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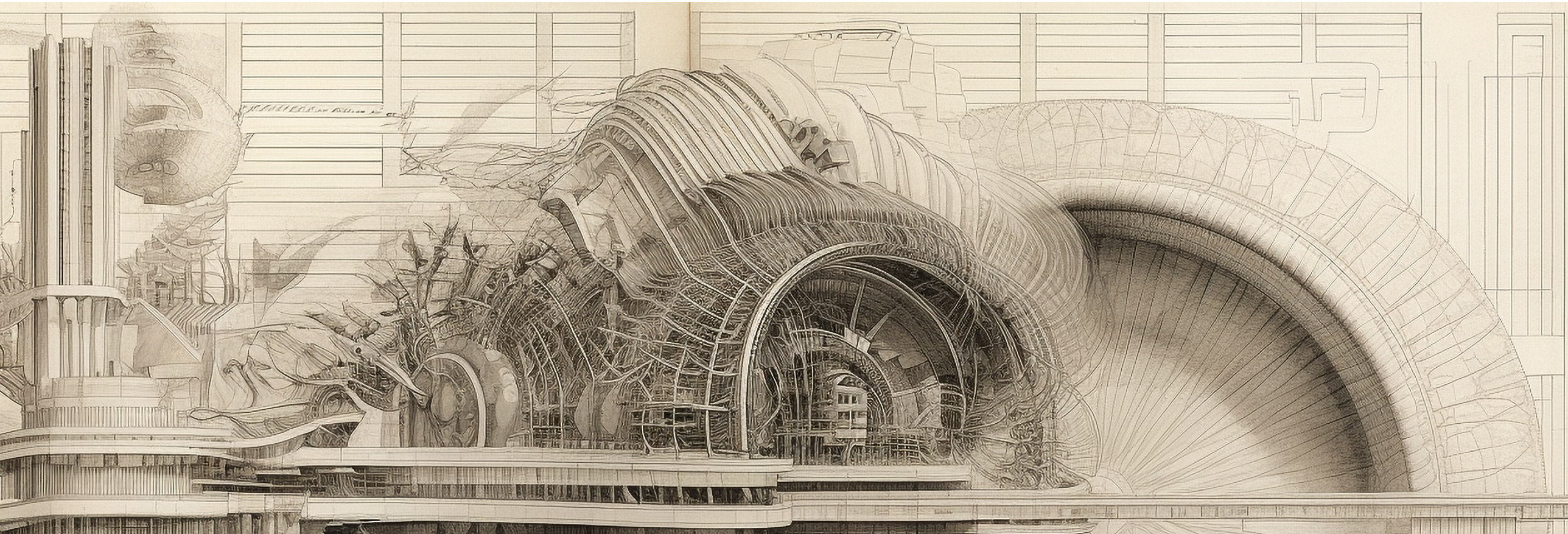

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POINTS OF VIEW FROM ABOVE

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Editorial

Francesca Fatta

This issue of the journal, edited by Pilar Chías Navarro, Andrea Giordano and Ornella Zerlenga, takes us back to a conceptual aspect of vision, that is, a particular point of view that 'looks at' or 'narrates' the world of things from above. Indeed, the editors wish to specify in the introduction how, in both literature and drawing, representation actually constitutes the act of storytelling. The point of view is the eye of the narrating subject, who constructs his story through effective and instrumentally useful languages. And, indeed, the world seen 'from above' takes us back to various literary classics from all eras in which the point of view rises, shifts, or is overturned with great expectations and at times against all logic. The first is *Le Petit Prince* (1943), narrated by Antoine de Saint-Exupéry who, having dropped down from who knows where in outer space, free from the preconceptions of 'false knowledge,' tells of the sight of small distant worlds where space and time take on very different variables seen from Earth; there where sunsets could be as many as forty-three in a single day, contrary to the laws of numbers and astronomy.

Another novel that takes us back to unusual and daring visions is *Flatland: A Romance of Many Dimensions* (1884) by Edwin A. Abbott, in which the vision of a new horizon is both knowledge and terror, just as the poor Square of Flatland, a two-dimensional world, cries out when he is taken aloft to learn about the third dimension: "'When I could find voice, I shrieked aloud in agony, 'Either this is madness or it is Hell.' 'It is neither,' calmly replied the voice of the Sphere, 'it is Knowledge; it is Three Dimensions'" [1]. And finally, we cannot fail to mention Lewis Carroll, [2] the Oxford mathematician author of *Alice's Adventures in Wonderland* [Carroll 1865] and a contemporary of Abbott, who, perfectly aware of the change the scientific world was preparing for, leads Alice "through the looking-glass" [Carroll 1871] into the world in which each object creates its own space (a kind of little theory of relativity). The dimensions in which Alice 'travels' are those of the telescope that lengthens and shortens, and which functions as a magic word to elude time and space, or at any rate to evade their laws.

Reading these novels represents a continuous challenge to the rigor of rationality opposed to a world closed in its knowledge and logic, rules that man's desire for knowledge has always sought to transcend, from the classical myth of Icarus, to the flights of the Montgolfier brothers (Joseph-Michel 1740-1810; Jacques-Étienne 1745-1799) and to the transatlantic flight completed in 1927 by Charles Lindbergh (1902-1974).

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The space within which these legendary flights and feats take place is the air, a free space where the destiny is fulfilled of those who detach their shadows from the ground and, at the same time, experience, the ecstasy of open vision and the anguish of falling. This is why art has always played an important role in the view from above, embodying suggestions, desires and frustrations, a metaphor for seeing beyond the projection of the present, because what is certain is that every great discovery is driven by an insatiable curiosity.
The proposal formulated by the editors reflects, on the one hand, the desire to retrace the scientific foundations of drawing, where theoretical and technical aspects of the discipline are combined, and, on the other hand, the anxiety of knowledge and the strong intermingling of art and science that, more than a hundred years ago, found great expansion thanks to the figurative avant-gardes.
An issue devoted to the history and innovation of the discipline of drawing, in which the nature and the artifacts of the world reside in the depths of the beholder's eyes and take shape thanks to the cultural, historical, technological and social construction of a gaze that is never neutral, but always conditioned by expectations, certainties and ideologies that are as profound as they are, at times, unconscious. Between desire and innovation, prefiguration and planning, the view from above proves to be a critical tool of knowledge, but also a capacity for synthesis and utopian thinking. Chías Navarro, Giordano and Zerlenga, teachers aware of the importance of the scientific foundations of drawing and with a deep knowledge of descriptive geometry, propose a vision both theoretical and innovative, to return in this issue, through the selected contributions, an exercise of reflection on the superstructures that condition the observation of what surrounds us, be it landscape, architecture or artistic expression. Thoughts, essays and reflections between advanced technologies and profound speculations that allow advancement on the path of knowledge and awareness for a reasoned analysis of places, an indispensable premise for responsible projects.
The columns, which are part of the established structure of the magazine, are kept on a level consistent with the theme of the issue. The image chosen for the commentary and described at the opening of the issue by Concepción López González proposes Piet Mondrian's famous work *Composition A: Composition with Black, Red, Gray, Yellow and Blue*, while, for the *Readings/Rereadings* column, Bruno Taut's book *The City Crown*, commented by Daniele Colistra, seemed an appropriate choice.
As always, there are reviews of recently published books and of the events sponsored by the Unione Italiana per il Disegno (UID) that took place between late 2022 and the first months of this year.
We also report that in this issue some changes have been made related to the editorial structure, due to the fact that two very young researchers, Sonia Mollica and Sara Morena, have joined the editorial staff.
Issue 13 of the journal, edited by Paolo Belardi and Massimiliano Campi and titled *The Present of Architectural Drawing* is already in preparation. A topic that intends to foster critical and theoretical reflections on the role assumed by drawing in the architectural design activity performed by those protagonists who have become affirmed on the international scene in this first part of the millennium (2000-2023) because, beyond the technological skills imposed by the use of digital software, what always stands out is the need for a cultural direction aimed at not confusing the means with the ends.
In wishing you an enjoyable read, I would like to thank everyone who has contributed to the realization of this issue, from the authors to the editors, reviewers, journal manager, editorial board, and editorial staff.

Notes

[1] "When I could find voice, I shrieked aloud in agony, 'Either this is madness or it is Hell.' 'It is neither,' calmly replied the voice of the Sphere, 'it is Knowledge; it is Three Dimensions open your eye once again and try to look steadily.'": Abbott 1885, p. 122.

[2] Lewis Carroll is the pseudonym of Charles Lutwidge Dodgson (1832-1898).

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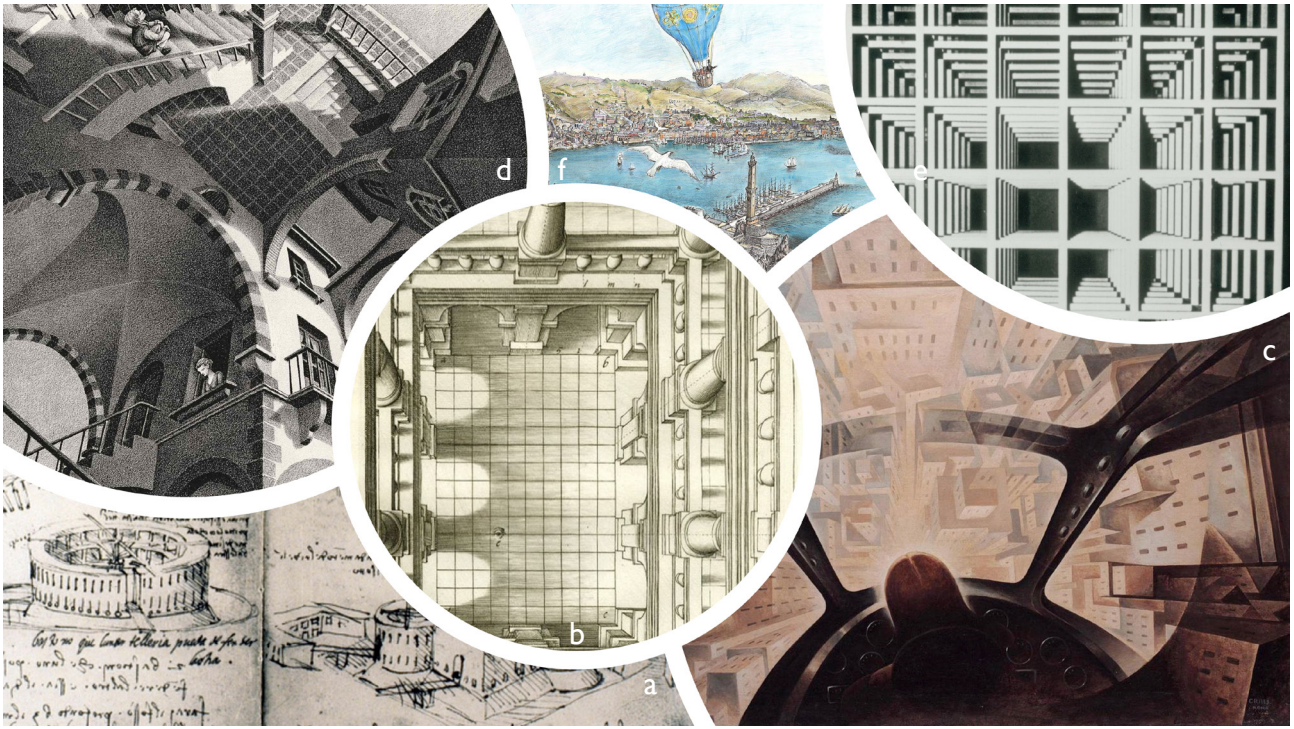
Points of View from Above

Pilar Chías Navarro, Andrea Giordano, Ornella Zerlenga

In the most general sense, 'point of view' means point from which something is imagined to be observed (an object, an architecture, a landscape, etc.). The concept of 'point of view' is in fact synonymous in terms of 'angulation', 'visual angle', 'perspective' and can correspond to a point that is both physical and figurative. It is no coincidence that in literature (which shares the act of narration with representation), 'point of view' means the angulation from which the narrator places himself and, in the descriptions, the concept of 'point of view' to return a classification on the storyteller's position in relation to what he is narrating. In this sense, the description is defined as 'mono-perspective' when there is a single angle of linear order and 'multi-perspective' in the case in which the description is 'seen' from multiple angles and, therefore, returns a non-linear trend. However, again, in a narrative there is also a 'spatial point of view', which depends on the place where the author narrates and describes what he sees, as well as a 'temporal point of view', which follows the time of the description in moments different or at different stages. Nevertheless, above all, there is a 'subjective point of view' that is of a cultural, psychological and ideological nature, which invests the mental attitude of the person describing, from the cognitive to the emotional one.
However, all these definitions lead to a 'fixed point': the 'point of view' alludes to the act of pointing one's eyes on something. At the same time, it also contains in itself the choice of the narrator (here 'representative', in the sense of 'the one who draws') to place himself in a precise position from which to observe reality, which could 'appear' different if perceived from a 'different' point of view. This would arise doubts about the objectivity of the narration (in our case, of the representation), but it is not like that. The choice of the 'point of view' from which to

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

Fig. 1. The privilege of viewing from above in the analog drawings of: a. Leonardo da Vinci, design sketches; b. Henry Hondius, Instruction en la Science de Perspective. La Haye, 1625, Tav. No. 29; c. Tullio Crali, Incuneandosi nell'abitato, 1939; d. Maurits Cornelis Escher, Up and Down, 1947; e. Sol LeWitt, Between the Lines, 1980; f. Sandro Migliarini, Drawings of Cities Views from Above, Genova and the Riviera, 1990.



observe reality and, therefore, describe it finds its foundation in the synthesis of the multidimensionality of the aspects to be represented, of the multiplicity of representation methodologies suitable for describing them, of the purpose of the representation itself, i.e. of the information that this must convey.
In the geometric representation of reality, the position of the 'point of view' is a function of several parameters:
- the observation distance (finite or infinite) of the object from the picture plane of the representation (plane on which the image of reality is geometrically projected and delineated);
- the direction of observation and the disposition of what is being described referring to it (in the case of infinite distance);
- the height of the observer considering the ground (in the case of finite distance).

The definition of these elements makes it possible to determine several 'points of view' of the same reality, arriving at the construction of different figurative outcomes such as to totally abstract from the visual effect of three-dimensional perception, discretizing reality into two two-dimensional 'views' (method of double orthogonal projections: plans, sections, elevations). Otherwise, to perceptually allude to the three-dimensionality of reality investigated according to 'points of view' which extract the observer from the context (parallel or cylindrical projections method: axonometries), or which, on the other hand, 'immerse' him in the context (method of central or conical projections: perspectives).
Moreover, the repercussions that such thoughts on the 'point of view' can have in creative and ideational terms of the spaces –imagined or designed as digital hybridization with programs supported by Artificial Intelligence– are fundamental. In this sense, and it is a current debate, whose 'point of view' is it, the representative or the machine?
In addition, if the point of view belongs to the machine, from 'which' point of view (technological, cultural, and emotional) does the machine represent, translating words into visual images? In this sense, number 12 of the scientific journal *diségno* invites us to reflect on the configuration of graphic narratives created through 'points of view', which observe reality from above and decline the theme into four areas of interpretation:
- representational geometries from above (narratives that find their theoretical foundation in the science of representation);
- measuring territories from above (narratives that find their theoretical-practical foundation in the use of methodologies, techniques, apparatuses both analogical and digital);
- visual thoughts from above (narratives which, like the myth of Icarus, find their artistic-cultural foundation in the metaphor of a shattered ambition);
- representing landscapes from above (narratives that are based on the idea of 'landscape').

Based on the call for papers launched in October 2022, the choice of a suggestive theme (such as views from above) has opened up an interesting area of debate. Many scholars have participated both with theoretical-practical approaches and with ranging from the subjectivity of artistic production to the representation and enhancement of the landscape, as well as the objectivity and rigor provided by scientific research, gathering the various contributions about the aforementioned four themes.
In drawing up a synthesis of the essays selected according to the usual double blind review procedure, the first theme gathered reflections and case studies that focus on the *Representational geometries from above* (of architecture, city, and territory), whose narratives find theoretical basis in the application of the science of representation. Here, Corrado Di Domenico, associate professor at the Department of Architecture and Industrial Design of the University of Campania "Luigi Vanvitelli" in the disciplines of composition and architectural design, edits the critical premise. Within this first thematic block, the analysis of the urban views produced during different periods was the subject of the interesting contribution by Michela Ceracchi, Elena Ippoliti and Giovanna Spadafora. In the opinion that the cultural context influences the representation of elements and spaces of the city, the authors reflect on the relationships that characterize the actual graphic expression. The inspection of the Renaissance aerial views of Venice and Parma is, however, the object of study by Chiara Vernizzi and Chiara Finizza. In constituting a significant cognitive advance, their contribution reveals the existing limits in the representation between reality and artifice and, understanding the city as a functional unit, focuses attention on powerful and iconic elements such as the defensive walls. Although they are well known for their exceptional cartographic, historical and artistic value, the maps of the Vatican Museums and Palazzo Doria Spinola are the subject of the article by Michela Scaglione and Martina Castaldi, in which two sets of views are compared, expressive of the geographical/cartographic value of the time. The studies on this first thematic area conclude with the interesting contribution by Graziana D'Agostino and Mariateresa Galizia, about the configuration of the scene views for the Teatro Massimo Bellini in Catania, in which the different perspectives assumed by the spectators are compared with archival information and data obtained through careful research.
The second thematic block is dedicated to *Measuring territories from above* with the theoretical-practical aid of both

Fig. 2. The privilege of viewing from above in drone photography shots: a. Mexico City, hilly area; b. Group of zebras with shadows; c. Rio de Janeiro (Brasil), Christ the Redeemer taken from different angles; d. Bird's eye view; e. Bachir Moukarzel (aerial photographer), Dubai Miracle Garden, 2013; f. Montenegro, Adriatic coast, islet occupied by Hotel Aman Sveti Stefan; g. Vitaly Golovatyuk (in art Panvelvet, photographer), Hong Kong, composition of 43 shots from the drone Phantom 4 Pro.

analogical and digital methodologies, techniques, and tools. The focus is introduced by a critical reflection on the latest generation of technological progress and on the objectivity of measurement by Elia Di Nardo, managing director of Campania Sistemi Srl, a start-up with many years of experience in measuring and representing the territory through topography and geolocation systems, aerial photogrammetry and drone surveys. In this context, the article by Andrea Rolando, Alessandro Scandiffio and Mariavaleria Mininni addresses a very important aspect such as the documentation of the seasonal variations of the Lucanian landscape through satellite images. The goal set by the authors is twofold, namely to integrate geolocated information obtained with mobile applications, to use them in favor of sustainable tourism development and for the technological transfer of the experience to society. Based on the opinion of significant future possibilities of territorial investigation with systems based on remote sensing, Amedeo Ganciu's contribution advances the theme of modeling urban phenomena and territorial dynamics. Through captivating graphs and diagrams, the author reflects on a very topical aspect such as the collection and contribution of relevant and useful data for understanding trends and critical issues in order to determine the correct formulation of territorial planning programs. The theme of measuring territories from above is an occasion for critical reflection by Irene Ruiz Bazán and Gianluca Vita, whose contribution closes this focus. Faced with the considerable quantity/quality of the images obtained from various sensors used in remote sensing, the authors reflect on the changes introduced in the perception of geographical space, focusing on the phenomenon of Google Earth and on the relevant comparison with aerial photography.

The *Visual thoughts from above*, otherwise those narratives that, like the myth of Icarus, find their artistic-cultural foundation in the metaphor of a shattered ambition, constitute the field of study of the third focus. The introduction is the essay of the architect Cesare Battelli, mainly interested in research and experimentation in the field of art and visionary architecture. Such as Matias del Campo and Carlos Campos, Battelli is also known for being an illustrious exponent of the use of Artificial Intelligence in architecture and for considering this digital context as the beginning of a huge paradigmatic shift in architecture. On these essential/existential themes, and attaining inspiration from the drawings for a project of a Brazilian architect, the authors Letícia Bortolo Martins and Ana Tagliari dwell on the importance of establishing the principles of an architecture in which people are the protagonists of the urban scene. The analysis of the selected documents returns a critical thinking capable of identifying the elements of the design as representations of ideas. The images of Rome between the two world wars are the subject of the interesting essay by Fabio Colonnese and Antonio Schiavo, whose iconographic repertoire highlights the critical use of drawings and/or photographs to represent the birth of a new sensitivity towards urban design. This focus ends with the contribution of Stefano Brusaporci and Luca Vespasiano, that, proposing a critical look at the use of the *camera obscura* in the sixteenth century, analyzes the view of the city of L'Aquila in the *Gonfalone*, whose graphic rigor allows us to reconstruct the main urban references points.

The last thematic section brings together the contributions related to *Representing landscapes from above*, finding foundation in the idea of 'landscape'. The introduction to the topic is by Luca Palermo, art critic and researcher at the University of Cassino and Southern Lazio, who intervenes on the aesthetic and ethical value of the representation of the landscape. In this sense, the essays collected in this topic decline the representation of the landscape in various ways. The stimulating reconstruction of the archaeological landscape of southern Rome is the object of study of Maria Grazia Cianci and Sara Colaceci. The authors, combining different methodologies and various sensors, provide complementary data of great interest and unpublished visions of a particularly important heritage complex. Different is the cut of the contribution of Alessio Cardaci, Pietro Azzola and Antonella Versaci that provides a great tourist potential and, at the same time, an unprecedented reconstruction of the place, focusing on a heritage that is acquiring more value, i.e. the strategic mountain pass and the defensive elements that were built on it. Last but not least, the accurate contribution of Lorenzo Grieco and Vanessa Mingozzi collects and explores the issues left open and those to be explored in the future.

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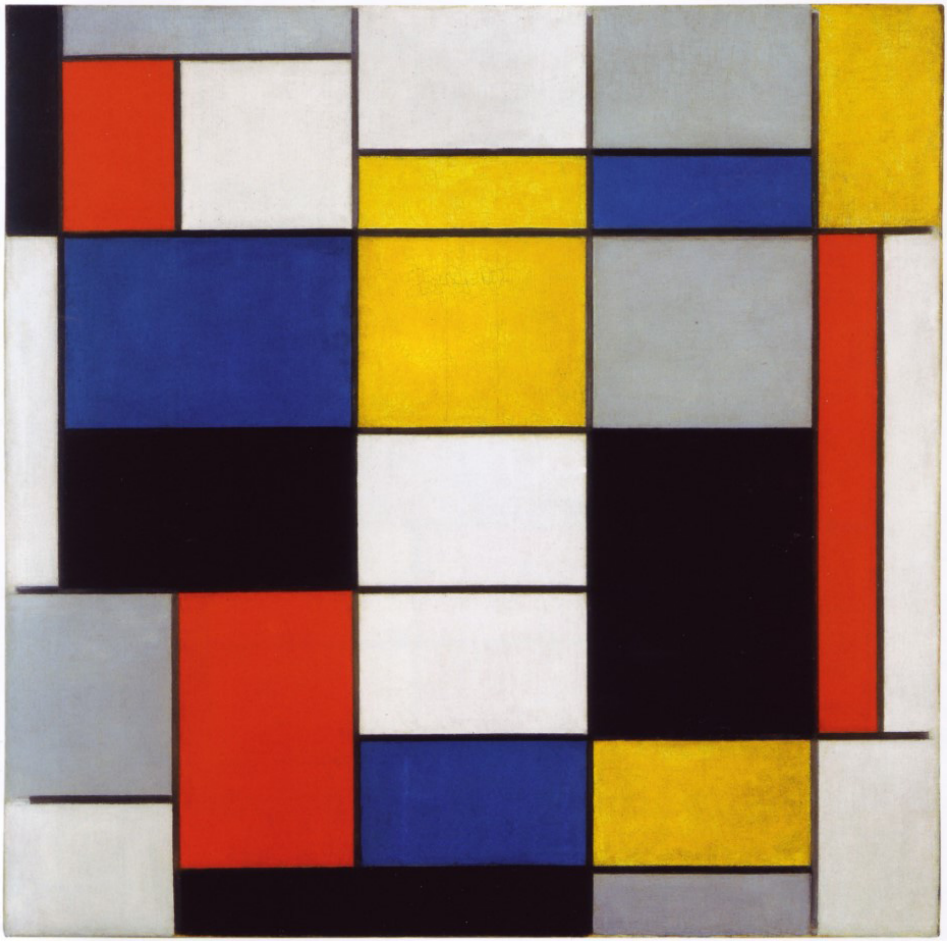
Composition A:
Composition with Black, Red, Gray, Yellow, and Blue

Piet Mondrian



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The View from Above Through Mondrian Universal Abstraction

Concepción López González

Who has not felt the evocation of an architecture or a territory seen from above when looking at a painting by Piet Mondrian? Who has not even seen this reflection written in the many essays that have been developed around his work? It seems to be a biunivocal relationship, in which the observer does not necessarily have to be a skilled architect, or even have any knowledge of architecture. Something in Mondrian's work leads us to interpret his production as if the author's intention had been to convey a message related to architectural design. However, his paintings are abstract compositions of great simplicity accentuated by the use of flat colors, as opposed to the complexity of an architectural work [1].

The application of the term 'abstract' to art arises from the claim to represent an emotional expression. It is a thought process aimed at conveying a message that evokes a feeling, a meaning. Its evolution in painting has led to what is known as "pure abstraction" [Mondrian 1961, p. 40], where the basic elements of plastic expression are synthesized. Geometry and geometric proportion become the narrative, being the vehicle and guiding thread of a rational and sensitive message at the same time. "The tool that makes it possible to handle this language in a universal way, its grammar and its elements, is Mathematics, and specifically, its application to art is produced through Geometric Proportion" [Jiménez Sequeiros 2016, p. 11].

Mondrian's abstraction is also an emotional process in which topography takes centre stage in the work. However, Mondrian does not make use of the entire

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

formal repertoire offered by geometry. Perpendicularity, the square and the rectangle seem to be the only elements Mondrian chose to convey his messages in his desire to achieve an abstract ideal of universal harmony.
"The square, with its absolute regularity, is the basis for countless formal operations" [Fonatti 1988, p. 76] which Mondrian did not hesitate to try out. The use of color is added to these combinations, constituting an inexhaustible repertoire of creations. Mondrian plays with perception and the visual transformation that each of them will produce in the observer, thus giving rise to an induced perception based on the viewer's previous experiences [Jencks 1975, p. 12]. It is precisely this induced perception that leads to the establishment of cognitive values directly related to the artistic work and implicitly connected to architecture. The observation of Mondrian's work produces an architectural evocation because it seems to represent diagrams of architectural and landscape concepts in which the building or nature are reduced to their essence, turning complex spatial structures into clean lines containing two-dimensional spaces. The plasticity of geometry is the point at which the abstract and the architecture, both built and represented, converge: in this way, only the most significant concepts remain, creating two-dimensional abstract spaces through a subdivision into modular fields [Moneo 1980, p. 73]. Mondrian provides a repertoire of formal combinations that can be perceived as a prelude to architectural forms.
When the architect proposes a projective drawing, he reifies his thought from basic elements such as line, plane or mass, just as abstract art does, "relating them freely in space by means of equally abstract laws, such as rhythm, harmony, or proportion" [Jiménez Sequeiros, p. 9]. Therefore, when geometry is the basic and essential element of plastic representation, it is easy to establish an approach to the architectural project since the basic principles of geometric drawing constitute the soul of architecture: "it is capable of supplying a suggestive formal repertoire of geometric figures with a strong symbolic charge" [Cabezas 2001, p. 15].
In both painting and architecture, geometry is the catalyst of the plastic or projective process, becoming the instrument to control space. The infinite space takes shape in a structure of extreme delicacy, where lines substantiate the contours and articulations of the subspaces. All this converges in a poetics of primary values where line, plane and color are the pillars on which it is based. It is this poetry that makes it possible to communicate images in a new way, to the extent that the image appears as an intentional message, even if the meaning is not immediately clear. Mondrian's poetics transmits and evokes architectural poetics through geometry and color. The geometrical composition, linear, elementary, composition of lines and planes with fundamental colors presented by Mondrian does not lose the poetic capacity, both of the work of art and in the architectural perception derived from it.
Mondrian made magnificent use of the contrasts between full and empty as compositional counterpoints, as César Domela Nieuwenhuis had previously tried out as the introducer of the concept of space in the De Stijl group. Mondrian seeks exclusive representation in two dimensions and avoids creating the illusion of depth by eliminating curved or diagonal lines. The same process takes place as when observing the interior of a building or a landscape from the point of view from above: three-dimensional spaces are represented in two dimensions through an operation of abstraction similar to that which leads Mondrian to represent his work.
It is therefore not difficult to abstract Mondrian's painting from the preconceived image of an architecture when the point of view is situated above, identifying his works with maps of structure and spatial organization. Although the systems of representation have a complex explanation in which different factors converge [Montes Serrano 2017, p. 56], we can simplify the diversity of the images and consider that the plans are still essentially abstract drawings. Their visualization is only possible through the mind given the impossibility, in most cases, of accessing the direct vision of the aerial point of view. When these two-dimensional aerial representations omit details and become schematic representations or morphological stylization [Leupen 1999, p. 206] they considerably resemble Mondrian representations. Through them, it is possible to explain the spatial structure, for which a distinction is usually made between the constructed (mass) and the unconstructed (void). In

Mondrian's work the lines resemble the walls (built) and the colored squares can be attributed to the unbuilt (empty). Paradoxically, in the case of the representation of urban or rural environments, the lines represent roads and the spaces become built-up masses or vegetation. The color codes in Mondrian's work have an aesthetic purpose in balancing weights and intensities, while taking into account the dimensions of each of the modules. Mondrian paints the intimate tension produced by each of these subspaces, so that the composition of the painting becomes an equation of balance between forms and colors. This is what Mondrian himself calls "dynamic balance" [Mondrian 1961, p. 44]. "Perfect proportion is achieved when all the values of the system are balanced, forming a geometrical plane and no longer a homogeneous surface" [Argan 1970, p. 496]. The result is a perfectly balanced picture, where color, form and arrangement are perfectly studied according to a perfect mental order, referring to the theoretical premises set out in two of his essays: *Art and Life* (1930) and *Plastic Art and Pure Plastic Art* (1937). In the architectural work, these color codes transgress the purely aesthetic by seeking a new meaning through a play of relations between form and color (content and meaning): functionality. Thus, in the views from above, a new representative dimension is incorporated, which Bernard Leupen calls "addiction" [Leupen 1999], in which signs are included about the functions and uses of the different parts that make up the building. Thus, the lines represent the spatial divisions, while the colored spots represent the uses: they are the signs that contribute to the transmission of architectural graphic messages.
Through these schematic representations of the point of view from above, it is possible to analyze graphically and schematically the spatial, structural, compositional, geometric, functional and relational organization of a building and its parts. It is only in the graphic space that the operations of configuration of form have a common purpose, both in Mondrian pictorial work and in architectural work: the differentiated articulation of the spatial [Fonatti 1988, p. 40].
The impact of Mondrian geometric aesthetics through its influence on the "world of forms", as defined by Carlos Montes Serrano [Montes Serrano 1992, p. 240], is therefore not surprising. This repercussion was of such magnitude that it is still present in the imaginary of contemporary architectural creations.

Note

[1] This paper moves from a reading of the image presented in the previous page: Piet Mondrian, Composition A: Composition with Black, Red, Gray, Yellow, and Blue (1923). Galleria Nazionale di Arte Moderna e Contemporanea, Roma.

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POINTS OF VIEW FROM ABOVE

Representational geometries from above

The Forms from Above

Corrado Di Domenico

Drawing and form, an ancient premise

Drawing is form, and this form is always a new creation, a new represented world, a first step toward an abstract geometry. A description of the sky dome, a view from above of a site interpreted in its broad outlines, so that geometry can speak the language of intelligible forms and their relationships. From the earliest days, 'drawing' creeps into the representation of the world by flanking artistic interpretation with geometry and abstraction. It is already an architectural drawing from the very beginning. At Lascaux, in the prehistoric cave, a square figure makes its appearance, and it is clearly a planimetric hypothesis. It is a geometry without plasticity, rendered two-dimensional as in a zenith view: geometry appears not as a theory of the figure, as a technique of representation, but as 'an abstraction' of a 'view from above', as a projective diagram. Along with the animals, then, a pair of grids, of checkerboards, are etched together in two distinct squares with colored fields in ochre and vermillion. A first substantive distinction, between Nature and artifice, separating and defining drawing as 'art' and geometry as conceptual interpretation and representation. Mental figure, 'not real'. This is drawing, tool and form at the same time.

According to some linguists, the transition to speech (and writing) comes 'from the sign', the symbolic graphing of the diagram that becomes, at a later stage, phonetic expression. The 'sign' comes before the 'sound' of the word. Thus, then, Olzhas Suleimenov writing *From Sign*

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

Fig. 1. Mark Pierce, Map of Laxton, 1635. The structure of the fields is finely depicted. This is a true survey of the formal behavior of agricultural land, meticulously cared for from the point of view of representation and the formal message that is reproduced. It is a rare example that expresses what we are able to take in today from the satellite and are hardly able to recognize from a formal point of view.

to Sound [Suleimenov 2015], conceptually reverses the birth of language by making the symbolic representation of the world as the source of spoken language become preponderant in the cultural development of primitive civilizations.
I am also thinking of an exceptional film, *The cave of forgotten dreams* built on the early footage inside the Chauvet cave made by Werner Herzog (with three-dimensional cameras that enhance the spatiality of the depictions on the rock surfaces) revealing the inherent kinematicity in those thirty-thousand-year-old rock figures. In this film we discover the 'spatial function' of the early paintings and understand how the drawings were in a plastic relationship with the movements of the rock and thus formed a volumetric system with the container, as if the cave were interpreted spatially.
For Roberto Calasso, "to hunt, one must draw," and "one day that lasted no less than twenty-five thousand years, Upper Paleolithic men began to draw. […] The animal and the person who drew it belonged to the same continuum of forms. That was the moment when the pressure of the powers imposed the strictest aesthetic discipline: the line, to be effective, had to be right. […] If the line was not right, the power was not evoked." Thus, "along with the animals had appeared geometry. Countless figures accompanied the animals or stood out isolated on the rocky walls. All kept their secret. But all were united by one character: to be the negation of the world as it manifested itself, as was the first wall perfectly perpendicular to the ground" [Calasso 2016, p. 28].
Moreover, the relationship between geometry, different from 'natural figures,' and the abstract, the 'becoming diagram' of form, also passed through a series of resonances between celestial figures and schematic imprints on the ground. Perhaps it was precisely in the rocks that the geometric nature of form was hidden, something that, like synopias, surfaced from time to time in the vision of things. Conceptual and creative vision, vision that was done together with drawing, sum abstraction of the naturally spatial thinking that belongs to man.
Much later, some not insignificant relations between form and figure are placed at the basis of art itself as a process of artistic discovery, we would even say as a process of 'formation', in the prodigious *Theory of Form and Figuration* that Paul Klee (1879-1940) collects in the two volumes of notes and reasoning produced during his teaching activity at the Bauhaus. Drawing, conceptually, takes flight since

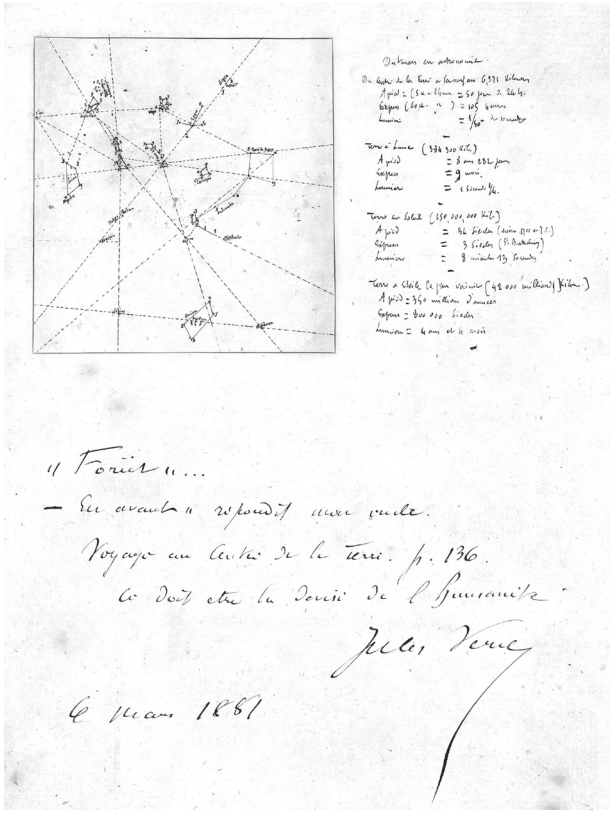


Fig. 2. Jules Verne, diagram, 1881. Contained in a manuscript of notes about the distances between certain celestial bodies. A useful relief to the imaginative narratives of a literature that relied on scientific knowledge. Relationship between constellations and writing, between geometry and narrative, between map and form.

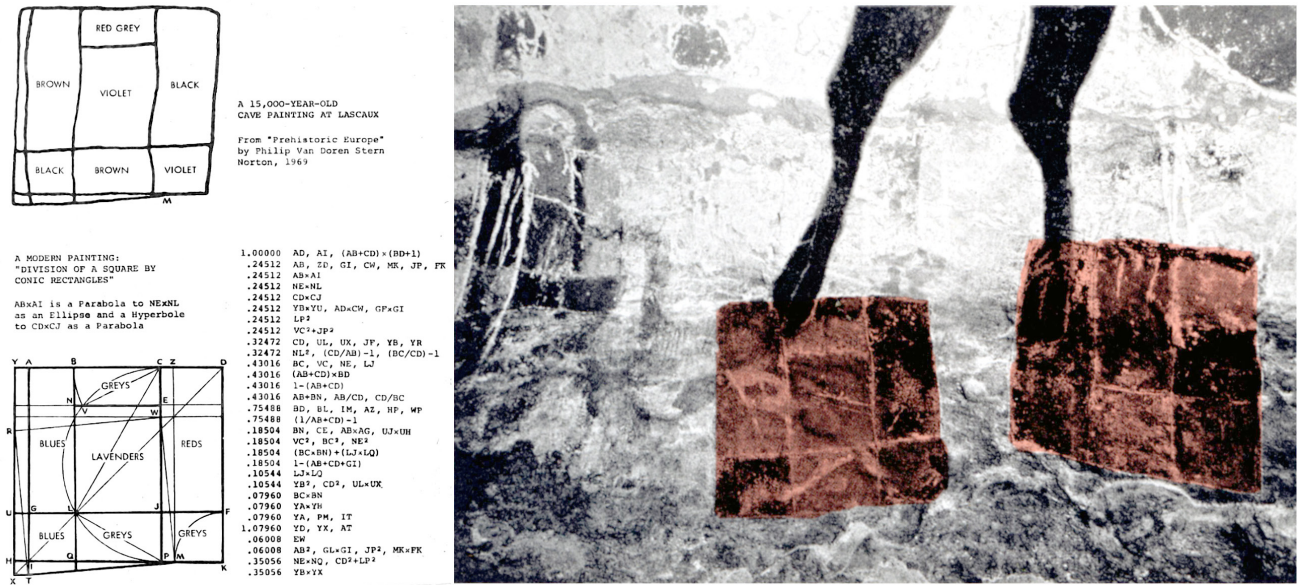


Fig. 3. Lascaux Cave, 15000 B.C. Survey of the square represented at the animal's feet with geometric considerations by artist C. Johnson. Opposite image of the cave figures [Venezia 2009] Image reprocessed by the editors of the book.

it belongs –for Klee– to the metamorphic field of form, the absolute science of creation. Everything is *in fieri*, it is a matter of studying its formal behavior, and Klee is perhaps the first to build a scientific theory on it. A fundamental assumption is that if science is progressive, art is conservative. We can investigate the past as well as the future with the same creative energy and essential beliefs, in an 'eternal present' that guards each new experience. Thus, Le Corbusier (1897-1965), in *Vers une Architecture* discerns that: "there is no primitive man; there are only primitive means. The idea is constant, virtual from the very beginning" [Le Corbusier 1923, p. 53].

Returning to the square, another famous example, at least as famous as the *ante litteram* representation of Lascaux, succeeds in bringing together two fundamental concepts encapsulated by geometric drawing, whose epistemological properties come before the rules of construction, since they are essentially encapsulated in the idea that drawing is a 'tool and diagram' that filters knowledge in order to interpret reality. This is the Egyptian grid, the "*mise aux carreaux*," which –according to Sigfried Giedion– is not comparable to the painter's perspective diaphragm or the scheme underlying the painting [Giedion 1969, p. 501], nor as Leon Battista Alberti (1404-1472) wanted, to the "optical veil," but was a system of "compositional proportioning". Through this, scientificity was given to the act of harmonizing through number, the control core (the cubit and the closed palm), the square matrix with which to arrange and measure, interpret and control, composing space. It was the *modulor* of the Egyptians. Interpretation and formation.

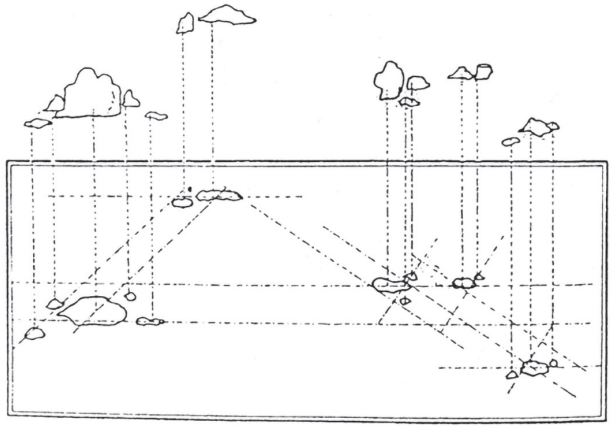
We have, then, several thousand years of 'drawing'. Drawings were placed in epistemological relation to each other: a map seen from above and a celestial triangulation, the figural relationship of a settlement pattern to its context, the decoration of a menhir. The small and the large interacted in a general view of the world that was essentially described through the language of geometry.

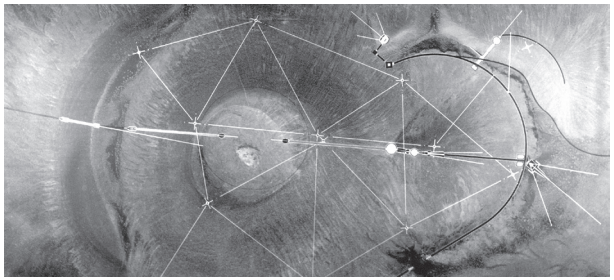
Drawing was the tool, indeed, we would say, the 'primary language' of culture. We would say more: representation was not a form of restitution of reality or of thought, of

Fig. 4. Werner Herzog, Image from the movie The cave of forgotten dreams, 2010. The forms move in tune with the surfaces. The movement of the torch light contributes to the dynamism of the figures. The figures belong to a plastic narrative, almost as if it were a film sequence: they are in fact repeated in series and overlapped as if moving, as if walking.

Fig. 5. Ryoanji, scheme from 1800. Graphic interpretation of the Ryoanji garden in Kyoto, where an elevation is developed from the plan that does not correspond to the normal section or elevation of the set of rocks, but rather, being shown with different heights, the rocks themselves build a conceptual diagram made up of heights and positions. Almost as if it were a sound, musical pattern.

Fig. 6. James Turrell, Roden Crater, drawing. Complex planimetry of the site geography project. It is presented as an abstract diagram made up of alignments, visual goals, triangulations, arbitrary axialities, and geometric construction that enshrines the meanings of place.





knowledge, but all in all, it was directly a form of thought, '*bildung*,' literally 'formation,' in the pedagogical sense, i.e., forming form. Yet, also representation of the world. It was imagination and poetry, survey and observation.
We cannot say that Aruspic rites did not have their own discipline of representing the Stefano Zecchi, an Italian Philosopher, in the introduction to the volume *The Metamorphosis of Plants* by Johann Wolfgang von Goethe (1749-1832), points out, precisely, the particular characteristic of the term 'forming' in the German language, certainly, to be understood in its educational meaning, of 'forming oneself,' but also as reinforcing the very idea that in the form is inherent the very process of formation, of "becoming of the form" –says Zecchi– that "is the force of metamorphosis" [Zecchi 1983, p. 17].
Every design must have, then, its own self-formative process, contain its own construction, '*bildung*', the key to its self-generation.
Again, we return to Klee, who demonstrated exactly this intimate generation of form as a specific assumption and testable theory. Through Art, through the science contained in drawings and words. Formal questioning, the study of beauty passing through the intelligible and the visionary.

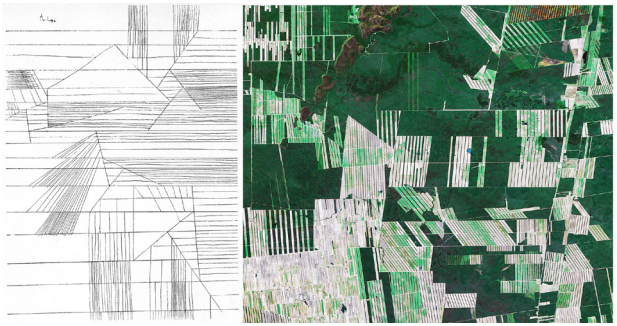
The imaginary point of view

The interpretation of the landscape in its components has been superimposed, since Neolithic times, on a definition of the forms involved and a description of the territory in formal terms. To figures and natural masses, rocks, tree patches, clefts and exceptional plastic presences, new forms could be added that interacted with places and conformed built systems, even on a large scale. Symbol and sign participated in a single geometric vision. Incredible examples of real maps drawn on a territorial scale, authentic landscape designs, can be found as far back as the fifth to sixth millennia B.C., in a variety of places in Europe and Asia.
They are spatially extended architectures that bring into play two main viewpoints, the heart of a millennial spatiality: the 'horizontality of vision', which aims to define perspective goals, the presences at stake, and the 'viewpoint from above', which includes the verticality of vision in space. The latter performs a symbolic task, related to the relationship with the vertical of the sky, the relationship

(sometimes even calculated) with the vault of heaven and its ideal alignments. Let us not forget that geometry makes its appearance in human cultures precisely as a useful system for tracing earthly relationships and calendars, drawing both on the ground and in the sky.
Everything is enclosed, or a set of enclaves; the landscape can become architecture through the interaction of geometries seen from above. Prodigious gazing that makes its entrance especially in Neolithic eras.
William Morris' definition in *Prospectus of architecture in civilization* then comes to mind, where, meaning by 'Architecture,' "the whole of the modifications and alterations wrought upon the surface of the earth, excepting the pure desert" [Morris 1881], this art seems precisely to merge its essence in its relation to the soil, as an extension of it, a physical interpretation of it. It encapsulates perhaps a topological richness. Rooting and extension have the earth as a base, as a support, and the movements define a precise strategy of place.
Two visions that are original and organic to the culture of construction throughout the ages. Horizontal and vertical. The structure of space that the two visions bring into play is fundamental. Not anthropocentric, but cosmological.
Spatial encroachments are defined in terms of perspective, horizontally: with the view from below, the essential function of architectural space is brought into play, which is to participate in a domain, in a perception of one's position in an interior, whatever it may be, made up of a system of relationships. From there, the plasticity of space and designing based on perspectives starts.
Triangulation references and topographic positioning are, on the other hand, controlled with the zenith point of view. But not only that, the projective map is already a plan, and it is present –always in the Neolithic period– exactly *as a project*. Indeed, we would say that in these unsurpassed experiences (as Leonardo Benevolo wants) the project and the diagram coincide in a single theoretical vision dropped *into geography* [Benevolo, Albrecht 2002].
Thus "architecture takes charge of (represents and reworks) the entire natural landscape, with a confidence no longer surpassed. […] The willingness to make natural and artificial forms coexist, in even very elaborate arrangements: qualities that atrophy in later eras, when the field of architecture narrows into the limited spaces of urban enclosures" [Benevolo, Albrecht 2002, p. 42; see also Benevolo, Albrecht 1994].

Fig. 7. Fossa (AQ), Aterno Valley, image from a hilltop. The incredible Italian landscape holds shapes and figures that seem to construct a talking landscape. The hill in the center of the valley –as seen from above the village of Fossa– looks like the back of a giant dinosaur. It is a presence that plays with the whole territory, setting in motion a site and a cultural geography.

Fig. 8. Paul Klee, Huts, pen drawing, 1929. Alongside, Google Earth. Prodigious formal associations distant in time and space. Klee imagined from a bird's eye view and prefigured formal behaviors.



This is evidently an unusual point of view, an elevated vision that cannot be matched except in the views obtainable from high ground, in the visibilities towards the valley floor, and ultimately in an abstracting of vision, directly and necessarily projected onto the ground as from above. It is a conceptual shift that is repeated only much later with Land Art, with the reconquest of the fundamental tension of space within the landscape and its recovery of meaning in 'cosmological' terms, which takes over a cultural *vacuum* that has lasted too long. Recall, among all, James Turrell's (1943) *Roden Crater* or Michael Heizer's (1944) contemporary *màstaba* of the *City* founded in 1972 and completed in 2022. In the former, some drawings are superimposed on the orthophoto of the crater and continue its formal force in a graphic study for possible small topographical changes to be made. In the second example, Heizer defines one of the most important architectural spaces of the millennium by merging the idea of sculptural spatiality of a complex of abstract constructions with the symbolic function of the planimetric arrangement. In fact, he builds an ideal bridge between Mesoamerican complexes made of *màstaba*, truncated pyramids and stereometric masses (also cited and studied by Jørn Utzon), and the possibility of visiting his work with a virtual trip from a satellite.

Perhaps the first 'non-Neolithic' architect to take up the view from above in creative terms was Le Corbusier, who used his *carnets* to jot down the first, new (and at the same time very ancient) visions of the forms of the world flown over from an 'impossible' viewpoint. As new as it was natural, indeed inherent to the human imagination as well as the need for architectural vision.

A discourse apart is the boundless-but essential and simple-experience of viewing the earth seen from above, once the preserve of very few photographers and particular editorial circulations, and certainly of a discipline, that of Geography, which is for all intents and purposes concerned precisely with graphic renderings of the earth's crust and its eventual thematization. The formal bearing of such satellite visions, however, concerns a real discovery. Which brings us back once again to Paul Klee, the artist who was perhaps the first in the early twentieth century to introduce, outside of architecture, the bird's eye view as a technique of formal investigation of the geometric structures of both the earth's surface and the color fields of his paintings.

Certainly Lemuel Gulliver, who looked at things from above on a 12:1 scale, we might say, had been a forerunner of this, along with the Neolithic architects. But even more, to this day we are faced with the true and powerful aesthetic abstraction of the surface of our planet. We find ourselves easily going through the rounds of a zenithal, movable and editable view in the high-resolution mappings of satellites. Orthographic views even in real time.

The change of perspective is decisive, but not so new, all things considered, because what we might call "the imaginary point of view" [Benevolo, Albrecht 2002] of architecture has always acted and been the conceptual basis of every project, every design.

The new view, we might say, of the Earth as seen from the Moon, that is, that view of our planet's surfaces probed by orbital distance, allows us to work as if in an infinitely historiated field of forms, and perhaps to realize how much the real sustainability at stake is the formal one. Poetry and the art inherent in it, first human action. Sustainability of form, of the whole, of the visible concatenation between things and correspondences of meaning. From above this is exactly what happens, the eye follows latent geometries, creates associations of fields, profiles and contours, builds formal structures that underlie, in essence redesigns the visible.

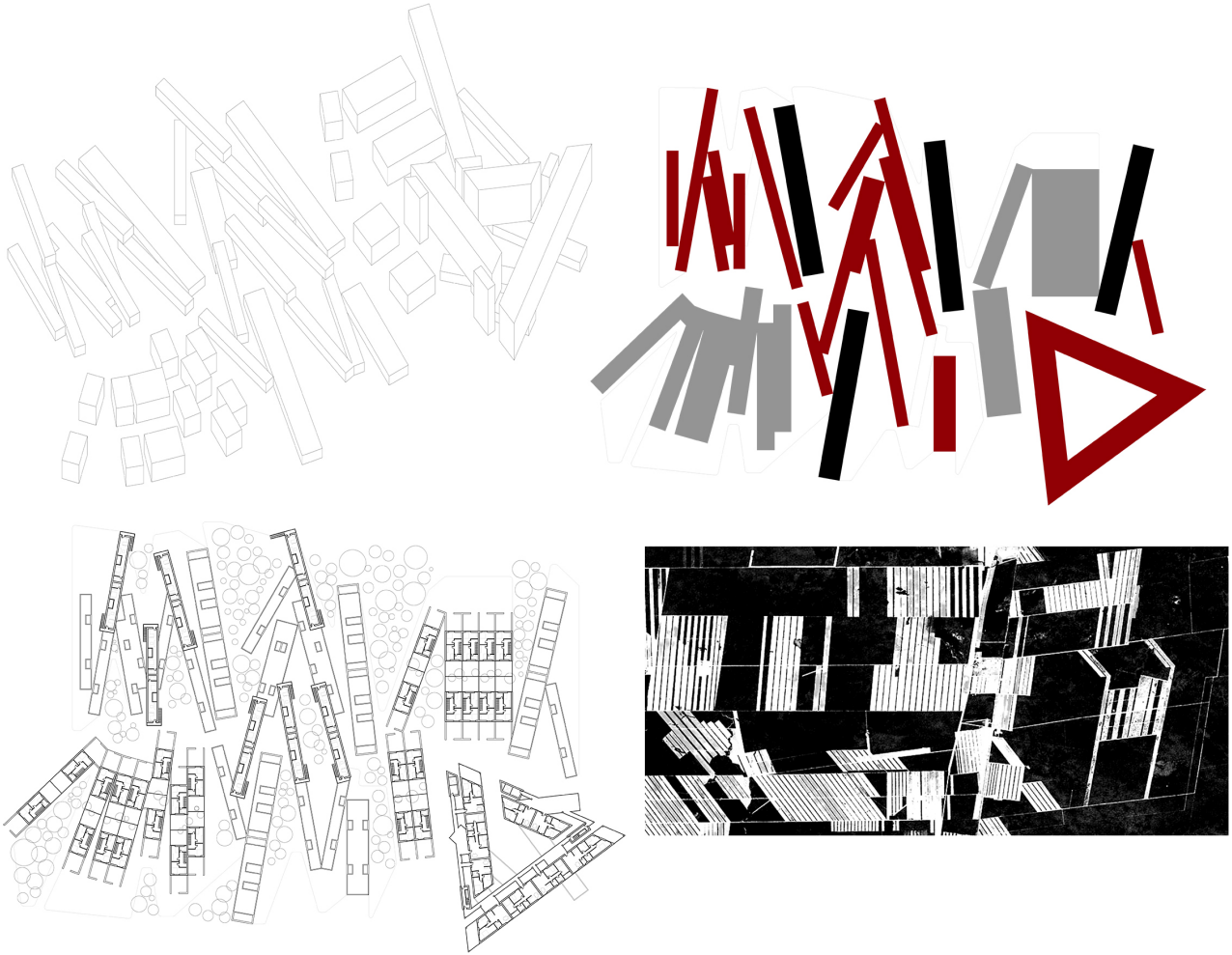
For Paul Valéry, it is a poetic operation that invests both language, composition, and architecture, where "the work of the eye on the object" is acted upon and where "architecture as art is the art of giving the gaze that of which to construct a system of figures and their mutual transformations with the movements of the eye" [Valéry 2011, p. 140].

The new prime landscape, paraphrasing the Italian poet Andrea Zanzotto [Zanzotto 2013, p. 32], then becomes the view from above, the plan diagram of reality. A new nascent dystopia, or a useful creative paradigm that allows us to still root our view to the cosmos?

No different, perhaps from the extraordinary photographs we can find of the surfaces of the planets of the Solar System, as published by NASA (*National Aeronautics and Space Administration*). Mars among them all [Barral, Girard 2017], where the images acquire an undisputed, transplanetary formal value. It makes no sense to think in terms of context, because the world of forms invests both astronomy and geography and small landscapes.

Let us resume with another assumption, with another identification or tautological reasoning. Drawing

Fig. 9. Design experiments. Corrado Di Domenico with Giada Altieri (second-year Architectural Composition course, DADI, Unicampania). Formal structures seek correspondences and assonances, interpret.morphologies and provide what we believe is true sustainability, that of art.



is architecture, not only that: through drawing we operate the only linguistic operation that belongs to architecture. On the other hand, we could not think that through word and syntax, composition and sound, poetry is not generated, and only with them. Drawing is to architecture as speech is to poetry… the syntax of form and its accomplished and controlled expression.
Drawing, therefore, can neither be self-generated by computers, nor be subject to algorithmic laws (see the artificial intelligence chatbots raging as early as 2022-2023), nor be perfect restitution of reality. In architecture, it cannot be the preserve of pure representation or expression of a style. Drawing is not only a tool but also an interpretive key, it is diagramming and at the same time a creative act. Analysis and synthesis.
Is it not itself, complex, abstract work and geometric diagram? It contains within itself the generation of form and the endless exercise of its geometric signification. Drawing cannot be restitution, but interpretation, that is, writing on, rewriting. Survey and, therefore translation.

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City Portrait(s). Towards a *Bilderatlas* to Generate Original Composited Illustrated Texts

Michela Ceracchi, Elena Ippoliti, Giovanna Spadafora

Abstract

Images of the city must be compared against a complex organism that changes over time. They can take shape on a sheet of paper or in digital space, but can also become mental images that populate our thinking and condition our perception of the city itself. Each image conveys the Author's gaze and is received with the observer's gaze: just as the ability to represent changes depending on the time and place to which the Author belongs, so with the ability to see images. The creation of a digital platform would make it possible to valorize the iconographic heritage belonging to a city: by visualizing the images in a diachronic and synchronic sequence, their communicative register is understood and they are rendered as parts of a unitary story.
It is hypothesized that, through the user's participation in the implementation and interrogation of the platform, it is possible to generate an unprecedented composite figurative text of the city so that, in the manner of the Bilderatlas Mnemosyne*, it becomes a tool for thinking through images. Users will contribute to writing a tale, narrated simultaneously from different points of view, which will have as its subject both urban transformations and the evolution of the ideal image that, in the various representations, the city gives of itself. Through a tale thus conceived, the user will become both its Reader and Writer and with new and original mental associations give shape to new stories about the city.*

Keywords: images of cities, maps, views, multi-perspective storytelling, shared representation.

Introduction

Images of the city must be compared against a complex organism that changes over time, they can take shape on a sheet of paper or in digital space, but also become mental images that populate our thoughts and condition our perception of the city itself, a perception that changes in space and time. Each of them is characterized by a different point of view, meant both in the projective sense of the term and in that of an ideal point of view coinciding with the author's gaze which conditions the way one sees, and at the same time represents, the city. The choice of the point of view together with the purpose for which the author creates the image and the period in which he works, contribute to defining the communicative register that gives form to the image itself [1] (fig. 1).

Representations of lived space and its extensions

Among the different families of representations, those which have the lived space as their object present the widest range of types and variations, resorting to the full extent of representative methods and conventions, from the figure to the sign, from the concept to verisimilitude. In this instance, it includes all those figural devices –from figurative patterns to elevation plans, from taxonomic drawings to zenithal plans– often extensively referred to as maps, which perform a mediating function between man and the world, not only physical-geographic, through an organized system of graphic-linguistic figures and signs related by a context. Every representation is, in fact, above

all, a giving order to things by attributing a position in space to them; and it is the level of the contextual reference that conveys the substance of the message and the contextual pressure [Eco 2009, p. 116] that gives coherence to the entire system. Because, to unfold communication, a sign system, as all symbolic writings, needs a spatial reference system, a context that supports both communication and the figure of communication.
Putting it on 'paper' therefore means arranging it in a space such that each graphic-linguistic figure and sign, in relation to the other elements of the set to which it belongs, fulfills a function and takes on a pertinent meaning. And therefore, every representation, and thus also every map, is first of all a topical device [Anceschi 1992, p. 103].
To understand the whole range of meanings that convey the figurations that have the inhabited space as their object, it is necessary to recall the different enunciative modalities, which can be summarized in the description and in the tale. In the description the gaze is "without a point of view", while in the tale it is that of "a moving traveler". In the first case, the vision is totalizing and synthetic, the interpretation unique; the prototype is the zenith plane. In the second case, spatiality is the weave of possible itineraries; the different points of view are revealed according to the path undertaken and the temporal dimension is introduced by the motion within space; the prototype is the portrait [Marin 2014, pp. 80, 81].
It is equally necessary to indicate the different languages adopted in communication. The abstract one of signs and symbols which, making what is continuous discrete, makes it possible to distinguish, and therefore to know via the difference: a difference in altitude, vegetation, or demographic structure. A discontinuous knowledge founded on

Fig. 1. The temple of Portuno as depicted by various authors: Giovannoli (1616), Piranesi (1758), Acquaroni (1828) and relative details.

hypothetical-deductive reasoning which acts through argumentation and is based on the reliability of the data. The visual one of icons and images, which acts by virtue of the resemblance to the subject which is figured. A continuous knowledge based on similarity that is achieved with aesthetic modalities: the information is metaphorical, i.e. based on assertions or injunctions of similarity.
It is therefore also essential to replace the criterion of realism with that of verisimilitude because the 'sight' of places, real or virtual, through a process of remembrance, always activates particular emotions in the observer (fig. 2).
Among the images of sites, the images of cities are certainly among the most effective, because they act thanks to that intimate and profound relationship that the sites build with individual and collective sensitivity, triggering a wide range of emotions through which they convey significant contents. The images of the city are therefore affective images, capable of activating a sentimental transport; tender images used as "vehicles of emotion and as palaces of memory and meditation" [Mangani 2007, s. n.].
According to this view it is therefore possible to understand the function of the images of cities in the *Universal Chronicles*, illustrated stories of the world; as for example in those of the hermit theologian Giacomo Foresti [Foresti 1486] or of the humanist doctor Hartmann Schedel [Schedel 1493]. They are cities of memory, of images for thinking and of a thinking in images; devices for formulating thoughts that support the text constituting the very logical structure itself, therefore it little matters that the same image serves to represent several cities (fig. 3).
But more generally, representations of cities, even when constructed as descriptive interfaces of reality, are always a particular interpretation that allows not only physical but symbolic control, participating in the definition of knowledge that is shared and to be shared. The images of the city, like all the figurations of lived space, always carry out an action of cultural mediation [2]: instruments of political, military and power propaganda or expression of the community and of belonging to the city, in which more and more points of view coexist, at least those of the draftsman/contractor and the recipient/spectator. But they are albeit an interface with the value of initiation to the knowledge of the deepest values and meanings of the city, to be conducted by immersing oneself in the representation that remains faithful only to itself, to the reason that generated it, resisting unchanging to every change imposed by history [De Seta 2011].

The different points of view of city images

The choice of the point of view from which to represent a city is never accidental, but derives from a precise communicative intention of the author who reveals the wish to highlight some of the characteristics of the urban organism. In this sense, Cesare De Seta has proposed a taxonomic classification of city images starting from the position of the point of view, distinguishing between the 'profile' with the observer placed at ground (or sea) level but at an almost infinite distance; the 'perspective view' with the observer positioned in a real station point but at a higher altitude than that of the city; the 'bird's eye view' with the point of view placed very high in order to observe the city in its entirety; the zenith plans, where the point of view, rising, becomes an improper point and the direction of projection is orthogonal to the plane of the city [De Seta 2011, pp. 30, 31].
From this classification emerges the variation of the communicative register, which becomes more and more abstract as the point of view rises, moving away from a concrete position which, however, is typical of the views in which the point of view coincides with that of the traveler who crosses the city and conveys the perception of that place [3] (fig. 4a).
The frontal view of the city conveyed in profile is, however exact, almost abstract (fig. 4b). The perspective view embraces the city in its entirety but in it the streets and the details of the buildings are lost in favor of the general description (fig. 4c). In the bird's eye views, the framing extends to capture the entire urban agglomeration together with the environment that surrounds it, while the expansion of the road surface the urban scenes to be shown from which the monumental buildings emerge, represented out of scale with respect to the minor building fabric (fig. 4d). The communicative intention of the zenith plans is oriented towards a claimed accuracy of the representation, in fact the observation of the city from above favors an objective description of the urban morphological system and of the relationships that exist between its parts, to the detriment of the perceptive rendering of places as they are experienced at eye level (fig. 4e).
However, it is necessary to underline the instrumental function of this classification. The authors have often deliberately departed from the 'rules' that define the different classes, which therefore are not to be understood in an absolute way, therefore "only an analytical investigation of each urban image can reveal the mechanisms of its construction and its 'betrayals'" [De Seta 2011, p. 31]. Furthermore, each class can undergo infinite variations by virtue of the correspondence with the reality that the Author intended to determine in the image, because each of them, as any graphic representation, "is always an interpretation and therefore an attempt to explain the reality itself" [Massironi 1982, p. 55]. Conveying one's interpretation of reality in a graphic representation, through an 'encoding', always implies making choices, which involve a variability in the degree of resemblance or abstractness, or of iconicity or symbolism of the image itself.
The same variability can also be found in the zenithal plans which, although sharing the same position of the point of view and the type of projection, differ in relation to the model of figuration adopted (fig. 5). Instead, what unites all the zenithal maps is the intent to show, to the viewer of the map, what cannot be seen, but only imagined, in crossing the city or looking at it from a real observation point, however high. For this reason, the zenithal plans, despite being representations where the abstractness of the communicative register used claims to show the objectification of the measure [4], are to be considered as particular tales about the city and therefore are to be included in the category of 'city portraits'.

Fig. 2. François Chauveau, La Carte du pays de Tendre, 1654; the imaginary map of Clélie's emotional itinerary, engraved for Madelaine de Scudery.

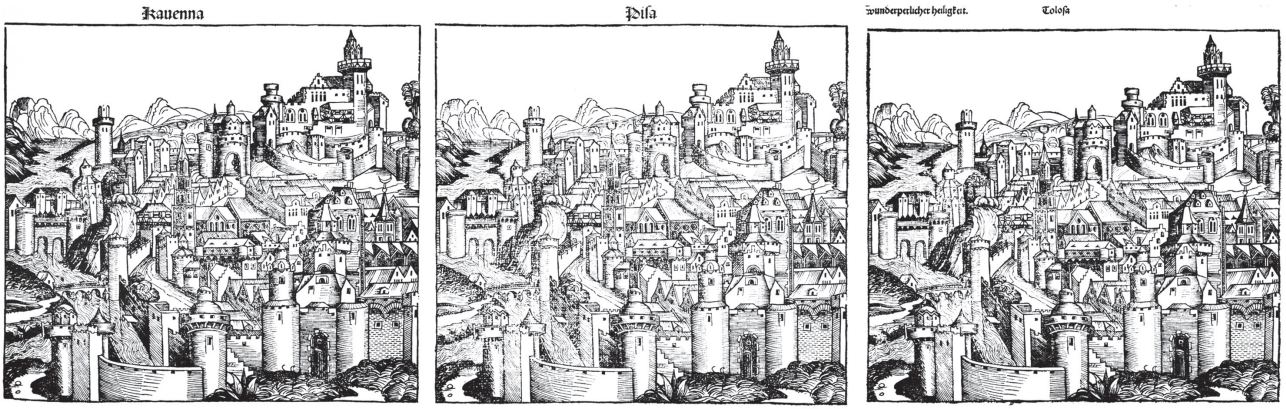

Fig. 3. Hartmann Schedel, Cronache, 1493; the same view is used to depict Verona, Ravenna, Pisa and Toulouse.

'Looking' at the world as it appears, 'seeing' the world as it is

The zenith representations of cities are abstract visions that cannot be experienced by the human eye, yet, the ability to think about them, and give them a consequent shape through drawing, has been seen since very ancient times [5]. But even this type of representation oscillated between objective images and 'tales', figurations aimed at expressing a mystical thought derived from a cosmological conception that involved the identification between 'Heaven and Earth' [6]. In different ways, the civilizations of the past have traced signs on the earth by looking at the sky (through the erection of dolmens, the construction of temples or the preparation of axes along which to structure territories and cities) and have imagined seeing the earth from above, raising the point of view vertically, to a sidereal distance, so as to dominate it. But if between the *Forma Urbis* (3rd century BC) and the map of Imola (1502) by Leonardo da Vinci, few other examples of zenith representations of built cities can be found [7], it is because, until the 18th century, the desire to produce images that narrate 'the world' prevailed rather than represent it through drawings based on 'measurement'. The slow process of refining topographic measurement techniques that began in response to the changed needs of a social, economic and military nature, found a turning point in the fifteenth century. Maurizio Vitta writes, regarding the role of images in the story of the known world, that "Precision subtracted the cartographic image from its role as a mirror of reality and launched it into an increasingly abstract dimension, which ended up assuming within itself every content of truth. In 1445 Leon Battista Alberti inaugurated in the *Ludi rerum mathematicarum* the technique of azimuthal triangulation for terrestrial surveys which paved the way for modern cartography. […] Mathematical abstraction became a guarantee of realism: the absolute correspondence between the cartographic space and the physical space was made possible thanks to the abolition of the latter in the former" [Vitta 1999, p. 172].

Thus, if we pause to reflect on the development of technologies related to the measurement and representation of the city and the territory, we cannot but highlight how the variation of the position of the view, understood in the physical sense, is closely connected to it. The distance between who measures and what must be measured has progressively advanced and has expanded in recent decades: sight has lost its role as a measuring instrument and drawing has lost its function of deducing, with the scientific method, the position of a point starting from the application of simple geometric rules.

The progressive elevation of the point of view has changed the ways of exploring the world and distanced the body from what it observes and measures. At the same time, the gaze is no longer exclusive, it no longer belongs only to those who choose to explore and describe the city, but the gaze is 'other' on the world, to which everyone can have access: paradoxically, it is no longer the view of aviators (as predicted by Le Corbusier), of topographers, or of

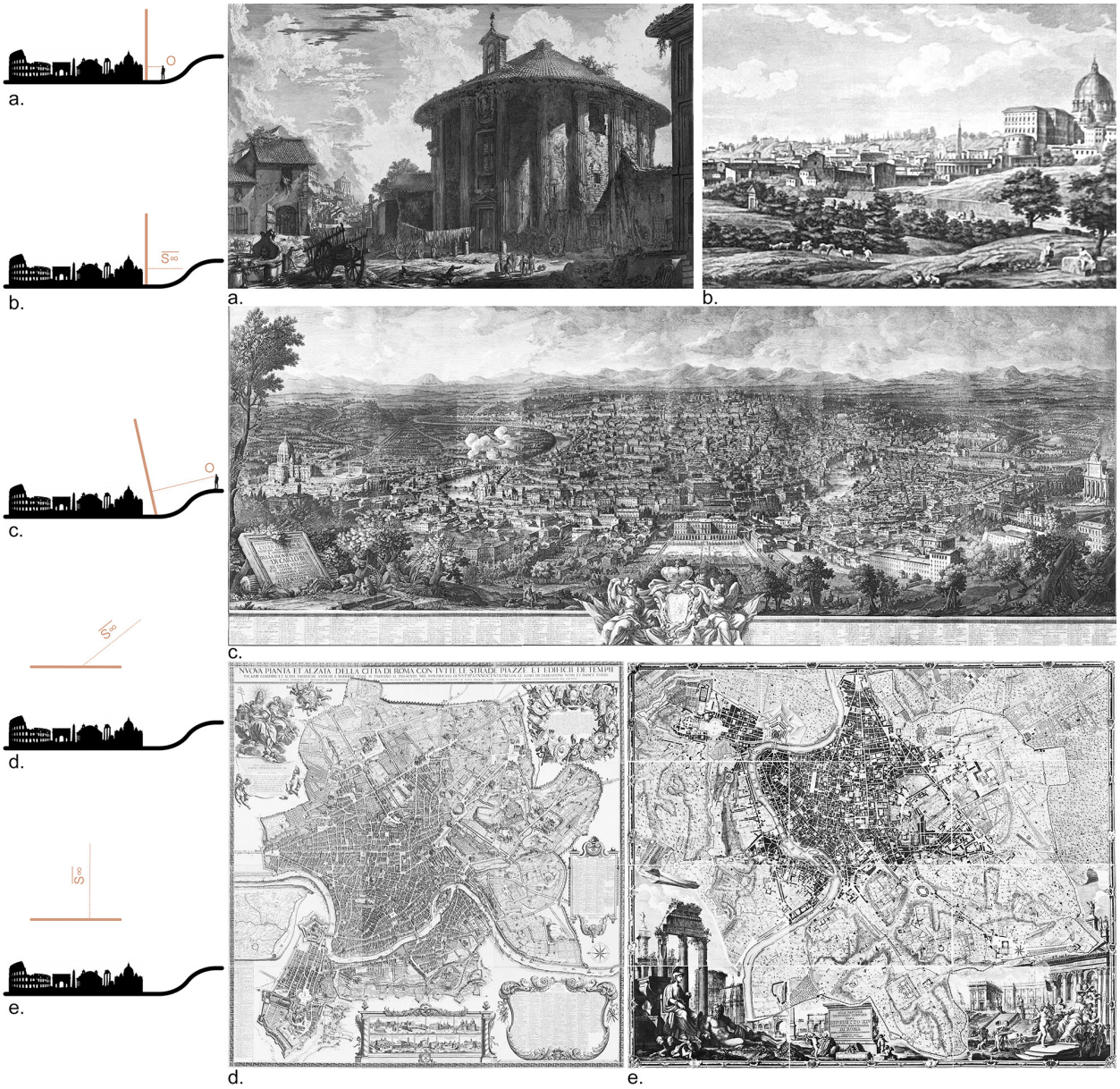

Fig. 4. A comparison between the various iconography categories and relative scheme indicating the position of the point of view (graphic elaboration by the authors).

Fig. 5. Different degrees of iconicity in the zenith plans: Piranesi (1746-1756), Nolli (1748), 3rd Engineers Corps (1900) and related details (graphic elaboration by the authors).

geographers but of information technology, massively accessible on the net.
The representation of the world conveyed by satellite images claims to be objective (and for certain uses, with some approximation, it is): the aspiration, which has always existed, to build a complete and exhaustive map of the world seems to have been achieved, a feat –typically Borgesian– which presupposes a grotesque coincidence between reality and image: as useless as impossible to achieve [8].
The conceptual transition from 'the world of approximately to the universe of precisely' [9] records, in the field of surveying, an enormous leap forward which, moreover, presupposes the equivalence between precision and quantity. *Google Earth* may not be a geographical map but a 'geospatial application', as some define it, but it certainly represents the largest source of information that allows us to "draw on ten petabytes of geographical data in seconds" [Brotton 2017, p. 435].
However, in the field of surveying, the architecture of the city returned in the form of millions of points of the digital technologies still makes us reflect on the fact that data is not information in itself and that a cloud of points, however dense, is not a 'representation' or is, at the most, the zero degree of a representation.
Between the 'objective' images of the world and the description of the intrinsic characteristics that distinguish one place from another, in fact, the entire distance that exists between 'looking' and 'seeing' remains unchanged (fig. 6).

Fig. 6. Leonardo Da Vinci's map of Imola (1502) and the 'objective' image extrapolated from Google Earth (graphic elaboration by the authors).

We are therefore called, today with greater urgency, to generalize and to abstract, to interpret and to synthesize, to choose, among the millions of data that we have at our disposal, what to actually use to contribute, through representation, to the advancement of knowledge of a city but also to the transmission of its values, or to the tale of the city.

'Seeing' the city through a participatory multi-perspective storytelling

The proliferation of hyper-realistic representations is deluding us that a representation of the world 'as it appears' is capable of conveying to us complete knowledge of it. Furthermore, the amount of images we are continually subjected to is causing us to lose the ability to really see the images and to recognize and understand their intrinsic value.
In summary, the contemporary age is making us become accustomed to looking at the world through representations 'without gaze', making us forget what it means to identify with the view of the author who portrays the city as he sees it, conveying in a particular drawing, whatever its 'precision', his own interpretation of the world.
This observation gave rise to the desire to reflect on an instrument designed to valorize the heritage of images that belongs to a city and, at the same time, re-educate the gaze to see historical images by participating in the writing of a tale in which they become the protagonists of the narration. The discourse on the city will be composed through the images created from different points of view, considering the meaning of this term both in a projective and ideal sense. As we have seen, the zenith plans are able to show the observer what is not visible when crossing the city but, to do this, they move further away from the sights of the places of experience, typical of those views which instead convey the view of the traveler who crosses them. Therefore, only by integrating the different iconographic classes into the discourse is it possible to reconstruct a simultaneous view capable of outlining a portrait of the city and of holding the different points of view together.

Fig. 7. Rome in Schedel's Chronicles (1493), Galleria di vedute di Roma antica (1758) and Roma moderna (1759) by Giovanni Paolo Pannini.

Even in the hypothesis of being able to write this tale about every city, the research has adopted the city of Rome as a case study, because it is emblematic of how the heritage of images contributes to giving shape, in the common imagination, to an idea of the city that endures or changes over time [10] (fig. 7). Just think of the aforementioned *Chronicle* by Hartmann Schedel in which Rome, unlike other cities, is represented through identity elements that make it perfectly recognizable. Or in Giovanni Paolo Pannini's *Gallerie di vedute* (*Galleries of Views*) where the ideas of 'ancient Rome' and 'modern Rome' are conveyed by the simultaneous vision of the many images produced throughout history specifically chosen to communicate an aspect of the city. Thanks to such a vast cartographic and iconographic heritage, the intention is to generate an unprecedented digital representation of the city by exploiting the system of relationships that can be established between the elements that compose it, writing a different tale each time, starting from the same heritage of images.
This representation will be created by users by accessing a digital platform, structured as a Cartesian plane in which objective time, the timeline, is represented on the x-axis of the abscissas, and on the y-axis of the ordinates the classified iconographies will be arranged according to point of view and degree of iconicity. The insertion sequence goes from the zenithal plan to the partial view with a reduced field angle, accompanying the reader from the general view to the particular view (fig. 8).
The platform is designed to have a metadata substructure that allows the writer user to participate in the narration by adding new maps or iconographic documents from time to time that will be placed in the cartesian plane according to the metadata that he will have associated with each image.
The classification of the images will take place in two ways. On the one hand, the documents will be classified with a descriptive logic through a form that the user will compile, in its predefined fields, using keywords chosen from a 'thesaurus'; this will include both pre-set keywords (related to the information necessary for the correct positioning of the document within the cartesian plane, i.e. the framing of the representation, whether global or partial, its degree of iconicity and the position of the point of view) and fill-in blanks (related to the time of creation of the image, the author, the client, the occasion and the purpose for which the image was created). On the other hand, the user will be able to establish associations between the documents, using a graph system, which will provide the system of relationships underlying the structure of the story, resulting from personal interpretations not directly identifiable through the association of common keywords.
The metadata system will guarantee the possibility of querying the platform and, in this mode, the writer user will assume the role of reader. In fact, the user inserting new documents with the related metadata will contribute to writing the tale and by querying the platform through the same metadata he will be able to read the tale as it is being created with the contribution of the other users, generating a parallel tale at each query, different every time.
The articulation of the narration into chapters is developed in the upper level of the cartesian plane, in which the zenith maps are distributed which convey the vision of the city in its entirety. These maps –more or less verisimilar– if considered isolated are a portrait of the city at a given time t_x. Instead, by arranging them along a 'timeline', they become representative snapshots of the temporal succession t_1, t_2, t_3, …, t_n, thus providing a sort of chronophotography of urban transformations. Therefore, through the sequence of snapshots an atlas is created capable of narrating a city through an unedited representation that becomes a narrative text, capable of making explicit the ability of graphic language to make time visible [Fatta, Bassetta 2017].
The platform provides for the possibility of exploring two georeferenced zenith maps in parallel, like two diachronic snapshots (fig. 9). The possibility of simultaneously visualizing the views relating to the urban portion framed completes the narrative regarding the urban transformations that took place in the period between the creation of the two maps, conveying the view at eye level [11].
The orderly sequence of iconographic elements comparable to each other, in addition to defining a timeline, provides a structure to the space of digital representation in which it is possible to place further elements by integrating them into the story. These elements, as anticipated, are part of all the other iconographic classes which together will contribute to completing the portrait outlined by the zenith plans. The ways of 'seeing', the modulations of the view, are technically and historically determined phenomena [Pinotti, Somaini 2016, p. 40], the contextual visualization of the images produced in the same era makes it possible to understand their communicative register. Therefore, only the heterogeneous set of the different iconographic classes that make up the heritage of a city manages to return a complete portrait of it, because each one is capable of conveying different iconographic contents. Furthermore, images

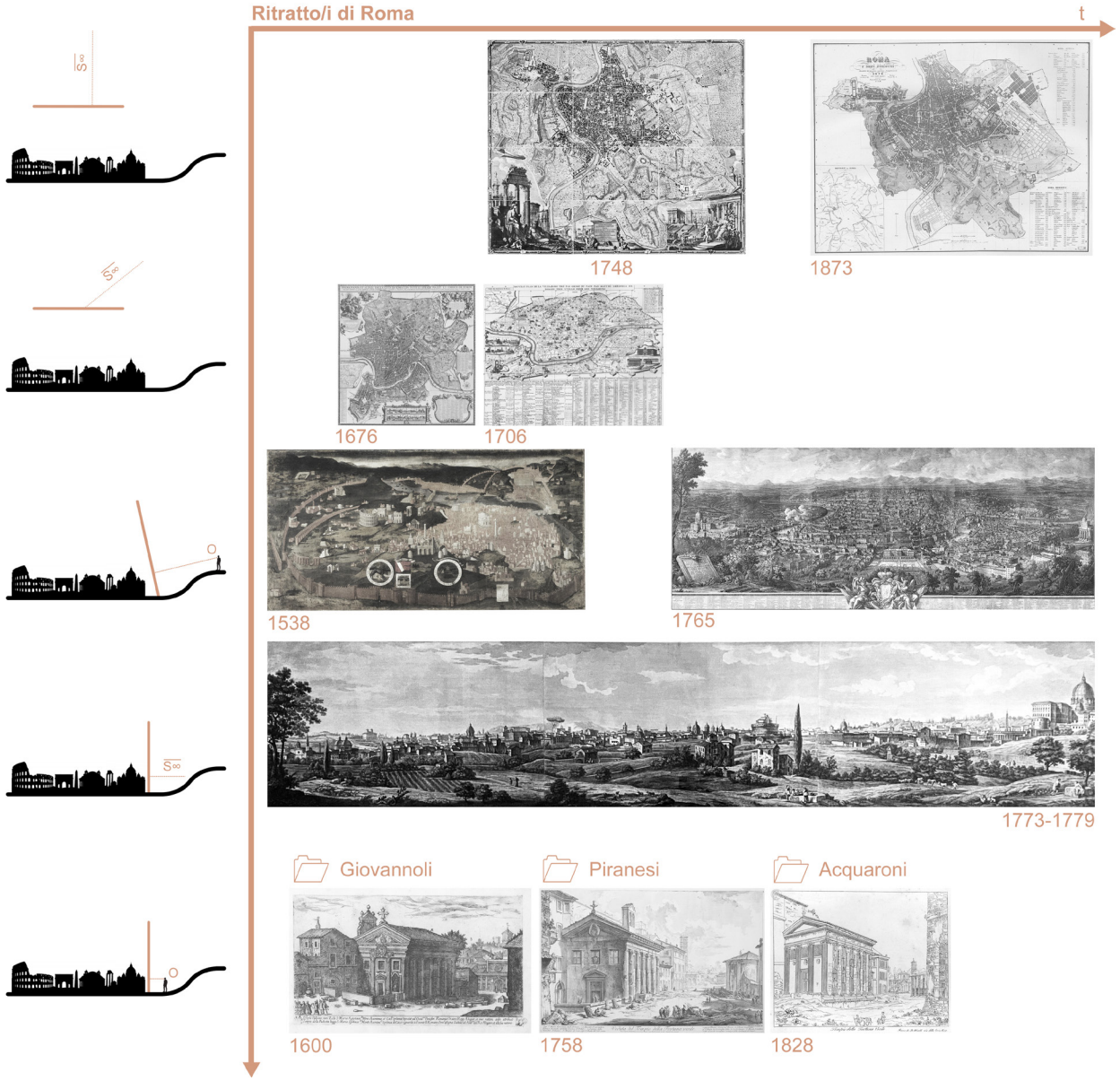

Fig. 8. Visualization of some elements arranged on the Cartesian plane of the digital platform (graphic elaboration by the authors).

Fig. 9. Exploration of two zenith planes and contextual visualization of the views useful in restoring the view at eye level (graphic elaboration by the authors).

Fig. 10. In a composite figurative text, the views of Vasi and Piranesi display two different gazes in the tale of the city, drawn in plan by Nolli (graphic elaboration by the authors).

"have the power to communicate different suggestions, thus going beyond their task of depicting the contents for which they were elaborated […] they can open new interpretative paths by triggering associative processes that open up to the unexpected" [Quici 2016, p. 93].
By organizing the maps and the various iconographic documents on this Cartesian plane, a 'composite figurative text' is given shape [12] in the manner of Ignazio Danti who, in the *Galleria delle carte geografiche* in the Vatican palaces, leads the Pope on a journey on the Apennine ridge between the Italian regions, through a narration that unfolds between orthographic maps and landscape views, in a continuous reference to miraculous or uplifting episodes, distant battles and more recent sieges [Ippoliti, Valenti 2015].
The digital platform, in its implementation, thanks to the participation of users, will take on the structure of a *Bilderatlas* that evokes Aby Warburg's *Mnemosyne*, becoming a machine for elaborating thoughts on the city, its transformations and its history. Through the metadata structure it will be possible to interrogate the Bilderatlas and generate different types of composite figurative texts, each time writing a different discourse on the city [Marin 2014, p. 89], a text written from the various iconographic documents, which satisfies "the need to understand the dimension of time together with that of space in an image" [Calvino 1984].
By consulting the platform, in fact, it will be possible to generate a composite figurative text by associating to a main image the iconographic documents that complete the portrait of the city in that specific historical moment (fig. 10). At the same time, it is envisaged to provide within the platform the tools necessary to segment those cartographic and iconographic documents which can be considered composite figurative texts in their own right (fig. 11). The user will therefore be able to associate the relative metadata to the individual parts useful for their recognition [13] and, in this way, it will be possible to recompose the individual parts with other iconographic documents, choosing them via the same metadata, on a sort of white sheet to build on it an unprecedented composite figurative text that substantiates the narration of one's own story about the city (fig. 12).

Fig. 11. Segmentation of various composite figurative texts: Falda (1676), Nodot (1706), Nolli (1748).

The interactive *Bilderatlas* will 'accompany' the user on a journey through the images that make up the cartographic and iconographic heritage of the city, involving him in the narration, thus allowing him to assume the role of reader and writer, but also giving him the opportunity to become the Author of unpublished composite figurative texts which, taken together, can compose a tale that unfolds in time and space of multiple views of the city.

Fig. 12. An example of a composite figurative text that the user could create to narrate the concept of Rome as the eternal city in the 16th century (graphic elaboration by the authors).

Conclusions

Contemporary society is submerged by an indefinite quantity of images, both due to the ever-increasing production and the amount that has accumulated over time, but "this iconographic hypertrophy nevertheless seems to correspond to a growing incapacity to acquire information in a critical sense, to understand the aesthetic values and to recognize ethical ones" [Quici 2018, p. 7].
While aware of the difficulties, in terms of resources and time, that the effective creation of the platform proposed here would require, the conviction remains that the possibility of interacting with the images, participating in the writing of possible tales about the city, stimulates the ability to see its intrinsic values.
The composite illustrated text, which the user-writers would help compose, would take the form of a shared tale about the city, capable of delineating its portrait through the images that represent it from multiple points of view, restoring to them the power to arouse infinite possible tales.

Credits

Although the research was conducted by all the authors and the *Conclusions* are part of the shared research project, the paragraph *The representations of the inhabited space and its extensions* is to be attributed to Elena Ippoliti, the paragraphs *The different points of view of images of the city* and *Seeing the city through a participatory multi-perspective story* are to be attributed to Michela Ceracchi, the paragraph *'Looking' at the world as it appears, 'seeing' the world as it is* is to be attributed to Giovanna Spadafora.

Notes

[1] For example, the scenes represented by Alò Giovannoli convey the perception of the site, sometimes even through historical or legendary re-enactments, not too concerned about the actual correspondence between image and reality; in his engravings Piranesi emphasizes the dimensions of the ruins of classical architecture with respect to the dimension of the human being, representing the scenes of urban life even in their decadence; the clean and evocative stroke of Acquaroni conveys the image of a city that is facing modernity.

[2] For example, even the choice of a particular form of representation, such as the one in 'elevation' between the axonometric and the perspective, expresses a precise cultural intention, namely that of outlining the urban space above all in its physical and material concreteness. The city is no longer simply the juxtaposition of some singular, albeit notable, elements, as in medieval symbolic figurations, but it is a complex organism. Organism described in its structure and internal articulation, through the highlighting of the relationships between emergencies and fabric and between solids and voids, and returned in its totality and entirety through the exaltation of the perfect balance established with the immediately surrounding area beyond of the walled enclosure.

[3] Think of the numerous collections of engravings, such as those by Piranesi, Vasi, Nibby, Acquaroni and many others, which return the image of the same urban views similar to photographic collections which, in their mutations, tell how the perception of those locations has changed over the course of time.

[4] Maps are interpretative objects and not a duplicate of reality too complex to be depicted in its entirety [Valentino 2020, p. 21]. An extensive and plural examination of the graphic language of maps is provided by the volume *Linguaggi grafici. Mappe* [Cicalò, Menchetelli, Valentino 2021].

[5] Think of the Babylonian *Mappa Mundi* (6th-5th century BC) which depicts the then known world, circumscribed within a circular crown that represented the Ocean. For further information on the topic, see the volume *Storia del rilevamento architettonico e urbano* [Docci, Maestri 1993].

[6] In this regard, see the volume *Cartografia e informazione geografica* [Lodovisi, Torresani 2005]. Paolo Perulli talks about "Cosmization of the territory", as the creation by man of "an order opposed to chaos [which] made the world habitable" [Perulli 2009, p. 11].

[7] We are therefore referring to the surveys of existing cities and not to the projects of ideal cities "based on pure visual representations of abstract concepts" [Vitta 1999, p. 174].

[8] "The Colleges of Cartographers erected a Map of the Empire which equaled the Empire in size and precisely coincided with it. Less devoted to the study of Cartography, the Successive Generations understood that that Map was Useless and, not without Impiety, they abandoned it to the inclement weather of the Sun and Winters" [Brotton 2017, p. 27], quote from the chapter *Del rigore nella scienza* in the text by Jorge Louis Borges [Borges 1961].

[9] In the first edition of his famous essay, in 1961, Koyré argued: "it is curious: two thousand years earlier Pythagoras had proclaimed that number is the very essence of things […]. Everyone repeated it, no one believed it. At least no one until Galileo took it seriously. […] Or more exactly, no one has ever tried to go beyond the practical use of number […] to make it an element of precise knowledge" [Koyré 1967, p. 97].

[10] Regarding the image of the city of Rome, real and ideal, see the studies by Italo Insolera [Insolera 2002], by Jessica Maier [Maier 2015; Maier 2020], by Cosimo Palagiano and Sandra Leonardi [Palagiano, Leonardi 2009], by Mario Bevilacqua [Bevilacqua 2018], and the description of Rome in the *Grand Tour* by Cesare di Seta [De Seta 2014].

[11] An example of parallel exploration of two cartographic documents is provided, in relation to the case of Milan, by the platform <http://www.ritrattidicitta.it/> (accessed June 4, 2023). While, an experiment in the contextual visualization of various iconographic documents is provided by the platform <http://vasi.uoregon.edu/> (accessed June 4, 2023), of the University of Oregon. The platform proposed here proposes to integrate these functionalities.

[12] The term is used by De Seta to describe those iconographic documents relating to the city in which, alongside its image, there are allegorical or symbolic images, legends, explanatory texts and dedications [De Seta 2011, pp. 5, 6]. An example of 'composite figurative text' is provided by Louis Marin with the representation of Strasbourg –Argentina versus Septentrion– by Barbier and Striedbeck [Marin 2014, tav. 1, p. 33; pp. 84-90].

[13] An example of the possibility of using segmented cartographic documents by associating information to individual portions is provided by the <http://nolli.uoregon.edu/> (accessed June 4, 2023) platform of the University of Oregon.

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Interpretation of the City Walls: Venice and Parma from Above

Chiara Vernizzi, Chiara Finizza

Abstract

Representing the shape of the city means fixing the physical consistency of a reality related to a certain time, through the knowledge of authors who over the centuries have tried to reconstruct the complex form of the city, representing it from above, simulating a point of observation without a doubt privileged and absolutely ideal. Venice and Parma are selected to explain the image of the city through authors who have recorded graphically from above, among other elements, the boundaries between nature and artifice. The parallel and compartmentalized narration is articulated through the reading of Jacopo de' Barbari's bird's eye view of Venice (1500) and Paolo Ponzoni's bird's eye view of Parma (1572). In fact, in this period, a particular urban iconographic representation is adopted, the 'planimetric perspective', obtained from a plan made following a geometric survey, so that the perimeter of the walls and the road plot appeared in all their completeness; the buildings are instead depicted with the perspective, described from a point of view located at variable height above the horizon. The growing attention of cartographers and designers towards the city is linked to the new type of state organization that considers the city as a functional entity enclosed within the walls, whose view from above allows us to understand its consistency and peculiarities.

Keywords: perspective iconography, image, city, urban walls, city doors.

Introduction

The image of a city can be metaphorically understood as a filter to observe the history of a culture and ideas [Nuti 1996, p. 15], in the relationships between art, science, visual perception, communication. These representations are first of all a figurative document [Nuti 1996, p. 12] through which information on the built space that meets the definition of city is communicated.
Over time, graphic methods to represent the city have used different conventions, by which urban information has been transmitted. This has produced different languages or ways of representing them, the result of choices in which cultural models converge, mechanisms of visual perception, figurative codes, technical skills, scientific knowledge, practical purposes and requests of the audience for which the representation is intended [Nuti 1996, p. 12].
Cartographic production is, therefore, understood not only as a document of the organization of the territory in which a society has historically evolved, but also as a testimony of the way this society is placed; only from the crossing of these two elements and from their diachronic interpretation is possible the identification of the functions of the city, its characteristics and the changes that have occurred over time.
Of course, cartographic production is not always able to offer a complete vision of the elements that make up the city: from time to time the prevalence of different motivations, led to a selection of the represented elements;

therefore, it is not always easy to compare subsequent documents; the very presence, in a certain historical epoch, of prospective or planimetric map production, or their mixing, depends on numerous factors interacting. They favoured some representations rather than others in relation to functionality, surveying techniques, dominant aesthetic canons and cultural and political influences of the society to which the map was destined.
Every historical image, even the most sophisticated, is never objective: it represents the way in which the client, on the one hand, and the author, on the other, have set themselves against the city to be reproduced and have interpreted and represented it. The city visible in a map is therefore never 'that city', but often the conventional idea of the city.
In order, therefore, to interpret the city as largely as possible, to understand its evolution that has led to the current urban forms, while it is essential to know its history on the basis of existing documentation and bibliography, on the other hand it is no less important to study how, over many centuries, there was perception of those forms, of how they through the cultural filters of respectively era, were collected, interpreted and transmitted visually [Nuti 1996, p. 133].
The image of a city, as a cultural vision, also reflects its limits and conditions: the different components, in fact, have had, depending on the case, greater or lesser impact, such as the conditioning due to the technical tools used, developed precisely to help or replace the eye in data transcription [Nuti 1996, p. 89].
Faced with the emergence of new ways of representation that claim to impose the real as a starting point to artistic work, the portraits built on the old and now proven medieval models during the fifteenth century will gradually cede the field to the 'eye bird view of real' [Nuti 1996, p. 12].
The claim of 'truthfulness' for the image of the city begins to be formulated explicitly towards the end of the fifteenth century; the truth becomes the acknowledged starting point of the image, in the sense that all the information contained in it derived from a personal contact of the author with the place described. The city that the designer approaches physically and personally become in its whole the object of representation and the method by which

Fig. 1. Perspective map of the city attributed to Jacopo de' Barbari and published by Antonio Kolb, Venice, 1500 [Cassini 1971, pp. 30-33].

it is, in this era, portrayed is that of perspective, used in Florence in the early 1400s by Filippo Brunelleschi.
In the fifteenth century the 'urban and territorial survey', in the current meaning of the term, is considered a fundamental discipline for knowledge of the city and the countryside and, in parallel with the expansion of cultural interests typical of that time, direct and indirect measuring systems also evolve, and the treatise on the subject begins in embryonic form.
Many names of cartographers, architects and engineers who in the second half of the sixteenth century dedicated themselves to territorial and urban cartography, but a separate affirmation merits the cartography of Rome, which continues to monopolize the attention of scholars including Leonardo Bufalini, author of a map of the city in 1551, map drawn up on the basis of a general survey, and Antonio Tempesta, author, in 1593, of a pseudo-perspective representation with a rather high point of view, such as to allow immediate reading the overall urban structure, the green areas, the monumental buildings and the road network.
The type of image produced by the perspective views don't produced a suitable vision, because, with the compression of the elements due to the inclined of perspective, only a small part of the urban objects could be reproduced. It is therefore used in this period a particular urban iconographic representation, based on a plan made from a geometric planimetric relief such that the perimeter of the walls and the road plot appeared in all their completeness; the buildings, on the other hand, are represented with three-dimensional views, in order to give a schematic representation of their volumetric consistency [Nuti 1996, p. 144].
In this period, of great importance is also the *Cosmography* of Sebastian Munster, dated back to 1544, which placed among the declared objectives 'the images and descriptions of the noblest cities', and demonstrates the growing interest in urban iconography. Only in 1572 was born as ambitious publishing enterprise the first book of the city, a set of representations completely independent of a text and no longer subordinate to maps: *Civitates Orbis Terrarum* is the name commonly accepted for all the work, composed of six volumes published between 1572 and 1617; this work soon became a true prototype, cliched and reissued with additions: model, in short, of a new publishing genre that will last a long time [Nuti 1996, p. 13].
The most innovative aspect of this production is due to the characteristics of the basic setting: the relationship; in fact, it is no longer that between the customer and the product to be performed, but between the finished product and the public as an end user. For this reason, the work is placed on the borderline between market and science, between object to sell and instrument of culture. The *Civitates* is thus configuration, as an expressive document of a long research that has been carried out around the creation of a language for the representation of the city.

The 'planimetric perspective'

The 'planimetric perspectives', compared to the first sixteenth-century views, modified the point of view of the representation, to eliminate the inconveniences arising from the view from above, if made at an angle not too wide with respect to the horizon, led to the overlapping of parts built in the representation of densely built areas. The most appropriate term to indicate this new way of representing is that of 'eye bird views', because it explains both the two-dimensional metric origin and the three-dimensional pictorial aspect [Nuti 1996, p. 138].
This system of representation, aimed at overcoming the limits of topographic conditions, of technical means, of the human gaze, is thus developed through an artifice: "a 'geometric ratio' ensures respect for the overall shape, the relationship between the parts and the whole, the arrangement of the neighbourhoods. The individual parts of the city are the smaller volumetric units, the blocks of houses. One can thus identify the spatial framework of the urban organism in its successive phases of growth, one can perceive the city as an object composed of full and empty spaces, and the nature of the differentiated voids in squares, streets, free spaces" [Nuti 1996, p. 144].
Dull of note is the attention paid to the minor building fabric, which is acquiring urban dignity, and therefore graphics, like the great architectural organisms. The search for a type of figuration that consistently analyses the relationships between roads, minor buildings, green spaces and monumental buildings is constant in this field throughout the seventeenth century.
The second criteria, the '*ratio perspective*', "describes the external aspect of the city, the place that surrounds it with the hills, the rivers, the fields, then its border, with the walls and the bulwarks; finally, the interior, with the appearance of buildings both public and private, so that they can recognize and possibly compare the different ways of building" [Nuti 1996, p. 144].

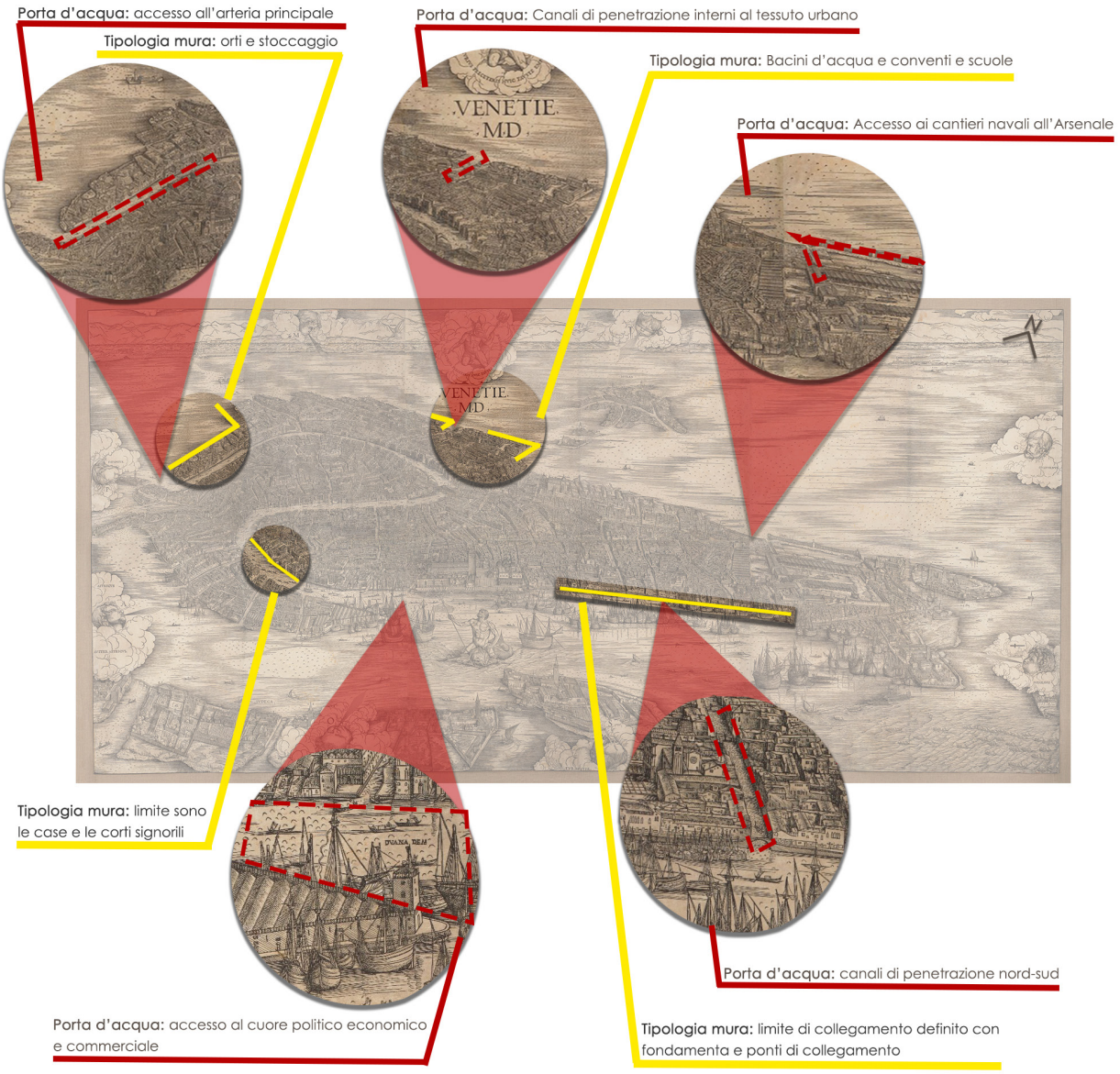

Fig. 2. The liquid walls of Venice in the plan of de' Barbari: the water doors and the functions between land and water (elaborazione grafica Virginia Droghetti).

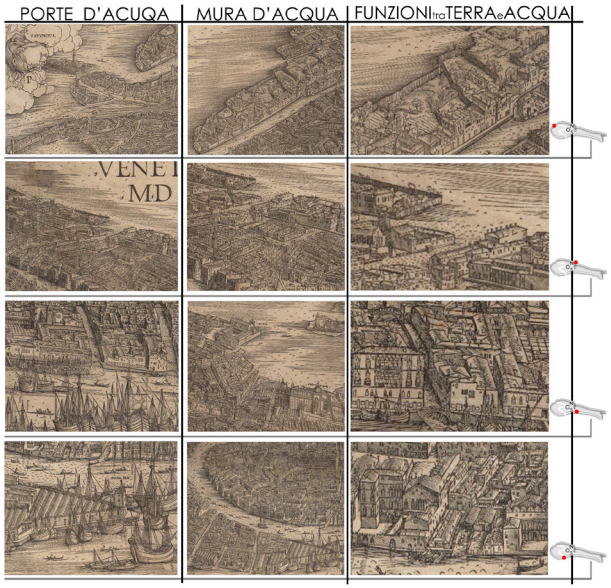

Fig. 3. Synthetic abacus: the water doors, the walls and the functions between north and south edge (graphic elaboration by Virginia Droghetti).

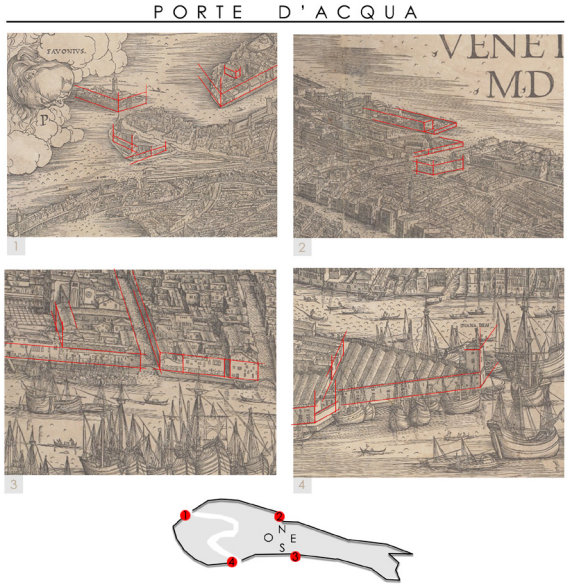

Fig. 4. A study of the lines of construction of the water doors in the map of de' Barbari (graphic elaboration by Virginia Droghetti).

The process of construction of the prospective plant begins right through the 'geometric ratio', while the 'ratio perspectiva' has to complete the representation keeping in mind the purpose to be reached: to present to the observer an image with effect-true, as credible part of the observed reality [Nuti 1996, pp. 149, 150].
In the representation, a thin border runs between imitation of the true and simulation of the true, conflict that will be resolved, in part, in the eighteenth century in favour of the measure, with the total renunciation at the second moment, the overlap of the elevation.

Jacopo de' Barbari's bird's eye view of Venice, published by Antonio Kolb in the 1500

The prospective map attributed to Jacopo de' Barbari (fig. 1) is a woodcut printed on six sheets of six matrices and measures 134.5x282 cm. The matrices are kept at the Museo Correr in Venice, while the exact number of the original issue is not well known: copies of which are found in several places, in Venice there are six copies [1]. The work, commissioned by Anton Kolb, required a work of three years, and was published in 1500 by the same client with the title on top at the centre of the map: *Venetie MD*.
The city is represented with great skill in which particular attention is paid to the dictates, allowing to bring out the clarity of the singular urban structure, despite its extraordinary variety highlighted by the interlacing of canals, fields and campi (venetian squares). The map is surrounded by eight faces that blow, to personify the main winds, indicated by Latin names. Also, in the upper part of the engraving are reported, in addition to the title, the gods Mercury and Neptune; therefore, the symbols of tradition such as the lion of San Marco are absent, alluding to a profane vision.
Venice is presented as a solid manufact emerging from a liquid space. A solidity that is revealed, in particular, in relation to the mobile environments that de' Barbari represents in the unfinished margins of mud and wood still under construction. This dichotomy between completed

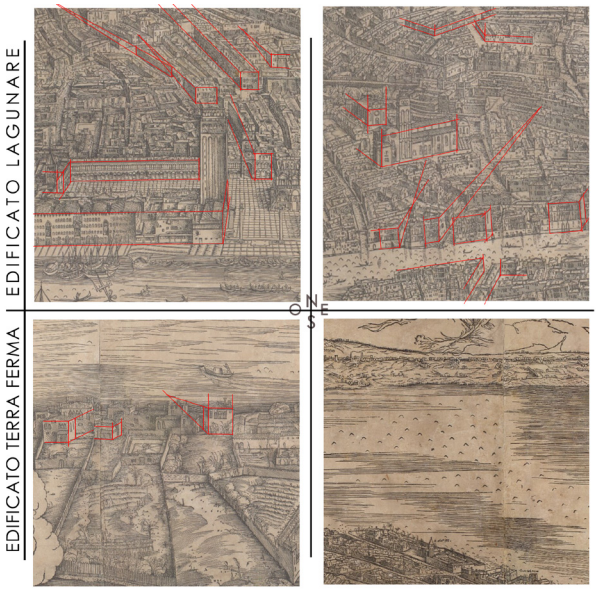

Fig. 5. A study on the lines of construction inside and outside the walls in de' Barbari map (graphic elaboration by Virginia Droghetti).

and 'fragmented' city is also revealed in the representative mode: deforming and approximating the marginal areas north of the city (gardens, vegetable gardens, shipyards and empty land), expands and highlights the inland waterways, brings out the area of the Arsenale (centre of the republican fleet) and celebrates San Marco (political and religious centre) with a theatrical perspective built on the geometric pattern of the pavement of the square. Until the last centuries of the Middle Ages, as one of the earliest iconographic sources of Venice affirms [2], its appearance is completely different: there were no streets and there was no land network. This network was established only later to connect the various parishes when the network of channels came to overlap a second network of land. In addition, the numerous reclamations work led to an urban thickening that was determined in rationalizing the relationship between the expanding settlement systems and its waters, to produce a real geography of spaces bordering between nature and artifice.
These transformations had shaped and defined the urban context according to new rules, also 'geometric', and had in fact generated the formation of a new model of urban 'edge' (fig. 2). The plan of the de' Barbari, observed in its details, records in evident way the role and the characterization of these edges that did not represent only the direct source of supply for the workings, but also represented the most convenient transit route for the transport of materials from the mainland. On these edges, therefore, a geographically marginal area is formed which is a consequence of a late structural consolidation that since its first organization qualifies an indispensable connective node. Observing the map, in particular the crown on board reveals itself in all its morphological diversity and accuracy of detail: to the north, still uncertain and transitional boundaries in which surface waters and beaches served as a line of demarcation between the city and the lagoon, between land and water; while to the south, towards the basin they march, the edges already manifest themselves as real urban organisms (fig. 3). "Here, the structure of the city loosened up to make way for wide, simplified geometries on which lay undeveloped areas, vineyards and vegetable gardens and a few dwellings, in which, to use the words of Cristoforo Sabbadino, the lagoon acted as the 'walls of Venice'" [Sabatino 1987, p. 23]. This affirmation is repeated later by Michele Sanmicheli who defined the lagoon as the fortification of this city, as if they were walls [3].
The precision of the graphic detail suggests a representation of the city based on an accurate urban survey, contracted, then, in perspective from an anomalous point of view from above. A point of view that alludes to an ideal vision, given the impossibility of reaching such a high point of view at that time. A sign of the 1500s that lies intermediate between science and art, in which the meticulous accuracy of the details is sometimes opposed to the perspective deformation resulting from the adoption of several vanishing points (fig. 4). The map offers a definitive and at the same time changing image of Venice, which is, like the city itself, the author manages to maintain a dynamic relationship with the reality that represents and the movement that inhabits it. This peculiarity still makes the plan of de' Barbari one of the most used sources to understand the figurative space of Venice. Along with the map of de' Barbari, there are other representations, less detailed and later, which reaffirm the structural value of the lagoon environment [4].
Despite the early sixteenth-century visions, the myth of Venice still lives today the close relationship between land and water, the waterfront and the lagoon liquid plain [Dal Fabbro 2020]. A lagoon that in this map is represented with

Fig. 6. The noble city of Parma by Paolo Ponzoni and published by Francesco Conti, Piacenza, 1572 (Archivio di Stato di Parma, Mappe e Disegni, vol. 2 n. 13).

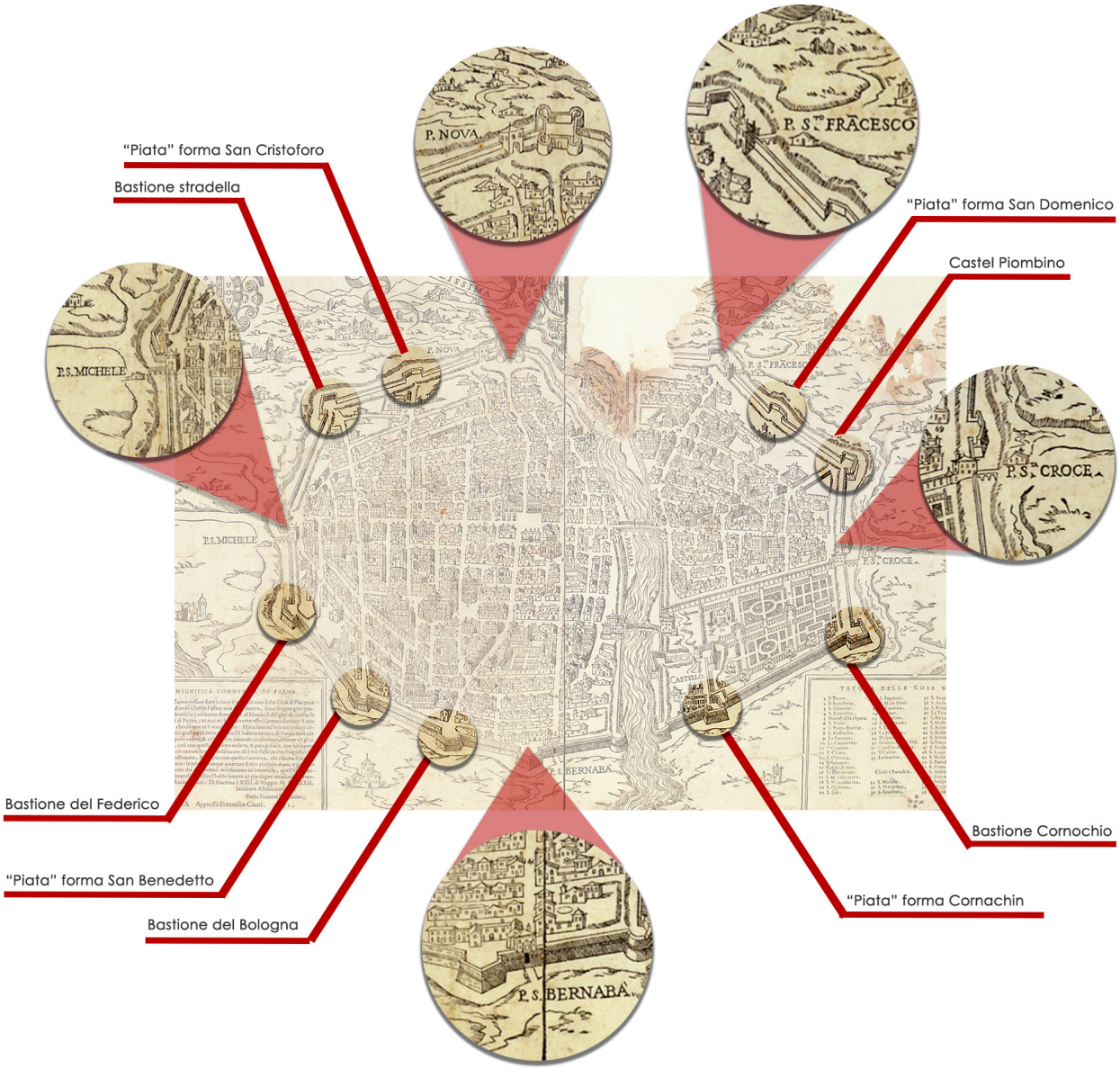

Fig. 7. The walls of Parma in the Ponzoni map: the gates and the bastions (graphic elaboration by Virginia Droghetti).

linear and dotted lines, and whose landscape 'beyond the liquid walls' even if slightly hinted provides a clear idea of the mainland (fig. 5).

La nobilissima città di Parma by Paolo Ponzoni and published by Francesco Conti, Piacenza, 1572

In 1572, Francesco Conti published in Piacenza the 66×88 cm map etched on copper, entitled *La nobilissima città di Parma* (fig. 6), made by Paolo Ponzoni and now preserved in the State Archives of Parma, in the collection *Mappe e Disegni*, and another copy at the Palatine Library of Parma.
The city is represented according to an orientation rotated of 180 regarding the today conventional view of the city that sees the geographic north in the upper part of the urban representation; in the upper part of the engraving, there is in fact a reference to the hilly slopes of the Apennines, which is located south of the city.
Also, in the upper part of the engraving are shown, in addition to the title, inserted in a festoon, three coats of arms of uncertain interpretation [Vernizzi 1994].
Very important is however the reference to the cardinal points, inserted in a correct way to the east and west of the Via Emilia (obviously in reference to the rotated representation of 180); there are no graphical or numerical references to the reduction scale and the unit of measures used.
The representation summarizes the schemes indicated above: within the urban fabric, circus-written by the city walls (fig. 7), formed by buildings sketched and tightly leaning against each other to form the blocks, stand out some buildings that are designed with greater clarity and detail: are as often happens in urban representations of those centuries, the centres of civil power (the civic square with the Palazzo del Comune), the religious centre with the cathedral and the baptistery, churches and parishes and works to defend the city. The buildings facing the urban stretch of Via Emilia are represented in a schematic way, but are equally recognizable: see for example the Palazzo del Comune with the very high civic tower, the imposing mass of the SS.ma Annunziata and the cruise plan of the Ospedale Maggiore.
Also, the position, the shape and dimension, although indicative, of the city doors (fig. 8) are very precise, and contributes to conferring on this representation the value of very reliable iconographic document in the description and diffusion of the knowledge of the architectural and urban elements present in 1572, date contained in the lower left panel in the engraving.
In this type of perspective iconography also becomes fundamental the 'Table of notable things', present in the lower right of the engraving: a real legend, in the modern meaning of the term, further descriptive element that gives each building a reference number, with descriptive reference in the 'Table of notable things' emphasizing, therefore, the importance of some places compared to others.
The representation of the elements inside the urban fabric, from the geometrical point of view, is often closer to an axonometric projection (therefore parallel) than to a perspective (central projection) as often the vanishing points are missing and the elements in their dimensions projected from an improper projection centre are clearly visible; the representation of the scattered settlements in the territory surrounding the city is different, which instead seem to see the horizontal lines converge towards different vanishing points.
The representation of the walls is very accurate and allows to see in a precise way the different configuration of the various bastions, reading, depending on their location along the walls, the inner part or the outer part (fig. 9).
The configuration of these architectural elements is rigorously described, highlighting the linear or curvilinear forms that are confirmed in the different positions by the bibliographical and historical-architectural references available, allowing a precise and reliable documentation of the real configuration of the walls, also described in other plants of the city, both coeval (albeit less accurate) and subsequent.
All along the walls the three-dimensionality is enhanced and underlined by the use of shadows applied along the sides facing north and west, while the shadows are completely missing. Also, in the representation of the fabric built inside the walls sometimes appears the shadow carried, consistently reported in the same sides, but not present in a homogeneous way on the buildings of the whole city (fig. 10).
The representation of the walls is completed with the indication of the moat, whose escarpments are represented with a dense hatching, and whose crossing is punctually described through the representation of bridges at the gates on all sides of the city.

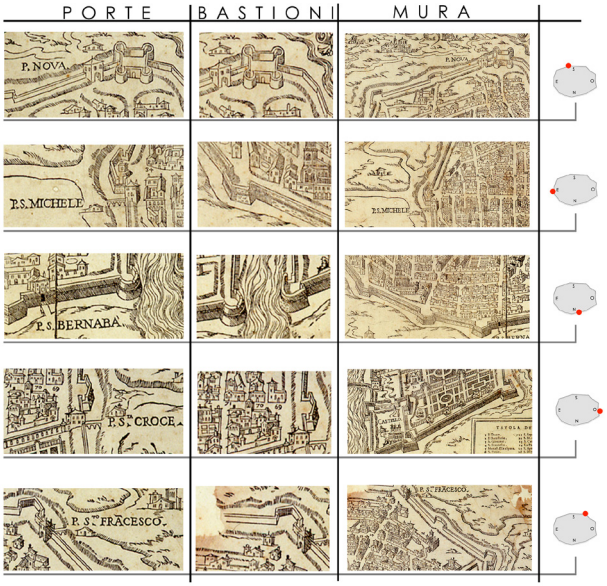

Fig. 8. Synthetic abacus: doors, bastions and walls (graphic elaboration by Virginia Droghetti).

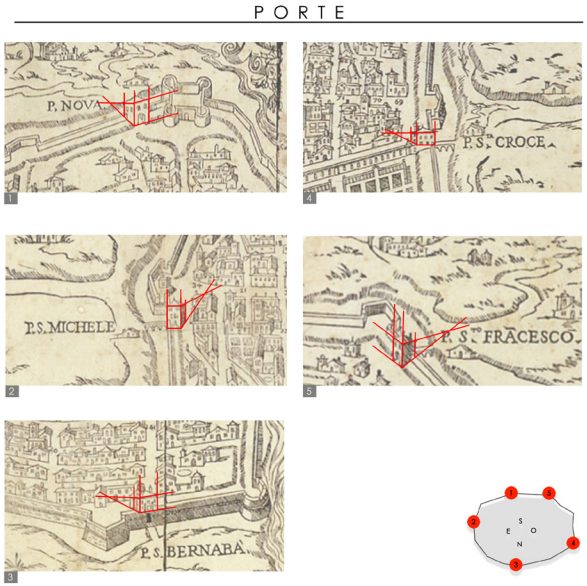

Fig. 9. A study of the construction lines of the doors in the Ponzoni map (graphic elaboration by Virginia Droghetti).

Conclusions

Taking the city as a progressive development of an organic vision –to use Franco Farinelli words an *imago mundi*– is the basis of the exploration on metaphors on which the stories of the urban image are based [Farinelli 2009].
The reading of the city through its representations is obviously an exercise that must take place knowing the cultural filter with which the author has transcribed reality, framing it in the temporal, political and scientific context in which it moved.
The urban images described above were chosen not by chance: almost coeval, both the result of a surveying operation that defines the urban structure from a planimetric point of view in a precise way, allowing the reading of the fabric in a timely manner, all accompanied by a three-dimensional representation with a leg on each side of parallel and central projection, aimed at describing the characteristics of volumetric consistency and the image that the city wants to transmit in a logic of objective communication of urban events.
Specifically, Venice is an inexhaustible source of evidence: widely painted, portrayed and filtered by artists, engravers and topographers whose outcome is a dense cultural product of knowledge. This heritage contributes to the knowledge of the places that, in Venice, in 1500 sees one of its first testimonies in the woodcut of Venice by Jacopo de' Barbari. In fact, this solid heritage of observation between real data, scientific representation and typographical accuracy allows to observe, through the different points of view used to the author, the dominant elements of the city of Venice.
Compared to the previous arrangement, here the fabric has thickened with a consequent contraction of the water spaces. A meticulousness that allows to read the urban space of water and land in all its details. This issue intensified in the second half of the fifteenth century when the fronts of the city, as mentioned, began to come alive under the pressure of a growing demography. It was around the middle of the century that the interventions aimed at regulating, through the construction of banks, the 'stretch marks' of the edges of Earth's space

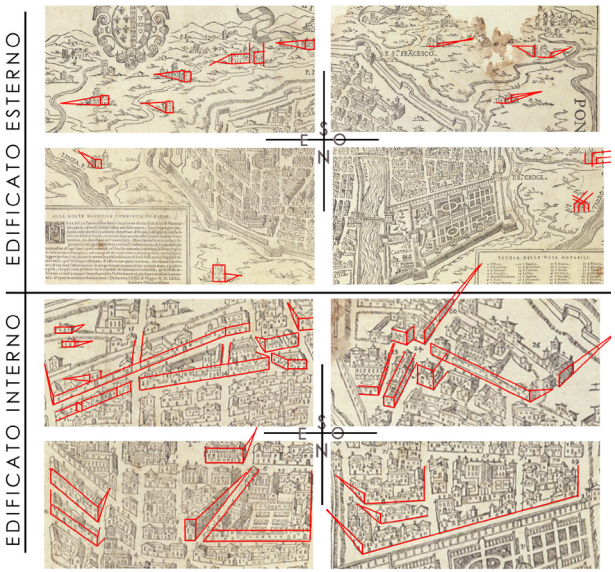

Fig. 10. A study on construction lines inside and outside the walls in the Ponzoni map (graphic elaboration by Virginia Droghetti).

were also concentrated. These were the years in which the expansive push, the control and the management of the urban space, saw a slow transition from fragmentary practices to actions of overall logistics to smooth the profile of the dolphin city [Howard 1997]. The idea of Venice as a city in continuous motion is recognized as a significant value of its own image. A motion that is reflected in its urban fabric that, after settling in the amalgamation of the elementary urban cells (the islands of primitive formation), took care since the thirteenth century to extend its boundaries beyond the natural line of demarcation between land and water. If for the other city realities, the urban expansion corresponded to an advance beyond the medieval walls, for Venice the process was more invasive because it provided the destruction of the liquid walls –or the lagoon– that surrounded it. More than growth in Venice, there was talk of change, referring to the relationship between land and water, but also the settlement and functional structure of the city.
Even Parma [Miani Huluhogian 1984], despite the different role has historically played, has known a great representative fortune, which we find above all, in addition to the perspective plan of the Ponzoni, in some cornerstones of the zenith representation such as the map of the Emerald of 1592 and the Sardinian Atlas of 1767, framed as true tools of knowledge prior to the implementation of important interventions, of urban type in the first case (the choice of the location of the Farnese fortified citadel) and of a fiscal type in the second case (the mapping of private property).
Both the above-described representations, thanks to the point of view placed at the top, with an inclination of about 30 hectares with respect to the horizon, allow to keep together the description of the planimetric consistency of the urban fabric and the reading of the volumetric and formal image of the two contexts, with particular reference to the system of walls, built and natural, that characterize them.

Notes

[1] The original print was probably twenty copies. In Venice there are six, including four at the Correr Museum; one at the Marciana National Library and one at the Querini Stampalia Foundation.

[2] The reference is to the Venice Plan from the "*Chronologia Magna ab origine mundi*", by Frà Paolino da Venezia, Venezia, 1346. Manuscript paper on parchment of 350x340 mm. placed in the Marciana Library. The centre is formed by the compact structure of the islands and their churches, whose name identified, also in the current name, the various areas of the city.

[3] In ASVe (archivio di stato di Venezia), *Scavi ed Esecutori alle acque*, reg. 119, c. 23r-v.

[4] The small woodcut Vinegia in the vigorous synthesis imagined by B. Bordone of 1536 in his '*Isolario*', and also the famous map of 1557 by Cristofero Sabbadino.

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The Narrative of the Urban Landscape in the Frescoed Galleries of the Vatican Museums and Palazzo Doria Spinola

Michela Scaglione, Martina Castaldi

Abstract

"He who has experienced flight will walk looking at the sky because there he has been and where he wants to return", so began the genius Leonardo about the studies he was making on flying machines. Not only Da Vinci, but the man in general, has always had a propensity for what he could not reach, an urge to create tools that would allow him to reach different points of view. Between Humanism and the Renaissance, the new cultural liveliness led man to undertake great geographical explorations, undertaking numerous studies to create detailed maps and charts.
The wealthiest families and prominent personalities, in general, began to take an increasing interest in cartography, asking astronomers and cartographers to make maps for their homes that initially only contained descriptions of the ancient world, to be progressively updated with newly discovered areas. The fashion became so widespread that aristocratic and clerical buildings began to be decorated in paintings or frescoes; the pictorial maps in the Gallery of the Vatican Museums and the Gallery of Palazzo Doria Spinola in Genoa are famous examples.
Therefore, the research aims to analyse the similarities and differences between these two cartographic representations in bird's eye perspective views of the Ligurian capital.

Keywords: cartography, Palazzo Doria Spinola, Vatican map gallery, urban landscapes, bird's eye perspective.

Introduction

The representation of the Earth on the elevations of public buildings has a very ancient tradition. However, it was only during the Renaissance that the image of the Italian peninsula began to be reproduced. This subject spread in a historical period when there was a greater interest in forming images that conveyed a sense of superiority and power. During Humanism and the Renaissance, 15th-16th centuries, Italy, the lively centre of this new historical period, went through a phase of evolution in stark contrast to the medieval philosophical thought that had characterised it in the previous century. Cultural renewal led to the re-reading of Hellenic-Latin texts, and, at the same time, the first geographical explorations outside the Mediterranean basin began. New maps began to be drawn up with bird's eye or pseudo-orthogonal views; they no longer had merely practical purposes but were produced for scientific and political-cultural interests.
"The use spread so widely in Italy that the *mappa mundi* mural became, in the 15th and 16th centuries, an almost ritual decoration of the seats of power, in both public and private spheres. However, the phenomenon is not just Italian: the general spread of maps and geographical representations in the 15th century is attested throughout Europe" [Milanesi 2012, p. 100]. The representation of cartographic maps in buildings of power represents, in the Renaissance, the relations of a sovereign or a state with the rest of the world and continues into the 16th century, when the *mappa mundi* is transformed into a series of maps representing

the different parts of the world using the oval 'universal' or the double hemispheric. "The choice of a geographical theme, for the decoration of a princely or prelatial flat, has nothing unusual or original about it: on the contrary, it is even codified in the well-known text by Cardinal Paolo Cortese, according to whom maps, offering the viewer the noble and dignified entertainment of contemplating the beauty, vastness and variety of nature, which consoles and improves the mind, are well suited to a prelatial residence. For all princes, then, the '*ex rerum et locorum cognitione utilitas*', the utility that comes from knowledge of things and places, referred to in the plaque with which Gregory XIII placed the seal of his arms on the Gallery of Maps in the Vatican in 1581, always applies" [Milanesi 2012, p. 108].
The case study of the map gallery on the first piano nobile of the Palazzo Doria Spinola in Genoa will be taken as an example in comparison with the famous map gallery in the Vatican Palaces. A historical, geopolitical and geometric-representative analysis of bird's-eye perspectives will be developed.

Palazzo Doria Spinola in Genoa

The Doria Spinola palace (fig. 1), today the seat of the prefecture of Genoa, was built in the Acquasola area for Admiral Antonio Doria, former marquis of Santo Stefano, between 1541-1543 [Labò 1970] and was included in the prestigious list of the Rolli as early as 1575 in the highest level of the palace destined to host "Pope, Emperor, and Legate Cardinal or other great Prince" [1].
In 1624, the palace passed to the Spinola di San Pietro family, who raised it by one floor and owned it until the 20th century. Then, after a brief period under the ownership of the Municipality of Genoa, the building passed to the Province of Genoa in 1879.
The palace's area is land of considerable strategic and socio-political importance as it is located close to the monastic complex of Santa Caterina; this area is prized as private individuals cannot usually build on it. The most plausible explanation for this type of concession is that Antonio Doria had close relations with the church and the Spanish crown of Charles V [Santamaria 2011]. The Doria family in general, but in the specific case of Antonio, brought to Genoa the feverish desire for building and renovation that would last throughout the Renaissance; the property anticipates what was to be the Strada Nuova project in Genoa with the subdivision and building of the new noble palaces. The area purchased by Antonio contained within it a series of medieval *domus* characterised by a stone portico on the ground floor, of a public nature, and a private first floor; in the building renovation practice previously anticipated, the project attributed to Bernardino Cantone [Labò 1970] with the help of Giovan Battista Castello, envisaged an amalgamation of the existing buildings behind an apparent symmetry of plan and elevation. The façade is laid out according to a regular partition frescoed by Lazzero and Pantaleo Calvi, depicting the triumphs of the ancient Romans, accessed through a marble portal with coupled columns designed by Taddeo Carlone in 1580.
The interior is distributed around a square loggia courtyard on two levels with Doric capitals leading to the private rooms and connecting the gallery built under the Spinola family. In the mid-19th century, a new urban layout of the city of Genoa was outlined, leading to the construction of Via Roma in connection with Via Assarotti, which was a break in the mediaeval fabric and led to the elimination of the Renaissance gallery and the cutting off of the right-hand edge of the main façade; the original appearance remains documented in the Flemish panels executed by Pieter Paul Rubens.
The interior frescoes in Palazzo Doria Spinola are by Luca Cambiaso, Valerio Castello and the Calvi. The latter were

Fig. 1. Palazzo Doria Spinola in Genoa (by Di Superchilum – Opera propria, CC BY-SA 3.0: <https://commons.wikimedia.org/w/index.php?curid=31937743> (accessed May 15, 2023).

16th-century Genoese Mannerist painters, pupils of Perin del Vaga; they obtained numerous commissions for façade frescoes throughout 16th century Genoa but were made famous by the work they executed for this building; in it, they depicted the exploits of the Doria family in comparison with those carried out by ancient Roman figures.
The Calvi family not only frescoed the façades but also devoted themselves entirely to the decoration of the upper loggia (fig. 2) in 1584, with views of fortified Italian and foreign cities realised in large panels above a faux marble plinth decoration. Rome, Venice, Milan and Palermo are depicted on the south side; Messina, Florence, Jerusalem and Constantinople on the east side; Bologna, Antwerp, Genoa and Naples on the north side and Ancona on the west side. Unfortunately, with the renovation of the plan, which led to several doors opening, traces of the maps of Constantinople, Bologna, Ancona and Palermo were almost wholly lost.
The decision to decorate the gallery of Palazzo Doria Spinola with views of cities was probably taken from the recently completed gallery of Vatican maps due to the close relations Antonio Doria had with the Pope and the Spanish crown; however, it is more plausible that the choice was also dictated by the specific interests of the owner being "a local unicum, since no other examples of such decoration are known in Genoa" [Boccardo 1982].
The Calvi family almost certainly used the geographic maps of the *Civitates Orbis Terrarum* (figs. 3, 4) as their primary iconographic source and the available geographic tables as support. Curiously, the only city that is not a perspective plan is precisely the city of Genoa, which is primarily a view of it. Labò showed how it, although perfectly representing the historical urban fabric of the 16th century, is the result of a later realisation in 1889 attributable to Nicolò Varni (figs. 5, 6). The portion of the wall on which it was painted was previously intended to represent a city plan that was lost with the transformations that occurred after the purchase of the property by the Province of Genoa [Santamaria 2011].

Fig. 2. Loggia superiore of Palazzo Doria Spinola in Genova (photo by the authors).

Belvedere Gallery of the Vatican Palaces

The Belvedere Gallery, famous under the name 'of the maps' (fig. 7) and now part of the Vatican Museums in Rome, was built between 1578 and 1579 by the Bolognese Pope Gregory XIII Boncompagni to a design by

Fig. 3. Naples in the Gallery of Palazzo Spinola in Genoa (photo by the authors) and in Civitates Orbis Terrarum by G. Braun and F. Hogenberg: <https://archive.org/details/civitatesorbiste00brau/page/n3/mode/2up> (accessed May 15, 2023).

the architect Ottaviano Mascarino with the support of Egnazio Danti and Girolamo Muziano for the decorative apparatus [Moretti 2020].
In texts of the time, such as in the *Ambulatio Gregoriana*, reference is made to the Pope's particular request to depict the entire Italian peninsula within his gallery in order to "reflect on the government of the territories, on the resolution of discord, on the maintenance of peace among peoples: as if to declare that the entire decorative scheme on a monumental scale has an ethical and civil value even before being religious" [translation from Watt 2005, p. 179] [2]. In the Renaissance, the Dominican Egnazio Danti, an Italian architect and cosmographer, was commissioned by various noble families, such as the de' Medici, to draw up maps and charts to be placed inside their wealthy palaces or villas as wall decorations. During his stay in Rome, he was called upon by Gregory XIII to reform the calendar, which will go down in history as the Gregorian Calendar, and to draw up, together with his brother Antonio, the gallery above. Danti most likely took up the idea of the circumnavigation of the peninsula from the plates of Leandro Alberti, published in 1550 in the text '*Descrizione di tutta l'Italia et isole pertinenti ad essa*', depicting the exact sequence of the regions within the individual frames, enriching them with quotations, inscriptions and war episodes of particular relevance [Moretti 2020].
Gregory XIII's gallery was designed to be enjoyed not only privately but also by a limited public in order to make them aware of the Pope's territories; this intention was also stated in an inscription above the north portal: 'Italy, the noblest region in the whole world: as it is divided by nature by the Apennines, in the same way for this purpose the gallery is divided into two parts, on this side the one bounded by the Alps and the Upper Sea, on this side the other bounded by the Lower Sea […] Gregory XIII, *pontifex maximus*, in the year 1581, wanted these things, begun by himself, to be finished with skill and splendour, not so much for his benefit as for that of the Roman pontiffs, and so that the utility would not be absent from the delight and knowledge of things and places' [3]. The original plan was for the gallery to link with the Sistine Chapel located on the third floor of the west wing of the Cortile di Belvedere; therefore, it was conceived as a large elongated room extending 120 metres covered by a coffered barrel vault.
The latter hosts a series of scenes of a historical, hagiographic and biblical nature, depicting episodes related to

the geographical locations below, framed within mock architectural parts adorned with putti and characters from the Old Testament: the authorship of these decorations is attributed to Girolamo Muziano and Cesare Nebbia [Fiorani 1996].
The gallery was designed as a walk through all of Italy's territories from north to south. The central part houses thirty-two maps, called primary, measuring 4.30x3.30 metres, depicting the regions of Italy (fig. 8) to the right and left of the Apennine chain, and eight maps, called minor, depicting the large port cities (Civitavecchia, Ancona, Genoa, Venice) and the smaller islands (Tremiti, Elba, Malta and Corfu) located at the ends of the gallery. In the south portal, two maps of the entire Italian peninsula represent '*Italia antiqua and Italia nova*', as the inscription states.

Comparison and analysis of the urban landscape representations of Palazzo Doria Spinola in Genoa and the Belvedere Gallery at the Vatican

During the 15th-16th centuries, the interest in cartography became increasingly preponderant thanks to the spread of the very first printed atlases; aristocratic families began to request astronomers and cartographers at court to produce maps of old and recently discovered areas to embellish their residences. During the mid-16th century in Rome and Venice, several publishers, commissioned by aristocratic families, began to print and disseminate maps following the example of the emblematic *Theatrum Orbis Terrarum* by Abraham Ortelius printed in Antwerp in 1576. Examples of this new decorative impetus include Pope Innocent VIII who commissioned Pinturicchio to depict various perspective views of Italian cities in the loggias of Belvedere; those by Bellini commissioned by the Gonzagas; those of Cosimo I de' Medici; the gallery of Palazzo Doria Spinola in Genoa and finally the gallery of maps in the Vatican of Gregory XIII. The last two examples mentioned above were produced almost at the same time: for this reason they are comparable in terms of representative geometric techniques, knowledge of places and also in political and cultural practices.
By analysing the Roman and Genoese maps in terms of similarities and differences, an initial similarity can be seen in the choice of representing specific geographical areas or cities rather than the entire known world (figs. 9, 10): Palazzo Doria Spinola depicts the most important Italian

Fig. 4. Milan in the Gallery of Palazzo Spinola in Genoa (photo by the authors) and in the Civitates Orbis Terrarum by G. Braun and F. Hogenberg: <https://archive.org/details/civitatesorbiste00brau/page/n3/mode/2up> (accessed May 15, 2023).

cities and some large foreign cities such as Jerusalem, Antwerp and Constantinople. In contrast, in the Vatican, all Italian regions and the possessions of the papal state are represented in a monothematic manner, except for a few islands such as Corfu and Malta. The reason for this particular choice can be inserted in an exact socio-cultural and political context in which Gregory XIII decided to create a space where the binomials ancient-contemporary and Roman-Christian history would merge into a single topographical and historical narrative within the drawing highlighting his possessions; "The presence of islands and promontories [...] complete the space and resolve the political borders in the liquid confines of the Mediterranean. Of this terrestrial space, crossing it as in the ceremonial practice of every possession, the modern pontifex, the new Augustus, symbolically assumed spiritual dominion: Gregory, commissioner of the Gallery of Maps [...] the pope of space and time" [Moretti 2020, p. 91].
The Genoese case, on the other hand, depicts several Italian and foreign cities to emphasise the power of the Doria family, which, thanks to its prestigious fleet and its wealth, was able to weave relationships such as that with the Spanish crown of Charles V, honoured by the depiction of the city of Antwerp, or that with the papal state, honoured by the maps of Rome and Jerusalem.

The point of view of the frescoes designed by the Calvi brothers is almost zenithal, the street layout of the cities depicted is perfectly legible, generating a feeling of control over the entire urban fabric.
The architectures are represented in cavalier axonometry with particular attention to the details of those strongly recognisable elements that characterise and make the city recognisable. The colour schemes used in these frescoes are repeated in a similar manner.
The urban fabrics are set in a landscape context that mirrors the real one with references to natural elements such as rivers or mountains.
The Belvedere Gallery is configured as a space animated by the presence of maps and enriched by allegorical paintings and historical events related to the maps themselves. They are almost all pseudo-bird's-eye views of regional thematic maps in which reliefs, architectural elements of the most important cities, allegorical and mythological figures and toponymic inscriptions praising and explaining a specific area are depicted; there is no indication of scale, graduation or orientation, which is however likely to be north. Also, thanks to the aid of a solar wind rose [Gambi, Pinelli 1994]. Despite being maps of a historical-geographical nature, there are explicit references of a religious nature, such as figures of saints or sacred episodes, and of a warlike

Fig. 5. Genoa in the Civitates Orbis Terrarum of G. Braun and F. Hogenberg: <https://archive.org/details/civitatesorbiste00brau/page/n3/mode/2up> (accessed May 15, 2023).

nature, such as armies lined up in a battle with weapons and horses (fig. 11), which had increased papal power. The figures present that animate the maps are the most diverse, for example, in the map of Liguria Christopher Columbus in the guise of Neptune with a trident and his ships sea monsters, naval fleets and small military camps.
The result is a representation that not only returns geographical data but a narrative that also includes socio-economic aspects of that territory (fig. 11). As for the maps of Palazzo Doria Spinola, they represent a closed portion of the territory as they focus on specific cities with the inclusion of elements that animate the scene, such as animals (fig. 12), people and means of transport; in this case, there is a faithful narrative of the city and not a strictly cartographic monothematic representation. They are also depicted with a pseudo-perspective view from above, almost zenithal, with architectural elements in cavalier axonometry, thus making them look more like real city views than maps. Also, in this case, there is no reference to scale, graduation or orientation; furthermore, compared to the Vatican maps, in this case, there are no toponomastic or didactic inscriptions other than those identifying the city depicted.
Both representations are pictorial rather than cartographic, even if from an urban and topographical point of view,

Fig. 6. Detail of the fresco of Genoa in the Gallery of Palazzo Spinola and detail of the Jan Massys of Metsys: <https://it.wikipedia.org/wiki/File:Crop_on_Genoa_from_Jan_Massys_of_Metsys_-_Venus_van_Cythera.jpg> (accessed May 15, 2023).

Fig. 7. Vaulted ceiling of the Galleria delle Carte Geografiche, in the Vatican Museums. (By Jean-Pol GRANDMONT - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=18222511> (accessed May 15, 2023).

Fig. 8. Liguria and Nice, with allegorical representation of Cristoforo Colombo, Galleria delle Carte Geografiche in the Vatican Museums (photo by the authors).

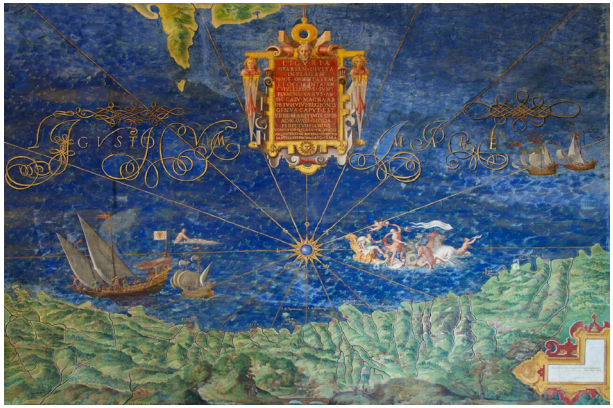


Fig. 9. Detail Map of Venice, Geographic Map Gallery of the Vatican Museums: <https://it.wikipedia.org/wiki/File:Citt%C3%A0_di_Venezia_-_Galleria_delle_carte_geografiche_-_Musei_vaticani_-_Roma_(ph_Luca_Giarelli).jpg> (accessed May 15, 2023).

Fig. 10. Fresco of Venice, Galleria Doria Spinola, Genoa (photo by the authors).

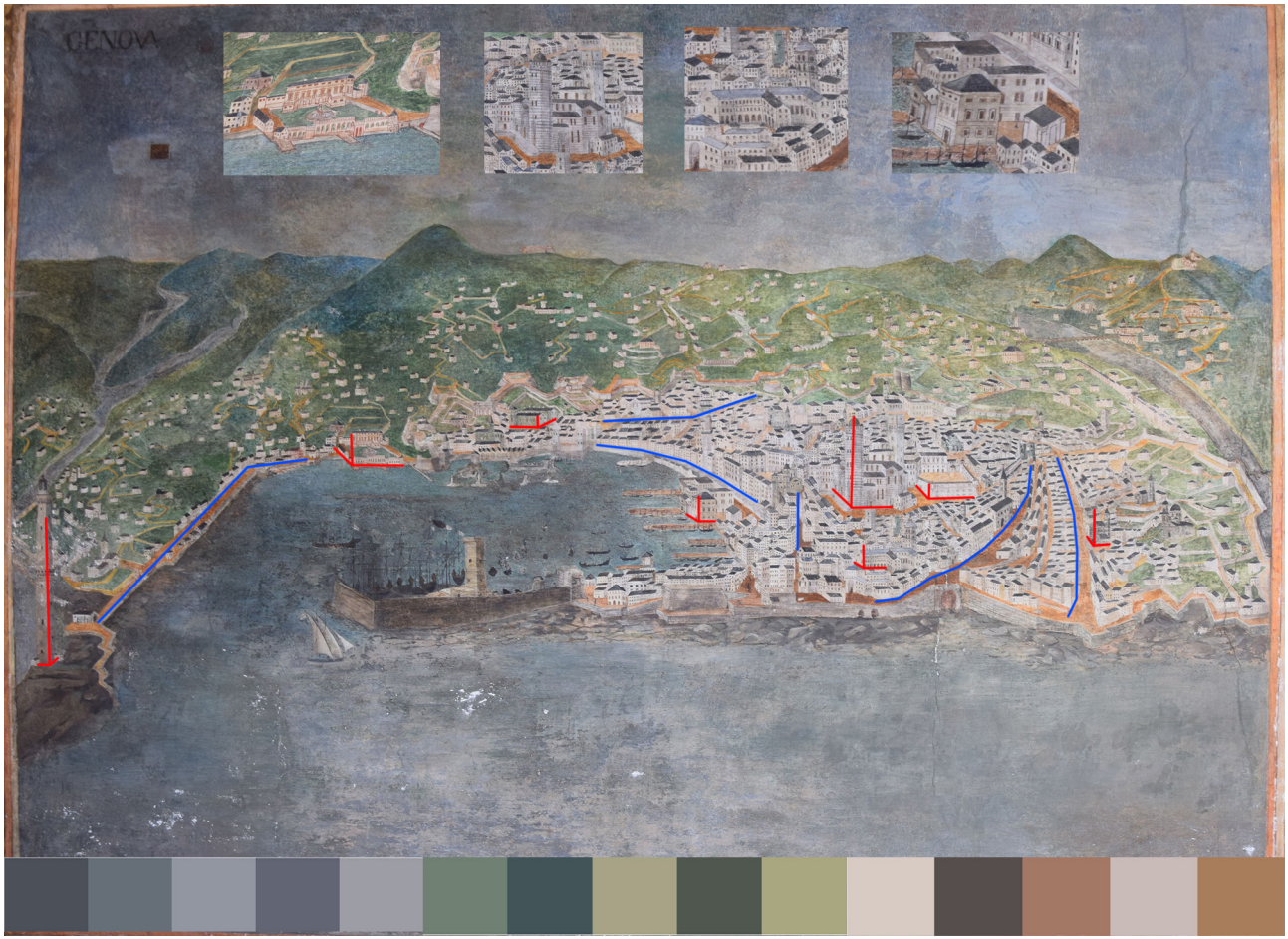
they are of remarkable precision. They leave the viewer fascinated by the minuteness of the graphic description that makes the human eye lose itself in the created narrative. The urban layout of the depictions is definable both in the Genoese maps, in which the street layout is also outlined, with precise architectural and natural references, and in the Roman maps, which, although covering a larger area, make the general town planning clear, also thanks to the inclusion of punctual architectural elements. The colours in both galleries are conventional; there is the use of a range of greens for the territory and of blues for the elements characterised by water; as far as the architectural elements are concerned, it is evident that in the Vatican maps, the colours are homologated given the modest dimensions, while in the Doria Spinola gallery maps, there is a correspondence with reality in the colours of the various cities.
The fresco of Genoa (fig. 12) presents some differences with respect to the others in the Gallery of Palazzo Doria Spinola: in addition to having been realised later than the city cycle designed by the Calvi, it presents a bird's eye perspective with a lower point of view that generates a greater coinvolution effect in the volumes of the urban fabric.
The main architectures, drawn in cavalier axonometry, are clearly visible in the urban fabric, the basic building blocks follow the shapes of the streets, contributing to the reading of the street layout.

Conclusions

This research aims to bring to attention the unique Genoese representation of maps located in the loggia of the piano nobile of the present-day Palazzo della Prefettura in Genoa. Therefore, the research aims to analyse the similarities and differences between these maps and the contemporary maps in the Belvedere Gallery in the Vatican. We have been able to analytically ascertain that, in both cases, there is a cartographic accuracy due not only to the

Fig. 11. Above: detail of Pope Julius II's Siege of Mirandola, Galleria delle Carte Geografiche in the Vatican Museums. (Public domain: <https://commons.wikimedia.org/w/index.php?curid=59630551> (accessed May 15, 2023). Below: detail of hunting scenes in the carta di Anversa, Doria Spinola Gallery, Genoa (photo by the authors).

Fig. 12. Geometric and chromatic analysis of the Genoa fresco in the Gallery of Palazzo Spinola in Genoa (graphic elaboration by the authors).



same choice of sources by Calvi and Danti but also due to their study of the places represented. Socio-cultural and political choices are preponderant in the selection of the required cartographic representations that serve to manifest the power of the patrons' possessions and the network of relationships and interests that both Antonio Doria and Pope Gregory XIII had with the Italian territory and major foreign cities; these ties are honoured by the presence of certain portions of territory or cities.
Pseudo-bird's-eye perspective representations, in both Genoese and Roman maps, are valuable support for the study of 16th-century possessions and offer the possibility of glimpsing a cross-section of life different from that proposed in the classical pictorial views that began to take hold during the Renaissance. The viewer's eye is not led to focus purely on direct everyday scenes but can see how they relate to the vastness of the territory in the Belvedere gallery and the intricate urban layout of the city in the Doria Spinola gallery. In the Vatican maps, this animation is taken up by figures such as armies and allegories. In contrast, in the Genoese maps, there is an animation of the scene through the presence of a few people, animals, boats and the opening of some windows and doors.

Credits

While totally agreeing with the ideas expressed in this article, the paragraphs *Palazzo Doria Spinola in Genoa and Belvedere Gallery of the Vatican Palaces* are to be attributed to Martina Castaldi while *Introduction*, *Comparison and Analysis of the Urban Landscape Representations of Palazzo Doria Spinola in Genoa and the Belvedere Gallery at the Vatican* and *Conclusions* are to be attributed to Michela Scaglione.

Notes

[1] The Palazzi dei Rolli are Genoese aristocratic palaces that, at the time of the Republic, were also used to host high dignitaries who were in Genoa on state visits or for the Grand Tour. The general list of rolli was in turn divided into prestige brackets, based on the family that owned it, the luxury of the dwelling and its location; these subdivisions were called *bussoli* and based on the location within them, it was indicated more precisely which type of personality the palace was able to accommodate. In the case of Palazzo Doria Spinola, being part of the first compass and therefore the one with the most prestige, it was suitable for popes, sovereigns and royals in general.

[2] "But Gregory does not treat his eyes to empty scenes that would delight the senses, but walking the length of the room, the two rows of paintings, which he can gaze on again and again, depict the whole of Italy. He can consider how best to administer and govern it, how to resolve civil discord and maintain lasting peace for his people. Gregory attends to the maps' every detail, nothing escapes his attention, neither remote castles on snow-capped Alpine crags, nor the most secluded nameless villages" [Watts 2005, p. 179].

[3] Inscription above the north portal of the Map Gallery in the Vatican: "*Italia Regio Totius Orbis Nobilissima ut Natura ab Apennino Secta Est Hoc Itidem in Duas Partes Alteram Hinc Alpibus (…) Haec ne Iucunditati Deesset ex Rerum et Locorum Cognitione Utilitas Gregorius XIII Pont. Max. non Suae Magis quam Romanorum Pontificum Commoditati hoc Artificio et Splendore a se Inchoata Perfici Voluit anno MDLXXXI*"

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The Hall and Stage of Catania's Teatro Massimo Bellini: Viewpoints between Perception and Rationality

Graziana D'Agostino, Mariateresa Galizia

Abstract

The present study investigates the concept of 'viewpoints' in the project of late 19th century theatrical architecture by assessing how the meaning of visual perception of the theatrical scene and the space of the auditorium, hence spectator involvement in the scenic narrative and in social contexts, is changing in the same architectural space.
The project choices implemented for the realization of the spaces destined for the booths and stage of the Massimo Bellini theatre in Catania were analysed through the comparison of archival documents of the project, data obtained from digital laser scanning survey, and the analysis of the geometric guides and spectator visibility in comparison with the Italian-style theatre type.
The research uses three-dimensional digital models to document the horseshoe planimetric layout of the real space of the booths and its separation from the fictitious stage events through the proscenium, which takes the Renaissance scaenae frons *structure delimited by the stage arch to frame the visual region.*
The survey and analysis clarify the design choices implemented by the architects at a time when the spectator was a central figure and when the theatre represented a dual spectacle involving both the stage space and the space occupied by the spectators.

Keywords: viewpoints, theatre architecture, archive drawings, digital survey, geometric analysis.

Introduction

This research analyses the concept of 'viewpoints' in the project of late 19th century theatrical architecture by assessing the mutability of the visual perception of theatrical scenes and the involvement of spectators in the scenic narrative and visual control of the entire auditorium in the same architectural space.
The design choices implemented by the architects who contributed to the realization of the spaces destined for the stall, boxes, and stage of the Bellini theatre in Catania (fig. 1) are analysed through the comparison of archival documents of the original project, data from digital laser scanning surveys, and analysis of the geometric guides and spectator visibility. The study is part of a larger research project aimed at the knowledge, appreciation, and enjoyment of the theatrical and cinematic cultural heritage of the city of Catania between the late 19th century and the first half of the 20th century.
The project of the theatre inaugurated in 1890 was the culmination of a long series of design solutions, reconsiderations, and additions that resulted in the final configuration by Milan architect Carlo Sada (1849-1924), who oversaw construction during his apprenticeship with the architectural studio of Andrea Scala (1820-1892), who provided the final project that would rise from the structures already built to plans by architects Giuseppe Zahra and Salvatore Zahra Buda, and later by Sebastiano Ittar.
The research makes use of three-dimensional point cloud data obtained through the integrated use of different laser

scanner models to capture the horseshoe planimetric layout of the real space of the audience area and proscenium and its separation from the fictional space of the stage in Renaissance *scaenae frons* style with an arch to frame the visual region.
The survey and analyses highlight the project choices implemented by the architects in a period when the spectator was a central element and the theatre offered a dual spectacle involving both the stage and the space occupied by the spectators. In fact, 19th-century Italian-style theatre was often the expression of an individualistic and largely inhomogeneous society, as Fabrizio Cruciani states: "the cylinder formed by the boxes is an active place of tensions, of crossed gazes, a vibrant perimeter: one looks from the boxes and one looks at the spectators in the boxes" [Schino 2018].
The process of capturing and documenting this architectural work of high symbolic value for the city required an intensive digital survey campaign implemented through different laser scanning techniques to observe and analyse the three-dimensionality of the hall. The point cloud obtained supported the study the geometric genesis of the planimetric drawing and elevations, and the quality of views and observation points through the creation of perspectives and orthogonal views with respect to some of the boxes arranged in five ranks separated by partitions that follow a specific compositional geometry.

Catania's Bellini Theatre, a project that lasted half a century

In 1880, the project drawing of the Nuovaluce Theatre in Catania, now Bellini, was presented and approved by Milan architect Carlo Sada. The final project actually completed work that had begun as early as 1812 by Giuseppe Zahra and continued by his son, Salvatore Zahra Buda, followed by Sebastiano Ittar and Andrea Scala. These architects had already drawn and outlined the main layout and stage rooms of the theatre, which would later be 'sewn together' and 'readapted' to the new environments proposed by Carlo Sada. His intervention therefore represents the analysis, interpretation, correction, completion, and synthesis of a project involving multiple contributors. For largely economic reasons, the project had to comply with certain municipal directives in terms of the site location and in the use of the structures that had already been built. For these reasons, the Nuovaluce theatre, after multiple project proposals that included the demolition of entire parts of historic fabric and important 18th-century architecture, the Teatro Massimo square we see today arose on a lot carved out of the historic Nova Luce square. Some of the features of the site differed markedly from the intentions of a time when the construction of 19th century theatres, in addition to

Fig. 1. Exterior and interior views of the teatro Massimo Bellini in Catania (photos by the authors).

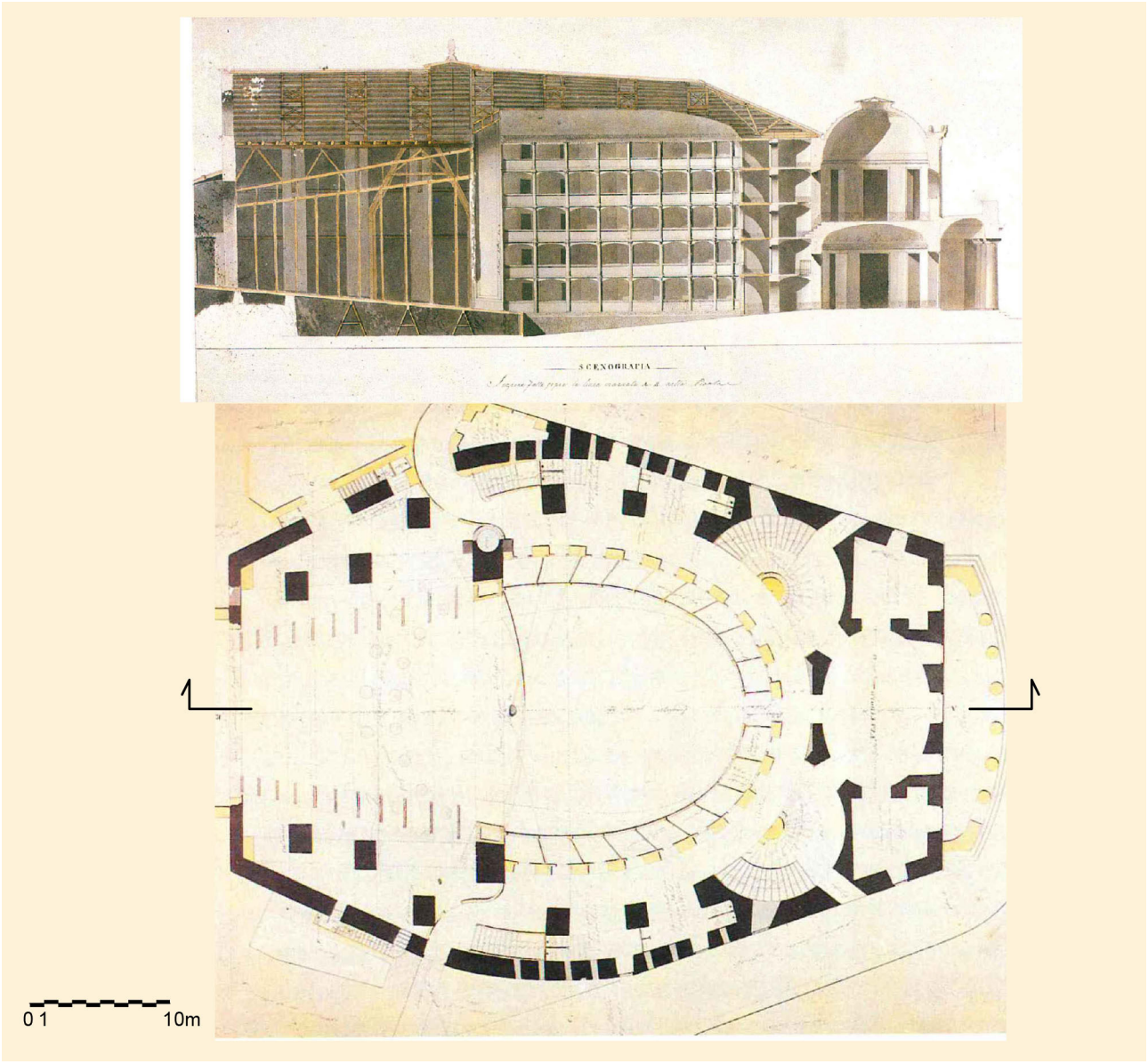


Fig. 2. Longitudinal section and plan of the II solution for the Nuovaluce Theater by S. Ittar [Dato Toscano, Rodonò 1990, pp. 34-36].

functioning as a socio-cultural aggregator, was seen as a catalyst for the redesign of the urban structure of cities. The architects had to account for the historic Landolina and Tenerelli buildings on neighbouring lots, and finally found a formal solution in Sada's elevation, which harmonizes the backdrop of the square through a connection with the adjacent buildings. He designed two loggias at the ends of the front, which assumed a quadrangular plan and were covered by cross vaults set on large round arches that provided covered access for carriages. The theatre therefore did not adhere to traditional canons of isolated monumental buildings raised above street level, but occupied a deep, trapezoidal lot on the short side of which the precious facade rose. Even the eventual floor plan proposal represented a compromise dictated by the initial demands of the municipal administration of the time, which, unlike the large cities that had two types of architecture for entertainment, the lyric theatre and Politeama, envisaged a theatre with a flexible structure that could accommodate both circus performances and opera. This position was initially addressed through the design of a semi-circular Greek-style cavea later stretched by Ittar onto an elliptical layout. Only later with the intervention of the new Politeama society, which obtained a temporary concession for the then embryonic theatre, was Andrea Scala commissioned in 1873 to complete the work and return to the typological model of the Italian-style theatre, with a horseshoe-shaped hall surrounded by boxes and with the arrangement of a tiered level parallel to the stage, with seats were arranged in the form of an arena, akin to an amphitheatre. Carlo Sada developed the geometric spatial configuration, demolishing the steps to make way for the continuity of the perimeter of the hall in elevation with boxes, and completing the expansion of the architecture with new reception rooms, such as the entrance vestibule, the loggia of the new elevation, and the splendid foyer.

The Sada Fund and the Archival Design Drawings of the Theatre Hall

The long and complex design process for the Bellini theatre is documented by the rich heritage of graphic drawings under the care of the Sada Fund, now kept at the *Biblioteche riunite Civica and A. Ursino Recupero* in Catania. The drawing project of the theatre number about a hundred sketches, orthogonal projections, and perspectives in diverse techniques (India ink, pencil, tempera, watercolour, ink) and on various types of media (cardboard, glossy paper, cloth gloss). The comparison of the archival drawings in plan and elevation with our digital survey allowed a thorough understanding of the architecture, control of spatiality, and verification of the visibility of the scene from the boxes and all the stall. Infact, comparison of the original drawings (figs. 2-4) reveals how the theatre was modified from the plan developed around the 1930s by Sebastiano Ittar, which envisioned an elliptical hall, with five tiers of boxes set on the remains of the previous Politeama that was destroyed during the war. Ittar designed the hall by extending it as far as the structures of the previous scenic arc designed by Giuseppe Zahra and his son Salvatore Zahra Buda, using it as a boundary to divide the fictional space from the real one. Moreover, in the plan drawings, he proposed two symmetrical hemicycle staircases and the elliptical entrance vestibule. These latter project choices remain unchanged even in the project drawings by Scala and Sada, as well as apparently being elements taken from the 1812 design, as documented in an 1848 paper by engineer Camillo Buda [Dato Toscan, Rodonò 1990]. The obligation to reuse the previous structures certainly represented an important constraint in the project of the entire spatiality of the hall. The intervention in 1874 by Andrea Scala, having noticed the insufficient size of the Politeama hall, led to the redesign of the geometry of the layout of the hall, taking the 19th-century longitudinal horseshoe typology and arranging the stall in six staggered rows (like the cavee) and six tiers of boxes. To achieve the enlargement of the hall, the architect occupied the entire curve designed by Ittar, including the old proscenium, with four more boxes along the side and the entire height of the stall. This intervention entailed an adaptation of the geometry of the dividing parapets of the boxes, which initially converged radially towards an ideal centre near the proscenium, arranged differently in the new boxes parallel to the scenic arch. This results in a restriction of the view of the stage in this area, compounded by the reduced width of the proscenium that remained constrained by the previous structures. The stage was to occupy a large new rectangular space at the back, which only the boxes arranged radially were able to see in its entirety. In 1876, the Politeama company went bankrupt, with Scala also leaving the execution of the work to his assistant Carlo

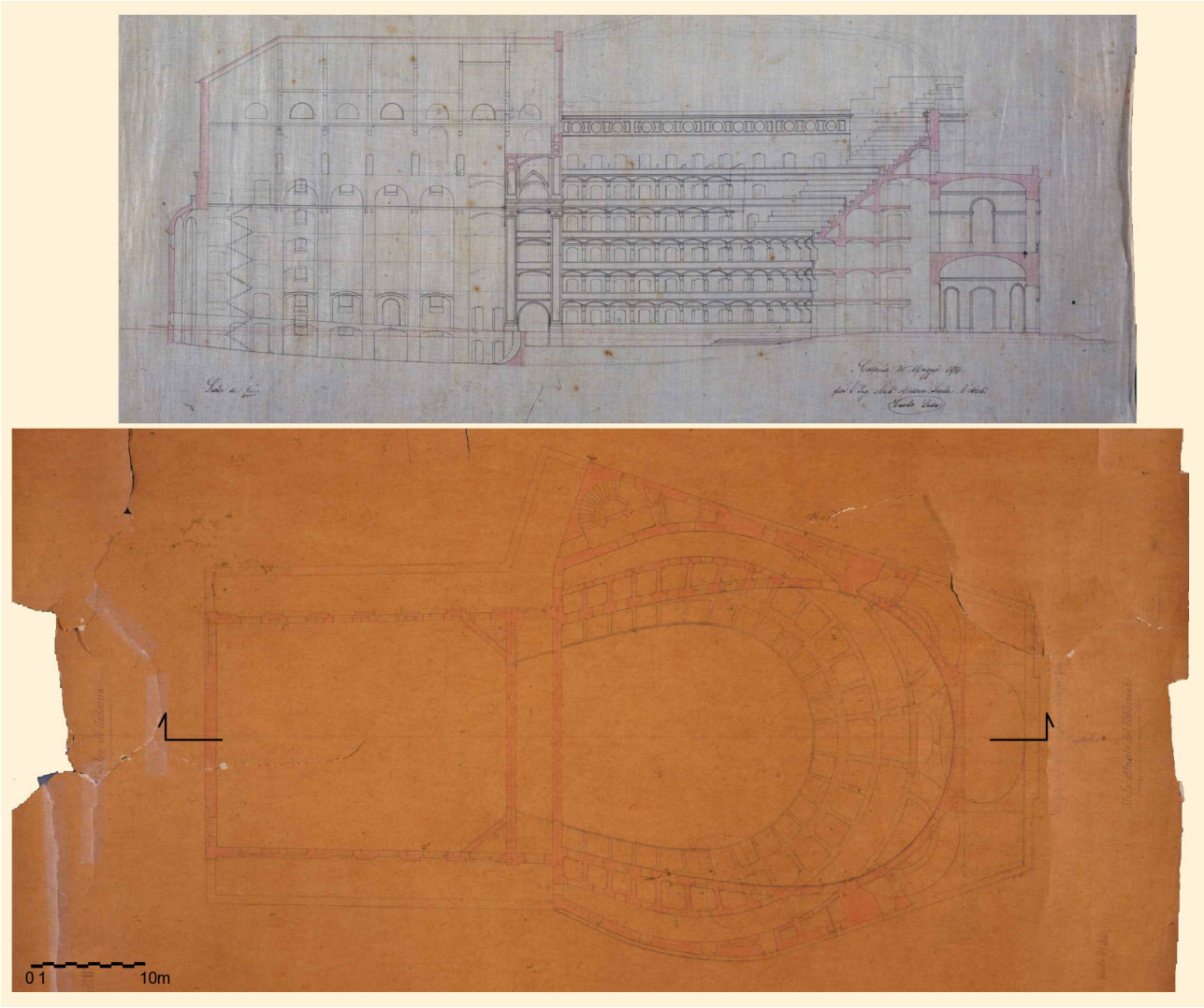


Fig. 3. Design of the Politeama by A. Scala (longitudinal section) and survey of the ground-floor plan prepared by C. Sada [Dato Toscano, Rodonò 1990, pp. 78, 79].

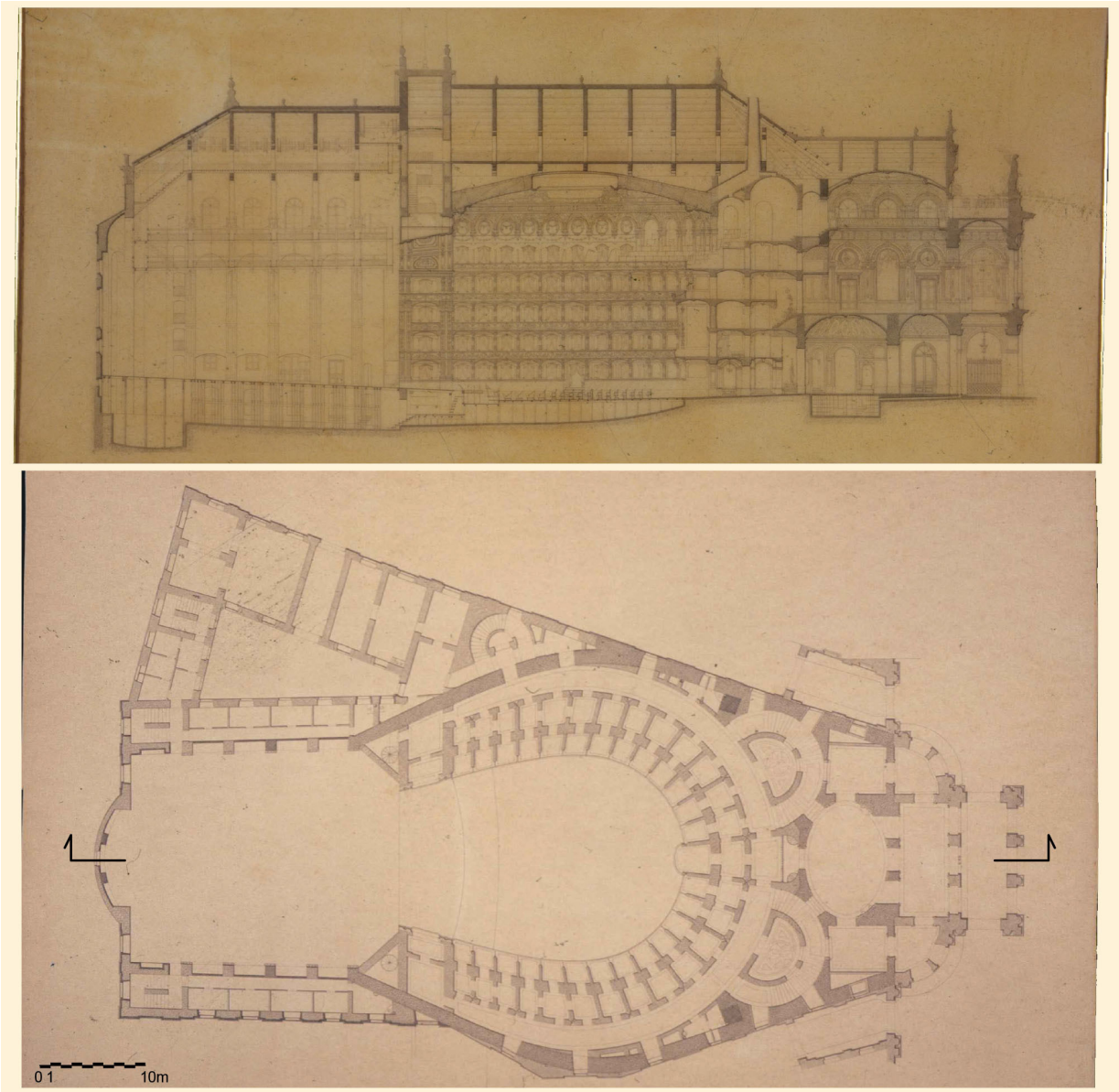


Fig. 4. Final drawing of the longitudinal section and ground floor plan of the Bellini Theatre by C. Sada [Dato Toscano, Rodonò 1990, pp. 128-130].

Sada, who during those years had cultivated extensive experience in the field of designing theatrical architecture. He abandoned the idea of a flexible structure and concentrated on the role of the theatre as an opera house. Sada made the pre-existing geometry of the hall his own. He removed the staircase to make room for the boxes, a privileged place that delimited the private and large common environments, "empty spaces that qualify as places of gaze, like eyes", as Cruciani states [Cruciani 1984]. It is for this reason that the viewer's perspective is not only the sole proprietary of the stage, but the space of visual relations that are established between the stages, transforming a simple hollow volume into a space of forces in which society qualified and recognized itself; a space of 'other representations' that invest the social, political, and cultural sphere. With this in mind, the privileged 'viewpoint' of the theatrical scene, corresponding to the boxes placed in the section of the curve in front of the proscenium, was inverted by contrasting with the multiple viewpoints along the perimeter of the hall and the different heights of the tiers of boxes. The viewpoints were located laterally, frontally, and partially obscured with respect to the scene, but retained the privilege of allowing observation of real-life scenes in which the stories of the aristocracy and upper middle class of the time were told. Optimal positions for covert observation of other spectators or blatant ostentation in the eyes of society.

Digital surveying for the study of design solutions of the Hall and Theatrical Stage

The application of digital technologies aimed at three-dimensional acquisition offers the possibility of developing multi-perspective descriptions to analyse and investigate cultural assets of considerable size and architectural value from different perspectives. The morphometric nature of the interior and exterior spaces of the Teatro Massimo Bellini in Catania, enriched with its decorations and frescoes of high figurative value, highlighted the importance of a combined digital operational strategy to obtain sufficient three-dimensional data for documenting the entire spatiality of the work and the urban context in which it is located, as well as to interpret the different design choices implemented over the years [Galizia, D'Agostino 2022].

Four different models of terrestrial laser scanners (RTC360, P30, BLK360 and BLK2GO from Leica Geosystem) were used according to the geometric-dimensional and stylistic-formal characteristics of the rooms to be surveyed, while multi-image photogrammetry was used to acquire the decorative apparatus of the vaulted rooms. The work presented here in focuses on the main theatre hall and stage environments, for which the P30 Scanstation (fig. 5) and the BLK2GO mobile mapping system (fig. 6) were used for the 3D acquisition of the connecting staircases of the five levels of the theatre and their ambulatories and the entire system of second-order boxes, chosen for the presence of the royal stage that offered a privileged vantage point for observing theatrical performances. The integrated use of the two instruments made it possible to obtain two point clouds with different characteristics that were functional to the environment in which they were used: about 420 million points (7 camera stations) for the morphological and decorative accuracy of the theatre hall and stage, and about 58 million 750 thousand points for the simpler, but articulated geometry of staircases, ambulatories, boxes, and anterooms (allowing a significant reduction in the acquisition time for these narrow and highly articulated spaces).
Thanks to the final point cloud, the project choices implemented by the architects who contributed to the realization of the spaces intended for the theatre stall and stage are compared and analysed through the comparison of the traditional representations in the archival documents of the original plans and the digital representations (orthogonal and perspective) obtained from the 3D laser scanner (fig. 7). Thus, the point cloud allows for a dynamic and realistic investigation of the chosen viewpoints for the scene and the envelope of the hall. This is a major advantage of using numerical models obtained from 3D surveying, as it allows the selection of analytical 'viewpoints' without necessarily being inside the theatre architecture.

Geometric analysis of the regulatory layout and of the viewer visibility

The two-dimentional analysis of the geometric paths regulating the shape of the hall and viewer visibility were conducted through comparison with the typology of the Italian-style theatre found in Daniele Donghi's (1905-1935) *Manuale dell'architetto* [Di Paola 2012; Zerlenga 2020].

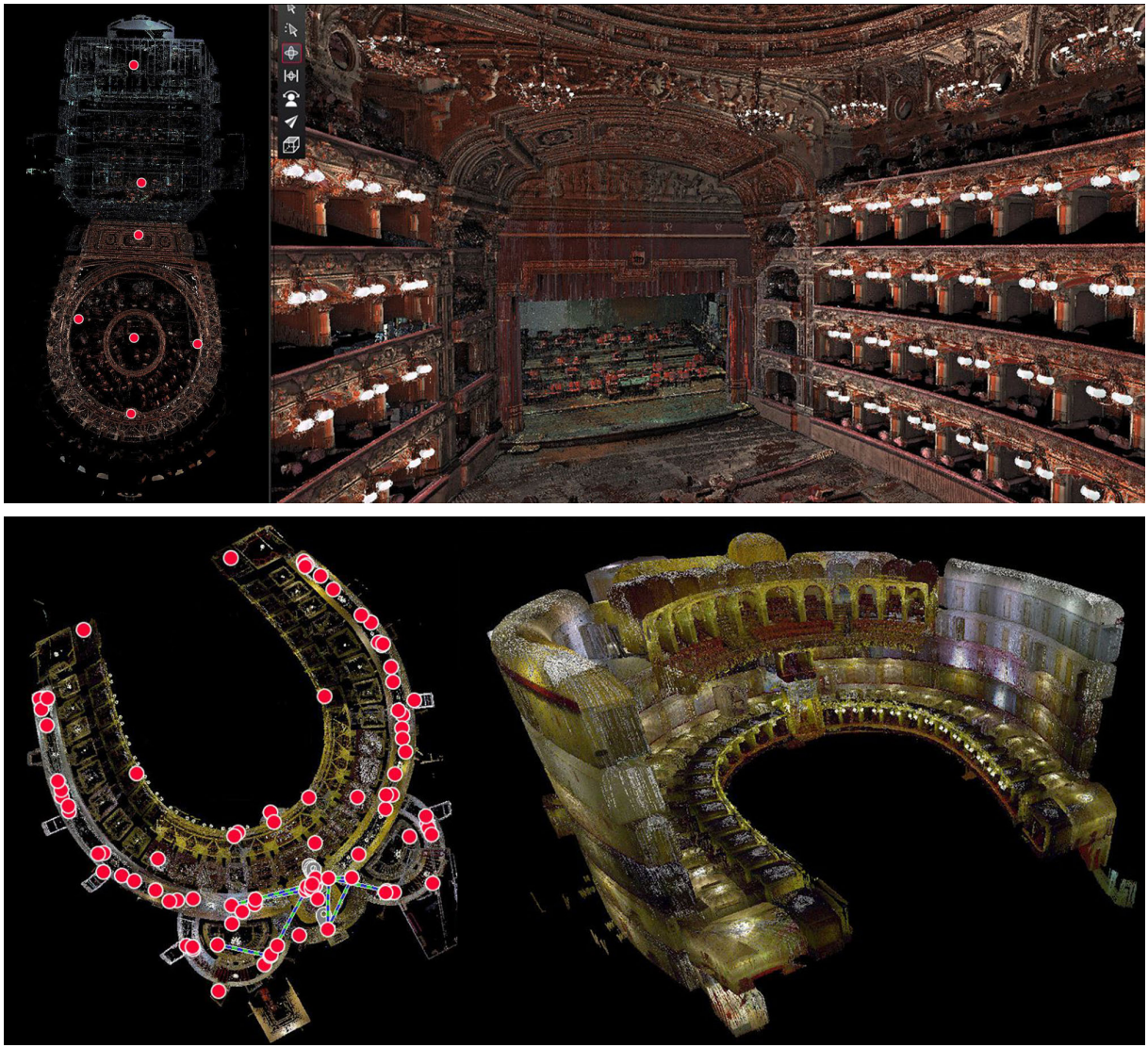
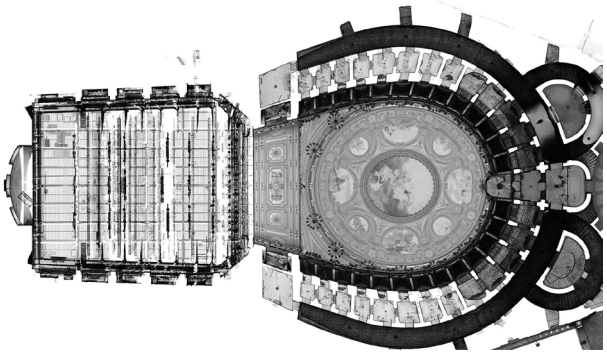
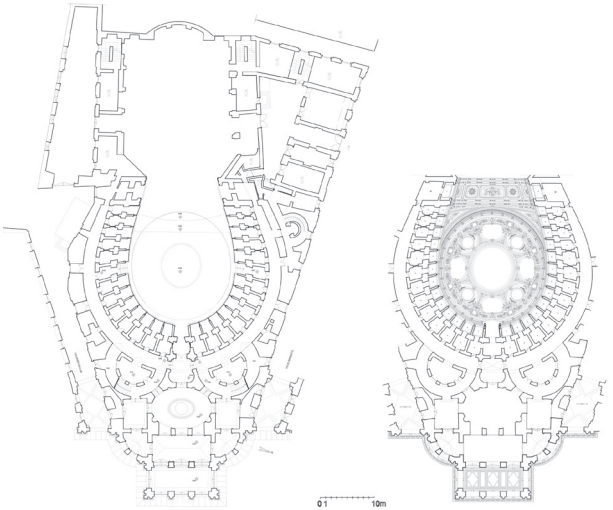


Fig. 5. Point cloud of the Teatro Massimo Bellini in Catania, Italy. Left, draft of the survey taken by Leica Geosystem's P30 terrestrial laser scanner; right, perspective view of the point cloud of the hall (graphic elaborations by the authors).

Fig. 6. Point cloud of the Teatro Massimo Bellini in Catania, Italy. Left, draft of the survey taken through the BLK2GO mobile laser scanner of Leica Geosystem; right, perspective view of the point cloud of the ambulatories of all levels, the second-order boxes and the peanut gallery (graphic elaborations by the authors).

The accuracy of the acquired point cloud and the possibility of obtaining representations from real viewpoints for investigating the spatiality of the architecture and the visibility of the scene allowed us to conduct a study of the real geometry of the theatre hall in comparison with the archival drawings of the project. For this purpose, profiles and orthoimages (horizontal and vertical) were extracted, updating the already rich two-dimentional archival graphic documentation of the entire theatre structure (fig. 8).
Three of the main aspects that contribute to the proper design of a theatre hall were explored: size and shape of the hall, arrangement and distribution of boxes, and visibility study. The analysis of the geometry underlying tracking (fig. 9) was carried out along the inner perimeter of the boxes, as given in the Donghi *Manuale* for cases where the entire hall is arranged in boxes. The horseshoe construction obtained is analogous to the curve of the hall of Teatro la Scala in Milan, where the curves AD' and BC' are more closed towards the proscenium. Having found the centre, O, of the circumference that defines the curvature of the first half of the hall (the diameter AB corresponds to the maximum width of the hall referred to the inner wall of the boxes), we find the points C and D centres of the arcs AD' and BC' (OA=OB=OM=AC=BD, D'MC' back wall of the boxes, QNP perimeter partitions, QP greater width of the proscenium). It is hypothesized that the choice of this more closed curve was dictated by the fact that the width of the proscenium could not be enlarged so as not to compromise the relieving arches that had already been built prior to architect Scala's project [Dato, Toscano, Rodonò 1990]. Figure 9 shows the analysis carried out on the search for the geometric regulation of the subdivision of the boxes. As already mentioned, Sada could not intervene on the distribution of the dividing partitions between the boxes as they were already built according to the design for the Politeama by





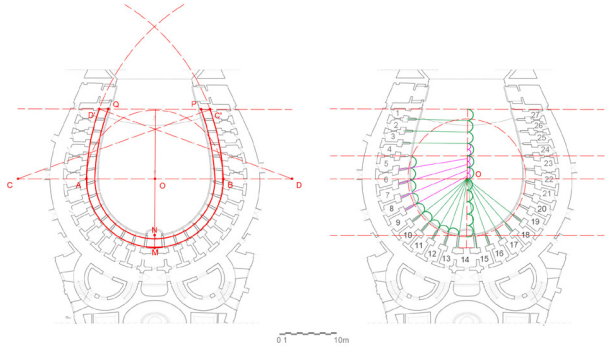


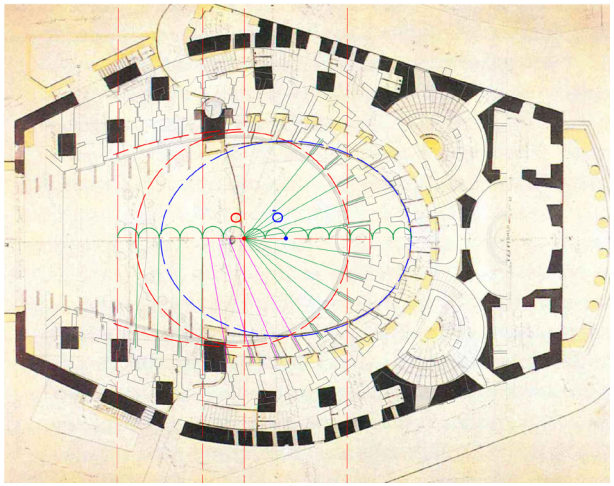
Fig. 7. Integrated point cloud of the Teatro Massimo Bellini in Catania obtained from the Scanstation P30 and BLK2GO mobile laser scanners. Top, hyposcopic orthoimage (graphic elaborations by the authors).

Fig. 8. Updated two-dimensional graphic documentation of the Teatro Massimo Bellini in Catania, Italy (2022). Ground floor plan and hyposcopic plan with decorative detail of the hall vault (graphic elaborations by the authors).

Fig. 9. Left, analysis of the underlying geometry of the tracing of the horseshoe curve; right, analysis of the underlying geometry of the tracing of the partition walls of the boxes (in green module a and in magenta a/), (graphic elaborations by the authors).

Andrea Scala. An a posteriori analysis reveals that the separating walls of the first four boxes that follow the scenic arch (1-4 and 24-27) are perfectly parallel to it and not inclined toward the stage, as found in the plans of the major Italian opera houses to improve visibility even from the side boxes. The project for a Politeama by Scala is set on the structures left unfinished from the previous project by Ittar, organized on an elliptical geometry of the hall. Scala allocated the entire elliptical body of the hall designed by Ittar to the new horseshoe hall, extending the latter toward the stage of the previous project drawing (fig. 10). It is assumed that for these reasons, the first four boxes near the new proscenium present the wall partitions parallel to each other. Boxes 5-8 and 20-23 are instead characterized by partitions with a less pronounced slope than in the literature in the sector. The direction of the partitions between boxes 9-19 converges towards the centre, O, of the construction circumference of the horseshoe curve. As shown in the geometric study, the layout of the partitions is set according to a scheme that divides the depth into 12 modules (shown in green) along the axis of the hall, towards which the separating partitions run. Along with acoustics, visibility is one of the main concepts considered in the design of a theatre hall, as Sada himself states in the report "To achieve therefore the three great requirements for a hall to be perfect, which are: to see well, hear better and be comfortable" [Dato Toscano, Rodonò 1990, p. 168]. Thanks to possibility of choosing viewpoints in which to position yourself within the 3D numerical model (those in which the spectators are stationed), we were able to carry out the study of visibility from selected theatre boxes (figs. 11, 12). We always stood on the second tier of boxes for the elevated viewpoint and the location of the stage, analysing the scenic view as you move away from it. The view is not the same for all spectators, not only because of the different seating arrangements, but also because of the varying positions of the actors. The view of the spectators in the dashed sections (in yellow in the plan) are tangent to the vertical edges of the partitions of the stage in which they are located [Donghi 1930]. The optical cones of the viewpoint of the spectators positioned in the less favourable (dashed) area of boxes No. 3, 7, 10, 12, 13 and the real stage, the privileged viewpoint framing the whole scene, were plotted in plan and verified within the digital dimension of the point cloud.

Fig. 10. Superimposition between plan of S. Ittar's II solution for the Nuovaluce theater and plan of the actual state with graphic analysis of the tracing of the stage partitions. In blue, elliptical curve outlining S. Ittar's design; in red, horseshoe curve outlining A. Scala's design (graphic elaboration by the authors).



Conclusions

The project drawing of the Teatro Massimo Bellini in Catania is a synthesis of geometric-spatial and aesthetic-formal solutions that represent a cross-section of 19th century life in Italy. However objective the interpretation of the spatiality of the envelope of the great hall through archival documents and digital survey may be (based on geometric-dimensional and stylistic-formal data), it remains an interpretation from a contemporary perspective that, while accounting for the architecture and history of nineteenth-century traditions, is not rooted in that same experience.
The study focused on the visibility of the stage from the boxes and stall, through the scenic arch that divides fiction from reality, verifying the quality of the viewpoint against the geometric-formal choices of the architects and the constraints of existing architecture. But there are other 'viewpoints' not investigated here, which involve the anthropological sphere. The nineteenth-century theatre was a meeting place of the nobility and upper middle class, in which society qualified and recognized itself

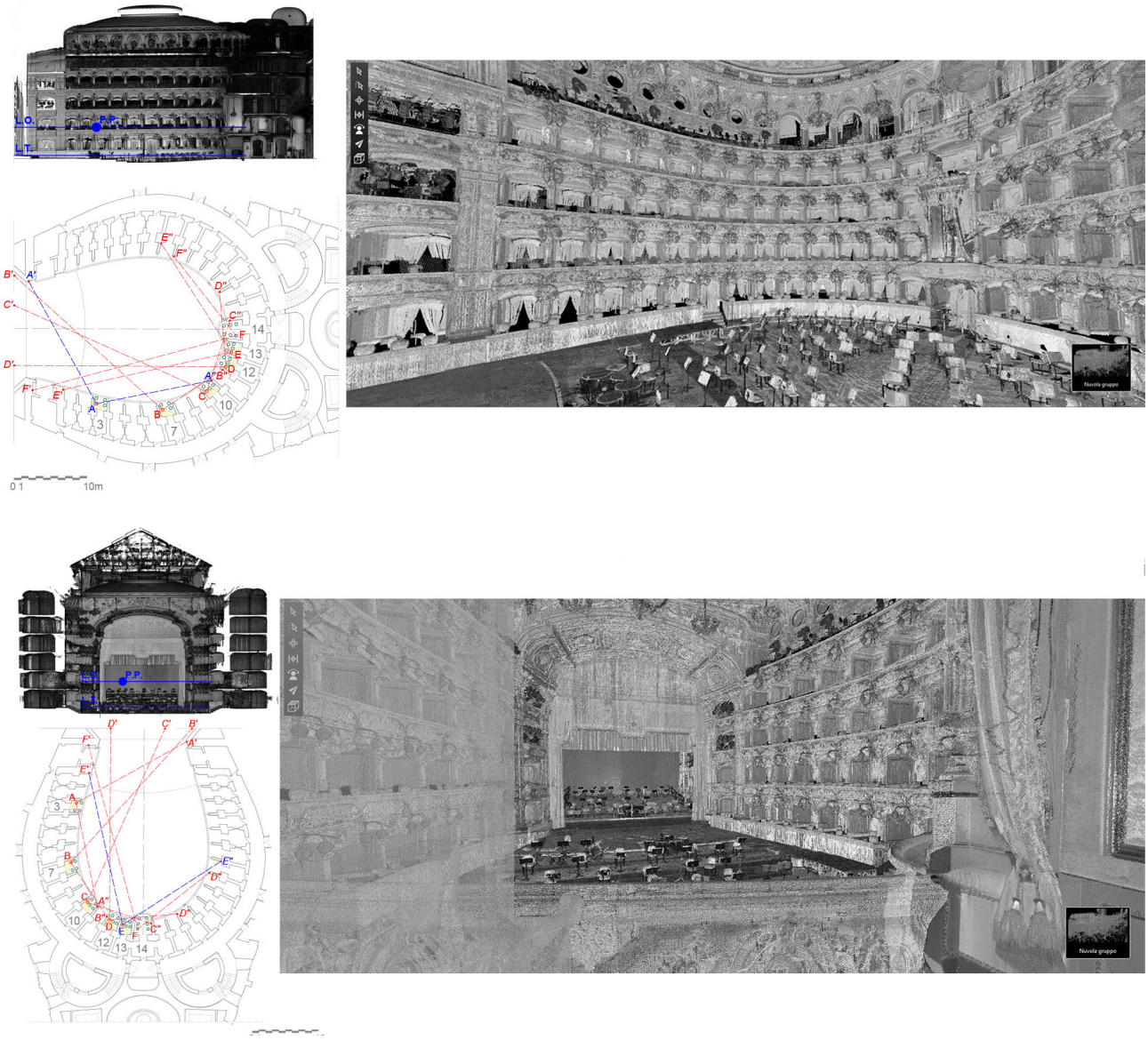


Fig. 11. Left, study of visibility from the boxes of the horseshoe theatre hall; right, viewpoint from Box No. 3 (graphic elaborations by the authors).

Fig. 12. Left, study of visibility from the boxes of the horseshoe theatre hall; right, viewpoint from box No. 13 (graphic elaborations by the authors).

[Cruciani 1984; 2005]. The reality of the theatrical space, the emptiness of the hall, was duplicated in the separate world of the stage, leaving a deep gap between the simplicity and bare functionality of the stage and the opulence of the hall, in which the spectator 'represents himself' [Landriani 1818; Lo Sardo 2014; Mazzamuto 1989]. The privileged 'vantage point' overlooking the stage was reserved for the wealthier social class, which occupied the boxes of the section of the curve placed more frontally to the proscenium. While above, almost at the impost of the vault, in the 'peanut gallery' where the truly educated non-possessors often stood, one watched from a 'bird's eye' perspective, not only at the theatrical scene (often deformed by the viewpoint), but also at the life scenes of the time, in which the dynamics between the aristocratic lords and ladies were recounted, reversing the viewpoint and becoming spectators of the economic, political, and social power of the time.

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Graziana D'Agostino wrote the paragraphs: *Introduction*, *The digital survey for the study of the design solutions of the theatre hall and scene*, *Analysis of geometric regulating tracings and spectator visibility*; Mariateresa Galizia wrote the paragraphs: *The Bellini Theatre in Catania, a project half a century long*, *The Sada Fund and the archival design drawings of the Theatre Hall* and *Conclusions*.
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Measuring territories from above

Top Views and Technologies for Measuring Territories

Elia Di Nardo

The man has always nurtured the need to explore and represent the territory that surrounds him in order to know its qualities (including the extent) and, where it is possible, share the collected data. Over the centuries both the techniques and the methods of acquisition and restitution of information have changed, and that is extremely evident from the correlation between the different modes of representation of the graphic elaborations and the periods in which they were produced, so much so that chronological analysis makes the following reflection self-evident: the purpose for which these works were made changed according to culture and society.
The search for measuring methods and techniques in order to record one's observation point from above is continuous in the humanity history. The first representations of the territory dates back to the third millennium B.C. and refers to small portions of Mesopotamian urban and rural centers. In these works it is evident the will to document the conformation of the places according to a very different concept, for example, from that of indigenous communities that, to follow the herd to be hunted, had the need to represent from above the places of the journey to go on. The subsequent advent of societies which were founded on a commercial economy between far countries (such as China or the Americas) marks the beginning of the representation of far territories, often inferred on the sole basis of oral evidence collected from the voyages of navigators and merchants. In the mid-seventeenth century, the need to represent as many territories as possible marks the beginning of scientific cartography even if, due to the technological limitations of the measuring instruments used, the surveys from

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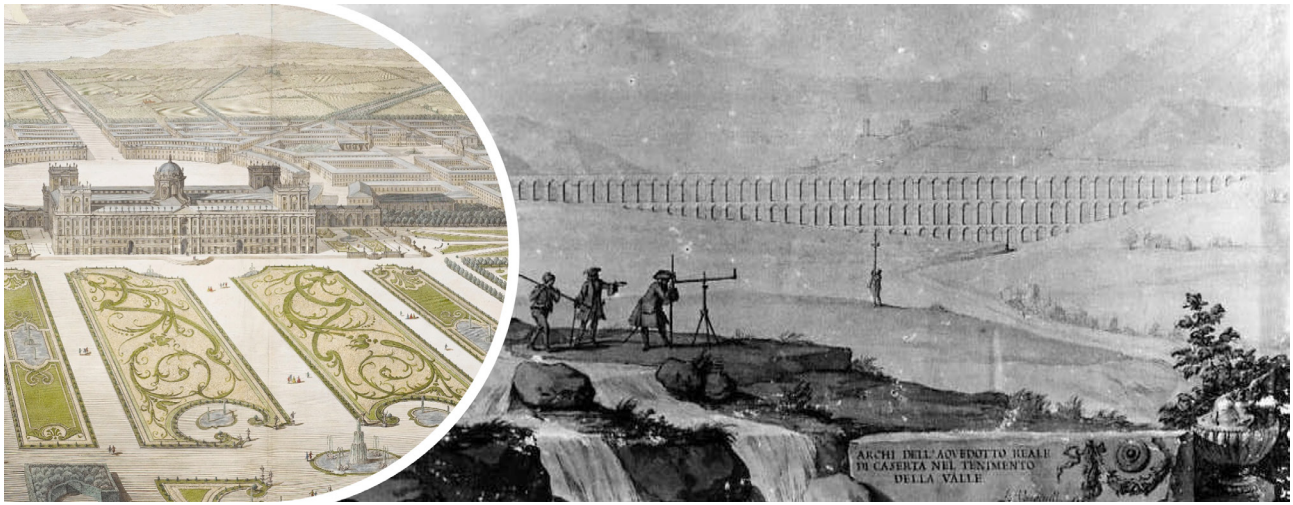

Fig. 1. On the right: drawings of Acquedotto Carolino for distance measurement. On the left: view of the great Parterre with the Palace in distance, hanging gardens and new town, in its first idea. In: Vanvitelli, L. (1756). Dichiarazione dei Disegni del Reale Palazzo di Caserta. Napoli: Regia Stamperia, tav. XIV.

above were often approximate. For a lot of centuries, in fact, the representatives of the 'measure' of the territories resorted to the use of their memory and imagination and, in the absence of tools able to 'benefit' the survey have privileged base points (natural and/or artifacts) characterized by a remarkable height in order to obtain visual observations and more performing graphic transcriptions. This type of solution was used to inspect the environmental context in a better way.

During the time, the representatives experimented with tools and techniques to gather as much geographical and territorial information corresponding as much as possible to reality and technological progress was the protagonist of epochal changes in the accuracy of the measurement and top-down detection. In fact, the search for methods, techniques and tools in order to increase the viewpoint height without the observer had his foot touching the ground, took a significant step forward with the advent of the first light aircraft (balloon) that allowed the operators to physically detach themselves from the ground, experience higher altitudes and direct their look downwards; it is evident that although they were able to represent the proportions of the real, it was still impossible to derive the precise measure.

The most important event came with the advent of photography linked to aircraft. At the beginning of this phase, the photographic survey of the territory was added to the traditional topographic survey by points, until its complete replacement thanks to the improvement of the aero-photogrammetric survey and the subsequent photogrammetric restitution, which constituted an accurate representation in scale of reduction of the planimetric and altimetric characteristics. More than half of the 20th century was characterized by the pre-eminent use of aerial photogrammetry but, with the advent of satellite technology and the consequent possibility of taking images beyond the Earth's atmosphere, the performances are increased especially in regard of the relationship between viewpoint and survey from above, and the opportunity to acquire a great deal of data in the most varied aspects. Since the second half of the 20th century, our society has been witnessing a phenomenon of rapid innovation of digital technology which appears to be immeasurably rapid in its new acquisitions and transformations to the point that it has interested the public and disciplinary opinion about the possibility of having to fear its autonomy. In this regard, consider the many of articles published in a few months about Artificial Intelligence and about

Fig. 2. UAS photos over Reggia di Caserta and Acquedotto Carolino.

the fears that this technology is raising in terms to control decision-making processes.
If we come back to the issue of surveying from the top of the territory, current electronic and information technologies based on the miniaturization of sensors offer unimaginable perspectives and play a significant role not only for data collection activities but also for their visualization. In fact, while the data acquisition and processing phases are realized by observing specific methodologies, the choice of technologies to be used is a function of the objective and the object of the study as well as the intrinsic skills of the instrument in anticipation of possible integrations and/or inclusion of all products in a single database. The added value which this technology offers is the preparation of a digital graphic platform where to join and overlap the existing surveys and data in order to derive thematic, upgradable, interoperable and interrogable territorial views.
However, in the presence of a great deal of varied combinations of methods, techniques and tools, it is essential to make a conscious choice from the critical viewpoint of the issue, and therefore, wonder about the proper understanding and full awareness of the benefits that these new integrated technologies are able to offer in the field of land surveying. For example, UAS (Unmanned Aircraft System), aircraft (especially helicopters) and satellite constellations (SAR, Synthetic Aperture Radar) are among the most widely used systems referring indirect and top-down spatial measurement operations. These systems are united by the possibility of detecting data by means of photographic cameras and/or LiDAR sensors (Light Detection And Ranging). In the latter the distance from buildings and/or surfaces is determined by measuring the reflection time of the laser pulse (ToF, Time of Flight principle). In addition, the different sizes and types of LiDAR sensors act as a discriminator where, in the case of small or larger sensors, they are installed on drones or aircraft. On the other hand, the photogrammetric instrumentation captures high resolution shots to recreate portions of investigated territory; then, by means of specific software, the shots are processed and assembled in order to create 3D models (georeferenced and measurable) and/or detailed 2D real world maps.
Another critical reflection concerns the definition of absolute precision as the ratio among centimeters and pixels. It is known that, by direct scanning, LiDAR systems are able to generate hyper-detailed point clouds by allowing accurate visualizations of the ground and its characteristics. Unlike photogrammetric camera detection, this technique is more adapt to measure and capture small and narrow objects (think of power cables or pipelines and elements with sharp edges). Moreover, while traditional photogrammetry does not allow to return an accurate representation where the vegetation covers the ground, LiDAR is more effective even in detecting areas with high plant coverage as the pulses are able to penetrate the spaces between leaves and branches reaching ground level. Contemporarily, another aspect to the detriment of the use of cameras is the low lighting (especially by night), which greatly influences the results of a flight with drone especially if influenced by dust or cloud cover.
The differences between the two detection techniques are also due to the effort that is necessary to achieve the objectives. For example, investment in equipment varies from sensor to sensor on the base of accuracy, assessed on the amount of data collected and generated. In this sense, being the sensors installed on smaller UAS systems, the performance is reduced in the same way. On the contrary, the effort expressed in working hours is greater in the photogrammetric survey because it requires to detect the so-called 'ground points' with GPS systems that need to correct the GPS data of the drone and orient the taken photos; that is also valid in the case of the latest drones equipped with GPS RTK (Real Time Kinematics). Moreover, in the case of LiDAR, the time resources needed for data processing are significantly reduced because, unlike photos, they are clouds of points that must first be transformed and then georeferenced.
Among the latest digital technologies, the top detection system is represented by the SAR (Synthetic Aperture Radar) which allows to obtain high resolution images from a great distance. The SAR system sends radar pulses laterally and, thanks to this, the radar returns to the sensor the signals that affect different objects on Earth at different times. This makes it possible to distinguish objects while the lateral radar pulses form the image lines; therefore, the dimension in azimuth is formed by the motion and direction of the sensor which continuously sends and receives radar pulses. Satellite SAR Interferometry is therefore a remote sensing technique through which it is possible to derive displacement maps of current and past processes; it is based on the comparison between two radar images (acquired at different times), on the same

Fig. 3. Aydın Büyüktaş, multidimensional photos inspired to Flatland by Edwin Abbot: <https://www.collater.al/flatland-le-fotografie-multidimensionali-di-aydin-buyuktas/> (accessed June 17, 2023).

area from the same sensor, normally installed on satellites in polar orbit around the Earth.
In conclusion, our contemporaneity requires the detectors of territories to understand the changing potential of techniques and technologies that, for decades, do not stop their development especially in relation to the changes in research, which, over the centuries, is increasingly directed towards methods that would 'broaden' the viewpoint. If the studies initially focused on methods especially used in order to physically reach the remarkable viewpoints, in the following periods we turned towards insights on the transposition of what is possible to see, by means of technological tools, and how to return this information. So, it has to image no more but it has to document what is real in order to achieve maximum accuracy.

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Looking at Seasonal Landscapes from Above. Mapping Spatio-temporal Conditions of Foliage across the Lucanian Apennines by Processing Satellite Multispectral Imagery

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Abstract

The process of analyzing, interpreting, and configuring a landscape is based on a dual cognitive approach: a view from above, which provides an overall understanding of the phenomena taking place on the earth's surface, and a view from the ground, focused on the physical experience of space, which require forms of representation more similar to perspective views. The experience of natural phenomena, such as flowering or foliage, is mainly based on the experiential approach at ground level but needs a broader view to establish analysis procedures able to support the design process, supported by cartographic representations showing the abstract point of view of the looking from above approach. The research was applied to the case study of the beech woodlands in the Lucanian Apennine Val d'Agri-Lagonegrese National Park, where it is possible to observe the phenomenon of the foliage of the woods with greater evidence, due to the homogeneity of these landscape areas. The methodology involves the use of dynamic mapping techniques which, through the processing of multispectral satellite images and the computing of vegetation indices, enable the features of the phenomenon to be represented in a spatio-temporal dimension. These forms of representation, on the one hand, can support decision-makers in defining territorial development strategies in the field of sustainable tourism, and on the other hand, they can be integrated into mobile web applications and/or web portals to provide geolocalized information which can be helpful for local actors and single users.

Keywords: mapping, multispectral satellite imagery, foliage, seasonal landscape, GIS.

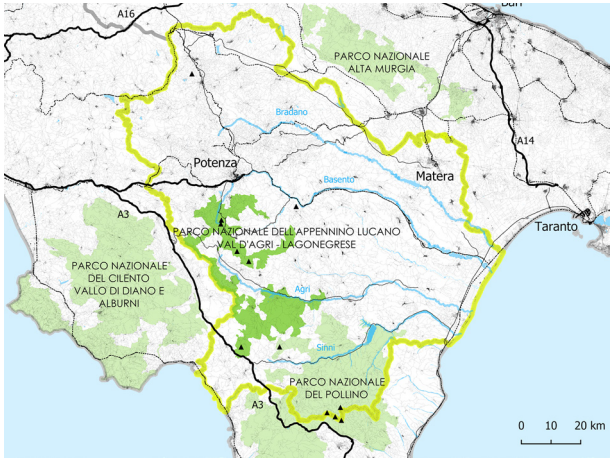
The methodological framework: dynamic mapping of changeable landscapes

The process of analyzing, interpreting, and configuring a landscape is generally based on a dual cognitive approach: a view from above, based on an analytical approach –conceived from a Cartesian point of view, virtually placed at an infinite distance from the object and compliant with the geometric principles of cartography– finally represented through the orthogonal projections of the maps; this look is complementary to the view from the ground, conducted through a more experiential and perceptive approach, where man, sight and the senses, as well as the physical experience of space, play a central role and the representations make use of forms more similar to perspective views. When the landscape under observation is characterized by aspects that may significantly and singularly change throughout time, according to the seasons, the analysis process cannot only be conducted by looking at it from above, but an integrated and complementary process from the ground level becomes even more necessary. This approach must be furthermore refined through movement, activating specific analysis procedures based on routes that directly cross and sectionate the landscape itself, at ground level. In short, it is necessary to adapt the mapping process in a dual and dynamic way.

The experience of natural phenomena, such as flowering or the change of color of the leaves in autumn, is based on the experiential analytical approach at ground level, the one of the walking through, which allows us to appreciate every

single plant component of a tree (leaves, flowers, fruits) at ground level and to represent them conceptually and geometrically as entities similar to a point. This way of acting in space is a landscaping act, a way in which the perception of the landscape becomes a cognitive and emotional act [Mininni, Sabia 2020, p. 116].
However, only through the practice of the movement across a significant space, it is possible to appreciate the phenomenon effectively, with the aim to better understand and control it, even in the perspective to drive the whole planning process and to create new opportunities for territorial enhancement, for example in the tourism sector.
For this reason, in order to establish analysis and interpretation procedures finalized to design strategies, broader views are needed, supported by cartographic representations that show the virtual and abstract point of view of looking from above, with reference to the surface in geometric terms, able to make visible the repetitions of the individual elements in a merged and homogeneous way, so as to make the phenomenon significant and appreciable at the right scale in a map. In summary, it is worth knowing how to read what happens at ground level, understanding in the right detail the growth of a plant: from blooms to flowers and finally to fruits. Traces and paths must therefore be defined in a precise way, so to highlight how the analyzed phenomenon occurs: with the transect method, with representations that hold together

Fig. 1. Location of the Lucanian Apennines National Park, in the system of national parks in southern Italy (graphic elaboration by Alessandro Scandiffio).



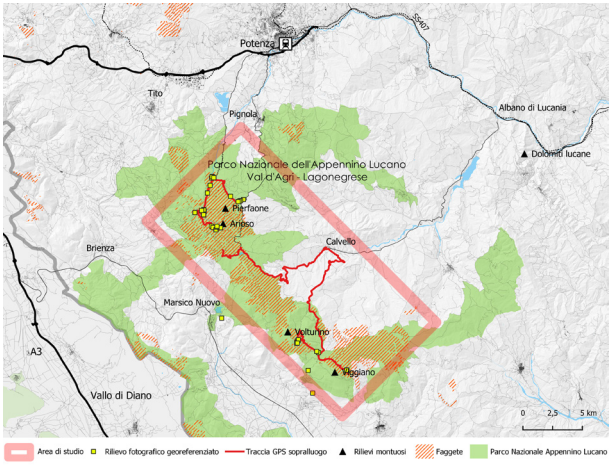
the line of a path (trace) and the record of the phenomena (track): lines that cross the map, accompanied with specific explanatory sections. In this sense, tracking technologies, based on GPS sensors, integrated with procedures that also make use of ground sensors, such as for precision farming techniques, can provide information that implement the mapping process. These are procedures derived from various expertise, linked to territorial mapping practices, and though they are addressed to multiple user communities, nevertheless it is worth keeping in mind how important it is to know how to read the phenomenon in the broadest dimension, in order to be able to control it in a adequate territorial dimension, with the specific tools of urban planning.
In this sense, the phenomena that characterize productive landscapes, in particular in their variable and seasonal dimension of tourist interest as well [Rolando, Scandiffio 2022] such as the foliage, the landscape of paddy-rice fields [Rolando, Scandiffio 2021; Scandiffio 2021b] or the spring blooming require a validation based on direct experience, that means observing 'from the ground'. However, in order to fully understand the evolution of these phenomena, it is equally crucial to have a broader and more abstract view, which enables seeing the whole picture and the evolution of the phenomenon over time. This approach becomes particularly important if we aim at considering a parameterization of the phenomenon with respect to time, so as to be able to predict the areas in which the phenomenon exhibits itself more evidently.
A methodological approach is therefore required, based on a loop of analysis, interpretation, identification of solutions, and refinement on the basis of iterative and repeated checks from the direct experiential scale to the abstract analytical one and vice versa. The 'place' that combines the perceptible detail at ground level (the one of the individual plant element) and the surrounding landscape is the route, where the point and surface meet. In this sense, the GPS route recording technologies and the GIS-based representation of the individual elements inserted in cartographic environments, therefore, become complementary tools for analysis and design.
The vector representations of the routes can be obtained in two different ways. The first method consists in collecting data from the ground through GPS recordings and exploiting direct experience on the field, in order to define a significant territorial area. The second one instead consists in looking from above, through the identification of the routes which cross relevant areas, on the basis of

geographical information such as the one relating to land use or satellite interpretations.
However, to obtain a complete and accurate representation of the territory, it is necessary to combine both approaches and progressively refine the interpretation of the territory, integrating information from above and from the ground level. In this way, it will be possible to identify effective and customized intervention strategies for each specific area.
The discourse is articulated and affects different disciplines and research fields, looking for scientific references that can perhaps help to put the research question in original terms and in a perspective useful for the analysis and intervention strategies and enhancement of seasonal landscapes. In this sense, the work of the plant biologist Stefano Mancuso is useful, when he states, also referring to Geddes, that plants are not simply passive organisms that adapt to the environment, but that they are also able to perceive and communicate with it, interacting with other organisms and with the soil, based on the principle of cooperation, which is the main force that shapes life: both in nature and in the cities, and human-made landscapes [Mancuso 2020, pp. 45-69].
This underlines how important it is that, when reading and interpreting a landscape, we also take into consideration not only the visible aspects, but also the dynamic interactions between green components and the surrounding context. In this way, it is possible to better understand the landscape complexity and dynamics and create nature-based design solutions which respect the natural balance of the environment.
The study case examined effectively explains the process of mapping related to autumn coloring due to the phenomenon of foliage in the beech woodlands within the Lucanian Apennine Val d'Agri-Lagonegrese National Park. Through the mapping of the natural elements that make up the landscape and their interaction with the productive landscapes, procedures of analysis and interpretation have been experimented with the aim to support actions of regulation, protection, and conservation or design strategies, for example, aimed at enhancing of territories in terms of tourism.

The seasonality of landscapes in the enhancement processes promoted by landscape planning

The making up of knowledge concerning a landscape planning process is a complex operation because it involves a huge amount of information dealing with multiple components that make up the landscape and the territorial structure of a region and the holistic dimension that belongs to the landscape. In many cases, the amount of data is not ensuring the making of strategic knowledge, because each cognitive 'frame', in decision-making processes, also has the task of working first of all in the construction of 'opinion making', strongly influenced by the way in which knowledge, 'opinion setting', are presented and problematized.
From this statement derives the strategic structural character of every planning process, in the sense that on the one hand, the knowledge is built that defines the territorial invariants as non-negotiable values within a vision of protection and preservation of the landscape assets; on the other hand, only a few of them will contribute to the strategic construction of proactive protection and therefore to the enhancement of the values considered fundamental for the development of the territories and the people who inhabit them.
Landscape Atlas or even better Heritage Atlas are the evocative ways to indicate the identity and heritage dimension of all those values selected on the basis of a precise territorial culture by the actors involved in the planning process which interprets the meaning of the politics that govern it, supporting their choices, beyond arbitrariness.
The integration of tangible assets with care to the intangible dimension adds major complexity to the landscape actions,

Fig. 2. Map of the study area, with evidence of the beech woodlands, GPS tracks with georeferenced photos recorded over the survey of 16th October 2022 (graphic elaboration by Alessandro Scandiffio).



especially considering the increasing value attributed to these components. Even though the value is not easily detectable with traditional tools, since innovative and creative methods are required and must be calibrated and validated every time in order to support the guidelines and regulations entrusted with planning.
In particular, perception, often interpreted as visibility of the landscape, instead concerns with a much more complex recognition process involving the knowledge owned by the communities, the value of traditions and rites that regenerate themselves, the way in which they are handed down by updating dimension of the present so that they take root in the contemporary world. The perceptive component, in an anthropo-ethnographic perspective, was one of the strategies established within the framework of the study agreement carried out between a group of researchers from the University of Basilicata and the Basilicata Region, Department of Environment, Territory and Energy for the purpose of drafting the Atlas of the landscape aimed at the making of the Regional Landscape Plan. The heritage dimension within landscapes has required the recognition of cultural landscapes by entrusting their representation to the combination of places, symbolic representation, and seasonality of rituals. The need to represent the notion of time to which the rituals of farmer festivities are linked has opened a critical reflection on the value of the dimension of food as a cultural marker of productive landscapes.
How to represent a deciduous forest that is astonished from the dimension of the intense greenery of spring to the slow transformation into the autumnal aspect that gives an appearance that is a prelude to the fall of the leaves? How does the fruiting of tree-lined crops configure landscape semantic density to flowering and fruiting? It is therefore a question of giving the landscapes the temporal dimension as a transitory

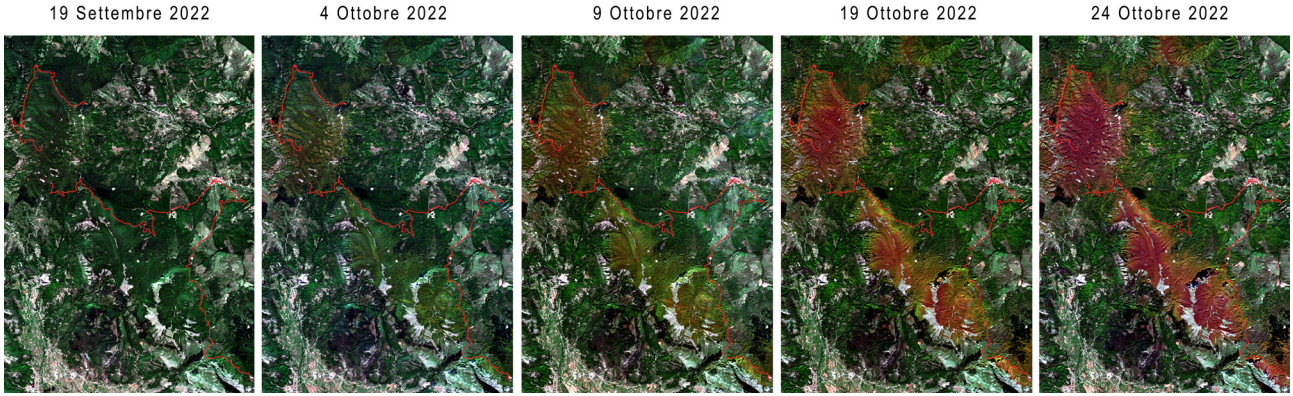
Fig. 3. Georeferenced photographic survey in the Monte Arioso area (PZ). Date 16th October 2022 (photographic survey by Alessandro Scandiffio).

value of perception, by integrating the visual aspect with the various methods of valorization, through the choice of the appropriate season to taste food, walk in the woods, and participate in ritual processions or community events.

Study area: the beech woodlands across the Lucanian Apennine National Park

The research has been applied to the case study of the beech woodlands in the Lucanian Apennine Val d'Agri-Lagonegrese National Park, which represents a great natural and landscape resource of this protected area, occupying about 15% of the total area of the Park. The Park, established in 2007, is located in the western area of the Basilicata region, southern Italy, on the border with the Campania region, in the Province of Potenza, along the Apennine backbone which is in-between the Cilento-Vallo di Diano National Park and the Pollino National Park (fig. 1). The territory of the Park involves the upper valley of the Basento and Agri rivers, dominated by the presence of some mountain peaks, which are the main visual references: mount Pierfaone (1.737 m), mount Arioso (1.772 m), mount Volturino (1.836 m), mount Viggiano (1.772 m) and mount Sirino (1.970 m).
The Italian National Internal Areas Strategy (SNAI) classifies the areas of the Park in the 'peripheral' and 'ultraperipheral' categories, in relation to the low population density and the lack of infrastructure accessibility. However, both factors have contributed positively to the conservation of natural environments and to the maintenance of high biodiversity, essential resources for developing strategies for the tourist enhancement of these territories. From a landscape point of view, the Park includes an extraordinary variety of environments characterized by a high level of naturalness involving, not only the mountains, but also secondary valleys, hilly areas and historic settlements where local cultures and traditions are rooted.
From the point of view of vegetation, there is a great variety of tree species (turkey oak, maple, white fir, downy oak, chestnut, hazel), including beech, which cover large portions of the highest areas of the mountains. In particular, in the elevation range between 1.000 m and 1.800 m a.s.l., tall beech woodlands, which are one of the main distinctive aspects of the mountain landscape of this area, cover the extensive areas in the upper part of the Apennine chain. These are very dense and uniform woods, characterized by the presence of old-centuries beech trees, up to 30 m high, which create a homogeneous vegetative cover, interrupted only in a few stretches by meadows and pastures. Due to the homogeneity of landscape features of these areas, it is possible to observe the phenomenon of natural changing colors over the autumn season, as an identifying feature of these places. By referring to the purposes of the research, the area in-between Mount Pierfaone, Arioso, Volturino, and Viggiano, located in the northern part of the Park, was

Fig. 4. The temporal sequence of the satellite imagery shows the evolution of the foliage phenomenon in the beech woodlands across the study area. Bands combination RGB - real color (graphic elaboration by Alessandro Scandiffio).

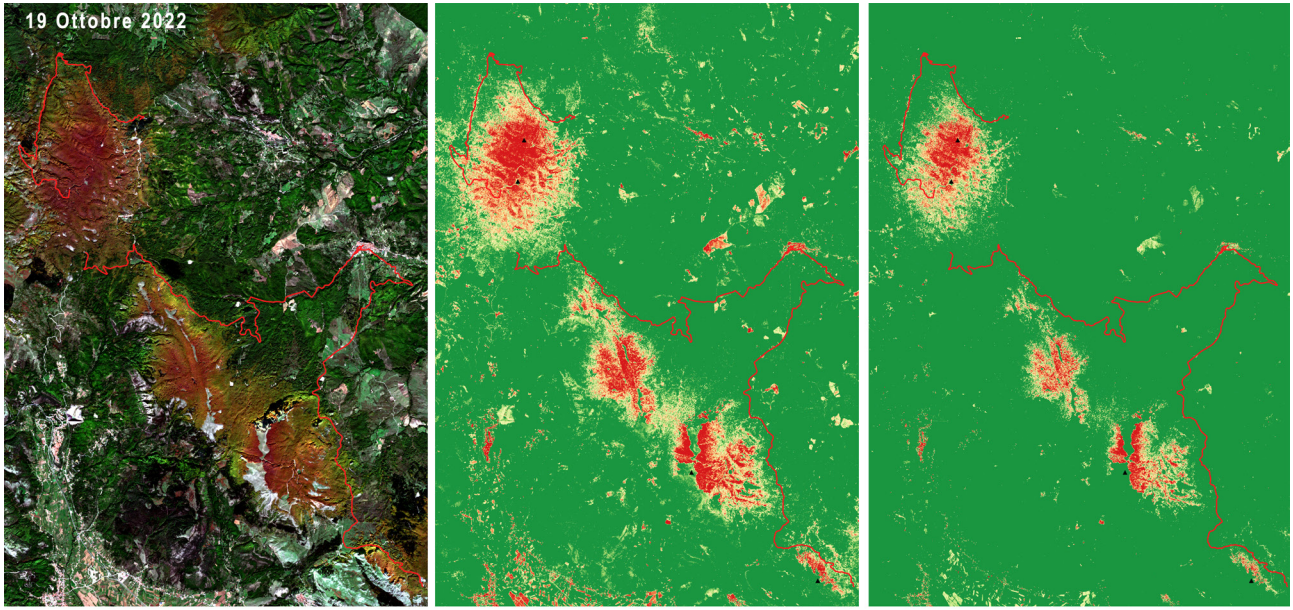


selected as a pilot case for the dynamic mapping of the phenomenon of the foliage of the beech woods, which in this area can be recognized more clearly (fig. 2). As part of the research, a direct survey on the field was conducted with the aim of analyzing, on the one hand, the physical characteristics of the places over the autumn season, and on the other hand, verifying the correspondence between satellite and ground observations, shown by GPS track, by the georeferenced photographic survey and a selection of demonstrative photographs (fig. 3).

The dynamic mapping process

This section is about the dynamic mapping process [Scandiffio 2021a], which allows the representation of the scenic phenomenon of the autumn coloring of the beech woodlands, understood as a distinctive aesthetic condition of the landscape within a certain territory. The evolution of cartographic tools, over history, has allowed the performing of increasingly accurate interpretative models of reality, able of highlighting not only the spatial elements that bear the shape of places [Pandakovic, Dal Sasso 2013, p. 218], but also to trace its evolutionary changes over time.
In the dynamic mapping process of the landscape, new relationships are established between the physical elements of the space and variable elements that change over time, which it is necessary to dynamically interpret and communicate them externally (for example between orography and vegetation, between vegetation and solar exposure, between elevation and crops). The abstract zenithal view, typical of cartography, provides a privileged point of observation of reality, enabling each one to appropriate a certain territorial portion and analyze it over time, through design tools. The landscape is only apparently static, a 'produced space', the result of a natural and/or anthropic transformation that took place over time [Sereno 1981]. Indeed, over the alternation of the seasons, the landscape varies significantly, assuming different aesthetic connotations, in relation to the rhythm of life of the natural species and the human activities that act

Fig. 5. Application of customized thresholds to the GRVI and ARI vegetation indices for foliage mapping (graphic elaboration by Alessandro Scandiffio).



on the earth's surface [Palang et al. 2007]. The relationships between shapes and colors of the landscape are strongly interconnected through the cycle of the seasons, [Stobbelaar, Hendriks 2007, p. 105] and can they can be analyzed in a space-time dimension through complex mapping systems.
Many seasonal changes in the landscape are linked to crop cycles and variations in vegetation, which is one of the most changeable components of the landscape during the year and which creates scenarios of continuous interest in the field of sustainable tourism. By investigating the main phenological phases of the life cycle of plants, it is possible to dynamically identify and map the evolutionary path of plants. By exploiting the potential of the multispectral satellite imagery of the Sentinel-2 mission, within the European Copernicus Program of the European Space Agency (ESA) [Marconcini et al. 2020, p. 654], it is possible to simultaneously observe both the spatial and temporal dimensions of the landscape, where scenic-perceptive phenomena of interest to the community occur seasonally [Scandiffio 2021a]. Dynamic mapping, therefore, is configured as a critical-interpretative process that enables extracting from the satellite image, which provides a comprehensive zenithal representation of reality, the conditions of the greatest evidence of the specific phenomenon (for example foliage), which occurs in some characteristic places and at a specific time of the year.

Methodology

The methodology is based on four fundamental points: the acquisition of multispectral satellite images, the image processing by combining the electromagnetic bands for the computing of the vegetation indices, the identification of customized thresholds of the vegetation indices for the mapping of the specific scenic phenomenon, and the interpretation of the results.
The European Copernicus satellite observation program enables the free use of temporal series of multispectral satellite imagery of the Sentinel-2 mission, with a high spatial resolution (10 m) and temporal resolution (revisit time 3-4 days at mid-latitudes), which cover the whole earth's surface. The use of multispectral imagery allows the use of different bands, which record the reflectance values, emitted by objects which are on the earth's surface, in different wavelengths of the electromagnetic spectrum (for example visible, infrared, near-infrared). For mapping seasonal phenomena affecting the vegetation, specific vegetation indices are used in literature (for example NDVI, GRVI, EVI, ARI, etc.) which, through appropriate combinations of different bands, allow investigating the phenological cycle and analyzing the health status of vegetation [Tucker 1979]. In the case study, the Semi-Automatic Classification (SCP) plug-in in GIS software was used for the acquisition and processing of multispectral satellite images [Congedo 2021]. The temporal analysis of the satellite imagery acquired in the area of the beech woods in the Lucanian Apennines enables observing the evolution of the coloring phenomenon over the autumn season by visualizing satellite images in the real color combination (RGB) (fig. 4). This is a preliminary step to analyze the evolution of the coloring phenomenon over time.
Some of the most interesting methodological aspects concerning the mapping of the coloring phenomenon deal with the research of the vegetation indices which are sensitive to the change of coloring of the leaves (from green to yellow, from green to red) and with the performing of related thresholds. In scientific literature, the performance and applicability of some vegetation indices for the study of spring flowering and autumn coloring in relation to the different types of trees are analyzed. The vegetation indices that exploit different combinations of the green and red bands perform better than other well-known indices such as NDVI [Motohka et al. 2010; Junker, Ensminger 2016]. Referring to the purposes of the research, two different combinations of the red and green bands have been used which correspond to the following vegetation indices:

$$GRVI = \frac{GREEN - RED}{GREEN + RED}$$

$$ARI = \frac{1}{GREEN} - \frac{1}{RED}$$

For each satellite acquisition, in the selected time range (autumn 2022) (fig. 4), the ARI GRVI vegetation indices were computed. The ARI index was taken into consideration, in relation to the presence of anthocyanin pigments, responsible for the coloring of the leaves, but it appears to be less performing than the GRVI one (fig. 5). The GRVI, being a normalized difference, can assume values ranging between -1 and +1. For the research purposes of mapping, it is also necessary to identify one or more specific thresholds in relation to each specific vegetation index, through which it is possible to 'isolate' the features of the searched phenomenon. In the case of autumn coloring,

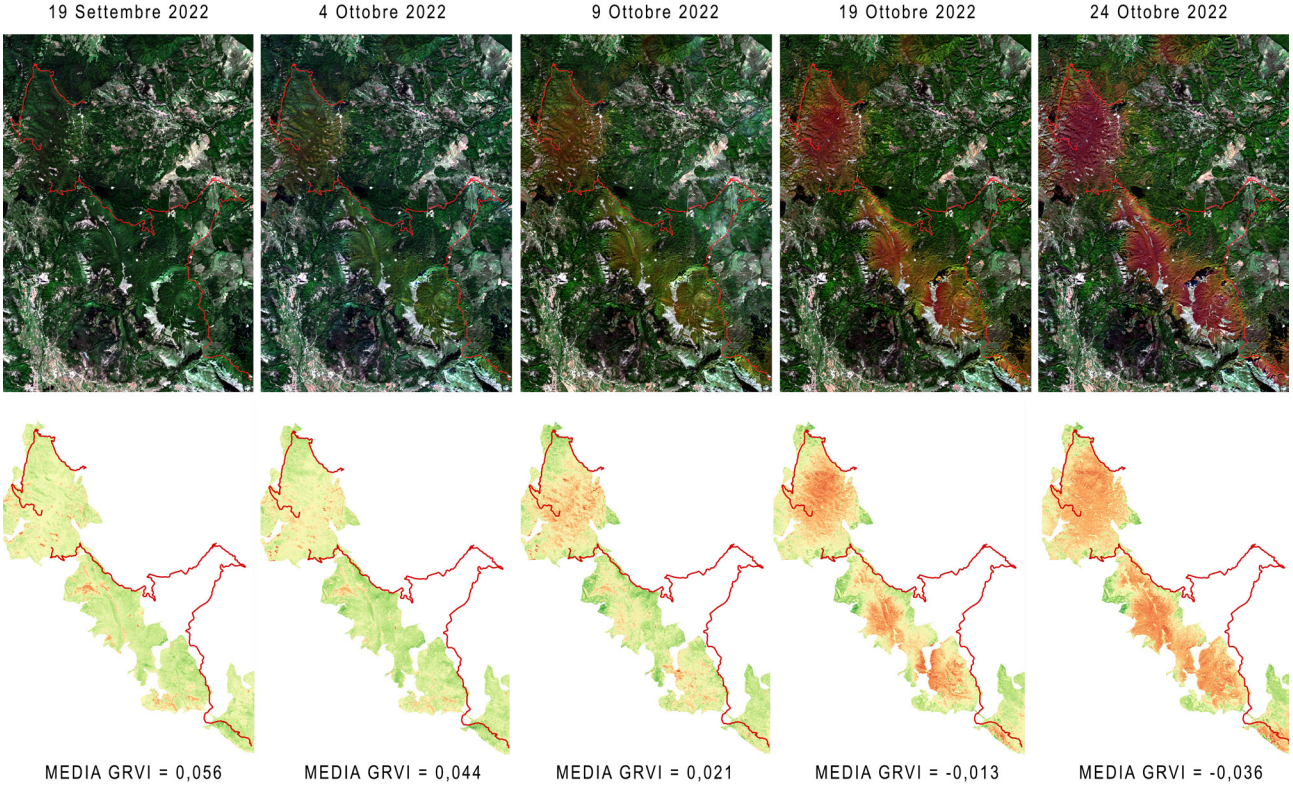


Fig. 6. Temporal sequence which highlights the trend of the GRVI average values (graphic elaboration by Alessandro Scandiffio).

the GRVI value=0 represents the sensitive threshold able to separate the green surfaces from those in color. Negative GRVI values make it possible to map the different nuances of autumn colors of the beech woods in the study area.

Results

The application of the methodology based on the vegetation indices, which use the combinations of the red and green bands, enables mapping with high accuracy of the areas where the autumn coloring of the beech woods occurs and its temporal evolution. It is evident that over the clìmax condition of the coloring foliage (range between 19th October 2022 and 24th October 2022), the GRVI performs, within the beech woods, the minimum value, equal to approximately -0.2, which identifies the maximum level of coloring. The GRVI values, which are related to significant color variations, range between 0 and -0.2. Furthermore, the trend of the average GRVI value, in the area of beech woodlands, for each satellite acquisition, has been computed, with the aim to show in a spatio-temporal perspective, the temporal evolution of the coloring phenomenon, and the effectiveness of the methodology proposed for mapping this phenomenon (fig. 6).

Conclusion and future development

The research shows a method for the dynamic mapping of the scenic phenomenon of foliage which, in recent years, has been characterizing some places as new tourist destinations in many areas of Italy. In this perspective, the use of satellite observations, with high spatial and temporal resolution, allows for the creation of new forms of representation which, in a dynamic way, show the processes taking place in the landscape, making them visible even to inexperienced eyes. The temporal dimension provides further hints for the analysis of the physical and cultural components of the landscape, typically represented in a static form in the maps, enriching them with changing contents that reproduce the variability of reality in a visual form.
Furthermore, if we consider that the foliage phenomenon is a manifestation of a crisis situation of the plant and that this is directly influenced by the climate, these methodologies can also offer, considering the increasing evidence of the issues related precisely to the climate and environmental crisis, analytical tools and significant research opportunities not only in the field of tourism management, but also for broader awareness-raising and territorial governance strategies.
Further research development can be addressed towards the development of methodologies that allow the integration of satellite observation with ground observation in a more effective way, to make the results more accurate and usable also in a predictive perspective, also including location-based service and users generated contents for mobile devices. By considering the role of these kind representations for practical use, they may configure as tools able of supporting decision-makers in defining territorial development strategies, if appropriately integrated within web mobile applications and/or web portals for the provision of geolocalized information, usable by local actors and single users.

Credits

Author contributions: all the authors shared the principles and the research topics presented in the article. However, the paragraph titled *The methodological framework: dynamic mapping of changeable landscape*s was written by Andrea Rolando; the paragraph *The seasonality of landscape*s *in the enhancement processes promoted by landscape planning* was written by Mariavaleria Mininni; the paragraphs titled *Study area: the beech woodlands across the Lucanian Apennine National Park, the dynamic mapping process*, *Methodology*, *Results* were written by Alessandro Scandiffio; the paragraph *Conclusion and future development* was jointly written by all authors.

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Geometric Modelling in the Narrative of Metropolitan Areas: a View on Attraction Dynamics

Amedeo Ganciu

Abstract

The new urban geographies are characterised by a high variety of activities and functions that interact with each other with different complexity, creating polycentric, hierarchical and asymmetrical spatial organisations. The new urban geographies, made up of relationships, force a radical rethinking of mapping, more directed towards the exploration of new intangible realities and freed from the need for cartographic correctness; a voluntary act made up of choices, omissions, additions. Searching for and experimenting with new ways of representing metropolitan complexity, in particular the attractiveness of cities, we arrived at a modelling of three-dimensional geometric surfaces capable of describing the phenomenon with greater emphasis and communicative capacity. The analysis is carried out by adopting a bird's-eye viewpoint, which, although it tends to generalise by simplifying the complexity of a territorial system, allows its characteristics to be observed and understood globally. The geometric modelling of the attractive phenomenon is the result of a complex graphical-analytical algorithmic procedure based on a hybridisation between graph theory and sophisticated spatial analysis methodologies. The result obtained is a three-dimensional geometric surface of extension equal to the analysis area, whose Einsteinian-inspired morphology deforms as a function of the force of gravity exerted by the metropolis. The case studies are two regions with the main Italian metropolitan areas within them: Rome and Milan.

Keywords: maps, cartography, data visualisation, urban phenomena, metropolitan areas.

Introduction: view on the evolution of mapping

The evolution of 'mapping', from its origins to contemporary times, has always been characterised by the constant need to connect reality and its representation, regardless of the conditions of the historical, economic and social context in which this activity is performed [Cosgrove 1999; Salerno 2021]. Conceptually, the map is a model in its most formal sense, i.e. an artefact designed and used to replace reality with a less complex representation of it, be it physical or abstract, to allow measurements or actions of various kinds that would be impossible to perform in reality, highlighting the elements that are subjectively considered to be the most important in relation to a given purpose. This definition allows two fundamental and consequential issues regarding mapping operations to be made explicit. The first is the inescapable subjectivity in choosing what is important according to the purpose and the way the observer decides to examine reality, i.e. his or her point of view on the 'object' he or she is studying and representing. The second derives from the first and is as simple as it is fundamental: the map is not reality but an interpretation of it, more or less sophisticated, more or less correct, and sometimes even paradoxically misleading or dishonest [Bergamo 2021; Moretti 2021].

Technological progress, which has particularly affected the technical-scientific disciplines, has inevitably acted as a catalyst in the evolution of cartographic sciences, with regard to surveying techniques, cataloguing and representation, purposes, and the very object of reality modelled through

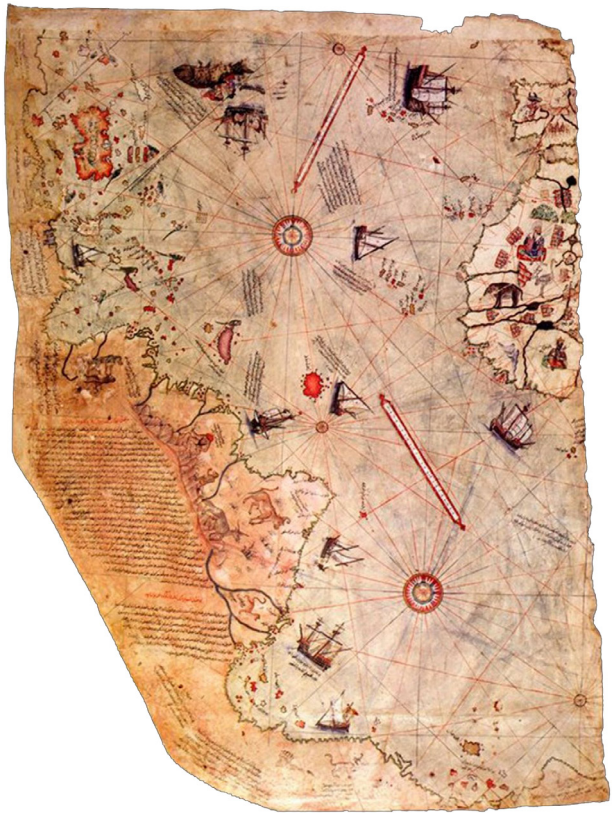


Fig. 1. Piece of the map made by Admiral Ahmed Muhiddin Piri in 1511 and found by the theologian Gustav Adolf Deissman in 1929 in the library of the Topkapı Palace in Istanbul where it is currently kept.

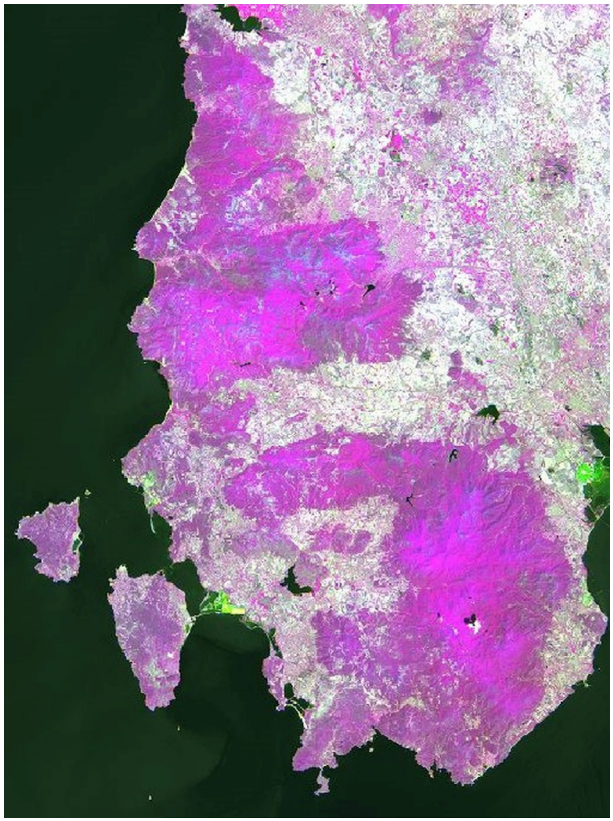


Fig. 2. Map from multispectral processing from Sentinel2 satellite acquisition, in particular the south-western coast of Sardinia with the vegetated areas highlighted in magenta colours using the NDVI algorithm (graphic elaboration by the author).

the cartographic medium [Llopis Verdú et al. 2019]. There has been a shift from modes of geographic data accumulation by direct knowledge and their subsequent processing within portulans since the 15th century [Lepore et al. 2017; Palestini 2021; Piscitelli 2011] (fig. 1), to contemporary means of massive and indirect acquisition and interactive data management through satellite remote sensing technologies [Buchhorn et al. 2020] (fig. 2).
Also from the point of view of purposes, the evolution of the cartographic medium shows a high dynamism: from the military and defensive purposes of the French three-dimensional cartographies of the 18th century realised through the 'Plans-Reliefs' technique [Salerno 2019], to the political purposes and representation of the 'Civitas' rather than the *Urbis* in the plan of Rome realised by Nolli in the mid-18th century using the *à poché* technique for the graphic restitution [Colonnese 2021] (fig. 3), to the strategic-commercial and softpower purposes of the European economic policy on a global scale of COPERNICUS [Zeil 2017], to an exquisitely artistic direction as in the 'Maps' project realised by the American graphic designer Paula Scher in which the conventional metrics yield the

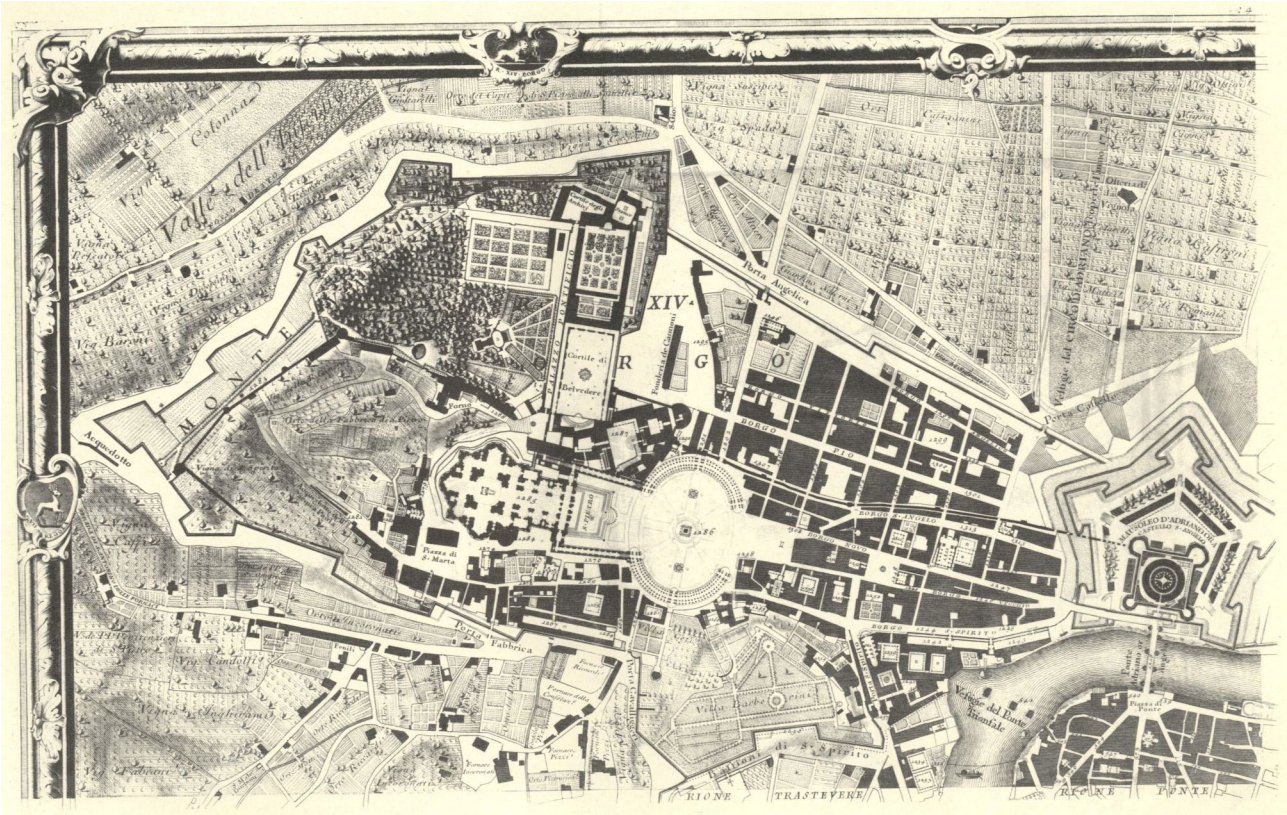


Fig. 3. Detail of the Map of Rome made by Giovanni Battista Nolli in 1748, detail of the Vatican area. Available resource online: <https://geoportale.cittametropolitanaroma.it/cartografia-storica/20/39/roma-nel-1748-9> (accessed May 23, 2023).

primacy of importance to the content and its communicative form [Palomba, Scandurra 2021].
Since geographer Roger Tomlinson created the first GIS system in the early 1960s, known as the Canadian Geographic Information System (CCIS), the computerisation of geographic data has rapidly spread and evolved in terms of analysis capacity and complexity [March, Scarletto 2017]. The development of new 'realities' parallel to our experience within cyberspace, the growing possibility of access to big data [Llopis Verdú et al. 2019] and the possibility of studying complex dynamic systems through algorithms and computer networks, have radically changed the point of view on the object to be represented; no longer physical spaces but increasingly extended and interactive virtual spaces characterised by increasing economic and social relational levels [Bergamo 2021]. In this direction, to accommodate the growing need for information correlated to the increasing territorial evolutionary complexity, the cartographic tool has evolved towards digital, dynamic [Bergamo 2021; Salerno 2021] and dematerialised forms [Valese, Natta 2021] capable of 'capturing' and representing also immaterial information through the use of infographic

visual codes addressed to all types of users [Zerlenga 2008] based on the map-diagram combination [Llopis Verdú et al. 2019] with a high information density but nevertheless capable of bringing out the peculiarities of the territory.

View on the representation of metropolitan areas

In the Italian national context, the metropolitan issue refers to the consolidation of asymmetric interdependence between contiguous municipalities, where asymmetry is given by the presence of a municipality that is larger than the others and whose force of attraction structures the surrounding territory [Calafati 2013]. The element that characterises all major urban agglomerations and in particular mega-cities [Blackburn 2019], i.e. those with a population over ten million, is their increasing attractiveness towards people, goods and energy [Wu et al. 2014; Batty 2011]. To this, the large flow of commuters who regularly travel from neighbouring or rural areas to access services or for work must also be added.
The discretion in the choice of viewpoint has over time produced numerous examples on the analytical and representative level of metropolitan areas. On the analytical level, several methodologies exist in the literature for the study of intra- and inter-metropolitan flows, mainly derived from ecological and economic sciences [Sen, Smith 2012; Fujita, Thisse 2013; Haynes, Fotheringham 2020]. Some authors have focused on defining the degree of polycentricity between different urban cores belonging to the same metropolitan area through the application of gravitational models [De Goei et al. 2010; Van Oort et al. 2010], while others have concentrated on studying the relationships between the centre and the surrounding area [Burger, Meijers 2012]. In this direction, several indicators of centrality and for the definition of sub-centres within the metropolitan constellation have been developed and used [Vasanen 2012; Veneri 2010; Veneri 2013; Roca Cladera et al. 2009; Krehl, 2018; Limtanakool et al. 2007]. However, the complexity of these models is often so high that the representations of their results are inaccessible if the user lacks the appropriate theoretical knowledge or more generally does not possess an adequate level of graphicacy [Cicalò 2020]. In this direction, the work of Craig Taylor as Senior Data Visualisation Design Manager of 'mapzilla' [1] is oriented. His elaborations, although based on a solid methodological and analytical foundation, are more oriented towards the development of infographics capable of filtering and representing with greater impact and understanding the territorial complexity and organisation of metropolitan systems from different points of view. For example, in the study of metropolitan spatial accessibility, the visualisation of travel times between the geographic centre of the metropolis and the peripheral areas is mapped by means of 'coral lattices' whose thickness is directly proportional to the level of accessibility (fig. 4). Considering the immateriality of the space of flows and the emergence of the network society at the beginning of the new century [Castells 2000], which conditions the everyday contemporaneity of human existence, the research conducted by the Senseable City Lab of MIT Boston [2] in particular on the project called 'Wanderlust', oriented towards the quantitative description of people's mobility, in particular towards attractive places, through their representation in spatial and temporal spectral form [Salerno 2021) appears equally significant (fig. 5). The realisation of the previous experiences was also possible thanks to the exponential technological development associated with an increasing accessibility to big data, which is acting as a catalyst for the evolution of graphic artefacts towards software-based workflows and algorithms for the construction of new augmented landscapes, necessary to probe the complexity of the non-human and to understand and govern its dynamics [Bergamo 2021]. In this direction, and focusing on the topic of research, it is possible to identify several researches in the literature that conceptualise the metropolitan area in the form of a network to be studied through graph theory and the metrics it makes available [Newman, Girvan 2004; Boccaletti et al. 2006]. According to this methodological approach, a metropolitan area can be schematised through nodes representing urban cores within the metropolitan constellation and links connecting them, with which different types of relationships are represented: commuter flow, goods, energy, political, economic or social relationships [Derrible, Kennedy 2011; Szmytkie 2017].

Case study and methodology

In line with the previous arguments, through this research we wish to explore new ways of representing territorial relations within contexts characterised by the presence of metropolitan areas, with particular reference to the force of attraction they exert. The case studies selected are the

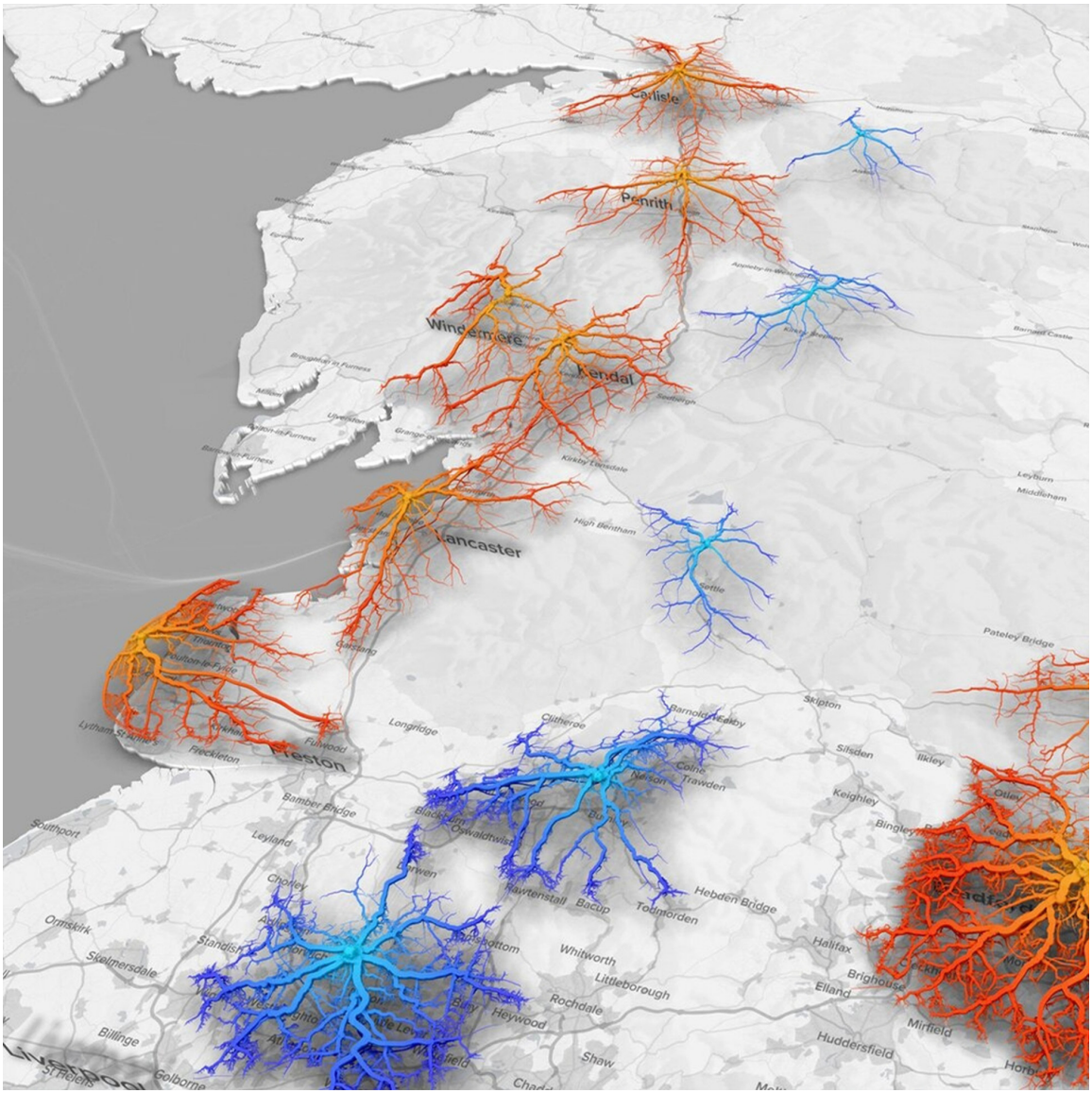


Fig. 4. The Coral Cities by Craig Taylor depicts spatial accessibility within 30 minutes moving from the urban centre to the suburbs by car. Online resource: <https://mapzilla.co.uk/work/the-coral-cities> (accessed May 23, 2023).

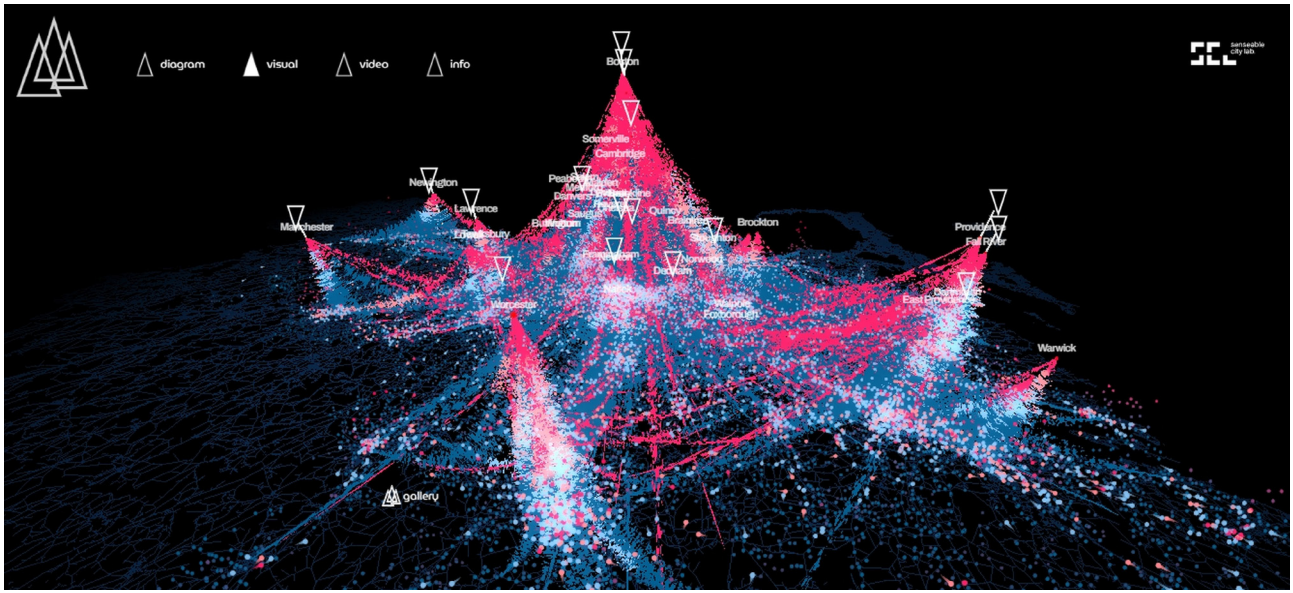


Fig. 5. Representation of 'The universal visitation law for human mobility' by Schläpfer., at the Senseable City Lab, MIT and published in the journal Nature [Schläpfer et al. 2021].

regions of Lombardy and Lazio because they are characterised within them by the two main Italian metropolitan systems, in terms of resident population and new economic wealth produced [UNHSP 2016]: Milan and Rome respectively. Exploiting the analytical potential of graph theory, it has already been shown how it is possible to determine in quantitative terms the attractive force of each urban centre within the study regions, by algebraically measuring this force as a function of the number of commuters travelling daily [Ganciu et al. 2018]; however, the aim of this research is not to investigate the dynamics in theoretical, methodological and quantitative terms, but rather to develop new ways for its representation, more suitable in representing the complexity of the phenomenon. However, for a better understanding of the research, it is considered necessary to briefly recall some elements of the previous works [Ganciu et al. 2018], which is the starting point for the development illustrated below. The data on commuting were extrapolated from ISTAT's National Commuting Matrix produced on the basis of the 15th National Population Census. This is a database of 4,876,242 records that condenses the interviews of 28,871,447 citizens who commute daily between their residence and their place of study or work, by any means of transport, whether public or private. Basically, it is a matrix in which each row shows the 'Source' and 'Target' municipalities, i.e. origin and destination, and how many people move between each municipality. Quantitative analysis was done by transforming the commuting matrix into a Graph (G) consisting of a non-empty set of nodes denoted as 'V(G)', a set of links denoted as 'E(G)' disjointed from 'V(G)', and the relationships (Ψ) associated with each link connecting two nodes [Boccaletti et al, 2006]; this transformation was performed using a specific library of the Python language called NetworkX, and importing the corresponding file into the Gephi software for subsequent calculations. The nodes represent municipalities; the presence of a link between two nodes indicates the existence of a flow of commuters between them; the magnitude of this flow, i.e. the number of people moving between two municipalities is associated with the link as a weight (w).

In order to determine the attractiveness of each municipality, the main measures of centrality were carried out, such as the degree of the weighted node '*Deg(w)*', which represents the sum of all weighted links converging on each node in the network, in other words the total number of commuters entering and leaving each municipality in the network, formally:

$$Deg(w) = \sum_{j=1,n} e_{ij}^{w}$$

with 'e' representing the weighted link between nodes (i) and (j). Given that each municipality is usually represented by a flow of incoming commuters as well as outgoing commuters, by exploiting the directionality of the links it is possible to calculate incoming commuters through *DegIN(w)* and outgoing commuters to other municipalities through *DegOUT(w)*, thus for each municipality in the study the following relationship also applies:

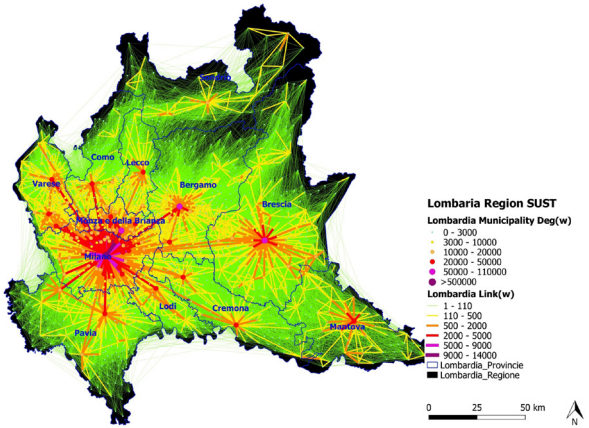
$$DegTOT(w) = DegIN(w) + DegOUT(w)$$

(figs. 6, 7).

In the research development presented here, starting from the above equation, it is possible to derive the net commuter flow for each municipality, meaning the algebraic difference between incoming and outgoing commuters for each municipality:

$$Fn = DegIN(w) - DegOUT(w)$$

Therefore a positive net flow (*Fn+*), will indicate attractive urban centres, vice versa a negative net flow (*Fn-*) will instead indicate those municipalities that give up commuters on a daily basis, to the advantage of the larger centres. Subsequently indicating with 'z', the net flow of commuters (*Fn*) as described above, the variable can be treated as the third spatial coordinate to be used in modelling the geometric surface that, as mentioned, will represent the commuter attraction capacity of each municipality. The proposed methodology also has the capacity to consider the cumulative effect produced by the proximity between urban centres by assuming that the attractiveness of a given territorial portion containing two or more administrative units possesses an attractiveness greater than the sum of the respective municipalities taken individually.



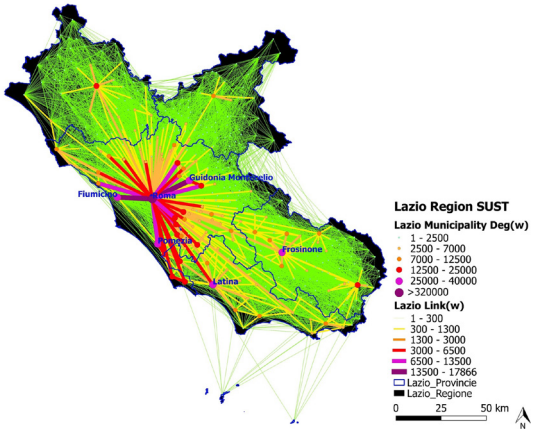


Fig. 6. Map of commuter mobility in Lombardy based on 2011 ISTAT data [Ganciu et al. 2018, p. 11]. The presence of a link indicates a flow of commuters between two municipalities, the number of travellers is expressed by weight (w).

Fig. 7. Map of commuter mobility in Lazio based on 2011 ISTAT data [Ganciu et al. 2018, p. 11]. The presence of a link indicates a flow of commuters between two municipalities, the number of travellers is expressed by weight (w).

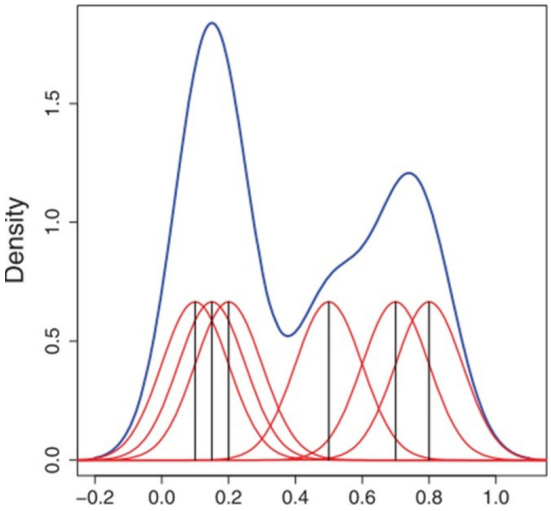


Fig. 8. Geometrical-mathematical example of cumulative estimation through KD [Chen 2017].

The geometries of the municipal administrative units processed in vector format (shp.file) were taken from the ISTAT database. Subsequently, again by means of GIS, a specific algorithm was used to calculate for each municipal geometry its centroid, which can be summarily indicated as the geometric centre of gravity of the municipal polygon considered, making it possible to obtain a new vector file composed of point primitives characterised by triples of Cartesian coordinates, with the values of 'X' and 'Y' expressing respectively the East and North co-ordinates of each centroid with respect to the chosen reference system, in this case based on the RDN2008/UTM zone 32N, and the third coordinate 'z' representing the value of (Fn). The cumulative attractiveness was also calculated within QGIS, through the use of the native algorithm for calculating Kernel Density [Chen 2017], which is influenced both by the degree of proximity or closeness of the centroids, but also of course by the relative variable 'z'. In particular, the KD also known as the 'Parzen window' [Parzen 1962], is one of the best known approaches to estimate the probability density function of a data set. Since the KD is a non-parametric density estimator, i.e. it does not require the assumption that the underlying density function belongs to a parametric family, it allows the algorithm to autonomously learn the distributional form of the density from the data (fig. 8). Figure 8 illustrates a simple example that explains the logic behind the KD algorithm: there are six observations, located at the positions indicated by the black lines. The individual observations make it possible to determine the probability of the density expressed by means of the Gaussian in red colour, which when added together yield the cumulative density estimate expressed by the blue curve.

Through the KD, positive and negative interference areas were then identified for each of the two study regions within a 20km radius of each municipal centroid; this radius was chosen because it is representative of the average distance of each centroid from its closest neighbours. The result of the analysis is provided through a raster model with a cell resolution of 250m × 250m. Each pixel of this raster thus contains a numerical value representative of the cumulative attractiveness of the municipalities that was subsequently used to model a geometric surface that interpolates all the values contained within the pixels obtained from the KD. The algorithm used for the interpolation is Inverse Distance Weighting - IDW [Lu, Wong 2008; Choi, Chong 2022], which based on the 'bird's eye' approach, as described in the introduction, was configured to consider the entire available dataset. In other words, given 'n' values present in 'n' pixels, the output raster was generated by interpolating n*(n-1) values, allowing the value of the variable to be estimated over the entire regional surface area. Again, the result is provided through a raster model for each of the two regions, with a resolution of 250m × 250m. This graphic-numerical matrix was finally treated as a sort of DTM (Digital Elevation Model) for three-dimensional modelling and visualisation, (figs. 10-12), making it possible to effectively visualise the attractive force of the urban poles through maps that will have the peculiar characteristic of being deformed by the attractive force that the metropolis exerts on the surrounding territory.

Results and conclusions

The geometric surface modelling presented in this research confirms previous research that identifies the cities of Milan and Rome as massive poles of attraction capable of significantly influencing the regional context in which they are located. In fact, by means of a 'drapping' operation (a technique that can be summarised by imagining spreading

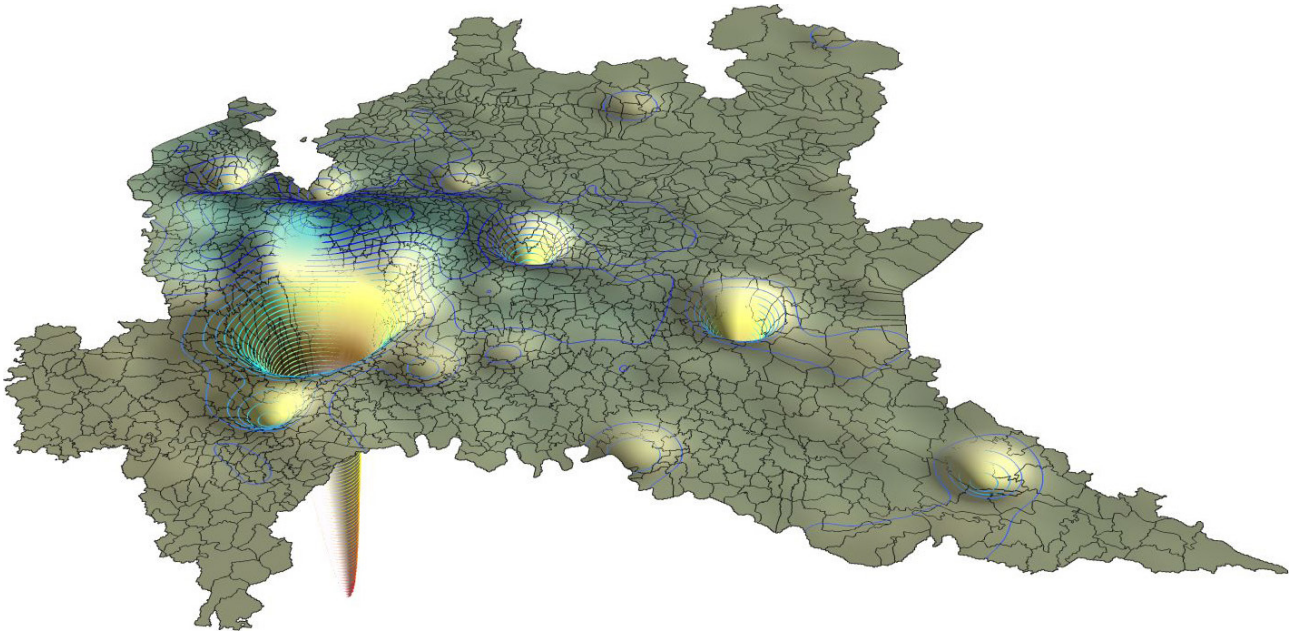
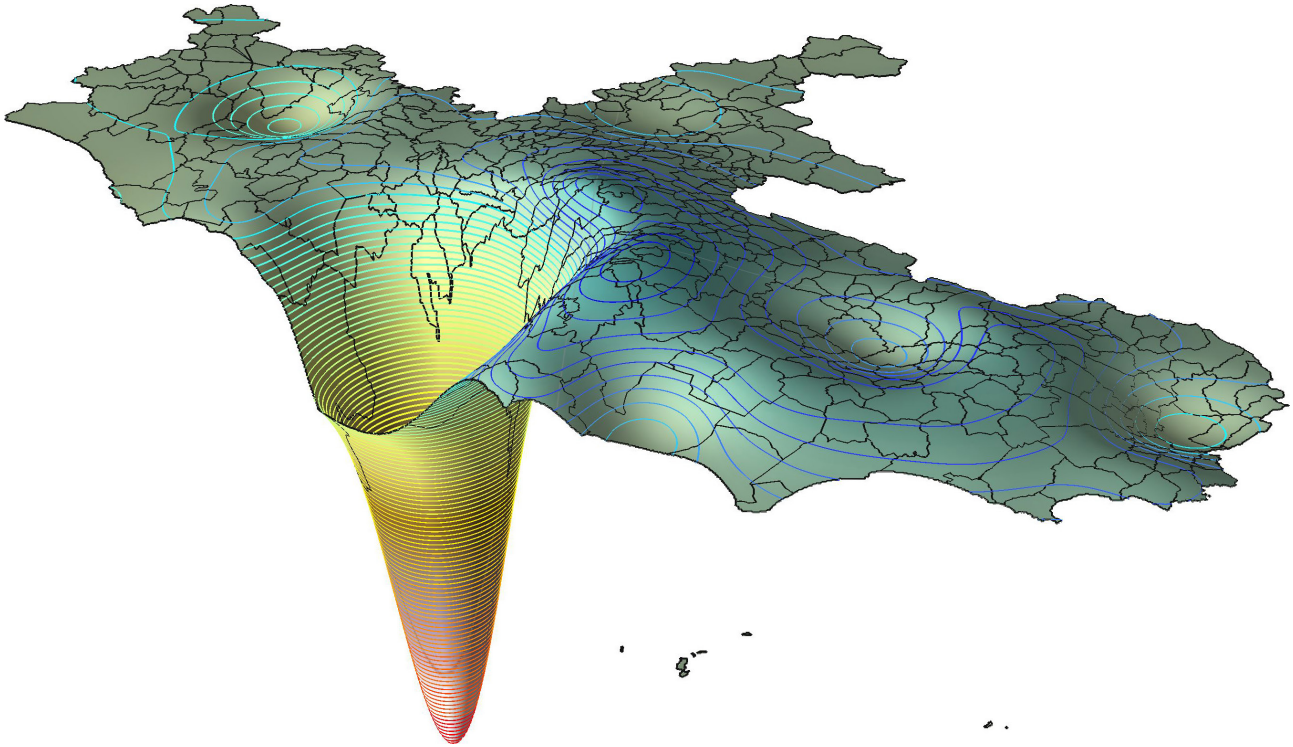


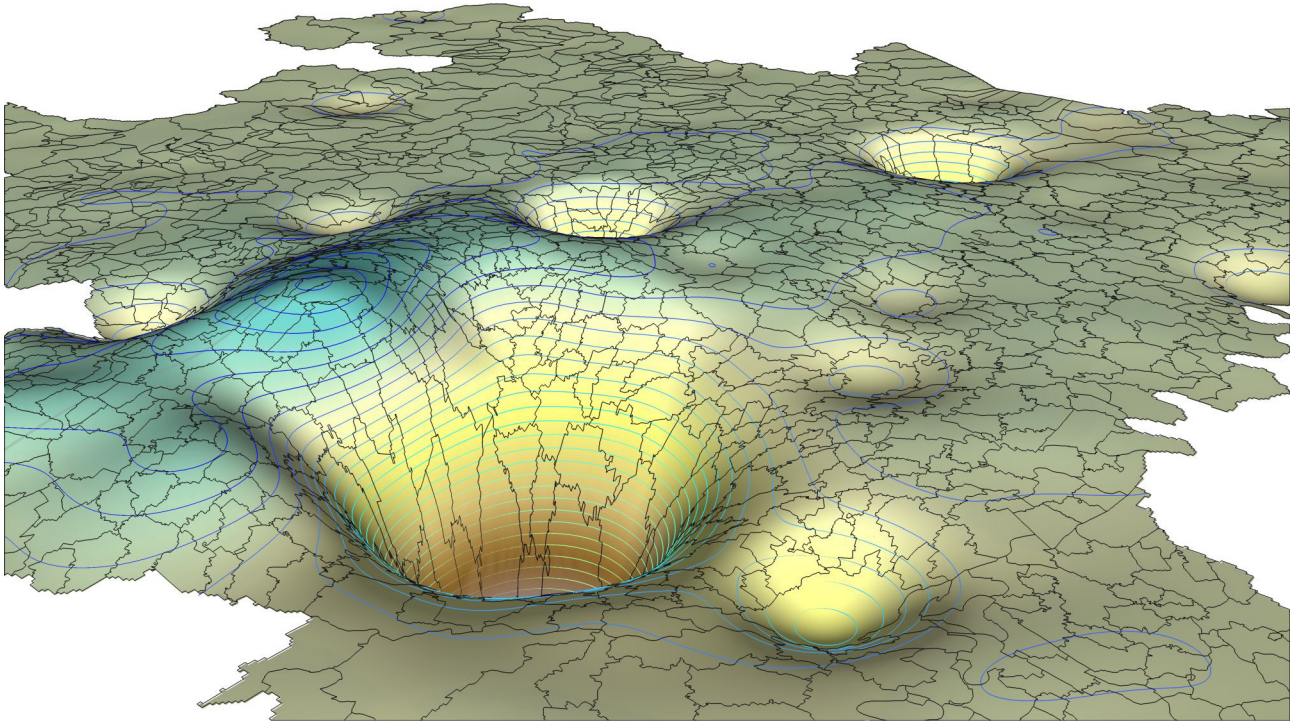
Fig. 9. Representation of cartographic deformations generated by the attractive power of cities in Lombardy (graphic elaboration by the author).

Fig. 10. Representation of cartographic deformations generated by the attractive power of cities in Latium (graphic elaboration by the author).



a transparent sheet over a solid) between the vector layer containing the municipal polygons and the calculated geometric surface, it is particularly evident how the geometries of the polygons tend to lengthen considerably once they have passed a threshold of attraction that we could metaphorically indicate as a sort of 'event horizon' (figs. 9-12). Modelling shows how beyond this limit the strength of the city grows exponentially, and this form of representation was particularly effective in the two proposed case studies, making the phenomenon more comprehensible than previous two-dimensional visualisations based solely on network visualisation [Ganciu 2018]. However, while this representation fulfils the objective of the research by bringing out more clearly the attractiveness of the cities and the power relations between the different urban centres within the two regional contexts, it is still unable to answer the legitimate question of how far the city's attractiveness extends in areal terms. In other words, further development is needed in the forms of representation in order to identify the solution that will make it possible to visualise the overall extension of the ramifications that, starting from the metropolitan pole, branch out over the entire surrounding territory and through which commuters move. In fact, it can be observed, comparing the results obtained in this research, that in the area containing Rome, the 'gravitational cone' is less deep but much wider than that observed in Milan; this apparent anomaly can be explained by considering that the proposed modelling is sensitive to the number of incoming commuters, manifesting the phenomenon through the depth of the cone, but is also sensitive to the interactions with the entire regional context according to a 'bird's eye' approach, evaluating the attractiveness of all the

Fig. 11. Detail of the cartographic deformations generated by the attractive power of the Milanese metropolis in Lombardy, one can observe how in the vicinity of the gravitational cone the deformations of municipal polygons increase dramatically (graphic elaboration by the author).



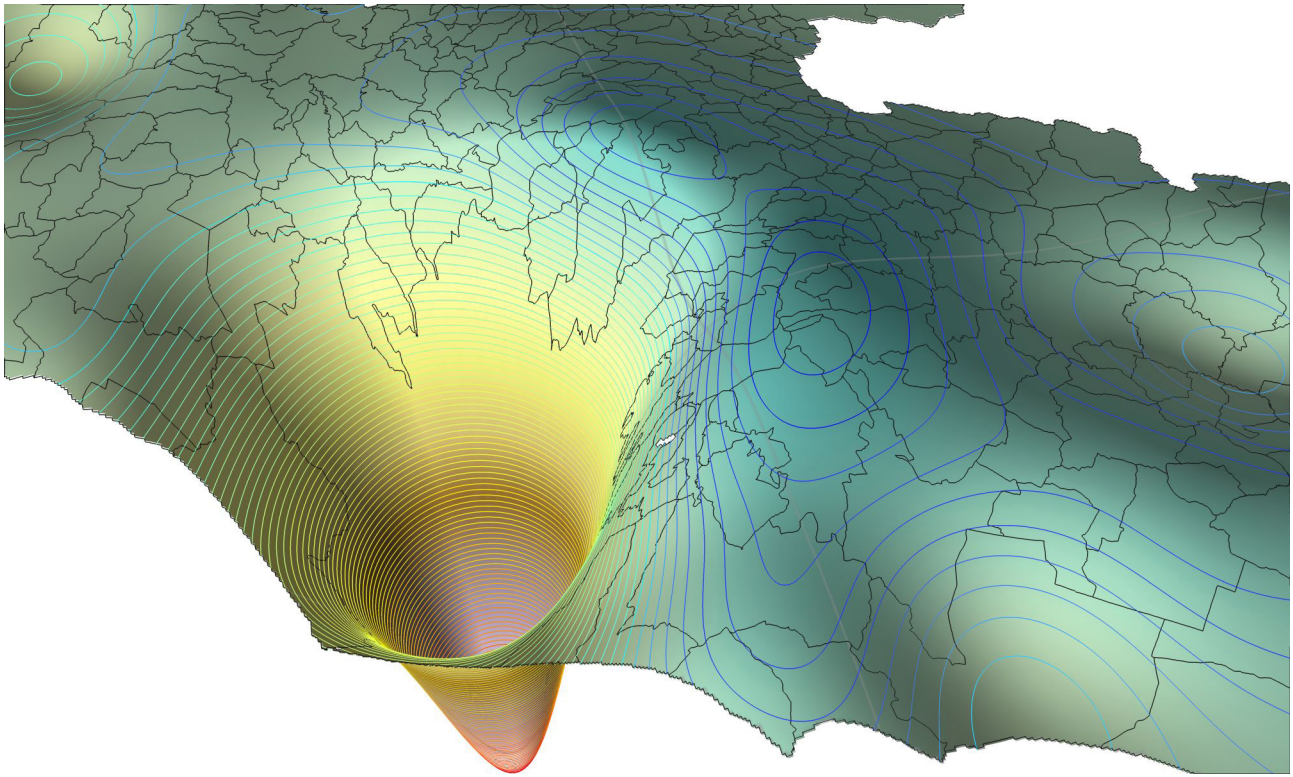


Fig. 12. Representation of cartographic deformations generated by the attractive power of cities in Latium, again it can be observed how in the vicinity of the gravitational cone of Rome the deformations of municipal polygons increase dramatically (graphic elaboration by the author).

municipalities and their ability to resist the attraction of the metropolis. If in fact in Lazio there are no powerful gravitational centres with significant capacity to balance the attraction of the Roman metropolitan area, the same cannot be said in the case of Lombardy with the presence of Milan and other urban centres capable of resisting the attraction of the great metropolis.
In conclusion, as discussed in the introductory section, the proposed mapping is the result of a well-considered but nevertheless arbitrary choice of the variables to be considered in the study, of the methodology for analysing and representing them, and of the point of view adopted by the researcher to observe the object being studied. This consideration, in the light also of the other examples illustrated, is of fundamental importance in the ability to nonetheless observe with a critical eye the graphical result obtained beyond the methodological complexity. In other words, it is not possible to exclude the possibility that variations in the point of view on the metropolitan phenomenon may generate different results, although this seems unlikely given the further confirmations obtained in this research. The proposed methodology has proven to be a useful tool to represent complex even intangible phenomena such as the attractiveness of cities, however, further development is deemed necessary to satisfy new research questions such as determining the territorial extent of influence.

Notes

[1] <www.mapzilla.co.uk> (accessed May 22, 2023).

[2] <https://senseable.mit.edu/> (accessed May 22, 2023).

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From the Eye of the Gods to the Eye of Google? Reflections on the Influence of Aerial Photography on Architectural Design

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Abstract

The representation and communication of contemporary architecture is going through a moment of paradigm shift in which the presence and use of photography is becoming increasingly prominent both when it comes to images of the actual building and when the image is synthetically generated from a three-dimensional mode. Already during the first modern movement we thought of buildings seen from above, from a biplane flight, and even earlier the bird's eye perspective showed how on some occasions the compositional effort was concentrated on a part of the building that would never be seen directly, but only perceived through its representation. Nowadays, aerial photography is gaining increasing importance both in communication and in the conception of the architectural project thanks to the existence of satellite applications, which mediate our perception of it to the point that it is possible to argue that the roof has transformed into fifth facade of the building and that this is, at times, the most important one. In this contribution we present a reflection on the importance that the point of view from above has acquired in the photographic narrative of architecture. Proposing an analysis of the various circumstances that have propitiated it such as: the digital use of architecture, the massive use of systems that favor the aerial view of the city and finally the expansion of the possibilities of aerial photography using drones and other devices.

Keywords: aerial photography, contemporary architecture, Google Maps*, drones.*

Introduction

The representation and communication of contemporary architecture are going through a moment of paradigm shift in which the presence and use of photography is becoming more and more prominent both when it comes to images of the real building and when the image is synthetically generated from a three-dimensional model, the so-called rendering. This situation, as Joan Fontcuberta theorized on several occasions with his reflections on the post-photographic era, affects many other contemporary areas but, above all, it ended up influencing and, in a certain way, guiding the architectural design.
The relationship between photography and architecture has been extensively studied and discussed since the advent of this medium [Fontcuberta 2017] and as explained in the quote contained in the essay *Conversazione tra Jacques Herzog e Jeff Wall:* "Da un fotografo ci aspettiamo delle immagini ma forse non era previsto che anche l'architettura cominciasse a pensare in termini d'immagine" [Becthler 2005, p. 22].
This report becomes particularly interesting if we analyze some recently built projects related to aerial photography. Already during the first modern movement we thought of buildings seen from above, from a biplane flight, and even earlier the bird's eye perspective showed how on some occasions the compositional effort was concentrated on a part of the building that would never be seen directly, but only perceived through its representation [1].

Fig. 1. Spiral Jetty, Smithson.

Nowadays, aerial photography is gaining more and more important both in communication and in the conception of the architectural project thanks to the existence of satellite applications such as *Google Earth* and *Google Maps*, which mediate our perception to the point that it is possible to argue that the roof is transformed into the fifth facade of the building and that this is, sometimes, the most important one.

Designing 'to be seen from above', the first experiences

In this analysis it is essential to try to establish the path that led to aerial photography becoming an essential element in architectural design and not a consequence that 'happens' once the building has been built. We therefore propose a reflection on the importance that the point of view from above has acquired in the photographic narrative of architecture.
Thus, even if the relationship between aerial photography and architecture began to be analyzed as early as the beginning of the past century [3]we can point out as one of the first experiences in designing 'to be seen from above' the work Proposals for the Dallas-Fort Worth Regional Airport (Tippetts-Abbett-McCarthy-Stratton, Architects and Engineers) in which, in 1966, lead land art artist Robert Smithson was brought in as a consultant.
As Janna Eggebeen states [Eggebeen 2011, p. 88] this complex public works project was of such magnitude that it was compared to the construction of the pyramids. A unique collaboration, which lasted a year, which coincided with significant changes that occurred in both contemporary sculpture and architecture towards non-objectivity, i.e. away from the singular and autonomous work, and towards a new relationship with space and the weather. At the forefront of this change were the airport's innovative architectural design and rethinking process and Smithson's writings and proposals related to the DFW project.
Smithson opens the door, already at the end of the sixties of the last century, to an important idea that will later change many paradigms, when he states that: "Aerial photography and air transportation bring into view the surface features of this shifting world of perspectives. The rational structures of buildings disappear into irrational disguises and are pitched into optical illusions. The world seen from the air is abstract and illusive. From the window of an airplane one can see drastic changes of scale, as one ascends and descends. The effect takes one from the dazzling to the monotonous in a short space of time– from the shrinking terminal to the obstructing clouds" [Smithson 1969, p. 180]
Smithson develops his thought by suggesting that through this vision the infinite can be grasped in a finite way. For him, the straight lines of airfields and runways give rise to a perception of 'perspective' that eludes all our conceptions of nature. The naturalism of seventeenth, eighteenth and nineteenth century art is replaced by a non-objective sense of place.
Smithson's reflection on designing from above revolves around the concept of 'visibility' of the work which according to the artist is often marked by both mental and atmospheric turbulence. According to the North American artist, simply looking at art at eye level is not a solution. If we consider the aerial map as a thing in itself, we will notice the effects of scattered light and weak tone reproduction. Aerial photography at high altitudes shows us how little there is to see.
Inverting the formula of bird's-eye view as sovereign vision, Smithson argues that the merit of aerial photography is to show that the lack of objectivity in vision, which we might think arises from confusion and peculiarity on the ground, is a general condition and a scarcity in the concept of art and in the aesthetic gaze.
The work proposed by Smithson for the airport was subsequently developed with Spiral Jetty (1970) (fig.1), a work that played on the rotation of the point of view. Looking through the artwork from the ground the concept of him was not visible. It could be photographed from above and this photograph held in the hand and the picture of him in the mind, but all of this was impossible to relate adequately to the palpable experience on the ground. Concept and experience are separated and articulated as horizontal and vertical axes. In the visual arts Smithson's work has had important effects in the ongoing criticism of the art object and has even become semi-institutionalized as a contemporary art genre of everyday
Going forward in time we can name some examples of this approach where the view from above becomes a key element of the project. West 8's work for Schiphol Airport and the Netherlands' sea defenses is an early example of this. The uneven distribution of open

spaces and built-up areas in an airport; the variety of sizes, shapes, and architecture of buildings; the contrast of sizes of vessels, equipment and vehicles, and the multitude of activities and logistics of airport operations, require careful visual management to avoid the looming emergence of chaos. This is developed on two levels, that of the user, at eye level, but also that of aerial vision. The Schiphol Airport project is not about theory but about images. As Geuze and Buijs, [Geuze, Buijs 2014] indicate, the absence of solid theoretical knowledge on landscape design is perhaps indicative of a moment in the history of this discipline between the late 1980s and the beginning of the 90s. When West 8 was asked to take on the project, the question arose as to whether it was actually possible to do the landscaping of an airport. In such a dynamic environment, there seemed to be nothing to design; no drawing of a durable plan to deliver. West 8's designers had no precedent or example; it hadn't been done before. This forced the team to start thinking in terms of some sort of 'menu' rather than a final design. A list of landscaping elements has been compiled that could be serially applied in certain places and under certain conditions. The aim was no longer to develop a lasting and defined landscape, but rather to address the aesthetics of the landscape in the short term, thinking in images. The effectiveness of that 'menu' opened our eyes and perhaps can now be considered a theory in its own right.
Macarthur [Macarthur 2017] reads in the point of view from above in architecture a tendency towards the picturesque and argues that designing taking into account the aerial view of the building was a general trend in many architectures of the 90s and states, in 2000, that "Iconoclastic contemporary architects are fascinated with the shaped plan forms of the modernist buildings excoriated by the urbanist of the '70s, precisely because they are figures recognizable without a ground" [Macarthur 2017, p. 117] MacArthur recognizes an evolution of Smithson's ideas on thinking about a new point of view, in the way in which the visual experience is taken into account in the fruition of architecture that characterizes the works of the OMA studio, in the design of Toyo Ito, in the fascination for the roof surfaces of the Sejima Foreign Office and in some works by the MVRD studio. All these architectural studios do not hide strong formal research of great visual quality, as often indicated by the authors in the description of their works. The description of Senday's Media Library made by Toyo Ito (2001) is valid as an example "This striking visual quality that is one of the most identifiable characteristics of the project is comparable to large trees in a forest, and function as light shafts as well as storage for all of the utilities, networks and systems" [Sveiven 2001]. Indeed, Toyo Ito's project takes great care of the view from above, where circular structural lattices that extend from one floor to another form a clearly identifiable formal composition.
Following this idea, the projects elaborated according to this principle of searching for a strong, decontextualized visual image, only perceptible from above, would be easily identifiable by their lack of relationship with their own urban context as opposed to the search for the creation of a perceptible figure above all conceptually (from above).
These projects obviously work on the plan, but also on the materials and the final rendering of the surfaces of the roofs and roofs, trying to produce an image and a concept that detaches from the context.

The digital 'revolution'

At the same time as these advances in the field of architectural perception theory, what some theorists such as Mario Carpo have defined as the first 'digital turn' in the field of Architecture (1992-2012) [Carpo 2012] this turn took place where the first software for and computer aided manufacturing (CAD/CAM) generated a style of smooth, curved lines and surfaces that gave visible form to the early digital age and left an indelible mark on contemporary architecture. In these considerations we can indicate one of the reasons that led to the idea of architecture for images that is rooted in the process of architectural design.
In fact, digital tools make it possible to get out of the classic design based on a reasoning anchored in plans, elevations, and sections and to conceive the building directly in its volume from which the canonical representations then derive which become a consequence and no longer the generating element. This type of architecture, born from the digital and three-dimensional manipulation of abstract forms, is closer to a type of representation based on virtual images, the so-called renderings, which are nothing more than virtual photographs

Fig. 2. Lego House, Bjarke Ingels.

Fig. 3. Aomori Museum of Art, Jun Aoki.

of a virtual model. Once the building has been modeled, the colors and materials have been decided, a point of view is chosen, then the lighting and finally an image, a still of the designed building, is 'taken'.
Even more today, in what is already defined as the 'second digital turn' [Carpo 2017], the unprecedented power of algorithmic calculation favors a new type of science, in which prediction can be based on pure information retrieval and in where the search for shapes through simulation and optimization can replace the deduction from mathematical formulas. Designers have also been playing with machine thinking and machine learning for some time, and the seemingly unfathomable complexity of the physical forms they are creating already expresses a new form of artificial intelligence, outside the tradition of modern science and foreign to the organic logic of our mind.
All these architectures and the concepts associated with them are increasingly difficult to represent under the canonical views, plan, elevation, section, but above all they also need a different spatial conception. Hence, perhaps, the need for an abstract point of view, often from above, in some divine way, which adequately represents the paradigm shift taking place in architectural design.
We can then add that the way of knowing and enjoying the city has also changed through the massive use of systems that favor the aerial view of the city itself. In 2004, Danish brothers Lars and Jens Eilstrup Rasmussen brought to Google the idea of a web application that displayed static maps but at the same time gave users the ability to search, move the map, zoom, and other functions. In the space of almost twenty years this application has become the most used tool for 'navigating' the city, offering a view of the city from a bird's-eye viewpoint which increasingly becomes the way to get to know and travel through the city in a virtual also 'from within'.

Projects for the eye of the Gods (or Google)

Numerous recent projects therefore seem to respond to the phenomenon that we have just explained, a fact that undoubtedly opens up a new debate on the aestheticization of architectural design and its relationship with photography.
We can name for example the Lego House designed by the Bjarke Ingels group in Billund, Denmark, which was inaugurated in September 2017 [4] (fig.2).
It is a 12,000 square meter building which aims to represent the Lego brand. The building comprises 21 staggered blocks resembling Lego bricks, with nine roof terraces containing different play areas for children. The building consists of a series of interconnected modular spaces, which house the exhibition and experiential areas for visitors. The entire construction consists of 8,500 m² above ground and 3,400 m² of basement. The modular spaces can be visited using a series of stairways, ramps and bridges, each designed however to be used independently. In 'human sight', the building is clad in white ceramic on its exterior to reflect light and create an understated form, to avoid overloading Billund with too much color. The Lego color palette has been used with care and has been mainly confined to the interior spaces, particularly the floors, to create fluid movement between spaces and to help direct visitors within the building.
In contrast to its light appearance from the ground, visitors arriving by plane or those viewing the building via digital means such as *Google Maps* are able to get an aerial view of the primary colors which reflect the unmistakable physiognomy of the Danish brand.
Both the renderings of the project and the photographs of the building, taken by the well-known architectural photographer Iwan Baan, portray the zenith views of the building, necessary to understand the compositional effort that revolves around this captivating and strong image, an out-of-scale of the well-known bricks, which has become a landmark of the city.
The roof of the building of the Aomori Museum of Art, in Japan, designed by architect Jun Aoki can be interpreted in a similar way [5] (fig. 3). The museum consists of a structure that is flat on top and irregular on the bottom superimposed on a landscape where the ground is crossed by some trenches. In addition to the white cubic galleries within the structure, there are interstitial spaces at different scales and proportions between the structure and the ground which function as exhibition galleries that are inserted into the site. The parts of the trenches that do not intersect with the structure are used as exhibition spaces. The outer wall is a brick wall, but the joints that are drawn with a separating wall and are hidden by the absorption of the outer wall.

Fig. 4. Chichu Museum, Tadao Ando.

As a result, the building seen from eye level looks like a brick construction structure floating in the air while the trenches in the ground serve to relate the museum to the important archaeological site of Sannai Maruyama which is located nearby. Seen from above, however, the building is oriented on a perfect north-south axis (evident from the view of *Google Maps*) which defines a flat white surface, crossed by the trenches with which the symbol is almost entirely drawn. Of the museum's corporate identity, designed by designer Atsuki Kikuchi.
Also in Japan, on the island of Naoshina, the same game seems to have been proposed a few years earlier also by Tadao Ando in his project for the Chichu museum [6] (fig. 4). As the name suggests, Chichu is located underground (Chichu literally means 'in the ground') so as not to detract from the beautiful natural scenery of the Setoe Inland Sea, the museum houses a permanent collection by just three artists: Claude Monet, whose works occupy the heart of the building, Walter de Maria and James Turrell.
Seen from above, the various geometric figures that make up the space are organized around an equilateral triangle with a perfect orientation on a north-south axis of symmetry, an arrangement, again deliberately imperceptible at eye level, which takes on all its compositional sense in front of the 'eye of Google'.

Conclusions

The relationship between architecture and aerial photography has always been discussed, practically since the first advent of the latter, thanks to its ability to better understand cities and the urban development it provides. Important projects such as *Collage City* [Rowe, Koetter 1978] have made use of this mode of vision to present different possibilities for analysis and reflection around urban development.
Aerial photography has undoubtedly changed the way we see the environments in which we live and has been one of the main vectors that has led to the construction of a visually complete global space in which –thanks to contemporary digital technologies– it is now also possible to navigate.
The real paradigm shift we are witnessing is, as we have tried to illustrate, the fact that the view from above becomes a founding element of the architectural project and not a consequence of it; therefore, not just one more possibility to carry out an 'a posteriori' analysis but a real design element to consider when designing the building. Therefore, it is not a question of reworking what has already been built under a new vision, as happens in the works proposed by many artists, among which we can point out that of Aerial Facades by Camilo Monzón Navas [7], or the 'site specifics' of the Italian artist photographer Olivo Barbieri [Panaro 2017] but to propose new subjects designed to be portrayed with this technique.
We have briefly mentioned what happened in the projects of Robert Smithson, a salient figure of Land Art, to find a first approach to this idea of moving the fruition point of the work upwards and towards a different gaze that manages to capture a sense of fulfillment only from a point of view unattainable by natural means to the human eye.
The evolution of certain architectural trends with a clear search for visual effects has then led to projects in which the interest seems to increase when viewed from above, losing contact with the context and elevating the proposals to a new formal plane in which they acquire a clear protagonism in relation to their environmental context.
The question becomes new and interesting if we consider that we are reaching a point in which we design not only considering the 'real' user of the building, but also the virtual one, the one who, in fact, makes use of the so-called 'Eye of the Gods' to get to know, discover and enjoy architecture. This relationship between aerial photography and design ideas is not usually made explicit by the authors themselves, but it is increasingly common to find references such as that of MAD Architects regarding the new terminal of the Changchun airport (China) where the architects explicitly state that they have worked for create "a tranquil and inviting atmosphere, both from a distance and from inside" [8].
At a time when the development of parallel realities that are still not clearly definable, such as the Metaverse, or the so-called Artificial Intelligence, seems to want to re-orient part of our daily life, some areas of architecture are coming to terms with this new situation by proposing solutions that take into account this reality in which we are immersed and by which we are sometimes submerged, in what Fontcuberta defines as the *Furia de las imágenes*, where the digital and the virtual take over the real.

Notes

[1] Among the multiple essays who have addressed this topic we use two clear references.

[2] The relationship between aerial photography and architecture has been extensively studied in the context of the Bauhaus we can cite among other reference essays *Malevich, Suprematism and Aerial Photography* [Lodder 2004].

[3] One of the first reference texts is Holt [Holt 1919].

[4] The images of this project can be consulted in <https://big.dk/projects/lego-brand-house-2740> (accessed May 20, 2023).

[5] The images of this project can be consulted in <https://www.aokijun.com/en/works/%E9%9D%92%E6%A3%AE%E7%9C%8C%E7%AB%8B%E7%BE%8E%E8%A1%93%E9%A4%A8/ and the view from *Google Maps* in https://www.google.com/maps/search/aomori+museum+art/@40.8087733,140.7021636,847m/data=!3m1!1e3> (accessed May 20, 2023).

[6] The images of this project can be consulted in <https://arquitectura-aviva.com/works/museo-de-arte-chichu-naoshima-> and the view from *Google Maps* in <https://www.google.com/maps/place/Chichu+Art+Museum/@34.447582,133.984656,205m/data=!3m1!1e3!4m6!3m5!1s0x3553ee2be7ee61e1:0x3ca3526566847809!8m2!3d34.4477479!4d133.9847175!16s%2Fm%2F03wdjd0> (accessed May 20, 2023).

[7] The work of this artist can be consulted online on the site https://camilomonzon.com/aerial-facades

[8] <https://www.designboom.com/architecture/mad-architects-changchun-airport-t3-china-02-06-2023/> (accessed June 2, 2023).

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Visual thoughts from above

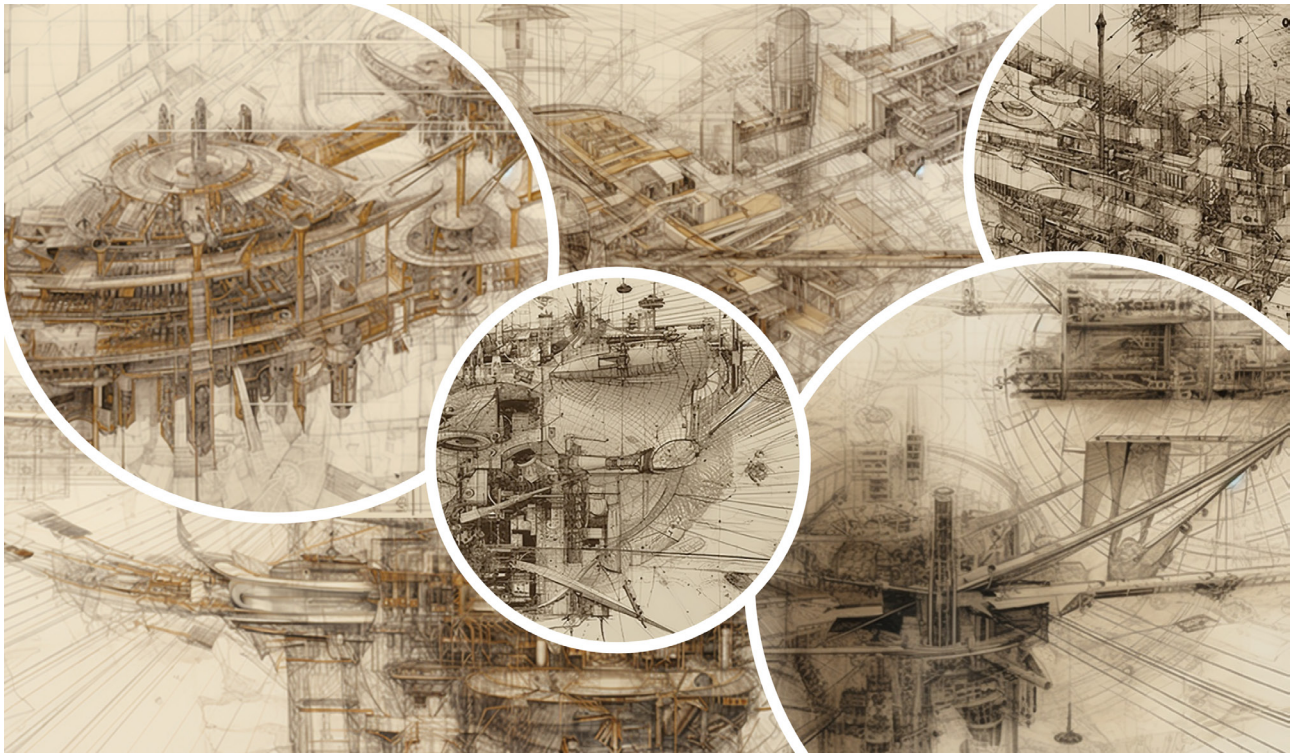
Icarus' Tears: Gaze and Vision

Cesare Battelli

In the *Metamorphoses*, Ovid recounts the myth of the labyrinth, the story of Daedalus and Icarus and the overcoming through flight of the labyrinthine structure, a symbol of imprisonment but also of the indissoluble bond between one's body and one's view of the world.
Daedalus, guilty of having helped Theseus and Ariadne in the defeat of the Minotaur, by order of the ruler Minos is locked up with his son Icarus inside the labyrinth that he himself had devised. From the labyrinth, the two protagonists cannot get out except by opposing the horizontality of the structure with the verticality of flight, which represents a sort of initiatory experience in that it 'overcomes' the force of gravity of body weight: that is, through imagination.
The human being imagined the land seen from above even before the invention of the satellite or the aircraft. Even before being a topographical transcription, bird's-eye view is in its essence a vision and thus starts from the assumption of an intrinsic blindness, but with an admonition that is implicit in the deepest sense of imagining, as the imagination is affected by the two worlds to which it belongs: imprisonment of the sensible and liberation elsewhere.
The motions of imagination and the idea of flight are united. Ovid's account bears witness to this: it is within the labyrinth, in the condition of imprisonment, that the legendary architect creates wax wings for himself and his son. The unpredictability of flight and thus the fall of Icarus also take us back to the aporetic labyrinths of Jacques Derrida (1930-2004) where, through the analysis of free-hand drawing, certain links between looking and vision are anticipated, between the seeing of imprisonment in

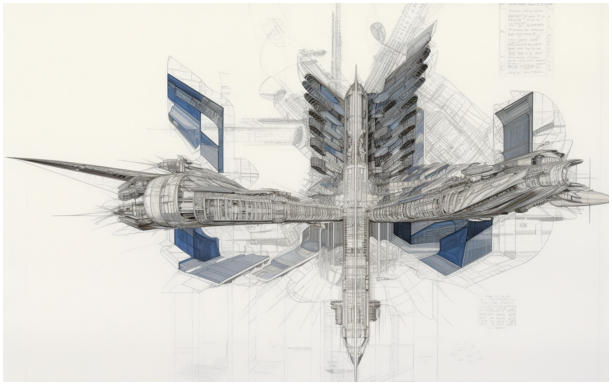
This article was written upon invitation to frame the topic, not submitted to anonymous review, published under the editorial director's responsibility.

Fig. 1. Cesare Battelli, Labyrinths.



the sense of our relationship with the real, and the 'not seeing' of the transcription (drawing) of what is commonly interpreted as real.
With freehand drawing at the centre, the real protagonist in the French philosopher's writings is in fact the relationship between eye and the gaze. Derrida never explicitly refers to vision *stricto sensu*, as in his hermeneutics there is only an internal bounce, an entanglement in one's own labyrinthine contours, but not an elsewhere. However, some passages and notes may be useful in reflecting on the size of the eye and how it, like flight, is more endowed with shadowy areas than it appears at first glance. "But it is known that eyes are not only made to see, they are also made to weep. We can ask why we cry, why a certain dimension of sadness –or laughter, or traumatic shock– causes tears, is quite enigmatic. It is rather enigmatic: why is this symptom pouring water on the eyes?" [Derrida 2016, p. 78, translated by the author].
In a collection of writings related to blindness, Derrida refers to a poem by Andrew Marwell, a 17th century poet (1621-1678), which concludes: "These weeping Eyes, those seeing Tears" [1].
According to the English poet, it is the tears that see and not the eyes. However, this seemingly contradictory veiling hides more articulated meanings. The eyes see veiled by tears, as if by blurring our vision in the dimension of abandonment –like Icarus beyond the labyrinth– we can see better by breaking down the limits of the things that surround us. At the same time, tears are the irruption of an emotion or trauma, an opening or an inner flight.
A second exergue of Derrida's is oriented to Nietzsche, to his "spectral presence in those places" [Derrida 2016, p. 79, translated by the author], and since a spectre is someone or something that is seen without being seen, it is a form vacillating in a completely undecidable way between the visible and the non-visible and is you don't see it coming, a kind of fluctuation of the threshold from which the French philosopher will draw some considerations on the event and its internal contradictions. The spectre, like the hallucination, is someone or something that crosses the space of obsession, mourning, etc.
Similar in some ways to certain texts by Jorge Luis Borges (1899-1986) and perhaps also to the figure of Homer described in the *Aleph*, or to the various forms of blindness that accompany Dante in his descent into the underworld, Friedrich Nietzsche's blindness is not only progressive, but also affected by a backward blurring.

Figs. 2, 3. Cesare Battelli, Labyrinths.



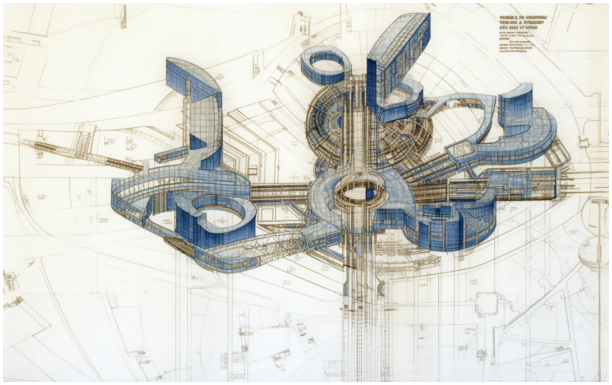
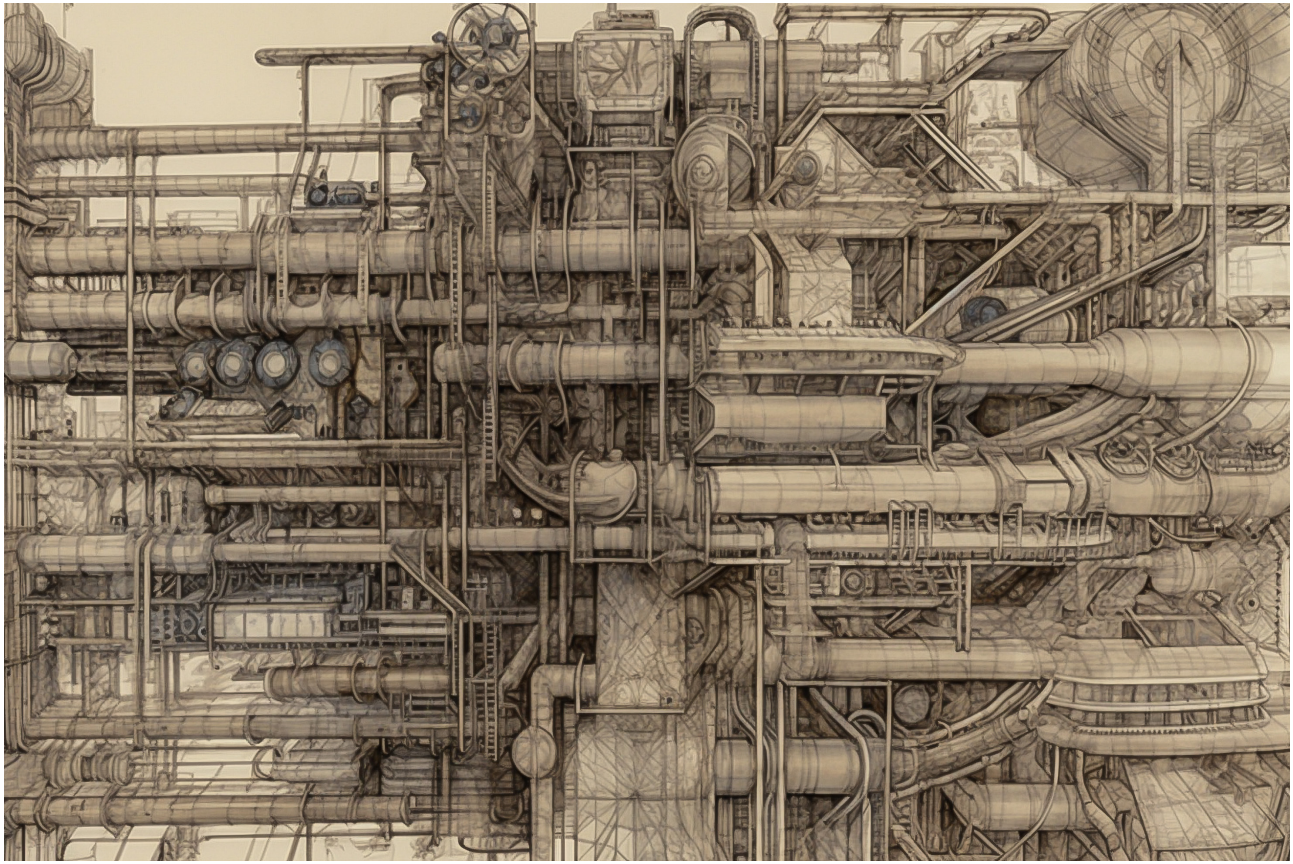
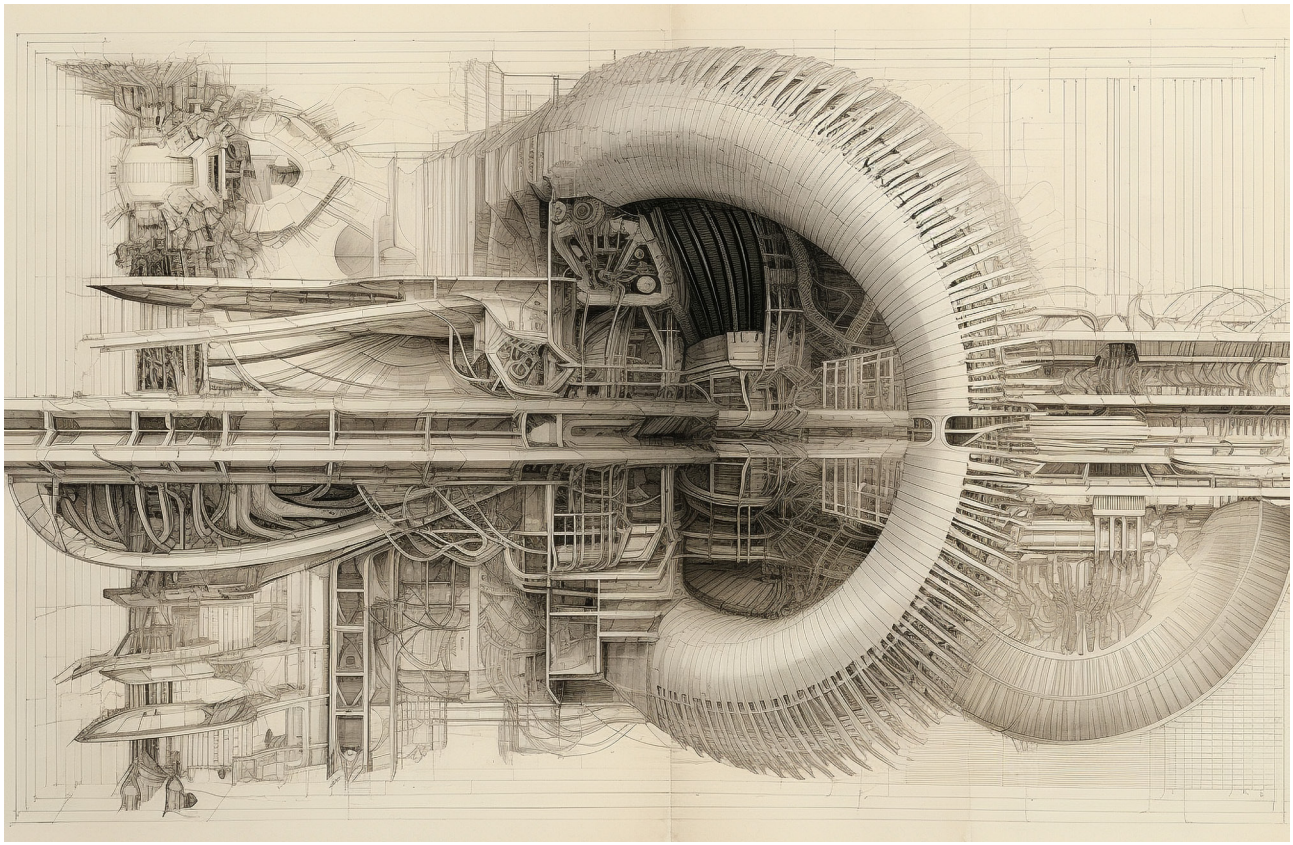


Fig. 4. Cesare Battelli, Labyrinth.



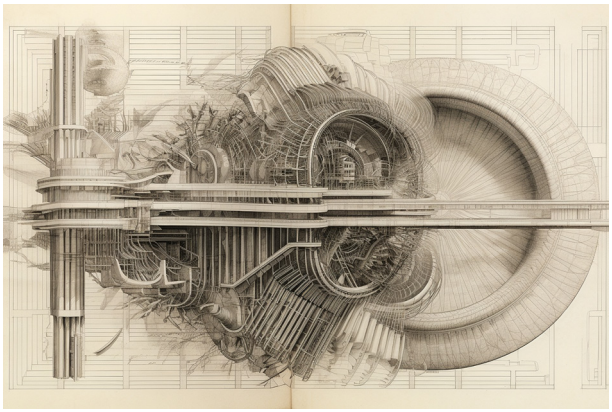
"Even the evil of my eyes, which sometimes leads me dangerously towards blindness, is a consequence, not a cause. In fact, every increase in my life force improves my eyesight. I am a double, I have a second sight in addition to the first. And perhaps I also have a third" [Nietzsche 1991, p. 271, translated by the author].
The first difficulty, the first aporia if you will, is that what comes to us, if it is to constitute an event –Derrida argues– must not be seen coming. An event is what comes (arrives); the arrival of the other as an event is an event worthy of the name, that is, an event that is irruptive, inaugural, singular only insofar as it is not seen arriving. An event that you can anticipate, that you see coming, that you foresee, is not an event. The Derridean eye is in fact a hand-eye, in that space where the dimension of contact takes place that arises simultaneously from distance and proximity. In this way, human eye has the capacity to foresee, anticipate and grasp, so that the hands interpose themselves, anticipating eye-contact.
In contrast, the sightless eye, the blind eye *ante litteram*, brings the hands forward to spatialize the encounter with the 'other'. By bringing the hands forward, the hands themselves structure the visual horizon, anticipating and recreating it. The world offers itself there, in the contact with the hands. At the same time, the blind person, thanks to the use of hands, pre-examines and pre-sees without seeing what is in the condition of coming, what is about to arrive without yet appearing in the horizon of touch and therefore of sight.
The space that is created between the eye and the hand, anticipating and intermediating between 'us' and the world, has a double condition: anticipation and recollection. The same space, perhaps, that is annulled in the recollection of prayer, with folded hands, almost as if no distance with the divinity were allowed, to welcome it and be welcomed. A form of intimacy, that of the hand and the eye, similar to the blind hand that is also produced between the eye and the hand of the artist.
In fact, drawing is thought of by Derrida as a form of blind transcription, or almost visionary, in the indicated sense of the event, as the irruption of the unexpected, of what one does not see coming.
The fractures produced in the philosopher's analytics seem without solution. If you draw, you don't see the object inspiring your drawing; if you observe the object, it is the drawing that disappears. An intermittence in which the eye, while bending, cannot split.
The natural drawing, the strokes on paper, should exhibit the visible by showing the way the eye rests on the paper. But that instant between eye and hand is once again blind, it is given in an instantaneousness of blindness. The apparent paradox, once again, lies in the fact that alluding to what the drawing lends itself to represent –that is to make present again– is due to a momentary obscurity of vision. However, this is not the only invisibility through which the drawing is structured: there is more, and perhaps that set of signs and lines is nothing but the unfolding of many shadows. First of all, drawing is a section as a mental projection; therefore, it is a portion of a totality that, except in the cubist experience and assuming it was successful, is as such unspeakable. It is projection, fragment. The contours, the *eidos* are drawn, but as such are only visible in the artist's head. Not to be confused with mimesis, in a portrait everything that finally evokes that person or that face is sustained by an absence, by everything that is not there.
The origins of painting and drawing also take place in an absence. In Pliny the Elder's narration, the shadow is the protagonist; the drawing takes place in the silhouette of the projected shadow of the character, the lover who is about to leave, at the moment of his early absence.
In a painting by Joseph Benoît Suvée (1743-1807) –there is also a similar one by Bartolomé Esteban Pérez Murillo (1617-1682) from 1660– entitled *The Origin of Painting*, one can clearly see how a young Corinthian woman, daughter of the craftsman Butades, with light projected on a wall, outlines the shadow of her beloved in order to preserve his image and, according to tradition, also his soul. "Regardless of the origin of the drawing, everyone agrees that it had to consist of circumscribing the shadow of a man. Finally, art emerged from monotony [*se ars ipsa distinxit*], discovered light and shadow, and thanks to this difference, colors were separated from each other. Then brightness was added, another value of light" [2].
The intermittence between seeing and blindness, which has the hand-eye as its protagonist, is a mixture of light and shadow, as is the eyelid in its constant flickering that indicates both closure and brightness.
In Derrida's chiaroscuro ontological fabric, in the labyrinth of his aporias, the eyelid is not mentioned in the sphere of drawing. However, the eye squeezes to put on paper those measurements taken with the pencil placed halfway between eye and field of vision.

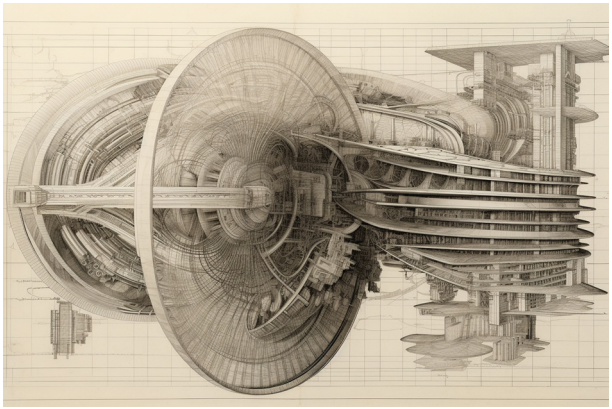
Fig. 5. Cesare Battelli, The flight of Icarus.



With the distances reduced, if not eliminated, the eyelids and their 'murmurs' in the half-light of the night acquire a dimension of visionary interiority. These images, perhaps visions, produced in the darkness of the eyelid are eloquently described by the poet Nanni Cagnone (1939) and are of two types: hypnagogic and eidetic [Cagnone 1993, pp. 114, 115, translated by the author].
The eyelid with its constellations offers itself as an intermediate world, a prelude to an inner journey that serves Cagnone to introduce the condition of the improbable poet, those discomforts of logic that we call poetry.
"There is a phenomenon of adaptation in describing them: that state of consciousness that is called hypnagogic, the twilight experience of those figures that one perhaps glimpses in the kaleidoscope of sleep on the inner screen of the eyelids. Even those who are polite enough to call them illusions and not hallucinations tend to downplay them, as if they were nothing more than an announcement of sleep, the sign of dreams. Yet sometimes we no longer sleep after these apparitions, and they are not always mere figures: rolling our eyes, we see things that evolve, subject to time, things that undoubtedly mature or come and go, make and unmake" [Cagnone 1993, p. 119, translated by the author].
Hypnagogic vision, cut off from all exteriority and distance from the other, creates its own universe of images in a place without space. The eyelid thus becomes a screen, transcending its own dimensions to become an internal luminescence, a kaleidoscope of images without a body, an absence of matter. Sometimes it is a succession of shadows with the density of ink, other times the shadows themselves, like ghostly fragments, slide in on us, on too close a plane, as if coming from the side, to gradually disappear if we do not look at them too closely. Something similar happens with eidetic images.
Cagnone, faced with the scepticism of those who consider them to be hallucinations, perhaps forgets to mention that hallucinations have their root in the Greek '*aluo*, *allusso*', which indicates an outside of oneself, an external vagueness, which transports the 'we' into the abyss of distance with no possibility of encounter.
On the contrary, visions, like dream visions, are the heritage of interiority.
The eidetic images, on the other hand, still carry with them some fragments of exteriority, perhaps of the light that has just gone out, those flashes imprinted on the retina that are transformed alchemically, in the manner

Figs. 6, 7. Cesare Battelli, The flight of Icarus.





of trans-figurations, into a changing succession of small constellations. In this case, distance contracts but does not cancel out. The almost-ritual dance of those small luminous spots with imprecise coloring similar to the uncertain colors described by Ludwig Wittgenstein, in their hybrid appearance, acquire a certain autonomy. They may even generate and regenerate themselves over long periods of time, but almost never, as in a glance, do they show themselves frontally. As soon as too much attention is paid to them, the eidetic images tend to disappear as if they do not want to be surprised. Perhaps the darkness, the blindness itself, instead of observing it, has to be traversed, in a kind of welcoming similar to that of the poet, which Cagnone refers to in his text on several occasions. The figures of the eyelid are all the more dazzling and enduring the more carelessly they are observed. The eyelid constitutes itself as an autonomous universe closed in on itself, halfway between sleep and wakefulness, and invites us to reflect on the meaning of the image. Cagnone describes his ocular visions as images that are nothing more than the persistence of what is offered, by repetition, to the biological eye. Persistence or perhaps pre-existence, without debt. But persistence is not so much an insistence that repeatedly furrows the same gesture, which in itself would already be a transfiguring gesture, but a form of fixation that escapes.

"There is therefore no *adæquatio rei et intellectus*. It is not a matter of writing, of rewriting, but of perceiving more and more the relationship with that appearance that, for itself, has words and will particular to those words. It is a matter of allowing oneself to be persuaded by the vision, of not dominating it and of admitting that no words will adequately prove it", Cagnone argues. Furthermore: "The shadow of you rests on my similitude of bodies" [Cagnone 1993, p. 119, translated by the author]. It is to this that we would like to arrive, and by necessity we will have to feed on the persuasion of the thing seen, being certain that it will become a 'gap' in the mind.

Credits of the images

The drawings here presented, dedicated to the construction of suggestive visions on the themes of Icarus and the Labyrinth, are by Cesare Battelli and were created with Artificial Intelligence software in May and June 2023.

Notes

[1] Andrew Marvell. Eyes and Tears. In G. A. Aitken (ed. by). *The Poems of Andrew Marvell*. London: Lawrence & Bullen, 1892, pp. 36-38.

[2] Plinio il Vecchio, *Naturalis historia*, XXXV, 11.

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Fábio Moura Penteado in São Paulo. Drawings for a Modern, Urban, and Democratic Architecture

Letícia Bortolo Martins, Ana Tagliari

Abstract

Drawings represent ideas and concepts, not just an architectural project. The concept of the 'Architecture of the Crowd' establishes principles of an architecture in which people are protagonists. This architecture, in turn, relates in a harmonious way to the city, inviting people to enter, circulate, and interact with the space and other people, in a natural way.
Fábio Moura Penteado's architectural drawings representing these ideas and concepts were the focus of this study. The projects selected for analysis, dating back to the 1960s, are as follows: Araras Forum (1960), Campinas Coffee Museum (1960), Piracicaba Municipal Theater (1961), Campinas Opera Theater (1966), Campinas Cultural Coexistence Center (1967). Through the analysis of handmade perspective drawings, we can identify the presentation of ideas contained in their theoretical and conceptual discourse. The elements that define and compose the drawings are significant for the representation of their ideas: points of view from which the drawing was constructed; number of people, interacting, immobile or moving, and their location; automobiles and machinery; vegetation and landscape; representation of the accesses to the building with some welcoming element such as a marquee; indication of paths and routes. A point of view that has the ambition of a good, urban, modern society, from the perspective of ordinary people roaming the city and promoting meetings and events in a democratic, safe, and healthy environment.

Keywords: brazilian architecture, urban architecture, handmade drawing, perspective, 1960s modern architecture.

Introduction

"The exercise of drawing is for architecture (but not just for architecture) a first form of the image of though".
Gregotti 2014, p. 14 [1]

In the 1960s, urban life was a relatively recent event, as Le Corbusier observed in his book *Urbanismo* [2009, p. 77]. The explosion of cities and urban life generated problems and demands that architects and urban planners could study, discuss, and bring solutions to.
During this period, a language of modern architecture was developed in São Paulo, the largest urban center in Brazil, which became known as 'Escola Paulista' (São Paulo School) and had as its master the architect Vilanova Artigas.

Fábio Moura Penteado, an architect graduated from the School of Architecture of Mackenzie University, was one of the important architects who contributed to the discussions and achievements around solutions for an architecture that met the problems of big cities. He began his career as an architect in the 1950s. However, the 1960s and 1970s were the decades with most creations, with 29 and 34 projects respectively, among the 106 cataloged in this research, whether built or not. Thus, we selected projects from the 1960s for analysis. The projects selected for analysis, dating back to the 1960s, are as follows: Araras Forum (1960), Campinas Coffee Museum (1960), Piracicaba Municipal Theater (1961), Campinas Opera Theater (1966), Campinas Cultural Coexistence Center (1967).

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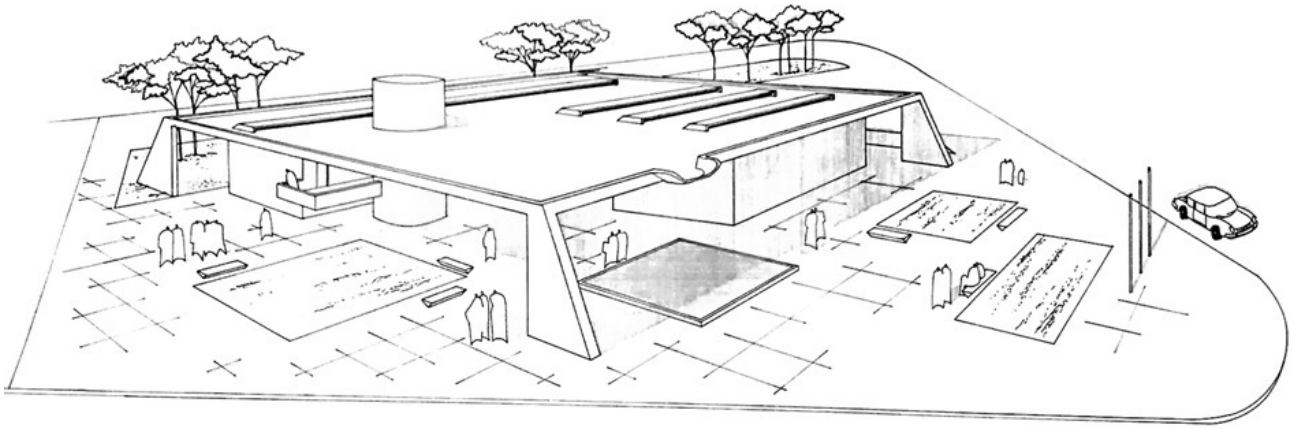
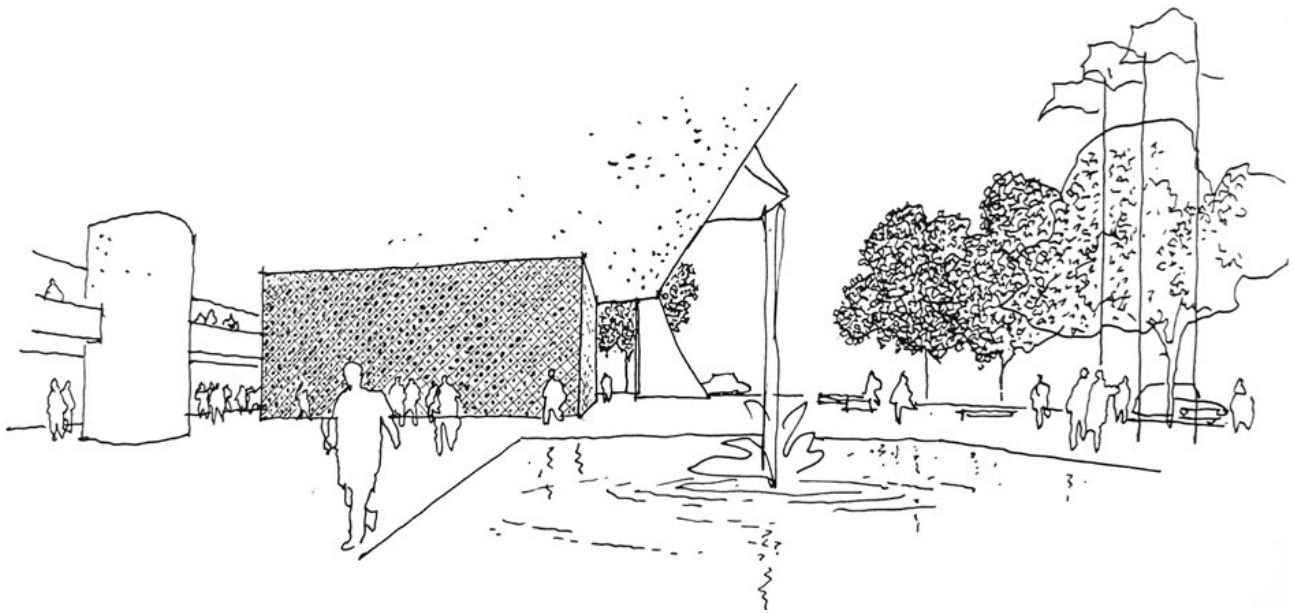
Fig. 1. Araras Forum, 1960. Source: Fábio Penteado Collection. Photo: Letícia Bortolo Martins, 2018.

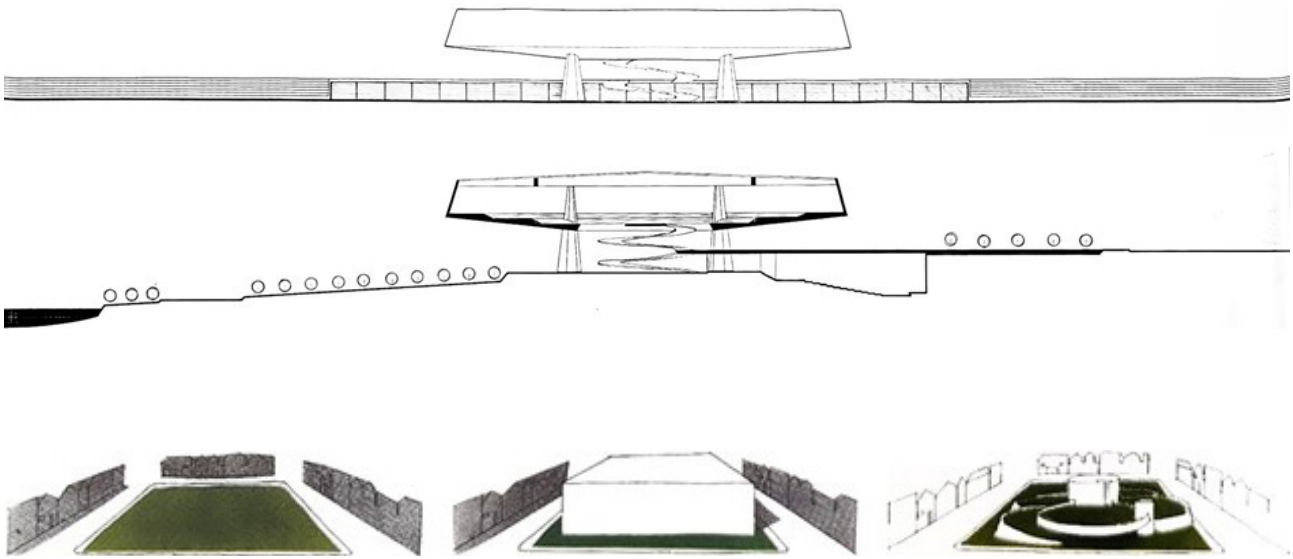




Through this research, it could be verified that the concept of 'Architecture of the Crowd,' which underlies Moura Penteado's projects, created dignified, human, inviting spaces that promote meetings and harmonious coexistence between people, by the careful design of the site plan, accesses, the relationship between the building and the urban space, inviting vertical circulation elements, the organization of the architectural program, the creation of large distribution and living yards, the relationship between closed and open spaces, landscaping, among other solutions and design strategies.
The five projects here presented have a link to the urban environment in which they were designed and, in two cases, built. Without exception, the design of the building is always organized in such a way that, around or on it, a square is configured. This square, along with specific characteristics of each project, involving the organization of the program, definition of the circulation system, among others, welcomes and invites people to enjoy this space. Fábio Penteado belonged to a generation of architects which produces a lot of hand drawings revealing a history. Penteado is renowned for his ability to express himself by the means of drawings. Many important researchers, such as Luigi Vagnetti [Vagnetti 1958], Vittorio Gregotti [Gregotti 2014], Paolo Belardi [Belardi 2014], Mario Docci, Marco Gaiani, Diego [Docci, Gaiani, Maestri 2017], highlight the different types of drawing and representation in architecture and its importance. In this paper, we present a thought involving the elaborate handmade drawings of the selected project, involving site plans, vertical sections and perspectives. They are perspectives elaborated from the point of view of people moving in the urban environment of the large cities of São Paulo in the 1960s. Such drawings represent Penteado's idea of an 'Architecture of the Crowd,' which conceptually underlies his architectural work.
It is a point of view that aims to a good, modern, urban society, a glaze from the point of view of ordinary people walking around the city and promoting meetings and events in a democratic, safe and healthy environment.

Fig. 2. Coffee Museum, 1960. Source: Fábio Penteado Collection. Photo: Letícia Bortolo Martins, 2018.

Fig. 3. Sketch of the evolution of the Piracicaba Theater project. Source: Fábio Penteado Collection. Photo: Letícia Bortolo Martins, 2018.



Fábio Penteado and the 'Architecture of the Crowd'

"From afar it is landscape. Up close it is monument.
The square is the people".
Fábio Penteado, 1962, p. 78

Fábio Moura Penteado was born in 1929 in the city of Campinas and studied architecture between 1948 and 1953 at Mackenzie University. During his life, several noteworthy events occurred, which contributed to the twentieth century sociocultural configuration of the state of São Paulo and Brazil.
His career began in an important period of the cultural context of the city of São Paulo, and along with other professionals of the time, Penteado took part in the Carvalho Pinto Government's Action Plan (1959-1963) to design numerous public buildings throughout the state –including hospitals, schools, and Justice forums–, which was essential for the development and realization of São Paulo's Modern Architecture [Giroto 2013, pp. 241, 242].
Although his architecture contributed to the consolidation of the São Paulo language of Architecture, his production has a close relationship with the initial generation of architects who gathered around the concepts and language of the teachings from the important master João Batista Vilanova Artigas, but it admits several references, as well, which define Penteado's architecture by a formal and expressive freedom, ensuring the uniqueness of his work among the works produced by architects working in the São Paulo School. The idea of a collective and civic architecture, a strong characteristic of São Paulo's Modern Architecture, permeates all of Penteado's work [Gitoto 2013, p. 68].
Penteado had a great importance for São Paulo's and Brazilian architecture. The study of his architecture indicates a latent concern to solve the problems caused by the great explosion of the urban population, always with special attention to the individual life of the people frequenting and experiencing it [Giroto 2013, p. XIV].
Thus, the architecture developed by Fábio Penteado became known by the conceptualization of 'Architecture of the Crowd'. On this rationale underlying the act of designing, the architect stated: "Perhaps the greatest role of architects in our time is to build new spaces for meetings and coexistence for the crowds of large cities. Suddenly, the design of buildings almost loses its meaning if the building, isolated from the urban landscape, does not communicate the participation of all people in what it can represent and live better. And certainly, the ideals of well-being and peace will have to be won by everyone, also with the strength and power of art and beauty" [Penteado 1998, p. 2] [2].
Thus, Fábio Penteado's architecture indicates that his projects are able to accommodate the multitudinous individual, seeking solutions at various realms, both for the city and its inhabitants. The drawings (handmade perspectives) illustrating the projects represent these ideas and concepts from the point of view of the people moving in the crowd of the modern city.

The 1960s and the selection of projects

The 1960s and mid-1970s have been forgotten for several years by scholars, who consider them for three major moments: the modern movement, Brasília and the post-Brazília period [Junqueira Bastos, Verde Zein 2010, p. 51]. This approach makes it difficult to correctly understand the other events of these two decades that are equally important. According to Bastos and Zein , "from a purely quantitative point of view, Brazilian architecture will, in fact, from the 1960s, consolidate, expanding and unfolding new professional horizons" [Junqueira Bastos, Verde Zein 2010, p. 52]. Therefore, we selected projects from the 1960s for the intended analysis, focusing public spaces.

Araras Forum

Designed jointly with José Ribeiro in 1960 in the city of Araras, countryside of São Paulo, the Forum (fig. 1) was one of the projects idealized by Governor Carvalho Pinto's Action Plan. According to Penteado, his intention "was to adapt the environment to the conditions of its users, making it more accessible and human, so that all layers of society could appropriate the space and feel at ease in it" [Moura Penteado 1998, p. 56].
The offered land was an irregular five-sided polygon. In the geometric center of the lot, in a square-shaped layout, the architects organized the program to arrange the space of the building without doors, nor a lobby, but an inviting 'covered square', as in an extension of the urban space of

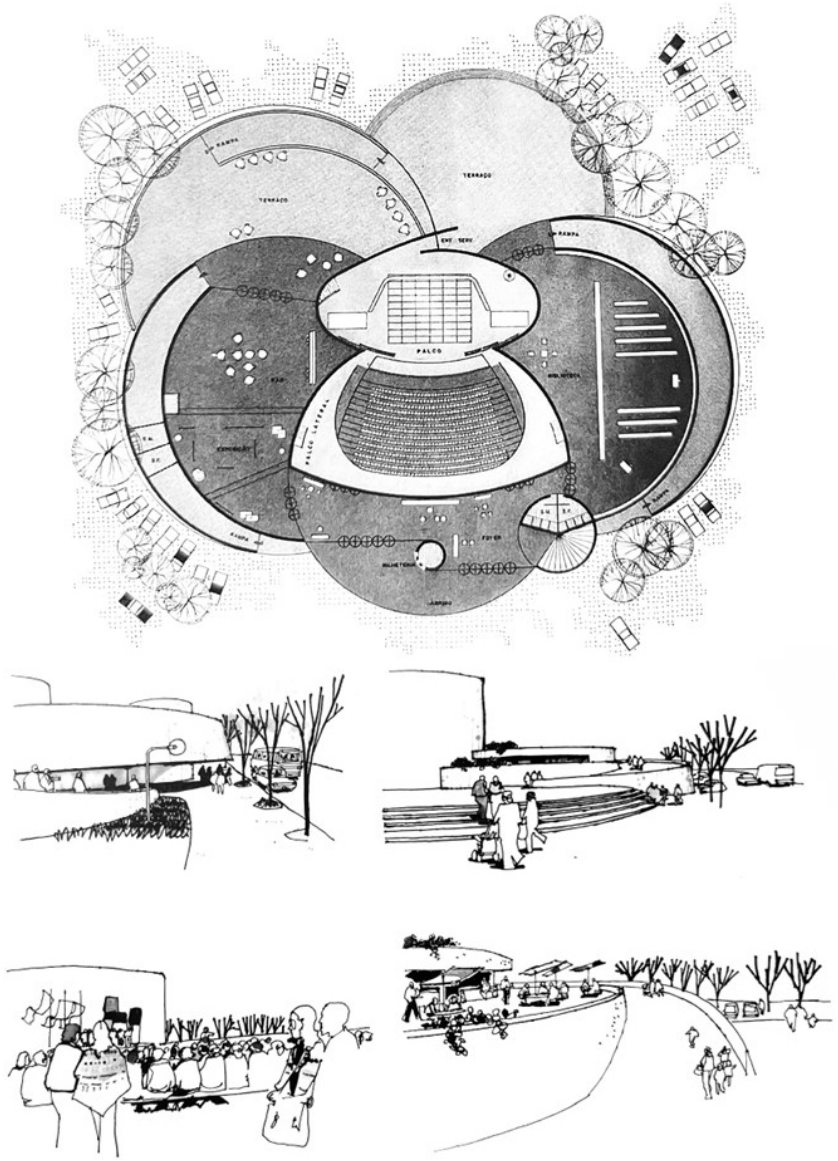
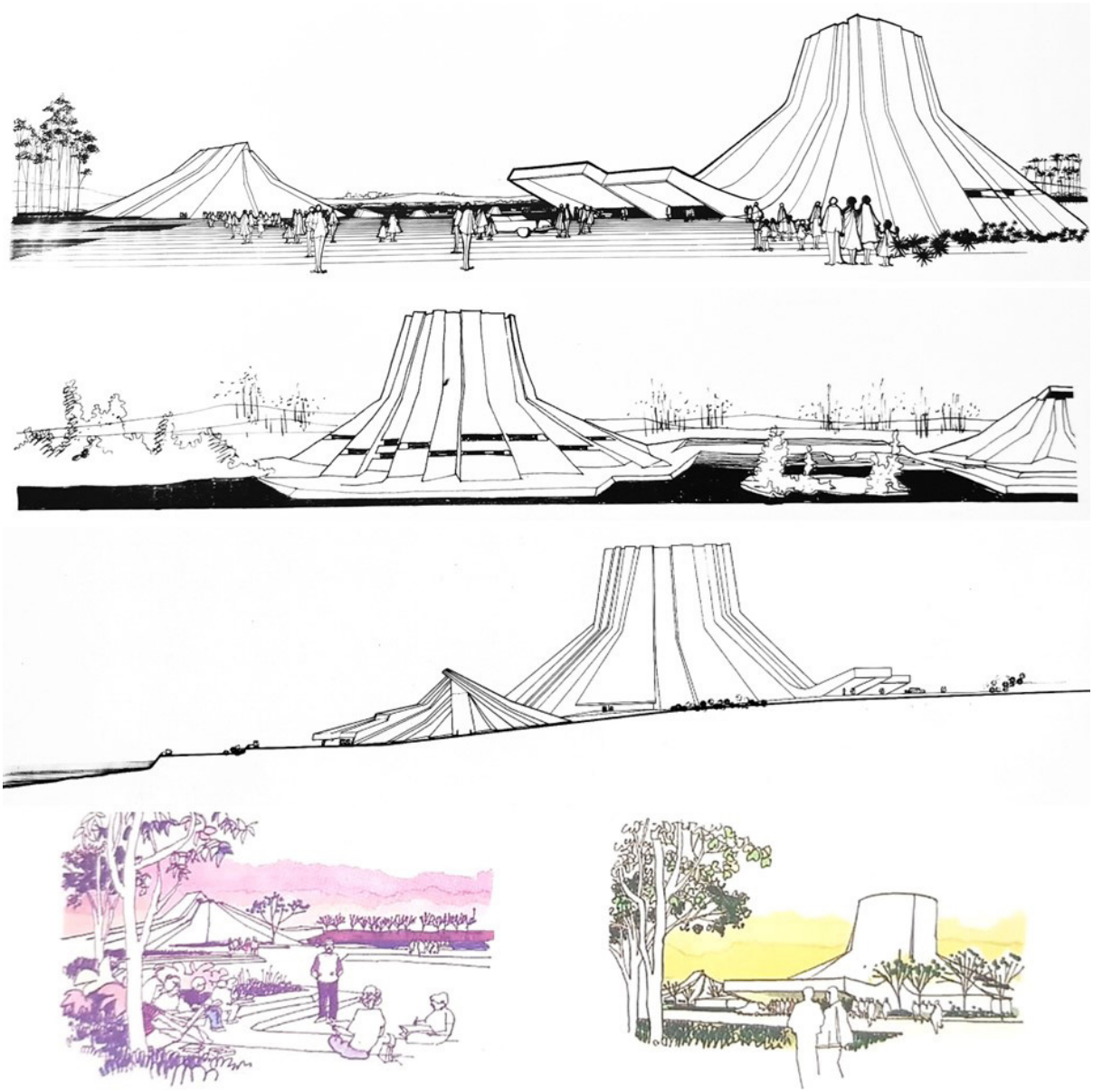


Fig. 4. Piracicaba Municipal Theater, 1960. Source: Fábio Penteado Collection. Photo: Letícia Bortolo Martins, 2018.

Fig. 5. Campinas Opera Theater, 1966. Source: Fábio Penteado Collection. Photo: Letícia Bortolo Martins, 2018.



the city, with the purpose of people entering, sitting, and talking. On the ground level, the program develops in three different blocks connected to the square: jury room or auditorium; staircase and water tank; registry offices, administrative and service sectors. On the upper level are located the rooms of lawyers, prosecutors, and the judge's office, offering greater privacy and security [Moura Penteado 1998, p. 56].
In addition to the covered square, along with landscaping and a waterfall with a water mirror that promotes a quality of temperature, the other areas of the lot also have important role regarding coexistence and meetings, so people can get closer and enjoy this space.
Although the functional architectural program called for austere and serious spaces in a legal environment, the architects, starting from the theoretical conceptualization and above all from the 'Architecture of the Crowd', conceived an inviting building, with light forms of sinuously curved slab, under four pillars, which fulfills its function, but which is different from all the other forums that Fábio Penteado visited before designing it: "all [the forums] followed the same formula, imitating Greco-Roman buildings with columns, immense pompous portals, and very high ceilings" [Moura Penteado 1998, p. 56].
"This project allows us to understand how the programmatic questioning, and the consequent architectural reproposition, are defined in function of the encounter between human being and architecture, thought in order to create conditions of autonomous action from the recognition of space as part of everyday life. From the breaking of barriers to the public appropriation of space, suggested as a territory of collectivity, it works towards demystifying the negative connotations that architectural imposition can cause" [Giroto 2013, pp. 18, 19].
The drawing here presented well represents the important ideas and concepts of his architecture. The bird's eye perspective reveals the whole of the building inserted in the urban area and the structure as defining architecture. People, cars and vegetation compose the urban scenery of the 1960s registered in this drawing.
We can notice the point of view of the user's gaze from which the perspective was elaborated, where people are observed circulating and interacting with the environment that indicates ways to access the building, privileging the harmonious and democratic relationship with the city. The built environment is represented with elements that reinforce the humanization of the space, such as vegetation and water, while indicating an urban environment with hints of automobiles, in a modern 1960s way of living.

Campinas Coffee Museum

Designed jointly with José Ribeiro in 1960 for the city of Campinas, interior of São Paulo, the Museum was a proposal requested by the city hall with the intention of: "bringing together, in a single architectural and landscape ensemble, elements that tell the history and traditions of the cultivation, harvesting, processing, and preparation of coffee, from slavery to the present day" [Moura Penteado 1998, p. 194].
The project, which includes a museum and a library, was designed for a plot of land located within the Taquaral Park, an important and noble area of the city to this day. The building is located under a typical coffee terrain with 200 meters of extension (fig. 2).
The formal configuration of the building follows the function of the proposed circular route, with a spiral ramp, and the main building houses the Museum. The other uses are distributed in a second semi-buried building with support sectors for the museum, such as management, restrooms, auditorium, hall, kitchen, restaurant, and bar. On the same level, the architect planned a large outdoor space, intended for open-air exhibitions, and two large staircases configured as meeting spaces, grandstands with a capacity of up to 5,000 people, as well as naturally constituting an element of vertical circulation.
The architects, despite the extensive terrain, decided to elevate the museum by creating, underneath it, a covered square working as a space for living and meeting and, according to the topograpical profile of the terrain, as a space for appreciating nature, both with a view of the coffee grounds and the lagoon. According to Giroto [Giroto 2013, p. 349], "the museum is presented as a large pure circular form, elevated on a traditional coffee ground, converted into an open public space".
In the drawings, we can verify important concepts of Planteado's architecture, involving a built environment merging with the public spaces of the city, in a welcoming and democratic way. The idea of the public square configured by the elevation of the building relative to the terrain invites users to a shaded living space to enjoy the lagoon and the museum's outdoor area, composed of a coffee ground simulating the originals of São Paulo's history.

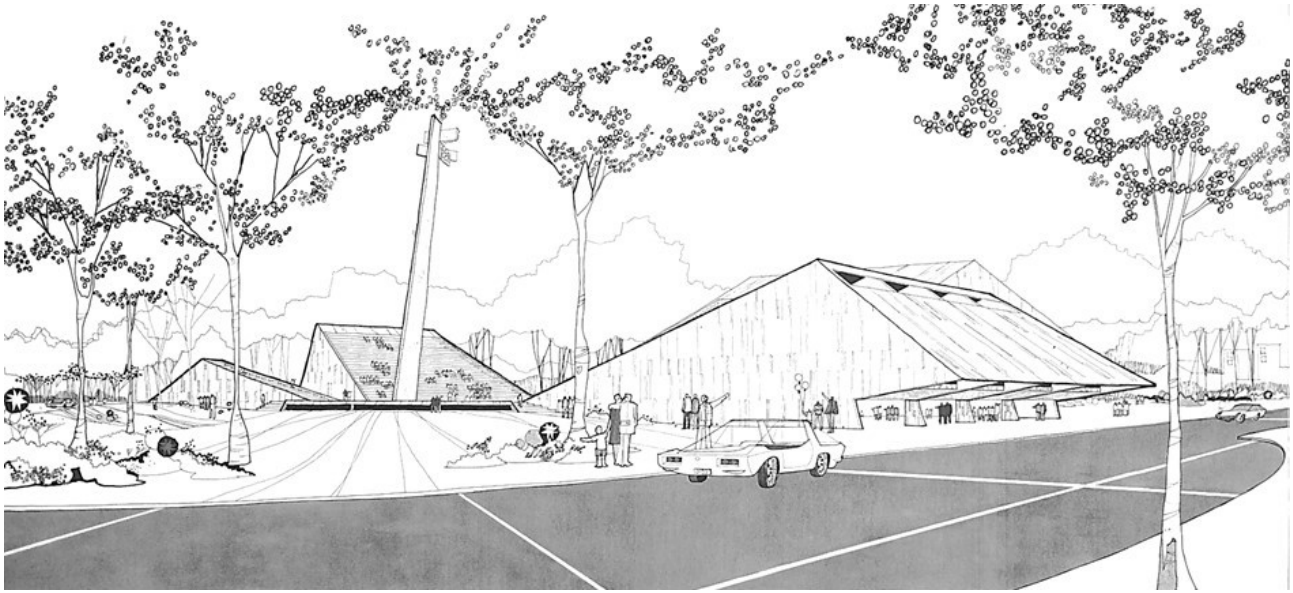


Fig. 6. Campinas Cultural Coexistence Center, 1967. Source: Fábio Penteado Collection. Photo: Letícia Bortolo Martins, 2018.

Piracicaba Municipal Theater

Designed together with José Ribeiro in 1960 for the city of Piracicaba, in the interior of São Paulo, the Municipal Theater shows the collectivist conception of Fábio Penteado to integrate the project into the life of the city, especially of students: "The chosen area was a square; a conventional solution could be to reduce it to a built-up block, with its four sidewalks merely widened. Then a project was born, one of those I consider my most beautiful projects, in terms of conception and design. It's a theater and it's a square" [Moura Penteado 1998, p. 92].
The theater was commissioned for five hundred seats and the land provided views of the Piracicaba River.
"Taking advantage of this landscape, Fábio imagined a composition of planes that overlapped, constituting circular volumes that opened from a central point – like concrete flower." [Moura Penteado 1998, p. 92].
Besides the theater, the program housed a library, an exhibition hall, a cafe that would open onto a terrace with a small outdoor amphitheater, and a large square that could be visited by the population at any time of the day, even if the theater was closed.
The sketches (fig. 3) reveal strategies for solving the program within the urban environment. While the perspective drawings (fig. 4) reveal the architect's intentions linked to the conceptualization of his theory of 'Architecture of the Crowd'.
Perspectives are constructed from the point of view of the user's gaze, of the people walking through the city and enjoying the public, social, and open spaces. From the point of view choosen for the design, it is possible to visualize the building and the free and unobstructed access routes as elements that are accessible or that encourage meeting and coexistence, such as the ramp with a slighting sloping, sinuous, curve, or the staircase that in addition to being an element of vertical circulation, in this case presents itself as a space of permanence, as a grandstand. The built environment reinforces an inviting, friendly and welcoming architecture. The accesses in this case are more related to the elevated square than to the theater itself, and this reinforces the architect's idea of creating public spaces and

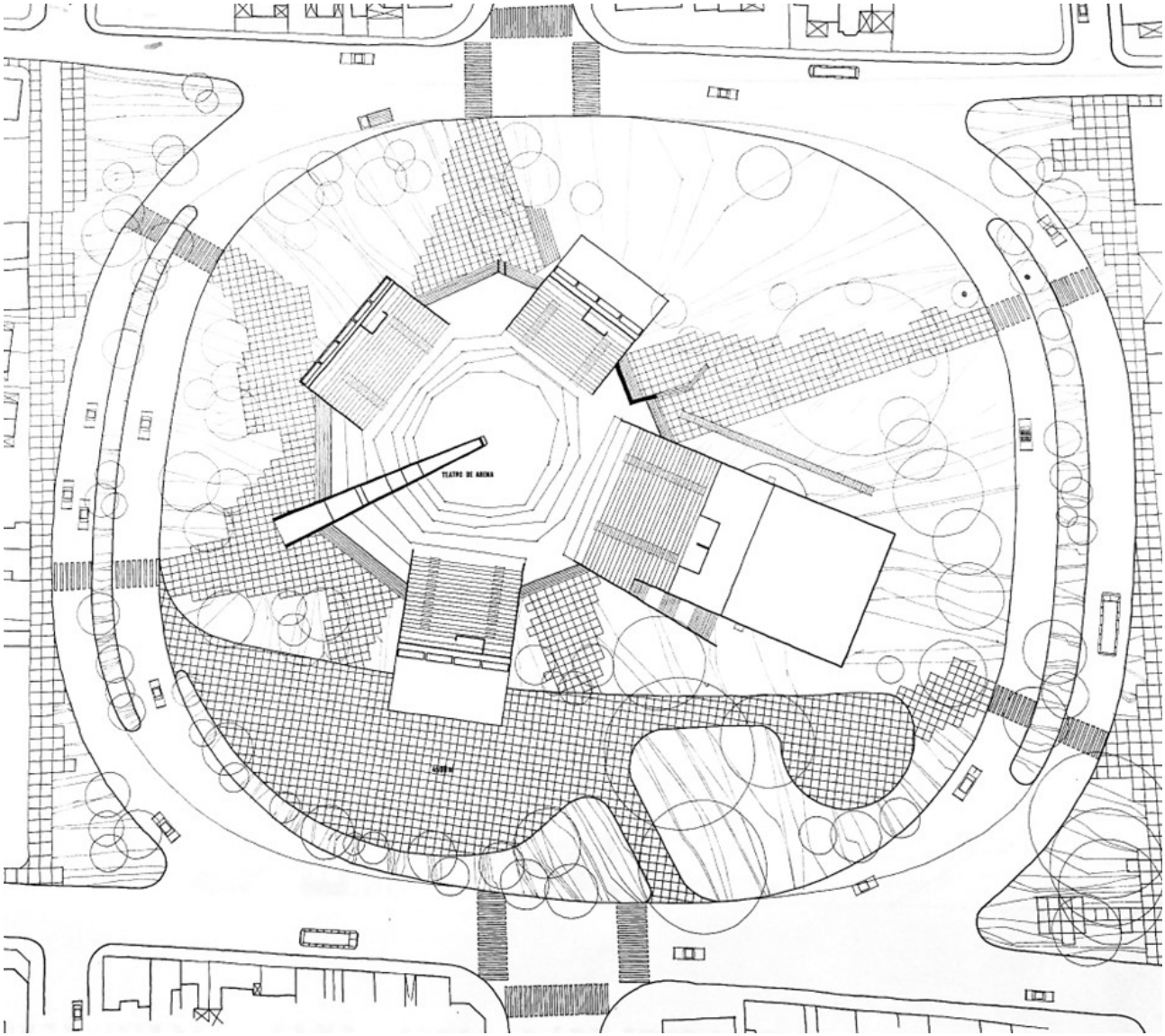


Fig. 7. Campinas Cultural Coexistence Center, 1967. Source: Fábio Penteado Collection. Photo: Letícia Bortolo Martins, 2018.

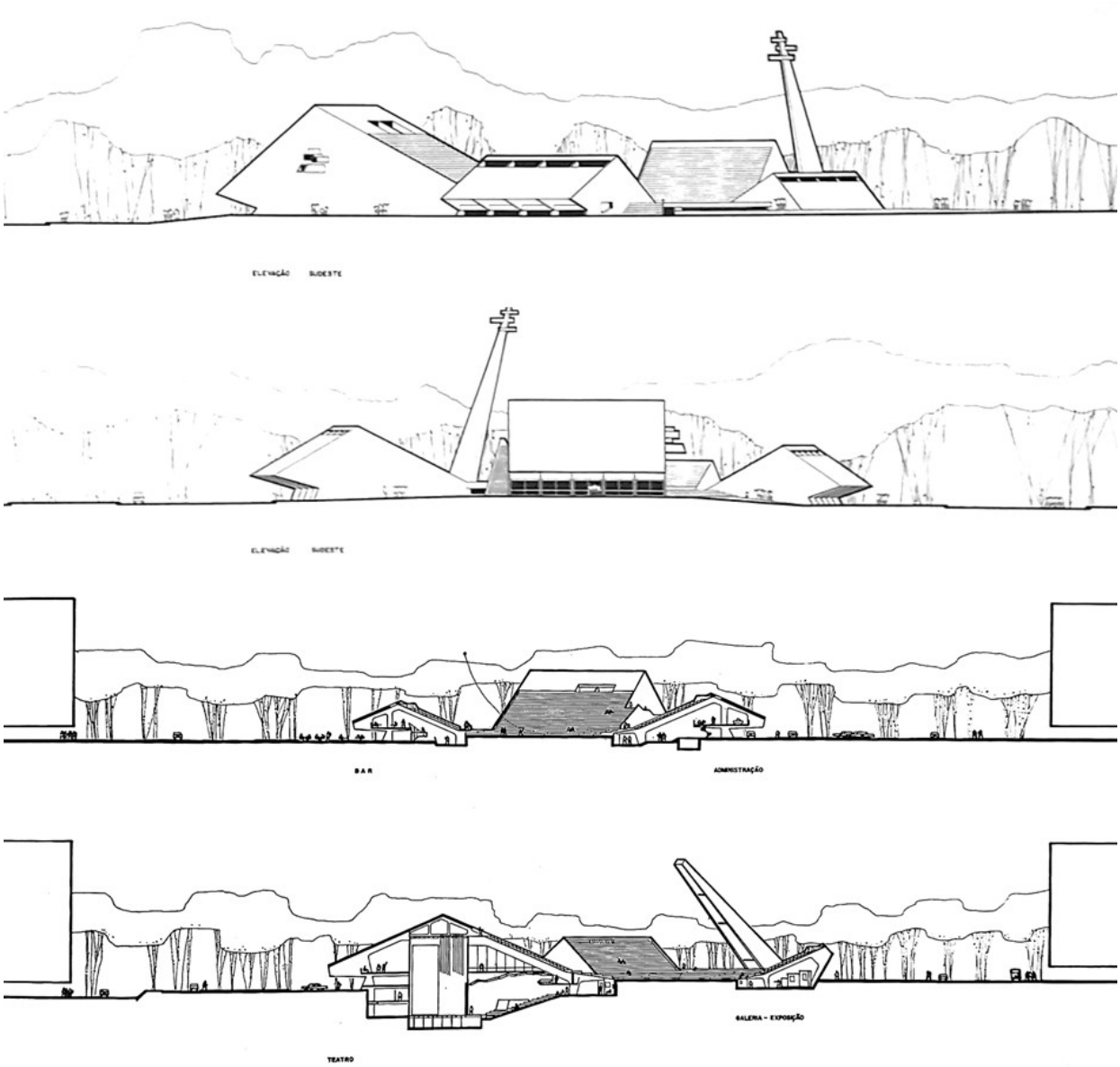


Fig. 8. Campinas Cultural Coexistence Center, 1967. Source: Fábio Penteado Collection. Photo: Letícia Bortolo Martins, 2018.

environments for the city. The good amount of people indicates a sociable and democratic environment, added to the hint of automobiles, which reinforces the idea of a modern urban space. Vegetation is subtly represented to balance the relationship between building and city.
Still about the theater being frequented at all hours, Penteado states: "against that theater that only opens its doors at the time of the show, a theater that is used and has profitability 24 hours a day: if you use public money, you must ensure cultural profitability, as if it were the best business" [Moura Penteado 1998, p. 92].

Campinas Opera Theater

Designed together with Aldo Calvo, Alfredo Paesani and Teru Temaki in 1966 for the city of Campinas, interior of São Paulo, the theater project (fig. 5) also had a team of twelve professionals specialized in scenic technique, scenography, acoustics, and sound [Moura Penteado 1998, p. 95].
The theater was designed to cater for three types of presentation –large operas, medium, and small performances– and it had a capacity of fifteen hundred people.
"The audience, designed in a single plan, had only one box for authorities, with independent access. Scenery changes were predicted by both vertical and horizontal systems, with the possibility of using two tangent swivels located at any point on the stage" [Moura Penteado 1998, p. 95].
The second theater was designed to host comedy and arena in addition to Elizabethan, classical, and full stage.
The malleability of the scenic spaces is a consequence of a thorough study of several components: the composition of the internal space; the shape of the dome; the easy mobility of the armchairs, allowing varied arrangements in the audience; a a 5-metre high catwalk crossing the stage space; and an 8-meter-high swivel allowing rapid modification of the scene and of new lighting and sound installation resources [Moura Penteado 1998, p. 95].
The large land available meant that the architect could design two distinct theaters and, taking advantage of the natural slope, steps were designed forming a third outdoor space that would face the Taquaral lagoon, where an artificial island would play the role of stage [Moura Penteado 1998, p. 95].
Although the two theatres were apart, they would be interconnected by a common service gallery, containing rehearsal room, choir, supporting facilities, and dressing rooms. "All of them with natural lighting and ventilation –preserving the view of the lagoon–, instead of the traditional basements where such equipment is usually installed" [Moura Penteado 1998, p. 95].
In the beautiful drawings for the Campinas Opera Theater project we can observe all the elements belonging to Fábio Penteado's architecture, which are represented through handmade perspectives. These perspectives are constructed using a centre of projection at the height of the gaze of the people walking through the space, revealing an urban space, open like a square, promoting encounters, permanence, and social interaction. The amount of people present in the drawings indicates the idea of public square, with cars, greenery, and the built landscape, the theater building. The elements that make up the Theater square contribute and stimulate permanence and interaction, such as the curved bench, the marquee marking the entrance and that can also be a shelter on rainy days or hot summer sun, typical in the São Paulo countryside.

Campinas Cultural Coexistence Center

Designed together with Aldo Calvo, Alfredo Paesani and Teru Temaki in 1967 for the city of Campinas, interior of São Paulo, the Cultural Coexistence Center (figs. 6, 7) was the only project actually built.
The project was based on a program aimed on realizing a five hundred seats hall; however, keeping the built area occupied by a theater of this size, the architect managed to make a much larger project and resumed the guidelines and concepts used in the projects of the Piracicaba Municipal Theater and the Campinas Opera Theater [Moura Penteado 1998, p. 100].
When Penteado went to visit the 6,000-square-meter area made available by the city hall, he proposed expanding it by incorporating a neighboring area that was the former immense Iluminense Square. Once this change was made, the two spaces formed a 40,000-square-meter large, circular square, which became a large roundabout for Júlio Mesquita Avenue, one of the most important avenues in the city.
The project divided the building of a standard theater into four blocks, as follows: "the largest of them is the performance room; the second defines the access to the set; the third is a bar that opens onto the square; and

the fourth forms the work areas. These blocks are interconnected by a half-underground gallery, replacing the traditional *foyer*. At one point, the gallery has a higher ceiling height to allow the exhibition of larger objects. In addition, it could function as a 'covered sidewalk', allowing pedestrians to cut a path, enjoying the most varied exhibitions [Moura Penteado 1998, p. 100].
These four blocks face a large central arena that can hold up to eight thousand people.
Thus, "the flexibility of the spaces was understood as a basic condition for the effectiveness of the proposal, ensuring the expected multiplicity of use" [Moura Penteado 1998, p. 100].
The designs of this project have two strategies. One consists of drawings with a specific focus on an internal environment of the built complex, highlighting elements of construction and structure, reinforcing the qualities of São Paulo's Modern Architecture and its relationship with the new techniques based on the use of reinforced concrete, allowing greater spans and differentiated support designs. The environment reveals a space of social conviviality of great cultural relevance for that time, with the presence of many people. In the other representation strategy, we observe a drawing exploring the more artistic vertical section, without many technical references, but revealing relationships between the height of the environment and people, relationships with the square and the external environment, vegetation, and even other surrounding buildings (fig. 8). Again, we can see the emphasis on the structural expression of Penteado's architecture by the drawings of the vertical sections, with differentiated designs of expressive architectural forms in reinforced concrete.

Discussion and final considerations

> Fábio is an architect-thinker, an intuitive questioner of the dynamics of life, an attentive observer of everyday life, permanently concerned with human dignity.
> Mônica Junqueira de Camargo, in Penteado 1998, p. 9.

In the scenario of the state of São Paulo in Brazil, in the 1960s, time frame of this study, urban life was a relatively recent event, and the explosion of cities and urban life generated problems and demands that architects and urbanists could study, discuss, and bring solutions to.
By the research developed, involving the drawing analysis and observation, starting from the assumption of the relationship between the concept of the 'Architecture of the Crowd', seeking a reflection on the relationship between concept and project in the architecture of Fábio Penteado, one can observe that the architect established principles for the development of an architecture that has people as its protagonist. An architecture that harmoniously relates with the city, inviting users to enter, circulate, and interact with the space and other people, in a natural way.
We verified in the selected projects that the concept underlying the projects created dignified, human, inviting spaces promoting meeting and harmonious coexistence between people through the careful design of the implementation, accesses, the relationship of the building and urban space, elements of welcoming vertical circulation, the organization of the program, creation of large distribution and conviviality courtyards, relationship between closed and open environments, landscaping and floor designs, among other design strategies.
After analyzing the five selected projects from the 1960s and their drawings, one can see that Penteado's architecture is restless and not content to propose the obvious, both concerning what was produced at the time and regarding the architectural program. Penteado brought innovative, creative ideas and questions to the debate.
"His projects are not content to propose new spaces for traditional programs, but express the vehement need to rework programmatic concepts. His proposals, regardless of the scale or technical specificity of the programs, end up constituting dynamic centers of coexistence [3]
Always rebelling against prefixed schemes, almost as a principle, Penteado does not allow himself to be imprisoned by the cliché; in his numerous projects, he subverts the program, questions, counter proposes, thinks about redesigns, in materials that allow a new scale of industrial equipment for inhabiting the space, for the urban [4].
The drawings reveal crucial elements for understanding Penteado's architecture. From the point of view chooseen for each drawing, usually at the height of the ordinary user's gaze, we can visualize a series of elements carefully inserted in the representation.
In the Araras Forum, the elimination of an entrance door, of the lobby and the integration between public and private space broke the barrier between justice and users of that space. In this project, the architect brought the square under the building.

In the Campinas Coffee Museum, the proposal to elevate the exhibition space by configuring a covered space at street level, in addition to taking advantage of the topography of the area for the inclusion of a staircase that is also a grandstand, show the concern to rethink the architectural program and add other roles to those already existing in the project. In this project, Penteado brought the square under the building, too.
In the Piracicaba Municipal Theater, taking advantage of the view of the Piracicaba River, Penteado had the intention of creating a space that was a square and a theater. Therefore, the architect designed terraces at the top of the building, which connected with the cafe, library, and exhibition hall and which could be used at any time of the day. In this project, he brought the square under the building for the third time.
The Campinas Opera House and the Cultural Coexistence Centre are two projects in which the main functions were conceived in different buildings; however, to unify them, the architect designed open spaces to be used for events, but also as meeting spaces. In these projects, Penteado has made the public square and the buildings into one.
The five projects here presented have a connection between the urban environment in which they were designed and, in two cases, built. Without exception, the design of the buildings is always arranged in such a way that, around it or on it, a square is formed. This square, along with specific characteristics of each project, involving the organization of the program, definition of the circulation system, among others, welcome and invite people to enjoy this space.
Through the analysis of handmade perspective drawings, we can identify the presentation of ideas contained in their theoretical and conceptual discourse. The elements that define and compose the drawings are significant for the representation of their ideas: points of view from which the drawing was constructed; presence of interacting, immobile or moving people and their location; automobiles and machinery; vegetation and landscape; representation of the accesses to the building with some welcoming element such as a marquee; indication of paths and routes.
The urban life scenario in the State of São Paulo in the 1960s represented in these drawings reinforce the conceptual intentions of the architect. Luigi Vagnetti observed in his book *Disegno* e *Architettura* that the representation assumes a significant characterization of an era as a living testimony of a taste and a period [Vagnetti 1958, p. 26]. These drawings are the representation of a thought and a testimony of a time. A point of view from an ambition of a good urban and modern society, from the perspective of ordinary people circulating around the city and promoting encounters and events in a democratic, safe, and healthy environment.

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Notes

[1] "TL'esercizio del disegno è per l'architettura (ma non solo) una prima forma dell'immagine del pensiero". All quotations from the text are translated by the authors.

[2] Text originally written in 1972.

[3] Camargo Camargo, Monica Junqueira de, in Penteado 1998, p. 9.

[4] Scharlach Cecilia, in Penteado 1998, p. 9.

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‘Aeroimages’ and Urban Visions of Rome between the Wars

Fabio Colonnese, Antonio Schiavo

Abstract

At the beginning of the last century, the experience of flying by airplane favoured the development of a new sensitivity towards the city and the territory. It transcends the static visions of the hot-air balloon and introduces a dynamic and, in some ways, anti-perspective sense, even in the urban representation. This article focuses on the twenty years of fascism and the case of Rome, which the historical events made the main development centre for the new-born aeronautics; investigates the relationship between the work of futurist artists, who created new figurative methods in aeropittura (aeropainting), and that of architects, increasingly committed to providing bird’s-eye views of large urban projects; identifies in some architects and drawings the signs of a new way of representing the city and of interpreting architecture from above, in connection with the surrounding territory, which testify to the airplane experience both directly and mediated by photography and cinema; finally, it witnesses the resistance of conventional architectural graphic models and the architects’ general inability to grasp the suggestions offered by the artists.

Keywords: Futurism, aeropittura, bird’s-eye view, photography, urban design.

Introduction

At the end of the 18th-century, the Montgolfier brothers’ balloon finally permitted the human levitation and the observation and representation of cities from above, which was before entrusted to the artists’ imagination and geometric expertise. A century later, the construction of the early flying machines offers pilots the thrill of flight and a dynamic perception of the urban form, actualising the literary and figurative imagery from Icarus to science fiction. The experience of flight, which is intertwined with war events, the futurist exaltation for speed and the rise of fascism, has its historical focus in Rome and is concretely manifested in the so-called ‘aeropainting’; parallel to this, indications of a novel way of seeing and picturing the city from above also timidly appear in the architectural and urban design. On the centenary of the military aeronautics, this article proposes a critical rereading of the project drawings relating to the Roman territory in the decades between the two wars, aimed at measuring the signs of this experience in relation to their geometric-perspectival (visual field, point of view, position of the picture plane, etc.) and graphical contents (level of detail, chiaroscuro, shadows, etc.) as well as the topics covered.

Aero-Rome, Aeropainting

From the early 20th century, Rome has been the main centre of research on flight. The *Cantiere Sperimentale Aeronautico*, where the Italian airships were tested and the

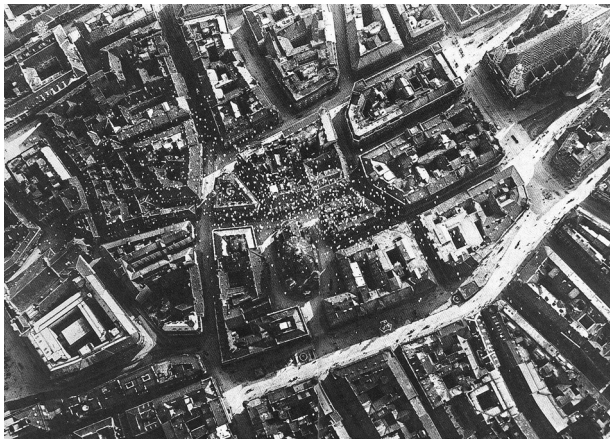


Fig. 1. Nadiral photo of the centre of Vienna taken during the launch of Gabriele D'Annunzio's flyers. Author: A. Locatelli, 1918: <https://commons.wikimedia.org/wiki/File:Manifesti_su_Vienna.jpg> (accessed May 3, 2023).

first seaplanes were built, was installed in Vigna di Valle in 1904. In April 1909, the American aviator Wilburn Wright gave flight demonstrations at the Centocelle field, effectively training the pioneers of Italian military aeronautics. Actualy, since the first balloon flight in 1783, first the view from above and then the aerial photography mostly fulfilled cartographic and military tasks [1]. Alfred Guesdon's views of Italian cities from the balloon, aided by early daguerreotypes and published in the mid-19th-century, are only an exception [2]. From 1899 on, the archaeologist Giacomo Boni, assisted by the Military Engineers, had been using a hot air balloon to survey the valley of the Forum and plan the excavations of the imperial palaces [Castrianni, Cella 2009a]. These experiences, with an exquisitely technical and military implication, also affected the imagination of the artists [Boffito 1921; Lodi 1981] as Villa Mellini's frescos testify [Castrianni, Cella 2009b]. The futurist incitement to the speed of airplanes finds its ideal founding act in *Le monoplan du Pape*, a novel written by Filippo Tommaso Marinetti in 1911 and published during the Italo-Turkish war in Libya, where the early military airplanes were involved. *The Manifesto of Futurist Architecture* of 1914 is ideally illustrated by Antonio Sant'Elia with visionary urban structures seen from above that integrate immense airstrips.

The topic of human flight, associated with the myth of Icarus and the inventions of Leonardo da Vinci, is intertwined with the nationalist impulses devoted first to interventionism and then to peace. The disruptive political value of the airplane was unleashed by Gabriele D'Annunzio's 'crazy flight' over Vienna on August 9, 1918, which marked an historic watershed. The nadiral photographs of the Austrian city are exalted by the press and convey an unprecedented sense of domination to the Italians (fig. 1). The episode gives flight a universal and lyrical dimension that fascinates an entire generation. The flight which, as Walter Benjamin would write [2001, p. 413], "has pierced the monopoly of the vertical", changes the way of framing and representing the city by virtue not only of the variation of the point of view and of the optical axis but also of the deformation imposed by the speed. This is already perceived in the *Edificio visto da un aeroplano virante* that Virgilio Marchi, architect and set designer, painted in 1919 [3] (fig. 2).
When fascism came to power in 1922, the Capitoline administration had already transformed Centocelle into the first Italian airport, created an airport in Guidonia (1916), and set up a seaplane base in Ostia (1919), whose hall was decorated with wall paintings that graphically interpret the flight experience by Gerardo Dottori in 1926 (fig. 3). In the same year, Fedele Azari created *Prospettive di volo*, the first painting attributable to the so-called 'aeropainting'. His work suggests the possibility of including movement in the representation not only of the human body, as Boccioni had already experimented by materializing the trails, but also of the landscape. The *Manifesto dell'Aeropittura* [4] of 1929 claims that "the changing perspectives of flight constitute an absolutely new reality and that it has nothing in common with the reality traditionally constituted by terrestrial perspectives" [Mostra Futurista 1932, p. 6]. These experiences subvert the cornerstones of traditional projective representation and orient the visual framework according to unexplored positions. Eventually, they attribute an unprecedented centrality to the roofs of buildings, which become the'fifth façade' in the definition attributed to Le Corbusier [Asendorf 1990].
The diffusion of airplanes –but also the airship is a frequent presence in the sky of Rome– stimulates the proposal of new urban models able to favour air traffic at all scales. In the unpublished *I vertici azzurri di Roma* (1924-1926), Virgilio Marchi illustrates the opportunities to develop an 'upper city' for air traffic [Godoli, Giacomelli 1995] while an artist-architects such as Tullio Crali [1994]

designs not only a *Aeroporto urbano* (1931) but also a *Ristorante aereo*. At the same time, the new figurative approach, which breaks down the surface of the canvas with trajectories, kinematic lines and nuanced trails intertwines with the regime's needs for self-representation.
By shaping the capital as a stage for its political action, the fascist party also makes use of the collective imagination linked to flight, by virtue of the civil enterprises of Italo Balbo and the military ones of Ettore Muti [5]. It is no coincidence that the Duce's face is projected onto the view of the newly erected via dell'Impero in Alfredo Gauro Ambrosi's [6] *Aeroritratto di Mussolini aviatore* (1930) (fig. 4). The aeronautics and military aircraft become protagonists as an object and a subject in cinema and architecture, too [7]. In the days in which "the monumental Italian Air Force Exhibition, set up in Milan in 1934, seals in inescapably modern aesthetic ways the first epic ten years of the most modern weapon of the new regime" [Fiorino et al. 2017, p. 508, translated by authors], the inauguration of Sabaudia on April 15, 1934 is celebrated by the flight of a flock of fighters. The photographs taken by the pilots become the official representation of the new milestone achieved by the fascist regime and help Tato paint *Sorvolando Sabaudia* according to the canons of aeropainting. Also in 1934, the *Manifesto Futurista dell'Architettura Aerea*, published by Angiolo Mazzoni and Mino Somenzi [8], renews the partnership between architecture and futurism under Marinetti's blessing: "the real 'important factor' of this manifesto is Aviation, which make prefiguring 'new social, political, industrial, commercial scenarios' and admiring 'the single great City with continuous lines to be admired in flight possible. […] Flying at night with the suns extinguished, we will have them below us like brilliant starry milky ways from the quiet explosion of the fulgent letters of this word, long from the Alps to Mogadishu: ITALIA" [Mangione 2008, pp. 20, 21, translated by authors].

Rome from above

The effects of flight on the urban representation can be read by focusing on Rome. The Eternal city has been the subject of countless views from above [9] also due to its bumpy morphology. Beyond the empirical ancient and medieval representations produced for symbolic and touristic purposes [Wataghin Cantino 1969], the prototype of the bird's-eye view is established by Étienne Dupérac in 1572.

Fig. 2. Building seen from a turning plane. Author: V. Marchi, 1919: <https://thecharnelhouse.org/2014/06/13/a-century-since-futurism-antonio-santelia-and-mario-chiattone/virgilio-marchi-building-seen-from-a-veering-airplane-edificio-visto-da-un-aeroplano-virante-1919-20-tempera-on-canvased-paper-130-x-145-cm-private-collection-switzerland/> (accessed May 3, 2023).

Fig. 3. Decoration sketch for the waiting room of the airport of Ostia. Author: G. Dottori, 1927 [Scudiero, Cirulli, Alegi 2003, p. 221].

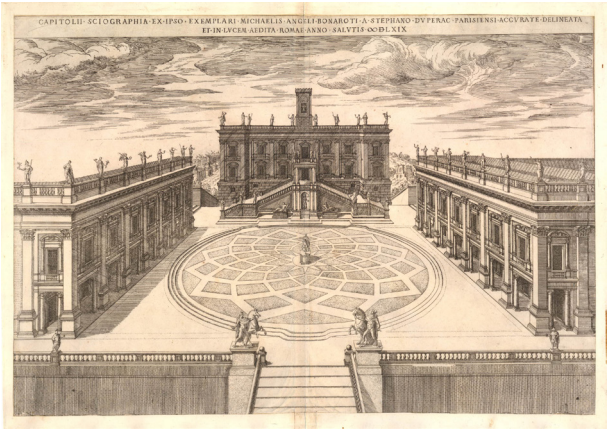
Fig. 4. Aeroportrait of Mussolini the aviator. Author: A. G. Ambrosi, 1930: <https://it.wikipedia.org/wiki/Alfredo_Ambrosi#:~:text=Alfredo%20Ambrosi%20(Roma%2C%201901%20%E2%80%93,vista%20di%20Roma%20del%201930> (accessed May 3, 2023).

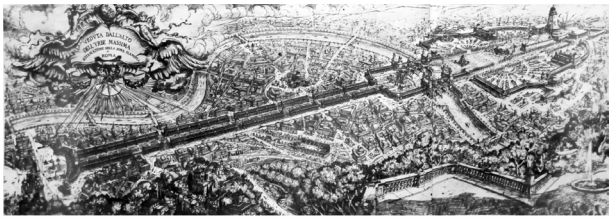
The perspective view of Michelangelo's project of the Campidoglio (fig. 5), is presumed to have been conceived to institute a visual and symbolic relationship with the antiquities of the Forums [Colonnese 2018]. At the same time, it resembles the coeval landscape painting, which used an elevated point of view to show the design of the parterres on the ground and the extension of the held.
The graphic production of Dupérac and Jacques Lemercier, his ideal follower, features the role wood and paper models had in negotiating this type of representations, which later evolved into 17th century urban views [Martinez Mindeguia 2016]. Like the relationship between the architect and the scale model, they can evoke the idea of power as 'superiority' emphasised by the revealing agency of the view from above. However, only after the hot-air balloon, the bird's-eye views began to support urban planning in the great European capitals; still in the Fascist era, the development of Florence was guided by the aerial panoramic view drawn by Luigi Zumkeller in 1936 [Corsani 2010].
These brief observations suggest that also the experience of flying by plane might have had visible effects in the way of representing architecture and the city. Though the consequences on futurist artists are evident, what about the architects? While Zumkeller's view, which was built as a real survey from the sky, "gives us the sense of astonished fixity of a view from a motionless hot-air balloon" [Gobbi 1982, p. 21, translated by authors], is there any desig representation embodying the view from the plane?
The aerial representations of Roman urban projects from the early 20th century show a broad visual cone and a generally static effect. This is the case of Guglielmo Calderini's [Boco 1996] drawing for the new Piazza d'Armi district (1908) and the International Exhibition of Arts at Valle Giulia (1911). Something different can be perceived in the views of Armando Brasini for his *Urbe Massima* (1914-1917). While the *Veduta dall'alto* of the immense monumental avenue still follows the rhetoric of historical views, with an impossible panoramic terrace in the foreground, the frayed edges of the *Planimetria* recall a frame of clouds (fig. 6). The project for the future via della Conciliazione is instead expressly depicted by a *Prospettiva aerea*, where the monumental scroll hides the panoramic terrace and any link with the ground.
Compared to Brasini's work, the bird's-eye perspective of Marcello Piacentini's study for the new Foro Littorio (1926), aligned to the main axis, looks rather didactic and debtor to Dupérac's 16th-century model. Beyond the clouds that mediate the relationship between the city and the horizon, Brasini's drawings show instead an 'accidental' vision of the monumental avenue that can be interpreted as an affiliation to new aesthetic models influenced by the flight. This also occurs in the close-up visions of his interventions in the historic centre, where a single visual cone embraces the monuments of the First and Third Rome favouring no urban axis [10], and in the Imperial Forums project by La Burbera group (1929), where the chiaroscuro component, due to the presence of Vincenzo Fasolo and Alessandro Limongelli, dramatises the image. Anyway, to find a true 'aeronautical'

view, one has to turn to the Italian-Hungarian Jenô/Eugenio Faludi [11], the leader of the Gruppo Urbanisti Romani. His airport design for Rome, which was presented at the IV Congresso internazionale di navigazione aerea (Rome, 24-30 October 1927) and then at the 1st Italian Exhibition of Rational Architecture in 1928 [Cennamo 1973, figs. 41-48], is properly depicted in a perspective view framed by the wings of a flying biplane.
Photography and cinema play a central role in changing the architects' gaze towards the city, even in views from above, often used to evaluate the relationship with the monuments. For example, the architects who illustrated the proposals for the Palazzo del Littorio in 1934 are likely to have watched the sequence in subjective of the planes that shot King Kong down the Empire State Building, released in Italy in October 1933. Surely, some of the entries show the use of mixed techniques including photo montages.
Giuseppe Terragni [12], Marcello Nizzoli and Luigi Vietti pasted a photographic excerpt of an exalted crowd below the concave facade of project 'A' seen from above. Luigi Figini and Gino Pollini, together with BBPR and Arturo Danusso, cut out the silhouettes of the military fighters flown over Sabaudia a few months before and glued them onto the photograph of their model shot from above (fig. 7). Filling the skies of architectural drawings –and the apse of churches, too [13]– with balloons and airplanes conveys the 'brand' of the regime and a general idea of modernity and dynamism. The case of Figini and Pollini, in addition, refers to an effective event and point of view which attributes further likelihood to the model. The photographs of the models –and the material cut from the photographs often taken with an inclined axis– are perhaps the only occasions in which the design representation abandons the reassuring and 'academic' vertical picture plane and embraces the oblique axis vision of the pilot. In this sense, they are also the main occasions in which the design images find a point of contact with the 'extreme' perspectives of the 'aeropainter' Tullio Crali and the images of the futurist city by Virgilio Marchi and Quirino di Giorgio [Fillia 1931].

Axonometry vs Landscape

The introduction of axonometric views into the architects' graphic repertoire at the end of the 1920s is promoted by the illustration of historical typologies and small-scale projects. the former inspired by Auguste Choisy's drawings





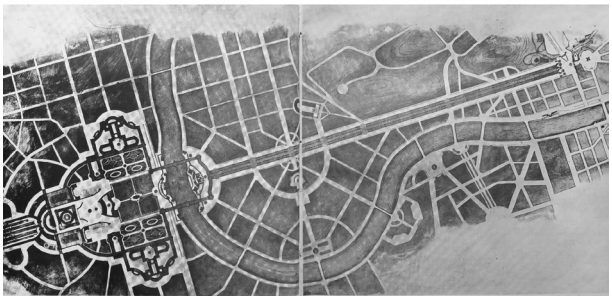


Fig. 5. View of the Campidoglio designed by Michelangelo. Author: É. Dupérac, 1569: <https://www.metmuseum.org/art/collection/search/395099> (accessed May 3, 2023).

Fig. 6. "Veduta dall'alto" and "Planimetria" for the "Urbe Massima" in the Flaminia Area, Author: A. Brasini, 1914-1917 [Brasini 1979, figs. 17 and 19].

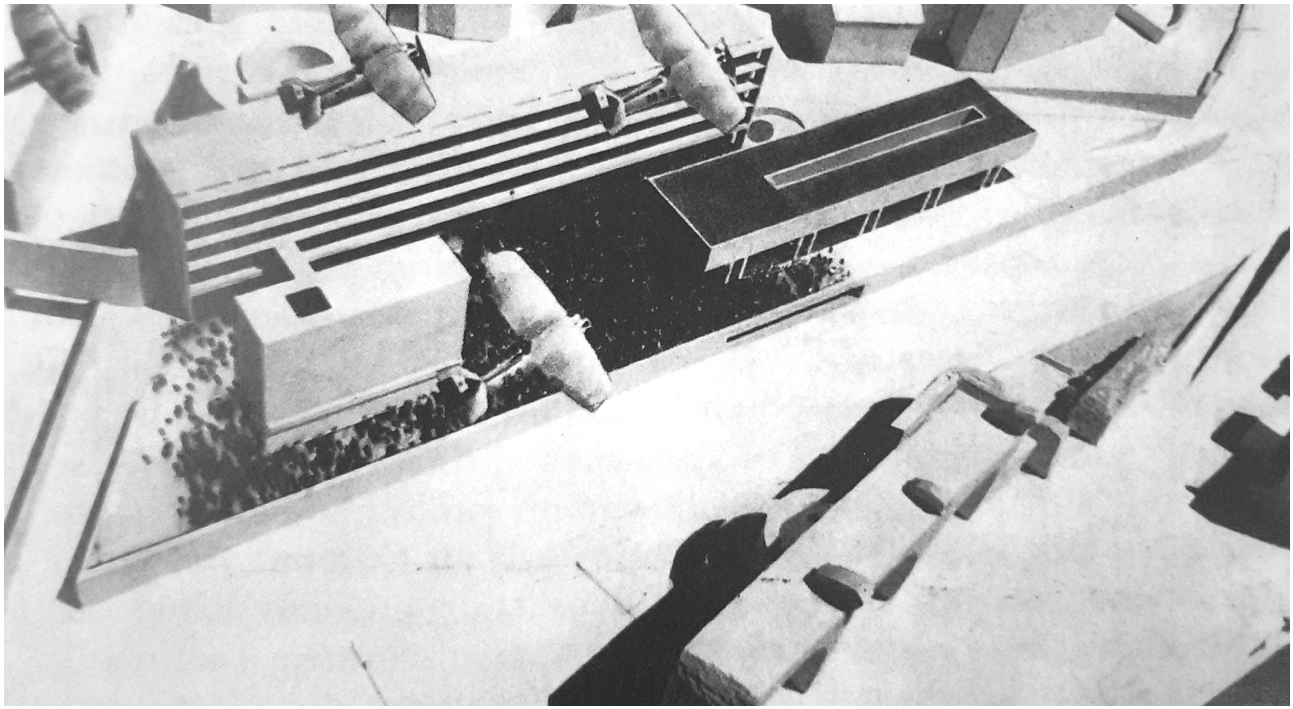


Fig. 7. Palazzo del Littorio, photomontage. Author: Figini, Pollini, BBPR, Danusso, 1934 [Gregotti, Marzari 1997, p. 114].

on the *Histoire de l'architecture* (1899), the latter by the projects of the Central European avant-gardes. In Rome, Gustavo Giovannoni and Vincenzo Fasolo associate the historical analysis with the design investigation. While the history of architecture taught by Fasolo was "made to make architecture" [Tafuri 1994, p. 10], Marcello Piacentini's *Architettura d'oggi* provided the 1930s students and professionals with "a new rich figurative baggage of international projects" [D'Abate 2018, p. 94] out of the academic canon. In this sense, Ludovico Quaroni, still a fourth-year student, designs a high school in via Lisbon which is inspired by Le Corbusier and the Bauhaus and represents it with a military axonometric view from above (fig. 8). It seems designed to underline the new centrality of the 'fifth façade', which appears in true form, also through the chromatic treatment, which evokes the 'aeronautical' *Planiti* designed by Kazimir Malevič a few years earlier.

The axonometric design is tailored according to the purpose, of course. The wire-frame inked axonometric view of the *Città universitaria di Roma* (1932), within Marcello Piacentini's general project, renounces showing any aesthetic value to offer an objective reading of the volumes and reveal its internal space. Giuseppe Nicolosi's opaque axonometric views for Guidonia find a inspiration in the views of the numerous airplanes that fly over the new town. From the operative approach, axonometry spares the problem of foreshortening the city towards the horizon, while metaphorically it evokes the point of view of a distant creator, who could be identified with the duce; on the other hand, the horizon line not only symbolises the existential feature of perspective but also the expansion of the city to the territory. It is no coincidence that the university campus shows a greater visual impact in the photographs from above in which the complex relationships

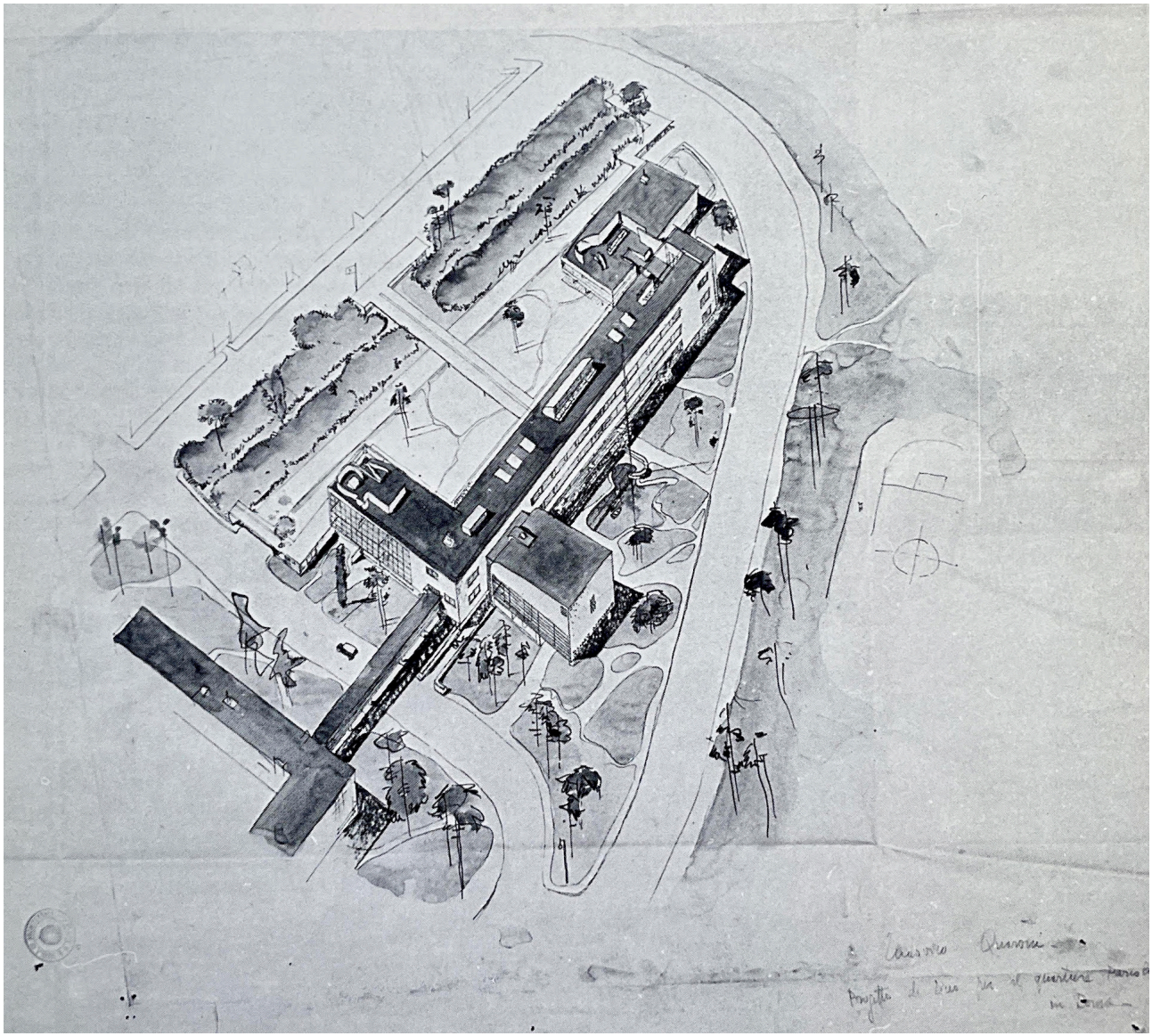


Fig. 8. High school project for the Parioli district (via Lisbona) in Rome. Author: L. Quaroni, 1931-1932: <https://siusa.archivi.beniculturali.it/cgi-bin/siusa/pagina.pl> (accessed May 3, 2023).

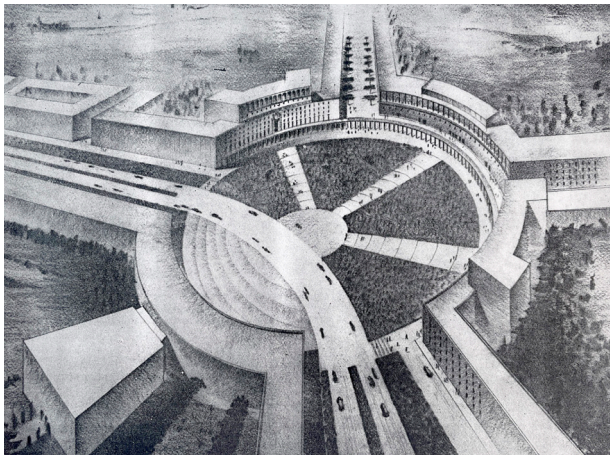


Fig. 9. Junction along via Imperiale by the current piazza dei Navigatori. Author: M. Piacentini and collaborators, 1939 [L'urbe di Mussolini 1939, p. 25]

with the existing urban landscape emerge that justify its nickname of 'city'.
The territorial dimension emerges from the drawings for the expansion area along the current via Cristoforo Colombo to the E42, such as the sketches by Mario Ridolfi's group for the Ministry of East Africa (1937-1939), which seek both a visual and spiritual with the presence of classical Rome and natural morphology. Along the same line, the drawings by young architects [14] –including Baccin and Vagnetti– gravitating around Piacentini illustrate the main junctions of the via Imperiale, planned in collaboration with the Governorate of Rome. In particular, the circular solution for the second square (now Piazza dei Navigatori) shows debts to the aesthetics of aeropainting (fig. 9). Compared to the other drawings, the graphic licenses on details and shadows and the use of cars and trails give the bird's-eye view ambiguity and artistry and simulate the unstable and suggestive vision of an architectural vortex. Equally suggestive is the perspective from the Aurelian Walls towards the E42, demonstrating the intent to trace a territorial sign to be perceived in flight.
Planning the extension of the E42 area required plenty of different representations from the sky, from technical and operational to suggestive and communicative. For example, the central bird's-eye view along the main axis, actually referring to the early modernist ideas of Giuseppe Pagano, Ettore Rossi, Luigi Vietti and Luigi Piccinato, is strikingly different than the images that display the following and final development of the district, like a large tempera-painted panel showing a sort of zenithal view of the district in the territory (fig. 11). It is actually a military axonometric view with an oblique vertical axe. This curious solution negotiates between the importance to show the three-dimensional form of buildings in both a scientific and clear way and the priority to have the main avenue vertical and parallel to the panel frame, eventually recalling a view from a turning plane. The vivid colours and the shadows add a photo-realistic and picturesque dimension to the project, which is distant from the abstraction and whiteness of the actual buildings.
Together with the E42, the fascist regime reached the apex of the architectural representation in its northern counterpoint, the Foro Mussolini, also elevated to the role of monumental gateway to the Terza Roma. In this case, the vision from above embodying the leader's planning will materializes in a bronze colossus with the features of the duce to be erected above Monte Mario [Giunta, Colonnese, *forthcoming*]. A charcoal bird's-eye view by Enrico Del Debbio proposes an even higher point of view behind the colossus. As in Duperac's prototype, Del Debbio frames the base-museum along the axis and urban area of northern Rome which the silhouette of the colossus is symbolically projected onto; yet, the 'aeronautical' inspiration is revealed by the base transfiguring into an airstrip, the city blurred and the inclined horizon suggesting the beginning of a turn.
When Del Debbio made this drawing, Luigi Moretti had already replaced him at the helm of the architectural complex and propaganda machine of the Forum, which he will carry on until the inevitable interruption induced by the war events. In anticipation of the assignment to Rome of the Olympic Games of 1940 and then of 1944, he had a large model made (fig. 12) that shows the territorial extension of his project. Such a project, which involves kilometres of the Tiber valley, prefigures a new sensitivity to urban design that is increasingly linked to environmental and natural aspects, above all in a perceptive key but not only. It is a sensitivity that, in some way, is also fuelled by a design of the open territory certainly promoted by the view from above offered by airplanes, direct or mediated by the photographs that architects increasingly use in their design and communication process.

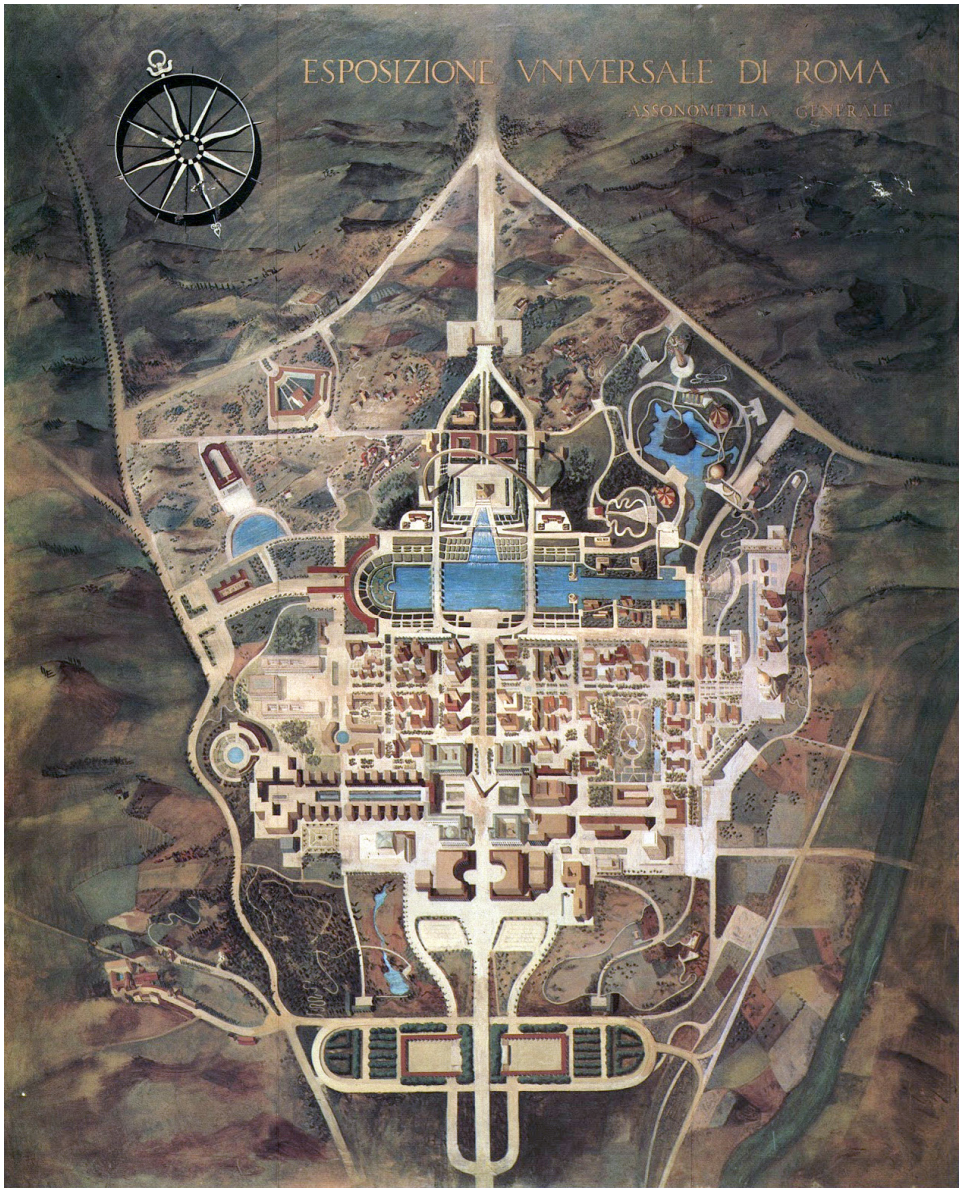


Fig. 10. Axonometric view of the general plan of the E42. Author: Ente Autonomo Esposizione Universale Roma, Servizio architettura parchi e giardini, 1940: <https://it.wikipedia.org/wiki/EUR> (accessed June22, 2023).

Fig. 11. The Colossus over the Foro Mussolini, bird's-eye view. Author: E. Del Debbio, 1933 [Neri, Muirhead 2006, p. 132].

Fig.12. Project for the Foro Mussolini. Author: L. Moretti, 1944.

Conclusions

For the futurists of the first and second generation, the experience of flight and speed in an airplane constituted an inexhaustible source of suggestions which found their specific manifestation in aeropainting, from 1926 onwards. Even the image of architecture and cities it came out transformed, fragmented, renewed in many ways. Yet very few of these suggestions disturbed the canon of design representation. We have identified, especially in the bird's eye views, early signs of a different way of seeing and interpreting the architectural and urban project but nothing comparable with the proposals of the aeropainters. We could also mention the curious horizontal perspective of the project for via Roma in Turin elaborated by Nicola Mosso in 1933, a sort of ideal link between the photographs of D'Annunzio mission to Vienna and the late-futurist paintings of Tullio Crali. And there are probably other graphic experiments in the many Italian architectural archives that could testify to this transfusion of aeronautical models between painting and architecture.
In the implicit technical complexity of setting oblique picture plane perspective views angled –today, with digital models, perhaps the opposite is true– it is above all the mediation of photography and models that occasionally contribute to breaking the dogma of the vertical and, through photomontage, to make the images dynamic, always emphasizing the constant presence of a superior authority. At the same time, certain drawings show, as had already happened at the time of Van Wittel and Canaletto's landscape painting mediated by the optical camera, how the architectural scene has gradually assimilated the territory, both in its critical grafts with the historic city, and in its complex relationships with the open territory and the coast.
The study of European architectural experiences contributed to the diffusion of axonometry which, however, did not completely replaced the perspective from above, probably also due to the intrinsic symbolic and figurative value of the horizon. In this unprecedented dialogue with the landscape, which is a prelude to post-war environmental planning, there is often a political will, also on the initiative of the architects themselves, to express continuity with the past, declining the relationship between the three Rome in emphatic terms. But the issue of graphic treatment also has its political implications.

If the wireframe graphic representations leave room for the interpretation of the observer, who participates indirectly in the project, pictorial and photographic photorealism takes on the further political connotation of a complete and concluded vision, certainly dear to the regime.

Notes

[1] The Aerostatic Section of the Italian Army was founded in 1884 at the Forte Tiburtino. On his two balloons, Captain Maurizio Mauro Moris will conduct the early photographic experiments.

[2] Alfred Guesdon, *L'Italie à vol d'oiseau*, 1849 [Orefice 2010].

[3] Viriglio Marchi published the Manifesto of Futurist Architecture on Roma futurista in 1920. The following year, he collaborated with Anton Giulio Bragaglia for the headquarters of his art house.

[4] On September 22, 1929, Marinetti, Dottori, Tato and others published the *Manifesto of Futurist Aeropainting*. This was anticipated by Marinetti's article Perspectives of Flight, taking up the topics of his 1912 essay. In 1930, Tato (Guglielmo Sansoni) also published the *Manifesto of Futurist Photography*.

[5] Noteworthy is Ambrosi's portrait of Ettore Muti of 1940.

[6] In 1938, Ambrosi creates an updated version of the portrait with the University City and the Foro Mussolini.

[7] The formal motif of the wings marks the roof of Roberto Marino's Ministry of Aeronautics in Castro Pretorio (1929) and the entrance canopy of Mario De Renzi, Adalberto Libera and Antonio Valente's Italian pavilion at the Chicago fair (1933).

Credits

This article results of the coordinated work of the two authors. In particular, Fabio Colonnese edited *Introduction*, *Rome from above* and *Conclusions* while Antonio Schiavo edited *Aero-Roma, Aeropainting* and *Axonometry vs Landscape*.

[8] Somenzi is also the author of a utopian airport-bridge over the Tiber [Lejeune 2008, p. 61].

[9] In particular, the view from the Gianicolo hill established the canon of the urban plans and views, although the artists had learnt how to elevate virtually the point of view and to integrate the visibile data [Fagiolo 2012].

[10] Brasini himself, at the end of the 1930s, from the dominant point of view of his Castellaccio, gives life to a personal vision of Rome, in which his monumental Flaminio bridge and the dome of his project for the church of Sacro Cuore Immacolato di Maria at piazza Euclide rivals that of Michelangelo and Della Porta.

[11] Faludi accompanied the project with an essay entitled *The problem of civil airports* [Faludi 1927].

[12] The group formed by Giuseppe Terragni, Antonio Carminati, Pietro Lingeri, Ernesto Saliva and Mario Sironi presents two different solutions.

[13] See the flying planes frescoed by Antonio Anchilli on the apse of Santa Maria di Loreto at Guidonia.

[14] They are Augusto Baccin, Beniamino Barletti, Adriano Cambellotti, Nello Ena, Pasquale Marabotto, Otto Matelli, Luigi Orestano, Dante Tassotti, Aldo Tomassini Barbarossa e Luigi Vagnetti [L'urbe di Mussolini 1939, p. 21].

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About the *Gonfalone* of the City of L'Aquila, or for an Hypothesis on the Use of *Camera Obscura* in XVI Century

Stefano Brusaporci, Luca Vespasiano

Abstract

The representation of the city of L'Aquila, in the banner, the so called Gonfalone*, painted in 1579 by Giovan Paolo Cardone, is the oldest known view of the historic center. Contrary to what usually occurs in devotional representations, mostly symbolic, the banner gives a surprisingly detailed image, where the numerous elements still recognizable today appear strongly corresponding. The mountainous nature of the territory, even close to the city, allow to have points of view from above of the urban center that offer sights similar to the one represented. The contribution, based on the reconstruction of the historical and cultural context, as well as through a detailed analysis of the artifact and the critical comparison with the current panorama, proposes that a* camera obscura *has been used to realize the view depicted in the gonfalone.*

Keywords: camera obscura, Gonfalone*, points of view, perspective, photography.*

Introduction

The banner of the city of L'Aquila, the so called *Gonfalone*, has been completed in 1579 by Giovan Paolo Cardone [Leonetti 2010], it is painted on silk, has such relevant dimensions (442x315 cm), and belong to the collection of National Museum of Abruzzo. The painting represents the four patron saints in the act of donation of the city to the risen Christ. The representation of L'Aquila fills the central portion of the banner and presents elements of particular interest, offering a bird's eye view of the historic center in the second half of the XVI century. Contrary to what usually occurs in devotional drawings, mostly symbolic, the banner gives a surprisingly detailed image, where the numerous elements still recognizable today appear strongly corresponding. Above all, the similarity of the representation with the views actually possible from the hills around the historic center is surprising. This similarity led to the conviction that it was from those hills that the preparatory studies for the realization of the view were carried out. At the same time, however, it has also been hypothesized that there was a relationship with the representation of the city made by Ieronimo Pico Fonticulano (1541-1596), in the same years.

This paper, based on the reconstruction of the historical and cultural context, as well as through a detailed analysis of the artifact and critical comparison with the current panorama, proposes that a camera obscura has been employed to realize the view depicted in the *Gonfalone*.

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Fig. 1. The Gonfalone of the city of L'Aquila by Giovanni Paolo Cardone, 1579.

The banners of the city of L'Aquila

Through historical sources, it is possible to document how the *Gonfalone* was part of a series that lasted for over a century, maintaining a stable iconography. The importance of these banners is testified by their use in particular circumstances, such as the Jubilee pilgrimages to Rome, and by the commitment to their realization of very important painters in the artistic scene of L'Aquila. The first known *Gonfalone* of the city dates back to 1462 [Clementi, Piroddi 1986, p. 91,186, n. 2]. Its realization is linked to the seismic swarm that struck the city between November 1461 and March 1462, and is remembered in the Chronicle by Francesco d'Angeluccio di Bazzano [D'Angeluccio 1742]. The incessant tremors had exasperated the population, that had spent the winter in shacks and huts. Various devotional initiatives were taken, inspired by a Franciscan friar called Timoteo de Verona [D'Angeluccio 1742, p. 902]. In addition to prayers and processions, the friar ordered the realization of the banner, paid by the municipality, and made in honor of the Virgin Mary. It was completed on July 25, 1462 [D'Angeluccio 1742, p. 902]. The author of the chronicle also records the iconography, which anticipates the one represented by Giovanni Paolo Cardone, with the Virgin Mary, the city at his feet supported with his hands by the patron saints: Saint Pietro Celestino, Saint Bernardino, Saint Massimo and Saint Equizio. Below appears Blessed Giovanni da Capestrano. All was adorned with gold, blue and many other beautiful and fine colors [D'Angeluccio 1742, pp. 902, 903]. This first banner, of which we ignore the author, is followed by others, in whose realization we find engaged some of the most eminent painters of the artistic history of L'Aquila. First of all, Saturnino Gatti, who receives payments for a banner, but it was probably not intended to replace the previous one conserved in the church of San Bernardino [Simone 2015, p. 93], as instead had to do the one commissioned to Cola dell'Amatrice [Pezzuto 2018], about which the Municipality issued a resolution in June 1528 [Simone 2015, p. 93].
In the Jubilee of 1575, the banner was left as a gift to St. Peter's Basilica in the Vatican. For this reason arises the need to make a new one, and it is precisely for this that Giovanni Paolo Cardone is commissioned on June 27, 1578 by act of Notar Angelini [Simone 2015, p. 117]. In the act it is specified that this banner had to be in conformity with the one left as a gift in Rome. This specification

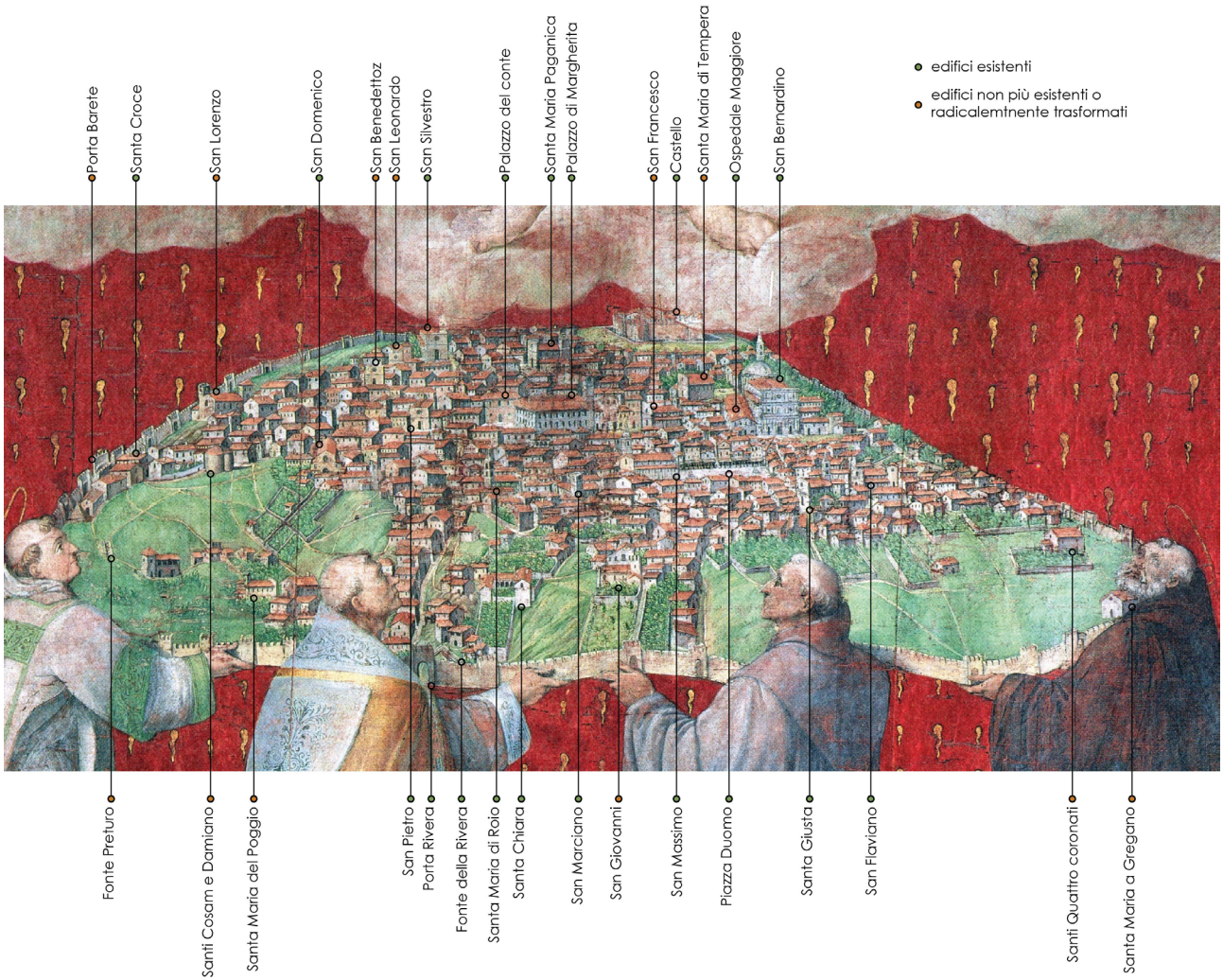

Fig. 2. The view of the city of L'Aquila in the Gonfalone. In evidence identifiable elements.

testifies the iconographic continuity of the various banners. The work was completed by 24 December 1579, as appears from the payments [Simone 2015, pp.119, 120].

The representation of the city in the *Gonfalone* of 1579

The banner by Giovan Paolo Cardone depicts the city seen from the South, from a rather elevated point. Of the city represented, which stands out against the crimson background, we recognize first of all the perimeter, exactly coinciding with the city walls. There are only two significant exceptions: the first one in the surrounding of the castle, which lonely and isolated dominates from an apical position the urban core; the second one around the half of the right margin, close to Bazzano's gate, where the walls, which regularly runs around 700-710 m a.s.l., goes down to the altitude of 680 m, following the natural compluvium where the gate lies. The shape of the urban perimeter is roughly triangular, with the horizontal base being supported by the patron saints, and the other two sides tending to converge forming a vertex around the castle, following a substantially straight path on the right and describing a curve trajectory on the left. The building does not fill the urban perimeter, leaving large green spaces, partly cultivated, and reaching the walls only at the Bazzano's gate to the East, the Rivera's gate to the South and the Barete's gate to the West. This condition is well documented also by other further representations and various studies on urban shape [Clementi, Piroddi 1986; Spagnesi, Properzi 1972; Centofanti, Brusaporci 2011]. The buildings of the city are characterized by the earthy color of the tiles that alternate with the light colors of the plaster. The scale of the buildings is substantially constant and remains consistent throughout the representation. Most of the buildings have no particular features: the holes are usually rectangular, with an absolute prevalence of solids on voids. From the urban fabric emerge a number of churches, generally characterized by horizontal crowning facades, rose windows and bell towers. By carefully analyzing the image we can identify numerous architectures, some of them still existing, others disappeared or radically transformed that can be identified in ancient maps (fig. 2).
Among these, those that stand out most are the castle, which has already been mentioned, the Basilica of San Bernardino, on the left, of which stands out particularly the design of the facade, designed by Cola dell'Amatrice in 1528, as well as the dome and the towering bell tower, and the Palazzo di Margherita, with its tower facing the square and an absolutely greater size than the surrounding buildings. Another prominent element is the large market square, characterized by the presence of wooden porches and stalls of shops, as well as the cathedral of San Massimo, of which we do not see the facade, but we recognize the southern front and the roofs and we can identify the three-aisled plant, the great transept and the bell tower.
Other buildings that we can identify with sufficient certainty are the Ospedale Maggiore, next to San Bernardino, the church of Santa Maria di Tempera, still left, the church and the convent of San Francesco on the opposite side of the square of Palazzo di Margherita and the Palazzo del Conte, now called Palazzo Pica-Alfieri. In the northern part we can recognize the churches of Santa Maria Paganica, San Silvestro and San Leonardo di Porcinaro, San Benedetto and San Pietro; on the southern side we distinguish the bell towers of San Marciano and Santa Maria di Roio, the convent of Santa Chiara, the Fonte della Rivera and the Rivera's gate: the numerous references indicate that the image is not an idealized representation, but a real and realistic view, which returns a very precise urban geography.
Because of the topographical correctness of the representation of the city, several authors have considered that the image has been elaborated starting from the relief in plan made in the same years by Ieronimo Pico Fonticulano [Simone 2015, p. 106].

Problems of the use of plants for the realization of the view

The two plants of the city due to the architect and treatise Ieronimo Pico Fonticulano are the oldest known. The first one, made after 1578 [1] is the *Plan of the city of L'Aquila*, drawn in pen on paper, and included in the manuscript known as *Geometria* [2]. The second is an engraving, made and printed by Iacopo Lauro in November 1600, from a design by Pico Fonticulano, an undoubtedly earlier design, in reason of his departed in 1596.
Due to the dating of the *Gonfalone*, we can consider as a possible starting point only the plan included in the manuscript. The other plan, the one engraved by Iacopo Lauro is certainly later, as indeed it is very probable, although not completely documentable, that the drawing on which it was made is also later to 1579. This drawing, in fact, is probably a re-elaboration of that which had to

be sent to Rome to make it painted among other cities in the corridor of the palace of his Holiness (the Vatican Gallery of Maps), paid to Fonticulano 10 ducats on 27 June 1581 [Rivera 1905, p. 116]. The drawing of the manuscript is indeed very schematic, and although the circuit of the walls and the main roads have been measured [Centofanti 1996], everything else is returned in an idealized way through the checkerboard scanning of the main streets and the ordinary ones. The presence of the cells filled with their number, and the fountains, marked by the rounds, allow us, however, to identify numerous corresponding points between this plant and the banner (fig. 3).
Observing the layout of these points, also leaving aside some approximation, a series of problems emerge. First of all the lack of correspondence of the geometries of the perimeter of the city walls: in the plan is very evident the offshoot that surrounds the Campo di Fossa (fig. 3), completely absent, or at last just visible in the banner. Another problem, much more serious, concerns the reciprocal position of the recognizable elements. Assuming, for example, as a reference the vertical alignment between the Palazzo di Margherita and the church of Santa Maria Paganica, the point of view would be located to the southwest of the city (fig. 3). As a result, for example, the castle should be on the left of this axis, at last aligned with it, instead in the banner is on the right. Assuming instead the vertical alignment between the castle and the cathedral, the position of the churches of San Flaviano and Santa Giusta is reversed, and would be incompatible, for example, the vertical alignment of San Pietro and San Silvestro. But perhaps, even more than this type of geometric inconsistencies, it is worth highlighting that in the view of the banner there is no evidence of the orthogonality of the roads, which is instead the dominant theme of the plan. Finally, Ieronimo Pico Fonticuano in his survey of the city does not report any altitude information that instead in the *Gonfalone* appears very accurate.

The possible points of view

The main conclusion from the analysis of the *Gonfalone* and the comparison between the view and the plans is that it is not possible to identify a single point of view that is completely consistent with the image. At the same time, however, in the literature it is easy to find evidence

Fig. 3. The plan of L'Aquila by Ieronimo Pico Fonticulano, about 1579.

of the widespread opinion that, the one of the *Gonfalone* is a view from the hill of Monteluco [Simone 2015, p. 106]. In addition to this, there is another observation point historically documented by the sources, namely the convent of San Lorenzo della Serra [3]. These two peaks, both south of the city, respectively 950 and 990 m a.s.l., are just over a kilometer apart, being on the two sides of the Roio Poggio pass, a locality of the immediate contour of the city, although higher than a few hundred meters.
The dense pine forest that since the late XIX century grows on the hill of Monteluco makes it impossible to directly experience the point of view, but rising above the trees with a drone [4], it has been possible to take pictures that are satisfactorily approximate to it. Even the ruins of the convent of San Lorenzo are located in a pine forest, which however thin out just a few dozen meters far.
Comparing the images taken from both points of view with the view of the *Gonfalone*, the findings are surprisingly accurate.
In particular, comparing the photograph from Monteluco with the view of the *Gonfalone* (fig. 4) it is possible

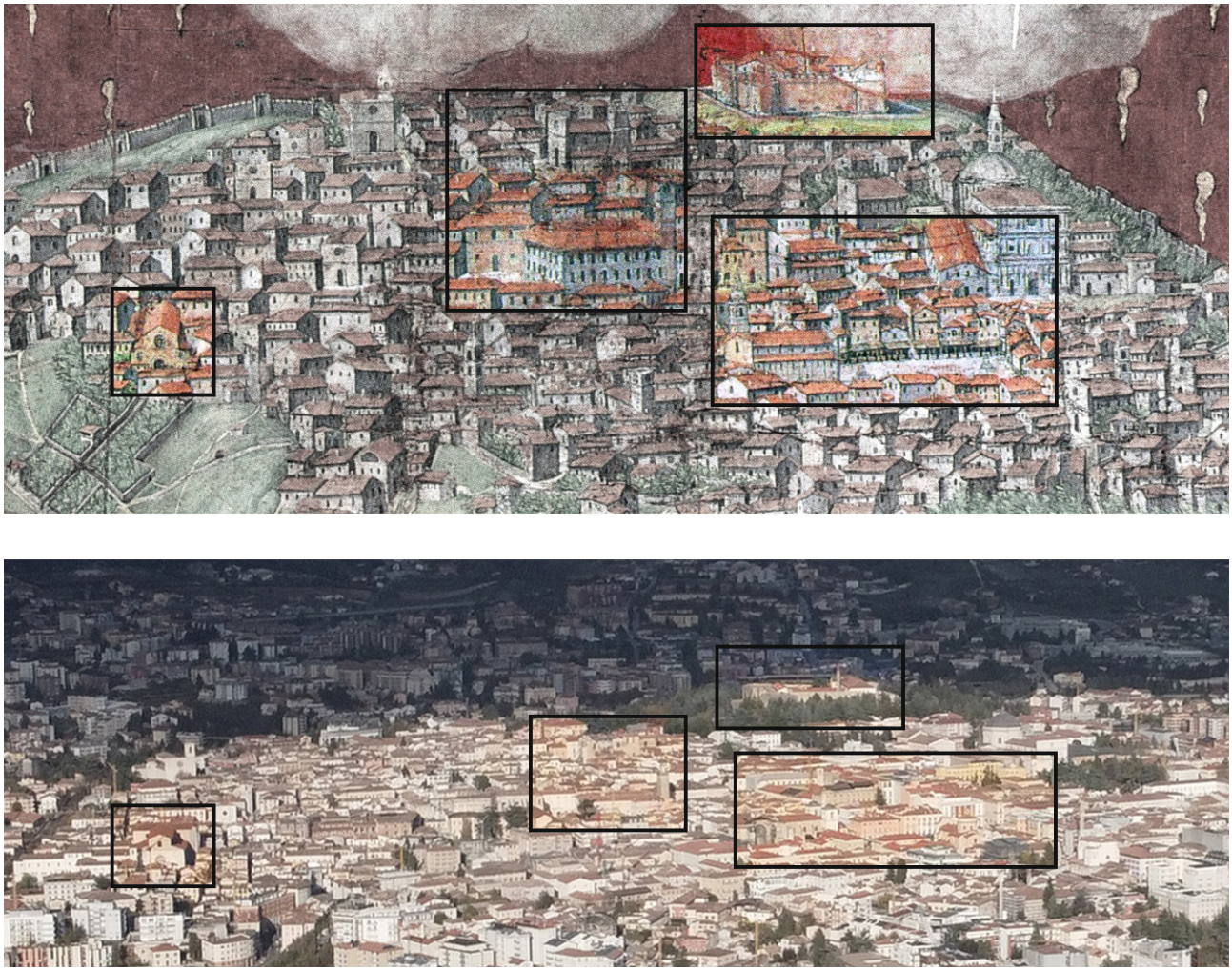

Fig. 4. Comparison between the view of the city of L'Aquila in the Gonfalone and a photograph taken from the hill of Monteluco.

to appreciate how the castle, the Palazzo di Margherita and the Palazzo del Conte, present themselves with the same angle. The same goes for San Domenico, whose image is perhaps the most responsive, for the cathedral of San Massimo and Santa Maria Paganica. There are vertical alignments between the latter and the Palazzo di Margerita, as well as between the cathedral and San Francesco, and as well as between the eastern front of Piazza Duomo with the Ospedale maggiore and the facade of San Bernardino.
Turning instead to the view from San Lorenzo (fig. 5), we can see how the reciprocal position between the churches of San Domenico, San Pietro and San Silvestro comes to be significantly similar to that which we see in the banner, as well as the one of Santa Giusta and San Flaviano, which was impossible from Monteluco. San Bernardino and the Ospedale Maggiore, as well as the Rivera's gate and the Fonte della Rivera, presents angles that coincide with those found in the banner.
Even evaluating the results in the plan (fig. 6), we can see how the geometric conditions about alignments and positions of the identifiable buildings are consistent alternately with one or the other point of view.
It would therefore seem to be a recomposition of images elaborated from two different points of view.

About the possible use of a camera obscura

The optical device, named camera obscura for the first time by Kepler in 1604 [Kepler 1604, p. 451], is based on a phenomenon already known in the classical era, but whose use would seem to take hold in Italy during the Renaissance. Famous are the representations of the device by Leonardo da Vinci in the Codex Atlanticus [5], dated to 1478, in which already appears a convex lens placed at the pinhole to magnify the brightness. However, the first descriptions in the treatises appear about a century later. The first is the one by Daniele Barbaro in his *La pratica della prospettiva* [Barbaro 1569] in which the phenomenon is described in sufficient detail. The text proposes the use of a lens to improve brightness, in particular the use of a thick lens, such as those used for glasses of the elderly [6]. The experience is presented as a possibility intended for the study of perspective, but not directly to representation, in fact the author proposes to use a sheet of paper, to be moved to focus the image, but not to draw [7]. The author also remains silent about the whole problem of reversing the image.
Only four years later, Egnazio Danti [Centofanti 2016] returns to deal with the phenomenon in his translation of the Perspective by Euclid, in which, in relation to the first theorem, proposes in the annotation as an explanatory experience to drill a hole in the shutter of a window, eliminating all other light sources so as to see on the opposite wall the projection of what is beyond the window [8].
In addition to practical warnings, the author highlights the reversal of the image that will appear upside down. The author proposes as a solution to the problem the use of a mirror, of which, however, he does not clarify geometry and material [9].
Giovan Battista Della Porta (1535-1615), a Neapolitan philosopher of the sixteenth century, who extensively deals with optics and in particular lenses and mirrors in the seventeenth book of his *Magie Naturalis* [10], seems to restart exactly from this last point. The author deals with the reversal of images in mirrors already in Chapter II, proposing a first solution with the use of flat mirrors [Della Porta 1677, p. 475], but it is in the following, which deals with the concave mirrors, that an effective solution is provided. Chapter VI is entirely dedicated to the camera obscura; after a description of the room, similar to the others, the author adds the advice to add a crystal lens in order to improve not only brightness, but sharpness too [Della Porta 1677, p. 485]. However, the image is still upside down [11].
Discarded the option of using multiple flat mirrors to straighten the image because they reduce too much brightness and sharpness, the author proposes the combined use of two convex lenses solving the optical problem for geometric aspects and image quality, using basically glasses lenses.
The treatment of Dalla Porta is not only maintained at a theoretical level of simple speculation, on the contrary, it abounds with practical indications intended to encourage the replicability of experience. The application for purposes of representation is quite explicit. The author emphasizes that by applying this method even those who are not able to paint can achieve excellent results in drawing and colors [Della Porta 1667, p. 485].
There are further indications in the text on the use of mirrors and lenses and their production. The importance of Dalla Porta's contribution, also because of the

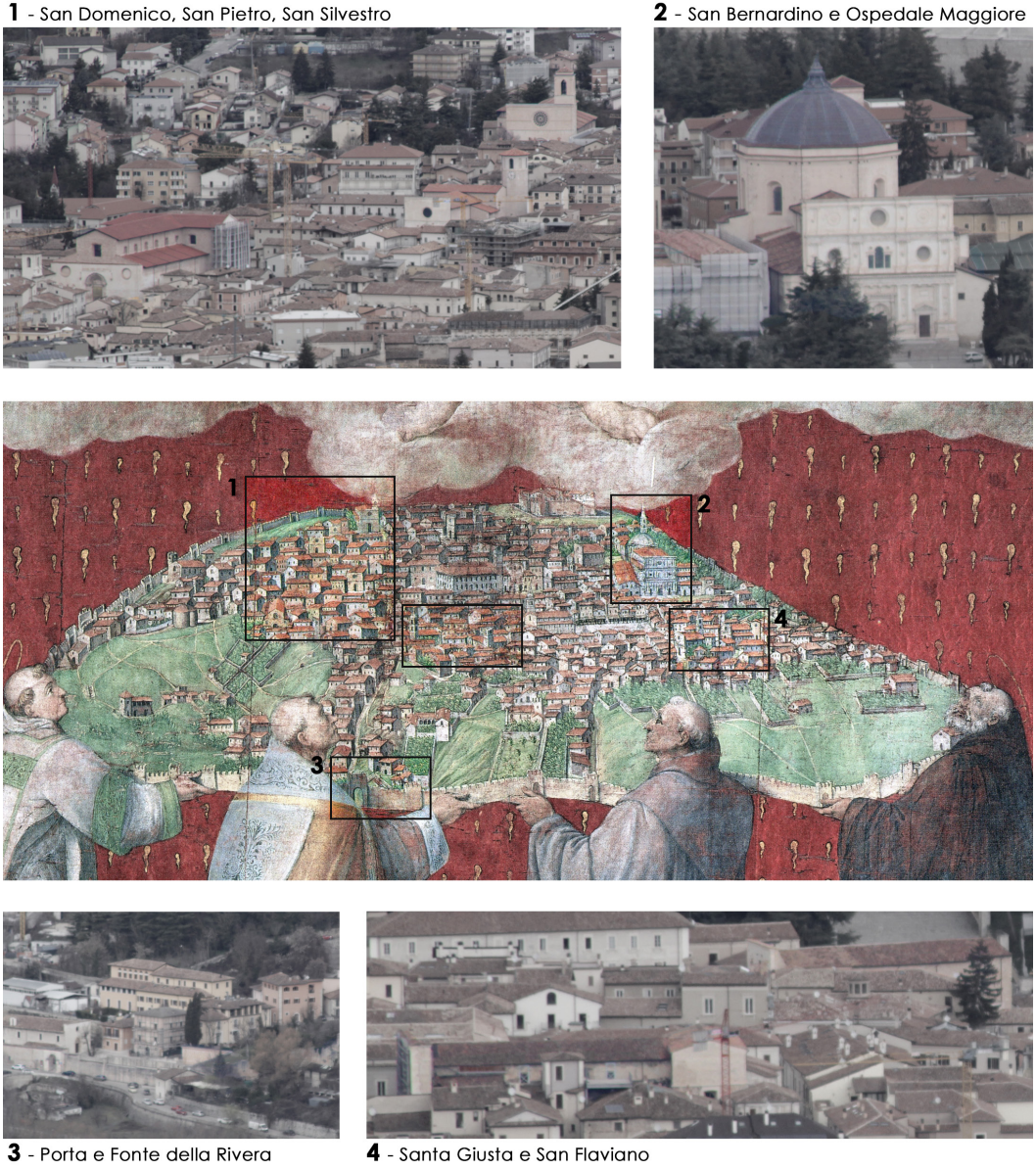

Fig. 5. Comparison between the view of the city of L'Aquila in the Gonfalone and a photograph taken from the hill of San Lorenzo della Serra.

great diffusion of *Magie Naturalis*, is evidenced by the explicit reference of Kepler in *Vitellionem paralipomena*: "*Hanc artem primus, quod sciam, I. Baptista Porta tradidit, magiaeque naturalis non minimam partem fecit. Sed experientia contentus, demonstrationem non addidit. Atqui vel hoc solo experiment potuissent Astronomi statuere de sua deliquii solaris imagine*" [Keplero 1604, p. 51].
Overall, the various chapters of Book XVII provide all the elements useful to achieve the necessary device to realize a wide and detailed view at a great distance, as the one in the *Gonfalone*.
The key character to connect L'Aquila, the Neapolitan philosopher, and Egnazio Danti is still Ieronimo Pico Fonticulano. The link between Pico Fonticulano and Egnazio Danti is due to the experience of the Gallery of Maps in the Vatican [Malafarina, Angeli 2006], of which Danti is in a sense the director, and in which Pico participates by sending the drawing of the city. Of this contribution is charged by the Municipality, and paid 10 ducats on 27 June 1582 [Rivera 1905, p.116]. We also know that Fonticulano certainly goes to Rome for the Jubilee of 1575 and probably also later. We can also attest the presence of Fonticulano in Naples where it is possible, although not documentable, that he met Dalla Porta, which housed in his house an academy; his house was very frequented also by nobles and intellectuals from all over the kingdom of Naples and his circle was considered an attraction of the city [12].
Finally, as for the practical aspect of the use of lenses, we know that at the court of Margherita d'Austria, it was very easy to find them, especially considering that also Daniele Barbaro recommends using lenses taken from glasses. Indeed, the inventory of Margaret of Austria's belongings, drawn up after her death, includes a large quantity of glasses. Excluding the pair circled with gold and the 12 pairs that Margherita had with her at the time of her death in Ortona [Bertini 2010, p. 36], there were fifty-one pairs in L'Aquila, at her palace [Bertini 2010, p. 76].
Further evidence of how much this object had spread at that time comes from the large canvas of the crucifixion in San Bernardino, in which, the Brussels Aert Mytens, native of the Spanish Netherlands of which Margherita had been governor between her two stays in L'Aquila, painting in 1600 an iconic pair of glasses, [D'Antonio, Maccherini 2020, pp. 35-37, fig. 41].

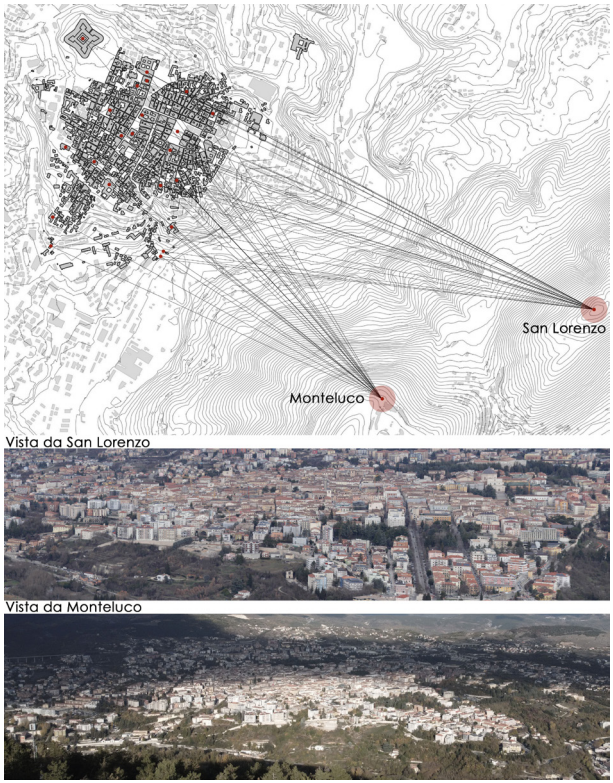

Fig. 6. Plan of the two points of view used for the realization of the view.

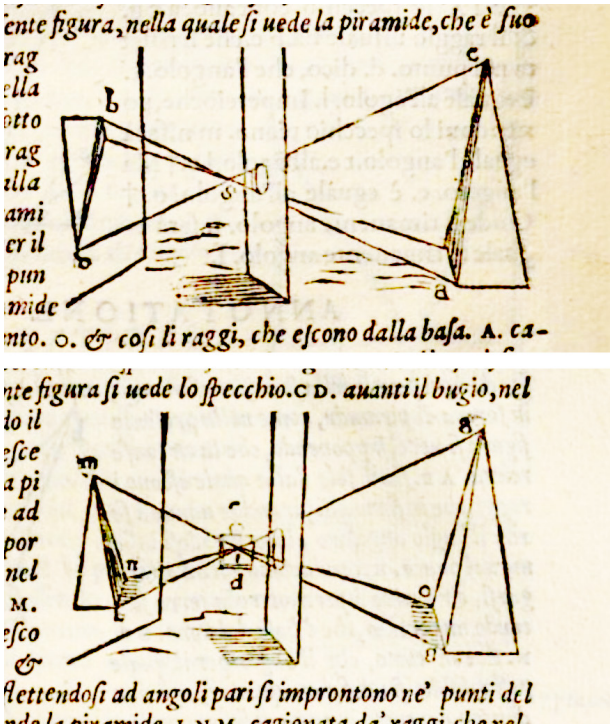

Fig. 7. The problem of the reversal of the image and its theoretical solution in the illustrations by Egnazio Danti [Danti 1573, pp. 82, 83].

Conclusions

The *Gonfalone* by Paolo Cardone offers a representation of the city of L'Aquila not idealized but overall iconic, both in the monuments and in the urban fabric. It can be excluded that the image was made starting from the Plant of L'Aquila included in the manuscript of Ieronimo Pico Fonticulano, either for the lack of information contained in it, either for it is not possible to determinate a single point of view. At the same time the comparisons between the *Gonfalone* and the photographs taken by Monteluco and San Lorenzo provide clear evidence of the real points of view, and highlight how the representation derives from the composition of two different points of view.
There is no documentary evidence that confirms the hypothesis of the use of a camera obscura for the realization of the view in the *Gonfalone* of 1579. At the same time, however, it has been shown that the use of the camera obscura was known and widespread in the second half of the sixteenth century, and how figures in the cultural field of L'Aquila, first of all Ieronimo Pico Fonticulano, could have theoretical and practical notions, and tools –such as lenses availability of glasses for the elderly– to realize and use that optical device. Therefore, if the hypothesis concerning the use of a camera obscura cannot be documented, it seems to be the only one that can validly justify the methods of realization of the painting of the *Gonfalone*.

Credits

With the exception of the *Introduction* and *Conclusions* edited by Stefano Brusaporci, the text, the photographs and the graphic elaborations are edited by Luca Vespasiano.

Notes

[1] The manuscript, in which the plan in question is included, on page 196 recto, refers to the death of the bishop of Aquila Juan de Acuna, occurred in July 1578, so the plan should be later.

[2] The manuscript is conserved in the Regional Library Salvatore Tommasi of L'Aquila, in the manuscript collection, under the signature Ms.57.

[3] At San Lorenzo, Fortebraccio da Montone set up his camp, during the siege of the city from May 1423 to June 1424.

[4] A DJI Mini 2 drone was used for the photographs (sensor: 1/2,3" CMOS; lens: FOV: 83, format 35 mm equivalent: 24 mm, aperture: f/2.8).
[5] The two drawings are on pages 5 and 34 recto. The entire codex is available in digitized version at <https://codex-atlanticus.ambrosiana.it/> (accessed June 4, 2023).

[6] Here is the original text: "*piglia un'occhiale da vecchio, cioè che habbia alquanto di corpo nel mezzo & non sia concavo, come gli occhiali da giovani, che hanno la vista curta. & incassa questo vetro nel bucco assaggiato*" [Barbaro 1569, p. 192].

[7] Can be inferred from the following passage: "*piglia poi uno foglio di carta, et ponlo incontra il vetro, tanto discosto, che tu veda minutamente sopra'l foglio tutto quello che è fuori di casa, il che si fà in una determinata distanza più distintamente*" [Barbaro 1569, p. 192].

[8] The explanation continues with the exposure of the problems that arise: "*Si deve avvertire, che all'incontro della finestra fa mestieri, che il muro sia bianco, & pulito, accio vi si possino improntare le imagini, che vengono di fuori per il picciolo bugio dalle cose vedute, ma quando il muro fosse impedito, si potrà stendervi un lenzuolo bianco, che farà il medesimo effetto; In oltre bisogna che il sole non percuota nel detto bugio, perché disgregheria i raggi visuali, ma si bene percuota nelle cose da vedersi, acciò i raggi imprimino i colori più gagliardamente dentro nel muro della Stanza. Terzo si deve avvertire che tutte le cose, che si vedranno riflesse nel detto muro saranno volte sotto sopra; del che ne sono cagione i raggi, che vanno à percuotere nel muro à retta linea, & quelli che si muovono di sotto percuotono da capo il muro, & quelli di sopra da piedi, & li destri alla sinistra, & li sinistri alla destra*" [Danti 1573, p. 82].

[9] Here is the original text: "*Hor se vorremo, che l'imagini tornino per il verso loro, metteremo uno specchio sotto il bugio dentro alla finestra come nella presente figura si vede lo specchio .CD. avanti il bugio, nel quale percuotendo il raggio. AC. che esce dalla punta della piramide si riflette ad angoli pari, & riporta detta punta nel muro al punto. M. così i raggi, che esco no da' punti. G. & O. della basa riflettendosi ad angoli pari si improntono ne' punti del muro. N L. La onde la piramide. L N M. cagionata da' raggi, che nello specchio percuotendo si riflettono, &non caminono rettamente, vien figurata per il verso suo come sta quella, che la cagiona. È ben vero, che queste imagini che sono cagionate da' raggi reflessi non si vedono così scolpite, ne di si vivi colori, come fanno quelle che da' raggi retti sono causate. Perché i raggi visuali reflessi, sono più debili, che non sono i retti*" [Danti, 1573 p. 83].

[10] There are many printed editions and translations from the Latin of this work, composed only of four books in the first edition of 1558 and subsequently enriched and expanded up to twenty books, among which the seventeenth is exclusively dedicated to optics. In particular, the Italian translation and the English one are mentioned in the bibliography.

[11] The text continues: "If you will that all shall appear right, This is a great secret: many have tried it, but none could obtain it: For some setting Plain Glasses obliquely against the hole, by reverberation against the Table, they could see some things somewhat direct, but dark and not discernable. I oft-times by putting a white paper obliquely against the hole, and looking just against the hole, could see some things direct: but a Pyramis cut obliquely, did show men without proportion, and very darkly. Bur thus you may obtain your desire: Put against the hole a convex Glass; from thence let the Image reflects on a Concave-glass: let the Concave-glass be distant from the centre, for it will make those Images right, that it receives turned, by reason of the distance of the centre. So up on the hole and the white paper, it will cast the Images of the Objects so clearly and plainly, that you will not wonder a little" [Della Porta 1658, p. 364].

[12] Pompeo Sarnelli, in the introduction of the translation of the *Magie Naturalis* [1677, p. VIII-XII] writes: "*Per commodamente filosofare, e con gli amici, e con se stesso, egli nella Città per i primi mantenea nel suo Palagio sito nella gran strada, hoggi detta di Toledo l'accennata Accademia; […] Era nelle conversationi amabile, e motteggievole; ma senza livore. Chi una volta era ammesso ad ascoltare i suoi discorsi, non mai satio poteva più allontanarsene, in modo che veniva chiamato le Delitie della nostra Città, e veramente era tale, mentre la sua casa veniva di continuo frequentata dai primi nobili signori di questo regno*" [Dalla Porta 1677, pp. XI-XII].

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Representing landscapes from above

High/Other Looks. Different 'Points of View' in 20th Century Art

Luca Palermo

In 1960 Jorge Luis Borges (1899-1986) published *El hacedor*, a collection of short stories and poems through which he narrates personal events and impressions, something unusual for the Argentine writer. In the *Epilogue*, he presents us, in a few lines, the story of a painter who, throughout his life, painted landscapes, kingdoms, mountains, islands, people; on his deathbed, the realizes that this tangle of lines, shapes and colors represents nothing but his face: his representation of reality is his self-portrait [1].

Our identity, therefore, is formed, or at least strengthened, also through the ways in which we observe the world, confront ourselves with it and cross it. The city and the landscape, essential components and integral parts of the world system, have therefore become mechanisms of representation and self-representation closely connected to (and perhaps deriving from them) their evolution and transformation. It is not a coincidence, in fact, that the interest of art for the city and for its complex and constant development has become a sort of *leitmotif*, especially starting from the avant-garde of the first decades of the 20th century. The one 'told' by the artists is a city that has lost, or is losing, its well-defined spatial unity; a city that has now become a metropolitan landscape; that city-labyrinth narrated by Walter Benjamin (1892-1940) in his *Das Passagenwerk* [Benjamin 1982], which, with its boulevards and buildings, creates new subjective and collective identities.

If the city and, therefore, the landscape change, their perception and representation also change: art, in line with the coeval technical-scientific discoveries, imposes

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

new strategies, new means and new methods to give back to the user all the complexity and semantic stratification, at times disorienting, of this apparently unstoppable urban expansion. Thus, the artist's gaze becomes a point of view able of creating strong connections and establishing references and relationships between the subjectivity of the creator and the objectivity of the urban and landscape context of reference. It is precisely through the subjectivity of the point of view that the spectator and/or the user perceive the infinite possibilities of narrating a reality that seems well framed in a scheme that is difficult to ignore.

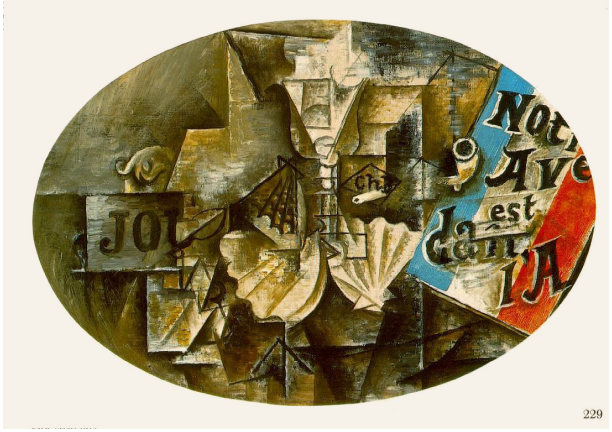
Without going too far back in time, without bothering Icarus and the bird's eye view, the desire to change the point of view and to transpose the result of this change onto paper, canvas, film or other support, has undergone a sharp acceleration with the advent of industrial society: perspective space and historical time, typical coordinates of urban planning from the Renaissance to the 19th century, no longer seem to be essential starting points for artistic creation.

If the famous aerial image produced in 1855 by the French photographer Gaspard-Félix Tournachon, better known as Nadar (1820-1910), literally moves up (with the help of a hot air balloon anchored at eighty meters high) the artistic gesture, the evolution of the viewpoint tends to reach extremes about half a century later with the appearance on the European scene, but not only, of those that artistic historiography usually defines as historical avant-gardes: Cubism, Futurism and Dadaism became, in fact, an integral part of a wider socio-cultural renewal driven by the coeval technical-scientific transformations; above all Max Planck's quantum theory of 1901 and Albert Einstein's theory of relativity of 1905. Until then, as Giovanni Lista recalled, "the aerial view cannot yet offer a new visual model, nor stimulate the imaginary, because it is conditioned by the traditional canons of landscape and urban representation" [Lista 2009, p. 237; translated by the author].

May 30, 1912 Wilbur Wright dies (1867-1912); in that same year, Pablo Picasso (1881-1973) creates a series of works whose title, *Notre Avenir est dans l'Air*, taking up a slogan of the Michelin airship company, seems to pay homage to the pioneer of flight and reveal the interest in the airplane, considered, by the artist, both machine and device able to change the aesthetic point of view [2].

Fig. 1. P. Picasso, The Scallop Shell. 'Notre Avenir est dans l'Air', 1912. Private collection.

Fig. 2. P. Picasso, Still Life with Chair Caning Picasso, 1912. Paris, Musée Picasso.



In this regard, Pierre Cabanne (1921-2007) observed that aviation had fascinated Picasso –but also Georges Braque (1882-1963)– to such an extent that he took part in the first rallies dedicated to the flight of Issy-les-Moulineaux and to influence his Cubist research [Cabanne 1977, p. 142]. Moreover, Gertrude Stein (1874-1946) was early aware of this, and in her *Picasso* (1938) she wrote: "When I looked at the earth I saw all the lines of cubism made at a time when not any painter had ever gone up in an airplane. I saw there on the earth the mingling lines of Picasso, coming and going, developing and destroying themselves […] and once more I knew that a creator is contemporary […] [and] sees the earth as no one has ever seen it" [Stein 1938, pp. 49-50].
In the most famous work of the aforementioned series, *The scallop shell: 'Notre Avenir est dans l'Air'* (fig. 1), the "diagonal verve of the typography", of which Linda Nochlin writes, seems to mimic the act of flight and the whole composition seems to combine the dynamism of a whirling flight with the static nature of what is happening at ground level [Nochlin 1968, p. 109]. The letters 'JOU' also appear on the surface. These are the same ones that a few months later will appear in the famous *Still-Life with Chair Caning* (fig. 2) whose shadows seem to almost evoke a landscape seen from above, from the point of view of a pilot, a paratrooper or a "vertical invader" [Berger 1965, pp. 40, 49].
A few years later, in 1915, during *The Last Futurist Exhibition of Paintings 0.10* in St. Petersburg, Kazimir Malevič (1879-1935) exhibited *Suprematist Composition. Airplane flying* [3] (fig. 3); on that same occasion he proposed the famous black square on a white background. It was the artist himself, as recalled by Christina Lodder [Lodder 2004], who retrospectively identified the origin of these works in the creative process that had led him to an extreme geometrization of forms on the occasion of the creation, in 1913, of the sets, for the opera *Victory over the Sun*: a story about time travelers able to go beyond the old concepts of space, time and gravity. The theme of space travel and aeronautical flight are, therefore, part of the cultural baggage on which the suprematist reflection is structured; this reflection also seems to look at the landscapes of aerial photographs widely disseminated by Russian newspapers since the beginning of the First World War. The title *Suprematist Composition. Airplane flying* refers directly to these subjects; however, most of the Suprematist paintings are structured starting from geometric figures placed on a white background that suggest a fluctuation of objects in space, in the cosmic infinity, in that void which, in those years, reflected the void of human consciences. After all, the combination of mysticism, spiritualism and technology was a characteristic that united the reflections of many artists in the first decades of the 20*th* century.
Between 1926 and 1927 Hannah Höch (1889-1978), a multifaceted German artist generally associated with Dadaism, created *From Above* (fig. 4), a collage in which two figures sit on a sort of slender scaffolding and from above look at the city and the landscape that unfolds below their eyes. If the figure on the right turns his gaze

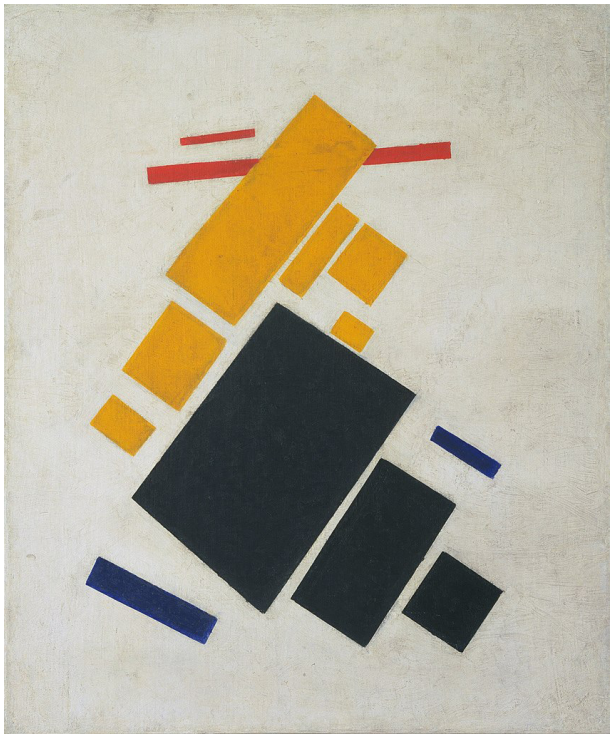


Fig. 3. K. Malevič, Suprematist Composition. Airplane Flying, 1915. New York, Museum of Modern Art.

Fig. 4. H. Höch, From Above, 1926-1927. Des Moines, Des Moines Art Center's Louise Noun Collection.

clearly downwards, the one on the left seems to wink at the observer, thus establishing a connection between what is happening inside the work and what happens outside it; between what is on our visual plane and what is happening below it. This work seems to be an invitation to look at the world from another perspective, from a different point of view than the one we are used to: change point of view, therefore, to be able to fully grasp the constant changes of man and the context in which he acts.

In those same years, in Italy, Futurism 'invents' *aeropittura*: for Filippo Tommaso Marinetti (1876-1944) and his associates, modernity appears attractive and fascinating; a world at times unknown, to be explored through a radical rethinking of creativity and aesthetic; the points of view, therefore, multiply, become dynamic; they confuse spatiality and temporality; they rise up to the sky and hover in the air in the awareness that "the perspectives of flight constitute an absolutely new reality and that it has nothing in common with the traditionally constituted reality of terrestrial perspectives" [Balla et al. 1933, p. 4; translated by the author]. While on the one hand Futurist *aeropittura* aimed at a renewed relationship with the rules of traditional perspective, on the other it aspired to a clear overcoming of the representation of the physical world by proposing images that were the translation of psychic experience, the state of mind of conquest of space. The reflection was no longer only on the external data of reality, but also on the way in which the artist translated the results of his meditation into images [4]. The futurists therefore rethink the representation of the landscape looking at it through the transparency of an airplane cabin; the medium, to paraphrase McLuhan, thus becomes a message; it becomes an integral part of the work and communicates its essence. The landscape tends to become mechanized and this mechanization exhibits a strong geometric component: a geometric order that contrasts with the chaos of the crowd praised several times by Marinetti [5]; on the other hand, the individuality of the painter/pilot is counterbalanced by the amorphous mass that crowds the streets of the city.

The aerial gaze, as a new point of view, almost seems to cancel the frenzy, movement, and rhythm of the metropolis. To strengthen and make such a point of view familiar, in those years, will be, as mentioned, also the images connected to the war conflict; newspapers and

Fig. 5. E. García Benito, Illustration for Dans le ciel de la patrie by Jean Cocteau, 1918.

magazines become visual material for numerous artists: from the English vorticist painters Wyndham Lewis (1882-1957) and Christopher R. W. Nevison (1889-1946), to the French Herni Farre (1871-1934) and Aimé Félix Del Marle (1889-1952) up to the album *Dans le ciel de la patrie* published in 1918 by Jean Cocteau (1889-1963) and illustrated by the *tempera* of the Cubo-Futurist painter Eduardo García Benito (1891-1981) (fig. 5).
The futurist attempts to give life to the art of space postulated by Marinetti was absorbed and reinterpreted, since 1949, by Lucio Fontana (1899-1968) and his *Spatial Concepts*, a title, however, already used in 1932 by Luigi Colombo Fillia (1904-1936) for two of his aeropictorial works. First with the holes, then, from 1958, with the famous cuts, the artist seeks a solution to "open a space, create a new dimension for art, connect it to the cosmos in all its infinite extension, beyond the flat surface of the image" [6]: from the representation of a landscape seen from unprecedented angles, we thus arrive at the pure perception of a landscape/passage. After all, already in 1951, in the *Manifesto Tecnico dello Spazialismo* he had argued that "the true conquest of space made by man is the detachment from the earth, from the horizon line, which for millennia was the basis of its aesthetics and proportion" [Fontana 1951, translation by the author]: once again, therefore, it is necessary to rise above the trampling surface to break patterns and traditions and re-establish what, perhaps, for too long had been given for certainty.
An ascension that is sometimes physical, other times only mental, capable of radically changing the perception of our reality and our everyday life. The change of point of view, in the aforementioned cases, however, involves exclusively the artist: it is the artist who looks at things from above; it is the artist who represents its effects on a support; it is the artist who offers the user the result of his work. The user, however, always observes 'from below'; the user is not required to move physically: he observes with his feet firmly on the ground what someone else has seen from above.
In the late 1960s, however, the viewer's point of view also began to matter. Land Art, which in those years began to spread on a large scale, cannot, in many cases, be thought of and, above all, perceived without an aerial view: it is the only way for the public (but also for the artists themselves) to grasp all the 'monumental nature' of many interventions. Examples of such an approach

Fig. 6. W. De Maria, Las Vegas Piece. Desert Valley, northeast of Las Vegas, Nevada, 1969.

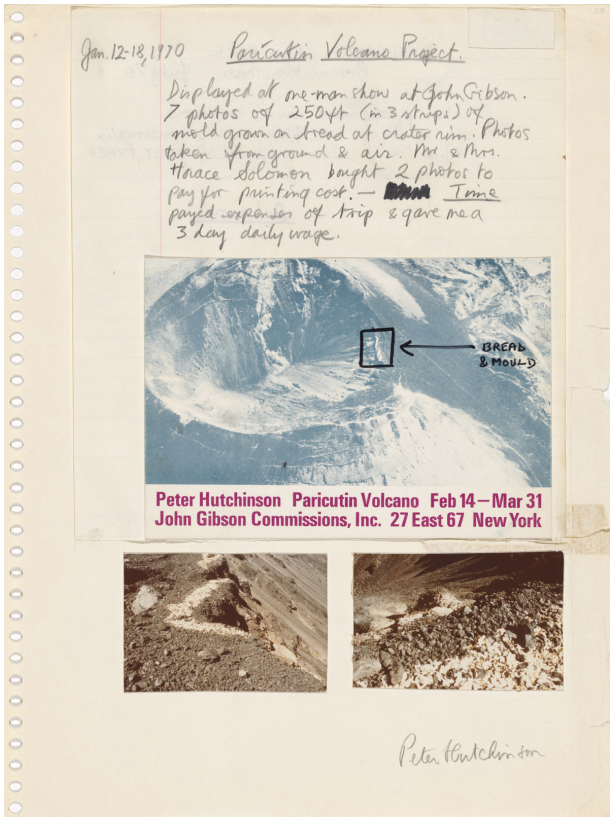


Fig. 7. P. Hutchinson, Project for Parícutin Volcano Project, 1970. New York, Museum of Modern Art.

are iconic operations such as *Directed Seeding* (1969) and *Devil's Hole* (1978) by Dennis Oppenheim (1938-2011), *Five Conic Displacements* and *Double Negative* (1969) by Michael Heizer (1944), *Las Vegas Piece* (1969) by Walter de Maria (1935-2013) (fig. 6), *Parícutin Volcano Project* (1970) by Peter Hutchinson (1930) (fig. 7), *Spiral Jetty* (1970) by Robert Smithson (1938-1973), *Observatory* (1971) by Robert Morris (1931-2018) (fig. 8), *Star Axis* (1971-in progress) by Charles Ross (1937), *Sun Tunnels* (1973-1976) by Nancy Holt (1938-2014), *Whirlpool (Eye of the Storm)* (1973), *Roden Crater Project* (1974-in progress) by James Turrell (1943). These are interventions on an environmental scale whose full understanding can only take place by changing point of view; you can move in them, walk them in all their greatness; grab a piece of it to remember before moving on to the next: It is, however, a partial view of a much broader whole. There is something almost mystical in the process of understanding these interventions: you have to ascend, detach, physically and mentally, from 'earthly things'; look at things differently: Smithson himself suggests that in his short essay from 1969 with the significant title of Aerial Art; here the artist wrote: "simply looking at art at eye-level is no solution" and "from the window of an airplane one can see drastic changes of scale, as one ascends and descends" [Smithson 1969, p. 117]. This is what Riccardo Venturi has recently defined as the aesthetics of "flying over" [cfr. Venturi 2022]: land artists don't fly to scrutinize the infinity of airspace, but to be able to see better and, therefore, better understand the space of their action; that land whose meaning escapes us, and will continue to do so, in its entirety. A conscious choice to be shared with the user of this "aerial art" that "could be seen from aircraft on takeoff and landing, or not seen at all" [cfr. Venturi 2022].

Looking at the landscape from above means, therefore, enjoying a privileged point of view; it means establishing a strong visual connection between above and below; but, at the same time, it bears witness to the need (or perhaps the difficulty) of the human being to never completely detach that umbilical cord that has linked us to the earth since its origins. From top to bottom, therefore, as happens in *Lightning Field* (1977) by Walter De Maria (1935-2013) (fig. 9): that connection that we have just defined as visual now becomes evident, albeit for very few moments; it is defined by the lightning which, falling, strikes one of the four hundred steel

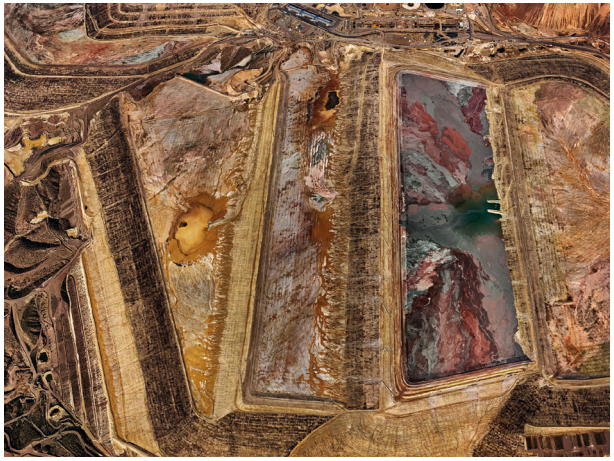


Fig. 8. R. Morris, Observatory, 1977. Lelystad, Netherlands (photo Gert Schutte).

Fig. 9. W. De Maria, The Lightning Field, Western New Mexico, 1977.

Fig. 10. E. Burtynsky, J. Baichwal, N. De Pencier, The Anthropocene Project, 2019.

poles planted in the ground. Natural and artificial stems contribute to creating a work made up of opposite but complementary concepts: full and empty, tangible and intangible, terrestrial and celestial, verticality and horizontality, observer and observed object.
What land artists were warning us about was to place our gaze and our attention on the ecological theme and on the impact of man's action on the landscape and on the spaces he inhabits; a question that, in the following decades, took on a new consistency with some artistic experiences connected to the questions of the anthropocene, or rather of that "present, in many ways human-dominated, geological epoch" [Crutzen 2002, p. 23]. Useful for my argument are *The Anthropocene Project* (2019) by Edward Burtynsky (1955), Jennifer Baichwal (1965) and Nicholas De Pencier (1966) (fig. 10) and the photographic work of Tom Hegen (1991) (from 2016 to 2021) (fig. 11), both focused on looking down on an ever-changing landscape. In the first case, the artists use the ortho-mosaic technique applied to aerial photogrammetry with a drone which, in addition to clearly altering man's normal point of view, becomes a tool and method for implementing the natural human sensory: the observer is offered a wealth of information otherwise impossible to grasp at eye level; in the second case it is aerial photography that becomes an aesthetically attractive genre able to highlight criticalities and collective urgencies: also in this case the images taken from above, better than any other, are able to highlight the upheavals produced by the action of the man over the landscape.
At the conclusion of this rapid excursus which does not claim to be exhaustive, what emerges is, perhaps, the need to train the gaze to look for different angles; it is necessary to practice raising the point of view and observation of things to raise questions and to try to build a new narration of the landscape in the awareness that, quoting the English anthropologist Tim Ingold, "walking perhaps should be considered bipedal flight: a way of flying that has yet to get off the ground" [Ingold 2021, p. 74; translated by the author].

Fig. 11. T. Hegen, from the Spanish Farmland Series, 2019.

Notes

[1] Borges writes: "A man sets himself the task of designing the world. Over the years, he populates a space with images of provinces, kingdoms, mountains, bays, ships, islands, fish, houses, instruments, stars, horses, and people. Shortly before his death, he discovers that the patient labyrinth of lines traces the image of his face": Borges 1999, p. 84 [translated by the author].

[2] The series consists of three works: one of unknown whereabouts; the second is part of the collection of the Center Georges Pompidou in Paris; the third, The Scallop Shell: "Notre Avenir est dans l'Air", is in the collection of the Metropolitan Museum of Modern Art in New York.

[3] The painting is, however, dated 1914 on the reverse.

[4] For further information about *aeropittura* refer to Crispolti E. (1985). *Aeropittura futurista aeropittori*. Modena: Galleria Fonte d'Abisso; Duranti M. (a cura di). (1996). *Dottori e l'aeropittura. Aeropittori e Aeroscultori futuristi*. Montecatini: Maschietto e Musolini; Fiz, A. (a cura di). (2003). *In volo. Aeropittura futurista*. Cinisello Balsamo: Silvana; Rebeschini, C. (a cura di). (2017). *Aeropittura, la seduzione del volo*. Milano: Skira; Duranti, M., Baffoni, A. (a cura di). (2022). *Dall'alto. Aeropittura futurista*. Fontanellato: Franco Maria Ricci.

[5] Ever since the founding manifesto of the movement in 1909, Marinetti had claimed that he wanted to sing "the great crowds agitated by work, by pleasure or by revolt" [translated by the author]: Marinetti, F. T. (1909). Manifeste du Futurisme. In *Le Figaro*, 20 Février 1909, p. 1.

[6] Cited in *Lucio Fontana*. (1970). Catalogo della Mostra, Parigi giugno 1970. Paris: Claude Tchou. Musée d'Art Moderne de la Ville de Paris, p. 9.

[7] Cfr. Smithson 1967, p. 116; the artist had already been interested in the airplane in a 1967 essay: Smithson, R. (1967). Towards the Development of an Air Terminal Site. In *Artforum*, V, 10, pp. 36-40.

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The Exploratory Dimension of Drawing in the Representation of Landscapes from Above

Maria Grazia Cianci, Sara Colaceci

Abstract

The aim of this contribution is to demonstrate the exploratory nature of the representation of landscapes from both the more properly expressive and interpretative aspects and the analytical and cognitive one of the environmental contexts.
Initially, the paper clarifies the historical and cultural reasons for the link between point of view and landscape, then retracing some historical stages in the alternation between perspective point of view and zenithal point of view in the representation of the landscape.
Subsequently, the paper illustrates some research carried out and in progress at the Department of Architecture of the University of Roma Tre concerning methods of acquisition, processing and data management aimed at reading, analyzing and understanding the landscape. The case studies are: representation of the archaeological landscape of the southern sector of Rome; survey and representation of the site where the Mausoleum of Sant'Urbano is located at the IV mile of the via Appia Antica with UAV and laser scanner; survey of the coast of the Pontine-Roman sector.

Keywords: landscape representation, viewpoint, documentation, UAV, LiDAR.

Introduction

We must define the nature of the correspondence between 'landscape' and 'point of view'. The research deals with the representation of landscapes from above, verifying how Drawing is an act of reading, analyzing and interpreting urban and territorial contexts.
Moving between art and science, the aim of this contribution is to demonstrate the exploratory nature of the representation of landscapes from both the more properly expressive and interpretative aspects and the analytical and cognitive one of the environmental contexts. Starting from outlining different ways of approaching the theme that links landscape and point of view according to theoretical, historical and artistic connotations, the contribution describes some research carried out and in progress in the Architecture Department of the University of Roma Tre. The research concern methods of acquisition, processing and management of data aimed at understanding the contemporary landscape.
The concept of landscape is polysemous and has taken on multiple semantic meanings over time. The current meaning of landscape was defined during a cultural process that materialized from the 1980s [1] until the beginning of the 2000s, and it is expressed in legislative documents that make the concept explicit. Among these, the *European Landscape Convention* (2000) [2], the *Carta di Napoli* (1999) [3], the *Prima conferenza nazionale sul paesaggio* (1999) [4], which state that the concept of landscape is mainly based on two aspects, namely the perception and

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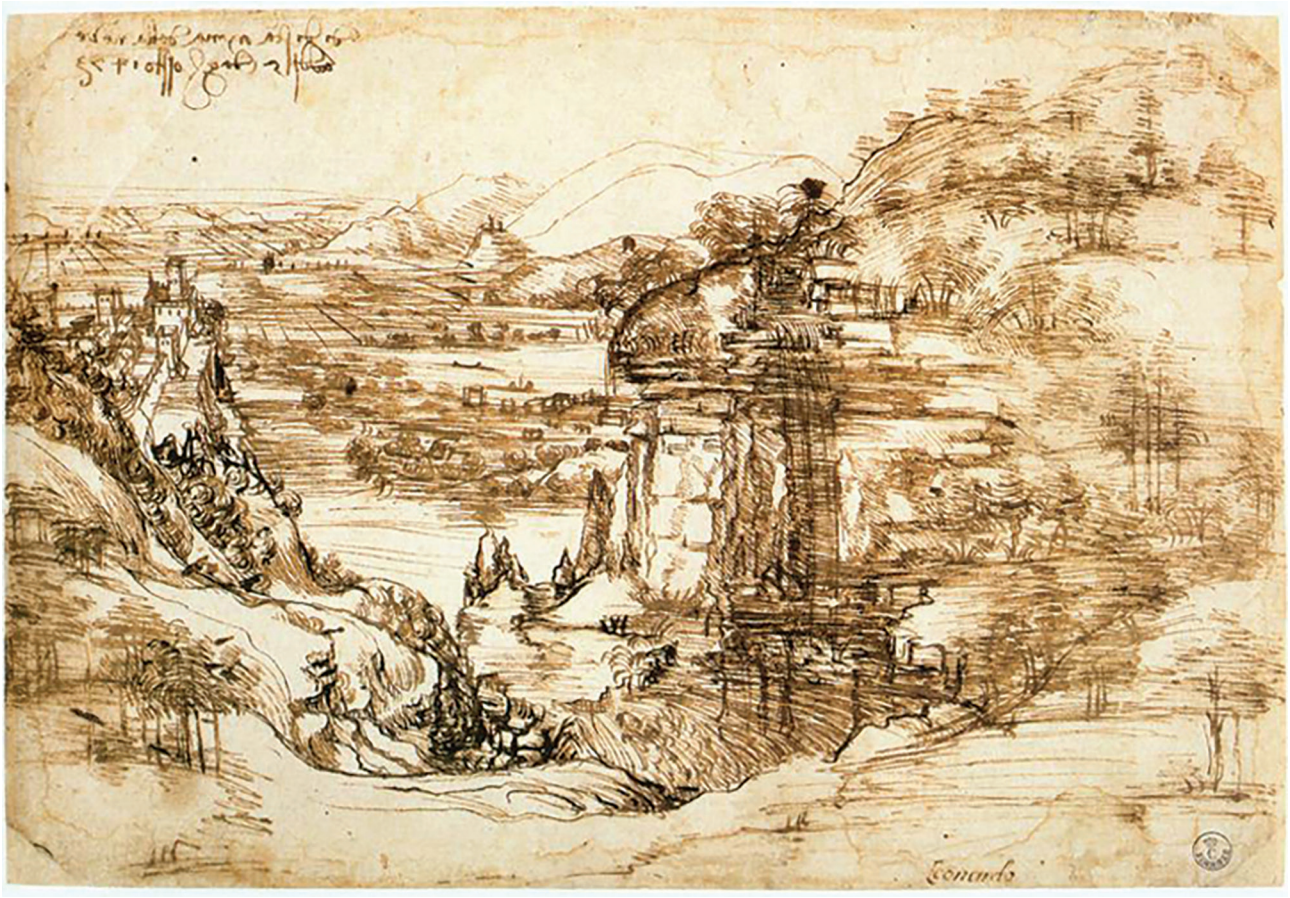

Fig. 1. Leonardo da Vinci, Paesaggio sul fiume, 1473: <https://it.wikipedia.org/wiki/Paesaggio_con_fiume#/media/File:Paisagem_do_Arno_-_Leonardo_da_Vinci.jpg> (accessed January 15, 2023).

the relationship between natural and anthropic components. Prior to this conceptual development, both culturally and in the Italian regulatory context, the meaning of landscape was linked to vision and gaze. In the laws of the first half of the twentieth century, aimed at the protection of the landscape, "the panoramic beauties", the "natural paintings" and the "point of view" are clearly mentioned [5]; therefore there was a semantic meaning connected to the stillness of the perspective point of view that the observer could assume with respect to portions of the territory considered of interest [Colaceci 2022a, pp. 145-158]. This demonstrates how much the relationship between the point of view and the landscape has a cultural root and historical value, even though the concept of landscape has currently undergone an evolution.

Landscape and point of view

In the representation of landscapes from above, the scalar dimension, the topography, the natural traces and the anthropic signs, the large environmental presences and the urban agglomerations assume importance. The Drawing is able to unravel this complexity, allowing the different elements to be separated in order to appropriately judge their qualities and connections.
The *Paesaggio sul fiume*, created by Leonardo da Vinci in 1473 (fig. 1), is a perspective representation from above that manages to effectively describe and communicate, through ink strokes, the physical-naturalistic spatial articulation and anthropic organization. The design captures and restores the landscape connotation characterized by a built settlement, cultivated fields in the valley which mark the texture of the soil and the surrounding hills with their tree masses.
At the end of the 16th century, landscape painting spread and despite being mainly aimed at commercial purposes, produced important graphic works for reading, understanding and analyzing the urban and territorial environment through pseudo-perspective representations [Docci, Maestri 1993, p. 157-162]. In the seventeenth century, the progress of instruments in the topographical field and a greater awareness in the geometric-perspective field favored the development of urban and territorial maps. The prevalent typology of these maps is characterized by pseudo-perspectives with a medium-high point of view [Docci, Maestri 1993, p. 148-156]. The passage from the

Fig. 2. Aerial photogrammetric image of the area near the current Parco delle Tombe Latina in Rome acquired with a flight by S.A.R.A. Nistri of 1932 (ICCD National Aerial Photo Library, sheet 150, streak 41, positive 786, negative 117079_0).

Fig. 3. Mario Giacomelli, Paesaggi dall'alto, 1975 (Mario Giacomelli Archive).

perspective representation to the planimetric map with a zenithal point of view occurred in the XVIII century, therefore there was greater attention to the rational aspects, to the true form of the urban and territorial areas, to the technical representation with appropriate graphic codes, at the base of which there were survey operations [Empler, Sargenti 1992, pp. 290-306]. At the beginning of the 20th century considerable aerial reconnaissance began which marked an important stage in the production of maps using the aerophotogrammetric method (fig. 2).
When we talk about the representation of landscape from above, beside the analytical-scientific field of investigation, reading and restitution of the existing we cannot ignore all those fields in which artists above all have approaches, methods and graphic elaborations for expressive and interpretative purposes.
Mario Giacomelli, during a plane trip, took photographs to distract himself from the flight, which gave rise to the idea of observing the landscape from a high point of view, which he led to the series *Paesaggi dall'alto* (1975) (fig. 3). This thought constituted the founding idea of *Presa conscience sulla natura* (1976-1980), in which the will to abstract the landscape taken from above reached the most mature results [6].
Similarly, Superstudio's *Il Monumento Continuo: New York* (1969), *Niagara* (1970), *Le dodici Città Ideali* (1971) reveal not only the group's thought on architecture and the city, but reveal the powerful figurative charge present in the representation of landscapes from above implemented with photomontages. In these cases, the representation arises as a deliberately compositional figurative act in which subtractions, combinations, additions and contaminations take place. The different forms and modalities of the graphic product imply a design act with exploratory purposes of the graphic sign.
In Archigram's *Plug-In City* (1964), the visionary project of the city, created with axonometric collage from above, shows a representation of the urban landscape in which the machine functions as an ideal and functional device for the construction, for the assembly of the components urban and its reconstruction.
The Drawing (digital/analog, of the existing/of the project) stands as evidence of the formalization of an expressive, compositional and exploratory intentionality which, in this case, concerns the representation and interpretation of real or imaginary landscapes.
Zoe Wetherall, with the *Earth* series (2018), photographed landscapes from above mainly with a zenithal

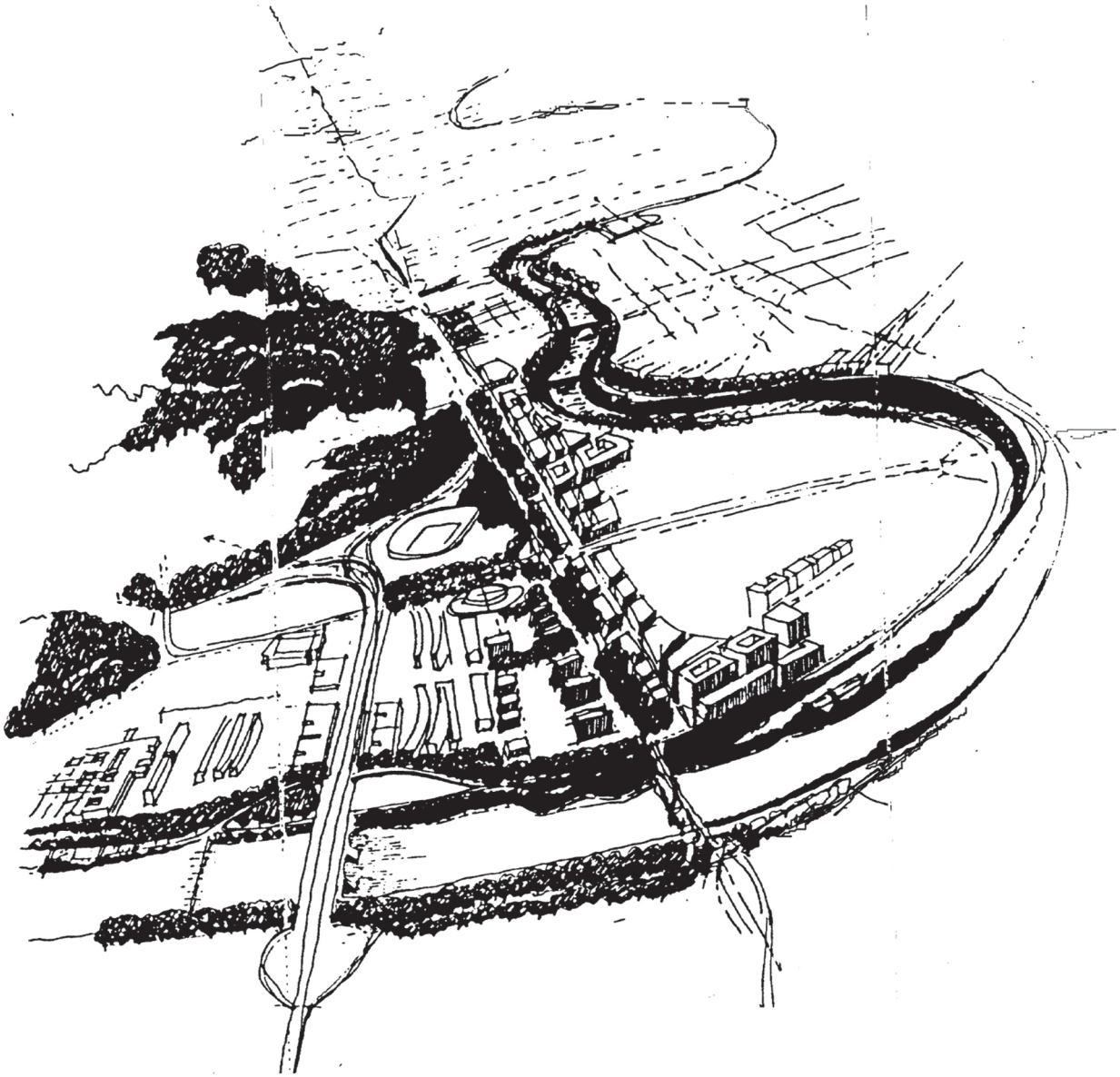

Fig. 4. Bird's eye view of the area between Ponte Milvio and Piazza del Popolo in Rome (drawing by Maria Grazia Cianci).

Fig. 5. Bird's eye view of the area between the Parco delle Tombe Latine towards the Roman countryside (drawing by Sara Colaceci)

point of view at a short distance from the object being photographed, emphasizing lines, figures and geometries, natural and anthropic [7] These experiences, as well as those by Ryan Koopmans [8] and Ashok Sinha [9], testify that the link between the representation of the landscape and the point of view is articulated in multiple varieties in which the expressive-figurative character is evident and how this has a clear intentionality from beginning of its genesis. In this vein, the representation of landscapes is not merely imitative, but from the outset consciously interpretive and, therefore, already part of an inventive-creative process. The whole, as well as recalling the unanimity of the physical relationships of the elements, alludes to the abstract nature of the same signs with graphic and visual values [Cianci 2008].
The Drawing, through synthetic representations from above, is able to grasp the structural elements of the physical and urban organization, the prevailing natural components and the building fabric, as well as the relationships that are established between one and the other (figs. 4, 5).

State of art

Interest in landscape issues has increased over the last few years. This is due not only to economic and social dynamics and territorial transformations, but also to greater attention to climate change, urban green spaces, the historical-archaeological pre-existence evidence of ancient landscapes, the environmental ecosystems that structure entire territorial portions becoming habitat of numerous living species. Therefore all processes aimed at safeguarding and enhancing the landscape become priorities in environmental management policies. The policies are implemented through monitoring, documentation and analysis operations which require adequate tools and methodologies.
In this regard, there is an increase in the use of UAVs (Unmanned Aerial Vehicles) with aerial photogrammetric acquisition aimed at monitoring, evaluation and protection and recovery actions. Numerous national and international research deals with these issues involving multiple fields. UAV is used to map and identify plant species [Baena et al. 2017, p. 1-2; Dunford et al. 2009, p. 4915-4935; Gini et al. 2018, p. 1-18; Gini et al. 2014, p. 2 51–269; Guerra-Hernández et al. 2017, p. 1-19], to monitor the phenomena of erosion and alteration of the coastal strips [Bazzoffi 2015, pp. 1-18; Gonçalves, Henriques 2015, pp. 101-111; Long et

Fig. 6. Image acquired with UAV of the mausoleum of Sant'Urbano, at the IV mile of the via Appia Antica inside Parco Archeologico dell'Appia Antica in Rome.

Fig. 7. Orthophotoplan obtained by integrating data acquired with UAV and terrestrial laser scanner (graphic elaboration by the authors).

al. 2016, p. 1-18; Pagan et al. 2019, p. 1034-1045], to identify areas with agricultural crops [Wang et al. 2022, pp. 1-12].
UAV instruments are used for geospatial surveys aimed at census through the use of information systems to promote landscape management [Colaceci 2022b, pp. 109-146; Doria, La Placa, Woodpecker 2022, pp. 73-80]. In other researches, these technologies are aimed at the survey for at the production of archaeological cartographic data [Ronchi, Limongello 2020, pp. 142-149], the enhancement of the historical landscape [Pirinu, Argiolas, Paba 2020, pp. 306-315] and the 3D reconstructions of archaeological sites [Ferreyra et al. 2020, p. 317-323].
The progress in the technological filed has made it possible to test survey operations with LiDAR (Light Detection And Ranging) technology in various applications. LiDAR technology is used for palimpsest reading and landscape component analysis, to determine topographic trends, map landscapes, visualize urban design, carry out territorial analyses, monitor coastal dynamics, integrate data with multibeam technology [Bosman et al. 2015; Johnson, Ouimet 2018, pp. 32-44; Mahmoud et al. 2021; Pérez Alberti 2022; Romagnoli et al. 2013; Ronchi, Limongiello, Barba, 2020, pp. 1-25].
The applications make it possible to facilitate the reading of large-scale ecosystems and to create thematic maps useful for understanding the territorial structures. Land cover mapping is required for many applications such as landscape planning, landscape ecology, agricultural management and forestry.
Documenting and monitoring are necessary actions for: the protection of the natural and anthropic territorial heritage, territorial planning, conscious management, actions aimed at recovering and enhancing the landscape.
This articulation of fields of interest, technologies and methodologies requires the presence of specialist figures belonging to multiple disciplinary sectors. The Drawing sector, as a cognitive means of reality existing at different scale dimensions, has always established a dialectical relationship with environmental contexts, therefore it can support and can play a critical role within these processes.

Landscape explorations

In the context of analysis, reading and knowledge of the landscape and its natural and anthropic components, the Department of Architecture of the University of Roma Tre

has been carrying out various researches for some years with multiple tools, methodologies and purposes, also in collaboration with other departments.
In the *Accordo di collaborazione scientifica per l'attività di studio, rilievo e analisi monumentale del Mausoleo cd. di Sant'Urbano al IV miglio della via Appia (Roma)*, stipulated with the Parco Archeologico dell'Appia Antica, the integration of UAV and terrestrial laser scanner is aimed at the graphic rendering of a piece of the historic Roman landscape characterized by archaeological presences (the mausoleum, portions of the Roman paving connecting the site with the via Appia Antica, a section of the via Appia Antica) and by heterogeneous tree elements [10]. The survey of the site assumes important value since it arises as the first act of investigation after the area was acquired by the Italian State for the park, since it was previously privately owned.
The methodology envisaged: acquisition of UAVs and laser scanners to obtain a single complete numerical model of the lower and upper parts of the mausoleum; point cloud management; CAD restitution; elaboration of orthophotoplans
The elaboration of a single point cloud has allowed the import into the CAD environment for the two-dimensional vector graphic restitution of the area in question. This was done through planimetry (plan at height of + 1 meter with respect to the internal altitude of the mausoleum), 10 sections including the mausoleum and site in its entirety. In addition, the restitution of the mausoleum wall typologies was carried out through orthophotoplans elaborated from UAV acquisition.
The research, used consolidated acquisition methodologies, is placed with relevance in the context of the survey of an area that has an important historical, cultural and landscape value. It constitutes a necessary operation for all future archaeological investigations and urban analyzes of the relationships between the site, the mausoleum and the via Appia Antica (figs. 6, 7).
The COSTA-Med research project [11] is aimed at developing methodologies for the analysis of coastal territories to support strategic transformation and adaptation to climate change in the Western Mediterranean, on the case study of the Lazio coasts of the Pontine-Roman sector (fig 8). Issues relating to the evolution of coastal areas in relation to climate change are high on the political agenda of many countries (fig. 9).
The project, currently in its first phase, has the following specific objectives: recognition of national and international projects of some coastal cities and regions; survey of the coastal strip under investigation aimed at mapping and monitoring the evolution of the coastline; creation of a simulator of the vulnerability of coastal territories in Web-GIS which graphically represents the levels of risk; creation of interactive 3D models of the coastal strips for the three-dimensional investigation of the territorial areas analyzed.
The methodology includes: the acquisition of the survey area with LiDAR technology; point cloud management; the data processing in GIS for the development of a Web-GIS platform for technical-administrative support and for dissemination usable by the communities.
The coasts represent an area particularly susceptible to the impacts of climate change as they constitute the transition zone between land and sea. Therefore, the coasts are affected by the consequences of two different environments, and host varied climatic processes that make them highly dynamic areas. The analysis of the vulnerability of the ecosystem services present in the Lazio coastal area, in particular in the Pontine/Roman sector, includes, in addition to the environmental aspects already being studied, also the anthropic and cultural heritage: therefore, it focuses attention on the repercussions that environmental phenomena (such as coastal erosion, sea level rise) would have on cultural landscapes, as well as on coastal urban centers.
These researches aim to confirm the central role of knowledge and documentation in the fields of study of environmental contexts, an indispensable condition for any management, safeguard, requalification and enhancement action.

Conclusions

In continuous oscillation between art and science, the exploratory nature of the representation of landscapes from both the more properly expressive and interpretative aspects and the analytical and cognitive one of the environmental contexts. It is a multifaceted dimension that includes diversified scopes, purposes and means.
Having ascertained the historical-cultural link between point of view and landscape, the representation of the landscape can follow multiple objectives through different tools and methodologies also depending on the type of result or graphic product that is intended.

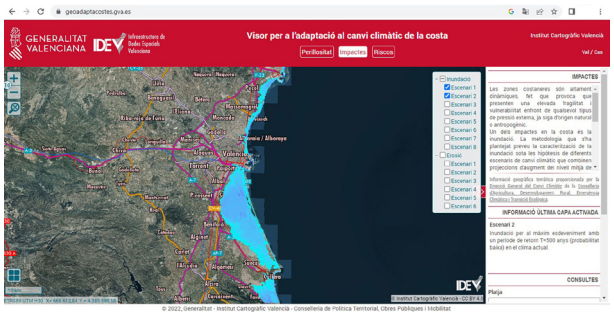

Fig. 8. Map of the Roman-Pontine sector with vulnerability levels highlighted (graphic elaboration by Leopoldo Franco).

Fig. 9. WebGIS for coastal climate change adaptation of the city of Valencia with future risk scenarios: <https://geoadaptacostes.gva.es/> (accessed March 2, 2023).

The disciplines of Drawing assume a central role in the reading and interpretation of environmental contexts. This is clearly stated in the representation of landscapes from above thanks to the synthesis necessary to elaborate subsequent reflections and research; this aspect is strengthened with the help of new technologies.
The complexity of the contemporary landscape is determined by the articulated set of modern anthropic, historical-archaeological, plant, biophysical, geo-morphological components. The landscape is characterized by heterogeneity and complexity, therefore its representation in the context of processes aimed at documentation and knowledge requires the ability to integrate tools, methodologies and multiple disciplinary fields.
In all operations directed towards the analytical-cognitive aspects of urban, territorial and landscape phenomena supported by the Representation sector, the actions of safeguarding, managing and enhancing environmental contexts become of fundamental importance.
Data acquisition and processing methodologies, management systems and digital models are aimed at promoting the reading, analysis and monitoring of the landscape cultural heritage. The knowledge procedures of the environmental contexts can be efficiently supported and implemented by the set of acquisition, processing and interpretation operations that belong to the Representation sector. Currently the issues of knowledge and enhancement of the landscape are prominent in national and international policies, as demonstrated by some objectives of the PNRR, including: protection and enhancement of historical and cultural areas (Mission 1, component 3); environmental protection for the reduction of hydrogeological risks (Mission 2, component 4) [12].
Representation disciplines can support such goals as they have traditionally been advocates of the needs of the community towards the exploration and analysis of environmental heritage. In the analytical field, the role of the Representation disciplines has the obligation to ensure critical guidelines that must favor the objectives of knowledge, reading and documentation through the graphic languages, the means and the theoretical principles that belong to them. These include not only important tools and operations for reading existing values but, in a broader sense, the value of a cognitive means of territorial structuring and the origin of urban and environmental organizational forms.

Notes

[1] The law 08/08/1985 n. 431 or Galassi law, extending the constraint of law 06/29/1939 n. 1497 to entire territorial areas, marks the beginning of the evolution of the concept of landscape in a contemporary sense.

[2] <https://www.premiopaesaggio.beniculturali.it/convenzione-europea- del-paesaggio/> (accessed May 25, 2023).

[3] <https://www.italianostraeducazione.org/wp-content/uploads/2019/01/004 _Carta_di-Napoli.pdf> (accessed May 25, 2023).

[4] <http://archeologiamedievale.unisi.it/NewPages/Testipaesaggio/ATTI.PDF> (accessed May 25, 2023).

[5] Law 29 June 1939, n. 1497 *Protezione delle bellezze naturali:* "Art. 1. The following are subject to this law due to their considerable public interest: […] 4) panoramic beauties considered as natural landscapes and likewise those points of view or belvedere, accessible to public, from which one can enjoy the spectacle of those beauties".

[6] <https://www.archiviomariogiacomelli.it/paesaggi-dallalto-1975/> (accessed January 15, 2023).

[7] <https://www.frontroomles.com/zoe-wetherall-earth> (accessed February 23, 2023).

[8] <https://www.ryankoopmans.com/> (accessed February 23, 2023).

[9] <https://www.frontroomles.com/ashok-sinha-strata> (accessed February 23, 2023).

[10] Responsible: Maria Grazia Cianci. Components: Maria Grazia Cianci, Stefano Botta, Daniele Calisi, Sara Colaceci.

[11] Research project born from the collaboration between the Engineering Department of the Roma Tre University, the Architecture Department of the Roma Tre University, the Architecture Department of the G. d'Annunzio University of Chieti - Pescara.

[12] Component 3 of Mission 1: Turismo e Cultura 4.0. See PNRR 2021, p. 89. Component 4 of Mission 2: Tutela del Territorio e della Risorsa Idrica. See PNRR 2021, p. 122.

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High-Altitude Architecture and Landscape: a Survey for the Conservation of Military Works at the Stelvio Pass

Alessio Cardaci, Pietro Azzola, Antonella Versaci

Abstract

The Stelvio pass hosts treasures that tell the story of the Great War. Remains hidden for more than a century in the ice of peaks of more than 3.000 meters altitude and revealed today following the gradual increase in temperatures. Complex of small fortifications, trenches, artillery sites and tunnels for the shelter of troops and vehicles. They testify to the violent clashes between the mountain ranges of Ortles-Cevedale, Tonale and Adamello. An integrated system where the military architecture blends with the landscape and camouflages itself with the materials and colors of the high-altitude environment; the rock is transformed into buildings to accommodate the spaces and functions necessary for the survival of men. A story little told but useful to make known another 'viewpoint' of the conflict to spread and communicate also with the tools of the Science of Drawing. The surveyor thus has the task of rendering, thanks to the graphic representation, the measurement of the territory and the representation of the landscape. The essay presents the results of a historical-architectural and landscape study that included the virtual reconstruction of the fortification of the pass: from the acquisition carried out with UAV systems to the return through 3D modelling. A particular place that the direct investigation and the electronic eye of the sensors, which from the top of the sky can read the particularity hidden among the high peaks, have allowed to perceive and document to preserve its physical substance and memory.

Keywords: Great War, 3D survey, drawing, documentation, valorisation.

Introduction

The Stelvio Pass hosts treasures that document and tell the story of the Great War (1914-1918). They are a complex of vestiges and artefacts preserved for over a century among ice of peaks over 3,000 m high and made visible today by the progressive increase in temperatures. They also comprise small fortifications, trenches, artillery emplacements and tunnels created to shelter soldiers and vehicles. These bear witness to the violent clashes fought on the Ortles-Cevedale Mountain group, whose main ridge just begins from the pass (fig. 1). This integrated system is where extraordinary natural scenarios contrast with tragic events that took place in an extreme context. Here, military architecture blends with the landscape and camouflages itself with the materials and colours of the alpine environment; the rock was transformed into built spaces to accommodate the functions necessary for the survival of men.

The 'White War' fought on the mountains was a conflict that took place between the snow and the stars. It distorted the traditional art of war, posing previously unthinkable tactical and logistical problems. The unexpected combat zone surprised the general staff of both belligerent countries, who showed themselves unprepared in the face of the difficulties imposed by the impervious heights. According to strategists, these territories, which would have remained no man's land, instead became the scene of a clash between explorers' patrols.

What took place in the high mountains was not a mass war, as in the plains, with the attacks of large battalions.

Fig. 1. The Stelvio Pass seen from the Braulio valley: in the center, the valle dei Vitelli, on the left Monte Scorluzzo, on the right the peaks of the Hohe Schneide and of the Geisterspitze. Jered Grube ©.

It was indeed characterised by a series of fights between small units comprised of a few soldiers, with military action transformed into an enterprise aimed at conquering the summit [Thompson 2014; Robbiati, Viazzi 2016]. Resistance at such altitudes under harsh climatic conditions was only possible thanks to structures capable of enabling war operations and guaranteeing human livelihoods. Therefore, it became necessary to build solid and warm shelters and a network of infrastructures to connect with the valley floor, which transformed the mountain into a glowing construction site. Soldier workers dug trenches and tunnels, built villages on the crests, perched on the walls or inside the rock and built mule tracks and numerous cableways for the transport of goods [Ferrario 2016].
Places that remain solitary today are still filled with memories of a tragedy in which an authentic vocation for peace sank; therefore, their knowledge and appreciation are essential. This research is one section of a project financed by the Lombardy Region called *Grande Guerra, valorizzazione delle testimonianze e recupero dei manufatti: strategia area interna Alta Valtellina* [POR-FESR Lombardia 2014/2020, Axis VI]. By examining the aspects related to documentation for knowledge, this project intends to promote interventions for the protection and safeguarding of existing sites.

Fortifications on the Stelvio Pass

The peaks around the Stelvio Pass were the crossroads of connections between the Austro-Hungarian Empire, the Kingdom of Italy, and the neutral Swiss Confederation. Their role was strategic for the Italian army, to prevent the advance of the Habsburg militias in Lombardy and in the Western regions and for the Austrians to curb the entry of Italian troops into South Tyrol. Notably, a long stretch of the border passed through the area between the Stelvio and Lake Garda, which the declaration of war of 24 May 1915 transformed into a warfront [Zaffonato 2017].
The Italian outpost at the famous crossing, which had always been manned by an armed contingent, was conquered at the beginning of June 1915 by a small group of Austrian soldiers who set up a first line of defence in a trench with only rifles and machine guns on these rocks. The attempts made by our troops to reconquer the pass were timid and tardy, allowing the enemy to consolidate

Fig. 2. The Stelvio Pass, from top to bottom: map of Lombardy, military survey (1818-1829); the map of Europe – 19th century cartography; map of the Habsburg Empire, military survey (1869-1887). mapire.eu ©.

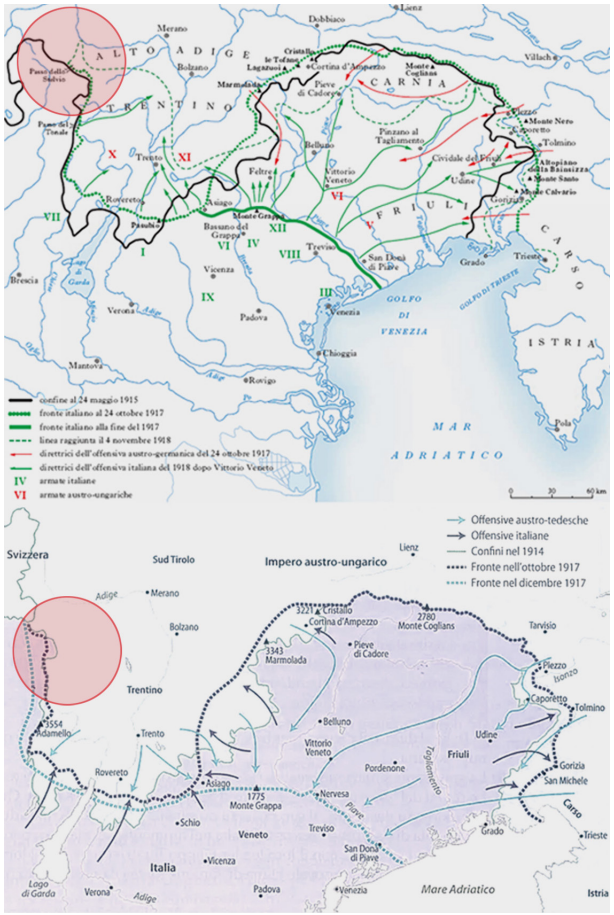


Fig. 3. The border and the war front. S.A.B.E. ©.

their positions, raise stone bulwarks and build wooden barracks. The Italian command, due to a serious and inexplicable tactical error, did not prevent the area from being occupied by the invader and ordered the withdrawal and protection of the Filon del Mot Ridge [Fettarappa Sandri 2020]. Subsequent attacks were deployed from below and in the open field towards the perched and entrenched positions on the ridges but had little success [Von Lempruch, Von Ompteda 2009]. They resulted in a line of separation that remained almost unchanged for the duration of the conflict (figs. 2-3). This withdrawal from the peaks, perhaps avoidable, prevented the Alpine battalions from becoming a threat and compromised all subsequent military actions. The pass, in fact, was the site of a few non-striking offensive actions that attempted to consolidate positions (fig. 4). The main conflicts on the Stelvio stemmed from the struggle against climate, bad weather and avalanches that caused more loss of life than the battles themselves [Viazzi 2012].

Between 1915 and 1916, Stelvio was fortified by both sides. The Austro-Hungarians strengthened the advanced line on the rocky terraces of Scorluzzo and Scorluzzino, building trenches protected by metal cages filled with pebbles and shelters dug into the rock to shelter the troops [Trotti 2011]. The small garrison of the Festungswerk Goldsee was strengthened with the imperial artillery position called *Goldseestellung* to defend the Trafoi valley and with the Lehmbruchlager field to place the long-range cannons of the Sperre Gomagoi fort in Val Venosta. It became the most important Austrian fortress on the Stelvio Pass, equipped with troop quarters, warehouses, kitchens, stables and a field hospital. Supplies were guaranteed by a system of three cableways, which, starting from Tafoi, first reached the Franzenhöhe refuge, then the Festungswerk Goldsee and finally Lehmbruchlager.

On 16 September 1917, the fortress hosted Emperor Charles I of Austria during his visit to the front. The fort stood in a large, nearly flat space near Golden Lake in a protected place sheltered from the blows of the Dosaccio di Oga fort (above Bormio); no projectile would have crossed Swiss airspace, violating its neutrality [Belotti 2009; Papetti 2019].

The Austro-Hungarian defensive structure was strategically composed of a large 'mountain fort', which was sheltered from enemy fire and not far from the front. It was assisted by a network of 'front line' entrenchments that were

Fig. 4. The vestiges of the White War at the Stelvio Pass. S.A.B.E. ©.

Fig. 5a. The survey of the military village of the Filon de Mot. S.A.B.E. ©.

Fig. 5b. The survey of the cave refuge on Monte Scorluzzo. S.A.B.E. ©.

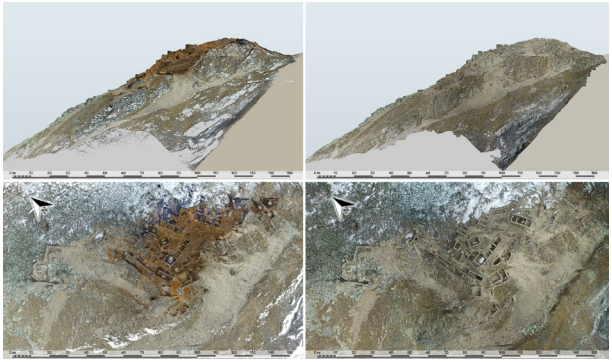
manned day and night; this required the construction of shelters dug into the rock [Bellini, Pizzarotti, Pedemonte2020]. The Trafoi-Tal was, in fact, a wide, open valley that had to be protected with artillery at high altitude because a possible breakthrough by the Italian army would have allowed the aggression of the regions of South Tyrol. By contrast, the director of the Stelvio, connecting the Val Venosta with the Valtellina, followed "an eccentric director leaning against Switzerland of limited logical scope and easily blocked" [Corpo di Stato Maggiore 1927, p. 301]; in particular, the Valle del Braulio (towards Bormio) was a narrow and winding alley that was easily defensible because it was difficult to pass through with many vehicles and men.

The Italian defences were therefore lighter and directly at the front to primarily function as guards. An imposing stronghold was not built (leaving them much more exposed to enemy fire); it was a system of military villages connected with trenches and firing positions to provide shelter for the soldiers and control the enemy 'a few metres away' [Sigurtà 2017; Barco 2021]. The system was comprised of two villages: one located on the ridge of Filon del Mot and the other below in the plain of Buse. Both hosted buildings that were made of weakly reinforced cement mortars, stone walls and mighty but quite different layouts: the first followed a highly irregular layout to adapt to the mountain, while the second was set on a circular geometry.

Fig. 6. 'Bird's eye' perspective of the digital model of the Filon de Mot military village. S.A.B.E. ©.

The village of Filon de Mot and the shelter in the cave of Monte Scorluzzino

The story of the White War at the Stelvio Pass is, unfortunately, little known. Nevertheless, it offers a different perspective on the conflict, which is necessary and indeed perhaps a duty, to disseminate and communicate with the tools of the science of drawing. Thanks to the graphic representation, the surveyor can return the measure of the territory and the representation of the landscape to acquire and provide users with information of a cognitive nature, stimulating their interest and favouring experiential activity and the subjective sensation.
The survey and graphic representation of the mountain landscape are two inseparable processes that are oriented towards the understanding of the natural areas and the man-made environment. They represent an analysis of the impact of cultural and environmental phenomena on a given territory that is aimed at understanding diachronic transformations [Rossi 2004]. It is a complete, complex investigation that combines historical research with the latest multidimensional acquisition and restitution tools and information from documentary, cartographic, iconographic sources with the survey tools for modelling, rendering and virtual landscaping. A logical project that is programmatic and systematic, and organised in flexible stages to allow a critical selection of choices. It is not a *stricto sensu* mathematical–scientific approach, but rather an emotional approach that can restore the essence of a place [Marotta, De Bernardi, Bailo 2008].
The best 'observers' are not always those who evaluate the metric aspects with great accuracy; they are those who recognise the distinctive signs of a territory through the reading of reality and the past, thanks to the testimony of ancient prints, draftsmen's sketches and old photographs. The ability to see is expressed by grasping the elements that characterise the *genius loci*, for which profound sensitivity and perceptive ability are required. The representation of reality is filtered by the personality of the executor and moves through the difficult relationship between architecture and the environment. The restitutions are not only metric images but also virtual representations that respond to the need for the metric survey and the possibility of communicating a space by making its peculiarities, including the aesthetic ones, eloquent.
The virtual reconstruction of both the pass area, which is simultaneously enchanting and inhospitable, and of two



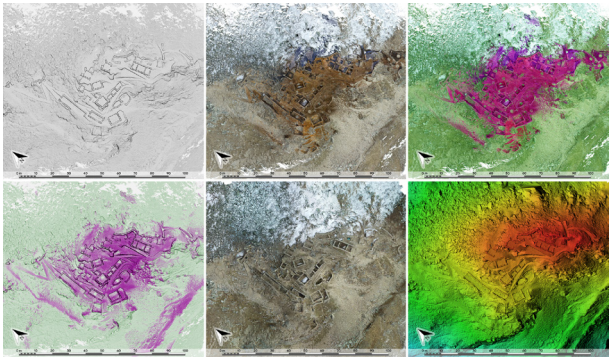


Fig. 7. Representation in double projection of Monge of the Filon de Mot military village: plan and elevation of integrated models. S.A.B.E. ©.

Fig. 8. The digital models of the Filon de Mot military village: on the left, Point Overview LS-Map & F-Map; in the center, Mesh Texture LS-Map & F-Map; on the right, Point Texture LS&F-Map e DEM. S.A.B.E. ©.

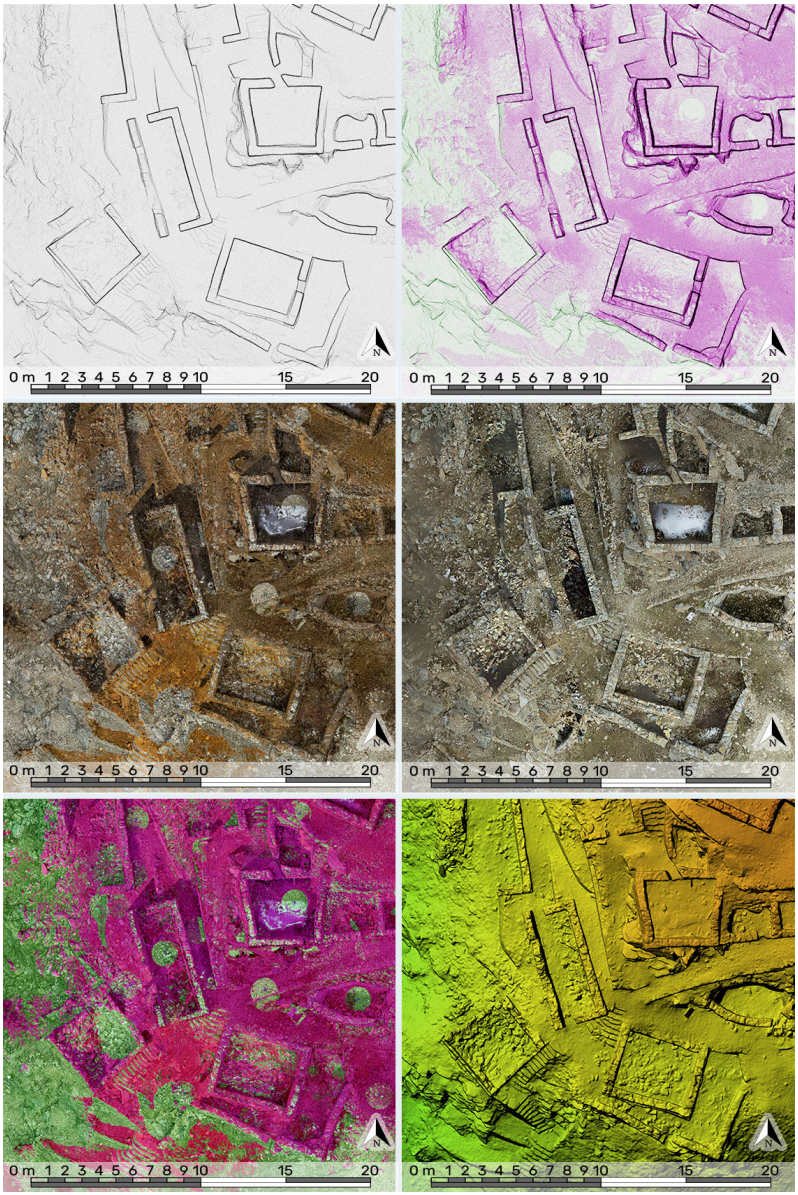
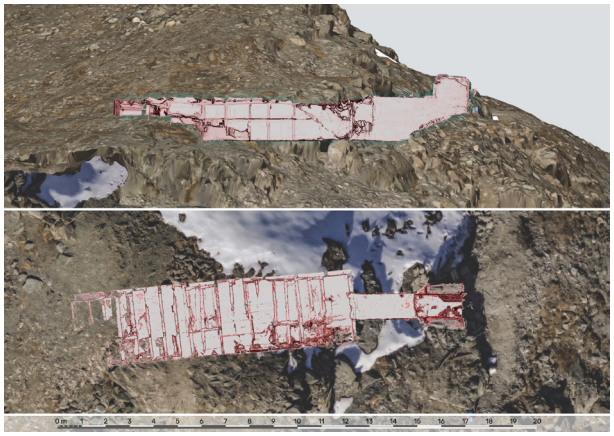


Fig.9. The digital models of the Filon de Mot military village: details of the different representations at 1:50 scale, thickness accuracy ± 1.5 cm and GSD 0.5 mm. S.A.B.E. ©.

Fig. 10. The cave shelter of the Scorluzzino: detail of the entrance, the trenches and the interior, freed from the ice, with the dormitories and the finds. Stelviopark ©.



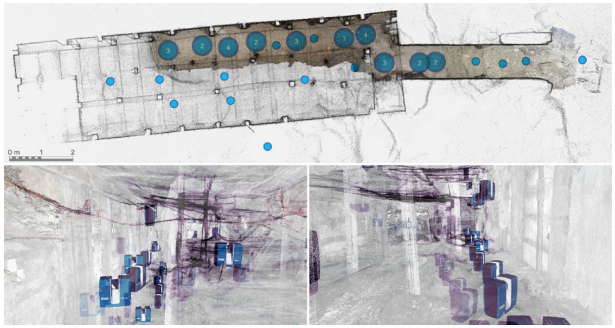


Fig. 11. The cave shelter of the Scorluzzino: plan and elevation. S.A.B.E. ©.

Fig. 12. The cave shelter of the Scorluzzino: plan and interior views of the model. S.A.B.E. ©.

significant episodes of architecture adapted to nature (the Italian village on the crest of the mountain and the Austro-Hungarian refuge dug in its belly) was based on an acquisition process conducted with remotely-piloted aircraft systems followed by 3D modelling. It aimed to reveal the morphology and functional and constructive characteristics of a space that were at the core of border surveillance activity, which remained unchanged during the entire conflict. Rocks, which became 'home' to hundreds of extremely young soldiers, are now considered 'special' for the meanings they embody. They have been documented by both the direct investigation and the electronic eyes of the sensors, which from the top of the mountain sky can read the peculiarities hidden by the high peaks.

The military village of Filon del Mot is an architectural work of great value that faces on three sides and is articulated on several levels linked by stone staircases. It is an extensive set of buildings with various functions, such as dormitories, an armoury, an infirmary, a canteen and a kitchen with an oven and a water tank. The buildings were made of dry masonry, internally covered with wood and with a cavity filled with straw and sawdust to ensure better thermal insulation. Even wooden roofs were coated with tarred cardboard or galvanised steel.

The village was protected on the eastern side by a large wall with loopholes for riflemen. From there, it branched off a dense network of trench walkways to reach the artillery emplacements, the cableway with the village of Buse downstream and the circular lookout fort. Construction of the village on the crest in such an elevated position (which was also uncomfortable, given that the space to move around was very limited), rather than on the plain below, was linked to offensive and defensive factors. From above, it was easier to monitor the movements of the enemy and to pummel a large portion of the territory more easily with artillery because these structures, positioned at a lower altitude, would have been more exposed to enemy fire directed from above.

Scorluzzino's underground shelter is part of the system of defensive fortifications erected by the Austro-Hungarian army. The cave was excavated at right angles to the eastern slope of the mountain and is positioned on the back of a short trench that allows access to a small observatory with loopholes on the roof. Nearby, the trench segments branch off towards the fortified peak of Monte Scorluzzo. The shelter is accessible by a short corridor protected by two reinforced concrete walls with metal beams that

support the tile. The compartment then widens and has a wall on one side covered with sheet metal. The stove and numerous nails used to hang clothes, weapons and equipment were leaned against it, while, on the other wall by the dormitory hung a large wooden shelf. At the back of the cavity, a wooden plank panel isolates a small room used as the commander's quarters, which is equipped with a single cot and a table with a stool. The inside of the military infrastructure was completely lined with wooden arches and had to house a garrison of about twenty men to garnish the neighbouring positions.

Survey of the landscape and the built heritage at 'high altitude'

The survey of sites placed at 'high altitude' requires particular precautions due to the difficult accessibility, the danger involved (for example steep and landslide slopes that can be reached 'on foot' but are often unsafe due to snow and/or permafrost) and the environment, including low temperatures, excessive wind and strong lighting. The planning of the *in situ* acquisition phases is therefore a crucial aspect that must consider both logistical issues and various aspects related to safety risks. For example, equipment transport is difficult and sometimes only possible with helicopters.
The surveys at the Giogo dello Stelvio were carried out between the end of summer and the beginning of autumn 2022 (that is in the final phase of thawing and before winter snowfalls (fig. 5). A rather short period of surveying, which was due to an anticipated disturbance and the consequent snow cover on the peaks, made it impossible to carry out the activities at all the planned sites (the operations were postponed to the following summer).
Integrated survey techniques and instruments were employed –Global Navigation Satellite System (GNSS), 3D laser scanning and terrestrial and aerial digital photogrammetry–, with particular attention to instrument care. Temperatures below zero may degrade instrument and battery electronics and adversely affect targets and sensors. To avoid problems, heat-insulated enclosures were foreseen, and the equipment was used at regular intervals to avoid thermal stress. The photographs also required careful planning to limit the consequences of the great contrasts and large shaded areas typical of the mountain area, as well as the use of neutral density (ND), a polarizing filter (PF) and sky light to increase image sharpness and reduce glare and reflections induced by clear skies and white snow [Re 2016; Bregani 2017]. To adequately carry out the 3D laser scans, the frozen surfaces were 'dirtied' with earth and ash (otherwise, reflective 'mirrors' would have altered the metric accuracy of the data), and special bases were made to place the instrument on the ground and to acquire nooks and crannies.
The conversion of the GNSS geographic coordinates into a Cartesian topographic system, which is indispensable for georeferencing all the models in a single reference, required a complex treatment following the large differences between the WGS84 ellipsoid and the local datum. The decision to carry out multiple elaborations by integrating data with different characteristics allowed the graphic rendering of several images enriched by a considerable amount of important information [Achille et al. 2015; Luhmann 2019; Fiorillo, Limongiello, Bolognesi2021; Pesci et al. 2022]. Specifically, the reconstruction of two large point models was completed using data obtained from both active (range-based) and passive (image-based) sensors. The processing made it possible to obtain the dot representations Overview Map and Texture Map from the former, while the same dot representations plus textured mesh returns and the Digital Elevation Model (DEM) were gotten from the latter. In total, six models, when combined and treated with one another, provided new and singular images capable of highlighting characteristics and particularities that cannot be deduced with traditional data-processing methodologies. The special treatment so called 'tomographic' allows the production of representations in Mongian double projection, which, as a 3D model, highlights the surfaces orthogonal to the painting and hides the parallel ones. An orthogonal projection of the model was placed onto a photographic plate covered by a thin film that darkens according to the states intercepted by the projecting ray: the greater the number of aligned dots, the more intense the grey will be, which, along with it, only intercepts a few white dots. A rendering style, which, if superimposed on a textured image of a planimetry or a section elevation, allows highlighting the deformations of the walls and the out-of-plane elevations, is essential for the design of conservation and consolidation activities (figs. 6-12). As a function of the possible recovery of the structures, a series of 2D graphic drawings were obtained from the integrated model on which the localisation and description of decay and instability phenomena were performed.

Conclusions

The first studies on the Alpine War were based on an analysis of places with photographic images and sketches from life. They were founded on the personal memories of the Italian and Austro–Hungarian officers: fictionalised sources with heroic tones and nationalist accents that were often characterised by a deference to the beauty of the landscape combined with the narration of the drama of a conflict fought in extreme conditions.
Research on the White War received a new impetus following the celebrations of the centenary of the First World War (2014-2018). A series of new infrastructural interventions has therefore been launched for the recovery of these places of memory [Trotti, Milani 2021]. A fertile field of interdisciplinary dialogue has made it possible to abandon the excessive attention to the story of the man with his bare hands against nature to concentrate on a systematic and impartial archival study. This was accomplished through a collaboration between the archaeological investigation and scientific–technological analyses, which aimed at understanding the profound anthropic action that sought to make inaccessible places habitable for humans to live on [Morosini 2022].
Today, the *Giogo dello Stelvio* is not only the ancient theatre of war, but also a representation of the Anthropocene and climate change, which is increasingly extreme, frequent and devastating. The retreat of the glaciers has, in fact, brought out a precious historical archive and exposed the artefacts and relics of the great conflict. This may make a long-hidden heritage accessible, allowing its documentation and possibly its recovery. Conversely, it may become a dangerous and worrying effigy of the transformation, which is perhaps irreversible, of our mountains, of the destabilisation of the slopes and of the risks associated with phenomena of change in the Alpine landscape. It is a complex environmental challenge that calls into question all subjects at the local and global levels.

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Eye in the Sky: Development of Architecture After Aerial and Satellite Imagery

Lorenzo Grieco, Vanessa Mingozzi

Abstract

The contribution investigates the role of the bird's eye view in perception and thus in the design of buildings and the city. The development of satellite technologies and their use on a large scale is considered a threshold towards a new way of conceiving architecture. In fact, the web allows virtual trips around the world and, the first interface with the city and its architecture is often the view offered by satellite image software. Their wide use, also as navigation tools, has changed the way of relating to the city. Whereas once the first interface between the building and the visitor was the façade, today the roof is often the first visible element. This change has also had an impact on the design of new buildings. For example, technical rooms are increasingly being hidden by roofs, and replaced by garden roofs, which are more attractive for viewing from above. Similarly, large-scale urban interventions, from the expansion plans of artificial islands in gulf countries to the mammoth buildings erected in deserts, follow geometries that are easily recognizable from above. They often use formal expedients –symmetrical shapes, bright colors, large logos– already in use in airport design, conceived to be seen from the privileged height of an aircraft. The democratization of the processes of viewing from above has led to a rethinking of the processes of communicating architecture, which no longer interfaces with the limited audience of flesh-and-blood visitors, but with the broader audience of people connected to the web.

Keywords: aerial imagery, satellite, land art, contemporary architecture

Introduction

Until a few centuries ago, men had to climb mountains and build towers, domes, belfries, altanas, or belvederes to have a view of the earth from above. The distance guaranteed by a high standpoint provided a wide field of view and hence a large degree of comprehension of the surrounding space. The possibility of an elevated outlook favored military strategies and commercial trade: enemy armies could be seen in advance, and in maritime cities, ships approaching the harbor could be detected quickly by the merchants on their way to negotiate cargo. Until the diffusion of aerial photography, only a limited number of people could experience a bird's-eye view of land. Although photography from tall buildings, such as towers or skyscrapers, allowed a view of the city from above, the purposes were usually different [Wigoder 2002; Deriu 2016]. Such perspective representations were usually centered on the emotional and realistic meaning of the image, understood as a still of a precise temporal event. Instead, the coupling of the camera to aerial means of locomotion made it possible to focus on larger areas, and on the landscape dimension, too [McKinley 1929; Newhall 1969; Martin 1983; Garcia Espuche 1994; Deriu 2004; Amad 2012; McCabe 2019]. It must be said that the difference between the various methods of aerial photography, which corresponds to a different inclination of the optical plane, also influences the way in which information is conveyed. In the case of a horizontal optical plane and vertical optical axis, the result is a flat projection. By tilting the axis some degrees, one obtains high oblique photographs, which highlight

Fig. 1. James Wallace Black, Boston, as the Eagle and the Wild Goose See It, 1860 (The Metropolitan Museum).

the volumetric aspects of space, keeping the object in the foreground and in the background at a comparable scale. Finally, low oblique photographs, with the axis more inclined, are often used to emphasize the vastness of a spatial area.
Such a distinction can be compared to that between different drawings from above: vertical photography has much in common with a plan, high oblique can be compared with approximation to an axonometric view, while low oblique can be coupled to those perspectival views enhancing the sublime aspects of the landscape, sometimes also including the horizon line within the frame. The possibilities of aerial photography have been enhanced by satellite images. They make it possible to obtain images of portions of the territory at a larger scale and, with recent technological advances, at a level of detail comparable to aerial photography.
Both aerial photography and satellite imagery, as two acts of the same play, evidently define a clear before and after of architectural perception by providing people with views from above. However, aerial photography did not have the same immediacy and ubiquity of use offered by modern satellite imaging software. Indeed, as has been the case with most recent digital innovations, one of the biggest consequences of satellite imagery involves the degree of diffusion. Nowadays, an immediate step in the study of a site entails a quick web search, followed by a look at its aerial image, which is usually provided by well-known satellite imagery services. The possibility of having a bird's-eye view was once available to only a few people, but today, a screen and a good internet connection enable anyone to reach the remotest places on earth without even taking a step.
How could architects not take these into account when conceiving, representing, and building architecture? How could they not long for an increase in the awareness of the simultaneous chances to be, or be seen by, an eye in the sky? These questions stimulate reflection upon the meaning of viewing from above, considering the introduction of aerial photography and satellite imagery as a threshold in the way of perceiving (and conceiving) landscapes, cities, and architectures.

Between war strategies and urban photography

The historical importance of altitude stems from practical reasons: the aim of ascent was often not so much delight in the view as the observation of sensitive targets. The Venetians were deeply aware of how attractive high-rise

Fig. 2. St Paul's Cathedral after the bombing of the 7 September 1940 (Imperial War Museum, London).

constructions were for those gathering information about ways of penetrating the lagoon. The Turkish ambassador Ali Bey was one of those seeking such information. In 1517, he visited Venice on behalf of the sultan [Sanudo il Giovane 1879, p. 73]. At the top of St. Mark's Campanile, his questioning about the canals and entrances to the city, which he could clearly see from above, illuminated a military concern and proved the strategic value of the Serenissima resolution of prohibiting access to unaccompanied foreigners. The limited access to high-rise structures was overcome when, around the 19th century, urban planners provided the city with public places designed for observation from above. Belvederes in the form of terraces punctuated the major cities of Europe, from Rome to Florence and from Paris to Lisbon. At the turn of the century, the development of elevating systems for skyscrapers supported the diffusion of panoramic elevators and higher observation towers, which offered unprecedented views of the city.

Viewing from above was also facilitated by the development of photographic technology [McCabe, Padley 2019]. In 1858, the French photographer and balloonist Nadar (1820-1910) shot the first aerial photographs of Paris from an aerostat. Two years later, James Wallace Black (1825-1896) and Samuel Archer King (1828-1914) captured the city of Boston (fig. 1). Their balloon view of the city permitted an unusual reading of Boston that underscores its relationship with its harbor and highlights the radial confluence of the streets near the port. The development of photographic technology, which is also linked to other flying 'devices' (such as kites, dirigibles, and pigeons), also prompted its adoption for military purposes [Mead 1983]. In 1862, the Union Army spied the Confederate troops through photographs taken from a hot-air balloon. However, it was the invention of the airplane that mostly favored the spread of aerial photography. Since the first airplane outfitted with a camera was used by the Italian army during the Italo-Turkish War (1911-1912), aerial reconnaissance has become a fundamental phase of military strategies, and its use particularly increased during the First World War. Sensible objectives, such as industries, barracks, and government buildings, and reference points were identified through their zenithal images. For this reason, camouflage techniques were applied to conceal them from the view of aircraft [Solomon 1920; Reit 1978; Hughes 2019]. For instance, the Kilburn White Horse geoglyph (Kilburn, North Yorkshire) was partially covered during Second World War to prevent German pilots from using it as a

navigational landmark. Other popular cases include the concealment of the Kremlin buildings to evade bombardment, and the masking of the Hollywood Burbank Airport with a camouflage netting disposed by scenographers and artisans from the main movie studios of Hollywood, which made it resemble a rural area [Patowary 2010].
During the Second World War, photographs shot from airplanes became fundamental in the quantification of war damages. For instance, the famous aerial photos of St. Paul's cathedral among the ruins in London permitted an unusual view of the buildings, both the surviving and blitzed ones (fig. 2).

Signs in the land

This important role of aerial imagery in reading buildings' plans and footprints is particularly evident in the relevance given to aerial photography in archaeology [*Fotografia aerea* 1971]. In particular, observation of crop, soil, and frost marks has permitted the discovery of many buried constructions. It has also allowed for reading of ancient divisions of cultivated lands, to which streets were later aligned, and interpretation of large-scale images traced on soil.
An example of these large-scale drawings is the geoglyphs of Nazca (fig. 3a). Mysterious lines forming ancient geometrical and figurative drawings fill a vast section of the Peruvian desert. Their aerial readability has generated different creative speculations about their function and the possible beneficiary of such a design effort. The most accredited theory is that they are ritual pathways connected with water sources in the desert. The Nazca lines underscore the key point of reflecting on the gap between experiential use and reading through a view from above. Despite they are something to be used on earth, they seem to require the public to be in the space to be fully appreciated. They lead us to reflect on the exigencies of ancient societies to connect elements in the landscape in order to make them more understandable through the materialization of perceived links. Large-scale planning/design seems to reflect the inability of the human mind to fully dominate those connections: human comprehension would rather go through physical experience.
Such premise lies at the base of Robert Morris' (1931-2018) consideration about the tendencies of art of his time. The renowned artist took inspiration from the Nazca lines to write the famous essay *Aligned with Nazca* [Morris 1975]. In his opinion, the drawings, whose lines cannot be read from street level, are in fact a perfect paradigm for the attempt to force the experience of space while using art to build perceptive and emotional relationships with the landscape.
Also inspired by the Nazca trenches, the Spiral Jetty (1970, fig. 3b) by Robert Smithson (1938-1973) constitutes an earthen dock formed by natural elements of the Salt Lake, such as mud, salt crystals, and basalt rocks. Its sinuous shape is perceived as an artifact when seen from afar but not when the observer walks within its counterclockwise track. Indeed, Robert Smithson used to travel by plane to investigate landscapes and identify appropriate areas for his

Fig. 3. a. Astronaut, Nazca Lines; b. Spiral Jetty; c. Lady of the North (Google Earth images).

interventions and it was during one of these flights that he tragically lost his life.
Art is not untouched by the aesthetic of aerial viewing and, more than other disciplines, it critically reflects on the drastic changes in perception this standpoint may cause [Dreikausen 1985]. Indeed, an eye in the sky, or at least at a relevant altitude, is needed to fully comprehend many examples of land art. The shift in the experience of a space from a ground-level view to an aerial one stresses the identification between the viewer and the creating entities, which are traditionally believed to reside in heaven.
In her famous essay *Sculpture in the Expanded Field*, Rosalind Krauss investigates how art in general and sculpture in particular has been eager since the 1960s to conquer the spatial dimension, crossing the usual border between the different disciplines' fields of action [Krauss, 1979]. In this sense, art, to become land art, has to learn to operate at a scale comparable with that of landscape design. If the land art tends to configure as a gesture, we can look at landscape design as the discipline of deeply remodeling earth. It is interesting to notice how processes of confrontation and modification of the natural landscape can be based on both mathematical and geometrical relationships, stressing the idea of an arithmetic order that underlies nature, and an illustrative attempt of figurative subjects. The work of the architectural theorist and landscape designer Charles Jencks (1939-2019) undertook both artistic directions; in *The Garden of Cosmic Speculation*, he dialogues with scientific phenomena and the laws of the universe (black hole, fractals), thus giving shape to a unique example of an abstract garden, while in the *Lady of the North* (2005-2012), he shows the anthropomorphic figure of a reclining woman made of uplands and valleys, modeled through massive earth movements (fig. 3c) [Jencks 2003; Politakis 2017]. Jencks was aware that technology had brought a different way of perceiving the city, whose shape had been changing accordingly. For instance, dealing with the fractal growth of metropolises such as London and San Francisco, he stressed the importance of viewing from above to read their morphology: "Fly over them at night, or better, get the satellite view, and you can begin to understand the truth of these supple bodies, whose life depends on constant death and renewal through the growth of small businesses" [Jencks 1997, p. 11].

Reading Human Settlements

Jencks' words emphasize the importance of satellites as monitoring tools of urban agglomeration, but this technology-driven observation highlights an intrinsic feature of drawing in plan: its regulatory power [Haffner 2013]. Indeed, the organization of new settlements and towns –from the stellar borders of Palmanova in the Friulan plain, Italy, designed in 1593 by a group of military engineers headed by Giulio Savorgnan (1510-1595) (fig. 4a), to the circular layout of the Chaux Saltworks, France (1773-1806, fig. 4b), designed by Claude-Nicolas Ledoux (1736-1806)– emphasizes the everlasting primacy of horizontal plans in

Fig. 4. a. Palmanova; b. Chaux Saltworks; c. Brasilia (Google Earth images).

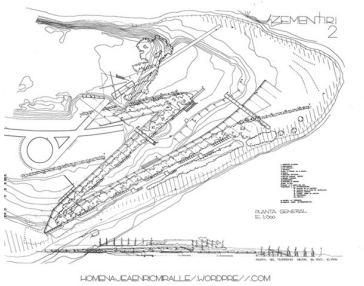
urban design [Branch 1948; Constantin 2021]. When aerial experiences were almost inconceivable, imaginative aerial perspective drawings were used to report determinations giving new shapes to growing cities. This kind of representation materialized a superimposed order that, although not experienced directly through vision, corresponded to transcendental concepts – be it those of Renaissance Neoplatonism or social utopia. However, given the impossibility of experiencing aerial views in real life and due to nearby, some explanatory expedients were required to underscore the new geometrical assets of sites. This was the main reason for the hexagonal squares in the middle of Palmanova, or the semicircular enclosures of Chaux.

In the last century, the reading of urban shapes greatly benefited from the wide spread of civil aviation, especially in the post-war period. This new perceptive possibility must have affected the creative sensitivity of Lúcio Costa (1902-1998), who designed the central area of the city of Brasilia –the new capital of Brazil– in the shape of an airplane (*Plano Piloto*, 1956, fig. 4c). The mirroring phenomenon between an observed city and the observers on an aircraft, whose image is reflected in the city itself, creates metacognition, which is a recurring feature of artistic practice [1].

This figurative approach to the design of cities was also applied at smaller scales, particularly in specific typologies of cities, such as necropolises. An interesting case is the cemetery designed in 1967 by Alessandro Anselmi (1934-2013) for the small town of Parabita, Apulia, Italy [Conforti, Lucan 1997, p. 198]. The plan of the project (fig. 5b) evokes the capital of a classical column, while its elevation, made of plain walls, is subsidiary to the horizontal layout. Nevertheless, the different altitudes of the site suggest a certain three-dimensional projection that would sanction the imperfection of a purely zenithal perception in favor of an angled aerial view. We could also mention several other projects of cemeteries that sustain the prominence of aerial views through the adoption of highly symbolical plans. For instance, the famous plan of the extension of the San Cataldo Cemetery in Modena, Italy (1971, fig. 5c), was organized by Aldo Rossi (1931-1997) through a succession of pure forms (squares, triangles, circles); the original plan (1984) of the Igualada Cemetery (fig. 5a), Spain, by Enric Miralles (1955-2000) and Carme Pinós (1954), was shaped like a 'Z', the initial of the Catalan word for 'cemetery' [Tagliabue 1989].

The diffusion of figurative schemes to be seen from above, which occurred toward the turn of the millennium, followed the development of zenithal photography, which was boosted by satellite technology. On October 24, 1946, the rocket V-2 shot several sub-orbital images of the Earth, while the satellite Explorer 6 produced the first orbital satellite photographs of Earth on August 14, 1959. However, despite the development of satellite imagery, its cost initially limited its use within the military and scientific fields. The broadening of the catchment area was mainly due to its matching with software, such as Keyhole EarthViewer

Fig. 5. a. Enric Miralles and Carme Pinós, Igualada Cemetery, plan 1984. Fundaciò Enric Miralles; b. Alessandro Anselmi, Parabita Cemetery, plan. From Lucan, Conforti 1997; c. Aldo Rossi, Gianni Braghieri, Cemetery of San Cataldo, Modena, plan, 1971 (The Museum of Modern Art).



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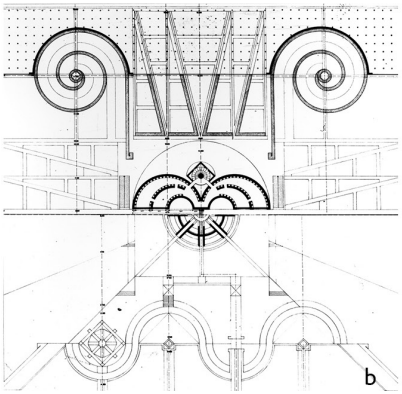

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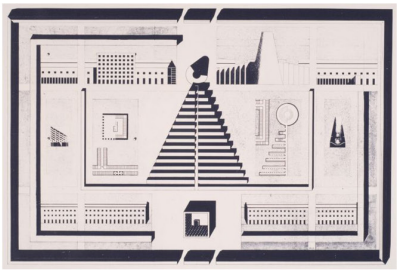


c

(launched in 2001), which was later renamed *Google Earth* (2004). The use of platforms dealing with satellite imagery and their integration into online maps or Geographic Information System are providing architects and other users a different tool with which to approach landscapes, cities, and their architectures [2].

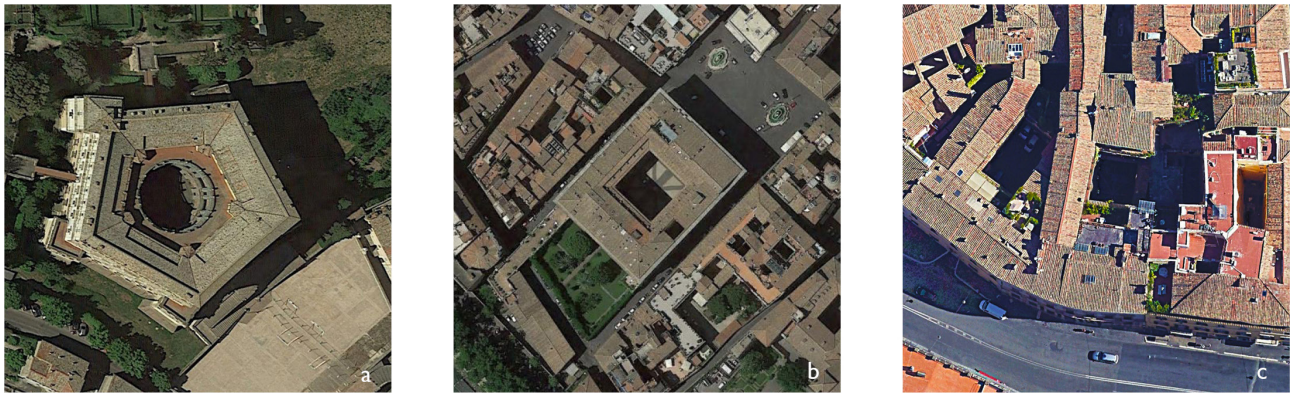
A matter of roofs

For a long period, façades have been the chief and the first interface between buildings and people. Their representative function is highlighted by eloquent architectural features that represent communication between buildings, their owners, and the world outside – precious surface finishes, dedicatory inscriptions, loggias, windows, and door frames. By contrast, in the twentieth century, the first reading of a building derived not only from a view of its façade. This was clear to Futurist artists, who created aeropaintings, which portray aerial landscapes, and to Benito Mussolini, who celebrated the audacity of airplanes [Frome 1993]. One decisive factor that convinced him to approve Gruppo Toscano's project for the new station of Florence (1932, fig. 6a) was that the building, when seen from above, resembles the fasces. Similarly, when viewed from the sky, the Palazzo M in Latina (1938-42), seems to outline the initial of the dictator to which it is dedicated (fig. 6b).
Today, people often approach architecture through horizontal projection, captured by satellites and transmitted to the screens of computers or phones. Human-scale/façade-side encounters are still how we primarily experience buildings, but aerial imagery is now definitely a major method of encounter. Indeed, people have become accustomed to a preventive knowledge of architecture because of the web. Therefore, before traveling to a place, people exhibit a widespread habit of searching the place on the web and looking for directions. In the planning of a trip, the first to appear is an aerial image of the location, which usually shows the rooftop.
Looking at roofs gives an unexpected point of view that can elucidate the intention of both ancient and contemporary designers and lead us to consider how satellite imagery af-

Fig. 6. a. Santa Maria Novella Station, Florence; b. Palazzo M, Latina (Google Earth images).

fected, or is affecting, our way of conceiving architecture. The aerial imagery of historical buildings works perfectly as a detector of specific geometric layouts and constructive devices not supposed to be seen before entering such buildings.
Thus, we can now see in advance that the polygonal volume of Palazzo Farnese in Caprarola, Italy, contains a circular courtyard (fig. 7a). Similarly, without crossing the threshold of its porch, we learn that the symmetrical façade of Palazzo Massimo alle Colonne is not aligned with the courtyard behind it (fig. 7c). This case, like many others, shows how the apparent symmetry, regularity, and compactness of early modern architectures is often merely simulated by architectural or decorative devices. For instance, when seen from above, the solid volume of Palazzo Farnese in Rome, Italy, the so-called *dado Farnesiano* (Farnesian dice), appears to be pierced by a small courtyard that is concealed behind the regular scheme of the window aediculas on via del Mascherone (fig. 7b).
The projection onto the optical frame in the case of a viewpoint at a considerable distance, such as that of a satellite, allows the roof surface of a building to be schematized as flat. The roof thus becomes a large sheet on which to draw graphic messages for viewers. The ornamental eloquence of the façade has in fact shifted from the vertical to the horizontal plane of the roof. After all, the Italian architect Vittorio De Feo used to say that the design of a floor has the same relevance as an elevation [3].
The rotation of the interface from the vertical to the horizontal plan also meant that roofs were provided with the textile character that Gottfried Semper, in his famous essay on *Style*, attributed to architectural ornament [4]. Picking up on the parallel the German drew between architecture and fabric, one could, for instance, draw a correspondence between carpets and the top representation of many pieces of contemporary architecture [5].
Contemporary building practices, indeed, often give a nod to 'sky spectators' who view architectures from above with ease. The first implication is the careful design of roofs and terraces, including elaborated pavement design, such as the mosaic patterns designed by Giuseppe Capogrossi (1900-1972) for the terrace of the Confindustria building in Rome (1972) (fig. 8a) [6]. Moreover, the zenithal vista has caused the sudden disappearance of utility volumes, including the rooftop units of air-conditioning systems. In addition, the diffusion of satellite imagery is probably extending our visual concept of landscape. Since, besides shadows, aerial imagery does not give us a detailed perception of altitude, rooftops and natural grounds appear to be in continuity. This, together with the increasing attention for sustainability, may be the basis of the wide spread of terrace gardens and green roof solutions.
The material and visual continuity between inclined walkable surfaces and roofs can also be seen as a product of a view from above. This is particularly evident in the City of Culture of Galicia in Santiago de Compostela (1999-2011, Fig. 8c) designed by Peter Eisenman (1932). The plan derives from the superimposition of graphic layers that overlay a square mesh on the grid of ancient medieval streets. The modelling of the resulting geometries creates

Fig. 7. a. Palazzo Farnese, Caprarola; b. Palazzo Farnese, Rome; c. Palazzo Massimo alle Colonne, Rome (Google Earth images).

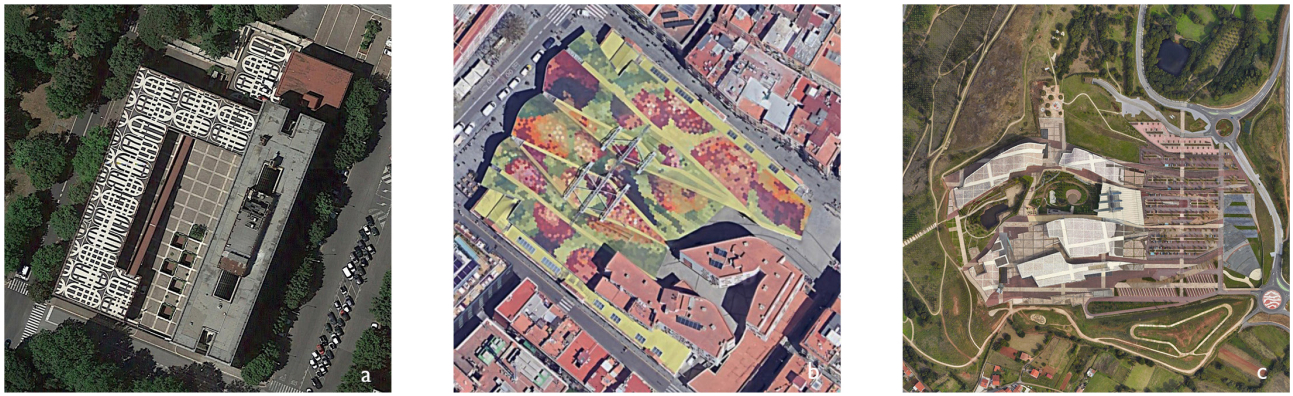


a hollowing of the terrain, in an approach that can be compared to the one employed by Alberto Burri in the conception of the *Grande Cretto* in Gibellina (1984-1989) [7]. From the top, it appears as a flat texture of intersecting grids, as if it were a tartan cloth stretched over a surface full of bumps.

More evidently, in the design for the new market of Santa Caterina in Barcelona, Spain (1997-2004, fig. 8b), Enric Miralles and Benedetta Tagliabue used the roof to reveal to the rest of the city the visual spectacle taking place in the interior [Miralles,Tagliabue, 2001]. Indeed, the architects restored the old market by adding a roof that is made of steel, wood and clad with octagonal ceramic tiles, whose disposition recalls the shapes and colors of the vegetables sold underneath. A street-level view can offer only a limited experience of the vibrant canopy, since only a glimpse of the colorful ceramics is perceivable. Not even the highest floors of the residential buildings on the borders of the square are high enough to allow a complete read of the drawing on the roof. Likewise, a very long distance is needed to appreciate the painting of Seurat, whose reading would benefit from a zenithal view because of the folded surface. A vibrant still life is obtained by decomposing the drawing in hexagonal tiles colored with 67 different hues –a process recalling the foundation of digital imaging based on pixels. In the work of Miralles Tagliabue EMBT, such architectural surfaces as roofs serve as a proper canvas where figurative experimentations are revealed with the impactful use of color.

Another project of Miralles Tagliabue EMBT features an analogous solution for a canopy. In the Centro Direzionale Station of the Naples Underground (2005-ongoing), Italy, which is in construction, the roof is again used as a wavy canvas for an image that assumes a symbolic value in the context. Like its Spanish counterpart, the Neapolitan building was conceived to expose a figurative illustration that is expressly intended to be seen from above. The original intention was to portray the face of Latin poet Publio Virgilio Marone (70-19 BCE) as an eminent figure related to the city. Although born in Mantua, the poet had a sentimental connection with Naples so deep that he asked to be buried there. However, the decoration of the roof, which was conceived as an artistic intervention involving the participation of the Cuban American artist Jorge Rodriguez-Gerada and meant to be experienced in large-scale drawings to be seen from space, has been cancelled due to budget issues and delays. The architectural and landscape designs of the Spanish architectural practice are often imbued with a figurative taste that serves as the driving force in the development of architectural projects. This approach to projects is materialized in the strong connection between drawings and results: the plans submitted to explain such projects are made of photos and organized in creative collages to make them as eloquently expressive as other kinds of drawings [8]. Plans and roofs are not only represented vividly but also concretely intended as eloquent sculptural objects whose shapes are firstly determined through their horizontal projection [Contreras 2013, pp. 174-177].

Fig. 8. a. Palazzo Confindustria, Rome; b. Market of Santa Caterina, Barcelona; c. City of Culture of Galicia, Santiago de Compostela (Google Earth images).



Sculptures and logos

The speaking capacity of roofs sometimes translates into the speaking capacity of the buildings themselves, which with some outstanding architectural features become eloquent symbols if observed from above. The widespread use of buildings with circular shapes, for example, ties in well with the need for recognizability in satellite representations [9]. Thus, architecture has begun to adopt the same stratagems as graphic communication.
On 22 April 2017, Cosmo SkyMed, one of the satellites belonging to the constellation put into orbit by the Italian Space Agency (ASI), returned an image of the Third Paradise in the garden of the Agency's Headquarter in Rome (fig. 9). It was a large-scale drawing of three connected circles by Italian artist Michelangelo Pistoletto. The work is clearly legible thanks to the reflective material used, and thanks to the geometric accuracy of the architecture by which it is framed. The observation from space seems to pay homage to the strategy that architects 5+1AA (Gianluca Peluffo and Alfonso Femia) sought to pursue when designing the new ASI headquarters (2005-2012, fig. 10a). The architects, called upon to intervene in the heterogeneous and unregulated urban context of Tor Vergata opted for concentrating the program within a series of volumes with pure geometries conceived as black monolithic blocks. The planimetric composition responds to the narrative of a sudden moment of equilibrium in the absence of gravity. The aerial views were the testing table for experimenting with a compositional action that takes the distance from the scattered settlements spread in the southeastern sector of the Roman countryside. The architects rather privileged pure forms, such as the parallelepiped and the circular arch that, in their perfection visible from the sky, evoke the mythical dimension of science and space.
Large-scale buildings offer an incomparable opportunity for experimentation in this sense. Difficult to understand in their complexity at the human scale approach, architectural manufacts such as museums, airports, large companies' headquarters, constitutes the chance for a sculptural gesture comparable to the craftsmanship that brings objects to life at one's hand scale. The aerial view of the site hence becomes the architect's working table in the initial phase, a compelling communicative image once the building is complete.
Aerial views are particularly important for airport buildings, which are inevitably seen from above by passengers who are taking off or landing. This is the reason they are often easily recognizable in their iconographical eloquence: their layouts tend to symmetrical geometries, and their high-tech surfaces are frequently modeled like precious fabrics, aerodynamic car bodyworks, or fluent design objects [10]. For instance, the aerial images of Studio Fuksas' Shenzhen-Bao international Airport makes the suggestions recalled by the architects stand out clearly (fig. 10b). The huge travel incubator evokes a tunnel shaped by the wind which turns at one end into a giant manta ray, ready to take off together with airplanes. The iconographic value corresponds to the functional program. The linear offshoots fulfil the need for different landing points, while the organically shaped head signals the main hall. The project materializes the architectural search for a 360-degree visibility, interconnecting interior and exterior spaces. The surface, wrapping like a skin the spaceframe structure, both inside and out, has a double function. The honeycomb motif with which it is perforated guarantees a constant daylight and decorates surfaces like a fabric. At the same time, the iterating geometric motif of the hexagon is adapted through complex parametric process to the interior surfaces. In a great leap in scale, the same tessellation also decorates the furniture of the gates, check-in, and passport control areas. The loss of scale or the fluent transition from extra-large to the extra small in terms of design made the furniture responds to the same leading concepts used to solve the masterplan.

Fig. 9. The third Paradise at the Italian Space Agency HQ. Foto radar satellite Cosmo SkyMed (Thales Alenia Space Italia).

Another eloquent example of this plastic approach to the large scale is the Ferrari World, an indoor theme park dedicated to the iconic car manufacturer, opened in Abu Dhabi in 2005. It was designed by the architecture firm Benoy as a space frame structure adapted to an imaginative shape that evokes the sinuosity of the Ferrari chassis (fig. 10c). The result is an out-of-scale architecture dominated by an imposing aerodynamic roof with a rotational symmetry of order three. The roof is painted the Italian race car color *rosso corsa* and is decorated with the Ferrari symbol facing the sky. The Ferrari World building embodies several themes intersecting in contemporary architecture, from digital modeling to marketing. They are somehow all linked by the possibility to see a building from the sky, at distances that can be provided by satellite imagery. Indeed, the roof serves as a large billboard for the Ferrari shield, if not a graphic symbol itself: advertising set up for aerial viewers [11]. After all, the Emirates abound in architectures and landscapes that are meant to be seen from a certain altitude, including the artificial Palm and World islands, which lie off the coast of Dubai. Similarly, the sinuous shape of the digitally modeled roof suggests a creative form-finding process that was traditionally a main prerogative of sculpture, applied art, industrial design, and therefore smaller objects. Modern construction technologies allow designers to indifferently realize a table and a building with the same shape; both are sculptural objects perceived by a user three-dimensionally also from above. The contemporary affinity between design pieces and large-scale buildings, enabled by the advent of modeling software in architecture, has also been enhanced by the possibility of aerial access to architectures. Satellite imagery programs allow viewers to easily zoom in and out of terrestrial surfaces – from small architectures to colossal megastructures; the loss of scale, derived from the availability of digitalized images and models, has deeply influenced people's perception of buildings [12].

Conclusion

The revolutionary role of technology in upsetting the viewing scale was perceived by the 1957 book *Cosmic View*, by Dutch educator Kees Boeke, which presents many images of several levels of dimensions –from the cosmic to the atomic [Boeke 1957]. The book inspired the short film *Powers of Ten* (fig. 11), directed by Charles and Ray Eames in 1977 following a previous prototype (1968) [13]. The film visualizes the size relationships of elements in a flow through space, which can be easily likened to the experience offered by contemporary satellite imagery programs. The Eames' film, despite providing the viewer with the dimension of the images represented, proves how a galaxy and an atom have the same dimensions when projected on a screen. Similarly, buildings and furniture can have the same size when seen from a satellite.

Fig. 10. a. Italian Space Agency (ASI) HQ, Roma; b. Shenzhen Baoan International Airport, Shenzhen; c. Ferrari World, Abu Dhabi (Google Earth images).

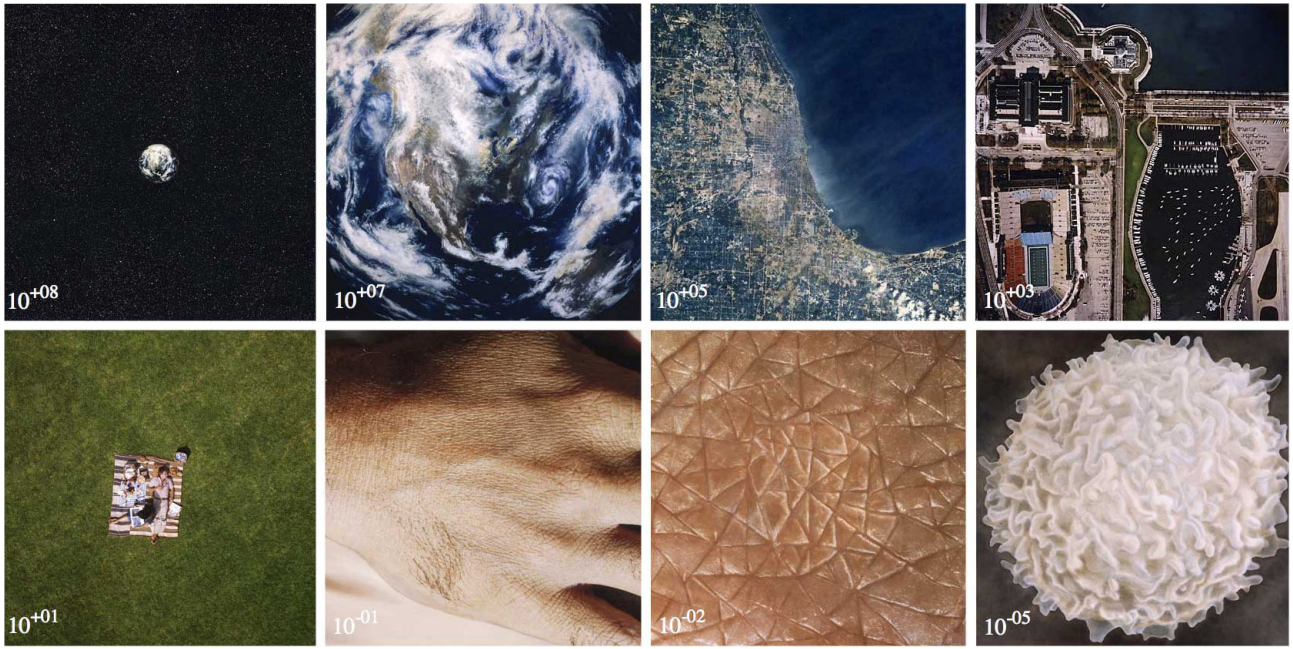


Fig. 11. Still from Power of Tens.

The way in which the eye perceives reality has been affecting architecture since the primordial awareness of spatial representation. With aerial photography and satellite imagery, for the first time, the orthogonal view from above has become a primary way of experiencing places, not just an abstract method of representation. Technology has unveiled another point of view on buildings that is independent of the body's position in space and is accessible to a theoretically infinite number of users. Moreover, the scalar versatility of this images makes them prone to inexhaustible degrees of detail.

Consequently, this perceptive approach seems deeply embedded in the design conceptions of recent architectural projects. At the same time, the diffusion of aerial and satellite imagery has helped to create a new awareness of people towards land transformations [Hayden 2001]. As this contribution has shown, by changing the way the world is seen, the way the world is designed and governed has also changed. Now more than ever, we may be able to affirm that contemporary architecture and urban planning deal with projects for the space age: buildings and landscapes to be observed by an 'eye in the sky'.

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Notes

[1] See, for instance the *Gallery transplants* in which Dennis Oppenheim (1938-2011) traced the plan of an art gallery on the soil, then exposed the photographs of the geoglyph in the gallery itself.

[2] On *Google Earth* as a powerful tool to observe the planet see Scheffers et al. 2015.

[3] The episode was recalled by Maria Grazia D'Amelio.

[4] "[textiles] can be seen, as it were, as the primeval art from which all other arts –not excepting ceramics– borrowed their types and symbols" [Semper 2004, p. 113].

[5] If the parallel is obvious in the case of landscape architecture –to carpets, one can easily juxtapose the paving that Dimitris Pikionis designed for the Acropolis in Athens, or the sinuous pattern of the floors that Roberto Burle Marx created for Copacabana, in a practice reminiscent of the tradition of flower carpets made all over the world– the affinity of many contemporary architects with textiles underlines the common roots between architecture and textiles. Think, for example, of the carpets designed by Zaha Hadid or the activity of architect and textile designer Petra Blaisse.

[6] The reading of patterns was boosted by a view from above, as proved by the flooring and garden designs of Roberto Burle Marx (1909-1994) or the Superkilen Park (2012) by Bjarke Ingels Group and Topotek1, which can be fully seen and understood only in plan or through aerial photography.

[7] This idea of the footprint as topography would also be proposed by Herzog e De Meuron for the 2012 Serpentine Gallery Pavilion.

[8] For example, see the plan for the Bremerhaven published in Zaera 1995, p. 10.

[9] See, for instance, Herzog & de Meuron's Skolkovo Institute in Moscow (2018) or MVRD's project for the Innovation Park Artificial Intelligence in Heilbronn, Germany (2023).

[10] We could mention the several airports designed by Foster and Partners (Honk Kong, Mexico City, Kuwait, Panama, etc.) or Studio Fuksas.

[11] The upsized reproduction of a commercial brand, the brilliant colors and the estranging effect of a huge iconic shape evokes some creative and conceptual mechanism of pop art.

[12] The quick passage from infinitesimal smallwhich has proved to be also a major theme in architectural drawings, where the digital space has questioned the validity of representative fractions. Analogously, the shift in the scale influences the perception of artworks, as proved in Anapur 2016.

[13] *Powers of Ten: A Film Dealing with the Relative Size of Things in the Universe and the Effect of Adding Another Zero*, directed by Charles and Ray Eames, voice by Philip Morrison, music by Elmer Bernstein, Pyramids Films, 1977.

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RUBRICS

Readings/Rereadings

Readings/Rereadings

The City Crown, or the 'Social Sublime'

Daniele Colistra

Reading/Rereading

I have read *La corona della città* (*The City Crown*, in english) (fig. 1) three times. The first time –but I don't know if it can be considered valid– as a student, at the invitation of a Composition professor, who suggested: "Stop at Quaroni's introduction, everything else is superfluous". The complete reading took place a few years later, during my PhD years. I found the book flowing, at times amusing, thanks to the radical positions expressed in vehement tones. But the overall assessment was not positive: too many contradictions, excessive rhetoric and an underlying naivety, unusual for a theorist who was above all a militant architect. The third reading dates to last month; although the doubts about the work remained, I appreciated the way used by Bruno Taut to highlight the tensions and turmoil that animated European architecture between the two World Wars, instances of a disappointed generation that dreamed of changing the world. I had the impression of reading the book for the first time, discovering unexplored aspects; and, despite the fact that *scripta manent*, to experience that the contents conveyed by a text can always take on new meanings.

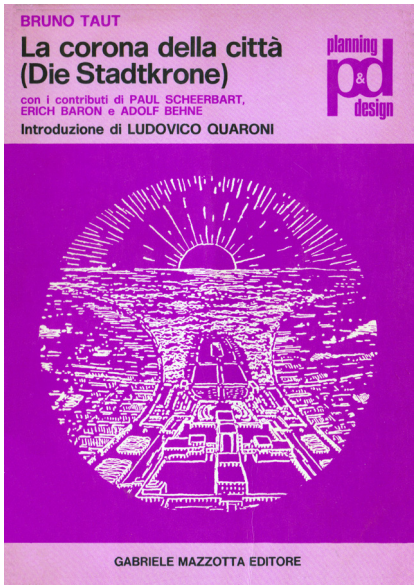

Fig. 1. La corona della città. Cover of Italian edition (1973).

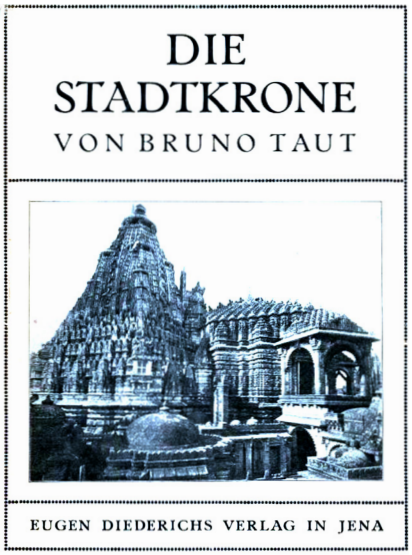

Fig. 2. Die Stadtkrone. Cover of German edition (1919).

The aspiration to the crown

The idea supported by Taut is very simple: the modern city, unlike the

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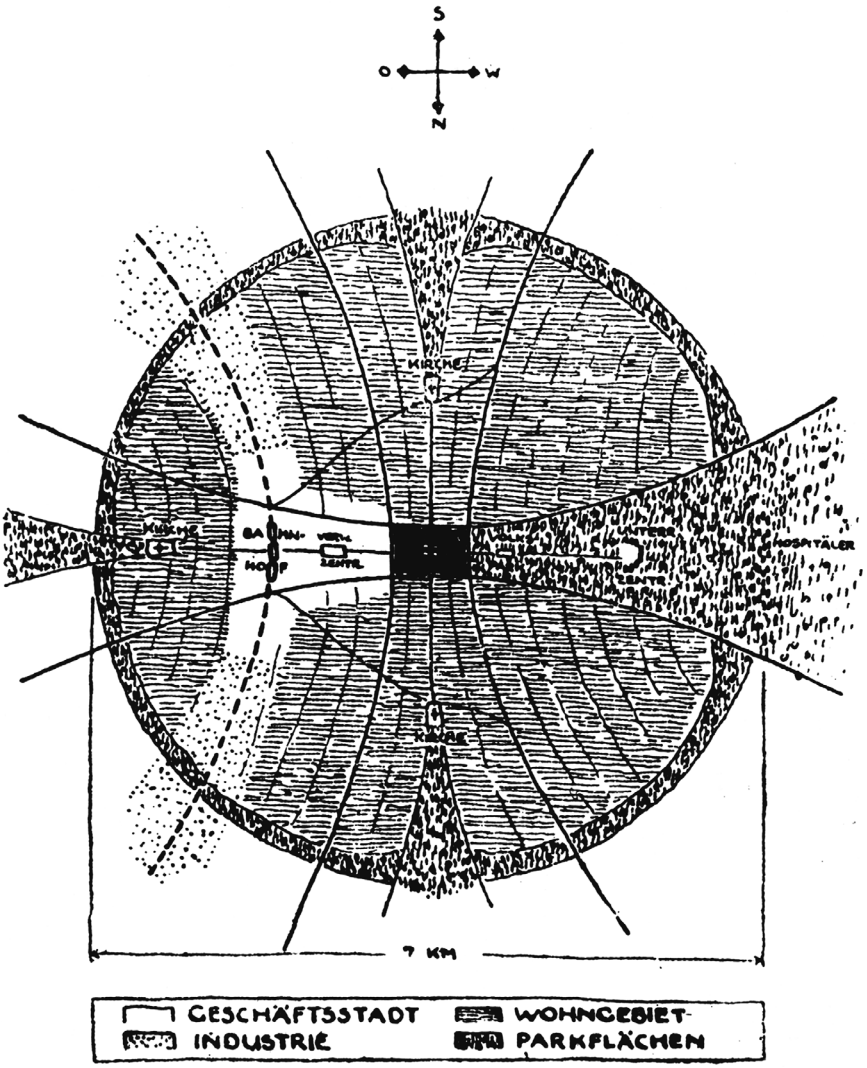
Fig. 3. Plan of the new city, with the City Crown in the centre [Taut 1973, p. 53, fig. 46].



ancient and medieval one, has no hierarchies. It could not be otherwise: there is no longer a civil or religious power to identify with, and therefore it is not possible to express this power through the magnificence of a cathedral or a royal palace. In the modern city, public and religious buildings are similar to private residences. Everything is unbearably homogeneous and the architecture, devoid of any spiritual component, is relegated to the resolution of banal constructive questions. However, there is an ideal that can symbolize the aspirations of modern man: it is 'sociability', the desire to participate in collective activities. The modern city, therefore, will have to be equipped with an imposing system of public buildings –libraries, museums, theaters– capable of accommodating these functions. Placed in the center of the urban space, it will be surmounted by an enormous crystal building which, like the bell tower of a Gothic cathedral, will soar above the building, symbolizing that 'social sublime' to which modern man aspires.

A collective work

Die Stadtkrone was printed in Jena in 1919 by the publisher Eugen Diederichs Verlag (fig. 2). The Italian edition was printed in 1973, in the *Planning&Design* series edited for Gabriele Mazzotta by Ludovico Quaroni. It is a collective book, divided into five parts written by authors who identified with the cultural movements *Arbeitsrat für Kunst* and *Novembergruppe*.

The first part, written by Paul Scheerbart, is entitled *Das neue Leben. Architektonische Apokalypse* (*The New Life. An Architectonic Apocalypse*) and is based on the fantastic novel *Immer mutig!* (*Always courageously!*). It is a fairy tale/parable, already printed in 1902 by the

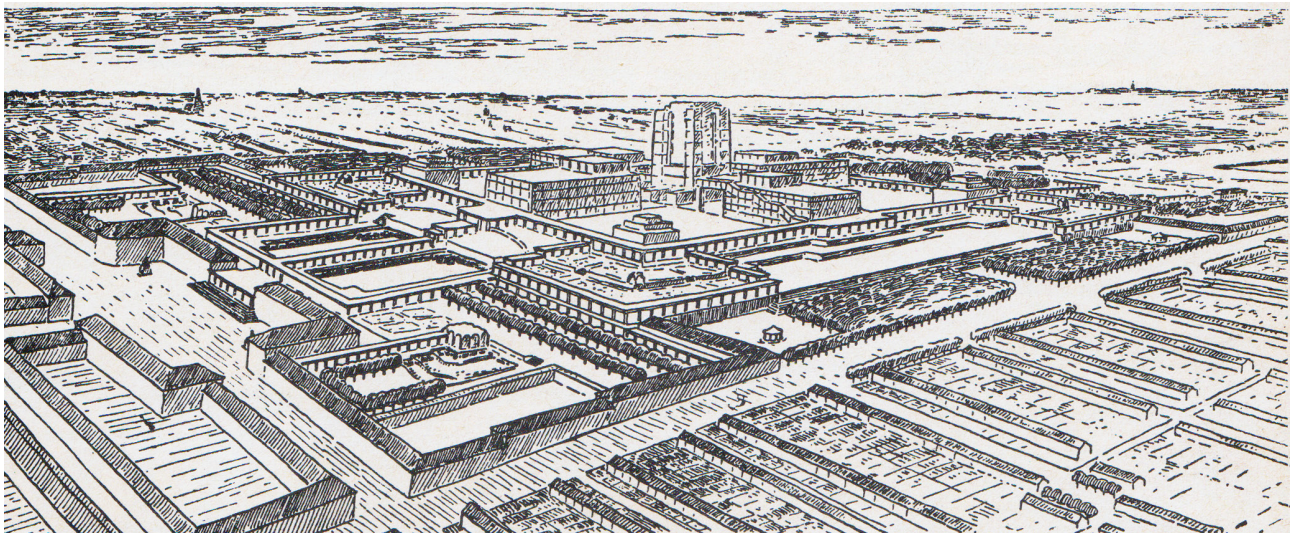


Fig. 4. The City Crown: perspective view [Taut 1973, p. 56, fig. 49].

publisher Bruns of Minden; it highlights the carelessness of men towards good architecture, a gift from the angels. Men no longer wish to welcome the "vivifying sun of architecture"; they prefer "their dinner with oysters and strong drinks, uninterrupted pleasures, coffee-concerts and sleigh rides" [p. 13] [1]. A fierce critique of capitalism and of an idea of the city subjected to the logic of profit.

We will discuss the second writing, which gives the volume its title, in detail below. Then there is the essay by Erich Baron, entitled *Aufbau* (*To Build*). In it, the theme of architecture is only hinted at, and is limited to the exaltation of glass as a material; the term "construction" is used metaphorically. It is a rhetorical essay, imbued with socialism, religiosity and a blind faith in the future: "we need to bow down in religious recollection before the greatness of the world" [p. 83]; "what we need is a program, not a flag" [p. 87]; "in the dawn of the victorious sun the man rejuvenated in spirit advances" [p. 88].

Wiedergeburt der Baukunst (*Rebirth of Architecture*) is written by Adolf Behne. The author, starting from the consideration that modern architecture has reached the lowest level of its millenary history, expresses a typically expressionist poetic in which curved shapes and primitivism are exalted, hoping for a renewed unity between the arts (with the superiority of architecture) and refers to the completeness of oriental art, particularly Indian art.

The book ends with another short story by Paul Scheerbart, *Der tote Palast. Ein Architektentraum* (*The Dead Palace: An Architect's Dream*), also taken from *Immer mutig!*, a dreamlike and enigmatic reference to the clash between the artist's aspirations and everyday life.

The City Crown

Bruno Taut's text, already written in 1910 but unpublished untill 1919, is divided into paragraphs. In the first, *Architecture*, the author argues that the purpose of architecture is to respond to practical needs through artistic forms capable of promoting "the broadening of human horizons" [p. 31]. Architecture must leverage the spiritual component present in every man; however, it cannot express the spirit of its creator, as it is made through the concurrence of many individuals; it is intended for the community, and therefore must reflect the spirituality of an entire people. Collective spirituality is based on energies hidden in faith, hope and desires; it is these forms of energy, and not practical needs, that give shape to architecture. The paragraph concludes by stating that the elimination of differences constitutes "the disease of our

age" [p. 33], and that in art it is always necessary to maintain the distinction between large and small, sacred and profane.
The second paragraph, *The Old City*, shows how it reflects the spirit of the society that generated it. The most important building of a medieval city is the cathedral; with its oversized bell tower, it mainly performs spiritual functions, unlike castles, fortresses and palaces, which have practical purposes and are subordinate to the religious building in a coherent and cohesive system. The cathedral is the 'crown' of the medieval city and "reflects the highest thoughts: faith, God, religion" [p. 34].
The third paragraph is entitled *The Chaos* and explains how the vertiginous development of the modern city has not been able to merge the old with the new, nor to harmonize the new elements (factories, roads and railway networks, residential and commercial zones) that characterize it. With modernity "heaven, the homeland of art, has disappeared and hell has arrived, the homeland of the lust for power" [p. 35]. In the squalor of the modern city, the population leads a miserable existence, and only a God could solve this situation decisively: men of good will can only give partial answers.
The fourth paragraph, *The New City*, describes the attempts of contemporary architects (Camillo Sitte, Theodor Goecke, the English theorists of the *Garden City*) to give an adequate response to the needs of the contemporary city. Taut believes that these experiences, although animated by good intentions, are doomed to failure as they are based on formalistic theories.
These experiences are like a *Torso Without a Head*, title of the following paragraph. Lacking an overall vision, they do not foresee an element that dominates the rest of the urban space. Political power, once represented by a single, large monument, is today fragmented into countless, banal buildings, often located in the suburbs and even subject to the same rules that govern private constructions. It is therefore necessary "to invent completely new forms and contents in order to give this torso another head" [p. 39].
The sixth paragraph, *A Flag is Needed* opens with the assertion that even today the city should be represented by religious buildings placed at its top. But traditional religion is losing strength, the idea of God is disappearing and even the Catholic Church, which has always taken care of symbolic and formal representation, tends towards dispersion and decentralization. However, faith survives, and can never disappear because it is unthinkable that one lives only in terms of matter: "without religion there is no true culture, no true art" [p. 41]. The new faith is expressed through social thought: socialism –understood as an idea that unites men and makes them united– is the new Christianity. The city must 'crown' the expression of this new thought. The architect must "think of his great profession, solemn and divine; increase the treasure that is hidden in the depths of the human soul; penetrate the soul of the people; […] to resurrect an ideal bearer of joy, materialized in buildings, which gives everyone the awareness of being members of a great architecture, as it once was" [p. 42]. The need for sociality, typical of our age, is the spirituality of contemporary man: it must be expressed in works that allow individuals to feel at one with their fellow humans.
We have reached the seventh paragraph: *The City Crown*, in which the style of the text takes on a more descriptive and pragmatic tone. Taut hypothesizes the scheme of a city located on a flat site and devoid of natural elements (rivers, hills, etc.). The city has a circular shape (7 km in diameter); in the center there is a rectangular area of 500 x 800 m on which stands the City Crown (fig. 3). Taut defines the structure of the road and railway arteries and of the various urban functions, according to *ante litteram* zoning criteria; the volume and layout of the residential buildings follow the principles of the Garden City. The city has an area of 38.5 square km and can accommodate up to 500,000 inhabitants. The City Crown brings together all the buildings that respond to social needs and host artistic, social and leisure functions. It is made up of four large buildings, arranged in a cross "oriented towards the sun" [pp. 45, 46], and the buildings and spaces surrounding them: squares, arcades, gardens, buildings for carrying out collective activities. It represents "the concrete and symbolic expression of the best realization of the city" [p. 48]. But the cross formed by the four buildings is only the basis of the crown itself. The top of the crown is a sublime construction, empty, enormous and devoid of any practical function, because "what is supreme is always silent and empty" [p. 52]. "It is the crystal palace, which […] shines in its exceptional dimension. […] Crossed by sunlight, it dominates like a sparkling diamond" [p. 50] (figg. 4, 5). Thereafter, Taut describes the phases of construction of the city; it will develop starting from the residential and productive areas (the construction of which could continue for several generations) leaving the central area free, destined for the City Crown, to be built only when that "correspondence between time and need that produces harmony of style" [p. 52]. The forms, therefore, are

defined in a summary way: the City Crown is only "an emblem, an idea and a theoretical stimulus whose final solution offers an unlimited range of possibilities" [p. 53].
In the following paragraph, *Estimate for the Construction of the City Crown*, Taut quantifies the expenses necessary to build it (45 million marks, 15 of which for the crystal palace) and articulates them according to a summary timetable, divided into four phases (30,000, 100,000, 250,000 and 300,000 and more inhabitants). He argues that the crisis affecting all urban centers that lack identity will lead to their depopulation and the creation of numerous cities with City Crown, whose high construction costs will be easily met thanks to more efficient urban planning.
The concluding paragraph, *New Research for the Crowning of a City*, is dedicated to the description of the cases in which –especially in the United States– the tendency to crown the city with elements of marked monumentality emerges. The text closes with a critique of rationalism in architecture: the mind can perform a regulatory function, but true architecture "can blossom only from the heart, and it is only the heart that we must listen to" [p. 69].

A crystal-clear introduction
The brilliant *Introductory Essay* by Ludovico Quaroni opens with an analysis of the expressionist movement, particularly widespread in the Nordic countries of Protestant Europe; countries which, unlike the Mediterranean ones, have always been wary of the poetics of Classicism. In architecture, Expressionism established itself late compared to painting and literature and was characterized by constant contradictions, nonsense, "butting left and right" [p. X], a state of almost orgiastic excitement which, once the charge is exhausted, will lead almost all the exponents of Arbeitsrat für Kunst to merge – with varying fortunes– into the rationalism of Bauhaus. According to Quaroni, "every rationalist architect was first an expressionist" [p. XII], except for those of Latin culture. He does not consider Taut a leading figure [he defines him as a "failed master", p. IX]; however, he credits him with having been the point of reference for all those German artists who, after the defeat of 1918, cultivated the desire for a better world through the union of the arts and the prefiguration of fantastic worlds. An art 'that saves' and which, through the partnerships of *Arbeitsrat für Kunst* and *Novembergruppe*, brings together all those who intend to react creatively to the horror of war and the humiliation of defeat. The Expressionists, according to Quaroni, are affected by a "pathology that tends to take them almost off the solid rails of the history of architecture" [p. XXI]. Although he considers *The City Crown* a "thin, made of almost nothing" book [p. XXVI], he believes it is important to publish it: to tone down the rationalist revivals of the early 1970s; to show the analogy between the bewilderment and crisis of architecture after the Second World War and those following the catastrophe of 1918; to explain how the "expressionist larva" generated "the perfect rationalist insect" [p. X]; to oppose, to the religion of capital and bureaucracy, an idea of architecture permeated with social instances. But, above all, to prefigure to the new generations –the students– the risks of a world without architecture.

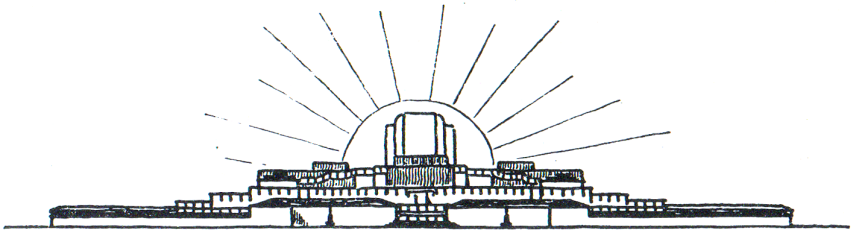


Fig. 5. View of the City Crown from east [Taut 1973, p. 49, fig. 43].

Faith, hope, contradictions
Faith, hope, contradictions: these are the keywords that emerge from reading this passionate text. The first two terms express positive values: trust in one's convictions, commitment so that they can be realized. The third term characterizes the figure of Bruno Taut. In *Die Stadtkrone*, the contradiction is already in the premises: imagining that the new society can be based on a community model and on principles of public interest, despite the individual being described as selfish and abusive; reject the idea of hierarchy and re-propose it in the urban structure; affirm the superiority of spirit over matter, without hypothesizing a radical action of social renewal.
Next to the contradictions, the ingenuity. Among these: hypothesizing that the city develops by referring to a crown which, however, will only be built after the city itself has grown; prefigure a detailed urban development and consolidation program,

complete with a cost estimate, but without any economic, sociological and demographic data to support it.
Taut's architecture, in theory, is based on the priority of the image; the theme of the crown offers countless ideas for dazzling representations, but the illustrations accompanying the text are sparse and poorly cared for. Taut is not a great draughtsman: "there is perhaps only one very beautiful drawing of his, and it is a drawing that does not seem to have been done by him, so sure is the sign, so much does it transpire, from the few strokes for the masses, a mature taste that Taut never had," says Quaroni [p. XXVI].
Compared with other texts by militant architects, such as the coeval *Vers une architecture* by Le Corbusier, or the more recent *Amate l'architettura* by Gio Ponti –both still current–, *Die Stadtkrone* seems aged, perhaps because the passion that animates it does not renounce rhetorical prose, proclamations, to a singular form of lay religiosity. The German crisis after the defeat pushed many idealists towards radical positions, aimed at longing for ideals of universality and spirituality well expressed by many Eastern cultures. It is no coincidence that *Siddharta* by Hermann Hesse was published in 1922, three years after Taut's *Die Stadtkrone*, and had renewed success in the years of maximum diffusion of hippie culture: the same years in which Quaroni edited this book, whose reading projects within a dream destined not to come true.

Note

[1] All quotations from Taut's text are taken from Italian edition [Taut 1973]: english translation by the author.

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Reviews

Reviews

Maria Grazia Cianci (a cura di)

Spessori.
Il paesaggio come stratificazione

Il Poligrafo
Padova 2021
317 pp.
ISSN 2724-6043
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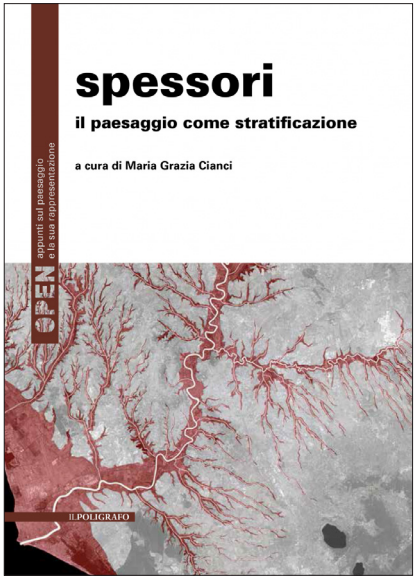

The book coordinated by professor Cianci is the first volume of a collection of texts on open spaces and their representation, which, although originating in the classes taught at the prestigious *Master di II Livello OPEN - Architettura e Rappresentazione del Paesaggio dell'Università degli Studi Roma Tre*, which was founded by professor Riccardo Ghio, demonstrates a clear research vocation open to the international scientific community.
The quality of the contributions is guaranteed not only by the high scientific level of the authors, who come from different and convergent scientific fields, but also by the experts who make up the scientific committee, whose careers are internationally recognised.
From the scientific point of view, the collection is a success because it constitutes a clear advance in knowledge by providing a transversal and multidisciplinary view of open spaces in all their varieties, ranging from the rigorous objectivity of cartography to the subjectivity of landscape appreciation, and covering a wide range of scales that extend from the domestic one of the gardens to the territorial scale.
A gaze that is not limited by historical or geographical barriers, as it is open to other continents and cultures, as well as to visions of the past and to the most recent and innovative interventions and projects.

The title *Spessori* (Thicknesses) clearly conveys his intentions: to undertake an OPEN investigation of the landscape, and to recompose its "diverse history, intangible but perceptible through the traces that have configured it", as Cianci rightly defines it in his *Introduction* [p. 13].
As a consequence of this multifaceted and expert approach, and the breadth and variety of its approaches, the book fills a gap in the literature on landscape and provides a holistic knowledge that is essential for all those involved in urban design and city planning, and which is noted by professor Salerno [*Introduction*, pp. 17, 18], who also highlights the relevance of some of the examples analysed in the text.
Aspects linked to the symbolic content and representative value of the landscape are essential before tackling the project, as knowledge of the "genius of the place" [Norberg-Schulz 1980], of those qualities that differentiate it and make it singular and unique, is as necessary as the passion that must permeate any process of design, recovery, or maintenance of the landscape. From this perspective, professor Zagari stresses that "making landscape" consists of setting up a "reading laboratory" [*Introduction*, p. 21] from which it is possible to extract guidelines for action.
This variety of approaches is grouped and developed around four fundamental

themes: the city, landscapes, projects, and representations; all of them are illustrated with a careful selection of images that support and complement the texts and constitute a parallel discourse that invites re-reading and analysis.
Maria Grazia Cianci and Francesca Paola Mondelli address the theme of the city and its current needs by analysing the essential character of meeting and exchange that squares have, and the repercussions on identity and the sense of belonging that the lack of public spaces has on the life of neighbourhoods; they use the example of the *Programma Centopiazze per Roma* competition [pp. 27-47], which was developed in several stages and was characterised by the essential participation of the citizens.
Lola Domènech draws on the reflection that "planning means to a large extent understanding and ordering" [Zumthor 1998], to explore in her contribution *Abitando l'intorno urbano. Altre atmosfere* [pp. 49-53] the Passeig Sant Joan project in Barcelona, whose design has managed to reconcile the values of sustainability and the improvement of urban life with the demands of transport and accessibility.
The future challenges facing the European city are addressed by Enrico Falqui in his contribution *Paesaggi della città globale* [pp. 55-63], in which, through the urban landscape, he analyses current problems such as that of the edges and peripheries, and the transition with the rural environment.
In *Roma: nuove rovine e nuove ecologie* [pp. 65-71], Francesco Garofalo uses the silent invasion of ailanthus in the landscapes of Europe as an excuse to address the need to preserve urban ecosystems, and especially vegetation in urban areas, of which the ruins in Rome are an outstanding example of coexistence.
Water is a major compositional element in urban landscape design and a symbol of the identity of cities, as Giulia Pandolfi points out in *L'acqua che piega la forma urbana* [pp. 73-79], after reviewing its historical values and uses on the basis of some representative examples.
Gabriele Paolinelli develops in his *Pistoia Ongoing Masterplan 2014-2016* [pp. 81-89] an academic proposal for the master plan of the city of Pistoia, which is an example of the possibilities that urban design opens up for research, as well as its character as a laboratory of ideas in which all kinds of dynamics and phenomena come together.
The second group of contributions is developed around different approaches and examples of landscapes.
In *Discontinuità nel paesaggio moderno: il Campidoglio di Chandigarh* [pp. 93-99], Darío Alvarez raises the issue of discontinuity as a characteristic of the landscape, which is manifested in the composition of the elements that make it up, such as topography, the treatment of water or vegetation.
The changes introduced by man into the natural environment are the focus of Giovanni Buccomino's contribution entitled *Un altro paesaggio è possibile (alla ricerca di rane in città)* [pp. 101-105], in which he supports the need to design with nature and to integrate biodiversity into landscape design.
In *Paesaggi della stratificazione* [pp. 107-113], Lucina Caravaggi takes up the essential theme of stratification that gives the book its name, interpreting and analysing the different dimensions involved to form an organic unity.
Francesco Careri presents the development of several didactic experiences in *Giochi di paesaggio* [pp. 115-121], in which the satisfaction of transforming reality with one's own hands is combined with personal experience of the landscape and theoretical conceptualisation, as solid pillars on which to base small urban interventions.
Simona Ceschin approaches the importance of *La vegetazione acquatica e ripariale del Tevere e il suo inquadramento ecologico ai fini della gestione e progettazione dell'area* [pp. 123-129] from different perspectives, such as the historical evolution of the plant life, the changes in the structure of its groupings or its ecological analysis.
In *Jacques Simon. La poetica di un acrobata. I suoi paesaggi* [pp. 131-137] Daniela Colafranceschi recalls the generous legacy of the late professor and landscape painter, characterised by his provocative and non-conformist attitude. Teresa Gali-Izard extends this homage to the master in *Ricordando Jacques Simon* [pp. 139-145], stressing the importance he attached to fieldwork, play and the value of contrasts, as well as the value he placed on people's participation.
Bruna Pollio proposes a transversal analysis in *Elementi di progettazione del paesaggio* [pp. 147-155] in which geological dynamics, the potential of nature and historical modes of land use are involved, using the interesting example of the Tiber valley in Lazio.
In *I micropaesaggi di Gordon Matta-Clark* [pp. 157-167], Marta Rabazo-Martin evokes the artist's critical and inquisitive gaze in projects such as *Reality Properties, Fake Estates*, in which he establishes new territorial relations that annul the concepts of scale, limit and interstice.

Álvaro Soto identifies the mounds formed by the stacked straw *Monumenti effimeri. Costruzioni nel paesaggio* [pp. 169-175] as mutable elements of the landscape, with forms that are as functional and evolved as they are ephemeral.
This thematic block closes with the chapter by Emanuele Von Normann *Del ri-conoscere e dell'appartenenza* [pp. 177-181] dedicated to the need to reinforce identity and a sense of belonging through the design of open spaces.
The projects described in the following set of interventions are examples of good work and craftsmanship, in the sense of mastery of methods and techniques.
Monica Bertolino shows several examples of the work developed in her Argentinean studio in *Territorio, paesaggio e contesto in America Latina. Riflessioni e interventi* [pp. 185-195], highlighting the importance of promoting local and regional values in architectural, urban and landscape projects.
In *Paesaggi fluidi nelle agglomerazioni urbane ad alta intensità* [pp. 197-203], Andreas Kipar studies the changes that the social and demographic structure of European cities is undergoing, focusing on the transformations that Essen has undergone and the strategies it has followed to turn its 2010 European Capital of Culture into a Green Capital in 2017, as well as its applicability to other European cities.
Identity is also the theme of the contribution by the MADE team of Michela De Poli and Adriano Marangon, entitled *Identità e paesaggi_incontri* [pp. 205-211], which advocates basing the project on an effective and unprejudiced balance between human interventions and the demands of the natural environment.
Stefano Magaudda addresses the important topic of *La governance delle infrastrutture verdi. Programmi, piani e progetti per i nuovi paesaggi dell'Agro Pontino* [pp. 213-224] applied to the case of the agricultural landscape of the Pianura Pontina, of which he makes an interesting geographical analysis with a view to promoting its recovery, paying particular attention to the network of irrigation canals and the historical treatment of water.
The catalytic capacity of public spaces to catalyse relationships is the theme addressed by Christopher Marcinkoski in *L'azione catalitica dello spazio pubblico* [pp. 225-231], which he promotes through the search for the latent opportunities offered by the territory and the convenience of arousing public debate as a form of citizen participation.
With the interesting example of the *Paesaggi mediterranei. Dimitris Pikionis e il Parco archeologico dell'Acropoli di Atene* [pp. 233-239], Franco Panzini analyses the compositional methods of the engineer and landscape architect, based on simplicity that avoids stridency and blends in with the surroundings.
The last section is devoted to the numerous possibilities offered by the representation of landscape.
Working on the urban scale, Daniele Calisi reports in *Il paesaggio urbano. Analisi e rappresentazione digitale come strumento di conoscenza* [pp. 243-251] the experiences arising from the fruitful collaboration between the Gabriele D'Annunzio University and the Abruzzo Region, and the multiple possibilities offered by the integration of manual and digital media and techniques.
In *Esplorazioni grafiche in Argentina: tra arte, architettura e paesaggio* [pp. 253-261], Emanuela Chiavoni presents the interesting graphic experiences that arose during a study trip in Argentina: an emulation of the Grand Tour that made it possible to compile a wide variety of descriptive and analytical graphic records at different scales on these vast territories.
The interesting results of a photography workshop are the subject of Stefano Cioffi's *La sedimentazione dell'immagine. Considerazioni su un workshop di fotografia* [pp. 263-269], in which the visions of the great masters and conceptual currents were combined to work on Rome's Porto Fluviale, swinging between reality and fiction.
Giacomo Costa explores the evocative and communicative power of images in *La rappresentazione dell'irrealtà* [pp. 271-277], delving into their ambiguities and the processes they trigger in the observer.
Francesca Fabiani's contribution entitled *Fotografia e territorio. Commitenze ed esperienze collettive, tra memoria storica e pratica contemporanea* [pp. 279-289] also deals with photography, but in this case focusing on its capacity to document reality and to transmit stereotyped images, and on the successive initiatives that have explored them.
Valerio Morabito analyses the capacity to narrate experiences and concepts in the chapter *Idea-rappresentazione* [pp. 291-301], warning of the current imbalances between meaning and image and between representation and idea.
The volume closes with a chapter by Massimo Siragusa entitled *Il paesaggio antropizzato in Sicilia. Un luogo come metafora* [pp. 303-307], in which he sets out his search for keys to reading the

surrounding landscape, which he does on the basis of three solid lines: urban evolution, reconstructions and the constructions of the agricultural world.
The reading of this first volume of the series does not disappoint, and offers a panorama as broad as it is suggestive, arousing emotions as necessary as those expressed by Goethe [Goethe 1887, vol. 2, p. 148]: "I was excited by the bold, the crossed-out, by what was drawn with wild lines of Indian ink, by the violent, I could read even that which, with a few features, was only the hieroglyphic of a figure, and I appreciated it immeasurably".

Pilar Chías Navarro

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Reviews

Pilar Chías Navarro

Amoenitas loci, paupertas, caritas.

La arquitectura de la Universidad de Alcalá, hipótesis gráficas sobre la fundación de Cisneros

Universidad de Alcalá
Alcalá 2022
84 pp.
ISBN 978-84-09-46183-7

The book *Amoenitas loci, paupertas, caritas. La arquitectura de la Universidad de Alcalá, hipótesis gráficas sobre la fundación de Cisneros*, by Dr. Pilar Chías Navarro, suggests to ricreate the lost image of the original architecture of the *Universitas Complutensis*, founded by Cardinal Cisneros in 1499. The author's proposal focuses on the reconstruction of the foundational nucleus, the so-called *Manzana Cisneriana*, whose construction began in March 1499 with the building of the *Colegio Mayor San Ildefonso*, a month before the *Carta bulada Inter Caetera* was granted on 13 April of the same year.

Based on an exhaustive consciousness of the archival sources and available documentary information, such as Juan de Obando's plan of 1564, this book is characterised by extreme rigour and a deep knowledge of the history of the building and its designers. But it must be said that the proposal developed by the author is more than a mere architectural reconstruction, it is the restoration of the spirit behind its conception and construction by Cardinal Cisneros. For professor Chías, understanding the structural work of the *Manzana Cisneriana* is only possible from a full comprehension of the ideals and objectives that underpinned the foundational process itself, which ultimately means delving into the figure of the founder and the Regenerationist principles that characterised the Spanish church of his time.

For this purpose, the author explores the written text and the historical image to reconstruct an architectural form closely linked to the Cisneros' idea of Catholic spirituality, for whom the academic foundation he was undertaking had to combine the need to promote the new way of approaching knowledge introduced in Spain by the incipient Humanism with the Catholic tradition that the new cognition could not and should not call into question. This duality justifies the three Latin concepts that begin the title of the work, reflecting both the humanist character, which is evident in the principles set out by Vitruvius in his treatise for determining the foundation place, and the values of modesty and charity proper to an institution of full Christian will. It is no coincidence, in this respect, that it was precisely in Alcalá where, in 1582, the first translation into Spanish of the Vitruvian treatise was published in the printing press of Juan Gracia, that made by Miguel de Urrea almost a century after the first printed Italian edition, which took place in Rome in 1486 by Giovanni Sulpicio da Veroli; this delay does not prevent us from validating the hypothesis that the architects in charge of the work entrusted by Cardinal Cisneros were aware of it, since the treatise was widely circulating on the peninsula at that time and was part of the Hispanic architectural culture. At the same time, the reference to Christian values such as *paupertas* and *caritas*

frames Cisneros' work within the Franciscan ideals of the Cardinal's religious instruction, which serves the author not only to deepen the symbiosis between Reason and Faith that characterised the academic training given at the *Universitas Complutensis*, but also to understand the material austerity of the work, which, although it responded to traditional building practices from the construction point of view, perfectly served the idea of modesty that nourished Cisneros' own religious convictions.
However, despite the use of documentary and iconographic sources and the enquiry into the understanding of the cultural purposes of the foundation is extremely rigorous, Professor Chías opens up an interesting area of reflection on the objectives of this type of graphic reconstructions. She addresses the role played in the whole process by the potential of drawing to recover and convey immaterial aspects such as the sensations perceived in the architectural space itself, the draftsman's interpretation in the conversion of the founder's ideas into real architectural spaces, and the intuitions derived from the vision of an era starting with the set of cultural aspects that characterise it, such as literature or painting, which allow us to "visualise" the yearnings and aspirations of an epoch.
In the first part of the book, the author discusses the capacity of today's university architecture, profoundly transformed, to transmit the values of the original structural form and the role played by drawing in the process. A process that is based on reason, study and learning of the architectural theory and practice of a period, but also on the capacity of sketch to convey images and intuitions, transferring to reality our way of understanding the past from our personal experiences.
In the first area, the author extrapolates architectural forms from other works to recreate the possible original façade, transposing the design intentions expressed in the round-arched façade of the *Convento de la Imagen* in Alcalá to propose the reconstruction of the potential first design of the Cisneros' foundation façade. An element that would respond much more plausibly to the austere aspirations of the Cardinal and to the foreshortened perception that must have characterised the urban fabric at the time of its construction than the current magnificent façade, designed by Luis de Vega in 1537 and built by Rodrigo Gil de Hontañón from 1541 onwards. This is a process which, in addition to translating the will of Cisneros himself, is fully architectural, in that it interprets the way in which early Renaissance Castilian architecture applied the forms that came from Italy. In this respect, the author makes use of the treatise by Diego de Sagredo, who in 1526 brought to press his *Medidas del Romano*, the first architectural writing printed in Europe in the Romance language and which, despite its modest contribution to Renaissance architectural theory, perfectly reflected the way of doing things of the Spanish designers of the time.
All this attests the rigour of the reconstructive work carried out by the author and her knowledge of the architecture of the period. But what I find most interesting is the reflection that accompanies this fully academic process of rebuilding; a thought of a personal nature, which links it to the author's experience in spaces that she has been visiting for twenty years now, and to the vision of an era that, constructed and assimilated through knowledge, feeds the whole process through the image. The author reconstructs the architecture both through words and drawing, giving it a fundamental role in the work of understanding and rebuilding the lost architecture, and with the latter the set of intentions and longings that nourished it and to which it gave form; perhaps because drawing has the capacity to integrate in an image both what is known and evoked.
The author alludes to this accumulation of experiences and sensations that underlie the whole process, interrelating objective data with subjective feelings; reinterpreting historical data and graphic documents through an experience that transposes them into spatial forms. This is the approach that characterises a book that differs from other academic methodologies developed from other disciplines, and in which the drawing and the associated gaze make possible a sensorial depth that the written text, with its greater descriptive capacity, lacks. From drawing and experience, the author seeks to do more than outline the original architectural space; she tries, in her words, to define "rhythms that still enclose the *Manzana Cisneriana*, echoes of times gone by that have happily come down to us and that only require the quiet enjoyment of these centenary spaces to allow revealing themselves" [p. 22].
A final reflection on the author's previous quotation. At the beginning of her text, both in the introduction and in the first pages that follow, professor Chías repeatedly alludes to the sensations and experiences that the city and the university transmit. The whole reconstructive process, firmly based on the author's previous documentation and erudition, is ultimately conditioned by our way of perceiving them; of feeling them. This is how the author explains it when she says that "the gaze, like the other senses, is not innocent and

is trained, just like the draftsman's hand; and it is enriched by the artist's interpretations, very useful for approaching the suggestive sphere of graphic artifice and subjectivity" [p. 19].
The author herself provides a beautiful metaphor that transcends mere academic and erudite reconstruction, when she claims to have imagined the *aposentador* (chamberlain) José Nieto coming out of the chapel panelled door, interpreting the present-day architecture by inserting an image taken from *Las Meninas* painting. An image that endows the space not only with the original formal, metric, and spatial features, but also gives shape to the echoes of the past and the lives spent when they still preserved their original form. Reconstructing is a mental operation that imagines what was from the data we know as much as from the images that our mind recreates; an activity that is necessarily based on the images to "find the subtle indications of time and rhythm whose echoes, as Muñoz Molina said, have been shaping the score of such a singular building" [p. 42].

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Reviews

Enrico Cicalò, Francesca Savini, Ilaria Trizio (a cura di)

Linguaggi Grafici. Decorazione.

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957 pp.
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The volume *Linguaggi Grafici. Decorazione*, edited by Enrico Cicalò, Francesca Savini and Ilaria Trizio, deals with a very current topic, especially in the declination that new technologies can offer. The work could not avoid dealing with the topic without considering another issue, which is that of ornament, highlighting the semantic similarity between the two terms and the differences dictated by the etymology of the names, as the editors point out: in the first case, in fact, "the ethical element is detected, indicating […] an attribution of honor and dignity" [p. 24], in the second case the word is "synonymous with order, beauty, harmony and perfection" [p. 24]. But ornament cannot fail to call to mind –as they rightly observe– the well-known essay by Adolf Loos written in 1908 [Loos 1999, pp. 217-228], presented at various conferences of the period and first published in French in 1913 in the journal *Les Cahiers d'aujourd'hui* under the title *Ornement et Crime*. Although the text was followed by a number of repentances, including *Ornament and Education* in 1924 [Loos 1999, pp. 325-332], there is no doubt that the weight of the very critical words in the first essay –think of the phrase "no ornament can any longer be invented today by those who live at our level of civilization" [Loos 1999, p. 226]– still affect our considerations today, leading us to think in terms of decoration/ornament especially about what was made before the 1930s, that is, including the *Art Nouveau* season. From this point of view, the volume stands out for balancing in a fair way between traditional ornament –the one extolled in Loos's essay, to be clear– and new possible declinations, which, perhaps wrongly, would not have found consensus in the same.

This balance between the two types of ornamentation finds different space in the sections in which the editors have placed the 38 essays by the 57 authors: if tradition has been included mainly in the first sections –*Geometrie*, *Rilievi*, *Tassonomie* and *Tecniche*– the new experiments are largely gathered in the following sections, well expressed by the titles *Interpretazioni*, *Superfici* and *Rappresentazioni*. Since it is not possible to list all the essays in the volume, we will report on a few of them, most illustrative of the various sections.

Edoardo Dotto's essay, *La sfida delle restrizioni. La decorazione a matrice geometrica tra didattica e ricerca visuale* [pp. 48-69] deals with the theme of decoration drawing in late 19th century schools, with timely and interesting references that are framed within the specific framework of the history of our discipline; other contributions in the same section, dedicated to *Geometrie*, also address the theme of geometric analysis, albeit declined from real cases: consider the contribution by Ornella Zerlenga, Margherita Cicala and Rosina laderosa, entitled *Intrecci amalfitani. Decorazioni fra contaminazioni e geometrie* [pp. 120-147] dedicated to the

rich figurative repertoire of the Amalfi Coast, where the history of architecture has been interwoven with decorative systems that have constituted the very character of the geographical area; but also those of Daniele Colistra –*Geometria e figurazione nelle decorazioni murarie di Tozeur e Nefta (Tunisia)*, [pp. 148-165]–, Marinella Arena and Paola Raffa –*Scritture in codice. Decorazioni berbere nella regione maghrebina* [pp. 166-185]– and by Barbara Messina –*Geometria e ornamento come identità culturale. Valenze estetiche e formali della decorazione nell'architettura islamica* [pp. 186-211]– which shift the investigation to the Mediterranean area, from Morocco to Turkey, pointing to the geometric genesis of wall textures, wall coverings and more complex double-curved surfaces. The essay by Michela Rossi and Giorgio Buratti, entitled *Variazioni sul tema. Dai rosoni del duomo di Milano: forma, costruzione e proliferazione nei pattern chiusi* [pp. 92-119], while dealing with an accurate analysis of historical materials, such as the Milan cathedral's rosettes, succeeds in reformulating their genesis using algorithmic systems that can then be applied in areas other than the original ones, such as in the field of industrial design.

The section called *Rilievi* is all about the study of past forms, also aided by new 3D scanning technologies. This is already perceived in Luca Vespasiano and Stefano Brusaporci's essay, *In dialogo tra spazio e decorazione: la Fonte della Rivera all'Aquila* [pp. 214-235], which involved the acquisition and treatment of the fountain of the '99 spouts' at L'Aquila, with the re-presentation of three-dimensional models of the masks made with the tools offered by rapid prototyping for a heritage enhancement project. Similar is also the case proposed by Michele Valentino, Andrea Sias and Marta Pileri –*Oltre la visualità delle superfici. Decorazioni parietali del Palau Carcassona ad Alghero* [pp. 292-309]– which, thanks to a photogrammetric survey, documented the restitution of the elevations of the work under study, identifying the figurative genesis of the wall decorations, traceable to the figure of the triangle and the square [p. 307]. A particularly unique case is the one addressed by Silvia Masserano and Veronica Riavis –*Geometria e natura: l'apparato decorativo del piano di facciata di Casa Bartoli a Trieste* [pp. 310-331]– who investigated the so-called *Casa Verde* in Trieste, designed by Max Fabiani in 1906. The site survey was flanked by historical documentation-archival drawings and photographs which enabled the comparison of design and construction status, allowing an accurate investigation also of the decoration with a plant subject, the geometric matrices of which were reconstructed.

The next two sections, *Tassonomie* and *Tecniche*, also collected contributions that studied works prior to the early twentieth century. These range from the Art Nouveau of some architecture in the city of Bari, studied by Valentina Castagnolo, Antonia Valeria Dilauro and Anna Christiana Maiorano, in the essay *New Liberty. Composizione e rappresentazione di un pattern* [pp. 334-361], to the mosaic floors of the Roman period, as treated in Sabrina Acquaviva's contribution, entitled *Il linguaggio decorativo in ambito romano: lettura e analisi del disegno dei pavimenti musivi* [pp. 416-441].

A possible contemporary implication of the decorative tradition is described by Valeria Menchetelli in the essay *La decorazione ceramica nell'architettura. L'esperienza umbra fra tradizione storica e innovazione contemporanea* [pp. 522-553], in which the use of terra cotta relief decoration in architecture is documented, also indicating the craftsmanship that is conducted today to produce ornamental ceramic tiles.

Francesca Fatta and Andrea Marraffa's contribution, entitled *Il Monetiere del Museo dei Brettii e degli Enotri di Cosenza: dalla decorazione analogica alla narrazione digitale* [pp. 556-583], starts from a careful analysis of a series of coins from the Greek and Roman periods that have been subjected to careful investigation. An initial phase of acquisition was followed by further investigation with the reconstruction of the three-dimensional figurative apparatus present on them. In this way, the scene described on became a narrative plot that made it possible to tell in animated form, with the logic of storytelling, what was present on the coin, as if it were a frame of the sequence.

Associated with these case studies of historical decorative apparatuses are other figurative modes that are not usual. One thinks of the historical use of lace and its revival, in its different regional declinations, as indicated by Sara Conte and Valentina Marchetti in the contribution *Decorazione strutturale e struttura decorativa: il rinnovato valore della tecnica del merletto* [pp. 584-605]; of light as a decorative apparatus, as proposed by Nicolò Sardo in *Disegni di luce. L'illuminazione artificiale come decorazione dell'architettura* [pp. 624-653]; to the use of tattooing as a decorative form that combines tradition and contemporaneity, as treated by Massimiliano Ciammaichella and Laura Farroni in *Pelli disegnate e indelebili decori del corpo* [pp. 684-709]; to the use of decoration in the art of weaving in Stefano Chiarenza's contribution, entitled *Linguaggio grafico e struttura decorativa nella produzione tessile modernista di Anni Albers*

[pp. 730-751]; to the fine use of decorative art in Alfons Mucha's graphic designs, as described in the two essays by Marcello Scalzo –*Comunicazione ed estetizzazione nei poster di Alfons Mucha: alcune note sul rapporto tra arte e pubblicità nella Parigi di fine Ottocento* [pp. 878-893]– and by Vincenzo Cirillo and Riccardo Miele –*Elementi di grammatica e sintassi decorativo-ornamentale di Alfons Mucha* [pp. 894-925]– which in different ways emphasize, on the one hand, the historical framework and, on the other, the geometric genesis of the figurative matrices.

Finally, we point out that, about the opening Loosian essay, it would also be useful to remember an important historical document, not mentioned in the volume: this is the film of the same title *Ornamento e delitto* by Aldo Rossi, Gianni Braghieri and Franco Raggi, which was presented at the XV Milan Triennale in 1973. Borrowing Loos's invective against ornament, the three authors –of whom the figure of Rossi is certainly central, given his role as head of the International Section of that event– proceed to a montage of film sequences by Luchino Visconti, Mauro Bolognini and Federico Fellini, supplementing them with video footage of the Milanese suburbs and punctuating the film with readings, some of them from texts by Adolf Loos, Walter Benjamin, Karl Marx and Hans Schmidt [2]. The video will be accompanied by the volume *Architettura razionale* [Bonfanti et al. 1973], which, although it does not quote the Loosian essay, conveys the principle of rationality and essentiality that –perhaps beginning with that 1908 text– will have such a wide echo in the Italian architectural scene.

Alberto Sdegno

Notes

[1] *Ornamento e delitto*, a film by Aldo Rossi, Gianni Braghieri and Franco Raggi, edited by Elver Degan Bianchet, directed by Luigi Durissi, Contemporafilm production, 1973, 42 minutes.

[2] The transcript of the texts can be found on pages 55-61 of the volume [Braghieri et al., 2010]. In the same book see also the contribution by Alberto Bocchini and Giulia Giancipoli on pages 61-65.

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Events

Events

2030 AD. Future Projections for Sustainable Design

Adriana Arena

The International Conference *2030 AD. Future projections for sustainable design*, which was held in Messina from 17 to 19 November 2022, obviously draws its reference from the ONU Agenda which, to the 17 objectives that embrace fundamental issues for sustainable development such as ending poverty, combating inequality and tackling climate change, adds a fourth theme concerning Living, as an articulated concept that underlies and interprets each attempt to act on any declination of sustainable development.
The Conference is set in a precise historical moment in our country in which, as Raffaella Lione, promoter and soul of the conference, states in the introduction to the volume of the Proceedings, "attention to sustainability, a transversal, interdisciplinary and intersectoral theme, can no longer be limited to being merely a dutiful act of responsibility and commitment, often insufficient or, worse still, merely strategic, but must become the motive for pragmatic actions aimed at obtaining concrete results" [1]. This awareness led to the setting up of the conference, in which the theme of Living was interpreted on apparently different registers, but in reality appropriately reconcilable, given that the leitmotif that animated the speeches over the two days of work was always the relationship that links the fate of our planet with our needs and, consequently, the actions to be implemented to preserve it for as long as possible.
Just reading the title alone lets you understand the dynamism of the contents: the term project, for those who understand drawing, implicitly implies a concept of movement, transformation and therefore a look towards the future, since every intervention that generates a change in a territory, in a building etc., inevitably determines an image that is different from the previous one that will characterize it from that moment on until the next change.
The topics identified by the coordinating committee, Raffaella Lione, Ornella Fiandaca, Fabio Minutoli and Alessandra Cernaro, made it abundantly clear that they wished to extend participation in this conference, which in fact originated within Ar.Tec. (Scientific Society of Technical Architecture), with the clear objective of gathering more points of view on a topic around which the scientific community has been debating for several decades. Scrolling through the topic titles, we understand how the theme of Living requires constant design research determined by its being in the process of becoming, that makes any analysis or theorization in progress outdated by the continuous change of scenarios.
The first topic, *Sustainable Communities: building, neighbourhood, territory*, proposes a reflection on the processes, methods and tools required for a design in which eco-sustainability is combined with the health of the inhabitants, social equity, and the quality of the built environment.
In the second, *Cultural Heritage: history, representation and design*, the theme of knowledge of the existing heritage is combined with aspects related to its conservation, which can no longer be separated from innovative approaches and digital technologies that also become a fundamental prerequisite for survey and representation.
In the third, *"Circular" technological innovation: process, project, resources*, the relationship between circular economy and technological innovation is analyzed, opening up topics such as the management of construction or demolition waste, the challenge of innovative materials and quality certifications.
In the fourth, *Health, well-being, safety: old and new models of living*, the theme of living is rethink within a new cultural, design and production condition as a goal to be pursued by looking at new contemporary challenges, re-examining consolidated typological models and experimenting with innovative distributive-functional and techno-typological solutions.
In the fifth, *Optimising the performance qualities of buildings: simulation and construction*, the performance quality of both

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new buildings and the existing building stock is looked at in relation to new comfort requirements.
In the sixth, *The digitalisation of the building process*, the phenomenon of the digital transition that has also affected the construction sector and that, in light of new platforms, such as GIS and BIM, and Augmented Reality and Virtual Reality systems, has undergone a deep revision aimed at automating processes.
The conference took place over two days in the Aula Magna of the Rectorate and the Department of Engineering. It was opened by the Magnificent Rector of the University of Messina, Salvatore Cuzzocrea, followed by the Director of the Department of Engineering Eugenio Guglielmino. This was followed by the greeting of Ar.Tec. President Fabio Fatiguso and the introductory talk entitled *Architecture versus Architecture* given by Luis Manuel Palmero Iglesias of the Polytechnic University of Valencia. Each topic session was preceded by 'introductory reflections' given by speakers representing the various disciplinary fields involved: for the first topic Santi Maria Cascone and Riccardo Gulli, for the second Francesca Fatta and Marina Fumo, for the third Rossella Corrao and Marco D'Orazio, for the fourth Domizia Mandolesi and Michelangelo Savino, for the fifth Rossano Albatici and Luigi Calabrese, and for the sixth Renata Morbiducci and Massimo Villari. Over the two days, 37 lectures and five reports were delivered in a single session.
A total of 104 papers were received, demonstrating the international scientific community's interest in sustainable living issues despite the diversity of approach methodologies, which is the feature that distinguishes and enriches multidisciplinary conferences.
An important opportunity for comparison, also patronized by the UID, between different disciplinary sectors in which there was no lack of contributions from ICAR/17 colleagues to emphasize the transversality of Drawing with respect to the proposed themes both in the application of the most innovative technologies in the field of relief and representation and in its more 'artisan' expressions: Sereno Innocenti's fascinating performance, who, in attendance, re-drew, as if for a sort of graphic restoration, the wash-houses of Santa Brigida in Genoa, comparing this experience with the perennial reconstruction of the Temple of the Treasure of Ise in Tokyo.
A festive occasion to say goodbye and thank Raffaella Lione who, with this last act, wished to celebrate the conclusion of her university career by giving the scientific community a further opportunity for dialogue and exchange of experiences; an appointment full of stimuli and challenges for the continuation of a research in continuous evolution and whose results will certainly animate the next conferences on the themes of the sustainability of living.

Fig. 1. Flyer of the event.

On the concluding day, the conference participants had the opportunity to visit the Horcynus Orca Park, set in the splendid setting of Capo Peloro and, within it, the MACHO Museum (Horcynus Orca Museum of Contemporary Art); the final stop, which marked the end of the work, was at the MuMe (Messina Regional Interdisciplinary Museum) where colleagues were able to admire in detail, among other works, paintings by Antonello da Messina and Caravaggio.

Notes

[1] Lione, R. (2022). Introduzione. In A. Cernaro, O. Fiandaca, R. Lione, F. Minutoli (a cura di). *2030 d. C. Proiezioni future per una progettazione sostenibile. Atti del Convegno internazionale.* Messina, 17-19 novembre 2022. Roma: Gangemi, p. 11.

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Events

DAI. Drawing for Accessibility and Inclusion

Valeria Menchetelli

On December 2nd and 3rd, 2022, in conjunction with the International Day of Persons with Disabilities (celebrated on December 3 each year since 1981), the first edition of the international conference *DAI. Il Disegno per l'Accessibilità e l'Inclusione* (DAI. Drawing for Accessibility and Inclusion) was held in Genoa. This is an interdisciplinary discussion space created for the presentation and sharing of application experiences and research activities focused on the issues of accessibility and inclusion, and linked by the use of knowledge, methods and tools peculiar to the discipline of Drawing. As announced by the conference call for papers, in fact, "In recent years, scholars in the field of Drawing and Representation have been paying increasing attention to the issues of accessibility and inclusion of diverse audiences in various spheres of daily life and from spatial, socio-cultural, and cognitive perspectives. Research concerning and experimentation on these emerging issues are increasing in contemporary society through the use of techniques, strategies, and methods founded on the disciplinary Drawing tradition". The aim of the conference was, therefore, to build an open field, itself inclusive, within which to gather the experiences of scholars working in various ways on issues of accessibility to outline possible paths of interdisciplinary investigation and to facilitate the creation of research groups or networks, including international ones, that can capitalize on their expertise and the diversity of their points of view to provide effective and competitive solutions to the challenges emerging from contemporary society.
The conference, promoted by a group of scholars belonging to the Drawing community who have long cultivated an interest in the issues of accessibility and inclusion by sharing a common cultural ground (Marco Giorgio Bevilacqua, Cristina Càndito, Enrico Cicalò, Tommaso Empler, Alberto Sdegno), was sponsored by the associations AISM (Associazione Italiana Sclerosi Multipla - Italian Multiple Sclerosis Association), ALI (Associazione Ligure Ipoudenti - Ligurian Hearing Impaired Association) and UICI (Unione Italiana dei Ciechi e degli Ipovedenti di Genova - Italian Union of the Blind and Visually Impaired of Genoa), which operate in the tertiary sector and face real-life scenarios on a daily basis, acknowledging the needs expressed by the many specific situations and proposing concrete answers to the instances that emerge from the experiences of illness, handicap or disability. The presence of these associations made it possible to trigger and make proactive a much-needed dialog between researchers, who often approach their investigation areas with a theoretical outlook not always related to real case studies, and practitioners, who live the daily experience of non-inclusion often not being able to access advanced solutions or experimental pathways.
The conference has taken as its acronym the abbreviation *DAI* (Come on), which, in addition to summarizing the reference areas, is enriched with an exhortative meaning: an encouragement to overcome the excluding obstacles and difficulties that preclude the full involvement of all people in the various spheres of social life, but also an incentive for researchers and planners to discuss and engage in a complex and as a yet little-explored field of inquiry, as stated in the call for papers.
The program occupied two days; the opening morning, coordinated by Cristina Càndito, chairwoman of the first edition of the conference, included a representative series of institutional greetings: Angela Celeste Taramasso, Rector's Delegate for Equal Opportunities and Inclusion of the University of Genoa; Adriano Magliocco, Deputy Director of the Department of Architecture and Design of the University of Genoa; Cinzia Leone, coordinator of European research projects on the themes of

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equality, accessibility and inclusion; Cristina Bellingeri, Disability Manager of the Municipality of Genoa; and Francesca Fatta, President of the Unione Italiana per il Disegno. Cristina Càndito's opening speech introduced the reasons for the conference, declaring its purpose in light of a renewed definition of the concept of disability, no longer confined to material issues found in architectural or environmental space, but instead extended by incorporating the guidelines of the United Nations Convention on the Rights of Persons with Disabilities, signed in 2006 and ratified by Italy in 2009. In fact, the objective of the Convention is to "promote, protect and guarantee the full and equal enjoyment of all human rights and fundamental freedoms by persons with disabilities, and to promote respect for their inherent dignity", where disability lies in the set of conditions that, in relation to the presence of barriers of different kinds (physical, psychological, sensory, cognitive, social), impede the full participation of people in society, based on the principle of equality among citizens. The same concepts were argued with great clarity in the keynote speech by Maria Giulia Bernardini, a philosopher of law and researcher at the University of Ferrara, who emphasized the fundamental legal transition taking place from the medical model used by the ICIDH (International Classification of Impairments, Disabilities, and Handicaps), which provides for the classification of disabilities according to their type, to the social model proposed by the ICF (International Classification of Functioning) in 2011, which no longer takes into account diagnosed limitations but the individual's functioning abilities, highlighting an evolving concept of disability and reversing the normative approach in a positive way. The conference sessions focused on four topics, with the title, borrowing from that of the conference itself, adding the adjective related to the specific thematic areas identified: Drawing for spatial, socio-cultural, cognitive, psycho-sensory accessibility and inclusion. Approximately 25 contributions were featured within the sessions, returning an overview of the experiences conducted by the participating authors and research groups. At the conclusion of the first day, the round table discussion with the spokespersons of the associations representing people with disabilities took shape as a particularly significant moment, capable of expressing the profound sense of the conference by achieving its overriding purpose, which is to build effective relationships between scholars active in accessibility research and social workers in the tertiary sector. The testimonies reported by the associations allowed clarifying some detailed aspects, highlighting the needs of people with disabilities with greater concreteness and precision and widening the margins of the investigation fields in a concerted and interdisciplinary way, as the slogan 'nothing about us, without us' incites the participatory design of solutions for disability. Specific conditions such as deafness (represented by Effetà Liguria - Conoscere la disabilità uditiva, Associazione per la difesa dei diritti degli audiolesi - Knowing Hearing Disability, Association for the Defense of the Rights of the Hearing Impaired, and ALI, Associazione Ligure Ipoudenti - Ligurian Hearing Impaired Association), blindness (represented by UICI, Unione Italiana dei Ciechi e degli Ipovedenti - Italian Union of the Blind and Visually Impaired), autism (represented by ANGSA Liguria Onlus, Associazione Nazionale dei Genitori di Persone con Autismo (National Association of Parents of Persons with Autism) and multiple sclerosis (represented by AISM,

Fig. 1. Cover of the book of conference proceedings.

Associazione Italiana Sclerosi Multipla - Italian Multiple Sclerosis Association) bear physical, cultural and psychological needs that require a commitment to ensuring maximum autonomy in decision-making and use for people with disabilities. In this type of response, the different application areas of the discipline of Drawing lend themselves ideally to the versatility of communicative solutions (from graphic language to wayfinding systems) and of interaction between user and real space (from multisensory to tactile model) or virtual (from augmented reality to services in the metaverse). The crucial theme reported by the associations, on which numerous experimental initiatives operate, is that of identification, emblematized among others by the experiential workshop on multiple sclerosis *Senti come mi sento*

(Feel how I feel), itinerant throughout the national territory, aimed at enabling, by means of special simulator devices, the direct experience of the conditions and physical sensations associated with the pathology.
The venue and the way the conference took place were also established in the spirit of expanded accessibility: the two days were held at the Sala Quadrivum in Piazza Santa Marta, a conference hall with a high degree of both physical and auditory accessibility due to the presence of ad hoc technological facilities. Participation was allowed in blended mode to ensure maximum adherence even remotely; in addition, a stenotype service with real-time subtitling made accessibility strategies even more effective. During the conference, a space dedicated to the exhibition of tactile models and maquettes enabled blind people to come into direct contact with the applications and research topics presented by the speakers.

The volume of the conference proceedings, published in open access by Publica and available as early as the days of the initiative, brings together the 50 contributions proposed by nearly 90 authors, and bears witness to the lively activity of a large group of scholars who, for some time and with diverse skills and interests, deal with issues related to accessibility and inclusion. The mosaic of experiences given back by the volume reaffirms a now well-established approach in the field, aligned with the cultural transformation that from the penalizing label of disability, applied to a narrow category of people and de facto stigmatizing, has moved toward the virtuous pursuit of the requirement of accessibility, understood as a positive quality attributed to solutions, services, spaces and places designed to cancel diversity and receive the multiplicity of needs expressed by an inclusive society. This approach has physiologically incorporated all recent normative and strategic guideline references on the issues involved, debunking one of the most sterile clichés on the subject of disability, namely that it is a condition that affects a minority of people, stereotypically identified by the universal symbol, exclusionary in itself, of the wheelchair. On the contrary, disability takes many forms, often invisible or however undetectable, and requires not only the use of a perspective of critical relativism, but above all, to consider the evolving nature of the human condition, which inevitably places each individual, in the course of his growth, in front of the need to experiment with reduced ways of using and accessing spaces, knowledge and services. It is only through this progressive awareness that it is possible to acquire the importance of the shift from the goal of equality to that of the protection of difference, which implicitly places the individual at the center of choices by ensuring that he has the conditions to independently and actively influence society.

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Events

La ricerca che cambia
Terzo convegno nazionale dei dottorati italiani dell'architettura, della pianificazione, del design, delle arti e della moda

Sonia Mollica

The third national conference of Italian doctorates in architecture, planning, design, arts and fashion (figs. 1, 2) –promoted by the doctoral school of the Università Iuav di Venezia– aims to provide a complete picture of the status and prospects of doctorates of the scientific areas involved, analyzing what are and what may be the first openings with respect to today's surrounding territorial and productive reality.
Eight years after the first conference held in 2014, the objective of the third conference is to consolidate the information pertaining to doctoral courses, with a further opening towards the field of the arts, allowing to formulate some initial reflections on the trajectories of change in research. The means by which to capture and systematize the changes in the doctoral courses is the observatory –undertaken by the second edition of the conference held in 2016– administered before the beginning of the conference to the coordinators of the doctoral courses, to PhDs with qualification obtained starting from 1 August 2019 and to PhD students of the first and second doctoral year.
The conference, held on December 1st and 2nd at the Badoer palace in Venice, was divided into parallel thematic tables, operational workshops/seminars and plenary sessions.
During the morning of the first day, the opening plenary session of the conference was held, divided into: introductory reports to the conference, in particular by scholars whose cognitive contribution was useful to enrich the critical reflection of all the conference participants; interventions by the discussants present at the parallel thematic tables; interventions by the doctoral coordinators and representatives of the doctoral students, concluding the session in an open discussion with free interventions.
Moderated by Maria Bonaiti (Deputy Director of the Iuav Doctoral School), the morning opened with institutional greetings from Benno Albrecht (Rector of the Università Iuav di Venezia) and with the introduction to the conference by Maria Chiara Rosi (Director of the Iuav Doctoral School). Therefore, various interventions aimed at analyzing the status of doctoral students and research followed one another, as is the case with the contributions of: Enrico Montaperto (General Directorate of Higher Education Regulations, MUR) regarding the future of the doctorate, research and Innovation at the service of the country; Simone Venturini (Member of the Evaluation Expert Group (GEV) of Area 10, University of Udine) with an analysis of the state of research in the area 10; Alessandro Balducci (National Coordinator of the Group of Evaluation Experts (GEV) of Area 08, Politecnico di Milano) with an analysis of the state of research in the area 08; Mario Lupano (Università Iuav di Venezia) with an in-depth examination of the state of research today. The interventions that followed during the plenary session found foundation and support in the observatory data and presented by the scientific committee of the Iuav doctoral school, with the contribution *Verso un Osservatorio della ricerca di dottorato: temi e questioni*.
The afternoon of the first day saw the succession or overlapping of operational workshops/seminars and parallel thematic tables.
The workshops/operating seminars have been designed to bring together, on the one hand, the coordinators and professors belonging to the doctoral programs participating in the conference, and on the other, the representatives of the doctoral programs participating in the conference. Each workshop was organized according to fields, affinities and disciplinary issues, focused on the discussion of: themes, approaches, organizational aspects, criticalities and potential of doctoral research, innovative doctorates, national

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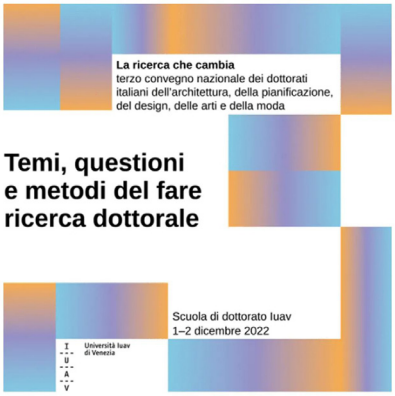
doctorates, consortia, PON funding, PNRR and future strategies, European agenda of research. Each workshop/ seminar was organized and managed by the participants themselves, the results of which were presented by the individual table coordinators during the final plenary session. The roundtables have seen as the main theme different research topics in the following scientific disciplinary sectors: ICAR/10-12 (Technological design of architecture); ICAR/13 (Design); ICAR/14-16 (Architectural design); ICAR/17-19 (Drawing, Restoration and History of Architecture); ICAR/20-21 (Urban and territorial planning and design); ICAR/13/L-ART/02-06 (Arts, Fashion and Theatre). The individual operational seminars divided according to scientific disciplinary sectors saw a final general table introduced and coordinated by Giovanni Marras (Università Iuav di Venezia).

Simultaneously with the workshops, the different parallel thematic tables of the 60 PhDs and PhD students from different disciplines and different universities followed one another, selected through calls for papers with a blind review mechanism organized on the disciplinary skills of the evaluators. Coordinated by discussants identified among the professors belonging to the doctorates participating in the initiative, the thematic tables were divided according to ten key words: community; contexts; emergencies; evolutions; hybridizations; intelligences; models; narratives; tools; transitions. These sessions were not configured as presentations or reviews of the progress of the theses but rather as opportunities for dialogue and discussion on research methods and approaches.

The ultimate goal was in fact to map and reflect on the specificities and convergences of the ways of approaching research in the various disciplinary areas of architecture, planning, design, the arts and fashion. Each parallel session, developed in spaces set up with large tables around which the researchers and discussants took part, saw a presentation lasting about 15 minutes of the theses of 4/5 doctoral students/ research doctors belonging to the following scientific disciplinary sectors: ICAR/10; ICAR/12; ICAR/13; ICAR/14; ICAR/16; ICAR/17; ICAR/19; ICAR/20; ICAR/21; L-ART/02-06.

The morning of the second day saw the succession of three parallel tables: workshop; parallel thematic tables/doctoral research; table of representatives of doctoral students. The workshop saw the parallel development of three tables, named and coordinated as follows: *Interdisciplinarità, multidisciplinarietà, Dottorati condominio* e *Dottorati nazionali* (introduced and coordinated by Alberto Bassi and Alessandra Vaccari, Università Iuav di Venezia); *Forme di produzione della ricerca dottorale, forme di scrittura della tesi* (introduced and coordinated by Maria Bonaiti and Stefano Munarin, Iuav University of Venice); *Rapporti con il territorio, il mondo delle imprese* e *le modifiche introdotte dal PNRR* (introduced and coordinated by Raffaella Fagnoni and Fabio Peron, Università Iuav di Venezia). The parallel thematic tables saw the continuation of the presentations of the 60 doctoral researches, while the table of representatives of the doctoral students focused in parallel on the debate –introduced and coordinated by Alberto Bretini and Giovanna Muzzi (Università Iuav di Venezia)– pertaining to the following topics: national networks, contents, methods, organizational aspects, critical issues and potential of those who personally carry out doctoral research.



Università Iuav di Venezia

La ricerca che cambia
Terzo convegno nazionale dei dottorati italiani dell'architettura, dell'urbanistica, della pianificazione, del design e delle arti

Università Iuav di Venezia,
Scuola di dottorato
1–2 dicembre 2022

promosso da
Scuola di dottorato Iuav
Maria Chiara Tosi, Direttrice

Università Iuav di Venezia
Benno Albrecht, Rettore

a cura di
Maria Chiara Tosi, Direttrice della Scuola di dottorato Iuav

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Progetto grafico e visualizzazione dati
Lucilla Calogero (coordinamento)
Marco Mezzadra
Elena Cavallin, Cinzia D'Emidio, Carmelo Leonardi, Maria Manfroni, Giulia Nicosia

Figs. 1, 2. Flyer and colophon of the conference "La ricerca che cambia".

Finally, during the afternoon of the second day, the final plenary session was held moderated by Maria Chiara Tosi (Director of the Iuav Doctoral School), during which the discussants reported the outcomes of the workshops, thematic tables and parallels of doctoral research.
The third national conference of Italian doctorates in architecture, planning, design, arts and fashion ultimately aimed to monitor the changes that have taken place since 2016 in the doctorate, helping to interpret them in the long term.

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Events

ARTEDU 2022 - Educating to Art / The Art of Educating

Barbara Tramelli

The National Conference on the Didactics of the Figurative and Performing Arts *ARTEDU*, took place at the Faculty of Education of the Free University of Bozen on 14 and 15 December 2022 in Brixen, under the scientific responsibility of professors Alessandro Luigini (Graphic and visual sciences), Chiara Panciroli (Educational processes) and Paolo Somigli (Performing arts).
With the title *Educating to Art / The Art of Educating*, the 2022 edition focused on the tools for the education in the visual and performing arts, which are constantly evolving thanks to the constant development of digital environments and technologies in the post-pandemic phase.
The first common thread in the parallel sessions was a discussion on the processes and methodologies that are experimented in different contexts to highlight and decode the artistic contents and the complexity of the cultural heritage in all its aspects. The conference brought together experts in the fields of graphic and visual sciences, pedagogy, design and more: significant was the number of participants who work in schools and museums, which demonstrates a wide interest in the topic and the explicit aim of bringing together scholars and operators in the cultural field to create a dialogue.

The various theoretical reflections were also united through the fundamental aspect of language, or rather of the languages used for the enhancement and application of artistic knowledge in all its forms: from theoretical reflections on the use of digital technologies (Giancarlo Grossi, Giuseppe Previtali, *Dal virtuale al reale. Ripensare l'educazione all'immagine nell'era dei media digitali*) and artificial intelligences (Chiara Panciroli, Pier Cesare Rivoltella, *Pensare oltre i confini. Spazi e forme della creatività al tempo dell'Intelligenza Artificiale*), to the practical discussion of various case studies concerning art education in different contexts and spaces, from laboratories (Manlio Piva, *Educazione artistica e Outdoor Education. Spunti di laboratori didattici interdisciplinari per la scuola primaria fra analogico e digitale*) to museums (Marcella Colacino, *Museo e educazione alla complessità. Riflessioni sull'educazione all'arte, per l'arte, con l'arte*). There were also several sessions focused on the methodologies of 'object-based learning' and 'art-based research' (Carlo De Medio, Rosita Deluigi), which denote the tendency (and the intrinsic need) to use new digital technologies by integrating them more systematically with the research on the field.

Furthermore, the user and his/her ability to see and experience art in and with all the senses was a topic discussed by various sessions: there were several contributions that presented 'knowing how to see' and 'learning to see' as central points of reflection (some titles: *Vedere significa comprendere?; Imparare a*

Fig. 1. Flyer of the event.

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vedere; *Vedere e comprendere con le tecnologie*; *Gli approcci del visible thinking*).
Finally, the keynote speeches by professor Giorgio Camuffo and professor Kuno Prey from the Faculty of Design and Art of the Free University of Bozen testified to the importance of communicating both the practical and theoretical contents of a complex discipline such as Design, as well as the fundamental role played by the students, who must be guided and at the same time left free to express and develop their artistic and educational paths.
In this perspective, one of the undoubted merits of the *ARTEDU 2022* conference was that it gathered teaching experiences from formal and non-formal contexts (universities, schools, museums, laboratories), which led to a discussion and a multi-voiced reflection on the tendencies and on past, current and future research projects for a creative and conscious education to art.

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