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THE STORY OF AN ART

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Abstract

The Italian, the words *tecnologia* and *tecnica* have two different meanings, therefore two distinct roles in architecture. While the former is purely instrumental, the latter, understood as *construction*, coincides with the elements of architecture and therefore also with its forms. As a consequence, its role is much more important, but also difficult and occasionally perplexing to define in a project. The two aspects, which are both scientific and artistic, are always present in architecture, distinguished by a different *purpose*, the real executor of their relationships. The expressive and representative purpose is proper to architecture understood as art, and establishes criteria, behaviours and construction roles, albeit with many shadow lines and uncertainties.

Keywords: technique-technology, construction, technical purpose, expressive purpose

Streszczenie

W języku włoskim słowa *tecnologia* i *tecnica* mają różne znaczenia, a co za tym idzie, pełnią odrębne role w architekturze. Pierwsze z nich ma charakter czysto instrumentalny, natomiast drugie, rozumiane jako konstrukcja, odnosi się do elementów architektury, a tym samym również do jej form. W rezultacie jego rola jest znacznie ważniejsza, ale także trudniejsza i czasami niejasna do zdefiniowania w kontekście projektu. Oba aspekty – zarówno naukowy, jak i artystyczny – są zawsze obecne w architekturze, wyróżniające się różnymi celami, które rzeczywiście definiują ich wzajemne relacje. Cel wyrazowy i reprezentacyjny jest właściwy architekturze rozumianej jako sztuka i to on ustala kryteria, zachowania oraz role konstrukcyjne, mimo licznych niejasności i wątpliwości.

Słowa kluczowe: technika-technologia, konstrukcja, cel techniczny, cel wyrazowy

In Italian, the words *tecnica* and *tecnologia* have two different meanings. The same thing does not happen, or happens to a lesser extent, I believe, in English, where the term "technology" covers a wider field of meanings. I shall therefore make an initial distinction between *tecnica* and *tecnologia*, since it is my belief that, in architecture, this difference has a considerable import.

Tecnica means the set of rules upon which the practice of an art or other activities, whether manual or intellectual, is based: as referred to architecture, it essentially concerns the principles and methods of *construction*, the direct emanation of a knowledge that became a science from the 1700s onwards.

Tecnologia is to be understood as the set of tools that make it possible to apply technical knowledge: it is aimed at solving the practical problems which allow the construction of a work and its operation, or make it more efficient and economic. The term may also apply

to abstract or intangible procedures (e.g., food preservation technology, or software). With regard to *tecnologia*, we can speak of "innovation", technological "progress", "inventions", which can sometimes favour scientific discoveries and the advancement of knowledge (the case, for example, of Galileo Galilei's telescope).

For these reasons, *tecnica*, to which I shall refer mainly with the term *construction* or *construction technique* from now on, and *tecnologia,* have two very different roles in architecture: I believe that the latter has a purely instrumental position, subordinate to the achievement of a precise and defined objective, quantifiable and measurable in terms of its efficiency, processing speed, performance, yield, and economy. *Construction*, on the other hand, plays a more relevant and more difficult part, since it directly interferes with the formal definition of the architectural project and its reasons.

If we can no longer agree with Vitruvius, who reductively defined architecture as the "art of building", nor do we wish to share the positivist belief of a direct derivation of the forms of architecture from the "truth" of materials or from the "certainty" of structures as a guarantee of its scientific nature, we assuredly agree with Auguste Perret, when he stated that construction is the "mother tongue of the architect", and that the architect "thinks and speaks in construction"[1]. This then means that the elements of architecture are the direct elements of construction, its means of expression: in this way the link between structural principles and the forms of architecture necessarily becomes more significant, more problematic, more complex and contradictory than that with *tecnologia*, which nonetheless guarantees applicability.

What I mean is that, if it is evident that every technological "innovation" rings the changes in a project and varies the result, urging or obliging us to find different and fresh solutions, these innovations, these updates of technological tools have a role that does not interfere with the ultimate purpose of the architecture, with the *reasons* behind its formal choices. They intervene in the project on a level pegging with functional needs or the many specific conditions that must always be met. Even today, at a time when we are faced with consistent, very pervasive, and apparently subversive technological transformations, I believe that their role is still the same: they can never constitute the central node, the starting point of the project or the reasons for its forms, they can never be the object of representation, on pain of losing the very meaning and role of architecture.

I would therefore like to leave aside this distinction between *tecnica* and *tecnologia* to focus on the more fruitful, intriguing, and difficult relationship between technical-structural knowledge and architecture.

Up to a certain point, the same reasoning we have made for *tecnologia* also holds true for *construction*, although, as I said above, the relationships with the forms of architecture are much more closely interwoven and fertile. Almost always, a new construction technique, regularly linked to the use of and experimentation with a new material, brings with it new ways of expression, previously non-existent and unknown, allowing the development of new architectural types, of ideas that were not previously feasible.

In the history of architecture, the direct correspondence between construction and architecture is often explicit: Bernard Rudofsky offered us many examples when he spoke of "architecture without architects" [2], showing works where the architectural quality was the

[1] A. Perret, *Contribution a un theorie de l'architecture*, Cercle d'Etude Architecturales, Paris 1952.
[2] B. Rudofsky, *Architecture Without Architects*, The Museum of Modern Art, New York 1965.

result of the correspondence of forms to needs, uses, construction wisdom, refined by time and craft, in the sense in which Tessenow understood it through Giorgio Grassi.[3] These works of architecture, which we can see everywhere in the world, were generally "unconscious", in the sense that the formal and expressive research was unconscious or, rather, unintentional. The extraordinary summary of all the issues that architecture addresses is, in these cases, an instinctive, rational and balanced result, generally linked to many factors: the availability of materials, the climate, the response to specific needs, the parallel fine-tuning of construction methods, the passage of time that gradually corrects and clarifies: a sort of "spontaneous" balance – as we describe these same works – between the two aspects of "utility and beauty", as Ernesto Rogers[4] would have it.

With the introduction of new materials, the situation changes.

Iron, for example, as is well known, was subject to major technical and engineering experiments, the harbinger of a vision which, thanks to the unconditional faith in the newborn construction sciences, tended to make architecture coincide with engineering, cancelling the former in the latter. This is an exemplary case in which the introduction of a new material and technical-scientific knowledge allowed the research and development of new structural principles (suffice it to think of the triple-hinged arch, for example), favoured the birth of new types of buildings, allowed their construction, and in some way fixed some of their characteristics, both typological and expressive. Large train stations, pavilions for fairs, the halls of stock exchanges are all themes that arose out of the 19th-century city, to which iron was able to give body and voice. Research which was continued by many great architects of the 20th century, from Peter Behrens to Mies Van Der Rohe, gradually shifting attention away from structural experimentation to the expressive possibilities of iron, in relation to the great themes of architecture – large factories, large collective halls, Convention halls, and so on.

Among these examples, the American skyscraper is the great interpreter of this relationship, albeit in contradictory ways which demonstrate both its potential and its difficulties.

Iron is still primarily responsible for this extraordinary typological invention, along with other conditions, both urban and technical. But in the construction of the skyscraper, iron, used in a coherent, pragmatic, technical and engineering way, deriving from its intrinsic properties and the ways to process it of the time, produces an inexpressive frame: this new building type was tasked with representing America, its power and ingenuity, to the world, but the expression of the simple structural frame, a technical erection, cheap, efficient, quick to assemble, is not actually up to this role. The architects of the Chicago School, from William Le Baron Jenney to Louis Sullivan, will have been aware of this expressive poverty and the distance between architecture and engineering, a gap which primarily concerns the purposes of each and their own statute, and they would seek solutions to this problem. The solutions they designed are not engineering, and deviated from direct exposure of the structure: they followed an opposite path: they looked for appropriate forms to *represent* the value and role of skyscrapers, to tell of and enhance their "height", Sullivan would say,[5] but in which, Jenney would specify,[6] the conquest of height and the solidity of the building were not only "effective" qualities", but also "apparent", self-evident.

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[3] G. Grassi, *Architecture as Craft,* "9H" 1989, pp. 34–53.

[4] E.N. Rogers, *Esperienza dell'architettura*, Giulio Einaudi, Torino 1958.

[5] L. Sullivan, *The Tall Office Building Artistically Considered*, "The Western Architect" 1922, no. 31(1), pp. 3–11.

[6] S.E. Loring, W.L.B. Jenney, *Principles and Practice of Architecture*, Cobb, Pritchard, Chicago 1869;

For us, the first American skyscrapers remain masterpieces of architecture, however, they were resolved by emphasizing the representation of the volume and their height through a cladding of the iron frame with stone or brick to visually reinforce it, exhibiting elements of a trilithic system that therefore becomes merely *represented*.[7] In a certain sense, a "fake", from the point of view of the correspondence between material, structure and form, a cladding that hides the actual load-bearing structure, but which does highlight the legitimate need in architecture for expressive purposes to prevail over structural performance.[8]

The gap between architecture and engineering is difficult to repair, one which recurs cyclically, sometimes integrates, and sometimes becomes a contrast. Some authors have helped us clarify the relationship between these two worlds, where architecture is an art that cannot be exempted from including science, an activity that has always straddled art and science, as well as art and craftsmanship.

It is my belief that the most lucid and precise was undoubtedly Étienne Louis Boullée who, by contesting Vitruvius and questioning the very meaning of architecture, brought a decisive clarification. Rejecting the ancient collocation which assigned it a subordinate role with respect to the liberal arts, Boullée reiterated that architecture was first and foremost an *art*: the Vitruvian relationship must therefore be upturned by virtue of its primary and authentic purpose. And this art was not to be understood as a construction skill; the proper and peculiar purpose of architecture, like the other arts, was the expressiveness and representativeness of its forms, their evocative capacity, the "representation of the character of the building", stated Boullée.[9]

The substantial difference from the other arts was that in architecture the technical question was inescapable, construction, with all the problems that ensue, is an essential component; as a result, relationships become more stringent and complex. But it is always the *purpose* which decides the role of the parts and their relationships: the goal, in architecture, is the form. Not the form per se, but form as a summary of all the issues addressed by the project, the intentionally expressive form, capable of evoking the meaning and value of the theme that the architecture is interpreting.[10] In this sense, forms are not the result of solving other problems or an unconscious or involuntary result: they are *intentionally* defined by pursuing a representative purpose.

The construction, the *tecnica*, has its own purposes and its own scientific status: it guarantees stability, solidity, precision, economy, and consistent use of the materials. But when it becomes part of the architecture, as happens in the relationship between *tecnica* and painting, sculpture, cinema, or music, it must be subject to other laws, it must serve another story. When *tecnica* prevails, to tell only of itself, it is reduced to "virtuosity", the demonstration of a specific skill which diverts the attention away from its generic, overall meaning, emphasizing only one component of the work. As in the other arts.

W.L.B. Jenney, *Architecture*, "The Inland Architect" 1883, April; W.L.B. Jenney, *A Few Practical Hints*, "The Inland Architect and News Record" 1989, no. 13(1), February, p. 7.

[7] In these same years, cladding in refractory materials also played another important role, that of fire protection.

[8] R. Neri, *Chicago. La rappresentazione del grattacielo*, Araba Fenice, Boves 2012.

[9] E.L. Boullée, *Architecture. Essai sur l'art*, Parigi 1775–1790; first edition in English: *Boullée's Treatise on Architecture*, H. Rosenau (ed.), Alec Tiranti, London 1953.

[10] L. Mies van der Rohe, *A Letter on Form in Architecture* [in:] P. Johnson, *Mies van der Rohe*, The Museum of Modern Art, New York 1947.

In architecture – as in the other arts – *tecnica* must not take over and only tell its own story, it must tell another story. It must tell the story of the art. It must *contribute* to giving an expressive form to the work. Because the purpose of architecture is not to arouse wonder over the structural boldness of the work or the originality or extravagance of its forms: these are ephemeral results, which quickly exhaust their effect like a passing fad, which speak of nothing but a skill, an oddity, or a peculiarity.

The expressive value of art is broader, rooted in culture, collective, lasting. Otherwise the longevity of certain works of architecture, like certain novels, paintings, and pieces of music, would remain inexplicable. Art interprets universal, general values, and represents them to the world in the clearest and most precise ways possible, *evoking them* through forms. In art we recognize ourselves, our world, and our values, "our own humanity", as Ernesto Rogers put it.

One experience has always clarified this aspect to me: in front of the painting called *Our Lady of Parturition* by Piero della Francesca we certainly do not admire the skill of the painter, nor are we interested in recognizing the particular physiognomy of the person portrayed, who is expecting a child. This figure moves us because we see in the painting the representation of motherhood, a human story which touches us all, and to which, in our culture, a precise value has been attributed; the painting evokes the gentleness, quiet and tenderness of waiting for the child to come.

It is still a figurative representation in this case, which architecture cannot be. This act of representation in architecture is trickier: here too the recognition of a meaning takes place through its *evocation* entrusted to the forms, which, in particular, *coincide* with the forms of the building. A short circuit which Loos explained clearly with the example of the mound of earth: "If we were to come across a mound in the woods, six foot long by three foot wide, with the soil piled up in a pyramid, a sombre mood would come over us and a voice inside us would say, 'There is someone buried here'. That is architecture."[11]

What does this tell us? That there is the establishment of an order, a hierarchy of intents, which clarifies the way in which the architecture is proceeding. First and foremost, we are talking about a *construction*, a human work *par excellence*, the result of technical knowledge, a pyramid of earth that must not collapse. Man "gives shape" to this elementary construction *intentionally*, and it is the form – the geometry, the dimensions, the material, the colour and so on of this construction – that provokes an emotion, which evokes in us the presence of death, because we bury the dead.

Construction is fundamental, it is what *takes shape*, and at the same time *gives shape* to architecture: but this construction is architecture because it is able to excite, to arouse a feeling in us *because of* its form. The shape of the mound is dictated by our idea of death, it is, in this case, very simple and perfectly *responsive, adequate* both for the practical purpose and, above all, for the representative one.

Loos suggested that, in order to be architecture, this adequacy must be the goal to pursue in every work: the mound of earth, the construction, has been given a specific representative form, aimed at "moving us", said Le Corbusier. "*A sombre mood would come over us*," said Loos: a mound built in another form would not provoke any emotion, would not say anything.

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[11] A. Loos, *Ins Leere gesprochen*, Brenner Verlag, Vienna 1932, Eng. trans. *Spoken in the Void,* MIT Press, Cambridge 1982.

It is precisely the purpose which tells us that, like other arts, architecture is "autonomous": it is the most "compromised" by other problems, functional, economic, structural, sociological, urban, technological and so on, that is, with many problems of a different nature, some of them referring to other scientific disciplines. All of which must be resolved, but its autonomy concerns its expressive capacity, its representative possibility, of which it defines the object and tools. The expressive result lies in the form, and the form as a result of the project is pursued voluntarily, intentionally, by implementing the tools and "rules" that belong to every art. This means – in my opinion – "autonomy" in art.

In architecture, awareness and purpose direct the definition of the forms, which must perform all the many and complex tasks of the project, solve all the problems connected with it. And in this process, construction has a much more preponderant role, arguably, than the "tools" of other arts, one which is more conditioning and challenging. Perhaps it can be compared to the use of one musical instrument rather than another, or to the choice of a material for a sculpture, marble or terracotta, or even to the role of the multiple components which contribute to the result of a film. They certainly affect the ways of expression, the "language" used, how something is told and also what.

Certainly, the limit between the exhibition of *tecnica* as construction and the quality of architecture is often blurred, hard to pin down, as is the boundary between structural experimentation and expressive intentionality. *Tecnica* does not have an intrinsic value in architecture, and it must not deterministically direct its forms.

Another material clearly shows these difficulties and the difficult balance between these two worlds, and opens up further research, posing even greater and different questions: reinforced concrete. This too is a "new" material, made up in turn of different materials, which does not possess properties so specific as to determine or dictate unambiguous principles of use. Reinforced concrete is a plastic, shapeless material, and, as such, it lends itself to technical, structural, and engineering experiments, also multiple, in different directions, as happened in the 20th century thanks to the many schools of engineers and architects, in Italy and in South America, above all.

The experiments have been quite extraordinary, ranging from bridges to dams, but for architects it has posed another, difficult problem, that of defining principles and sets of elements capable of interpreting the purposes of art, representing the values of architecture and making them recognizable. To distinguish technical experimentation, the boldness of constructions, the exhibition of structures from their use for the representative purposes of architecture, for the definition of a system of principles and rules, takes a "language". A language which, consistently with its possibilities, seeks to define a stable expressive system, one which helps us make forms comprehensible, general and evocative, supporting us in transforming them into that "language" of architecture to which Auguste Perret aspired.

It is my belief that this is open research, the constantly open research of architecture.

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