

GINO MALACARNE*

CONSTRUCTION AND CHARACTER, THE ARCHITECTURE OF AUGUSTE PERRET

KONSTRUKCJA I CHARAKTER, ARCHITEKTURA AUGUSTE' A PERRETA

Abstract

In the architecture of Perret, characterized by the use of reinforced concrete, the relationship between form and construction is very close. A system of coherence between the constructive system and the architecture, between form and construction, characterizes his work. For Perret „an architecture that does not come from a constructive system is nothing but fashion.” His architecture and the forms adopted are coherent with the chosen construction system, in which not only the practical purpose but also the representative one is evident.

Some interesting and coherent research is based on the correspondence between the constructive system and the formal-representative system that highlights the character and appropriateness of the building with respect to the theme. Techniques and construction also impose on the form some necessary limits that free the architectural invention.

Keywords: construction, character, skeleton or charpente, order, tectonic

Streszczenie

W architekturze Perreta, charakteryzującej się użyciem żelazobetonu, związek formy i konstrukcji jest niezwykle ścisły. Jego dzieła cechuje spójność pomiędzy systemem konstrukcyjnym a architekturą, między formą a konstrukcją. Dla Perreta „architektura, która nie opiera się na systemie konstrukcyjnym, jest niczym innym jak tylko modą”. Jego architektura i przyjęte formy są spójne z wybranym systemem konstrukcyjnym, w którym widoczny jest zarówno praktyczny jak i reprezentatywny cel.

Kilka ciekawych i spójnych badań opiera się na zgodności pomiędzy systemem konstrukcyjnym a formalno-reprezentatywnym, który podkreśla charakter i zasadność budynku w odniesieniu do tematu. Techniki i konstrukcja narzucają formie pewne niezbędne ograniczenia, uwalniając tym samym inwencję architektoniczną.

Słowa kluczowe: konstrukcja, charakter, szkielet lub charpente, porządek, tektonika

* Prof. Arch. Gino Malacarne, DA-Department of Architecture, University of Bologna.

“L’architecture c’est l’art de faire chanter le point d’appui”.
(*L’Architecture*, 1935, Auguste Perret)

Auguste Perret elected to work with a “rediscovered” material and a brand-new technique, namely reinforced concrete; the potential of this new construction system needed corroborating. As a result, Perret found himself in an as-yet open-ended experimental space that sought to perfect form in relation to ongoing technical innovations. Around 1900, there were several architectural approaches; Peter Collins in “The Vision of a New Architecture” identified five ways of using reinforced concrete in buildings, classifiable as: “conventional”, “futuristic”, “skeletal”, “plastic”, and “veneered”¹.

The possibilities identified alternated “conventional” solutions that sought to downplay the newness of the construction system, and among these we might also include the “veneered” method and solutions such as the “futuristic” model, but also the “plastic”, which deliberately sought new effects with no thought for rational need. Instead, the “skeleton” model, for Perret the most interesting, was mainly used for utilitarian purposes (factories, hangars, etc.).

Clearly, these categories are still identifiable and judiciously usable today, and in the use of concrete the search goes on for original forms “never seen before”.

Perret opted for a more complex road: experimenting with an appropriate use of technique without losing sight of the values of traditional construction and architecture; in fact, he assumed the task of “determining the most appropriate architectural forms which a now familiar building process should take”².

In addition, in identifying the most organic form for the use of this “new” construction material, his work shared points of view with a way of thinking that saw the architectural project as a logical-rational process that allowed transmissibility. In fact, in applying it, he would choose to build a system of logical, communicable stability in the relationship between architecture and construction; civil architecture, in the sense of architecture that belonged to all, required consistency and recognition, without necessarily inconveniencing the “constructive truth”.

As John Summerson wrote, Perret “[subdued] the chaos of empirical engineering and industrial building by disciplining it into a classically designed framework”³.

Perret’s theoretical work and design was significant, and continues to be so, precisely because of his attempt to seek an “order”, an architectural system using an innovative technology at a time of technical and formal “experimentation”, a period without rules or still searching for them. We can only agree with Collins when he stated that Perret’s work was “the first really rational and actual expression of reinforced concrete”⁴.

¹ P. Collins, *La visione di una nuova architettura. Saggio su Auguste Perret e i suoi Precursori*, (Concrete. The Vision of a New Architecture, London 1959), Il Saggiatore, Milano 1965, p. 158.

² P. Collins, *La visione di una nuova architettura*, *op.cit.* p. 174.

³ J. Summerson, *Il linguaggio classico dell’architettura*, (The Classical Language of Architecture, London 1963), Einaudi, Torino 1970, p. 80.

⁴ P. Collins, *La visione di una nuova architettura*, *op.cit.*, p. 132.

Perret did not use reinforced concrete to invent new forms, build new spatial configurations and/or aspire to a certain expressionism. His was not even a research into plastic forms, it was a quest for an order indispensable for construction.

The column, the pillar, and the beam were the basis of all his constructions. In fact, he never used concrete arches except to cover large roofing spans, and the only plastic concession in his work appeared in some helical staircases, rather attractive, if we exclude some cornices which certainly display virtuosity in the concrete formwork technique, but were not plastic invention, rather quotes, since they copied sections of ancient Greek vases.

Cantilevers were not permitted either; indeed, he spoke with contempt of “those architects who from a taste of the picturesque, abuse the cantilever, which, apart from being onerous, expresses effort and thus fatigue”⁵. He also abhorred the structural versatility and virtuosity permitted by reinforced concrete, especially if designed to “attract attention”.

Reinforced concrete was used by Perret in his search for a stable norm that would determine a shareable language and express intelligible forms. A stability between construction system and architecture, and between form and construction, are what characterizes his work, and locates it within the tradition of the Classical Rationalists who marked the history of modern French architecture. In their search for order, his projects can be included in a Classical dimension.

For Perret, who was both a great architect and a great builder, “architecture not derived from a construction system is nothing but a passing fashion”. His architecture and the forms he adopted were consistent with the chosen construction system, forms in which both representation and the practical objective are evident.

Perret wanted to marry the tendency of the Classical Rationalists to represent construction with highly personal research into the possibilities offered by reinforced concrete and the way of employing it; it could be said that in his work, architecture and engineering were the expression of each other and that he was an architect who determined a technique and created architecture as a result.

The architectural forms came out of the construction system chosen, but this was not simply reduced to a technical and functional option. The beauty of the proportions, the quality of the execution, the reference to and evocation of the Classical tradition mean it was far from being a simplistic functional response. Like other modern architects, he believed that architecture “must be part of a long-lasting tradition”.

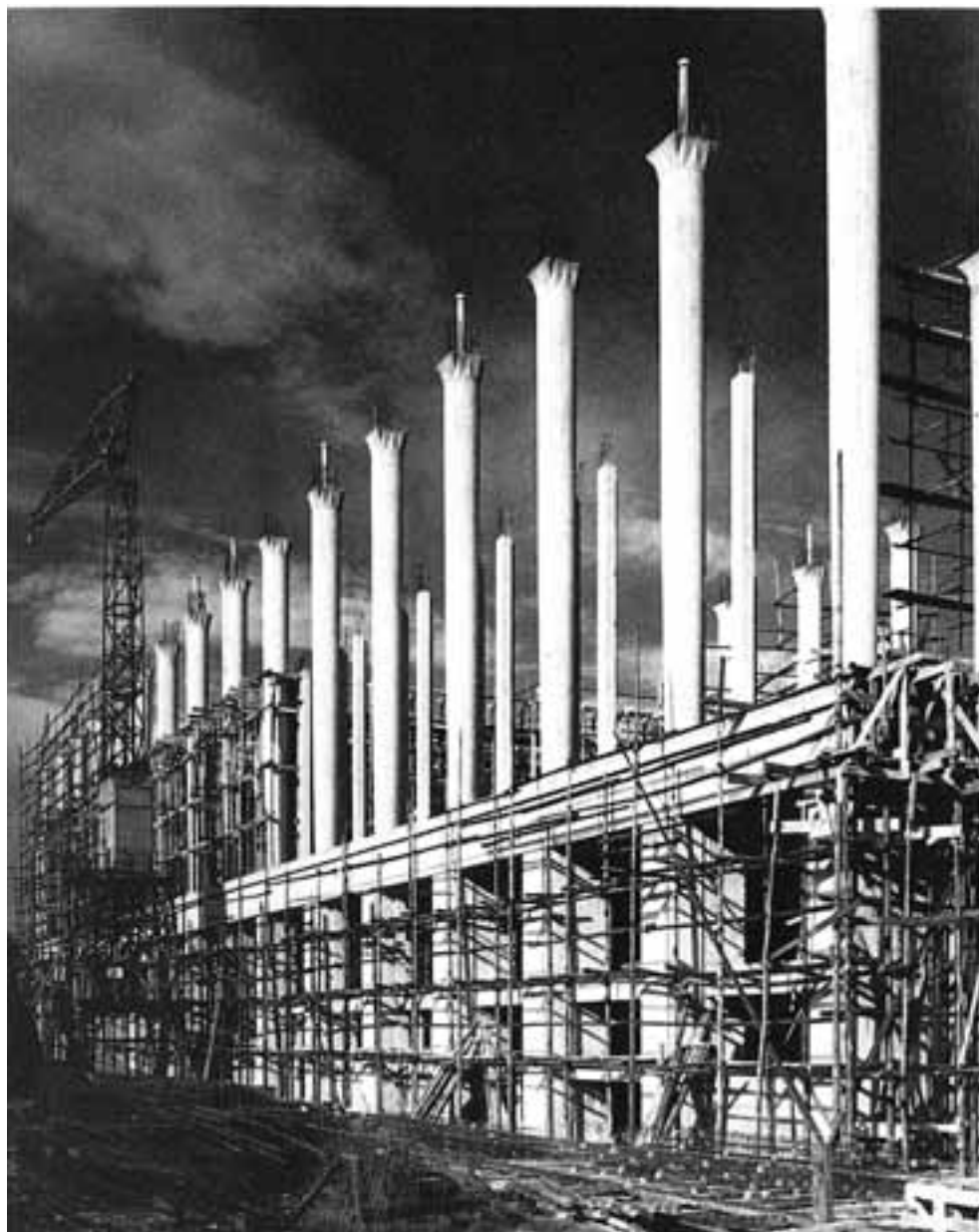
In fact, he sought the solution to a problem that was not merely scientific or technical but genuinely architectural, linking his work to the history of architecture and “even claiming the despised Classical tradition as his own” as Argan wrote, adding “The first prejudice debunked is that the technique of *concrete* is completely new, without a tradition, with an objective scientific foundation that makes it necessarily immune from any historical or national influence”⁶.

As has been pointed out, when it came to *concrete*, he quashed “the long and sterile dispute between engineers and architects”⁷ a dispute that remained open and was the cause of critical concerns for both architecture and the teaching of it, as Pier Luigi Nervi reminds us in his writings.

⁵ A. Perret, *L'Art et les artistes*, January 1936, p. 22. Quoted by Peter Collins in *La visione di una nuova architettura*, p. 187.

⁶ G. C. Argan, Introduction to the book by Peter Collins, *La visione di una nuova architettura*, p. VIII.

⁷ *Ibidem*.



Ill. 1. Hotel de Ville, Le Havre, building under construction (1945–1955)

In fact, for Nervi “Building is also art in its more technical aspects relating to structural stability.” He reiterated “We can say that the application of maths-based theoretical research to the study of the internal balance of resilient systems began last century and gradually grew to reach its current significant development. If it has brought formidable aid to solving static problems, it has inevitably contributed to debilitating the sources of intuition and static sensibility, favouring that detachment between mathematical-technical mentality and intuitive-artistic mentality consecrated in the educational and professional division between engineers and architects; it must be regarded as at least one of the causes of the crisis which architecture has been facing for decades”⁸.

His work is all an “exaltation of the trilithon”⁹ that aspires to an *ordonnance architecturale* of reinforced concrete in an attempt to include his projects in a Classical dimension searching for an *order*. One of his main objectives was to create monumental architecture using reinforced concrete.

The theme of construction, thinking that architecture is ornamental or ornamented construction (alluding to César Daly) and tending “towards a trabeated and framed architecture” was certainly a theme dear to the classic French Rationalists. Perret was a part of this tradition, was a successor to it. For him, as for Viollet le Duc and Auguste Choisy, to mention some safe references, the architectural form was substantially intended as structural.

This theme of construction so dear to the Classical Rationalists was clarified by Julien Guadet “construction must be the constant thought of the architect, it provides the arsenal of his resources, and defines his field. Any attempt at architecture that cannot be constructed has no value, any architectural form that violates or falsifies construction is flawed. And if by this word *construction* you mean the structure of the building, its full and effective reality, can you conceive that the building realized expresses more than itself?”¹⁰

In Perret’s work, there are references to both Gothic and Classical architecture. He drew inspiration from the ideals of Viollet le Duc and the construction ideals of Gothic/Mediaeval architecture in his belief in a constructive truth and in seeking to obtain the maximum results with the minimum of means. However, he expressed himself in line with a classical construction tradition wherein the origin of the orders was linked to a cultural fact, the “petrification of the woodwork of the first buildings”. In fact, he was fascinated by Choisy and shared his theory “according to which the Classical Greek entablature was a transposition of archaic temple prototypes in timber, and the skeletal form was conserved to maintain symbolic continuity”¹¹.

In fact, Perret said, in his “Contribution à une théorie de l’architecture” of 1952 “In the beginning, there is no architecture other than a frame in wood. To avoid fire, one constructs

⁸ P. L. Nervi, *Scienza o arte del costruire? Caratteristiche e possibilità del cemento armato*, Città Studi Edizioni, Milano 1997, p. 9, 10.

⁹ These are some considerations taken from Benedetto Gravagnuolo, *La continuità con la città storica dalla Amsterdam di Berlage alla Le Havre di Perret*, in *La progettazione urbana in Europa. 1750–196*, Laterza, Roma-Bari 1991, p. 231.

¹⁰ J. Guadet, *Eléments et théorie de l’architecture*, vol. 1, p. 109–110.

¹¹ K. Frampton, *Tettonica e architettura. Poetica della forma architettonica nel XIX e XX secolo*, (Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture, MIT Press, Cambridge, Massachusetts), Skira Editore, Milano 1999, p. 147–148.

in stone. And the prestige of the wooden frame is such that one reproduces all of its traits, even the heads of the pegs.” For him “the ancient temple reproduced the shapes of wood in marble or stone. Instead, reinforced concrete owes its aspect of top-level structure work to the need for formwork, the mould into which it is poured. In its first stage, a reinforced concrete construction is a negative in wood, whose skeleton is the exact positive. It is therefore not surprising that there is an analogy between the forms of reinforced concrete and those of antiquity, since all derive from the same base material: wood”¹².

These references and theoretical aspects nurtured Perret’s thinking on construction/architecture that was expressed through an emphasis on the building’s skeleton or *charpente* (cross frame). Where the conceptual relationship between the techniques of wooden construction and reinforced concrete played a key role with its symbolic meaning in recalling ancient buildings.

“The skeleton of a building is similar in function to that of an animal’s” wrote Perret, and “Just as the rhythmic, balanced and symmetrical skeleton of an animal contains components of different forms and arrangement, so the skeleton of a building should also be rhythmic, balanced, composed and even symmetrical, and should be able to contain all the different components demanded by function and intention. This is the true foundation of architecture. If the framework is not worthy to remain in view, the architect has failed in his mission”¹³.

But this is in an essay written in a poetic form published in 1945 and subsequently presented with some changes in 1952 “Contribution à une théorie de l’architecture”, where we can find the strength of his theory/poetry. (The fragments that follow are taken from the 1945 text)¹⁴.

“(…)

*Architecture is the art of organizing space,
it is through construction that it expresses itself.*

“(…)

*Architecture is, of all the expressions of art,
that which is the most subject to material conditions.
Permanent are the conditions which nature imposes,
transitory are those that man imposes.*

*Climate, its intemperateness.
materials, their properties,
stability, its laws,
optics, its distortions;
the eternal and universal meaning
of lines and forms,
impose the conditions which are permanent.*

¹² Text by A. Perret cited by Roberto Gargiani [in:] *Auguste Perret 1874–1954. Teoria e opere*, Electa, Milano 1993, p.75.

¹³ A. Perret, *La construction moderne*, 19 April 1936, p. VI. Quoted by Peter Collins, [in:] *La visione di una nuova architettura*, p. 188.

¹⁴ A. Perret, *Contribution à une théorie de l’architecture*, in *Techniques et Architecture*, January 1945, 9 April 1952.

*Function, usage, rules, and style
impose the conditions which are transitory.*

*The architect is the constructor
who fulfils the transitory through the permanent.*

*It is he who,
by the grace of the union of science and intuition
conceives a portal, a nave, a sovereign shelter
capable of receiving in its unity
the diversity of the organs necessary to the function.*

*It is by construction that the architect
fulfils both the permanent and transitory conditions.*

*Construction is the maternal language
of the architect.
The architect is a poet, who thinks and speaks
in construction.*

*(...)
The large buildings of today entail
a skeleton,
a framework of steel or reinforced concrete.*

*The framework is to the building as the skeleton is
to an animal.
Just as the skeleton of an animal,
rhythmic, balanced, symmetrical,
contains and supports the most diverse
and diversely situated organs,
so the framework of a building
must be composed, rhythmic, balanced, and
even symmetrical.*

In this text, in fulfilling the relationship between the “permanent conditions” and “transitory conditions” that influence the architectural project, he defines the idea of an architectural and construction system which, in overseeing the implementation of the framework/skeleton/*charpente*, determines the architectural theme.

This idea, defined *abri souverain* could be translated as “sovereign shelter”, a “noble harmonious shelter for man”, as it was called by Gargiani. By sovereign shelter is meant a great roof (a hall) supported by a giant order of columns referring to the large collective buildings of antiquity, primarily, the classical temple and the Gothic cathedral, as has been noted¹⁵.

¹⁵ R. Gargiani, *Auguste Perret 1874–1954. Teoria e opere*, Electa, Milano 1993, p. 118.

Perret sought to define a systematic method for architecture, one that was proportionally adjusted and modulated, and used framed structures. Through columns (or pillars) and beams which fulfil an austere geometry in plan and in elevation, it was possible to conceive countless combinations and achieve effects and “emotional qualities” comparable to the great monuments of the past. This would make it possible to give different buildings and institutions a hierarchically diversified meaning.

In all his projects, on different scales, is the idea of the *abri souverain*, which features on the façade as a giant order. The sovereign shelter chosen defines the “permanent conditions” of the work of architecture, and in clarifying the dimensions, joints, and proportions of the skeleton, determines its architectural theme. The skeleton or *charpente* was used by Perret with modulated variations that responded to the theme by offering the buildings a specific character. His compositional method “was to determine the structural rhythm most appropriate to a given programme”¹⁶.

Fulfilling the “transitory conditions” are the layouts and external walls of the trabeated structure. The ground plans are never “free” as the idea of the *abri souverain* would imply, but are subject to a compositional programme that provides architectural quality identifiable as: harmony, proportion, and scale. The external walls that help to close the buildings but also define the system of openings that contribute to clarifying the architecture’s character, were initially of stone and brick, but later they too became precast concrete panels. In time, the concrete would be cast along with inert materials to colour it, while for the surfaces would be used typical methods for working natural stone (hammering and so on) to create various textures for the external surfaces and make the artificial stone look increasingly like natural building stone.

The project for the Church of Notre-Dame Le Raincy (1922–1924), the Rue Ponthieu Garage (1905), the seat of the Service Technique des Constructions Navales (1928–1931), the apartment building at Rue Raynouard 51 (1929–1932), La Maison in Garches (1931), the Musée de Travaux Publics (1936–1946) and projects for Le Havre (1945), are just some examples of Perret’s important works, that we cannot deal with here; however, it is important to keep them in mind because in their thematic and dimensional diversity it is possible to encounter the themes dealt with.

His limit or his greatness, in his search for an *ordonnance architecturale* of reinforced concrete, is that he defined what has been baptized a “Perret Architectural Order” developed in the project for the Musée de Travaux Publics, and later for the Hotel de Ville of Le Havre. Until then in his projects the column-beam relationship had not felt the need for a “new capital”. However, “the exaltation of the trilithon” so dear to Perret, which aspired to an *ordonnance architecturale*, showed the search for an appropriate decoration, adapted to represent the character of the buildings and their urban role, while highlighting the relationship between architecture and construction.

Construction and Character

Works of architecture should be shared by others. Architecture is a collective, public phenomenon that should use a “shared language” to produce the buildings that surround us. Instead, we can observe in what is being built how it has lost sight of the overall objectives of knowledge and representation.

¹⁶ P. Collins, *La visione di una nuova architettura*, p. 187.

One of the many failures, with respect to the tradition of the craft, is the relationship between architecture and construction. Any research into Perret's architecture should attempt to clarify "the role of construction with respect to the disciplinary foundations of architecture" and to re-establish relations between construction and representation.

In fact, architecture begins when the construction becomes representation, i.e., when the technical forms are transformed into symbolic ones. Analogy with technical forms, as Antonio Monestiroli wrote, "does not mean their direct use but adherence to the conceptual universe that these contain"¹⁷. Construction is a means to an end which is the architecture itself and which is specified through the notion of character.

Therefore, one of the central issues is the attempt to clarify the role played by construction in defining buildings' character. The character of a building does indeed contain its function but is something richer "(...) it is the nature of the subject and constitutes the evocative emotional side, without which there can be no architecture," as Aldo Rossi wrote. In fact, architecture is not merely limited to fulfilling the needs that are the basis of any construction, but also engages with problems relating to the representation of these needs, which are never as unique as in Functionalist research. Regarding *caractère*, in the sense of "identity between the architectural imprint and the moral stamp of the programme", Guadet stated that "the character of buildings is then the condition of their diversity and saves a city or a time from monotonous constructions" and makes them recognizable.

The most interesting research is based essentially on consistency between the construction and formal and representative systems, which highlights (or exalts) the character and suitability of a building in relation to a theme. Techniques and construction dictate "necessary limits" on the form to free the architectural invention. An attempt to define "an architectural system where free invention is not possible," is ultimately a way of opposing the excessive disorder of contemporary architecture in trying to build "useful beauty".

In their unity of intent, Perret's projects show a great linguistic richness and a remarkable variety of compositional themes. Observing the main fronts of the buildings of Le Havre – his most heavily criticized project – those that determine the character of the places, shows us the sheer vibrancy and diversity of his designs, where the much-criticized repetitiveness and monotony is actually full of variations determined by contrasting representative needs for the buildings and spaces in question.

Perret can be identified with that artisan whom he himself described as "he who, without betraying the modern conditions of a programme, or the use of modern materials, produces a work which seems to have always existed, which, in a word, is banal, can rest satisfied. Astonishment and excitement are shocks which never last; they are but anecdotal and contingent sentiments. They never last. The true aim of art is to lead us dialectically from satisfaction to satisfaction, until it surpasses mere admiration, to reach delight in its purest form"¹⁸.

¹⁷ A. Monestiroli, *L'architettura della realtà*, Umberto Allemandi & C., Torino 1999, p. 238.

¹⁸ Auguste Perret cited in a text by A. Perret as quoted by Peter Collins [in:] *I mutevoli ideali dell'architettura moderna*, (*Changing Ideals in Modern Architecture*, London 1965), Il Saggiatore, Milano 1972, p. 393.