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**From the mind to the sheet, through the hand.
Topicality of freehand sketching in the architectural project.**

Abstract

In an era in which the digital transaction is increasingly affecting all areas of society, we are aware that this process has already been underway for some time in the context of defining, representing and managing the architectural project. It is necessary to keep the attention on the centrality – not only educational – of the role of freehand drawing, with particular reference to the sketch, in the phase of the initial creative process of the architectural project. The reading of some exemplary drawings produced by leading figures such as Pier Luigi Nervi and Renzo Piano, even if there are obvious differences in approach and architectural outcomes, makes clear the essential role of this moment in which the concept of the project is elaborated and refined in an intimate dialogue. This sees in freehand drawing the still primary and irreplaceable tool for defining the lines and characteristics of the project of the future architecture.

Keywords

Sketch — Drawing — Architectural Design

Introduction

The Oxford Dictionary defines the term *concept* as «an abstract idea», but also as «a project or an intention», or philosophically declines it as «an idea or a mental image that corresponds to some distinct entities or to their essential features...».

From this definition begins a reflection on the role that the term assumes in the design field, focusing attention on the project sketch as the primary outcome of the process of defining the idea. By way of example, we will analyse the outcomes of the approaches of two central figures in the panorama of the architectural project, despite their strong differences in the graphic and design results.

From the study of the drawings conserved at the Nervi Fund at the CSAC of the University of Parma and from the observation of some sketches by Renzo Piano exhibited at the Renzo Piano Foundation in Pegli (Genoa), the following considerations take place, recalling that Vasari wrote already in the second half of the sixteenth century:

we call “sketches” a first kind of drawings made to find the way of attitudes and the first composition of the work. We made them in the form of a stain, only outlined in a single draft of the whole.

The engaging rereading of the Italian translation of Paolo Belardi’s short text entitled *Why Architects still draw*, also urged a re-reading of the founding role of the design sketch as a moment to draw the idea from oneself and its subsequent development, outlining a moment of intimate dialogue, preliminary to any further accurate definition of the architectural work.

It is also impossible not to recall Franco Purini's numerous reflections on drawing, which is portrayed as an ideal square that contains four main aspects: *seeing, thinking, communicating, remembering*. (Purini in *Disegnare* 2010, p. 14). In particular, he emphasizes that on the one hand drawing leads to thinking and on the other it is itself the result of thinking, that is, the result of that internal design to which Federico Zuccari refers: the outcome of the interaction between thought and hand (Docci in *Disegnare* 2010, p. 3).

Of particular interest, following the reflection on the sketch, is also the comparison between the preliminary sketches of a work and its final version, in search of the geometries present since the first conceptual drawings and their transformation into architecture. For this reason, some sketches are displayed in sequence at the Renzo Piano Foundation alongside the final (or executive) drawing and photographic images of the architectures actually built, allowing for a comparison between the concreteness of the realization and its creative roots.

On several occasions, Renzo Piano has said that he makes very complex buildings, but always draws by hand to learn about the object he works on. This statement already contains all the meaning of freehand drawing intended as an immediate extension of the mind, but also as an instrument of knowledge, of inner debate, of definition and refinement of the idea. Sketches are often crooked, sometimes inaccurate and disproportionate, always out of scale, with projective methods used in an intuitive and not rigorous way, but which, also in the spontaneous elaboration, always emerge for those who have studied artistic and architectural disciplines. In fact, we know that the project design makes use of codes and rules that make it a real language.

While in the initial phase of the design process, drawing is configured as a tool for communicating the designer's ideas and, as such, it can also take on very personalized forms, vice versa the executive drawing has a strictly communicative function and it must be organized through a coded language, with its own vocabulary and syntax.

The effectiveness of the sketches lies in their being drawn freehand, without aids such as rulers, by hand movements that are sometimes uncertain and often accompanied by textual annotations with which they are intertwined, outlining a diachronic and evolutionary inventive process (Dal Co in Conforti, Dal Co 2007, p. 23).

The sketches become work tools whose outcomes should be studied as real archival documents, as every interpretation of an architecture should start from the analysis of the multiple layers that are deposited there during the creative process. The various documents must be analyzed to find the sedimentation of the processes of conception and selection that make effective the functional and (sometimes) symbolic purpose they pursue (Dal Co, *ibid.*).

In fact, according to Manfredo Tafuri: «architectural drawings are to be interpreted precisely as archaeological traces, from which the text is decomposed» (Tafuri in C.S.A.C. 1983, p. 24).

While Dorlfes says that he considers it necessary to judge the Architectural Design as an artistic operation in its own right, free from what may be the characteristics of the building that may be built at a later time, on the basis of the primitive drawing (Dorlfes in C.S.A.C. 1983, pag. 34).

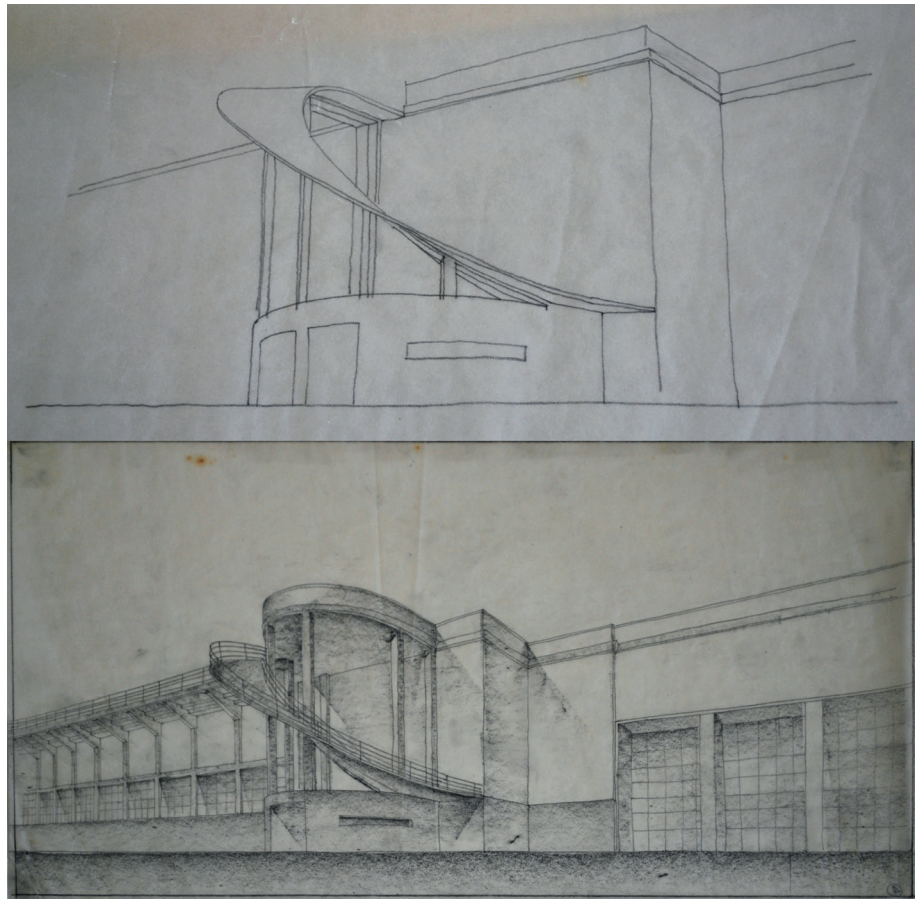


Fig. 1

Pier Luigi Nervi, *Stadio Comunale Berta di Firenze* (1929/32). Exterior of the grandstands at the spiral staircase. Perspective sketch and incidental perspective. CSAC Università di Parma, - N. inv. PRA 31 - n. id. 12814 - coll. 268/6 e 268/8.

The authors and the cultural background

The approach to the project of the two authors, Pier Luigi Nervi and Renzo Piano, is therefore read through the analysis of what is the contribution and development of the primitive idea, in its evolution carried out through the direct, manual graphic tool, intended not only as a communicative medium, but also (and above all) as a moment of verification, maturation and knowledge of the project idea in an intimate and personal dialogue. Gradually the idea (the *concept*) is transformed into something that must be communicated through a coded language, giving life to graphic drawings drawn up according to the current regulations, through which the realization of the work is described. They are objective documents capable of uniquely communicating the intentions of the designer.

Several critics, architectural historians and designers have spoken out on the controversial question of the intrinsic value of architectural drawing and sketch, understood as a finished work in itself. For this reason, an overview of the main interpretations in this sense is necessary when you are about to read and interpret the graphic corpus of authors such as Pier Luigi Nervi and Renzo Piano. On the one hand to contextualize works in a never exhausted cultural debate, but also to contribute to the correct interpretation of the graphs with the necessary critical tools.

Luigi Grassi applies the Crocian distinction between *art* and *non-art* to architectural drawing and considers worthy of attention only the drawing by the artist's hand, while the executive drawings aren't. Bruno Zevi also set against the original drawings with the project boards and implements a distinction between a work of art and professional drawing. On the other hand, Renato De Fusco, applies the results of linguistic structuralism to the study of architecture and he considers architectural drawing as a lan-

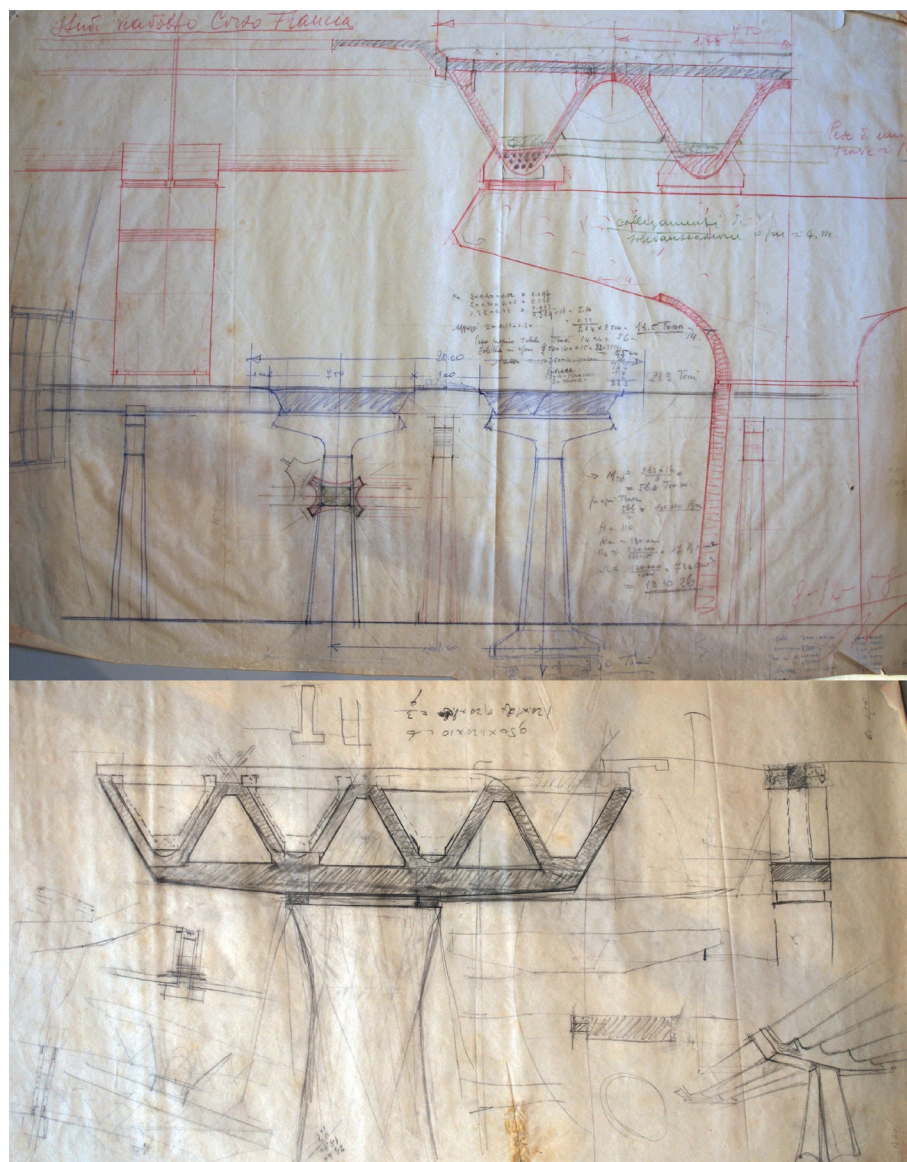


Fig. 2

Pier Luigi Nervi, Viadotto di Corso Francia a Roma (1958/60). Overall and detail sketches, perspective and orthogonal projections. CSAC Università di Parma, - N. inv. PRA 1252 - n. id. 15254 - coll. 31/6.

guage, without, however, considering the different writings of drawing. Vittorio Gregotti carefully evaluates the design intention and emphasizes the relationship between the preference for certain means of representation and the cultures of the project. Luigi Vagnetti proposes to document the transformation of the graphic language of architects and engineers and to understand the historical components of the graphic tool; for him there is no analogical relationship between graphic representation and realized architecture. Klaus Koenig and Tomàs Maldonado differently deal with the problem of the relationship between drawing and design iter. Instead, Vittorio Magnago Lampugnani relates the «form of presentation» to the «intellectual purpose of the author».

A key moment in the debate is the conference on architectural drawing organized by the *CSAC Centro Studi e Archivio della Comunicazione* of the University of Parma in October 1980. On this occasion, Arturo Carlo Quintavalle historically identified and contextualized the interpretative models that had given rise to the different readings of the project drawing: the design seen only as a function of the work carried out versus the drawing considered as an autonomous value.

The reading of the graphic works by Pier Luigi Nervi and Renzo Piano refers to this variegated cultural panorama. They have left us an extraor-

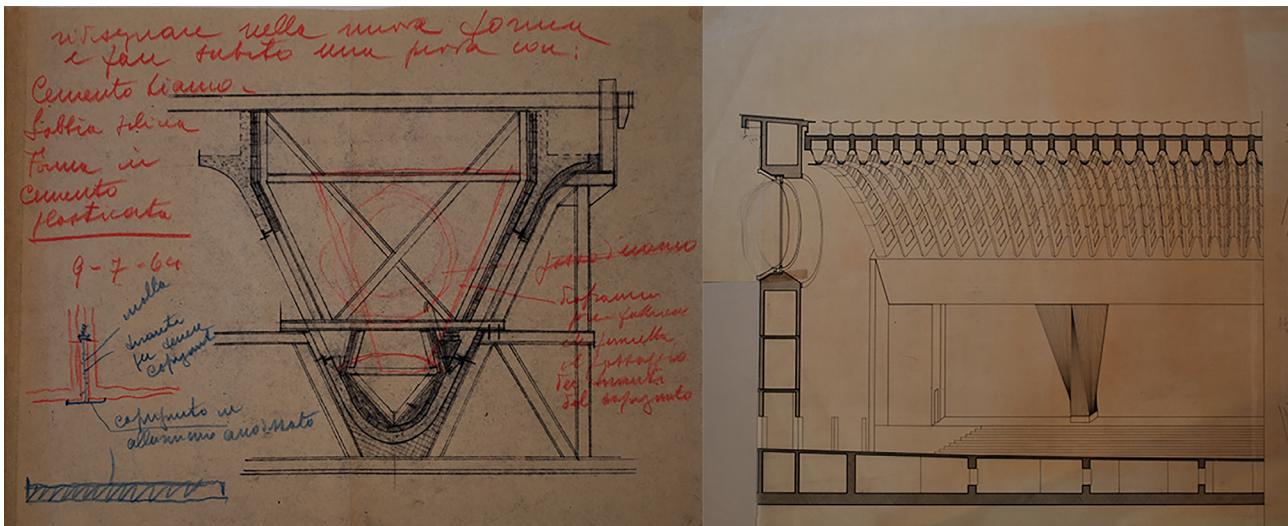


Fig. 3

Pier Luigi Nervi, *Aula per le Udienze Pontificie in Vaticano* (1966/71). Detail of the covering vault of the courtroom and executive. CSAC Università di Parma, - N. inv. PRA 585 - n. id. 14142 - coll. 152/4.

ordinary body of drawings that includes sketches, preliminary and final designs and a very large number of executive drawings and isometric and perspective views.

In light of these different interpretations expressed by historians and critics of architecture, the problem of “writings” and their history has been tackled by carefully considering the graphics chosen by the two authors, identifying variations both between contemporary projects and over the course of the long period examined. The examination of the “writings” proved to be particularly important for understanding the complex system of relationships between the designer and the culture of his time.

The analysis carried out on Pier Luigi Nervi’s drawings was set up by dividing the documents relating to the projects examined by horizontally investigating the projects, focusing on the analysis of the graphic aspects expressed in Nervi’s autographed drawings. In particular, the sketches were seen that can be traced back at the first creative moment and that dimension the structural parts or others, but also those that control the relationship between the context and the new architecture.

The sketches by Pier Luigi Nervi, referable to the copious documentation preserved in *Fondo Nervi* at CSAC in Parma, are mostly made up of minute line notations, almost always accompanied by notes and dimensions, and they oscillate between the pure structural intuition and the precise solution of construction problems (Fig. 1-2).

The sign, almost always drawn in pencil, is always precise and clear, and it denotes the author’s strong personality as well as an excellent command of the instruments of representation. Attention is always aimed specifically at definite themes, investigated according to adequate projective codes and differentiated graphic signs always used in a conscious way. They’re aimed at defining a personal language which, together with descriptive annotations or captions, fix the attention specifically to constructive, formal or perceptive aspects of the work (Fig. 3).

Renzo Piano’s drawings, kept at the *Fondazione Piano* in Genova outline an inimitable style thanks to the peculiarity of their graphic aspect. The sign, no less than the writing, is always clear and fast, constant and sure. The graphic variation is functional when the themes vary. His drawings illustrate how much Piano is aimed at the search for coherence between form and structure, of the structural and formal conception, aiming to integrate composition and construction together, fully accepting, albeit with

very different formal and structural outcomes, the lesson by Pier Luigi Nervi.

The use of different tools in the definition of the creative sketches mostly sees the pencil (Pier Luigi Nervi often also uses red or blue pencil to correct the first lines), but also black or coloured marker (often green for Renzo Piano), with different thickness. Occasional annotations enrich the graphic with hints; the studies, albeit schematic, consider from the earliest stages the orientation in relation to sun exposure.

Quick sketches are overwhelmed made of a few lines, sometimes more accurate and defined. In any case, they tell us about the architectural poetics and design language of the architect, expressed in harmony with the final codified graphic, that is the true stylistic code of the studio and its owner (Figg. 4-5). The notes and the corrections are often also on the first prints (or copies) of the project drawn up in definitive form, a sign of a constant work of refinement of the idea, along the lines of what the masters of the past (i.e. Pier Luigi Nervi) used to do. Then, they used to give the drawings to the studio collaborators, who developed the ideas by translating them into graphic boards drawn up according to the normalized and unified codes and representation scales.

Claudia Conforti identifies in Renzo Piano's sketches:

three scales attacked simultaneously by the design signs: the organic one of the artifacts, captured by the orthogonal sections and/or perspective; that of the technical detail, which expresses formal evidence of the space and its construction transferred into sections; and the wide-ranging geographical one, which controls the impact of the new building on the site. Only the latter is shown in the final planimetric representation, in which the project is at the centre of a network of relationships that the architect has carefully studied (Conforti 2007, pp. 7-8)

A trait that unites the sketches of the two authors, despite the very different graphic and architectural outcomes, is the coexistence of indications and annotations regarding solutions referring to multiscale readings, highlighting the relationship between constructive facts and perceptive results, to which both devote great attention from the first creative phases. In many sketches of both authors, indications on the assembly of the elements appear, an aspect towards which a great deal of attention is shown already in the early design phases, outlining a way of conceiving architecture that treats form and structure together, which thinks of one not as a function of the other, but as two entities and aspects that belong and interpenetrate, effectively coinciding in the architectural products designed.

In both of them, we know how much the search for non-standardized structural and constructive solutions is a stylistic feature of their architectural creations, while underlining once again the difference of the final architectures, of the materials used and also of the graphic results of the respective approaches to the conceptual sketch and to the building process of the project that is articulated through it.

Conclusions

It is well known that the advent of information technology, several decades ago, led architectural drawing to broaden its boundaries, progressively modifying the design process and amplifying the expressive tools of architectural composition, becoming at the same time a means of representation and a tool for development and control of the design process. The peculiarity is that in this process, information technologies have not

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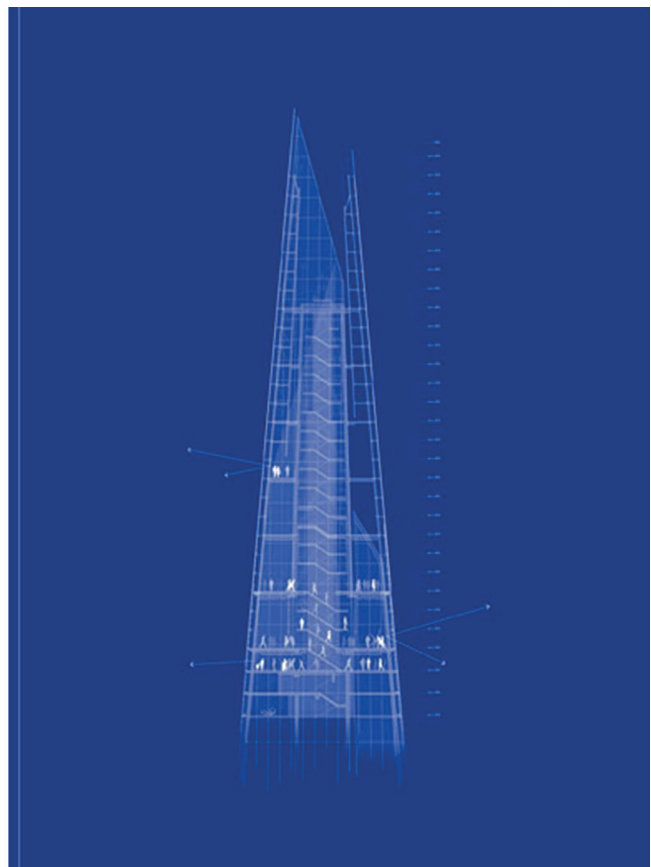
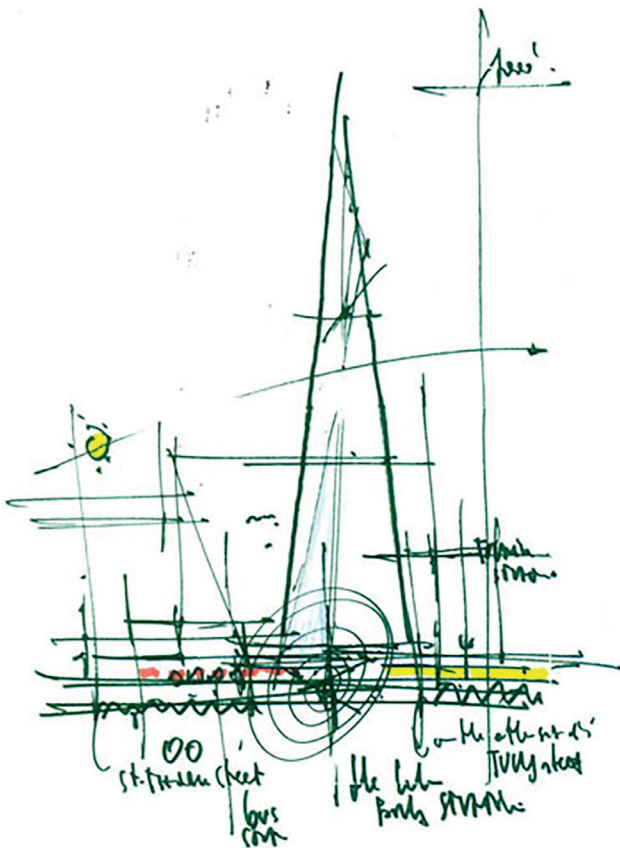
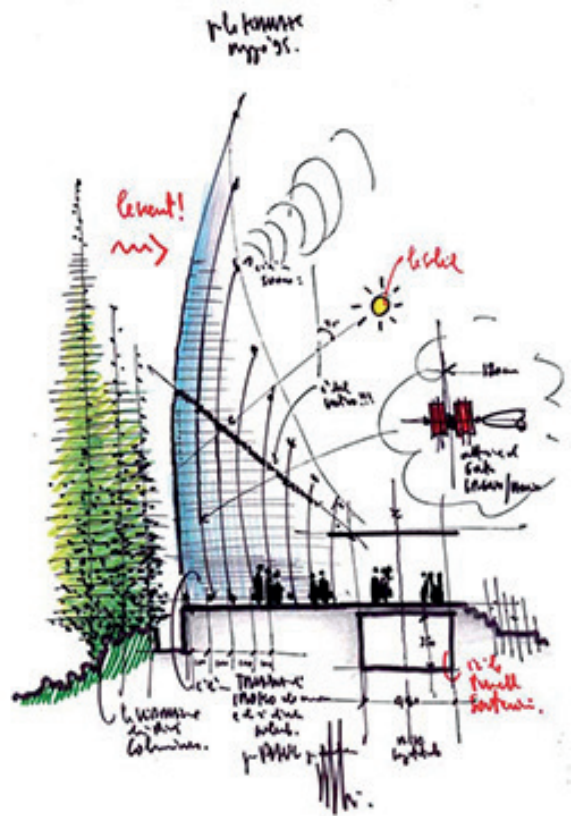
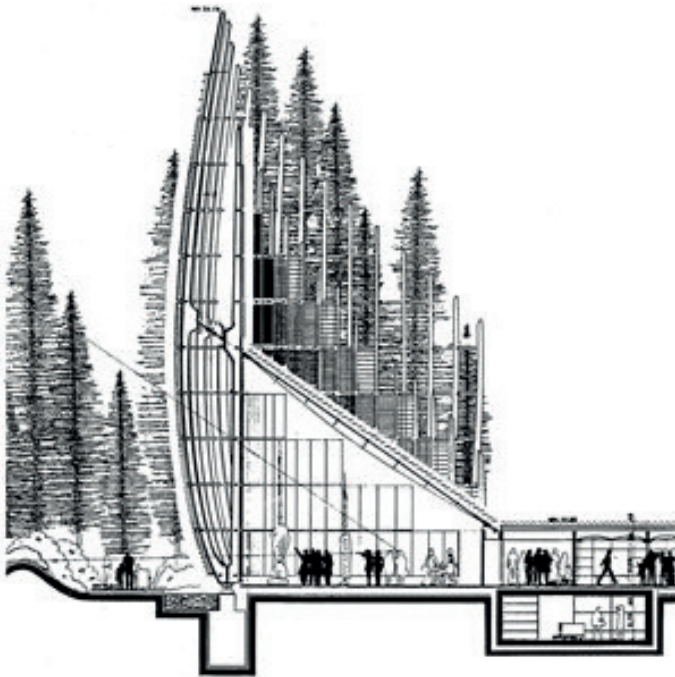


Fig. 4-a-b
Renzo Piano, *Centro Culturale Jean-Marie Tjibaou, Nuova Caledonia* (1991-1998). Concept sketch and project section. Fondazione Renzo Piano www.fondazionerenzopiano.org

Fig. 5-a-b
Renzo Piano, *the Shard, London Bridge Tower, Londra* (2000-2008). Concept sketch and project section. Fondazione Renzo Piano www.fondazionerenzopiano.org

remained functional to the expressiveness of the idea, but they became a means of extending projects and, consequently, a means of creating a new architectural language.

The innovative trends in digital representation can be traced back to three distinct aspects, respectively relating to the verification and immediate use of the project model, that is the creation of a 3D environment in which the designer can immerse himself in a virtual experience; the communicability of the project itself and its adaptation to the means and expressive tools of the contemporary world, characterized by multimedia and multidimensionality; and above all at the overwhelming entry of the IT into the ideational and design process, suggesting, supporting and sometimes determining spaces and geometries of the future reality, without making the phase of freehand conceptual sketches obsolete.

The moment in which the idea of the form of the project germinates and comes to be defined, always allows the authors to express themselves in a totally subjective way and often freed from the rigidity of the codes and rules of representation of the project, sometimes giving life to real graphic languages or “Metagraphic”, through which design creativity gives life to a complicated game of remakes and inventions, in that complex and patient game of textures that leads to the creative sketch.

The moment in which the idea of the form of the project germinates and comes to be defined, always allows the authors to express themselves in a totally subjective way and freed from the rigidity of the codes and rules of representation of the project. Sometimes this creates real graphic or “metagraphic”) languages, through which the creativity gives life to a complicated game of remakes and inventions, in a complex and patient game of textures that leads to the sketch.

Concepts well expressed by Mario Botta, that well emphasizes the cultural, meditative and formative role that still today the freehand drawing must have in the preliminary ideational phases. In one of his recent writings, he says:

With the passage of time the pencil has been transformed in an extension of the hand itself, and he became used to having it between their fingers, as happens with a smoker's cigarette. The pencil is not just a tool for drawing, but it helps to interpose the pauses, it prepares the thought: it can perhaps be said that a pencil is the tool that transports the idea to the drawing... it is a research, not a representation tool (Botta 2020, p. 7).

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