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Writing the Architectural Space: Ludovico Quaroni's Lesson in Space and the Limits of Visual Representation of Architecture

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ABSTRACT

In his 1977 book Progettare un edificio*, the Italian architect Ludovico Quaroni dedicates some pages to describe the* Space Effect*. Through a first-person narration, he invites the readers to apprehend with their imagination the effects of movement and the experience provided by elementary volumes and spaces. After various explorations, which seem to drive the readers from the abstract to the material world, the route ends into a dome-covered cylinder, which gradually turns out to be the Pantheon. The text, which is inspired by literary techniques and cinematic visions, not only states the theatrical nature of architecture but also indirectly affirms the specificity of the written language both in mentally engaging the reader and in describing space even beyond the architectural representation's capabilities.*

Keywords*: Ludovico Quaroni, written architecture, visual perception, experience of space, architecture description, architecture representation.*

Introduction

Ludovico Quaroni's *Progettare un edificio: Otto Lezioni di Architettura* is published in 1977. The cover of the first run (Fig. 1) features a colorful sketch of the Acropolis of Athens made by Louis Kahn during his 1951 travel and, somehow, the entire book seems to be pervaded by the need for a new balance between experience and meditation, subjective and objective, ancient and modern. In the fourth chapter, Quaroni dedicates some pages to describing the effects of the architectural space. To initiate the reader to the capability of space to produce visual effects and bodily sensations, he adopts an unusual novel-inspired first-person writing style that allows to consider and analyze these pages as an *unicum* in the book. After digressing the term 'space' in the architectural discussion and commenting the crucial passages of Quaroni's text, we analyze the textual strategy adopted by the architect to involve the reader, in particular the young students to whom the book is addressed to. We underline the explicit architectural and figurative references in the text and identify the implicit ones; we discuss the theatrical quality of the space evoked by the words as well as their educational functions. We finally reflect on the limits of the architectural representation evoked by Quaroni describing the space of the Roman Pantheon, where he concludes his *promenade architecturale*.

Fig. 1. Ludovico Quaroni's *Progettare un edificio.* Cover of the first run.

Ludovico Quaroni

Ludovico Quaroni (1911-1987) has been an Italian architect and urban planner. In the late 1930s, he began his practice as a designer and teacher at the School of Architecture in Rome. He took part in important architectural design

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competitions for public buildings and established relationships with the most active groups of Italian architectural avant-garde. During the war, he suffered from a five years long imprisonment in India. Back in Rome, Quaroni intensified his urban studies and contributed to the Italian post-war reconstruction, both in theory and practice. His association with Adriano Olivetti, the emerging of the British picturesque concept of Town Planning and a teaching experience at the MIT in Boston around 1958, during which he got in touch with both Louis Kahn and the researches of Kevin Lynch and Gyorgy Kepes on *The Perceptual Form of the City* (1954-59), convinced him to promote a closer relationship between visual perception, the role of architecture and the urban form. This address can be appreciated both in his photographic books (*Immagine della città*, 1968; *Immagine di Roma*, 1969) and in several of his urban projects. The years spent teaching in the universities of Naples (1951-55), Florence (1957-64) and Rome (1965-81), allowed him to be recognized as a master by generations of architects. Under the name of *disegno urbano*, he conceived a large cultural and didactic project that aimed precisely at keeping together aspects, which at the time seemed to belong to distant professional and theoretical fields. As confirmed by the architect Giancarlo Rosa in an interview with the author of this paper, in the 1970s Quaroni planned the organization of a three-year long course of Architectural Composition in a crescendo of dimensional scale - from the building to the district and the city. At the same time, he wrote a series of lectures to focus the architect's formation on these major themes. In 1977, Quaroni published the first corpus of eight building-oriented lessons in the book *Progettare un edificio: otto lezioni di architettura* ('Designing a Building: Eight Lessons in Architecture'). On the inducement of Rosa himself and Gabriella Esposito, Ludovico Quaroni's wife, the part of the manuscript dealing with the city has been published posthumously in 1996 in the book *Il progetto per la città: dieci lezioni* (Design for the City: Ten Lessons) (Quaroni, 1996). His manuscript on designing the district still remains unpublished.

Talking of Space

While the work of Ludovico Quaroni as an architect, urban planner and cultural figure has been widely investigated (Tafuri 1964, Terranova 1985, Orlandi 1986, Ciorra 1989, Carpenzano and Toppetti 2006, Riondino 2012), his writings have received less attention. Instead, they can reveal much of not only his way of understanding the design practice, but also his omnivorous curiosity and interest in 'all of the innovations coming from the figurative world' (Livio Quaroni quoted in Riondino 2012: 467). Among the various topics discussed in *Progettare un Edificio*, Quaroni faced the problem of teaching what the 'space' is and the effects it may produce on people. He dedicated the entire fourth lesson to this theme, also by integrating his words with in-depth sheets edited by his collaborators Francesco Cellini, Antonino Terranova and Paolo Melis and dedicated to the scientific concepts of 'type', 'model', and 'space'.

It is important to remind that architects' consideration of 'space' as a fundamental entity is a recent matter. Before 1890, the word 'space' practically did not exist in the architects' vocabulary (Forty 2004: 267). Its adoption, although with different semantic nuances, is closely linked to the intuitions of a few modern architects, such as Rudolf Schindler and Theo Van Doesburg (Mattens 2011:105); to the development of physical-mathematical definitions (Jammer 1966); and to the artistic interpretations by Gottfried Semper, Alois Riegl and August Schmarsow. In particular, by qualifying the importance of the experience of space in architecture in opposition to the peculiarities of painting and sculpture, these theoreticians contributed to identify the *Raumgestaltung* as the central theme of 20th century architecture while maintaining a certain ambiguity about its features (Gullberg 2016). Obviously, the space as a void was always conceived and described in relationship with the three-dimensional limit that circumscribes it and makes it visible. Sigfried Giedion's (1941) *Space, Time and Architecture* was decisive for introducing the 'space-talk' in the 'critical vocabulary of American and English architects' (Schnoor 2011). Two years later, Nikolaus Pevsner (1943) readdressed the mission of the historian of architecture on the theme of space, too (Draper 2004). Bruno Zevi (1948: 58) radicalized this position by declaring that 'what has no internal space is not architecture'. He raised the 'space' to the fundamental and discriminating category to judge the outcomes of modern architects (Van de Ven 1987), although he did not contribute to univocally define the properties and qualities of the architectural space.

Le Corbusier made the issue even more ambiguous and elusive. In the post-war years, he elaborated the term *espace indicible*, literally intended as a space that deceives every possible description and that can only be experienced in bodily and spiritual terms. Over the years, Le Corbusier himself produced different and even contradictory definitions of his idea. Mickaël Labbé (2015) has revealed this ambiguity is also due to its long elaboration across a series of editorial commitments between 1946 and 1953. Le Corbusier needed not only to write a definition of something indefinable by nature, but was also asked to translate it into other languages. In particular, for *New World of Space* (Le Corbusier 1948), a book designed to present his idea of *espace indicible* in English, he initially proposed 'Ineffable Space' and then 'Space beyond Words' (quoted in Labbé 2015: 1096).

In the same years, by presenting enquires on the space from different disciplinary approaches, other scholars (Kepes 1944, Arnheim 1954, Bachelard 1957, Rasmussen 1959, Hall 1968) contributed to a sort of progressive and unaware identification of architecture with space as well to the idea that 'The ultimate quality of architecture would therefore lie in the resistance to description; [it] (...) would be intrinsically untranslatable in another language, much less transposed by the complexity of the three dimensions to the linear succession of the story' (Corbellini 2016).

The Spatial Effect

The fourth chapter of *Progettare un edificio* is dedicated to the 'Space'. After some premises aimed at clarifying terms such as 'structure,' 'model,' and 'type,' and others to distance himself from Beaux-Arts tradition terms such as 'volume' and 'mass', Quaroni proposes a paragraph entitled 'The Spatial Effect'. This text has the task of explaining the opportunities of space to those who have not yet acquired one through experience. 'In spite of the risks that the operation presents, I will therefore try to describe in words what is meant by sensation and spatial effect, to deduce its importance in the design' (Quaroni 1977: 81). To do this, he adopted an exceptional form of writing, both in his context of the book and in the wider scenario of the architectural literature. Over the length of four pages, his writing passes from the figure-referred description-and-analysis of concepts and places of any ordinary university book to a first-person narration.

> I imagine two cubes standing in front of me, on a flat ground, each side apparently six-meters sized. These two cubes are abstract, closed, with no surface quality, no thickness, no color, like a De Chirico's painting of the Surrealist period. The ground itself is abstract, incorporeal like a stage, and the sky is missing, too, matte black. The precise gradient of the light illuminates some faces while others are either shaded or in dim light; a cube casts its shadow on the other one but I cannot see the light source (Quaroni 1977: 81).

The mental journey proposed by Quaroni begins in an abstract space which shows pictorial and theatrical qualities. 'Both the cubes are so light that I can move one with my hand: and here different spatial sensations come to me, depending on the mutual position of the two solids' (Quaroni 1977: 81). The sensation is static as long as the cubes are parallel but it becomes 'dynamic' or 'acute' as 'one of them moves, and revolving on itself, orients one of its edges towards the center of one of the other's faces, leaving only a two-meters passage to let me get through' (Quaroni 1977:81).

> Suppose now that it is possible to get into one of the cubes, through a door in the middle of one of its vertical faces. When seen or perceived from inside, the cube looks completely different than the same cube seen or perceived from outside. It is a single and unique geometric figure: but geometry is an abstraction while a cube that I can either see from outside or enter is a spatial entity. (...) Inside the feeling is static, a perfect balance: six identical square walls with the same right angles (...). Everything is too uniform, too still, steady, dead and this instills in me the desire of leaving such a lack of dialectics, contrasts, asymmetries and dynamism (Quaroni 1977: 81-82).

After exhausting the description of the static effect produced by the typical Renaissance perspective box perceived on its symmetry axe, Quaroni explains a different kind of effect belonging to vanguards' accomplishments.

> (...) Nonetheless, while approaching the exit, I see the latter cube, just a few steps away.

> It is looming, threatening (...), and it could push me back unless there were a door in the corner, which is as large as the door in the former cube (...). I get inside: the latter cube is as large as the former, but the direction along which I'm moving and perceiving it is the diagonal one, and it results a very different spatial dynamic effect, which is lesser static and indifferent, and much more dynamic and exciting (Quaroni 1977: 82).

The visual perception inside the both cubes is disturbed by the smooth and immaterial surfaces, which present no articulation, pattern, or color.

> (...) But suddenly the walls are lightening up with color: the ceiling are becoming even more dull, specifying this quality with an intense black, while the white floor is getting brighter and brighter and the walls are defined chromatically all of pure, alive, and violent red (...) but everything lasts for a few moments, and the colors change again: now the six faces of the cube are all different: a purple-red, a turquoise, a dark and bright blue, a light emerald green, a rotten green, a light grey. The sense of exaltation is replaced by a sense of composed elegance, while the destruction of symmetry revitalizes the dynamic effect (Quaroni 1977: 82).

After introducing the perceptual agency of colors, Quaroni presents a different group of solids.

> (...) When I get out, I find that three cylinders have replaced the former cube. Apparently identical in their size, they are equally distant from each other and symmetrically disposed with respect to the cube's diagonal of te (...). A restful sense of harmony resulting of them prevents me from staying still and pushes me to get among the elusive curves. As soon as I cross the narrow space between the left cylinder and the central one, many more cylinders appear: an immense and not very convex cylinder (...), others of various diameters and heights, placed at very variable distances. The view, beyond the closest cylinders, is lost on a large space at the end of which a semi-cylinder that shows its concave side seems to collect and close all of them, as huge as this landscape of curved solids. Following my architectural promenade (Le Corbusier), I slide along the wall of a cylinder placed on the left and then I leave it for another one placed on the right a little further back (...): a S-shape path (Quaroni 1977: 82-83).

The landscape of cylinders is only a mazy prelude to the final event.

> (...) Here is a much larger cylinder with a door that attracts and invites me: my path continues, but in an opposite way. While before I was following, attracted by the wall, a convex surface, now, still seduced by the same wall, I am forced to follow a concave surface, with a completely different spatial effect (...). Suddenly, the cylinder seems to dilate, getting bigger. I lose the sense of the curvature and my steps slow down, up to getting indifferent (...). And I see that the walls, which until this moment had been vertical and open to the sky, start to bend and to close towards the center, leaving only one single eye for the light of the sky. A sun ray diagonally crosses the hall, making the atmospheric dust visible (Quaroni 1977: 83).

The end of the trip is near. Geometric abstraction is gradually being replaced by material effects and the Emerald City at the end of the Yellow Brick Road is finally unveiled.

> I'm inside the Pantheon, and the cylinder is now a building, articulated in niches, frames, fake windows, and coffers that mark the vault. [It is] A completely closed compartment, except for a minimum crack between the huge bronze doors and that eye, up there, which directly connects this space with the outer universe (Quaroni 1977: 83).

At the end of his trip, Quaroni reflects on the Pantheon's space and adds a final consideration on the relationship between space and representation.

> I realize here the impossibility we have of rendering the spatial effect of a building through the drawing. The drawing is in scale and therefore it is not capable of restituting the dimensional effect on people, which is very important (...). The sectional drawing clearly shows how [the Pantheon's] height and width are the same, but it gives no idea of the effect of heaviness and lightness of

the dome, which appears as an abstraction if compared with the materiality of the sun illuminating the thickness of the eye on one of its side (Quaroni 1977: 84).

Considerations on Quaroni's promenade

As mentioned, Quaroni conceived this book as part of a modern treatise on architectural design, from the building to the city. He also discussed topics, such as the Vitruvian triad, that relate his book to the noblest tradition of architectural literature. This is widely reminded by the 396 references in the bibliography, whose entries reveal also his main sources for topics such as 'Perception' and 'Space in Architecture' that are central to the elaboration of his written promenade. However, this copious bibliography does not offer all the answers. For example, it apparently lacks of any of Colin Rowe's writings. It is likely that the reading of some of his essays, such as those collected in *The mathematics of the ideal villa and other essays* (Rowe 1976), legitimized the opportunity of his description of the space effects. Rowe 'is in fact one of the few post-war historians to have conveyed differentiated spatial analyses of modern architecture,' especially through their interpretation as events '"contaminated" with ambiguity and active character' (Schnoor 2011). On the other hand, Quaroni's writing lacks the use of terms borrowed from hydraulics and mechanics such as 'pressure' or 'tension', which are so common in Rowe's architectural descriptions, while terms such as 'static' and 'dynamic', which belong to Rudolf Arnheim's vocabulary, abound. Added to this, one must consider Le Corbusier's idea of *promenade architecturale*, the perception of a man walking with his eyes 170 cm high from the ground, which is so central to his architectural work. Other conjectures are here attempted by analyzing the text in relationship with media (inter-medial references), imagery (hidden iconography) and target (didactic functions) in the general frame of the conflict/contamination between description and representation.

Inter-medial references

Rather than trying to explain the spatial effect by describing some of world-wide known buildings, Quaroni chose to evoke the experience of a walk in a city by transferring it to a stage, a micro-city of elementary volumes explored through his own eyes and sensations (Fig. 2). The use of the first person in academic works, which has been recently discussed and encouraged (Webb 1992, Davies 2012), has the effect of introducing a sensorial and emotional factor in the reading, qualifying it as a sort of cinematic trip full of special effects in the 'wonderful city' of Ludovico Quaroni.

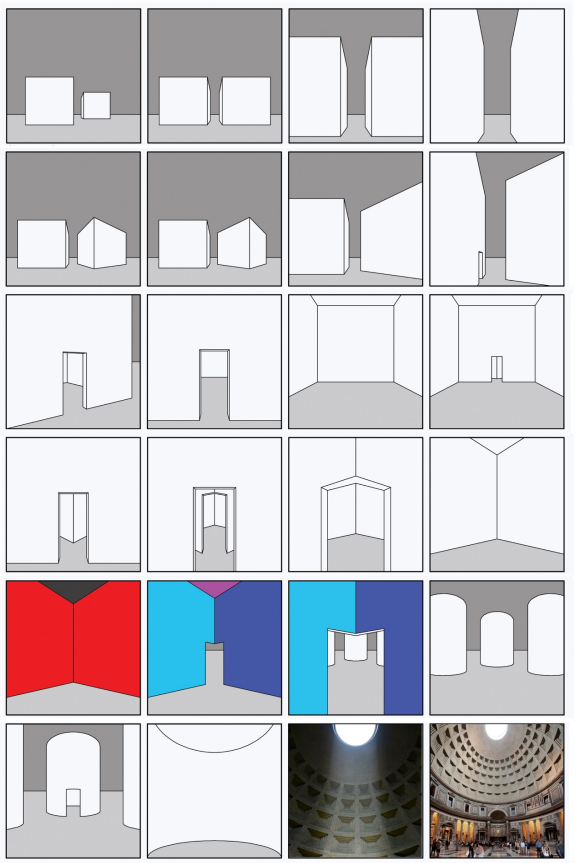


Fig. 2. Fabio Colonnese, visual reconstruction of Ludovico Quaroni's lesson in space, 2016

While the content of his itinerary is inspired by reflections and memories accumulated in seventy years, in the familiar Roman explorations as well as the exotic spaces of the Islamic cities, the form of his *hypotyposis* is inspired by novels. In a manual or treatise, the description of a place or building, even if only a fantastic place, is expected to be objective, structured and precise, with measures and details. The French novelist Alain Robbe-Grillet often adopted the idea of objective space in his short stories, providing such meticulous descriptions to make the space itself ambiguous due to an excess of data and the lack of pertinences on which to structure the mental

image (Eco 2004: 190). On the contrary, Quaroni's *hypotyposis*, which is so poor in features and details, leaves so much free space for the imagination. The readers are unconsciously called to borrow pieces from their own personal imagery to cooperate in the definition of the mental image. This makes them a sort of co-author of the narrative space itself. The only 'apparently' certain measures - the 6 meters side of cubes and the two meters distance between them - are provided at the beginning of the text. Some later elements are simply compared to the cubes but the reader is given no more dimensional clue about both the other solids and distances between them. In some cases, such as either the second arrangement of colors in the inner faces of the latter cube or the size of the three cylinders, the description appears to be deliberately ambiguous, indefinite. After a crystalline, almost mathematical start of the trip, the space acquires essentially topological characteristics by entrusting the description to terms such as 'a few steps away', 'near', 'behind', 'on the left', and so on.

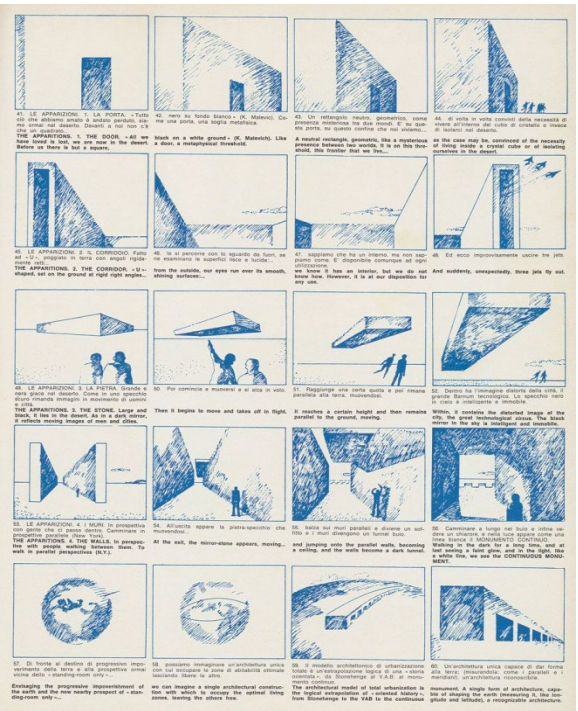


Fig. 3. Superstudio, Storyboard for a film on the Continuous Monument, 1972

This feature could result of a precise narrative strategy borrowed from novelists. It can be compared with illustrious examples of the past. For example, Giovan Battista Marino's description of the castle in *Adone*, 1623, initially offers the readers crystalline geometries with explicit measures but almost imperceptibly it leads them into an inconsistent accumulation of forms and details which transcend into an allegorical and dreamlike dimension (Günther 2016). Likewise, Jorge Luis Borges begins the description of his Library of Babel with mathematical precision, as if the narrator were reading shapes and measures from a plan in his or her hands, to introduce later elements of ambiguity that make it impossible to be understood and visualized (Giovannoli 2015). At the same time, the narrative model of the human perspective in a mazy context could be referred to the description of the Battle of Waterloo in Stendhal's *The Charterhouse of Parma*, 1839, 'seen by the protagonist, Fabrizio Del Dongo, who is inside it and who gets lost in the space he crosses haphazardly' (Eco 2005: 198).

The general inspiration of his text is likely to be searched for in the cinematic works. As a matter of fact, the whole piece could be the description of a single 'long shot' developed around and inside three-dimensional scenes arranged onto a stage. The informal use of punctuation contributes to the continuity effect of the description. Even the presence of a fading effect, in the final transfiguration from cylinder to Pantheon, could be conjectured. It is enough to mention Orson Welles or Alfred Hitchcock to imagine some possible suggestions. From a figurative point of view, another means could be that of comics-strips or the story-boards. In particular, Superstudio's (1971) *Story board for a film on the Continuous Monument* (Fig. 3), demonstrated the research and communication potential of radical architecture on landscape also through drawings and captions that might have inspired Quaroni's text. On the other hand, reading the text in the first person one gets the impression of being accompanied on the journey by someone who precedes the reader, like Virgil in Dante's *Commedia*. Leon Battista Alberti had argued that in the perspective painting the relationship between space and the observer should not be direct and illusory, making the pictorial horizon and the optical horizon coincide, but must be mediated by the role of the figures, which serve to mentally identify themselves in the scene. Likewise, Quaroni stands as a link between the reader and the space to be explored. This rhetorical device has ancient roots in the theater and can also be

found in the post-war movies, whenever the protagonist turns implicitly or explicitly to viewers in the cinema hall. Thus, the direct vision of the moving character establishes an empathy that leads the spectators to identify with him or her, to project themselves into the visible space and to question themselves about the invisible space, as well.

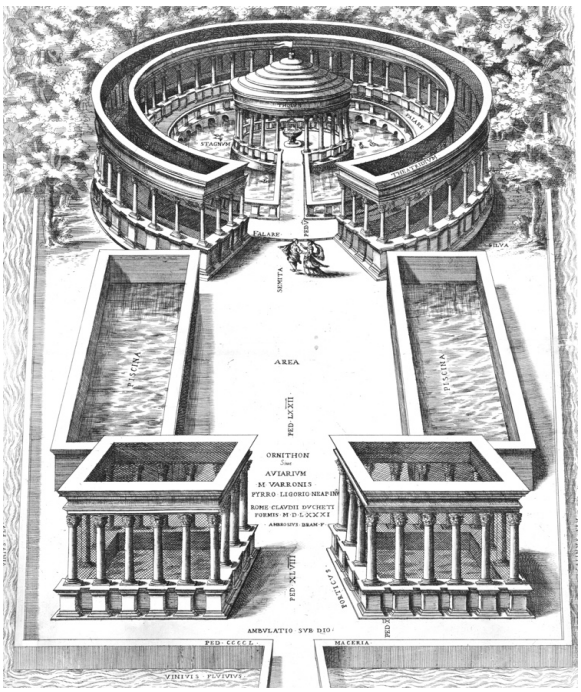


Fig. 4. Pirro Ligorio, Reconstruction of Varro's Aviary in Casinum, 1558

Quaroni's text could also recall a game. Something like *Goose game* or *Dungeons and Dragons*, 1974, with the dungeon master telling the players the features of a room and the effects of their actions. But it could also recall a videogame, such as Will Crowther's *Colossal Cave Adventure*, 1975, a computer version of a role-playing game which is considered the first known example of interactive fiction. Although Quaroni elaborated the text before or almost simultaneously with the development of these games, whose spread was initially very limited, it is likely to have been influenced by the vision of the early three-dimensional vector models for engineering structures. Already in the early 1960s, the first Computer Aided Design (CAD) systems were available on the market and used by large companies, like IBM's Design Augmented by Computer (DAC-1) in 1963. This could have contributed to produce a text that today can be easily related to a videogame with a subjective viewpoint, in which a sort of avatar describes the effects of his movements in a geometric and dynamic environment affected by continuous and unpredictable mutations.

Hidden Iconography

What kind of mental image is Quaroni's text expected to summon and disseminate in the mind of the readers? Is it just a collection of generic spatial events or, on the contrary, a sort of promenade through a secret, wonderful city imagined by Quaroni? Would it look like a fantastic antiquarian reconstruction by Pirro Ligorio (Fig. 4), a 19th-century *recueil* of monuments and temples, or an architectural *capriccio* drawn by Aldo Rossi? Perhaps it would rather look as an illustration of a manual on perspective, showing solids with their shadows casted on the ground. In this case, one could also think that the idea of getting inside a cube has been inspired by the 28th plate (Fig. 5) of Hans Vredeman de Vries' 1605 perspective book (Placzek 1968). Surely the representational approach could be a valid key to interpret all the text, with the passage from abstract to real as a sort of metaphor of the long process from the early design sketches to the building site. In reality, all of the answers can be right and wrong at the same time, as the text is written properly to facilitate the process of customization by the reader.

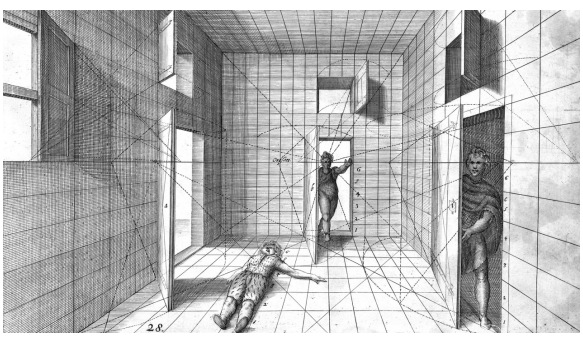


Fig. 5. Jan Vredeman de Vries, The Book of Perspective, 1604-05, plate 28

Indisputably, the text presents at least three explicit citations: De Chirico's surrealist paintings, the *promenade architecturale*, remarked by the name of Le Corbusier in brackets, and the Pantheon in Rome. This heterogeneous group of references, which also denotes Quaroni's cultural intent of reconnecting architecture to visual arts and

history, conveys specific images he intended to share with his readers in order to orient their imagination and to provide the written space with univocal visual qualities.

In addition to these, other implicit references can be easily conjectured. For example, the two initial rotated cubes seem to allude to Louis Kahn's Fisher House (1961-68), which is composed of two wood-and-glass boxes with a light and precarious appearance (Fig. 6). Moreover, one of the edges the bedrooms cube intersects the living-room cube in the middle of one of its sides. This aspect closely resembles also the rhomboidal church in Gibellina Quaroni designed from 1970 on, which can be accessed by one of its corners. Some lines later, the former colors application to the interior of the cube recalls Carlo Scarpa's domestic and museum interiors while the latter reminds the experiences of Neoplasticism as well as the collection of Le Corbusier's *polychromie architecturale*. The sequence of cylinders might evoke an African village, an Etruscan necropolis, the huge parking buildings Louis Kahn had designed for Philadelphia or the residential circles Quaroni himself had designed for Barene di San Giuliano in 1962.

Fig. 6. Louis Kahn, Fisher House, 1961-68

Beyond these explicit and implicit references, Quaroni's text suggests a mental experience suspended in a fictive atmosphere between city and theatre. He is walking in a city: a horizontal, opaque, and labyrinthine city that never offers a vantage point high enough to look around and get a general view of it. At the same time, he is moving in a theatre. Quaroni's text suggests an ambulatory theatrical performance, in which the spectators are called to follow one of the actors and to walk through different scenes. The cubes on a flat ground are scenic boxes on a stage: light wooden frames covered with canvas that can be moved with one hand. The absence of a true sky is not qualified with the white of a blank canvas still to be painted but with the matte black of the backdrop, almost prefiguring the black of the Autocad(™) model space.

Quaroni seems to evoke many elements together. He recalls the Renaissance figurative tradition of architectural backgrounds, which Pierre Francastel (1957: 64) considered the original source of the built architecture and which were largely conceived through the interface of the theater (Hodne 1998; van Eck and Stijn Bussels 2011). Indirectly, he also recalls the theatrical and rhetorical vocation of fascist architecture, which was also indebted to De Chirico's imagery and which Quaroni had experimented as a young architect in the project for the Piazza Imperiale of E42, Rome. He recalls the tradition of the 20th century abstract, scenic machines of Gordon Craig and Adolphe Appia, which were to inspire Le Corbusier's definition of architecture as 'the masterly, correct and magnificent play of volumes brought together under light' (Le Corbusier 2007: 102). At the same time, he even seems to point out a way to use theatrical and ephemeral architecture to regain possession of the city that might be related to Renato Nicolini's cultural activities of the *Estate Romana*, which debuted in 1977.

Didactic Functions

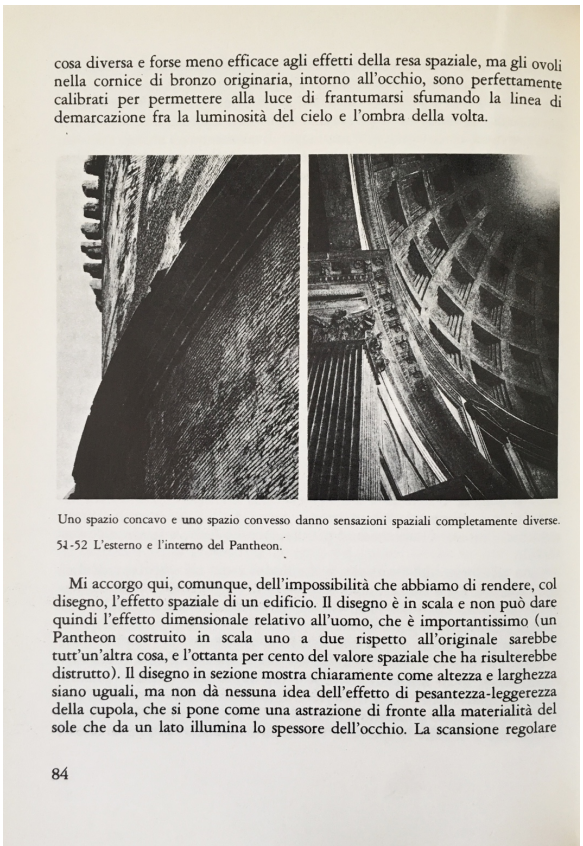
Quaroni's text suggests the importance of the fantastic dimension as a mental environment in which the reader/student can figure out shapes and test them. It also indicates a method of doing it by gradually increasing the complexity of the shapes and material attributes - from the abstract to the real, from the simple to the complex, from squared volumes with right angles to curved and juxtaposed surfaces. In this, the text seems to replicate the process of traditional graphic processing, from the sketch to the measured drawing, passing to scales of representations closer and closer to reality. Think of the two initial cubes of six meters on each side that seem to constitute the idea of the standard component as a system of mediation between the human body and the criteria of design and industrial production. At the same time, the possibility of moving them evokes the heuristic and playful dimension of modeling and experimenting forms, both in the physical and the digital environment.

The text emphasizes above all the range of sensations that space can produce on a moving subject and how these are linked to specific concatenations of spaces and configurations of the surfaces that surround them. The precise reference to the 'relationship between the spaces in succession' (Quaroni 1977: 85) also seems a reference to the inseparable scale relationship that links the room, the apartment, the building, the district and the city, which are to be considered but episodes of a sequence. The range of sensations described, from the serene and distant vision to the claustrophobic effect, may evoke even cinematic examples. By reminding the dramatic and emotional potentialities of the architecture, Quaroni intended also to highlight its specificities in the wider context of the visual arts. At the same time, he intended to demonstrate how the sensations may influence the motion, altering the narrator's rhythm, speed, direction, gestures and thoughts. Somehow, after Kevin Lynch (1960) and Edward Hall (1968), Quaroni had focused on human behavior in space, assuming 'the emotive effects induced on people by the structure of space as the primary tool to evaluate the design' (F. Forte quoted in Riondino 2012: 437). In this way, he even suggested the possibility of a narrative architecture, one conceived to tell a story and devoid of any function other than to arouse emotions, such as a monument or an ephemeral architecture built for an exhibition or a procession.

Description vs Representation

Quaroni's text on space effect is supported only by three figures. Two of them are small pictures showing the Pantheon's wall from inside and outside (fig. 7); the third one is a double plan of the village of Grassano, both positive and negative, to highlight the network of streets. This kind of drawings had been developed only a few decades before. Since the late 1930s, the unprecedented centrality of the concept of space had stimulated the search for devices useful for visualizing, classifying and teaching space in its various architectural aspects. Photography both acquired a new scientific value and inspired a series of diagrams adopting positive / negative inversion to amplify the relationship of figure-background as investigated by Kepes (1944) and Arnheim (1954). Finally, Bruno Zevi (1948) elaborated negative orthogonal projections and Luigi Moretti (1952-53) proposed three-dimensional negative models of the space contained in the buildings.

However, even if such a sophisticated diagrams and models can represent the shape of space, Quaroni clearly claims the impossibility of representing the spatial effect of the Pantheon, a true fetish of architectural space (Colonnese 2019), almost quoting Rasmussen's (1959: 192) words: 'No picture can do it justice because it is the great architecturally enclosed space round us that makes the deepest impression, not any sectional view.' But of course, the question cannot be limited to Pantheon. The shortage of illustrations and his critical position against the representation are worth to be discussed.



cosa diversa e forse meno efficace agli effetti della resa spaziale, ma gli ovoli nella cornice di bronzo originaria, intorno all'occhio, sono perfettamente calibrati per permettere alla luce di frantumarsi sfumando la linea di demarcazione fra la luminosità del cielo e l'ombra della volta.

Uno spazio concavo e uno spazio convesso danno sensazioni spaziali completamente diverse.

51-52 L'esterno e l'interno del Pantheon.

Mi accorgo qui, comunque, dell'impossibilità che abbiamo di rendere, col disegno, l'effetto spaziale di un edificio. Il disegno è in scala e non può dare quindi l'effetto dimensionale relativo all'uomo, che è importantissimo (un Pantheon costruito in scala uno a due rispetto all'originale sarebbe tutt'un'altra cosa, e l'ottanta per cento del valore spaziale che ha risulterebbe distrutto). Il disegno in sezione mostra chiaramente come altezza e larghezza siano uguali, ma non dà nessuna idea dell'effetto di pesantezza-leggerezza della cupola, che si pone come una astrazione di fronte alla materialità del sole che da un lato illumina lo spessore dell'occhio. La scansione regolare

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Fig. 7. Ludovico Quaroni, Progettare un edificio: Otto Lezioni di Architettura, 1977, p. 84.

Quaroni may be conjectured to criticize the so called 'paper architecture' emerged in the middle on 1970s: the aptitude to consider the drawing *d'invenzione* and the drawing after architecture as an autonomous and artistic expression of utopic research (Huet 1977), also for commercial intents (Colonnese and Carpiceci 2013: 395). It is also possible that Quaroni intended to refer to the Le Corbusier's concept

of *espace indicible*, according to which in some specific cases not even words can express the spatial sensations.

We believe instead that Quaroni intended both to underline the readers' role as co-author of the images of his architectural promenade, and to reserve a hidden eulogy to the written word. Although the architects have in the drawing their elective tool, few written words can provide them with the freedom to be inaccurate and inclusive in describing their project as well to postpone certain decisions, just like a rough sketch (Forty 2004: 38). It is no coincidence that in his practice as a teacher, Quaroni used to prevent himself from sketching on his students' sheets to correct their project. He rather preferred to speak and suggest useful precedents to let them develop their formal solutions on their own.

A plan or section drawing can illustrate a building well beyond the physical limits imposed by its walls, even analogously replicating its conception and construction. Instead, the description of a building, whose words are forced to follow a linear sequence, analogically replicates the experience of space made by a visitor walking inside. This feature can be exploited to experiment a sequential and cinematic approach to design (Tschumi 1996) or just to have an aniconic point of view on the design process. In particular, the Czech architect Adolf Loos had been always very critical towards the representation of architecture and Quaroni is likely to have embraced the positions of Adolf Loos: the very term of 'effect' he adopted in his text has been probably taken from *The Principle of Cladding*, 1898, one of the most famous Loos' articles (Colomina 1990: 15, note 24).

Loos was not only proud that the interiors he had arranged were so ineffective in the photographs that even his clients could not recognize them, but he also stated that he did not need to draw his designs. He believed that as 'a drawing cannot convey the tension between sight and the other senses, it cannot adequately "translate" a building' (Colomina 1990: 12) and he also stated that 'A good architectural concept of how something is to be built can be written down. The Parthenon can be written down.' (quoted in Forty 2004: 28). It is interesting to notice that in an article of 1968, Aldo Rossi (1968: 329) had focused properly on the Pantheon to demonstrate that any building can be used to go back to its design and to the principles that had governed its architectural development and construction. Rossi was a Quaroni's good friend and interlocutor. In 1967, he had convinced Quaroni to assemble his writings in the book *La Torre di Babele* and written the preface to it (Quaroni 1967). Anyway, in the 1968, writing about the Pantheon, Rossi also cites Loos' words but he replaces the Parthenon with the Pantheon. This may be labeled as a mistake or a lapsus; it might even be referred to Zevi's (1948) polemical assertion the Parthenon is not architecture as there is no internal space; anyway, Rossi's rephrasing is likely to have unwittingly suggested to Quaroni not only an effective end to his itinerary but also an occasion to state both the implicit limits to architectural representation and the potentials of narrative and writing tools in architecture.

Conclusions

In the book *Progettare un edificio*, Ludovico Quaroni dedicates some pages to a first-person description of an architectural promenade along the streets and squares of an abstract, theatrical city. This piece shows his ability to go beyond his time and to offer a mediatic and visionary look upon architecture. In particular, he uses the Pantheon to highlight the limits of the visual representation as well the opportunity offered by words in describing and producing space with a direct relationship with human feelings.

His brief and partial phenomenology of the spatial effects oscillates between experience and memory, between citation and self-citation, in a sort of 'scientific autobiography' parallel to the one Aldo Rossi (1981) was writing in the very same years. Inspired by artistic and scientific models and inserted in the context of a didactic book, the short first-person text 'goes against the grain of academic writing' (Davies 2012: 750) and has a disruptive and engaging effect. It casts the readers into a mental space that is produced by the interaction between the explicit and implicit references of the writer and their individual personal experiences. Thus, reading today those four pages makes the mind crowded by not only the pictorial, architectural or cinematic images Quaroni had in his mind when writing but also by images and sensations coming from contemporary experiences, such as videogames, animations of digital architectural models and virtual reality.

Quaroni (1967: 28) had written that 'the Architect is that *homo poeticus* (...) who tries to put together things that are distant from each

other.' Somehow, the mental space that he sets up for his 'lesson in space' seems to make this aspiration to inclusion and combination possible, even if only for a few pages. His text proposes a transition from abstract to real; from ephemeral to monumental; from theatrical to urban; from modern to ancient; from measurable to incommensurable; from representable to describable; and, in the last instance, from himself to his readers. To Quaroni, the vision of a subject walking and the act of describing are the very last instruments able to keep together and give order to the chaotic and inconsistent city of his age, especially by attributing an emotional value to the experience of space.

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