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**Drawing as architectural design knowledge.
Tools and compositional processes in Francesco
Cellini's work**

Abstract

Among the various interpretations that architectural drawings can take on, this essay focuses on one particular type, understood as an intimate manifestation of a specific compositional process. Post-war Italian culture has been testimony to that usage, which has made it possible to identify the construction of a unique inception of design among many famous architects. This paper, through a paratextual re-reading of notes, texts, drawings and designs, focuses on the Italian architect and professor Francesco Cellini, who used drawing to develop a way of planning and thinking about architecture, coming up with innovative techniques and tools to adapt to the needs of the time, and fostering consistency between idea and practice one of the most unique qualities of his signature style.

Keywords

Drawn architecture — Cellini — Architectural composition — Drawing — Design

Mind and hand

The hand means action: it grasps, it creates, at times it would seem even to think. In repose, the hand is not a soulless tool lying on the table or hanging beside the body. Habit, instinct and the will to action all are stored in it, and no long practice is needed to learn what gesture it is about to make. (Focillon 1948, pp. 65-66)

Drawing, although it is currently assimilated in the definition of 'representation', is not a tool on the margins of the act of designing. Instead, it can be equated 'with intuition and knowledge, even if it happens unexpectedly' (Cellini 2016, p. 223, translation by author). For the aforementioned reasons, among the different forms that architectural drawing can take on in order to express and communicate (to clients, engineers, specialists, the press, etc.), this paper looks at a particular type of graphic marking, understood as a more intimate manifestation of a specific compositional process: the drawing that appears when designing and which has its very creator as its reference. It should also be noted, however, that this apparent category is never so neat and clear-cut. It too has its blurred lines, as every drawing cannot exclude technical and artistic aspects, let alone its addressees (clients, companies, colleagues, etc.) or the professional occasion for which it was created (bids, competitions, jobs, exercises, etc.).

The relationship between mind and hand, between thought and action, becomes the interpretive crux of the symbiotic dualism that can subsist between design and drawing. «Through his hands man established contact with the austerity of thought» (Focillon 1948, p. 65). «They are the instrument of creation, but even before that they are the organ of knowledge» (*ibidem*, p. 70).

The mental model, which thinks, transcribes one's thoughts with one's hands in an action necessarily linked to the body (Pallasmaa 2014). The translation of one's ideas through the progressive control of one's physicality, which in turn is updated and improved with the passing of time, makes it possible to build a structured way of understanding and carrying out a design.

The experimentation that took place as part of the 'Architettura Disegnata' (Drawn Architecture) movement starting in the early 1970s illustrates an important historical time period for the 'schools' of Milan and, in particular in this context, Rome – despite the inattention of critics, which has ascribed a certain degree of evasion of architecture (Tancredi 2002). The immense production of drawings is testimony to cultural and technical research that spans from design exercises in which «the image *coincides* perfectly with its architectural content» (Purini 2002, p. 17, tba) to the creation of «*drawings of invented places or theoretical landscapes*» (*ibidem*, tba) and, in most cases, it has expressed its most authentic meaning as an «*endemic form of architecture*» (*ibidem*, p. 18, tba).

Trying to respond to the simple question of «what kind of drawing is truly needed to design?», the aim of this reflection is to sketch out the meaning of the work of Francesco Cellini, starting from a study of his drawings that shines a light on the unique qualities and characters of his architectural projects.

Drawing and Design

A series of simple A4 sheets of paper can be examined in support of the theory that places the usefulness of drawing as a tool of knowledge and investigation in architecture in the fore. Here, Francesco Cellini jotted, freehand, his line of reasoning in a narrative that's conversational and direct, structured by the alternation of text with very few deleted or erased words, and architectural sketches connected to each other through direct graphic marks (e.g., thick arrows preceded by the word *così*, meaning 'like this' in Italian), highlighting clarity devoid of second thoughts. The precision and communicative capacity enclosed in just the sequence of eight (plus one) sheets sent via fax¹ is still surprising, as it gathers his architectural design for the Rowing Centre on Lake Corbara (1993-1996), a design that remained arguably unchanged up to its completion. After a succinct introduction (and a request for 'Help!') aimed at his Umbrian colleagues, Cellini expressed, in a detailed and concise manner, the 'settlement principles' and the compositional choices that, starting from the topographical nature of the site, would condition the architectural project. The first page ('pag. 1') describes its position, nestled into the steepest section of the site, dictated by practical motives whose main goal is to keep the building's visual impact on the landscape to a bare minimum. This hypothesis is thus aimed at arranging the building on two floors, set perpendicular to the shore of the lake. That would on the one hand make it possible to welcome the boats, and on the other the building would almost disappear into the ground: indeed, the Rowing Centre has just one facade, set up like a 'section' opening towards the landscape, which ends with a large window and a protruding balcony supported by two tie-rods that create a lookout point over the lake ('pag. 3'). The construction system, illustrated on the subsequent page, is conceived in tandem with the overall idea of space, and is represented in its elementary breakdown into parts, constituting a sort of 'x-ray' of the architectural organism ('pag. 2'). The proposed concept is to build by excavating the slope, following, at the sides, the incline and using a mixed technique composed of a box frame in concrete, for the removal

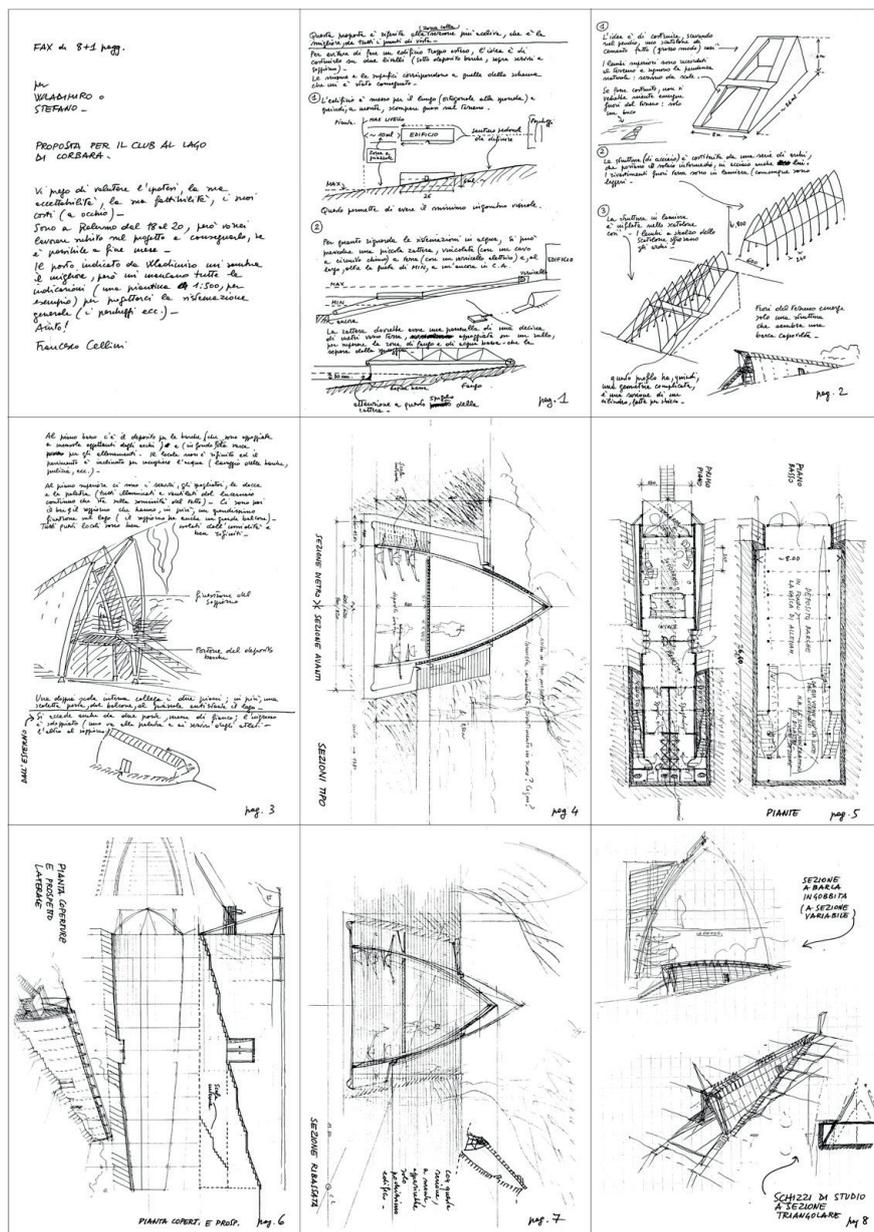


Fig. 1
Design for the Rowing Centre on Lake Corbara, 1993-1996 Concept, drawings by F. Cellini sent via fax.

and containment of the earth, and by a steel structure comprised of a dense sequence of pointed arches for the above-ground part, evoking the shape of an 'upside-down boat'.

Correspondence between the structural and compositional principles is a recurring characteristic in all of Cellini's projects, so much so that it can be recognised here as one of the stylistic signatures that distinguish his way of conceiving of a design. The latter is a 'code' acquired from his education in Rome, shaped upon his instinctive capacity to understand certain practical, foundational aspects of construction technology².

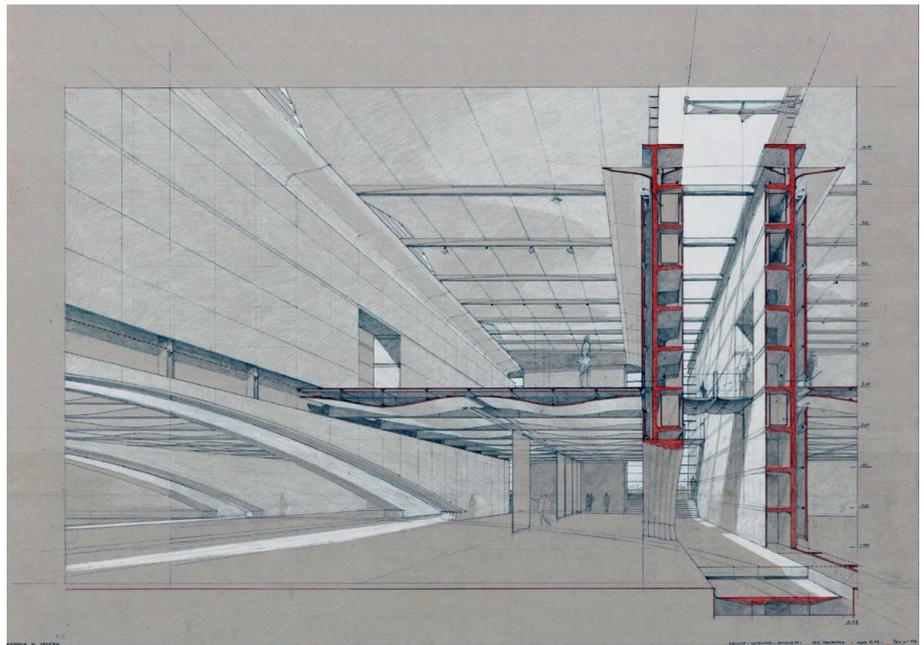
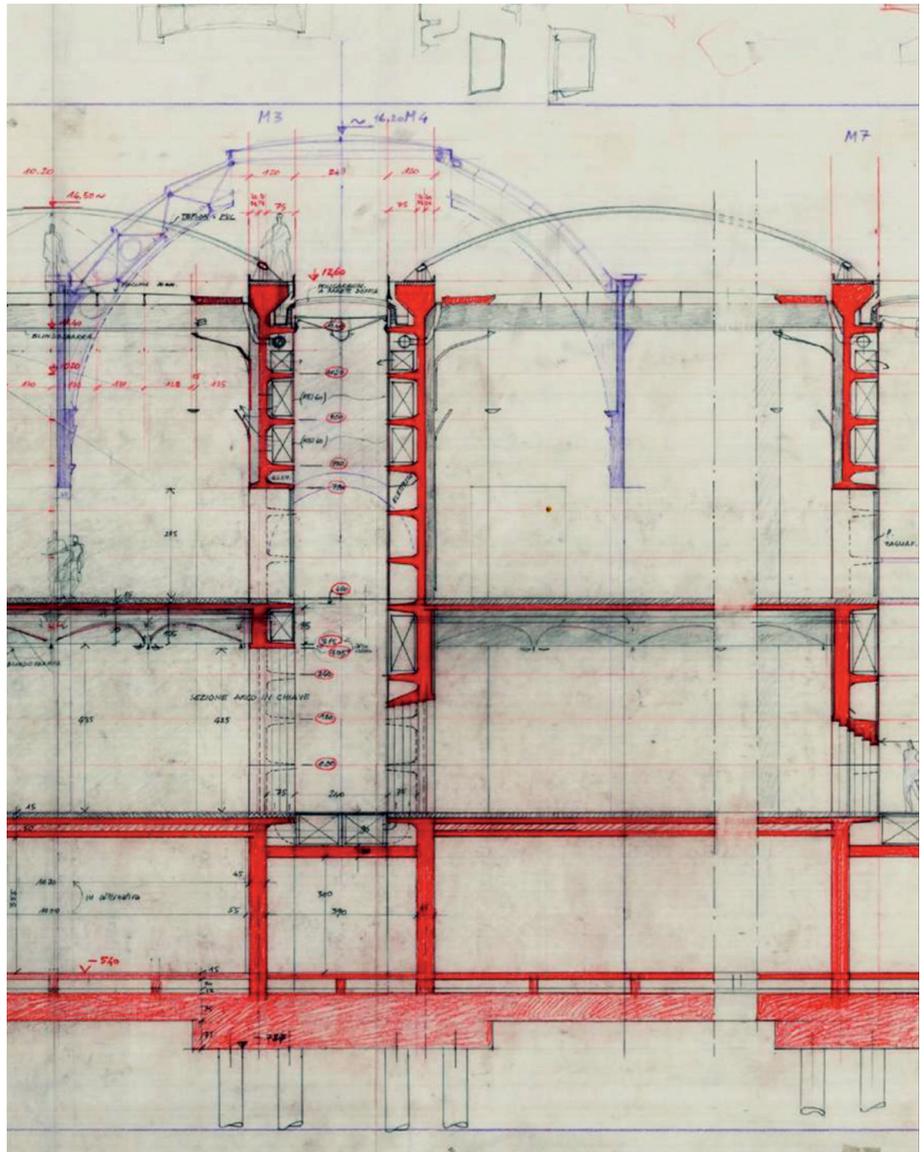
Other drawings follow, verifying the conformity of details and views of the whole, which confirm his stylistic tendency for «precise, dialectic architecture [...] made [...] of balance» (Cellini 2016, p. 15, tba). Recurring among the sheets are: an 'main section' which is broken down into two because it passes through the checkpoints of the design (dietro - back, and avanti - front), which gives us the inner measurements on a human scale, with the actions and uses contained within, the relationship with the context in the margins, and even a few technical-structural comments and a question about the type of cladding ('pag. 4'); the floor plans of the various levels and of the roofing, lateral elevations according to the section of the land,

Fig. 2

Cross section for the call for entries for the Italian Pavilion at Giardini della Biennale in Venice (1988-1992). The drawing, done by hand, is meant to study and check the structure, plant engineering and spaces.

Fig. 3

Perspective drawing of a bay, for the call for entries for the Italian Pavilion at Giardini della Biennale in Venice (1988-1992). The drawing was done by hand on a dark background, highlighting the key role of natural light.



and a few axonometric views that highlight the power entrusted to architecture as a topographical narrative ('pag. 5', 'pag. 6', 'pag. 7'). Closing out the set are sketches studying different (later-discarded) solutions with small variations to the compositional decking, which remains simple yet also rigorous and true to the idea of the design ('pag. 8').

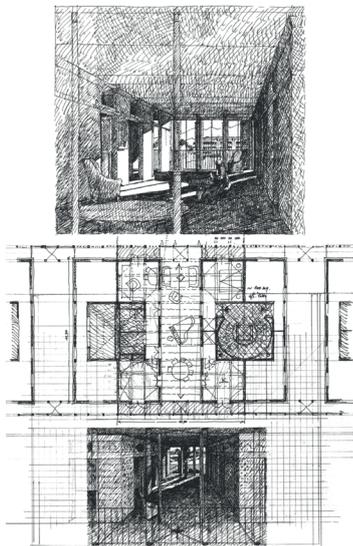
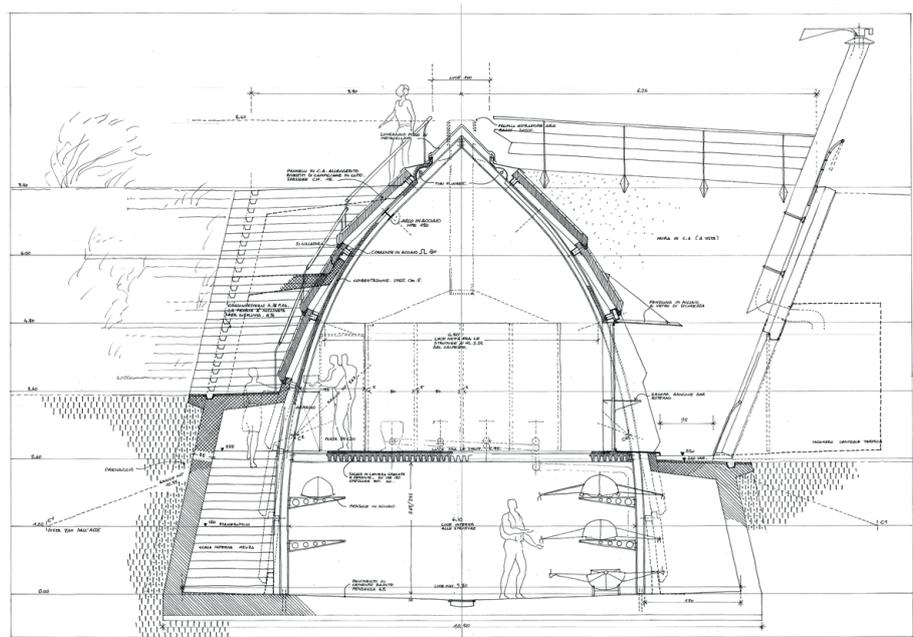
Section drawing is one of the architectural research tools that Cellini employs almost obsessively as a moment of dedicated processing: it returns in different shapes in his work, at times quite general and quick, or slow and measured at others, with notes and precise accuracy. The sections represent his way of studying the interior spaces in relation to the complexity of the whole (compositional, structural and use-based) and are considered, in turn, «places where the building, as if cut with a knife, reveals its inner truth» (*ibidem*, p. 16, tba). There are countless drawings produced for that purpose from the 1980s to the early 2000s, many of them conceived of with the sole scope of checking the design, made by Cellini for Cellini: for example, sections to study the imposing construction and engineering system that gives structure to the spatial articulation of his design for the Italian Pavilion at Giardini della Biennale in Venice. Often the process of understanding the design, in its entirety, begins from a section, which then generates a three-dimensional perspective able to capture the essence and the sense of the building to be inhabited. It is as such that he specifies some convictions and principles in favour of «architecture [that] should first and foremost be understood, to be able to be emotionally accomplished; not that it is made exclusively to provoke admiration or awe. It should speak to the brain and, for that reason, to the senses, but not only to them. A building therefore should be designed in such a way so that those who use it or see it know how to reconstruct it intellectually in their internal formative logic, and not to be perceived as an appearance, perhaps only from some special vantage point» (*ibidem*, p. 15, tba). That gives rise to a way of drawing that is an expression of the «rational cognitive process that leads to a result that is as logically consequential to the preconditions as it is, a priori, in-deducible to them» (*ibidem*, p. 223, tba). That subsists even when the drawing is stylised, capturing an atmosphere within it and taking on pictorial-descriptive value: in addition to turning to the use of simple forms and an expert mastery of the physical forces that govern tectonics, when designing interiors, sunlight plays an essential compositional role, deriving from a reinterpretation of work by Bernini and Piranesi³. Cellini's studies led him to implement a «way of drawing (by hand and then on the computer) which uses a strategy with its roots in the 1800s: very little black and lots of white, on a relatively dark, neutral background» (*ibidem*, p. 21, tba).

Drawing is dear to Cellini, and he himself, as an architect and teacher, has returned to the topic on multiple occasions. One of his first practical experiences, working at the School of Architecture at the University of Palermo as a lecturer in first-year Architectural Composition starting from the 1988-1989 academic year, allowed him to draft *Il Manualletto*⁴ (1991). The book pragmatically and simply establishes the intrinsic rules of graphic representation after having subjected the technical and construction ones to review; notes are thus present on structures (vertical and horizontal), crowing elements and pedestals, stairs, doors, windows, and measurements. Once again, the design aspect cannot be free from strictly technical notions and his designs represent a clear architectural character and a way of working that is consistent across idea and practice.

In this regard, his custom of understanding drawing as a palimpsest that

Fig. 4

Technical section, on multiple points, for the Rowing Centre of Lake Corbara (1993-1996), inspired by the drawings of M. Ridolfi. The drawing was carried out in phases, by hand, using a ruler and set square.

**Fig. 5**

Drawings for the exhibition on homes of the future (Futurama) done by hand with a biro, with N. Cosentino, 1983. Marked by intense chiaroscuro, the rooms of the house are arranged around a central space. These are study drawings for residential types executed as a duo, with a biro, where the individual contribution of the creators is unrecognizable. The drawing becomes obsessive and characterized by sharp contrast between light and shadow.

encapsulates a multitude of representations and meanings in a single drawing, with the goal of encompassing the spatial and humanistic potential of architecture, capturing multiple views and types of information at once, is exemplary. A unique kind of technical drawing of the main section of the Rowing Centre can be seen, drafted by hand with a ruler and set square on a schematic base of modules of 120 cm. It's a way of drawing, carried out by Cellini under different circumstances and for many years, that concentrates his attention on the logical process of knowing and constructing the design itself, and thus «on numerical precision and on geometrical consistency» (*ibidem*, p. 224, tba) and not on the quality of the lines. It's a type of drawing that was in part inspired by those of Mario Ridolfi (Roma 1904 – Terni 1984), who Cellini knew well (Cellini and D'Amato Guerrieri 1997, 2005; Pujia 2019) thanks to the research and study experience that began during the work done for the long-standing journal *Controspazio* (D'Amato Guerrieri 2018) where he explores the oeuvre of the maestro from whom he inherited, for example, the use of layered geometry as a particular style of architectural writing. The carrying over of certain time-tested graphic conventions was thus reinvented and bent to spatial and architectural purposes until becoming a specific type of 'writing'. That is in part determined by a few practical requirements, such as «the speed of execution, the suitability to the very small size of [his] studio, the adaptability to [his] myopia, etc. [that had] a conceptual advantage over the strenuous drafting of the profession at the time: the distance between design and transcription was reduced» (Cellini 2016, p. 224, tba).

The composition in question also contains another distinctive marker of the Cellini's language of design: the «controlled and repetitive» use of a specific measure «with a propensity for the numerical series of 60, 120, and 180» (*ibidem*, p. 16, tba) which clearly illustrates his passion for geometry and obsession with units and their multiples. The drawing, in addition to dimensioning, holds a depth of information that almost makes the building appear in its three-dimensionality; it possesses structural, technical, systemic (plant engineering) and compositional information that, unlike the quick drawings examined previously, emerge in a sort of detailed palimpsest from which a rather mechanical and repetitive manner of execution

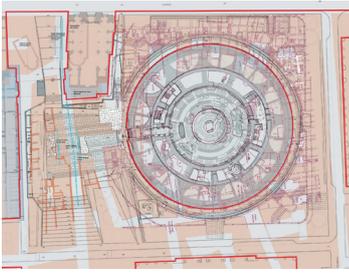


Fig. 6

Study drawing which reconstructs the layers of the city for the redevelopment and adaptive reuse of the Mausoleum of Augustus and Piazza Augusto Imperatore in Rome (under construction).

can be deduced, overshadowing the fact-finding act of the design.

These drawings stand out as necessary for their creator; they embody a chance to verify that which was prefigured. The logical process that's behind the design is gradually copied over on paper, literally putting things 'in writing'. Looking at the sketches, an attachment to the context emerges, which, with its strength, guides the design approach, conditioning the adopted settlement principle that also flows into the checking of the detailed solutions. By way of example, the breakdown in phases of the building process is represented rigorously in a few three-dimensional, schematic and simplified drawings, that, in an analytical way and accompanied by measurements and technical descriptions, forecast the communication of the phases of construction (Pujia 2019).

The significance of Cellini's drawings

The distinctive character of Cellini's drawings can be found in the dual symbiosis between technique and communicative expression, both ascribable to the use of a free hand, in turn accompanied by expert spatial command which combines structural aspects and compositional wholes. The roots of his research can be traced back to a few meaningful experiences, such as the intense, influential collaboration with Nicoletta Cosentino, where drawing emerges as the expression of an idea, meaning a veritable intellectual manifesto⁵. Over the years, the rather artisanal aspect of his work and of his way of drawing made it possible for him to perfect a drawing method that was in line with his physical and intellectual needs, without however shirking the demands of time for which he gradually invented the tools⁶.

Although this article can only partially capture the multiplicity of characters in Cellini's style, the continuous 'writing' of architectural thought, the apprehension towards the role of contexts, inquiries into the resistant matter of buildings, and a reflection on the quality of the space continue to shine through. Because, at their core, as Focillon once stated, hand and mind, and thus design and drawing, are part of the same phenomenon. Moreover:

So it happens that the hand that moves, holding its favourite pencil (carefully selected among the thousands available), is not only the absolute master of the sheet of paper that is being filed with almost automatic characteristics; at the same time, as all artists know (though they don't say it), it also knows and thinks. (Cellini 2016, p. 229, tba).

Notes

¹ «A tool that [at the time] pre-empted, by a few years, the role that the web now plays in professional collaboration» (Cellini 2016, p. 101, tba).

² Cellini talks about the teaching of the maestro Saul Greco (Catanzaro 1910 – Esfahan 1971) who, with his lessons on structural drawing, conveyed the use of strain with a practical end: understanding the space.

³ Cellini would later introduce a technique he got from his painter grandfather, Giuseppe, who used toned paper to highlight the light.

⁴ Initially written as a booklet for the course, it was then gradually fine-tuned for publication and is still today often used in many design labs.

⁵ For further reading on studies at the time, see F. Cellini, 1963-1973 which contains the years of university education and architecture studies, and the work and research done with N. Cosentino and other Roman colleagues (Cellini 2016, pp. 233-235).

⁶ Cellini never rejected the use of computers; he often generated 3D models which were worked on and integrated to then be retouched and finalized by the architect.

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