradition of multifaceted and high quality research through the dissemination of numerous studies and applications of mathematical principles (e.g., descriptive and projective geometry, symmetry, proportion, statics, grammar, computer science, topology, algebra, fractals etc.). Related to the broader theme of architectural design, these focuses have over time aimed to present analytical and critical reflections on the countless aspects that inextricably link this pair to landscape, urban design, statics and/or building science.

On the basis of this cultural orientation and the usual topics (*Design theory, Geometry, Representation of architecture, Didactics, Rule-based Design, Structures*), during the three days of plenary sessions (morning and afternoon), about 40 papers were presented, selected according to double blind review, whose contributions on architectural projects, either 'on paper' or actually existing, stimulated in the participants fruitful reflections mainly oriented towards the role of geometric thought as a *mèdia* for Design Analysis, which has always made use of geometric sciences to represent 'forms' in the plane and in space as well as to investigate their mutual relationships. The use of graphical transposition of complex mathematical equations with the aid of drawing on two and/or three-dimensional supports (analogical and/or digital) has led various authors to address the theme of the representation of complex projects through the use of emerging disciplines and technologies (artificial intelligence, integrated digital survey, BIM and H-BIM, parametric and algorithmic modeling), which show their versatility in becoming together a tool for the investigation, interpretation and design of architecture in its multiple relationships with mathematics.

On 15 June, the last day of the conference, a section was dedicated to the research carried out by PhD students with the aim to disseminate new lines of research and promoting new horizons of interest and directions to investigate. The synthesis of this objective was expressed to the

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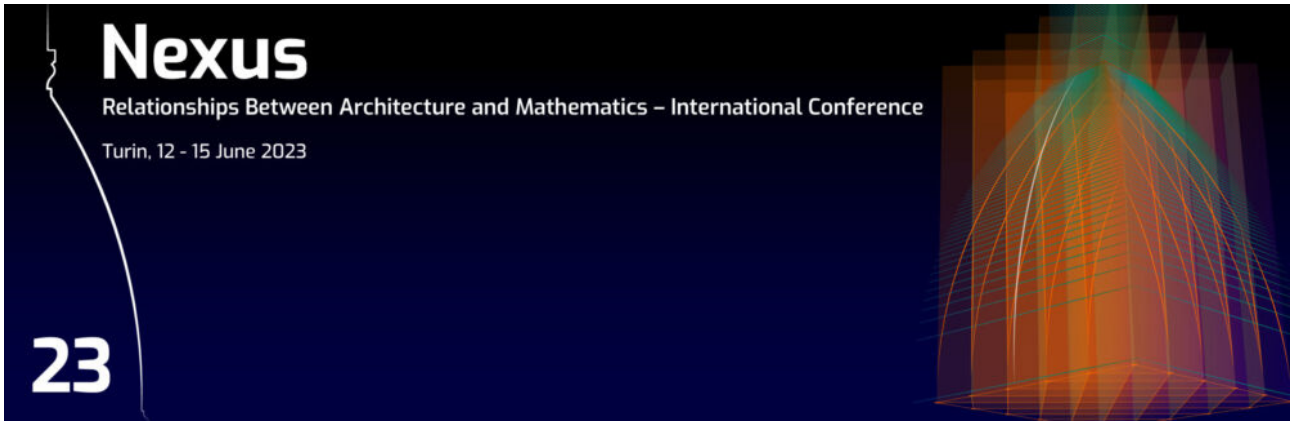

Fig. 1. Banner of the event. Nexus 2023. Relationships Between Architecture and Mathematics, 12-15 June 2023, Turin.

audience by Roberta Spallone, who commented as follows: "the Ph.D. Day takes on the significance of an intergenerational discussion and is intended to provide suggestions and viewpoints useful for the maturation of young scholars" [1].

The research presented, of varied interest and high quality in terms of content and methodologies of investigation, once again represented the strong point of this conference, the outcomes of which were published in June 2023 in a supplementary volume of the *Nexus Network Journal* [2]. In conclusion, it may be said to have taken part in a stimulating scientific-cultural event, full of ideas and suggestions for a future of new research that, in the next *Nexus* edition (2025), will certainly find new blood of expression and comparison.

Notes

[1] Spallone, R. (2023). *Nexus Conference 2023 Turin*. In Nexus Network Journal, No. 25 (Suppl. 1), pp. 1-3. <https://link.springer.com/article/10.1007/s00004-023-00734-z> (accessed 21 November 2023).

[2]<https://link.springer.com/journal/4/volumes-and-issues/25-1/supplement> (accessed 21 November 2023).

Author

Vincenzo Cirillo, Department of Architecture and Industrial Design, University of Campania 'Luigi Vanvitelli,' vincenzo.cirillo@unicampania.it

Events

Jean François Niceron and Emmanuel Maignan. Two Minims, between Science and Faith. Deceptive fruits of an 'artificial magic'

Domenico Mediati

Deception and mathematical rigor: two seemingly antithetical dimensions. Yet sometimes oxymorons are reconciled. This is the subtext of the exhibition *Jean François Niceron and Emmanuel Maignan. Two Minims, between Science and Faith*, curated by Alessio Bortot, Agostino De Rosa and *Imago rerum*, which opened on October 7, 2023, at the shrine of St. Francesco di Paola [1].
The exhibition traces the studies carried out by the two French Minims in the 17th century between the convent of SS. Trinità dei Monti in Rome and the Mother House of the Minims in place Royale (now place des Vosges) in Paris, which was almost destroyed in the late 19th and early 20th centuries. The two convents were the casket in which Niceron and Maignan developed and applied their research on optics, catoptrics and gnomonics. The corpus of their studies is characterized by an antidogmatic approach that combines faith, science and mathematics according to a philosophical and cultural vision that recalls René Descartes' method of doubt. Nothing certain can be found in the representations of the two French scholars, constantly aimed at searching for a 'divine secret code' hidden in nature, that only mathematics and optics can reveal. It is a constant chase after the deceptive fruits of an 'artificial magic' applied to image construction and the theory of perception.
The two convent buildings that housed Niceron and Maignan are reproduced in the exhibition through representations, 3D reconstructions and virtual tours. The convent of SS. Trinità dei Monti was surveyed with digital technologies by *Imago rerum* of the IUAV University of Venice. This made it possible to propose evocative and effective virtual reconstructions of the corridors where three paradigmatic works of the two Minims are located: the anamorphic painting of *San Franceso di Paola raccolto in preghiera* (1642) created by Maignan in the western corridor; the anamorphosis of *San Giovanni Evangelista che scrive l'Apocalisse nell'isola di Pathmos* (1639-1640) painted by Niceron in the eastern corridor; Maignan's catoptric astrolabe (1637-1638) that connects the two corridors and of which a three-dimensional analog model is shown. A video presents a virtual tour of the monastic convent that concludes with a sequence from Werner Herzog's film *Salt and Fire* (2016). In it, the anamorphosis of St. Francesco of Paola is reproduced, digitally reconstructed by *Imago rerum*.
Of the no-longer-existing place Royale convent in Paris, a digital model, illustrative tables and a virtual tour leading to the convent church, the anamorphic galleries on the second floor, the library and the remains of the solar gnomon sundial have been created. Also, philological reconstructions of the two now-lost anamorphic paintings by Niceron are illustrated: *St. John the Evangelist Receiving the Apocalypse on the Island of Pathmos* (1644) and *Magdalene in Contemplation at the Sainte-Baume* (1645).
The exhibition offers a broad overview of the theoretical work and application experiments of the two Minims. One section is devoted to a comparative analysis of Niceron's two treatises, *La Perspective Curieuse* [Niceron 1638] and the *Thaumaturgus Opticus* [Niceron 1646] (published posthumously). In them a predominantly applied approach to solving graphical problems is evident. Anastatic copies of the two treatises are available for consultation by visitors.
Very striking is the section devoted to the perspective representation of complex hollow star solids. They remained only on paper and in Niceron's creative imagination, but in the exhibition, they find concrete realization through prototyping models in PLA. Studies of conical and pyramidal anamorphoses are investigated through complex geometric analyses and three three-dimensional models, reworkings of three

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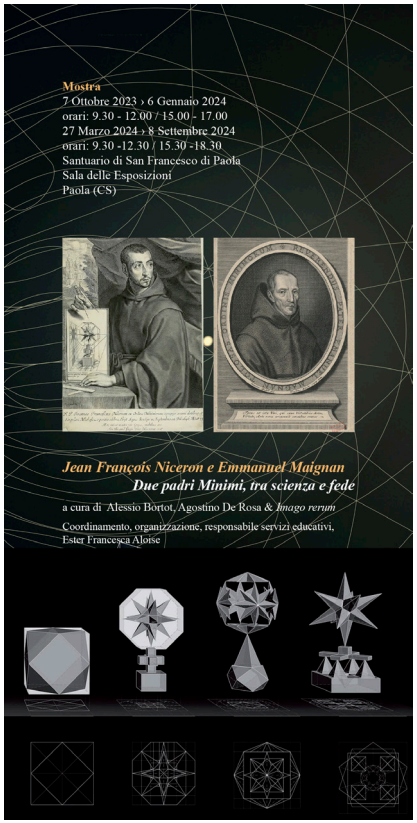

Fig. 1. Title page of the exhibition brochure.

plates found in *La Perspective Curieuse*. When observed from precise points of view, they render the real features of the faces portrayed.
In addition, the exhibition is enriched by cylindrical mirrored devices reproducing all the catoptric anamorphoses attributed to Niceron: one of his earliest realizations depicting Jaques d'Auzolles de Lapeyere; all the *anamorfosi Barberini* resulting from early experiments later reported in treatises of 1638 and 1646; and the catoptric anamorphosis of a *Mounted Soldier* (1620-1640) reworking an engraving by Hendrick Goltzius.
The central core of the exhibition reproduces large-scale photoplans of the two anamorphoses of the convent of SS. Trinità dei Monti. Two adhesive disks applied to the floor indicate the point of view from which it is possible to perceive the figures hidden by the optical-perceptive deception. Between the two representations is an additional photoplane reproducing the catoptric astrolabe made by Maignan between 1637 and 1638 in the convent's northern corridor. Such an optical-solar device made it possible to know the exact ante-meridian time of any place on the globe reached by the Minims. A graphic diagram placed under the photoplane allows visitors to interpret timelines and geographical locations.
The exhibition continues with more of Niceron's catoptric anamorphoses, in particular a three-dimensional reconstruction of the *tabula scalata*, a device consisting of triangular prisms –placed inside a box– on whose faces are shown portions of the face of Francis I of France alternating with lines reproducing a celebratory motto. The text and image are recomposed when perceived from a specific point of view and thanks to a tilted mirror. But perceptual deceptions do not end with optics and catoptrics. In fact, Niceron devotes *Book IV* of *La Perspective Curieuse* to dioptrics. He elaborates a series of studies in which a monocular telescope fitted with a prismatic lens, pointed at a table depicting multiple figures, allows a new image to be obtained by recomposing portions of those given. Here the deception comes by the fragmentation and convergence of the laws of refraction. *Imago rerum* reconstructs the device by applying it to *Table LXIX* with the busts of 12 Ottomans that, when observed through a prismatic-lens monocular telescope, are recomposed into the portrait of Louis XIII. Catoptric laws and perceptual deceptions bend to unequivocal political-theological messages.
The exhibition closes with a section devoted to Emmanuel Maignan whose studies on gnomonics that led him to make two cathopter astrolabes in Rome are highlighted: the already mentioned one from SS. Trinità dei Monti in 1637-1638 and the one from palazzo Spada in 1646. In addition, a hypothesis of an astrolabe also initially placed at SS. Trinità dei Monti and now lost is proposed.
Finally, very interesting is the digital reconstruction of a work by Maignan that was never realized. In the manuscript *Mathematica Pamphilianos hortos exornans* [Maignan 1650 ca.] he describes some scientific games that were to accompany the design of the villa Doria Pamphilj attributed to Francesco Borromini. Here we find some artifices related to the French father's studies on optics, gnomonics, acoustics and pneumatics. The work was never realized but the exhibition proposes a virtual enjoyment of it albeit in a digital dimension.
The exhibition concludes with a copy of the treatise *Perspectiva Horaria* [Maignan 1648], part of the collection of the *Biblioteca Charitas* of the convento di San Francesco di Paola, and a reproduction of the table illustrating the projective procedure by which Maignan created the anamorphosis of *San Francesco di Paola in preghiera*.
The exhibition is popularizing synthesis of a research conducted with extremely rigorous scientific method, both on theoretical content and on graphic analysis and anamorphic reconstructions. It represents a virtuous example

that elegantly and lightly reconciles the necessary requirements of scientific rigor with effective popularization skills. The curators of the exhibition have been able to enhance the natural predisposition to perceptual and emotional involvement that themes related to optical, catoptric and dioptric anamorphoses are able to solicit. It is a playful dimension that spontaneously realizes a *serious game* in which theoretical analysis of the treatises and rigorous geometric representations are placed side by side with engaging digital reconstructions and reproductions of devices [2] conceived by Niceron and Maignan, capable of soliciting awe and wonder. The exhibition hall is thus transformed into a stimulating optical-perceptual playground in which the visitor can delve into theoretical aspects while at the same time being attracted by virtual tours and three-dimensional reconstructions, wandering in search of a privileged vantage point that reveals the deception. It is an effective place of cultural dissemination but also an opportunity for educational growth in which, following in the footsteps of the two Minimal fathers, dogma gives way to reason and the constant search for what lies hidden between the occult folds of natural laws.

Fig. 2. Bottom: images from the exhibition. Top, from left to right: Jean François Niceron, Anamorphosis (Ritratto di Luigi XIII davanti al crocifisso), Gallerie Nazionali di Arte Antica, Roma; three-dimensional analog model of the catoptric astrolabe made by Emmanuel Maignan at the Convent of SS. Trinità dei Monti, Rome.

Notes

[1] The exhibition was organized in collaboration with the 'Fondazione San Francesco di Paola ONLUS' and can be visited from October 7, 2023, to January 6, 2024 and from March 27 to September 8, 2024. Ester Francesca Aloise oversaw coordination, organization and educational services.

[2] The Department of Architecture and Territory from the Mediterranea University of Reggio Calabria oversaw the optimization of 3D models and prototyping.

Author

Domenico Mediati, Department of Architecture and Territory, Mediterranea University of Reggio Calabria, domenico.mediati@unirc.it

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Events

REAACH 2023 - REpresentation Advances And Challenges AI-XR Connections

Barbara Messina, Andrea di Filippo

The fourth edition of the REAACH symposium, coordinated by Andrea Giordano (University of Padua), Michele Russo (Sapienza Università di Roma) and Roberta Spallone (Politecnico di Torino), was held in telematic mode from 10 to 11 October 2023 (fig. 1). Resuming the debate addressed in previous editions, on the challenges that the new digital methods offer to experts and scholars in the field of representation, the event aimed to focus attention on the possibility of connecting 'extended'' reality (XR) technologies –which includes augmented reality (AR), virtual reality (VR) and mixed reality (MR)– with the disciplines that employ artificial intelligence (AI). In this sense, the call proposed an exposure, in terms of applications and experimentation, to the worlds of tangible and intangible cultural heritage, architectural, environmental, infrastructural and product design, and education, as a place of higher education as well as a tool for educational enhancement.

The proceedings were opened by Roberta Spallone, President of the REAACH Association, who emphasised the rich participation of researchers from all over the world –more than 190 authors from five continents and 65 selected contributions– who were able to interpret the symposium topics in an interesting and innovative way.

Institutional greetings followed from Francesca Fatta, President of UID (*Unione italiana per il Disegno*), who highlighted the relevance of the issues addressed and the excellent organisation of the event promoted by REAACH, founded as a social promotion association aimed at the mutual exchange of knowledge and multidisciplinary research on the progress and challenges of representation. This was followed by greetings from Alessandro Luigini, President of the IMG Association –also founded with the aim of promoting interdisciplinary research that links the themes of representation with those of education– whose participation in the event was intended as a tangible sign of the possibility of consolidating the network of research interconnections that REAACH promotes.

The first day of the symposium continued with four plenary sessions, which offered twenty-five contributions selected for oral presentation, focusing on topics related to *AI&XR and Heritage Routes* (sessions 1 and 2), *AI&XR and Classification/3D Analysis* (session 3), *AI&XR and Museum Heritage/AI&XR and Historical Sources* (session 4) [1]. On the second day, a further three plenary sessions were held, scheduled for the oral presentation of a further twenty contributions, the first of which still focused on *AI&XR and Museum Heritage/AI&XR and Historical Sources* (session 5), and the other two on *AI&XR and Shape Representation and AI&XR and Education* (session 6) and *AI&XR and Building Information Modeling* (session 7) [2] (fig. 2).

Particularly emblematic of the transversality of the topics covered were the three invited contributions presented on the first day.

The first of them, entitled *Beyond the visuals: future collaboration scenarios between architects and artificial intelligence* –speakers Alberto Pugnale and Gabriele Mirra– highlighted how applications based on artificial intelligence are finding wide diffusion in the field of architecture, with the aim of not only automating procedures but also supporting the creative process itself. In this sense, the greatest challenge is to model the cognitive path of the designer, opening new possibilities for interaction between man and machine based on visual output or natural language, and focusing on how to train the algorithms developed to support design.

A further challenge is the use of AI applications to develop decision support systems for different domains. This was the theme of the second invited talk, entitled *Artificial Intelligence in interdisciplinary research domains: case studies and future perspectives* –presented by

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Fig. 1. Banner of event.

Marina Paolanti– in which a wide range of solutions was explored, ranging from automatic driving to the tracking of people flows in a confined environment in order to predict their movements, passing through the use of NeRF networks for the reconstruction of architectural spaces from photographic datasets, a possible future alternative to the consolidated photogrammetric protocols.
Testifying to the interdisciplinary and multidisciplinary spirit of the initiative was the third invited paper, entitled *Artificial Intelligence for space weather prediction* –speaker Michele Piana. In particular, the contribution analysed how AI algorithms can operate in the prediction of those phenomena, related to solar activity, that can affect the performance and reliability of space and groundbased technological systems, to the extent of potentially endangering human life and health.
Many general points of reflection emerged from the other interventions. Among these, several contributions addressed the capability of 'extended' reality to promote experiences of digital knowledge and enjoyment of cultural heritage.
For instance, *Hybrid construction of Knowledge Graph and Deep Learning experiments for NotreDame de Paris' data*, by Kévin Réby, Anaïs Guillem and Livio De Luca, illustrated a scientific project for multimodal data management. Using deep learning computer vision models, robotic processes were outlined to support researchers and specialists in a hybridisation that is fundamental for the comprehension of monuments and architecture rich in history and significance.
And again, the paper by Riccardo Florio, Raffaele Catuogno, Teresa Della Corte and Caterina Borrelli, entitled *Immersive technologies for the remote enjoyment of an archaeological complex that cannot be visited: experiments on the Cento Camerelle site in the Campi Flegrei Archaeological Park* proposed a work of superimpositions, interactions and contaminations between real and virtual space, to transform the 3D model into a 'digital scene', i.e. a participatory place in which to fully realise access to the cultural contents related to the model.
The contribution by Roberta Spallone, Fabrizio Lamberti, Johannes Auenmüller, Davide Calandra, Fabio Fasano and Martina Rinascimento, *Immersive experience for the contextualisation of Sekhmet statues*, also drew attention to the importance of devising information models that are not limited to the description, deduced from survey data, of the vestiges of architectures of cultural interest, but that create virtual spaces capable of 'narrating' structured and appropriately contextualised information.
The design of a spatial storytelling system was the aim of the research group consisting of Sandro Parrinello, Anna Dell'Amico, Francesca Galasso and Giulia Porcheddu. In their contribution, *Virtual spaces for knowledge preservation. The digitalisation of the archaeological excavation of Arsinoe*, a sourcebased modelling was proposed for the virtualisation of the investigated archaeological area, conveyed through a navigable digital space and special web pages for the dissemination of information content (survey data, historical images, drawings, excavation journals, …).
Another application of AI to the field of architecture concerns the possibility of developing predictive models for monitoring buildings. Among others, the contribution proposed by Massimiliano Campi, Sergio Di Martino and Marika Falcone, *Predicting architectural decay by AI applied to 3D survey*, has set the ambitious goal of going far beyond current applications. In fact, the idea is to implement a knowledge discovery process that –starting from the outputs deriving from the survey with terrestrial laser scanner (TLS), mobile mapping system (MMS) and close-range photogrammetry– is aimed at predicting the evolution of the decay phenomena affecting the Salerno cathedral, thus going beyond the architectural aspects alone to embrace the engineering and computer science fields as well.
Still addressing the potential of artificial intelligence algorithms in the processing

of data derived from digital surveying is the paper by Alessandra Tata, Pamela Maiezza, Stefano Brusaporci and Luca Di Angelo, *A proposal of Integration of Point Cloud Semantization and VPL for Architectural Heritage Parametric Modeling* in which they described processes for the automatic extraction of features from point clouds (based on geometric attributes) and visual programming systems to automate the parametric modelling process, thus simplifying scantoBIM applications.
However, AI systems are equally capable of generating synthetic images from textual descriptions in direct relation to the field of representation. Giorgio Buratti and Michela Rossi, with the contribution *From text to image. Comparative evaluation of AI for design and representation*, analysed the main approaches for pursuing this purpose, highlighting their benefits and drawbacks.
The same topic was addressed by Giovanni Caffio, Maurizio Unali and Fabio Zollo, whose presentation *–Hypotheses of images and architectural spaces in the age of artificial intelligence–* explored the possibility of shaping architectural spaces through AI. Experimenting with a series of processing steps and their interactions, they illustrated the transition from text to image to morphogenerative modelling through semantic transitions of planar images and threedimensional spatial systems.
The issue of digital applications that make use of 'extended' reality technologies as a tool to support design was also taken up in the contribution by Maria Linda Falcidieno, Maria Elisabetta Ruggiero and Ruggero Torti *–Via Porro: readings and inspirations from an urban space–* albeit with a different slant to that described so far. Through virtual reality applications, perfectly combined

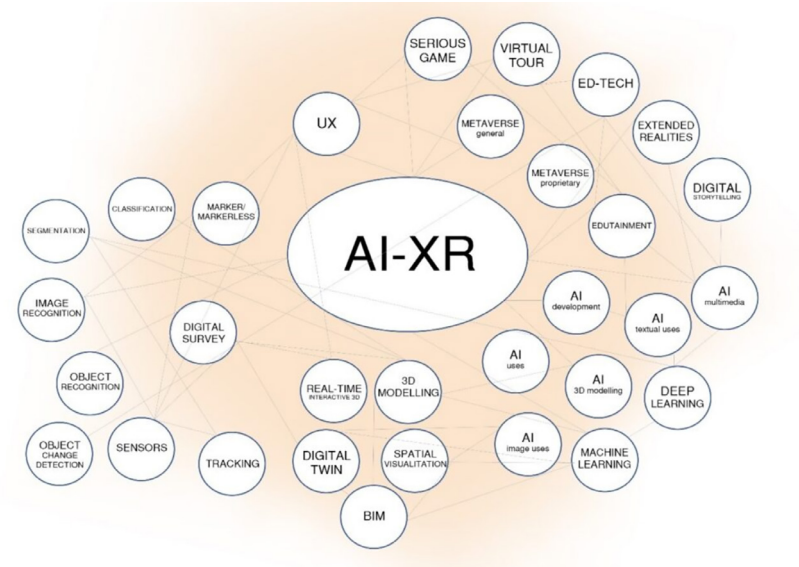

Fig. 2. Topics and key-words.

with parametric modelling systems, an animated narrative capable of simulating the ways in which the space will be used becomes possible.
Still addressing the opportunities offered in the field of design and use of architectural spaces, is the contribution by Teresa SánchezJáuregui Descalzo, Nicolás Gutiérrez Pérez, Tomás Abad Balboa, Pilar Chías Navarro, entitled *Immersion through Extended Reality as a tool applied to wayfinding inside hospitals*, which aimed to highlight the capacity of new XR technologies –combined with AI and GPS systems for geolocation– to simulate virtual visits in real environments that are difficult to navigate, thus guiding the 'navigation' in them of users, especially the most vulnerable ones.
The availability of so many digital tools generally imposes a review of their correct implementation in the field of architecture, closely related to the specific purposes of the applications. This theme was explored by Fabrizio Ivan Apollonio, Federico Fallavollita and Riccardo Foschi, in the contribution *Immersive Investigation of the Hypothetical Reconstruction of 1816 Canova's Exhibition in Spirito Santo Church in Bologna*, in which the potentialities and criticalities of the most popular visualisation technologies were analysed, contributing to the definition of a best practice in immersive virtualisation processes applied to architectural heritage.
Andrea Giordano and Michele Russo, respectively VicePresident and Secretary of the REAACH Association, concluded the proceedings by emphasising how the broad participation of speakers and authors [3], diversified in terms of the topics and experiences

proposed, allowed the symposium to be dense with content and interesting insights. These could be a source of inspiration for the advancement of research in all areas gravitating around the connection between AI and XR, thus initiating a new transdisciplinary way of thinking [4].
In conclusion, the symposium constituted a rich and stimulating moment of confrontation for all researchers and scholars who, thanks to the skilful use of advanced technologies, tools, and digital devices, are experimenting with renewed ways of interacting with reality.

Notes

[1] Session 1 – *chair*: R. Spallone, M.G. Bevilacqua.
Session 2 – *chair*: M.G. Bevilacqua, B.E.A. Piga.
Session 3 – *chair*: V. Cera, M. Russo.
Session 4 – *chair*: A. Luigini, R. Spallone.

[2] Session 5 – *chair*: A. Giordano, C. Santagati.
Session 6 – *chair*: A. Luigini, V. Cera.
Session 7 – *chair*: F. Maietti, S. Brusaporci.

[3] To enrich the plurality of interventions, the contributions presented in the plenary session were complemented by a further 20 videopresentations, collected in a specific YouTube session. The two days of the symposium, together with the dedicated Youtube session, are available at the link <https://youtube.com/playlist?list=PL_o0V_i87eE28unV86QJwAJ6i0hPaTvVk&si=Udak3v-rOJiK6wF3b> (accessed 29 November 2023).

[4] The papers presented orally and on video were refereed by the session chairs and the scientific committee of the symposium, in order to provide useful suggestions for the development of an extended paper which will be subjected to peer-review and, if positively evaluated, published in Springer's *Digital Innovations in Architecture, Engineering and Construction* (DIAEC) series.

Authors

Barbara Messina, Department of Civil Engineering, University of Salerno, bmessina@unisa.it
Andrea di Filippo, Department of Civil Engineering, University of Salerno, anddifilippo1@unisa.it

Events

UID2023. *TRANSITIONS. Cross Modulate Develop* 44th International Conference of Representation Disciplines Teachers

Paola Raffa

The 44th International Conference of Representation Disciplines Teachers, Congress of Unione Italiana per il Disegno, opened in the Sala delle Capriate of Palazzo Steri, seat of the rectorate of the University of Palermo. The institutional greetings preceded the celebrations of the awarding of "Benemerite alla memoria" to Margherita De Simone and Rosalia La Franca, founders of the Palermo 'drawing school', who contributed to the transition of the disciplines of Drawing from the 'limit of geometric instrument' towards representation of space in its physical and conceptual narrative'. We remember the *Seminari di Primavera*, organized in Palermo in which innovative representative procedures were tested for drawing as a language of sharing and methodologies for developing new research practices.

Francesco Maggio opened the Conference by presenting the theme of *Transitions* in its meaning of an intermediate stage of a 'process in which a condition changes from one state to another' and in which, in the challenges proposed by the introduction of digital processes, the construction of new paradigms of the frontiers of representation is glimpsed. *Transitions* indicates possible futures of modes of expression, of practices of theoretical research, in transdisciplinary dialogue.

The three focuses on which the debate was centered are introduced by Fabrizio Agnello, who substantially summarized the reflections of the Palermo researchers contained in the volume of the Proceedings edited by FrancoAngeli and published the same day as the opening of the Conference.

Cross (History and Science of representation): means to cross "transversally with respect to a route taken as the main one, not with the intention of placing oneself across or 'sideways' but with the desire to establish contact with the multitude of aspects that characterise a given reality […]. Transversely to paths already marked out, questioning the new frontiers of representation and imagining possible new horizons. […] in search of languages that through the roduction of new images can lead to the delineation of innovative research paths" [Cannella, Garozzo, Morena 2023, p. 66].

Modulate (communication, reconstructions, descriptions): alludes to what concerns the design matrix of an architecture. "In the action of 'describing' the complex relations between visualization and cognition of architecture concept. Drawing elects itself as the privileged tool for the transposition between language, proportion" [Cannella, Garozzo, Morena 2023, p. 701].

Develop (Experiments, innovation, design): to continue, in time and space, in the interpretation of events. "The challenges proposed by the digital pose questions that start with the construction of new paradigms of visual language and aim toward a form of creativity capable of transporting information to new procedures in the formulation of design" [Cannella, Garozzo, Morena 2023, p. 2203].

Before the start of the Conference, Fabrizio Avella and Manuela Milone inaugurated and introduced the exhibition, which they curated, *La Collana di Pietra 1982-1996* set up in the foyer of the Aula Magna Margherita De Simone. It is a journey through the graphic production of geometric ink-line drawings made between the 1980s and 1990s, which constitute the graphic heritage of the volumes of *La Collana di Pietra*, conceived and directed by Margherita De Simone, whose goal was to organize, promote and coordinate the activities of research on the representation of the built environment, as well as to collect the outcomes of the *Seminari di Primavera* held from 1983 to 1996.

In the afternoon of the first day, the conference attendees were able to visit the exhibition *Palermo e la peste dell'insonnia and the Plague of Insomnia* set up in the Galleria delle Collezioni

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Fig. 1. Banner of the event.

of the Department of Architecture. The Director of the Department, Francesco Lo Piccolo and Ettore Sessa, distinguished scholar of Sicilian architectural history and Head of Collezioni Scientifiche of the Department of Architecture, University of Palermo, introduced and narrated the reasons and content of the exhibition.
The *Collezioni* contain funds, archives, collections including the historic *Dotazione Basile*, the Ducrot Archives, the Archives of the Faculty of Architecture of Palermo, and the collection of the *Tavole Didattiche* del Corso di Architettura di Giovan Battista Filippo Basile per la Regia Scuola di Applicazione per Ingegneri e Architetti of the University of Palermo.
On a horizontal plane were placed models and drawings predominantly from the *Dotazione Basile*, while from the ceiling, in a tight succession of equidistant vertical planes hung more than a thousand A4 transparent sheet reproducing some of the drawings from the lectures preparated by Ernesto Basile for the students of Architecture Faculty.
The opening lecture of the session *Cross* was given by Riccardo Migliari, a recognized master for scholars of representation and professor emeritus at La Sapienza University of Rome.
Migliari introduced the theme of solid perspective through moving images whose geometric construction transitions from Euclidean space to perspective space.
He shows that "perspective-solid looks at perspective space in the one and only direction that proceeds in front of the observer, solid homology sees the entire space but excludes man, while solid perspective puts him in the center, free to turn his gaze anywhere and makes him able to contemplate the infinite" [Cannella, Garozzo, Morena 2023, p. 34].
Lidia Tilotta, vice-editor in chief of Tgr Sicilia, Journalist of Peace 2023 "For the courage with which she tells and publicizes stories of humanity asking for peace and for the love with which she approaches the many people many times abandoned by the mainstream news media" (award motivation), introduced the *Modulate* session. With very few images, reading excerpts from the book *Lacrime di Sale*, he addressed the theme of Mediterranean migration. The essay, co-written with Lampedusa doctor Pietro Bartolo, leads through the sense of tragedy but incites the duty of rescue and welcome.
Riccardo Florio introduced the session *Develop* through commentary on effective images investigating the theme of the relationship between representation and design with great acumen and sophistication.
The conference speechs were divided over the two days into five parallel sessions moderated by two chairs per session. Outcomes of more than 125 research papers by scholars from Italian, European and South American universities were presented.
In two additional sessions, the outcomes of the UIDSS Summer School 2023 *Designing applies game for heritage education*, curated by Alessandro Luigini and Daniele Rossi, which was held in Brixen July 19-24, 2023, were presented, organized by the UID together with the Free University of Bolzano and the University of Camerino, and of the Workshop 2022 *Hortus Lizori, Percorsi didattici sulla rappresentazione del paesaggio*, organized for European doctoral schools, curated by Fabio Bianconi and Marco Filippucci, which was held in Lizori-Campello sul Clitunno July 6-8, 2023.
The location for the concluding day, chosen by the organizers of the conference,

coordinated by an untiring Francesco Maggio, was the Sala Mattarella in Palazzo dei Normanni, the ancient Royal Palace and now the seat of the Sicilian Parliament.
Livio Sacchi introduced the *Lectio Magistralis* by Francesco Cellini, who led the participants in an interesting *promenade* through his works, in which the design and the modes of representation he adopted constituted a solid pre-digital era reference.
Francesco Cellini, among the best-known protagonists of the Roman school headed by Ridolfi and Quaroni, was awarded the UID 2023 Targa d'Oro with the following motivation: "In his intense activity as a teacher and professional Francesco Cellini has always considered Drawing as an instrument of thought, a language rich in expressiveness and technique. Through Drawing he has refined a way of designing and conceiving architecture, innovating techniques and tools according to the needs of the time, giving corporeity to the graphic structure, exalting the role of geometry and bringing out the construction of his own design ideation".
A second UID Targa d'oro was awarded to Livio Sacchi, professor of Drawing and "a scholar of Representation with scholarly interests directed at innovation applied to the field of education, research and the profession. […] His latest volume *Il mestiere di architetto*, outlines a series of possible solutions for the future of university education, on contemporary design and developments related to digitization, BIM, Big Data and artificial intelligence" (from award motivation).
The Targhe Gaspare De Fiore 2023 for the best PhD theses were awarded by the committee composed of Caterina Palestini, Enrico Cicalò and Massimiliano Ciammaichella to Martina Suppa, University of Ferrara and Universiteti Polis, with the doctoral thesis entitled *Optimisation of survey procedures and application of integrated digital tools for seismic risk mitigation of cultural heritage: The Emilia-Romagna damaged theatres;* to Valeria Croce, University of Pisa and Florence, with the doctoral thesis entitled *Semantic annotation transfer and retrieval for architectural heritage. A methodological system combining Artificial Intelligence, H-BIM and collaborative reality-based annotation platforms*; to Alessandro Martinelli, Sapienza University of Rome, for the doctoral thesis entitled *Principi teorici e sperimentazioni digitali finalizzate alla conoscenza e alla comunicazione della geometria delle forme*.
In addition, the Committee proposed to award 3 UID 2023 honorable mentions to Doctoral Theses carried out by Flavia Camagni, Sapienza University of Rome titled *La Sala dei Cento Giorni a Palazzo della Cancelleria, un mondo sospeso tra realtà e illusione. Studio, interpretazione e rappresentazione delle Prospettive Architettoniche di Giorgio Vasari*; by Salvatore Damiano, University of Palermo, titled *Francesco La Grassa. Disegno e architettura*; by Federico Maria La Russa, University of Catania, titled *3DCITYGH: an Expeditious Parametric Approach for Digital Urban Survey and City Information Modeling of city-block Structural Models.*
At the end of the Members' Assembly, the chair, Francesca Fatta, awarded best papers to the session speakers; for the *Crossing* session, Edoardo Dotto was awarded for his paper *Heuristics of Error. The 'Reconstructed Stonehenge' by Inigo Jones*; for the *Modular* session the paper by Fabrizio Ivan Apollonio, Federico Fallavollita and Riccardo Foschi entitled *Systematizing Virtual Reconstruction of Lost or Never Built Architectures was awarded*. For the *Develop* session, three best papers were awarded to Jessica Romor and Graziano Mario Valenti for the paper *Procedural Models for Conceiving, Controlling and Generating Free Form in Decorative Appearances*; to Giuseppe Antuono and Pierpaolo D'Agostino for the paper entitled *Toward Information Modeling and Management for the Restoration Project. The Court Theater of the Regia di Portici* and finally to Cesare Battelli, Alessandra Cirafici and Ornella Zerlenga for the paper *Digital Transitions: artifacts from intelligent machines. Reflecting with Cesare Battelli.*
The Conference concluded with a visit, conceived and curated by Fabrizio Agnello and Mirco Cannella, to the Royal Palace and the Palatine Chapel, a masterpiece of Norman architecture in Sicily.

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Author

Paola Raffa, Department of Architecture and Territory, Mediterranea University of Reggio Calabria, paola.raffa@unirc.it

Events

IMG2023 – IMAGIN(G) HERITAGE

Rossella Salerno

The fourth biennial meeting of the conferences organized by IMG-Network was held at the University of L'Aquila, on July 6th and 7th, 2023, under the direction of Stefano Brusaporci. The theme chosen for this edition of the International and Interdisciplinary Conference on Image and Imagination was dedicated to *IMAGIN(G) HERITAGE*, a context that combines two very broad fields of research –those of Heritage and Images related to it– in the plurality of variations that this relationship can encompass.
The theme of the conference held in L'Aquila originated, on the one hand, from the observation of the growing role that populations, communities, inhabitants and users have manifested in recent decades in the definition of Heritage itself; on the other hand, from the growing awareness of the importance of the intangible dimensions of Heritage.
In both processes, the concept of Heritage has come to assume the nature of a 'discourse', that is, an act of participatory communication, according to a path of 'Heritage making', where the visual paradigm plays a role closely interrelated to the verbal one.
Moreover, if Heritage is traditionally bound to the themes of history and memory, visualization should not only be directed to the past, but should prove capable of embracing the present for those values expressed by communities and populations, as well as by scholars and stakeholders. The visual dimension of Heritage discourse, thus interpreted, broadens its scope quite a bit: from 'a Heritage of Images' to 'imagine Heritage'.
Such a 'vision' of Heritage is called upon to cross multiple and diverse scientific and disciplinary domains: from the educational to the participatory and more generally public; from the graphic field to the visual and narrative; to finally address that variety of digital applications ranging from museums to archives.
And, in fact, the conference fostered participation and dialogue among representatives of scientific and cultural societies that are affected by the topics in various ways: Federica Zalabra, Director of the National Museum of Abruzzo; Francesca Fatta, President of the *Unione Italiana per il Disegno* (Italian Union for Drawing); Pier Cesare Rivoltella, President of the *Società Italiana di Ricerca sull'Educazione Mediale* (Italian Society for Research on Media Education); Maria Luisa Iavarone, President of the *Centro Italiano Ricerca Pedagogica* (Italian Center for Pedagogical Research); Serge Noiret, President of the AIPH Associazione Italiana Public History (Italian Association of Public History); Roberta Spallone, President of the REAACH-ID Association; and Alessandro Luigini, President of the IMG-Network APS Association.
The conference offered an international dimension in the roster of keynotes and topics addressed in the respective papers: Pilar Chías Navarro of the Universidad de Alcalá developed the specificity of the contribution of representation in the study of Heritage by comparing its innovative aspects in relation to an established tradition of inquiry; Federica Zalabra also highlighted the role of technology in supporting art-historical narration, particularly in the context of the National Museum of Abruzzo, of which she is director; Serge Noiret, on the other hand, addressed another vital nerve center of the conference, namely the centrality of participation and knowledge sharing in a community, focusing on the connection between Public History and Cultural Heritage; last but not least, Renata Jadresin-Milic from the Unitec Institute of Technology in Auckland, New Zealand, illustrated the outcomes of an interesting research project carried out in Aotearoa.
The digital volume of the Proceedings, edited by Stefano Brusaporci in the role of coordinator, with Pamela Maiezza, Adriana Marra, Ilaria Trizio, Francesca Savini and Alessandra Tata, was published by the PUBLICA publishing

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Fig. 1. Banner of event.

house in Alghero; there were ninety papers in the proceedings, most written by multiple authors, for a considerably higher total number of participants.
There were four best paper awards: Dario Ambrosini, Annamaria Ciccozzi, Tullio De Rubeis and Domenica Paoletti for the contribution *Optical methods: imagin(g) the hidden world of cultural heritage*; Carlo Battini for his contribution *No contact detection technologies: artistic expression as well?*; Alessandra De Nicola and Franca Zuccoli, for their contribution *Heritage fruition and interpretation. A path of kit construction: the importance of images*; Margherita Fontana for the contribution *A proposal for a bunker aesthetics from Paul Virilio's archaeology to virtual architecture*.
In the splendid setting of L'Aquila, the fourth International and Interdisciplinary Conference on Image and Imagination renewed the fruitful partnership between IMG-network, which places the themes of Image, Imagery and Imagination at the center of its activities, and the *Unione Italiana per il Disegno*, a scientific society in the disciplinary field of Drawing that deals with the generation, construction and analysis of drawings, images and models as outcomes of scalar representations of existing or planned realities; of the design and visual translation of concepts, ideas and narratives, as expressions of nonverbal language, within two key areas, with possible interrelationships: one scientific-technological and one social-humanistic.

Author

Rossella Salerno, Department of Architecture and Urban Studies, Politecnico di Milano, rossella.salerno@polimi.it

The UID Library

The UID Library

2022

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UID Awards 2023

UID Awards 2023

Golden award to Francesco Cellini

The UID 2023 Golden award is assigned to an architect among the best-known protagonists of the so-called Roman school headed by Mario Ridolfi and Ludovico Quaroni.
He was an assistant, then researcher, from 1972 to 1986 at the Faculty of Architecture in Rome, collaborating in the courses of Ludovico Quaroni and then Carlo Aymonino.
In 1987 he was full professor of Composition at the Faculty of Architecture in Palermo; in 1994 he moved to the Faculty of Architecture at the University of Roma Tre, of which he was dean from 1997 to 2013. In 2015 he was appointed Professor Emeritus.
Francesco Cellini has been an Academician of San Luca since 1993, and served as president from 2019 to 2020. He received the International Prize of the Venice Biennale in 1991, and in 1996 he received the "President of the Republic" award for architecture.
He has participated in and qualified as a winner in numerous national and international competitions, including the 2006 competition for the Augusteo in Rome. This design activity has been exhibited in international and national exhibitions, published in various Italian and foreign books and journals, and reviewed by various critics; in this regard, it is worth mentioning the important monograph dedicated to his work published in 2016, with a critical essay by Francesco Dal Co, and the exhibition: *Architetture di Francesco Cellini. Disegno, Storia e Progetto*, organized in Venice by IUAV in 2017.
In his intense activity as a teacher and professional Francesco Cellini has always considered Drawing as a tool of thought, a language rich in expressiveness and technique. Through Drawing he has refined a way of designing and conceiving architecture, innovating techniques and tools according to the needs of the time, giving corporeity to the graphic structure, exalting the role of geometry and bringing out the construction of his own design ideation.

Golden award to Livio Sacchi

The UID 2022 Golden award is assigned to a scholar of Representation with scholarly interests directed toward innovation applied to the field of education, research and the profession.
He is responsible for architecture at the Institute of the Italian Encyclopedia founded by Giovanni Treccani, honorary president of Europan Italia, member of the board of Eurosolar.
Livio Sacchi has distinguished himself for his commitment to the National Council of Architects, Landscape Architects, Planners and Conservators; in 2006 he curated the Italian Pavilion for the International Architecture Exhibition of the Venice Biennale with Franco Purini and in 2010 the Inarch Pavilion. In 2009 he was awarded the "Sebetia-Ter" International Prize, Silver Plaque of the President of the Italian Republic.

His scientific and educational activity, evidenced by the most authoritative international journals, has always placed at the center what he calls "the question of architectural representation," from geometric fundamentals to multiscalar survey, addressing then, in depth the themes of the project and its developments in the digital field.
In 2000, with Maurizio Unali, he activated the website www.rappresentazione.it dedicated to research and didactics of representation in architecture.
His latest book, *Il mestiere di architetto*, outlines a series of possible solutions for the future of university education, on contemporary design and developments related to digitization, BIM, Big Data and artificial intelligence.

Silver awards "Gaspare De Fiore"

Martina Suppa, Optimisation of survey procedures and application of integrated digital tools for seismic risk mitigation of cultural heritage: The Emilia-Romagna damaged theatres; supervisors: prof. Marcello Balzani, prof. Arben Shtylla; external experts: prof. Federica Maietti, dr. Fabiana Raco
For scrupulously investigating the limits and potential of today's survey methods, linking them with parametric models typical of HBIM for the documentation, management and monitoring of historic theaters damaged by the 2012 earthquake. The rigorous structure of the thesis, the level of depth of the case studies covered, together with the richness and quality of the iconographic apparatus, confirm the cultural value and usefulness of an excellent research that, it is hoped, will be a harbinger of further developments.

Valeria Croce, Semantic annotation transfer and retrieval for architectural heritage. A methodological system combining Artificial Intelligence, H-BIM and collaborative reality-based annotation platforms; supervisors: prof. Gabriella Caroti, prof. Andrea Piemonte, prof. Marco Giorgio Bevilacqua, prof. Livio De Luca, prof. Philippe Véron
For researching an integrated scientific and methodological approach for retrieving and sharing semantic annotations for cultural heritage, employing 2D and 3D digital models, Artificial Intelligence algorithms, H-BIM environments, collaborative and reality-based annotation platforms. The proposed methodology is also validated on significant case studies of French and Italian architectural heritage, such as the Notre-Dame Cathedral in Paris and the Certosa Monumentale in Pisa, thus providing relevant input for the scientific design community.

Alessandro Martinelli, Principi teorici e sperimentazioni digitali finalizzate alla conoscenza e alla comunicazione della geometria delle forme; supervisors: prof. Graziano Mario Valenti, prof. Marta Salvatore
For tackling the topic of interactive digital representation, developing and testing a smartphone application dedicated to deepening the knowledge of geometry in space –and more specifically to ridged surfaces– through gamification-oriented augmented reality as a useful tool for teaching geometry in space. The proposed results manage to actualize one of the most relevant topics in the disciplinary tradition through an original, innovative and effective methodology.

Special mentions "Gaspare de Fiore"

Flavia Camagni, La Sala dei Cento Giorni a Palazzo della Cancelleria, un mondo sospeso tra realtà e illusione. Studio, interpretazione e rappresentazione delle Prospettive Architettoniche di Giorgio Vasari; tutors: prof. Marco Fasolo, prof. Leonardo Baglioni
For making a significant contribution to research in the area of painted architectural perspectives. The complexity of the case study is treated with extreme methodological rigor, ranging from historical, documentary and iconographic research, to the rules of perspective restitution in geometric and architectural terms, to arrive at Vasari's Quadraturist logics. The excellent iconographic apparatus, completely edited by the author, together with the experimentation with

new technologies for the fruition of the reconstructed architectures, confirm the validity of a research that offers solid potential for development.

Salvatore Damiano, Francesco La Grassa. Disegno e architettura; tutor: Francesco Maggio
For providing a significant contribution to research in the area of analysis and critical reinterpretation of drawings kept in architectural archives, also inherent to unbuilt or disappeared works. The punctual filing of the drawings, the rich iconographic apparatus, edited by the author, together with the graphic analysis and digital reconfigurations provide an important contribution to the understanding and fruition of the archival drawings, corroborating the effectiveness of a research that proposes interesting trajectories of development.

Federico Maria La Russa, 3DCITYGH: an Expeditious Parametric Approach for Digital Urban Survey and City Information Modeling of city-block Structural Models; supervisors: prof. Cettina Santagati, prof. Mariateresa Galizia, prof. Ivo Caliò, eng. Marco Intelisano
For experimenting in an original way with the use of different methodologies and tools for the realization of a parametric City Information Model (CIM). The thesis proposes an innovative format, called CityGH, for the semantic structuring of city models in the parametric environment, filling the gap found in the literature in relation to guidelines for the semantic structuring of city models in the parametric environment.