

Joseph Gandy, the "ruin" of the Bank of England. An interpretation of the project designed by John Soane, 1830. A particular.

# Matter, material, architecture. The tectonic conception between spontaneous consciousness and critical consciousness

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## ABSTRACT

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Talking about of place and matter as indissoluble terms of architectural practice could at first appear tautological, because of the essential link that makes them participating in the construction of anthropic structures. But nowadays it has become of utmost importance to emphasize it, in the light of the profound changes that concern the architecture in the last decades, during which the importance of technology as a value in itself that summarizes all the meanings of the project has questioned the link always existed among materials, building and language, as expression of a type-morphological world in which to recognize themselves collectively.

In this sense it may be useful to analyze some nodal points characterizing developments and discontinuities of this relationship, to investigate the role of memory as a "working theme" of architecture, performed above all through materials, and to highlight the importance to seek a critical link between place and type read in the ontological dimension of the building, that has no nostalgic or historiographical purpose, but on the contrary it is necessary to root the project into a cultural palimpsest that allows the present of construction to be dense of social meanings.

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## KEYWORDS

*material, place, organism, tectonic, cultural area, design*

## 1. PLACE, MATTER, TECTONIC

Place and matter, two terms mutually linked. The first is rooted in the ways in which matter is used by men, transformed into material through a process of constant refinement that begins to recognize in it a particular aptitude to be molded, cut, roughened, and geometrically shaped to become constructive element. The matter possesses a specific character as a potential material,<sup>1</sup> where its inherent physical qualities are brought within a technical know-how always updated, in order to conform spaces and structures suited to the multiple needs of man. A transformative vocation that does not exhaust itself in a logical-technical determinism, but assumes symbolic and linguistic value in the connotation of the identity of a civilization and a territory with architecture (Muratori, 1963)<sup>2</sup>. But if matter becomes material it directly influences the characters of a place, it is also true that the place itself, that is the result of collective identification in building stratifications that have symbolic and aesthetic value, influences

architecture for the particular qualities of the materials that connote the context (Fig.1). The building in this sense can be understood as a synthesis of the change of nature - that is the matter "mother" - in architecture, a theoretical but also physical place in which topos encounters typos (Frampton, 1999, 20), recognizing each other in the built form.

This is a process that involves three terms, matter - material - element, within a sequence (Strappa, 1995) that attributes a coherent technical form to the matter, making it an architectural element and a structure. All this is done with dimensional distinction, specialization, and hierarchy, essential for the relationships that structures establish among themselves and with the whole organism. This process can be empirical-spontaneous, referring to elementary civilizations, or scientific-critical, as evidenced by innovations that from the seventeenth century have prepared the present cultural ground.

Figure 1.

Jerusalem, Kidron valley. From the left: the tomb of Hezir' sons and the tomb of Zechariah.



Vitruvio, in the treatise *De Architectura*, describes the operations of recognizing, selecting and ordering materials, an order that for St. Augustine is the very premise to beauty.

From the materials and the *utilitas* descend the different kinds of construction (Fig.2) (Vitruvio, 2002, *Liber secundus*, VIII, 142-143), for example putting in relationship the material with the amplitude of the *intercolumnio* and recommending for *araiostyloi* temples the use of wooden architrave in one piece instead of marble ones (Vitruvio, 2002, *Liber tertius*, V, 181). Wood and marble recur in the hypothesis of the "lithicization" of the Doric order (Martin, 1980),<sup>3</sup> according to which the elements of its syntax translate the constructive and expressive congruence of the archaic wooden temple, as illustrated by Choisy's famous design. It's the adaptation of an architectural code developed for another material<sup>4</sup>, which maintains the symbolic and aesthetic value of the original tectonic configuration.

In the matter is anticipated the form of materials and the way these affect the type; it is imagined their aging, the entropy behind what Cesare Brandi (1977) called *patina*, that is the "sordina posta alla materia" [the damper placed on matter] by time, influencing the image of the building, its perception, and by extension the characters of a square, of a street, of a city and landscape.

The ways in which the materials express their link in architecture are related to the concept of tectonics, a "law" in which the vocation of materials is written with respect to the most appropriate syntactic relations to the purpose for which they are intended. The Greek word *tekton*, indicating the carpenter or builder, undergoes various mutations of meaning over time. Frampton (1999, p. 21) explains that *tekton* had the role of poet for Saffo, anticipating the nineteenth century' two souls of tectonics as "art of connection", in which the know-how of craftsmen meet the aesthetic judgment.

Tectonics (Purini, 2000) "represents" the weight of matter, acts on the relationship form-construction and language, giving architecture special characters synthesizable by couples of opposite terms *heavy / light*,<sup>5</sup> *opaque / transparent*, *ductile / plastic*, *wrinkled*

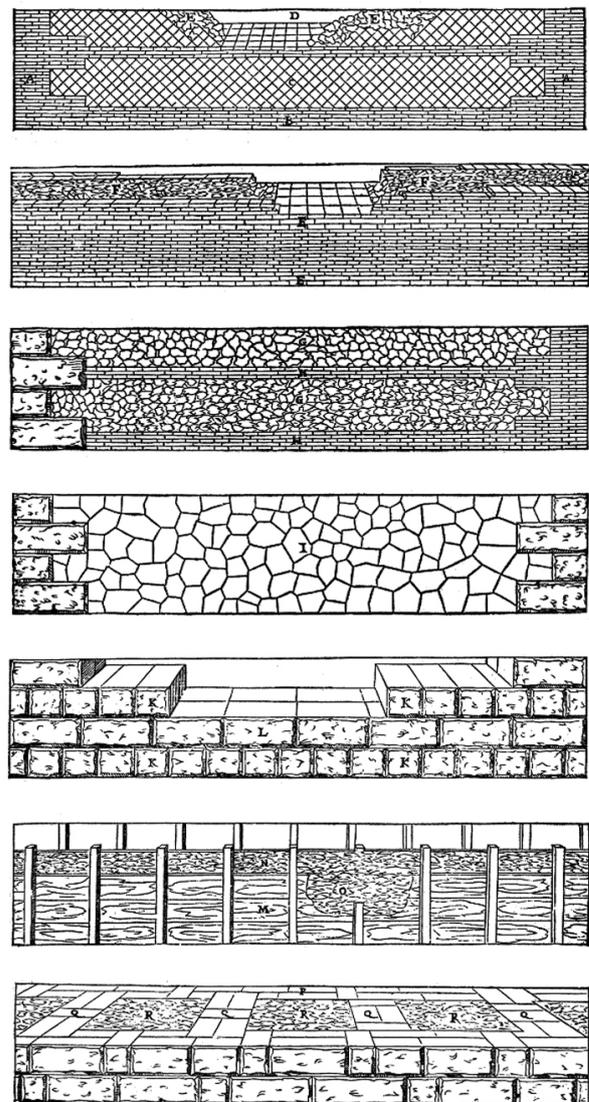


Figure 2.

*Different types of wall. From: Andrea Palladio, I quattro libri dell'architettura, Hoepli, Milano, 1945 (1570)*

*/ smooth*. The tectonic of a building expresses the set of rules, empirical and collective or scientifically developed, which establish - making them expressive - the link between different materials. In the first case,

contributing to spreading knowledge in constant updating; in the second, triggering deep innovations for introducing new materials or techniques.

It is thus evident that the tectonic nature of a building is linked to constructive-formal universes that contain specific grammars of build (Fig.3). There is an intimate connection between architecture and material, through consistent transformations that develop its technical potential and its linguistic value. These transformations are the result of two synergistic "attitudes" of makers with respect to building, which are *spontaneous consciousness* and *critical consciousness*, as defined by Gianfranco Caniggia (1986), starting with the complex analysis of Saverio Muratori. The spontaneous consciousness is the immediate and synthetic adhesion of the builder to the layered knowledge, thanks to which the notions

about the ways to build a building are passed down and are collectively inherited. It's typical of non-crisis periods, when the consolidation of knowledge and its updating follows natural civil evolution, as in elementary civilizations, whose architectures have simplified connections among matter, material and organism, and language is nothing more than the direct translation of construction.

To act according to critical consciousness implies a discernment, an individual choice of materials and their use no longer - or to a lesser extent - following the collectively inherited culture but introducing a discordance respect to it. This happens in periods of crisis.

Spontaneous consciousness and critical consciousness, apart from their distinction, in reality intervene simultaneously - albeit with different



◀ Figure 3.  
*The Doric order and the expressiveness of the trillith*

▲ Figure 4.  
*The stone wall and its "textile origin".*

▶ Figure 5.  
*Matera. The tectonic translation of the material vocation.*

equilibriums - in the mind of the makers or designers: in the first case because elemental empiricism include naturally the tendency for its improvement; in the second case because the designers who seek the syntactic break between materials and language with respect to tradition, must adapt project to inertia of function, use, social habits, and hence a residual spontaneous consciousness that persists.

## 2. THE "ELEMENTARY" DWELLING AND THE MATERIAL-CULTURAL AREAS

Spontaneous consciousness, acting on the collective nature of architecture and its stratified permanences, conditions the identity of the so-called *material-cultural areas*, territories closed by natural limits relatively insurmountable (Caniggia e Maffei, 2008), whose natural features have stimulated in man a process of identify and selection based on a building

vocation, recognized to the stone, to the trees, to the shrubs, to the clay.

The material-cultural areas are connected to the palimpsest of knowledge that correlates nature to architecture through the type. The type is understood as a set of characters shared by several buildings as a result of belonging to a civilian area that acquires technical awareness of the way that materials can be transformed into constructive elements, arranged in structures and systems up to define the unity of the architectural organism. These are notions handed down through a process of continuous refinements capable of composing a culture of construction over time.

In general, and with many simplifications, can be distinguished two main specific material-cultural areas: *organic-wall* areas, synthesized by the art of the mason; *serial-wood* areas, in which the art of carpenter has developed. The first is marked by the prevalent use of stone or terrain, by the organicity and continuity of construction, in which the wall character





**Figure 6.**  
South of Italy, a typical trullo in the countryside of Valle d'Itria.

sums up the convergence among space, structure and expressiveness. In the latter, the use of punctual and discontinuous elements such as trunks, branches or bundles of plants implies the seriality of the structures, consisting of mutually interchangeable parts distinct between supporting and non-supporting ones. In the *serial-wood* areas stability is not given by continuous support, as in the first, but by the balance among the elements sections, their length and the interconnection nodes. However, the two areas are not directly related to the materials available in nature (Strappa, 1995), considering the many cases of elastic-wood tradition in areas with abundance of stone, such as Turkish-Ottoman regions, and vice versa woody areas such as the Apennines in Italy, where stone and brick define the cultural matrix of the building. They are therefore polarities to investigate cultural intersections and their overlapping, considering many contaminations of which history is rich, as shown by nineteenth-century studies, and in particular the contribution of Semper (1992) on theory about the textile origin of the wall (Fig.4). Or as many primitive homes demonstrate, built with a wood carpentry rested on a masonry base. Or the role of plaster in covering and thus in concealing the inner structure, highlighting the continuity of volume - in the case of organic areas - or the hierarchy



**Figure 7.**  
Ciad, a village of mud-brick huts.

between supporting and non-supporting parts in the wood areas.

There is also a close relationship among building type, city and territory, based on the influence of materials in configuring inhabited space and its morphology. It's evident in the shelter and rudimentary dwellings (Cataldi, 2015) of elementary civilizations, that directly translate matter into building consistently with its technical attitudes. This happens in the *stone areas*, whose morphology determine three types of tectonics. The first is *excavation*, the primary act of the shelter, spread in territories characterized by limestone or tuff, as in several areas of North Africa, Anatolian hinterland, China, and Mediterranean Europe. In Italy, the Apulian-Lucanian Murgian territory is rich in excavated architectures. Among these, Matera represents a millennial palimpsest of types and variants (Fig.5) based on the spontaneous and critical updating of a unique building thought adapted to the needs of the inhabitants, from the excavation - the negative - to its external development with the addition of rooms, made with the same asported matter transformed in blocks. A total symbiosis linking environment, matter and architecture.

Another type of *organic-wall* tectonic is generated by the *spietratura* [clearing stones], an ancient

agricultural practice that consists in freeing the fields from the stones, detrimental to the crops. From that gesture man has learned to select the material of different dimensions, intuitively placing the big stones below and the small ones above, thus sensing the tapered section of the dry-stone wall. The updating of this technique characterizes the typical *trullo* (Fig.6), a traditional dwelling which resumes those principles by applying them in a building type characterized by the stone conical pseudo-vault, made for progressive overhangs of horizontal rows of *chianche* [flat stones] resting on the walls delimiting the internal space, even these last built with the same spontaneous rules of dry-stone wall.

The greatest building specialization in the *organic-wall* areas is represented by the weaving of squared blocks, which require a deep understanding of the interdependence among element, structure and

organism, deriving from the most archaic techniques, building principles such as declivity and size reduction of elements upward.<sup>6</sup> Even in *earth areas*, such as the *stone areas*, there are several variants of shelters and houses based on the archetype of the excavation, but with substantial differences: in the latter it is subtracted rock parallel to the ground plane, while in the *earth areas* excavation follows the method of vertical well, obviously for static reasons due to the different consistency of the matter. An example of this elementary settlement is Matmata in Tunisia, where digging proceeds with a foundational ritual that begins by tracing the base circumference and continues by removing the terrain until it reaches the

**Figure 8.**

*Algeria, abandoned earthen village near Timimoun, built in adobe structure and wooden roof.*



limestone stratus, exploited as the natural ceiling of the rooms excavated below.

In the *earth areas* the building culture of *pisé* is diffused, as in the *musgum* hut of Africa (Fig.7), whose self-supporting ovoid structure, reinforced by a wooden frame, is equipped with mud scales arranged in staggered rows. With this ingenious system it get at the same time (Cataldi, 2015, 53-54) reinforcement ribs and steps for maintenance.

Another "earth" variant of the form-building relationship is the *adobe* technique, which is the basis of a constructive culture identified by mud bricks and influenced by the availability of timber, in addition to the nature of the terrain. In the oasis settlements of the Erg desert, for example, palm trunks and their leaves form the roof frames, differentiating themselves from the *adobe* structure (Fig.8); while around the Syrian salt lakes the lack of vegetation is reflected in the domed homes built only with mud bricks, dried and mounted for horizontal overlapped rows upward.

The technics based of cooked brick inherits the tectonic principles from both the *pisé* and the *adobe*,



characterizing a peculiar culture of the "textile wall" that crosses and assimilates the constructive traditions of *organic-wall* and *serial-wood* areas.

The elementary dwelling in *serial-wood* areas, considering only the Euro-Mediterranean area, distinguishes above all the building culture in the Nordic and Middle-European countries, focusing mainly on two archetypes: the first one is the house *blockbau* (Fig.9), whose structure is made of trunks stacked and wedged in at the corners, often risen on a stone base; the second is the *framework* type, with a wood structure differentiated by the closing walls, made of *pisé*, *adobe* or cooked bricks, such as the Germanic *Hallenhaus* (Fig.10). Unlike the other two areas described above, in *serial-wood* areas there is a clear separation between structure and building envelope. This is also evident in the wetlands, where a specific know-how has been developed for the presence of trees, rushes and saltworts, centered on the type of hut and pile dwelling, where the art of bind and *framework* has reached already in the antiquity high levels of structural and expressive complexity.

◀ Figure 9.  
*Blockbau* type. Photo by Øyvind Holmstad.

▼ Figure 10.  
*Hallenhaus* type. Photo by Axel Hindemith.



In the *serial-wood* areas, comparing them to the *organic-wall* areas, emerges a greater hierarchy among the individual parts, linked by knots, joints and ligaments.

Hence the described material-cultural areas enclose within them specific morphological variations depending on the different territories. By them derive specific tectonic and stereotomic cultures, arising from the relationship of man with materials, which inspired distant civilizations to express a similar typological thought in different ways, within which local multiplicities find greater strength. Vitruvio Pollione (2002, Liber secundus, I, 133-139) summed up this concept by identifying the origin of architecture in the roof of fronds, in the digging, in the dough of mud and branches, distinguishing the different material areas.

Therefore the study of "elementary" architecture allows to understand technical-formal archetypes as a kind of "hidden characters" even when architecture, especially in our time, research a geographic-expressive atopy.

### 3. THE EMERGENCE OF CRITICAL CONSCIOUSNESS AND THE INTERPRETATION OF CLASSICAL TRADITION AS A "CIVIL CONQUEST"

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Elementary dwellings allows to clearly understand the form-building relationship in its "material truth", where the tectonic implicitly becomes the language, and where spontaneous consciousness is the collective *framework* that assimilates the typological updates. By contrast, urban civilizations of antiquity are fundamental to understanding the search of expressive potentiality of materials and their meaning, especially in public buildings. Considering this as a too wide topic to be analyzed here, it just have to emphasize that the collective role of architecture, as social self-representation, was implicit in the unity of knowledge (Carpenter, 1979), an essential prologue to consider the construction as a choral work of

identification,<sup>7</sup> a fundamental aspect present also in Medieval culture.

But above all the fifteenth century marked a critical discontinuity with respect to the inherited organic and unitary knowledge, because of theoretical speculation of intellectuals and architects who rediscovered Roman antiquities through the study of the discoveries and the reading of Vitruvius, elaborating a *grammar of Order* as the foundation of a universal and anthropocentric theory of architecture, embodied in projects and collected in treaties. In the middle of the fifteenth century, in the *De Re Aedificatoria* treaty, Leon Battista Alberti (Borsi, 1973) critically interpreted Vitruvio<sup>8</sup> and emphasized the link between materials and architecture, saying that the building is a body consisting of design and matter (Leon Battista Alberti, 1966, 14). In one of the typical biological analogies of period, it was recommended (Leon Battista Alberti, 1966, 66) to conform the "limbs" following the example of nature, which means, first of all, to obtain a compact, integral, unitary structure from the materials organized in a certain order. These concepts were focused on the use of materials according to the principles of consistency and necessity, summarized in the idea of beauty based on *concinnitas*, probably derived from Cicero (Di Stefano, 2000, 18)<sup>9</sup>. The *Concinnitas* is a sophisticated harmony of contrasts on the basis of three fundamental categories to be applied in the construction of a building: *numerus*, *finitio* and *collocatio*<sup>10</sup>, from whose interaction the building is born, composed of well-tuned parts, to which nothing can be removed or added without breaking the overall harmony (Wittkower, 1964).

Although many treatists like Alberti, Filarete, Palladio, Serlio and Vignola reflected on the Vitruvian triad and in particular on architectural orders - focusing on the study of variations in classical canon - the cultural scenario in which they lived in was still strongly united in to comprehend collectively the relationship of materials with structure and language. Even when Giulio Romano, in the courtyard of the Doge's Palace in Mantua, deformed the syntactic rules using spiral columns on the first floor overhanged respect of the basement, or in the courtyard of Palazzo Te, in which he simulated visually a structural collapse of the

trabeation (Fig.11), forcing the static expressiveness of the trilith. As Summerson (1970) stated, the expressive accentuation of Giulio Romano's bugnate gives the material an intermediate appearance between nature and artifice. Although often he uses plaster to feign stone weaving, as Leon Battista Alberti in Palazzo Rucellai in Florence the century before, another "heresy" that shows a deep focus on the building language and its symbolic representation, rather than the tectonics description. These are calculated dissonances that don't betray the starting principles, but only vary their application. Thus anticipating the baroque exception to the classical order, making the *representation* autonomous from the *ontological* component of the construction. This is demonstrated, for instance, by curved architraves and innovative proportions that renew the form-construction syntax, based on the materials used and the local building culture. This explains the use of bricks mounted following a curved line and joined by the plaster, which one overcomes the limits imposed by the flatness of the individual elements and avoiding the whole surface being fragmented. The theme of curved surfaces in Baroque is differently solved in those



Figure 11.  
Giulio Romano and the "visual collapse" of the trabeation. The expressiveness of the static.

*stone areas* where the tradition of tuff is developed. In this case, the curved line is obtained by sculpting the blocks in place, as shown by the cases of Spain (Fig.12) and southern Italy.

#### 4. THE CRISIS OF THE RELATIONSHIP BETWEEN MATERIALS AND CLASSIC RULES IN EIGHTEENTH AND NINETEENTH CENTURIES

So far a conceptual parallel has been followed between the consolidated material tradition and its constructive and linguistic expression. But in the middle of the eighteenth century France and England became cultural centers for a renewed connection of tectonics with materials, between materials and language, for reaction to neoclassicism considered unable to reflect the ongoing social changes. The scientific and philosophical innovations that marked the Enlightenment and industrial civilization determined the separation and specialization of



Figure 12.  
Valencia, the curved façade of the cathedral. The expressive potentiality of the wall.

knowledge, producing in architecture two almost antithetical attitudes: in France prevailed the historical and evolutionist thought, in England the romance, the picturesque and empirism. Both are influenced, in a different way, by the study of classicity, made possible by archaeological campaigns, and by the study of the Gothic and its structural potentials.

It was a period of great cultural ferment that shows interesting aspects regarding the material-architecture link. French rationalism owed much to the translation of the *De Architectura* that Claude Perrault published in 1653. By questioning the Renaissance faith towards the fixed proportions of the five orders, Perrault (Middleton, 1977) distinguished in a building the "positive beauty" due to the quality of materials, executive precision, measure and symmetry, and "arbitrary beauty" due to its proportions, structure,

and form. The path to the essence of architecture then culminated in the Greek-Gothic ideal asserted by Michel de Fremin and the Abbé de Cordemoy, purified by any emphatic representation and privileging the simplification of the tectonic form, in search of classical essence without the excesses of the baroque, anticipating Marc-Antoine Laugier and the famous frontispiece of his *Essais sur l'architecture*. (Fig. 13).

This design shows the architecture, embodied in a woman, standing above a ruined temple that indicates the "living" hut of tied trees and branches as the origin and paradigm of a conception more concerned with the analytical understanding of the constructive principles that repeating a rigid and dogmatic grammar.

The ductility of Gothic, according to Viollet Le-Duc

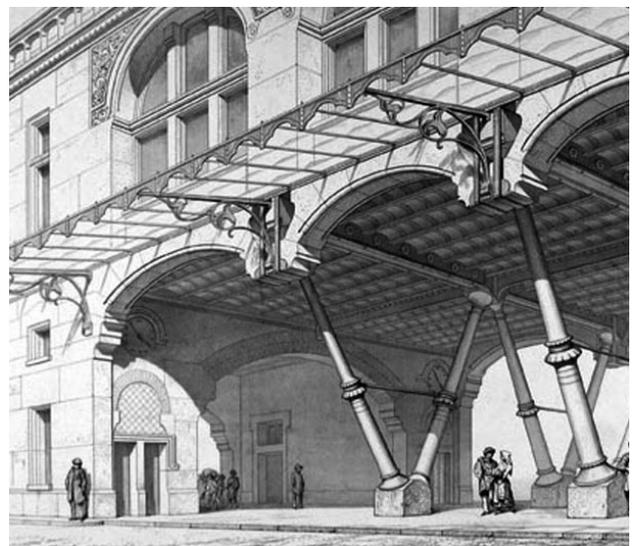


◀ Figure 13.

*The frontispiece of Essais sur l'architecture, Marc-Antoine Laugier, 1755.*

▼ Figure 14.

*- Viollet Le-Duc, the project of gallery for the castle of Pregny, 1875.*



(1982) based on "principles and not on a formulary", it fitted well with the materials available by the metallurgical industry, because the reduction of the sections and the coincidence between structure and language in the building frame had assonance with the medieval constructive tradition. It was the time when Soufflot and Rondelet inserted metal



Figure 15.  
Joseph Gandy, the "ruin" of the Bank of England. An interpretation of the project designed by John Soane, 1830. A particular.

reinforcings in the masonry, before the mature work of Labrouste in the middle of the nineteenth century, whose projects harmonized the metallic structure and masonry structure, interpreting the neo-classical ideal according to a new form-building expressiveness. In 1875 Viollet Le-Duc, in the project of gallery for

the castle of Pregny (Fig.14), removed the pillars by replacing them with sloping and opposed cast iron struts. This was not only a design choice, but a real manifesto with which the Carcassonne architect renounced to the classic grammar of column as a primary element.

At the same time, in England, classicism was dissolving, making architecture part of natural phenomena. The *ruinism* re-elaborated Piranesi's engravings introducing those atmospheres in classical and neo-palladian projects, consumed by time and partially collapsed, scrutinizing architecture as the end of its life rather than displaying executive and chromatic perfection, as evidenced by the designs by William Chambers, or John Soane's Bank of England project, designed by his assistant Joseph Gandy as a giant ruin (Fig.15)and exhibited at the Royal Academy in 1830 . Two different ways of acting on materials to renew the concept and the language of architecture: analytical rationalism in France, romance in England. In the first case, the apology of the resistant section; in the second, the celebration of degradation and patina. But it was the first to prevail, with the consecration of the metal frame to the paradigm of the Industrial Revolution and the typological inventions of time, the factory and the railway station. For both, cast iron and steel stimulated the search for new languages, but especially of new syntax with which to gradually release the bearing structure from the envelop, preparing the terrain for the reinforced concrete (Fig.16), that in the new century marked a new and most radical breaking point in the bond between material and architecture.

## 5. RATIONALISM, CLASSICAL HERITAGE AND THE INFLUENCE OF CULTURAL-MATERIAL AREAS

*"The climax of civilization reached by man in classical antiquity cannot be easily forgotten. Classical antiquity has been and is the mother of all subsequent cultural periods."*

(Loos, 1972)

Research on reinforced concrete and iron structures at the beginning of the twentieth century crosses Modernity focusing on some issues related to the role of materials: on the one hand the free plan, the overhang, the angle of a building as discussion topic, the separation between support and envelope, the

cancellation of the massive wall by the curtain wall; on the other, a further investigation into the unexplored potentiality of classical architecture and its principles, reinterpreted with new materials in search of a new constructive and expressive truth.

The complete analysis of these two phenomena is deeply studied by extensive specialized literature. Therefore this part of dissertation is focused on a few exemplary cases of the second theme, chosen among many others, which show a more explicit critical link with classicism.

In this sense, August Perret's "classic rationalism" is debtor of the analytical conception and structuralism of Viollet Le-Duc. But with respect to his indirect master, Perret was free from tectonic contamination between masonry and iron, experimenting a new opportunity to reconcile "the rigor of platonic



Figure 16.  
August Perret. Musée National des Travaux Publics, helicoidal staircase, 1948.



Figure 17.  
Peter Behrens, Aeg Turbinenfabrik, 1909.

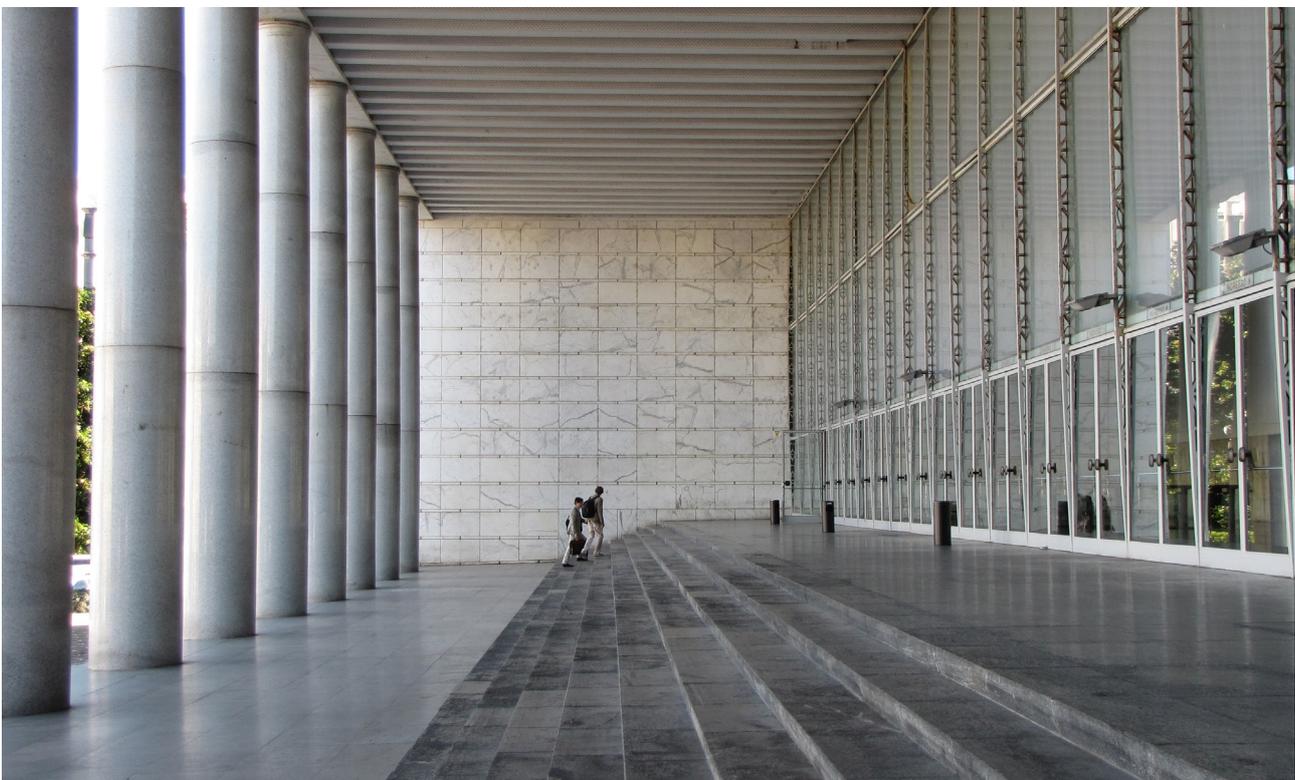
form with the tectonic expressiveness of structural rationalism" (Frampton, 1999 146-147) through the frame structure made of reinforced concrete. The result of this attempt is evident in the house in Rue Franklin in Paris, built between 1902 and 1903, in which the structure is separated from the closing walls, manifesting this hierarchy with ceramic coatings whose refinement recalls similar wooden works, combining the theory of Semper with Choisy's hypotheses on the wooden derivation of Greek trabeation. Or, in the late 1948, the Musée National des Travaux Publics, whose trabeate structure expresses even more clearly the path towards the "expressive economy" of reinforced concrete, particularly in the interior, where the memory of the classical vestibule blends with the modernity of the elastic frame and culminates in the helicoidal staircase in *béton armé* sustained by few points: the grooved columns and the pillars of the façade, detached from it freeing a continuous space. In the Germanic area, Peter Behrens recovered Schinkelian classicism (Frampton, 1982), placing it in a different relationship between construction and language.<sup>11</sup> In Aeg Turbinenfabrik of 1909 (Fig.17), the temple metaphor is translated with industry materials, iron for the structure, reinforced concrete for the façade panels, and finally the glass windows, mounted among the iron pillars rhythmically ordered along the lateral façade. The latter is a modern intercolumnio that renounces the angular element as a traditional reinforcement of the building, thus declaring a unconventional constructive truth: it's the "angular conflict" of the Greek temple reinterpreted coherently with the new material. The composition of the front façade also gives a clear distinction between the supporting structure and the non-supporting parts: the fronton rests visually on the glazing entrance and not on the rearwarded concrete panels, pointing out how the visual weight of latter does not match a supporting role. It is a sophisticated *anti-tectonic* that puts together the symbolic form with a different organicity of the structure.

The result of a renewed relationship among material, form and construction finds in Mies van der Rohe's research a particularly significant contribution, focusing on a reduction work in which the truth of



**Figure 18.**  
Mies van der Rohe, the German Pavilion for the Barcelona International Exhibition, 1929. (Rebuilt in 1986)

materials and construction is declared by elementary tectonicism derived from the semperian archetypes of base, supporting structure and roof. The German Pavilion for the Barcelona International Exhibition of 1929 describes the synthesis of the technology potentiality and classical heritage (Fig.18). In this sense the form is the result of an investigation process on the construction (Mies van der Rohe, 2010) and its aesthetic and symbolic meaning, as well as technical.<sup>12</sup> The podium clad of travertine is the base of the cross-shaped pillars covered with chromal tinplates and vertical partitions made of different materials: glass with different finishes, onyx, travertine, marble. The plastered roof completes the desire to elevate the building work beyond the purely technical fact,



**Figure 19.**  
Adalberto Libera, the main pronaos of  
Eur Congress Palace, 1938.

recalling the classicity but at the same time denying the representation of the tectonic nodes.

The modern mentioned buildings so far speculate *serial-wood* archetypes, in which the heritage of designers cultural contexts is recognizable.

But in same years, Modernity in the *organic-wall* areas coincided with projects that re-elaborated "stereotomy inertia", as evidenced by Italian rationalism of Roman area, in which beyond the "rhetoric of state" emerged attempts to adapt the reinforced concrete and iron structures according to wall tectonic and stereotomic principles.

Emblematic of this approach is the 1938 Eur Congress Palace of Adalberto Libera, particularly the variant presented for the second phase of the competition,

defined by himself a "basilica ample as a temple". From the ancient specialized building the palace recovers the articulation of the volumes, the character of spaces, symmetry, some linguistic and syntactic principles. However, it is not rhetorical, but the translation of spatiality and classical tectonics into the technique of reinforced concrete, used in a way consistent with its characteristics.

The research by Libera aimed at a synthesis of the massivity of wall, the rhythmic repetition of the pillars and the large nodal space that stands out as the urban pole, masking the structural frame within a new organicity in which the aesthetic potential of the concrete is in its mass, opposed to the Gothic reduction by Perret on the fair-faced concrete. All of



Figure 20.  
Adalberto Libera, the rear pronaos of Eur Congress Palace,  
1938.

this is evident in the double *pronaos*, the main one looking towards the Palace of the Italian Civilization (Fig.19) and the second originally turned towards the countryside(Fig.20).In the first case, the sequence of the pillars and the equivalence between depth and height

refer to several examples of classical porticos, but the wide distance, the continuous glazing, the sequence of steel beams, and in general the elimination of any ornate, avoid mimesis. In the secondary *pronaos* Libera reinterpreted the peristyle, with the sequence of pillars in strong relation with the glass windows, sustained by steel reticulated supports, detached from them by a narrow space that recalls the "myth". The coatings communicate their non-supporting role, as well show the processing techniques of the marble slabs borders. Therefore critical intentionality exploring constructive and expressive potentiality in new materials, in the early twentieth century found a fertile ground where, in addition to the experiments more directly related to the artistic avant-garde, it had a significant cultural space for a renewed tectonic research aimed to introduce classic principles in the new materials, toward an architecture in which *topos* and *typos* composed a tissue of memories.

## 6. CONCLUSION

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This essay is to be considered only as a preliminary report of an ongoing research on certain ways of thinking architecture, based on the recognition of the cultural material palimpsest as an operating trace, an exercise in which history is a structure of critical orientation. In the belief that reasoning on preexisting, on archetype, on principles is not only helpful in understanding the past, but on the contrary is the essential foundation for a present rich in cultural meanings.<sup>13</sup> The long theoretical crisis that architecture is going through in the last forty years is producing, with few exceptions, the rejection of a theory of the project, and the conviction that faith in technology and continuous innovation are the nodes around which to build the only one value of architecture. In this sense, tectonics are denied in its deepest meaning, that is the integrable expression of the building into the context with a storytelling of transformations. The relationship between type and construction is refuted, so is denied the evolution of form through the interpretation of matter, ratifying the progressive autonomy of the *technological form from the tectonic form* (Gregotti, 1991). Thus renouncing to the *ontological form* (Rizzi, 2003)<sup>14</sup> and to its ability to contain "formed matter" within a process that always identifies an origin, an ancestral identity. Several scholars speak about the architectural language role in current moment, which has become a communicative tool rather than a expressive medium representing the construction as a result of a material culture linked to a place, its morphology, its stratified authenticity. Instead, a language understood in this last sense, permits to consider *venustas* the organic fulfillment of *utilitas* and *firmitas* as collective art of building. In the actual tendency of separation between language and construction there is also a paradox, because the emphasis placed on the autonomy of materials with respect to tectonic expression actually puts in crisis its centrality in translating man's housing necessities, because it makes unrecognizable the cultural process that relate architecture to the territory. But at the same time it increasing the awareness and the importance of investigating a new ontological

dimension in architecture, where memory is the critical link between *topos* and *typos*. In which the relationship between material and architecture marks the place, identifies it, acts on the collective consciousness of citizens, on the stratification of settlements, and settles their idea of present and future. An architecture that wants to be based on principles rather than consensus.

## NOTES

1 The difference is the attribution of meaning and purpose that differentiate matter as nature and material as artifice.

2 For Saverio Muratori the architecture and, more generally, the civil structures are necessary to qualify and identify a society, influencing through the transformations the identity of a territory.

3 The Greek temple of origins, derived from home architecture, had a stone base, mud brick walls or earthen ones, and wooden pillars who supported the roof.

4 Semper points out that the transposition of characters among different building methods is widely spread in the material cultures, due to the permanence of the symbolic value attributed to the traditional form.

5 A contrast already identified by Gottfried Semper, who distinguished the stereotomy of the base (heavy) to the tectonics of the frame (light).

6 The technique of squared blocks of stone is not necessarily a "conquest" that replaced the old methods, but was often used together to distinguish the main buildings from housing. A hierarchy present in all urban civilization, as demonstrate the ancient treatises, starting from Vitruvius' one.

7 In the classical Greece of the fifth century BC, for example, the masons and the sculptors used the same materials, the same tools and the same techniques.

8 Franco Borsi describes in detail that Leon Battista Alberti was not limited to a critical re-edition of the Vitruvian text, but provided an original contribution, including references to other classical authors, by directly examining the buildings and by reconciling the tools of craftsmanship with the humanistic conception of architecture, devolved to the community and hence far from the representative and aulic function Vitruvius attributes to it as the enrichment of the empire.

9 In this case referred to the "musicality of poetic expressions".

10 The numerus is the numerical relationship between the framework and the openings of a building; the finitio is the mutual agreement among measures of length, width and height; collocatio is the arrangement of the elements according to their position in the organism (Di Stefano, 2000, pp. 19-20).

11 Behrens rejected the supremacy of the technical-material component on the form, adhering instead to Alois Riegl's *Kunstwollen*, to a "will of form" necessary to give an aesthetic ideal to the industrial civilization, where the norm was not only the deterministic requirement of serial production, but had a root in the symbolic and artistic values of objects and architecture.

12 As he states in a 1923 paper, "We do not recognize any formal problems, but only constructive problems. Form is not the aim [...]. There is no form in itself." (Mies van der Rohe, 2010, p. 8).

13 Where history, origin and duration are the "privileged material of the project" (Gregotti, 2010, p. 90).

14 Understood according the concept proposed by Renato Rizzi in introduction of book by Emanuele Severino "Tettonica e architettura", as a form belonging to the Western-Greek ideal that defines the ontological theory.

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