RATIONALISM AND THE ORGANIC ANALOGY
IN FIN-DE-SIÈCLE PARIS:
Auguste Perret and the Building
at 25b rue Franklin

by
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May 1980

SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE IN PARTIAL
FULFILLMENT OF THE DEGREE OF MASTER OF SCIENCE
IN ARCHITECTURE STUDIES AT
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
JUNE 1985

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Rationalism and the Organic Analogy in Fin-De-Siècle Paris: Auguste Perret and the Building at 25b rue Franklin

by Martin Bressani

Submitted to the Department of Architecture on February 20, 1985 in partial fulfillment of the requirements for the degree of Master of Science in Architecture Studies

ABSTRACT

The thesis studies the apartment block at 25b rue Franklin in Paris designed in 1903 by the architect Auguste Perret. It documents the building's history and discusses its design in the context of late-nineteenth-century theoretical debate on housing and architecture.

The first part of the study examines the context. It includes an analysis of the various constraints that Perret faced at rue Franklin in an attempt to establish clearly the extent of their influence on the design of the building. Next a typological survey of the apartment block in nineteenth-century Paris brings out those aspects of the building type considered problematical by the architects of the period.

The second part of the study discusses the theoretical issue of rationalism. It first distinguishes the different brands of rationalist theories in France at the end of the nineteenth century. An examination of the 25b shows the mark left by the writings of Eugene Viollet-le-Duc on Perret's rationalist conceptions of architecture. It also illustrates the link established between industry and rationalism at rue Franklin.

The third section of the thesis adresses the organic theory of architecture in its relation to the 25b rue Franklin. Contrary to the conventional view, the
discussion demonstrates that the design of 25b rue Franklin entailed aims which went beyond a strict response to legal or site constraints or the faithful expression of structure. Perret at rue Franklin attempted to root his architecture in society, nature, and history. This "organicism" was again largely indebted to the insights of Viollet-le-Duc. It also reflected Perret's firm conviction that reinforced concrete itself was an "organic" material which summarized and surpassed all previous materials. With such notions in mind, Perret endeavored to achieve a synthesis of what were considered the two great architectural traditions of the Western world: Gothic and Greek.

Thesis supervisor: Dr. Stanford Anderson
Title: Professor of History and Architecture
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ACKNOWLEDGEMENTS

Joe Siry first suggested that I work on Auguste Perret's building on rue Franklin, and I thank him gratefully: the subject proved to be both rich and little explored. My advisor, Stanford Anderson, was unusually generous with his time and consideration. He remained unflappably confident and optimistic about my work, even when I wasn't, and the strength of his personality made my time at M.I.T. a real enjoyment. His advice and informed criticism assured the good progress of the thesis work.

The greatest debt I incurred in Paris was to Henri Poupée, whose generous hospitality at the Conservatoire National des Arts et Métiers made the study possible. I thank him particularly for the extended and interesting exchanges on Perret's personality, which revealed largely unknown details of his life and work. I must also thank the present apartment owners at 25b rue Franklin in Paris who permitted me to visit their homes: Mme. H. Judet; M. and Mme. Millet; M. Laroux; and particularly Mme. Girardiére, who allowed me the pleasure of a wonderful evening on Perret's ninth-floor terrace.
I am most grateful to Robin Middleton of Cambridge University for extremely valuable comments on my manuscript. I must also thank Henri Bresler, professor at U.P. 3 in Versailles, for useful informations on the nineteenth-century Parisian urban house.

Michael Leininger and Merrill Smith of Rotch Library at M.I.T. were always supportive and I gratefully thank them.

To the Canadian Housing and Mortgage Corporation I am grateful for constant financial support through my studies at M.I.T. I am also greatly indebted to Joan E. Goody whose major gift to M.I.T. funds the annual Marvin E. Goody prize; it enabled me to travel to Paris.

I must thank both Genise Schnitman and Luc Courchesne for their constant and cheerful presence through the trial by thesis-writing. I particularly thank Genise for her brilliant editing. She assured the soundness of my writing and finally made me understand the difference between "that" and "which."

I do not dedicate this work to Claude Jean because, simply, everything I do is dedicated to
her. To Peter Collins I owe my knowledge of the history of architecture, of Perret, and more. I dedicate this modest study to his memory.
TO THE MEMORY OF PETER COLLINS
Fig. A

The apartment block at 25b rue Franklin. Photograph taken immediately after construction. From L'Art décoratif.
Auguste and Gustave Perret in 1903 standing in the Trocadero Gardens and looking at the building at 25b rue Franklin then under construction.

"Voyez-vous, Monsieur, nous avons voulu, mon frère et moi, innover..."

Gustave Perret to a journalist of La Patrie in 1905
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Since 1959, no book about Auguste Perret has appeared. During these twenty-five years books have been written on almost all "pre-modern" architects: Berlage, Sullivan, Loos, Behrens or Horta, all had their share of thesis, monographs and detailed studies. Even the more obscure such as Lutyens, Hoffmann or Ashplund have been brought to the limelight within the last decade. The reappraisal of the early manifestations of Modern architecture is an important part of current architectural criticism. The work of these architects appears today to have qualities found lacking in mainstream modernism. Their concern for the role of history, or the meaning of style and ornament were addressed with a conviction that endowed these seminal buildings with a particular richness. Moreover, their burning desire for reform in architecture could still accommodate the expectations of the society they lived in.

The relative lack of interest for the work of Auguste Perret is surprising. Perret's buildings such as the 25b rue Franklin, the garage Ponthieu, the church of Le Raincy were among the most widely published in
avant-garde publications of the 1920's in Europe. However, Perret's exceptionally long career (he practised up to his death in 1954), his definite schism with modernism in the 1930's, and the "classicizing" and reactionary character of his late work have placed him in an ambiguous position in the history of Modern architecture. Already in 1932, Le Corbusier had sanctionned Perret as a "continuator," whose entire personality was to be found in the "continuation of the great, noble, and elegant truths of French architecture." (1) Yet in the same text, Le Corbusier relate that, in his trip to Germany in 1910, he always carried with him and "proudly" showed to all, a picture of Perret's 25b rue Franklin. This modest building was indeed at that time one the more forceful architectural statement in Europe.

I have no intention in this thesis to ponder on the extent of Perret's influence of Le Corbusier. I will give no attention to the fact that some of Le Corbusier's famous five points -- the reinforced concrete frame, the free-plan, the roof-terrace, the pilotis -- may (or may not) have been suggested by Perret's 25b. I will rather attempt to discover why Perret designed in 1903, using reinforced concrete, a
building of such resonance in the architectural world of the epoch. In other words, I will attempt to explain Perret's building in terms of the architectural debate developed in the nineteenth century rather than with respect to the future modernist doctrine. One of the main risk in analysing the 25b is precisely to perceive its importance only as a link between two different sensibilities. Its mixture of structural austerity and rich ornamentation has made it a work of transition par excellence: the straightforward articulation of its concrete frame has a modern air, while its floral decoration of ceramic tiles assumes an Art Nouveau lyricism. Such reading is overly reductive; for Perret's building expresses fulfillment, rather than the clumsiness of a work in transition. Perret tackled some of the major architectural problems of nineteenth-century French architecture. The building crystallizes attitudes toward society, habitation, cities, and architecture. It forms a microcosm of not only fin-de-siècle Paris but of the nineteenth century in the industrializing part of the world. As the building itself overlooks the "capital of the nineteenth century," its architecture condenses and summarizes the
architectural world of the epoch. "Buildings must create a past," Perret once wrote, "the past that extends life." (2) Perret was no iconoclast; he addressed the problem of style and tradition which gave his building its particular texture. His determination to go beyond nineteenth-century eclecticism did not prevent him from creating a work which is endowed with all the complexity and weight of nineteenth-century architecture.

Why limit the scope of this thesis to only one of Perret's buildings? And why choose the 25b rue Franklin? Larger monographs that survey the whole career of an architect, while providing essential ground work, comprise almost unavoidable pitfalls: the specificity of individual works is often lost within the larger framework of an entire architectural production; the early work must always find explanation through the later work and vice versa. Such historiographic strategy is certainly valid. Generally speaking, the work of an architect must be understood as a series of experiments linked together (3). A global survey of an architect's career, however, may overlook the possibility of drastic reorientation or simply the abandonment of early hypothesis. The 25b is the perfect example of such occurrence. It so obviously prefigures the later work of
Perret that its particular "oddities" were generally perceived as (shameful) concessions made by Perret to the Art Nouveau "fashion." Even Collins' extremely perceptive work on Perret presented the 25b only as a first timid experiment in Perret's career. The end result is that the 25b -- even if included in all histories of modern architecture -- has never been examined closely. Yet a careful analysis rapidly uncovers uncommon richness often lacking in Perret's later work. To be sure, the apartment block on rue Franklin prefigures Perret's future architectural "doctrine" but it also assumes ambitions and an awareness of current architectural issues that Perret did not sustain in his subsequent work. The challenging questions that the 25b attempted to resolve were perhaps too complex to be upheld in the range of a long career. For this reason, the 25b is more worthy of attentive study than any other work by Perret.

* * * * *

The building has rarely been appreciated to such extent. Even before the historians of the Modern
Movement "took over" the 25b and secured its position in history as a quaint example of proto-modern architecture, the building, despite its uncontested fame, was rarely discussed in great length. At the time of its construction, only one article in *L'Art décoratif* was devoted to the building. This is surprising because all tile-clad buildings built of reinforced concrete at the turn of the century were celebrated by the professional press as the symbols of a new age. *La construction moderne*, a progressive journal that always praised experiments with new materials and which published most of Perret's work prior to 1903, didn't carry a single line on the new building on rue Franklin. Edmond Uhry's article in *L'Art décoratif* was ambiguous. Uhry simply noted the appropriateness of the use of a tile cladding for reinforced concrete buildings "which should not remain with the appearance of industrial premises." (4) Without doubt, Uhry's statement was used rhetorically, seeking to pre-empt any such criticism of Perret's building: it is precisely the "industrial appearance" of the 25b that prevented a more extensive critical acclaim. Perret had obviously violated the rules of propriety. Uhry, however, notes with enthusiasm the roof-top terrace that forms the
tenth story of the building, something unprecedented in Paris.

The height of the 25b, augmented by its perch on the hill of Passy overlooking the whole city of Paris, was certain to attract attention. In 1905, the group L'Art pour Tous, which numbered such venerable members as Frantz Jourdain and Roger Marx, held a conference on the tenth-floor terrace of the 25b: the participants conversed at an elevation that matched "the height of the first platform of the Eiffel tower." (5)

The conference, titled "L'évolution logique de l'architecture" and organized by Yvanhoë Rambosson, dealt in large measure with Perret's building. "The era of unfounded caprice and excesses is now over. We begin to realize the uselessness of unjustified complications... It is our needs, our taste and the very condition of our lives... that will now dictate the form of our architecture." (6)

For Rambosson the 25b was "one of the most rational constructions erected within the last few years." (7) He praised the building for its "serene and superior simplicity," its "serious and pleasing appearance," at once "practical and beautiful." (8)
Rambosson notes how the whole building was built in accordance with modern science and industry. He also insists on the special elegance of the apartments, "conducive to calming our inner fever and fatigue by resting the eyes." (9) This conference was followed by a short article in the newspaper *La patrie* titled "Une maison de dix étages," which indicates that the building enjoyed a certain level of popular publicity. Only in 1908 did the building start to gain wider recognition. Charles Saunier in *L'Architecte* wrote that "despite its young age, [the 25b] is already part of history, it marks the beginning of a new orientation." (10) The same year two articles on the building were published abroad: Robert Mallet-Stevens wrote a small descriptive article on the building in the *Architectural Review* (London) and A. C. David briefly discussed the "ascetic attenuation" of the 25b in the *Architectural Record* (New-York). These articles were short, but they nonetheless affirmed the building's reputation.

From then on, no survey of the architectural production of the time would fail to mention, in passing, the 25b. Pascal Porthuny in "Dix années d'architecture," published in 1910 in *La gazette des Beaux-Arts*, notes the "ingenious plan" of the 25b, while
Henri-Marcel Magne in L'Architecture: l'Art français depuis vingt ans commends the building as an audacious experiment.

The building won real international fame in 1928 with the publication of Giedion's Bauen in Frankreich, Eisen Eisen-Beton. No less than five illustrations of the 25b rue Franklin were included in the small book. Giedion of course insisted on the building's structural "rationalism" and its modernist features. Particularly significant was the apartment plan published with the text: all doors and windows were erased; partitions were lightly drawn and contrasted with the structural columns indicated in black. This was indeed an open-plan: there was no distinction between interior and exterior. Giedion had thus set the building's transitional position in history. This role was reinforced by the fact that Le Corbusier had "transitionally" worked in the building in 1908-09 during his apprenticeship in Perret's office.

The apologetic monographs on Perret by Jamot (1927), Champigneulle (1959), or Collins (1959) have done little to improve the matter. They too considered the building transitional, though they meant
transitional within Perret's own career. Collins only stresses the building's structural integrity and Perret's brilliant stratagem to obviate the customary interior court. He ends his discussion of the building awkwardly, noting its "undeniable Classical character" and its quality of "timelessness... the hall-mark of true Classicism." (11)

This difficulty in dealing with the 25b is typical of most of the historiography. The work has been often criticized: it has been called in turn too playful (Pevsner, 1931); awkward and harsh (Hitchcock, 1929); restless (Giedion, 1941); too traditional (Ragon, 1958); or too compromising (De Fusco, 1974). None of these authors, however, have dedicated more than a few paragraphs to the building, and in most instances the discussion focuses on Perret's ingenious strategies to circumvent the limitations set by the building code.

In 1959 a photographic study by Ludovico Diaz do Santillana was published in the Italian journal L'Architettura. The very brief article attempts to unveil "Il segreto del primo Perret." The laconic text leaves one in suspense as to Perret's "secret." Nonetheless, it recognizes the particularity of the work
in Perret's career, and even ventures some parallels with Gaudi and Hoffmann. The more recent evaluations of the 25b do not go much beyond such hints. Kenneth Frampton in his *Critical History* (1980) is very perspicacious, recognizing both the building's Gothic and Classic lineage and its indebtedness to Viollet-le-Duc; his claims, however, are not sustained at great length.

The need for an in-depth analysis of the 25b is indisputable. The main task of such study is to untangle the different levels of interpretation which have traditionally been intertwined. Perret at rue Franklin had to respond to site and legal constraints that imposed strong design limitations. The originality of his solution has often been emphasized. That ingeniousness, however, has prevented scholars from grasping significance beyond the brilliant solution to these contextual restrictions. The only theoretical importance that historians have recognized in Perret's work is its structural rationalism. The exact nature and the implications of such rationalism have never been elaborated by these historians. The building's
peculiarly complex structural frame has never been considered. Moreover, rationalism is only one theoretical aspect underlying the realized building. The organic analogy informs Perret's project at a fundamental level; only by reading the building in these terms can it be fully understood and appreciated.

The 25b can thus be interpreted at many levels. The present study is divided in three distinct parts which provide successive readings of the same forms: contextual considerations, rationalism, and organicism are superimposed layers at 25b rue Franklin. Each aspect must be clearly distinguished to permit a clear analysis of the building. These mingled concerns at rue Franklin somehow do not comprise pitfalls of potential contradictions, but rather reinforce one another with amazing coherence. An analysis of context in its typological dimension "supports" Perret's peculiar response to the city by-laws. These aspects are in turn "grounded" in Perret's structural rationalism, which itself is but a consequence of his organic theory of architecture. This ability of Perret to transform the most prosaic concerns into larger theoretical issues is never more clearly illustrated than at rue Franklin. The
solid bond between the different levels of inquiry almost defies analysis: Perret conceals his theoretical pursuits within the most unassuming considerations. "Il segreto del primo Perret" is but this veil of prosaism that has inhibited most historians from deciphering the full richness of his work.

Interpreting Perret's early work is always risky. Perret wrote little, and there may be material that has disappeared. Of Perret's early career there remain no texts -- not a single letter or note from his hand. The Perret archives at the Conservatoire National des Arts et Métiers in Paris contain only drawings (mostly plans), and no sketches. This presents obvious difficulties to the student of Perret. However, it also allows a freedom of interpretation, as one needn't be inhibited by the often obtuse late writings of Perret which have come down to us. Moreover -- and this is the keystone of this thesis -- there is Eugène Viollet-le-Duc. The *Dictionnaire raisonné de l'architecture française du XIe au XVIe siècle* (1854-1868) and the *Entretiens sur l'architecture* (1872) are Perret's most obvious theoretical sources. In fact, they nearly comprise an "instruction manual" to Perret's
architecture at rue Franklin. This contention is not based solely on Perret's inspiration from Viollet's general theoretical insights: Perret's direct formal borrowings from Viollet-le-Duc constitute a clear avowal of his indebtedness.

John Summerson once wrote that "Perret is a real follower of Viollet-le-Duc, the first who has succeeded completely in making an architectural language to fit the terms of the theory." (12) Summerson had in mind the more classicizing work of Perret's late career which convey so eminently the "rational point of view." It is at rue Franklin, however, that Perret attempted, more than ever before or after, to bring to form the full complexity of Viollet-le-Duc's theory of architecture. The extent of his success is documented here.
NOTES


3- See Stanford Anderson, "Architectural design as a system of research program."

4- Edmond Uhry, "Une maison à Paris", p. 55.


7- Ibid, p. 213.

8- Ibid, p. 216.

9- Ibid, p. 213.


11- Peter Collins, Concrete, p. 182-184.

PART ONE

The Project and its Context
CHAPTER ONE

Perret's formative years

The work of Auguste Perret must always be seen in the context of the family enterprise. Until his death in 1905, Claude-Marie Perret, Auguste's father, was the undisputed authority controlling the contracting firm Perret et ses fils. He was the dominant figure within the family as well. He made the decision that his sons Auguste and Gustave would go to the École des Beaux-Arts. It was also Perret père who ensured that the sons never received the official diploma since, in principle, an architect "diplômé du gouvernement" could not act as a contractor for his own project. (1) To have his sons trained as architects was for Claude-Marie Perret an "ingenious device for underbidding his competitors, whereby architect's fees could be included in tenders for building contracts, and private architects circumvented whenever he constructed speculative buildings of his own." (2) It is nonetheless certain that Auguste Perret himself agreed to his father's decision. As he later told Champigneulle, he never
thought he could have another profession than that of an architect. (3)

It has been (somewhat romantically) claimed that Perret was a descendent of the master-masons who built the abbey of Cluny. It seems, however, that Claude-Marie Perret became involved in the building trade by external circumstances rather than family tradition. (4) His first training was as an apprentice to masons working in the area of Sennecy-le-Grand near Lyon, where he was born in 1847. Like many young men at that time, Perret came to Paris in his early twenties, probably hoping to partake in the construction boom going on in Paris at that time.

Only three years after Perret arrived in Paris and just after his marriage, the Franco-Prussian war of 1870 broke out. He was then conscripted in the Garde Nationale. Perret seems to have shared some of his compatriots' enthusiasm for the war since he was quickly made sergeant and eventually sous-lieutenant of the Fourth Company. He also played a significant part in the activities of the Commune. He was condemned to death "in absentia" on May 21 1871 for complicity in the burning of the Palais-Royal. For a period of ten years, the
Perret family lived in exile in Belgium where, within four years, C.-M. Perret established himself as a building contractor.

Auguste was born in 1874 at Ixelles, near Brussels. He received the laical baptism of the compagnons maçons and at the age of three days was symbolically named appareilleur en chef (5) as a presage of his future profession. In 1879 the French government offered amnesty to political offenders of the Commune. In 1880, despite the success of his Belgian contracting firm, Claude-Marie Perret moved with his family back to Paris where he started a new business. In 1881 Auguste entered the secular École Alsacienne on the rue d'Assas. Ten years later, at the age of seventeen, he entered the studio Guadet-Paulin at the École des Beaux-Arts.

Auguste was by then already fairly well versed in construction, since as soon as he could hold a pencil, he had been put to work in his father's business. In 1890, at only sixteen, he had designed and built a country house for his mother at Berneval-sur-Mer. His knowledge of construction was enriched by some familiarity with architectural history and theory, since, it is commonly claimed, at age eleven he was already a passionate reader of Viollet-le-Duc.
Auguste and his brother Gustave remained at the École des Beaux-Arts for almost ten years. They were not assiduous students and were rarely seen in the Beaux-Art studios. Most of their time was spent preparing drawings for their father's business. Nonetheless, both Auguste and Gustave achieved good academic records, and the former won numerous medals, mentions, and even the coveted "Prix de reconnaissance des architectes américains" for his design of a hippodrome. (6)

We know very little of Auguste Perret's thinking at that time. Very few drawings remain from Auguste's stay at the École des Beaux-Arts and these are the only documents left of that period. It is difficult to see in these student works a very precise architectural orientation. (7) Some of the earliest and most beautiful drawings are the renderings of an Ionic porch for a museum entrance, submitted in his first year at the École (dr. 2). This analysis of the classical orders was done directly under the direction of Julien Guadet and formed the basic teaching at the Ecole. Perret won first prize for this work. The three drawings were exhibited in the "salle de l'Horloge," an unprecedented honor at the Beaux-Arts (8). They demonstrate splendidly
Auguste's complete mastery of the orders. After accumulating two medals and twenty-nine units, Perret was admitted to the First class of the École in November 1893. A year later, he won a medal for a rendering of the main porch of the medieval church of Saint-Gervais et Saint-Protais in Gisors (dr. 3). This "concours" was under the direction of Lucien Magne, the newly appointed professor of history of architecture at the École. It was the first time that French medieval architecture was taught in history classes at the Beaux-Arts.

Magne was a devoted follower of Viollet-le-Duc, with whom he had worked for over ten years. His presence at the École des Beaux-Arts was a unique chance for Perret. It permitted him to extend his knowledge of medieval architecture and to develop his understanding of Viollet-le-Duc. (9) It certainly offered a strong counterpoint to Guadet's classicism. It is interesting to note that Perret, one of Guadet's best students, was also a keen follower of Magne's classes. Perret's choice to do measured drawings of the church of Saint-Gervais et Saint-Protais is significant. The choir and the towers dated back to the XIIth century but the facade was of the XVth or XVIth century, with a truly beautiful mixture of Renaissance and Flamboyant motives. (10)
Perret's drawing of the porch is at least as accomplished as his earlier drawing of the museum entrance using the Ionic orders. The mixture of Gothic and classical elements creates a rich but well balanced composition. This interest in works of the Renaissance in which Medieval features persist was not unusual in architectural circles in France at the time. (11) This preference, in the case of Perret, as manifested in his student drawings, locate the source of inspiration for a new union between a certain structural austerity and a more exuberant use of ornament which remotely prefigures the house on the rue Franklin.

Other drawings produced by Perret at the École don't seem worthy of special attention except in that they show how well Perret mastered the design techniques used at the Beaux-Arts. The "country house" of 1898 (dr. 5) should be mentioned for its daring simplicity, especially striking when contrasted with the works produced by his fellow students for the same project. (12) Perret's project anticipates the casino of Saint-Malo he designed the year after: both feature rustic materials, high pitched roofs with dormers, and a plan in a tripartite division with a curved road on one of
its sides. The arrangement of rooms continues, nonetheless, in the finest Blondel tradition. This project by Perret was awarded the first medal by Julien Guadet.

Auguste Perret attended the studio of Guadet-Paulin at the École des Beaux-Arts until 1901, when he submitted a proposal for his diploma thesis. The proposal, which consisted simply of a three-page typewritten program for a hydropathic establishment, is of interest only insofar as it demonstrates, contrary to what has been commonly assumed, that Auguste had indeed determined at one point to pass the official diploma. The project was approved and signed by Julien Guadet but never carried to completion. There is no document to inform us why. As already mentionned, it seems likely that his father, who surely saw Auguste as his successor at the head of the family business, did not want the official title of "architect", which would inhibit his son's activity as a building contractor. Perhaps Julien Guadet, who was in Auguste's close entourage, made him face the moral obligation of choosing between an independent career as an architect or taking up the family enterprise. It is clear that Auguste would have chosen the later. The Perret family had been and would
always remain very tight-knit, and undoubtedly the family interest would always have priority over Auguste's own personal aspirations.

On several occasions while his sons were at the Beaux-Arts, Claude-Marie Perret assigned them the design of buildings. (13) Their first works of notable importance are an office building on the rue du Faubourg Poissonniere (1898) (fig. 1), and the casino at Saint-Malo (1899) (fig. 2).

The two projects were published in *La Construction moderne*. Contrary to traditional opinion (14), the small office building on Faubourg Poissonnière was not the first of its type in France. Lucien Magne, rue Etienne-Marcel (1888), or Guillaume, rue d'Uzes (1880), had already designed similar buildings using strong pillars between which spanned large glazing panels supported by iron lintels. The last story, used for apartments, was recessed to allow a small balcony to run continuously across the facade thus delimiting it clearly from the floors used for office. The main significance of this work in our context is that it demonstrates clearly the influence of Guadet's teaching on Perret's early work. The projecting giant Ionic order
recalls Guadet's Hotel des Postes in Paris (1882) (fig. 3), which was itself derived from Louis Duc's Palais de Justice on the Île de la Cité (1869). The strict, abstract and geometric articulation, only slightly mitigated by classical detailing is indeed in the best classical rationalist tradition which stemmed from Labrouste. The splendid monumental staircase as well as the overall compositional clarity and hierarchy of the plan follows the precepts advocated later in Guadet's Éléments et théorie de l'architecture (1901-04). The abstractness of the articulation of the facade indicates a search for a purified classicism that prefigures Perret's later work. A striking resemblance exists, for instance, between the building on Faubourg Poissonnière and the small Hôtel Bresy on Villa Said in Paris (1927-28). The later would be a decisive stage in Perret's development of a systematic architectural language in the 1930's.

The casino of Saint-Malo, for its part, is more in the rationalist tradition of Viollet-le-Duc's lineage. (15) If the plan is developed in strict respect of Beaux-Arts symmetry, with carefully controlled shifts of axes, the exterior volume, especially the central octagonal tower and the overhanging roofs, is more
reminiscent of Viollet-le-Duc. The absence of orders, the rustic materials, and the picturesque roofs manifest a mannerism very popular at the turn of the century for country villas (cf. Louis-Henri Boileau, Sauvage, Plumet). The ceilings of the entrance porch and of the great ballroom consist of exposed wooden beams and joists in the rationalist manner of de Baudot. For the first-floor structure under the "grand café," Perret used a system of reinforced concrete beams. The new material was above all a useful technical device and does not seem to have had any particular meaning for Perret. It was, nonetheless, Perret's first experience with the material and, as such, has acquired a historical significance.

The immeuble on Faubourg Poissonnière and the casino at Saint-Malo can thus be understood as two poles in the early work of Perret. The strict classicism of the former is opposed to the vernacular qualities of the later. If both buildings are of a rationalist vein, they represent two distinct brands of rationalist theories in France that will be discussed in greater length in part two of this study.

Claude-Marie Perret was probably supervising
closely the architectural work of his sons. Often the Perret enterprise invested its own money in the projects (as at Saint-Malo) and therefore it was important that the architecture conformed to the expectations of the future clients. The building on Faubourg Poissonnière and the casino at Saint-Malo were both well designed and carefully executed buildings. However, they affirm no specific architectural personality; they can only demonstrate Perret's ambivalent theoretical orientation.

The first truly original work of Perret is the house designed in 1902 on the ave. de Wagram (16) (fig. 6 & 7), located near the quartier Monceau, a new upper-class district of Paris. It was entirely a speculative enterprise by the family firm, which probably obliged Perret to meet the client's economic expectations. Perret produced a truly remarkable work that not only insured the maximization of the site but also introduced subtle elements which were later developed more fully at rue Franklin. With the building on ave. de Wagram, Perret plunges directly into the architectural debate of his time and shows the emergence of his own architectural personality. It is true that the "moulded" mass of his building and its ornamental
foliage are proofs of Perret's Art Nouveau inclination. It does not follow, however, the exuberance of Guimard or Lavirotte, but rather the more restrained forms of Plumet. The latter's apartment building on the ave. Victor Hugo, dated two years earlier, is a clear precedent for Perret's building (fig. 8) (17).

Perret, however, introduces some more personal elements which have proven more potent than Plumet's austere "medievalism." The building assumes the general parti of Plumet's house on the ave. Victor Hugo: two side bays which are linked by a colonnade on the fifth floor serve as a balcony for the floor above. Where Plumet had boldly accentuated his projections and used an articulation reminiscent of medieval castles, Perret simply emphasized the wall as the main tectonic element of his building. This simplicity was surely a reflection of Viollet-le-Duc's rationalism, which prescribed that the structural system used in buildings should dictate its general configuration.

Perret thus preferred more subtle modulations which nonetheless gave his facade a special sense of vitality. The projecting side bays are linked to the central wall which maintains the street alignment by a gentle curve where a climbing plant, sculpted in stone,
rises and foliates below the first cornice. The windows widen progressively at each floor, giving the elevation increased lightness at the top. The fifth floor is reduced to the appearance of a frame. The facade, like a tree, is lighter at the top than at the bottom. This peculiar arrangement is structurally rational but is also reminiscent of Viollet-le-Duc's notion of a "vital equilibrium." Instead of putting smaller windows over larger ones, as is typical according to classical ordonnance, Perret reversed the disposition. The arrangement may also reflect the change that occurred in the social organization of the apartment house since the introduction of elevators: the most desirable spaces were then at the top of the building where air and sun was more abundant.

Another remarkable feature of the apartment house on the ave. de Wagram is the unusual simplicity of the wrought iron balustrades in front of the French windows and at the entrance gate (fig. 39). As Collins notes, these "were executed by ordinary laborers from standard commercial sections in accordance with the architect's own designs." (18) The fact was remarkable enough to be noted in the article devoted to the building in La
Construction moderne. This use of standard industrial components manipulated by the architect to achieve harmony is undoubtedly an idea stemming from Viollet-le-Duc and will be further developed in the house on the rue Franklin.

It is clear from the house on the ave. de Wagram that Perret's chief consideration was to create an "architecture vivante," whether this meant inducing a special sense of equilibrium to the composition of the facade or whether it meant responding as unassumingly as possible to the current means of production. These considerations are only hinted at on the ave. de Wagram which follows closely the Art Nouveau idiom. Today, the building is hardly to be distinguished when compared to its neighbors. The finer characteristics of the building on the ave. de Wagram deserves, nonetheless, special attention; they were indeed of real significance for Perret inasmuch as they were further developed and became key elements in Perret's design for 25b rue Franklin.

It is interesting to compare the building on ave. de Wagram with Guadet's design for an apartment building on blvd. Saint-Germain (1890) (fig. 4 & 9). The comparison is particularly provocative since both
projects had identical programs and were situated on sites of approximately the same dimensions and configurations on a prominent Haussmannian boulevard. The organization of the apartment plan is similar. One significant distinction, however, is to be noted. While in Guadet's plan the two salons are grouped on one side and the two major bedrooms on the other, Perret places the salons in the middle and distributes the two bedrooms on opposite sides. Guadet has justified his arrangement in *Elements et théorie* in functional terms; and indeed, it is arguably more practical to have all bedrooms grouped together.

It should be readily dismissed that Perret's design was motivated by his desire to respect Beaux-Arts rules of symmetry. For one, even if the two bedrooms had been shifted to one side, the overall symmetry would have been kept since the petit salon is exactly of the same width as the bedrooms. Perhaps the use of bow-windows at the extremities induced Perret to have similar functions at these locations, thus expressing clearly on the exterior the functional distribution of the apartments. It is more likely, however, that the centralized plan was derived from Viollet-le-Duc's
project for an urban residence published in the Entretiens (fig. 10). As we will see in our discussion of the organic theory, this project by Viollet was the most obvious precedent to the apartment plan of the 25b rue Franklin. It is not surprising, therefore, that Perret would have already borrowed, in 1902, some of its characteristics. Following Viollet's precept, Perret places the "principal organ" -- the salons -- in the middle while the "secondary organs, the members" -- dining room and bedrooms -- are grouped around it. The plan at rue Franklin certainly constitutes a more forceful statement in this line of thought. Yet the apartments at ave. de Wagram already evidence this way of thinking. The large openings of the salons and the dining room onto the galerie confers an openness perfectly attuned to the spirit of Viollet's project. Moreover, the prismatic geometry of the main rooms in Viollet's urban residence is already timidely incorporated in Perret's plan with the introduction of an octogonl bedroom adjacent the main stairway.

A similar departure from Guadet's teaching is obvious from Perret's treatment of the elevation. The framed structure at the fifth floor does not adopt a classical vocabulary as Perret's previous building on
Faubourg Poissonnière or Guadet's house on blvd. Saint-Germain. The small columns take instead the appearance of trees and thus evoke an analogy with nature rather than a specific historical style. The presence of the frame at the fifth floor alludes to Perret's search for an elemental (or primitive) architectural principle devoid of specific historical connotations. It hints at Laugier's primitive hut and even more at Philibert de l'Orme's rustic order illustrated in his *Architecture.* Perret's pavilion of the Librairie Centrale des Beaux-Arts at the Decorative Arts Exhibition in 1925 (fig. 45) provides a later and more direct application of Philibert's *ordonnance.*

The apartment block on the ave. de Wagram, designed only one year after Perret left the Beaux-Arts (when he gave up the idea of competing for the official diploma) was a clear -- though somewhat modest -- statement of independance from the École.

Some aspects of the building on the ave. de Wagram probably encouraged reserve on Perret's part. The use of a stone bearing-wall construction system was perhaps perceived by Perret as too traditional to allow any dramatic changes in configuration or expression.
Most important, the building, though originally owned by Perret's family, was never used by them and was sold only a few years after its construction (1906). The building, then, had to respect closely the immediate exigencies of the real estate market.

The building was well received in the press. Articles were published in *La Construction moderne* and in *L'Architecte*. (19) It even appears to have had a significant impact within the profession, if one can believe Frantz Jourdain's testimony of 1932. (20) It probably made Perret more visible in the architectural scene in Paris and certainly boosted his confidence.

At the ave. de Wagram, Perret, for the first time in his career, broke free of Julien Guadet's influence. Perret no longer deals only with problems of distribution, symmetry, and composition. The frank expression of the wall with increased lightness at the top was a simple and direct application of Viollet-le-Duc's rationalist conceptions. Otherwise the delicate modulations of the bays and the ornamental foliage demonstrate Perret's search for an organic vitality not unlike that sought by Art Nouveau artists. These two aspects of Perret's architecture -- rationalism and
organicism -- are already subtly blended on the ave. de Wagram. At rue Franklin, however, Perret was able to develop such concerns more fully. The particular context of the project on rue Franklin, together with its use of reinforced concrete enabled Perret's architecture to blossom to a power of expression unprecedented in his career.
CHAPTER TWO

The project (21)

The building at the 25b rue Franklin is generally considered to be the starting point of Perret's architectural career. As Peter Collins notes, however, in 1903 Perret was nearly thirty years old and had already designed and supervised the construction of at least six buildings, the last three of which had been published in the influential periodical *La Construction moderne*. (22) From the start, nonetheless, several aspects of the rue Franklin project set it apart from any of Perret's previous work. As with the house on ave. de Wagram, this too was a speculative enterprise by the family firm, but it was to be used both as the family residence (23) and as the office of the firm Perret et ses fils. There was then no question of selling the property in the near future.

This was Perret's first occasion to conceive a work with some release from the constraining exigencies of the real estate market. In addition, it was a favorable opportunity to display the firm's design and
constructive creativeness since the building would be its headquarters and thereby acquired a promotional role. It is also likely that Claude-Marie Perret's hold on his son Auguste was relaxing. The great success of the latter's designs for the casino of Saint-Malô and the house on the ave. de Wagram certainly helped establish his competence in his own right. Moreover, Auguste's strong personality was probably affirming itself in the face of his father's old age and declining health (Claude-Marie Perret died two years later in 1905).

The site was also of determining significance. The small hill of Passy on the top of which the project would be built, was officially within the city limits since the decree of 1860, and formed part of the XVIth district of Paris. Yet this old commune had kept the character of a small village, distinctly suburban, and remained uncongested by the intense activity characteristic of central Paris. It is true, however, as Doniol complains in 1902, that there was "an ever greater amount of speculative enterprises due to the large increase of the value of the land which caused a progressive disappearance of green areas in the
Passy was a desirable upper-class residential district west of the main core of Paris which developed at the turn of the twentieth century and was never exploited as a commercial or industrial center. Passy had a beneficial exposure to the westerly winds, had the advantage of resting on permeable ground which was easily drained, and was also fortunate in being one of the highest point of the French capital. The rue Franklin connecting the carrefour de Passy with the Place du Trocadéro was an important artery in the area. It was even directly connected with central Paris by a tramway line whose route passed in front of the 25b.

The rue Franklin had along its sides very few buildings dating after 1870. The street was enhanced by private gardens that appeared here and there along its length. The cadastral plan of the city of Paris drawn at the turn of the century shows a rather large private garden (number 23) immediately west of Perret's site (then number 25) (fig. 12). A picture of the site taken before the old Trocadero was built (c. 1880) illustrates how little different it was from what is shown on the cadastral plan thirty years later (fig. 13). The old
photograph shows on the left the building which stood on the site before Perret built his own (number "25" on the cadastral plan). It was a very simple three-story residence, with its main face turned toward the large garden on its west side. It had more the character of a suburban villa than of an urban residence.

On the south side of the site, immediately across the street, were the Trocadero gardens which sloped down toward the Seine and, across the river, the Champs-de-Mars. This area of Paris always held an important role in the life of the city. In the eighteenth century it had been the popular rallying ground of Paris. Several important events were held on the Champs-de-Mars, including the first balloon ascent in 1783. During the revolution it was an area of the city where major fêtes and celebrations were held which confirmed the Champs-de-Mars's popular role within the city. (26) Perhaps more significantly in our context, the Trocadéro and the Champ-de-Mars had been since 1867 the major site of the international exhibitions. Perret's structure on the rue Franklin thus faced the site where some of the most significant architectural monuments of the nineteenth century once stood. (27) In
1903, only the Eiffel tower remained as a witness of the glorious days. The sense of coming "after" a brilliant chapter of architectural activity was heightened by the architectural failure of the 1900 world exhibition, which proved a disappointment to most architects, even those of the least progressive bent.

The site at the 25b not only overlooked the Trocadéro and the Champ-de-Mars; it also offered a panoramic view of the whole of Paris (fig. 70). Zola in his novel Une page d'amour had taken this exact vantage point to create his famous "tableaux" of Paris. (28) The site had thus the double symbolic importance of confronting directly both the famous exhibition ground and the city of Paris, then probably the two greatest symbols of modern times. At the rue Franklin this fantastic panorama created a challenging comparative relation: in front was "Paris ramassé," (29) condensed into one huge entity, summarized into a series of distinct monuments. In Zola's words:

In the middle, the Seine was spreading, triumphant, encased in its gray banks, to which unloaded casks, profiles of steam cranes, dirt-carts drawn up in line, gave the appearance of a seaport.... The bridges, on both sides of the Cite, became threads spread from one bank to the other; and the towers of Notre-Dame, all gilded, arose like horizon landmarks, beyond which the river, the buildings, the clumps of trees merged
into the sun's dust....On the right bank, in the midst of the old trees of the Champs-Elysées, the large glass roofs of the Palais de l'Industrie shone with the whiteness of snow; farther on, behind the squat roof of the Madeleine, like a tombstone, arose the enormous mass of the Opera; and there were other buildings, other cupolas and towers, the Vendome column, the Saint-Vincent de Paul church, the Saint-Jacques tower and, nearer, the heavy squares of the pavilions of the Louvre and of the Tuileries, half-hidden in a clump of chestnut-trees. On the left bank, the gilding of the dome of the Invalides rippled; beyond, the two unequal towers of Saint-Sulpice paled in the light; and, still farther away, to the right of the new spires of Saint-Clotilde, the bluish Pantheon, seated squarely on a height, dominated the city, displayed its fine colonnade standing out in clear relief, motionless in the air and with the silky appearance of a captive balloon. (30)

Perret could not have chosen a more provocative site. It confronted the paramount architectural production of the past seven hundred years in France.

No document, however, gives us any indication of the immediate reasons which prompted Perret to buy the site. Two explanations have been given. Perret's mother, Pauline Lorimey, came from Passy, suggesting that the Perret family had special ties there. This in itself seems a feeble explanation, especially in view of the fact that Claude-Marie Perret was the dominating figure in the family and that they had already lived for over twenty years in the heart of Paris, on the rue du Rocher in the 9th district. Another explanation has been that
the site at the 25b rue Franklin was so exiguous that its real estate value was low. To a certain extent this may have been true, but only with respect to the new regulations of 1902 which made very large courts mandatory. The existing building, however, probably added some value to the site, since the small structure could probably have been renovated to accommodate a small hôtel particulier of comfortable size. Auguste Perret had attempted repeatedly, without success, to buy adjoining properties (31) which suggests that it is unlikely that he was simply after an advantageous purchase. It is more likely that he had a personal interest in the site outside of any immediate financial concern. The site was ideally suited for a retirement residence for the head of the family: it faced south-east and overlooked a large park far from the noise of central Paris. The tramway line passing on the rue Franklin linking Passy with the city was also an asset for the family business. These factors, plus the special significance of the location as described above, were undoubtebly reason enough to buy the site.

Probably the most important aspect of the project, that which made it so completely different from Auguste Perret's previous work, was the decision to use
reinforced concrete for the structure of the building. The constriction of the site may have aided Perret in convincing his father to use concrete, a material that had greater flexibility since it obviated the need for bearing walls and permitted a thinner structure. (32) It is likely, however, that Auguste himself was interested in the new material over and above its advantages in this specific project. Jamot and Dormoy both report that Perret had told them, in 1899, that he wanted to build the casino at Saint-Malo entirely of reinforced concrete. (33) Perret, however, was always so keen in asserting that he was the first architect to use reinforced concrete that this evidence should not be granted undue weight.

In any case it should be remembered that reinforced concrete was considered by many at the turn of the century to be the material of the future. The World Exhibition of 1900 made extensive use of concrete (fig. 14) and thus attracted considerable attention to the material. Paul Planat in La Construction moderne devoted many articles of a technical nature to concrete. De Baudot, in his course at the Trocadéro, expressed interest in the material as early as 1890. By 1903 his
church in Montmartre (using the Cottancin system of reinforced cement) was virtually complete and was already a focus of interest. However such claims for priority may be settled, the fashion in which reinforced concrete effected such a drastic change in Perret's architecture seems to establish convincingly that it was, for him, more than solely a new technical means. It is one of the challenges of the present work to articulate how reinforced concrete was such a crucial determinant for Perret. It is in this respect only that we may affirm that the apartment building on the rue Franklin was, in a real sense, the starting point of Perret's career.

No documents have been found to give us any precise data as to when the project was initiated, nor have we exact information as to when the land was bought. (34) The project was largely designed by April or May 1903. (35) Construction most likely started in the summer of 1903 and ended sometime in the first half of 1904. (36) The first tenants, however, did not move in before sometime in 1905. (37)

It is commonly said that the Credit Foncier refused to advance a mortgage on the enterprise because
of its audacious use of reinforced concrete. This story has been repeated so many times that it seems difficult to attempt to refute it. It is surprising, however, that in 1903 the bank would not trust a construction system which had been used extensively for industrial buildings and (though in only a few instances) for residential buildings in Paris. (38) Perhaps the bank's hesitation was more a consequence of Perret's decision to use the relatively unknown firm of Latron et Vincent for the reinforced concrete work, rather than the more established businesses who were direct concessionary companies of Hennebique. The construction system used at the rue Franklin remains, however, very similar to Hennebique's system of slab-on-beam (fig. 15) and was, at least by today's standards, largely overdesigned. It is conceivable that some of Perret's unorthodox structural contortions at the 25b could have caused a certain skepticism in 1903. But even these remain quite modest when compared with some of the work done under Hennebique's patent and published in *Le Beton armé*.

The 25b was built by the firm of Perret et ses fils with the structural work subcontracted out. All laborers were paid by the day, since Perret's firm did
not have its own permanent team of construction workers.

The stoneware tiles used to sheath the entire front elevation were designed by Perret, manufactured by Alexandre Bigot, and laid by laborers under the general supervision of the architect (fig. 16) (40). The infill consists of a single solid brick wall, coated on the exterior with a layer of cement to which the stoneware tiles were directly applied. On the interior the coating was of plaster mixed with asbestos fiber for added weather insulation. We have no information on the organization of the construction site.

Undoubtedly Auguste had the key role in the planning and execution of the building. If most drawings are signed by both Auguste and Gustave, some of the more important ones are signed by Auguste only. (41) It is impossible to know Gustave's precise contribution in the elaboration of the project, but he most certainly played an auxiliary role. Claude-Marie Perret, for his part, seems to have been involved only remotely; the only document bearing his name is the first application for a building permit. All other documents were signed by either Auguste only or by Auguste and Gustave.

The building has eleven distinct levels from
the basement up to the ninth-floor penthouse. It rises slightly over 33 meters above ground -- or 66 meters above the Champs-de-Mars plain. The basement and ground floor have a structural organization distinct from the upper floors. The heavy piers at these lowest levels are widely spaced to allow a maximum uninterrupted floor area (dr. 11 & 17). Above, a more slender and ramified structural frame has a configuration similar to that of the rooms (dr. 12 & 18). There are three doors at ground level on the street side (fig. 17). To the extreme left, a small service entry opens to a set of stairs which lead directly to the basement; the stairway was used for coal deliveries and as the entrance for the domestics. Symmetrically on each side of the central glazed bay are the two principal entranceways. Entering on the left, one is led to the main stairway and the elevator which gives access to the upper-floor apartments (fig. 5). The door on the right gave access to Perret's office, conventionally announced by discreet capitals at the top of the two inclined members on the side walls of the porch (fig. 18). The left entrance is otherwise slightly wider and higher (due to the slope of the street). Once through the door, one finds a flight of stairs leading to a small lobby with the concierge's
loge immediately to the left.

The lobby is thus nearly one meter higher than the office area on its right, which rests at ground level. An access to the office from the lobby is nonetheless provided on the right side of the main stairway. The office space also has a ceiling height considerably higher than the lobby, which allowed Perret to add some years later a steel mezzanine when the firm outgrew its original space requirements (fig. 19).

The office space was divided in three areas: one large central area of nearly 60 square meters, with its street side entirely glazed; one oblong area at the entrance on the right; and a smaller space at the back probably used for storage. These areas, however, were not rigidly enclosed and were separated by glazed partitions which created the appearance of one open space.

The basement was divided into a number of small rooms. It housed the mechanical services (elevator machinery, central heating-stove, and coal storage) and storage areas for each tenant. The basement floor was accessed only through the service entrance at the front or the service stair at the left hand side at the back.
The seven stories immediately above ground were used for apartments. Each floor housed one apartment. All the apartments had identical plans except for the ones on the sixth and seventh floors, which were recessed to respect the legal building line. The main stairway leading to these floors was entirely made of reinforced concrete, with a veneer of stoneware tiles on either side of the central carpet. The north wall of the stairwell was of glass blocks (fig. 20). It allowed Perret to bring light in the stairwell through the translucent material without having to withdraw the alignment of the rear wall in order to avoid infringing his neighbor's easement rights (42). Guimard at the Castel Béranger had also used glass blocks in the main stairwell; but Perret very ingeniously exploited this building component to extract as much rentable space as possible, thereby using the new material with apparently the most unassuming intentions. Glass blocks were also used in the kitchens to provide a light source from the courette ("small interior court"). Perret had also planned to use the material under the kitchen windows on the street side (dr. 7) but finally restricted its use to the area immediately above the service entrance, and used wired glass under the windows.
above.

The interior finishes in the apartments were conventional: plastered walls and ceilings with very simple moldings (fig. 21), hardwood flooring, very wide glazed double doors linking the three main rooms (fig. 22). From drawing 6 we see that the building was originally intended to provide one-bedroom units, with the boudoir and fumoir on either side of the apartment. This somewhat unusual room arrangement reflected quite accurately the way apartments were used: in formal receptions men would retire to the fumoir after dinner, while women would gather in the main bedroom which was often adjacent to the main salon, particularly in smaller apartments which did not have a "petit-salon."

In the later drawings of the 25b apartment plans, Perret has designated the two smaller rooms at the side bays as bedrooms, which probably gave the apartment additional rental value. The apartments thus consisted of one main and two smaller bedrooms, a dining room, a central salon, a gallery, a bathroom, and a kitchen. All service rooms (kitchen, stairways, elevators, bathrooms, and corridors) were grouped near the party walls, with the service stair at the far left while the main body of
rooms was turned towards the south, overlooking the Trocadero gardens and the city. Each major room had its own fireplace -- except the main salon which had, on all of its sides, large glazed doors or windows. The apartments were heated by radiators but it still was unusual that the main room of the apartment should lack its conventional fireplace (43), particularly if it was provided in all the other rooms of the apartment. It is true that a chimney rising in the central portion of the building would have been more difficult to handle on elevation and also have compromised the symmetry and prevented the provision of large door openings between the major rooms. As it was conceived, the salon assumed a particularly modern character with its glazed walls and absence of fireplace.

The sixth-floor apartment departs only slightly from the typical configuration, the only difference being the two small loggias at the bays. The seventh-floor apartment (dr. 13) is significantly different from the other apartments. A continuous terrace which links the three central rooms was made possible by the recess of the salon. All rooms were consequently more regular in shape. This apartment was originally used by Perret's father (who died within his first year living there).
His wife kept the apartment until her death several years later.

The eighth floor (dr. 15) was used by the servants who were each given their own little room. The only access to this floor was through the service stairs since the main stairway bypassed it, while directly linking the seventh floor to the ninth. On this last floor, was a small apartment that was originally used by Auguste Perret (dr. 16).

A series of undated drawings drawn by Auguste, show the plan and elevations for the woodwork of this apartment, which was probably built sometime after 1905 (44). The panelling -- which has survived to this day (fig. 23) -- was unusually simple for the time. A visit to the apartment, however, shows how the overwhelming view of the Eiffel tower (which appears almost as seen through a telephoto lens) and the city beyond supersedes by far the interest of the rooms themselves. Perret's decision to sheath with mirror glass a large portion of the north wall indicates how the view of Paris was in fact meant to serve as the main decor of the apartment. A window was later added looking north, which allowed a panoramic view of the Bois de Boulogne and the hills of Saint-
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Cloud. (45) The rather limited floor area of this apartment was compensated by a series of terraces: from the main terrace on the ninth floor, a ladder gave access to the roof-terrace, which was nothing less than a small garden decorated by flowers and small trees. (46) Another ladder gave access to the eighth-floor terrace which was otherwise inaccessible to the servants whose rooms were on that floor. The ninth-floor penthouse was thus linked to an elaborate system of terraces that spread over three levels. As we have seen, these seemed to have quickly enjoyed some reputation in Paris since a conference sponsored by the group "L'Art pour tous" was held on the roof-terrace in June 1905.

A trellis of sorts, built of reinforced concrete, was added to the ninth-floor terrace after the original construction of the building (compare figs. 24 & 25) (47). It is difficult to know the exact purpose of this elaborate concrete work. It probably served as a trellis supporting climbing plants as well as brise-soleil. Yet the heavy reinforced concrete beams seem somewhat excessive for such modest purpose. It probably also played a promotional role, displaying reinforced concrete bare of any veneer material to the eyes of
visitors. As Le Corbusier reported, already in 1908 Perret's slogan was: "I built of reinforced concrete!" (48) Consequently, it is not surprising that he would want to show a sample of the material in his own apartment. Perret's building on rue Raynouard (designed in 1930) may confirm this hypothesis: there too, Perret had left the reinforced concrete columns bare only in his own apartment.

On either side of the ninth-floor terrace, the concrete trellis was terminated with a small stoneware decorative element (fig. 26). These were purely formal features that punctuated the extremities of the end beams. Their different shapes reflect the slight dissimilarities between the two wings of the building.

The ninth-floor apartment was the cause of some legal problems which were finally settled only because of Perret's special connections at city hall. (49) Yet the infringement of the stipulated building envelope was obvious from Perret's own drawing (no. 7). It demonstrates Perret's determined interest to have a ninth-floor apartment of this type which, otherwise, had little real estate value (it was not even equipped with a kitchen) and which served him only as a pied-a-terre.

It literally formed a little "villa in the sky"
overlooking Paris. At rue Franklin, references to villa-like accommodations was not confined to Perret's own penthouse but was a theme that pervaded the whole building. The U-shape configuration of the apartments was suggestive of a country villa. The provision of terraces on every floor overlooking the Trocadero gardens and the whole city further sustained the image. This characteristic already prefigures the "maisons a gradins" of Henri Sauvage, first developed in the 1910's. For Perret, however, it was primarily a contextual response to the site: Passy was still perceived in the turn of the century as a small village thus invoking more peaceful and rural ways of living. The small loggias and the very configuration of the apartments was a very subtle acknowledgement of this particular situation. As Rambosson had noted, Perret's apartment plan was very "conducive to calming our inner fever and fatigue by resting the eyes." Perret had certainly in mind that his building would serve as a retirement residence for his parents and, suitably, attempted to provide a soothing atmosphere.

Generally speaking the configuration of the
building was a truly brilliant solution to the problem at hand. The recess at the front of the building allowed all major rooms to have a window on the street which made it unnecessary for Perret to provide an interior courtyard. According the new bye-laws of 1902, this court could not have been less than 56.66 square meters which -- for a site of only 196 square meters -- was considerable. As it stands today, the courtyard at the front is only 18 square meters; Perret thus saved nearly 40 square meters per floor. The bye-laws of 1902 specified that the owners of two contiguous buildings could share their interior courts provided the two parties signed an agreement stipulating that such courts would always remain common.

In theory, Perret could have then used the large court (120 square meters) immediately at the rear of his site. It is probable, however, that M. Jacqueau who owned this court did not want an added servitude to be imposed. Whatever was the case, Perret totally disregarded the potential provided by this courtyard, since even the small courette at the back of the 25b which opens into the neighboring court has exactly the required dimensions. In addition, as we have just seen, the glass block wall at the main stairway prevents any
view into the court, thereby assuring the total independance of Perret's building from the neighbors. Perhaps Perret preferred to keep his building as a totally autonomous entity even from a prosaic legal point of view. As we will see later, this would not be inconsistent with his basic organic theory of architecture. It should also be kept in mind that, contrary to what is often claimed, Perret's site was not uncommonly small by Parisian standards (50) and that a building of more conventional configuration would have been feasible -- though, obviously, with less rentable floor area.

The front elevation of the 25b follows rigidly the regulations imposed by the 1902 bye-laws. Article 24 allowed, on streets of twenty meters in width, the "décoration" of the main entrances to project a maximum of .5 meter at the gabarit inférieur (that is, the lower portion of the building, below four meters from the ground). Perret follows this prescription to the letter: the slanted walls of the two main entrance porches project exactly .5 meter at the four meter level, above which the gabarit supérieur -- allowing
projections up to 1 meter -- applies (see dr. 7). Article 22 restricted the surface of all enclosed sections of the building which projected beyond the alignment at the gabarit superieur, to 1/3 of the total surface of this upper-portion of the facade. At the 25b rue Franklin, the two bays are exactly 1/3 of the total surface of the upper elevation. These bays do not project equal distances from the alignment, since article 22 decreed that "laterally and at the extremities of buildings, projections shall be limited by a vertical plane at 45 degrees to the plane of the alignment and starting at 25 cm. from the party line, a measure taken at the alignment." (51) Perret thus had to limit the projection of the left bay which was immediately adjacent to the party wall. Despite this adjustment, however, the bay still projected by a few centimeters in excess of legal requirements, a fact noted by the city inspectors.

The legal building line -- in a section drawn at the top of the building -- was determined by a half circle of a radius of half the width of the street, starting at a height equal to the width of the street. The building section on drawing 7 shows how the curved walls at either side of the bays on the sixth floor
follow exactly the curvature of the legal building line. The sixth-floor loggias are also in close concordance with the building line, since only a non-enclosed structure could be erected in line with the bay below. The exterior wall of the building itself had to be recessed following the limit set by a half-circle projecting 1 meter further than the main building line. Similarly, the limit for the decorative projections at the top of the bays followed a third half circle, projecting 2 meters further out from the main building line, starting at the point of junction between the curve and a vertical line projecting from the outer edge of the bay (see the three half-circles drawn on the building section on dr. 7). The seventh-floor ornamental pieces crowning the bays were illegal and required a special variance. From drawing 7 we may see how the eighth and ninth floors projected outside the building line. On the first set of drawings submitted with the building permit application, Perret omitted the ninth-floor penthouse in both elevation and section. It is difficult to know if it was purposefully omitted or if it had not yet been planned. A corrected elevation was sent to the city hall after the penthouse had been
erected -- and only because it had been requested by the city inspectors. The evidence, then, suggests that Perret was covering up, assuring himself that the project would not be blocked by the city before it was started. Perret was condemned to pay a nominal fine and to destroy those portions of the building that infringed on the legal limits. As already mentioned, Perret was then granted a variance and finally had only to pay the sum of sixteen francs.

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Despite its modest size, the 25b -- located on a prominent street of Passy, only a few meters away from the Trocadéro -- could not have failed to be noticed by the inhabitants of Passy. It is true that this district had already witnessed the erection of a good number of "modern" buildings, especially by Guimard -- who had designed many of his buildings in the 16th arrondissement (including the Castel Béranger and the École du Sacré-Coeur). Compared to most of the Art Nouveau production, however, Perret's building probably appeared austere and rigid. We have no documents which
could provide information on the popular reaction to the building.

The flats were let at a price of 6000 francs per annum, which meant an upper-class clientele, but was not unusual in Passy. The 25b provided all the elements characteristic of a modern luxury building: "radiator heating, electrical lighting, elevators, dumbwaiter, telephone connection with the concierge and the city, gas, hot water, bath and toilet all installed, servants' quarters and storage basement." (52) The magnificent view over Paris and the absence of an inner court were certainly very appreciated and marketable values. It is important to remember that, in 1903, a reinforced concrete structure sheathed with stoneware tiles was no less expensive than a building made of cut-stone with sculpted decorations. In fact, the initial cost was probably greater than if it had been built of stone. (53) The extra floor area which concrete construction permitted compensated for the higher cost of the building itself. Reinforced concrete even allowed Perret to build an additional floor while still offering a clear height of 3 meters from finish floor to ceiling in all apartments; this was slightly higher than the
average Parisian apartment built at that time. (54)

The 25b rue Franklin was a profitable investment; it should be kept in mind, however, that the house was, above all, the headquarters of both the family enterprise and the architectural office of "A.-G. Perret." It thus had to convey the skills of the construction firm and furthermore state clearly Perret's architectural convictions. The construction skill displayed in the building is undeniable but it was obviously the latter aspect which absorbed Perret's energies: the 25b rue Franklin is one of the most ambitious architectural statements of Perret's career. Before embarking upon a theoretical analysis, however, it is useful to comprehend fully the nature of the *maison à loyer* as a nineteenth-century building type.
Conventions and law imposed strong constraints on the design of apartment buildings in Paris at the turn of the twentieth century. In that post-Haussmannian era, the building type was subject to growing criticism which originated from the sentiment that the great urban houses of Paris were banal, anonymous, and ultimately oppressive for the development of harmonious family life. These issues had an immediate architectural dimension that translated into increased efforts at "characterization" of the urban dwelling. This created in 1900 an almost desperate search by the Art-Nouveau architects for new forms to bring a sense of vitality back into the monumental streets of Paris. The quest of the Art-Nouveau artists was transitionally of genuine significance; but, in its evasion of the reality of the modern industrial city, it proved to be a short-lived crusade with little impact on future development.

Auguste Perret at the 25b rue Franklin accepted in
its full dimension the critical problem of the maison à loyer (55). He sought a new solution that would respond to modern needs through the use of modern techniques. It would be erroneous, however, to reduce the 25b rue Franklin to its typological dimension. The building was not conceived through a Guadetesque analysis of precedents. More fundamentally, the solution Perret found was the consequence of his reflections on architecture and art.

This chapter is thus largely introductory. It attempts to illustrate the architectural problem of the maison à loyer as it was perceived by architects in 1900. The debate was important in Parisian architectural circles because these buildings were the predominant type in the city. As Daly wrote in 1840: "There are a thousand houses to be built for each public monument." (56) If the École des Beaux-Arts never addressed the problem of the urban dwelling in its official curriculum, the professional press, even that directly associated with the École, devoted increasing attention to this building type. In the last decades of the nineteenth century a growing number of reviews, criticism and even theoretical discussions were dedicated to the maison à loyer. Certain periodicals
were almost exclusively devoted to the subject (Moniteur des architectes, L'Architecture moderne). Daly and Viollet-le-Duc, certainly the two greatest minds in the architectural debate of the second half of the nineteenth century, published a considerable number of pages on the problem. By 1900, even non-specialized journals, such as La revue bleue and La revue des deux-mondes, focused their attention on the Parisian house. By then the maison a loyer had entered the realm of fashion. As was written in La revue bleue in 1903: "On n'a que les maisons qu'on est digne d'habiter." (57) A house was like a piece of clothing, reflecting directly on the character of the owner. In its most narrow dimension, this meant that prevailing taste dictated the exterior form of houses; the maison a loyer at the end of the century consumed "styles" as rapidly as Parisians consumed luxury goods.

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This had not always been the case. In the course of the nineteenth century, as the maison a loyer progressively became an architectural problem in its own
right, architects relied on set conventions largely derived from the aristocratic hôtel. Even at that time the elevation was often seen as a problem, and a series of partial solutions were recognized and used repeatedly. Only after Haussmann, whose set of rules perhaps too rigidly sanctioned a fixed type, did architects bring the form of the maison à loyer into serious discussion.

Large compendia were published all through the nineteenth century containing well-engraved plans and elevations of Parisian houses (58). One of the first of these albums was Krafft's Plans, coupes, élévations des plus belles maisons et des hôtels construits à Paris, published in 1801. It attests to the increased attention given to the maison à loyer following the building boom in the later half of the eighteenth century (59). When the houses illustrated by Krafft are compared with the immeubles published in Jombert's Architecture moderne (1728) or Neufforge's Recueil élémentaire d'architecture (1757-58), we see how little had changed in the organization of eighteenth century Parisian houses. Facades were more lavishly decorated and the buildings
were often larger, but the plan and functional distribution were similar. The apartment comprised a series of large rooms grouped together without the intermediary of corridors or antichambre (fig. 27). Apart from the salle de compagnie (hall), and the salle à manger (dining room), the rooms were not denominated.

In the large maison à loyer, the tenant could rent space as needed and, more or less, establish for himself the functional distribution of his apartment. The larger central room, the salle de compagnie, was used for both reception and sleeping. The apartments provided no special dégagements (corridors) for servants who lived relatively freely amongst the family. The facades of these buildings were simply organized (fig. 28). The ground floor and the entresol (mezzanine between ground and first floor) were treated as a base on which stood three or four stories of decreasing height; the last story with its balcony and heavy cornice terminated the composition while the mansard receded above. Except for the change in height, the three stories above ground were undifferentiated. This type of composition had become common in the eighteenth century. The early nineteenth century witnessed only a greater emphasis on detailing and more monumental
composition using a classical vocabulary. Krafft's publication, which went through successive editions in the first half of the nineteenth century, is, nonetheless indicative of a new attitude. Relatively early in the nineteenth century the maison à loyer would begin to undergo changes. Complex factors lead to these transformations. Two determinant elements representing antagonistic interests, originated outside the architectural profession. The first came from medical discourse and concerned hygiene and health. The other emerged from the concern of speculators and administrators for maximum rentability. Hygiene called for well-lit, spacious rooms, with a coherent infrastructure to provide fresh water and disposal of sewage. Capitalist speculation, for its part, encouraged maximum building within the given spaces and tended to reduce open areas to the minimum. These two opposed forces, however, were not always irreconcilable. At least with the buildings for the upper-middle class, maximum rentability was achieved when "modern" buildings with maximum commodity, air and sun were offered. Conversely, hygiene was often used as a justification for large-scale destruction in the existing framework of
the city and served to conceal an essentially speculative enterprise (60).

During this period large segments of peripheral Paris were developed. These new districts formed experiments for what would soon be transposed to the whole of the city by Haussmann: large avenues and big houses with monumental facades and more functional layouts. These new developments were carried out through the close collaboration of speculators and the city administration. Development served both the capitalistes and city hall; it increased the well-being of the inhabitants of Paris (presumably calming social unrest), and it encouraged progress in the economy. Speculation and hygiene would remain throughout the nineteenth century the two most pervasive forces shaping the development of the maison à loyer. These two aspects undergirded the nineteenth century notion of urbanism.

Their effect on the maison à loyer was important. Hygiene and rentability, working hand in hand, had transformed the design of houses into an almost scientific equation where the comfort of the growing borgeoisie of boutique and merchant was the dominating concern. Plans were rationally laid out for
maximum site use. If apartments were larger with a greater number of rooms, there was much less wasted space than in older houses (61).

The ground floor was often built using iron construction, which permitted a larger commercial space and large glazed areas. Around the interior courts, spaces for storage were reduced to the minimum. Finally, the apartments themselves were carefully studied for maximum efficiency.

Each room had its specific function and equipment. They were still grouped en enfilade, but alternative access was provided that made rooms independent of each other. The dégagement ensured that service could be conducted without disrupting the life of the bourgeois. Distinct zones within apartments were thus clearly articulated: the reception areas facing the major streets, the bedrooms alternatively facing the street or the court and the service spaces (kitchen and dependence). Areas were linked through an intricate system of corridors. A service stair adjacent to the kitchen provided direct access to the mansard that served as the servants' quarters.

The intense land speculation that Paris
witnessed during the nineteenth century, particularly during the Haussmannian transformations (1855-70), made apartment living the most common form of habitation in the city. Even the upper-class abandoned the old hôtel particulier that was becoming antiquated and too expensive. Only the very rich could afford to build a modern hôtel, which remained the most prestigious form of urban dwelling. Consequently the maison à loyer became increasingly luxurious. By the end of the century, lavishness abounded, as appears in an article by Marc Croisilles in L'Architecture moderne. Croisilles relates the sarcastic words of a Parisian woman:

My new apartment consists -- and this is the absolute essential -- of a gallery of 32 meters in length by 24 meters in width, which gives me access to a grand salon, a moyen salon, and a petit salon, to a salon à jouer, one for smoking, one for reading, one for playing music, and another for resting..." (62)

Though written in 1912, the passage gives an amusing picture of the tendency to identify a specific space to each social or bodily function, a phenomenon already emerging in the early nineteenth century. In fact, around 1900, apartments grew to gargantuan proportions. Some apartments deployed no fewer then seven bedrooms on one floor and a succession of salons nearly duplicating those described by Croisille's
Parisienne (fig. 29).

* * * *

If the laws of hygiene and the forces of speculation were decisive factors in the development of the maison à loyer, they were not the only elements at play. The bourgeoisie which had secured its position in the economic structure of the city needed houses that were not only hygienic and economical but that also reflected its new status. If the bourgeoisie could not afford private urban residences, it would seek to enhance the prestige of the maison à loyer. This was achieved mainly through a "typological transfer" from the hôtel to the apartment block (63).

Jacques-Francois Blondel, in his *Architecture française* (Paris: Jombert, 1752), had claimed that since the beginning of the eighteenth century a new art of distribution (planning) had been created. For Blondel, the distribution of private houses was the area where French architects had most improved over the architecture of antiquity. Over half the buildings documented in Blondel's book are Parisian hôtels.
particuliers. Already, Blondel was insistent that each room be denominated according to its particular function and that houses comprise an _appartement de parade_ (reception area) and an _appartement de commodité_ (private quarters of the family). Blondel was concerned with the hôtel and never tackled the problem of the immeuble. In the nineteenth century, however, architects who designed apartment buildings would turn to Blondel for guidance.

A distinctive characteristic of the French hôtel was its large court around which all functions were distributed. On a central axis was the main entrance to the house. Symmetrically on each side -- near the main _corps de logis_ (building block) -- were entrances to the second-floor apartments. Closer to the street were the stables, kitchen, servants' quarters and other service spaces (fig. 30). All major reception rooms faced the enclosed garden on the other side of the main _corps de logis_ while the dining room faced the court and was closest to the kitchen. Rooms _en enfilade_ were characteristic and, according to Blondel, were a sign of the "magnificence of the owner." (64) The longer the "perspective," the more majesty it conferred on the
house. Private apartments were on the second floor, which made corridors unnecessary. One should note, however, that the so-called chambre de parade often adjoined the main salons. Such "bedrooms" were in fact used during receptions and were very formal. In most cases, a more private bedroom, the chambre à coucher per se (65), was located on the upper floor.

Typically, the maison à loyer could not incorporate private gardens, nor could the apartments be distributed on more than one floor. Yet certain features of the hotel, albeit significantly transformed, would later appear in the maison bourgeoise. The monumental stone stairways were increasingly common in the maison à loyer of the upper class. These were a hallmark of distinction, as they had been in the hôtel type. The semi-private neutral zone of the front court in the hôtel was transformed into an antichambre or galerie within each apartment, a distinctive feature of all upper-middle-class apartments in late nineteenth century. It already appeared in most of the maison à loyer illustrated in Daly's Architecture privée. However the immeuble Hachette on the blvd. St.-Germain, designed by Charles Garnier, 1882, is probably the first instance where the galerie-antichambre was used to its full
potential (figs. 31 & 32).

This building by Garnier is a particularly good example to illustrate the maison à loyer's mimesis of the hôtel. The corps de logis facing the street was used for apartments while the block at the back of the court was an hôtel particulier used by Mr. Hachette. The building thus combined under one roof both building types. The plan of the first floor showing simultaneously the hôtel and one typical apartment demonstrates the similarity in planning approach. The hôtel plan is regular, expansive and symmetrical. The apartment plan is more complex because all rooms must be provided on one floor. The distribution of each separate section of the apartment, however, is identical to the hotel. The large salons (no. 8) are flanked by the two major bedrooms (no. 13) as in the hôtel. The large antichambre (no. 7) structures the organization of the whole apartment, giving access to all reception rooms, to the corridor leading to the bedrooms, and to the service core. Despite its capaciousness, the antichambre was not used for a definite purpose but served as a nodal point of the apartment -- a role similar to that of the court in the hotel. The galerie-antichambre
formed a buffer zone, a "terrain neutre" (66), between the common stairway and the main enfilade, just as in the hôtel the court mediated between the street and the main corps de logis. The galerie-antichambre also permitted greater flexibility within the apartment. Rooms en enfilades remained -- since such an arrangement still bestowed status -- but each room was now independent of others, and their particular identities were defined and emphasized. In the maison à loyer, the role of the private garden in the hôtel was given to the street -- or the city itself -- onto which all the major salons faced. The shifted function was realized further when all major boulevards were lined with trees. Obviously, the street and the city had neither the accessibility nor the manageability of a private garden. Parisian streets had, however, the fascination of a natural phenomenon and were perceived, without doubt, as the proper backdrop to the large receptions held in the salons. Along the most prestigious streets of Paris, such as ave. Henri-Martin or the blvd. Suchet, special zones of non-aedificandi were established to provide a buffer from the free-flowing life of the city. (67) To face a park or a green area of some sort was always regarded as the best
situation, an idea which, at least in part, stemmed from the tradition of the hôtel.

The decoration of apartment buildings in the nineteenth century can also be seen to rely on a transfer from the palatial architecture of earlier centuries, particularly the use of the orders and classical ornamentation. The reflected ceiling plan of the immeuble Hachette reveals how the ornamentation of the apartment was similar to that of the hôtel. The problem of interior decoration was simple. In the more luxurious buildings elaborate woodwork enhanced with gold and painted canvases could easily be incorporated. In the upper-class maison à loyer the ornamentation of apartments was arranged by individual tenants. Decor, once the exclusive appanage of the hôtel was introduced into the apartment.

The exterior ordonnance (ordering) of the facade was more problematic. Elevations were seen as part of the street rather than as reflections of the individual buildings or their interiors. Street regulations and the maximization of space encouraged similar profiles on contiguous buildings. One of Haussmann's chief aims was to unify Paris "considering the entire city as one large
monument of which all parts would be interdependent." (68)

The immediate consequence of this for the maison à loyer was considerable, since the major part of the city consisted of such buildings. Eighteenth and early nineteenth century houses presented facades with windows undifferentiated by floor. Decoration was always sober, and the orders were most often absent from this prosaic building type. The houses aligning the rue de Rivoli designed by Percier et Fontaine (begun in 1803) were the most coherent ensemble of this type, prefiguring the rectilinear aesthetic of Haussmann. Their austerity, however, contrasted strongly with the ostentation of houses built during the Second Empire. Haussmann did not oppose elaborate ornamentation; in fact, he encouraged monumentality as long as his principles of regularity and symmetry were applied.

In a note addressed to the Commissaires-Voyers in 1855, Haussmann expressed his irritation at the "broken lines and the lack of continuity of the lignes magistrales [controlling lines] of the houses in Paris." He then recommended that all owners "give to their houses the same principal lines on the facade, so as to have continuous balconies, cornices and roofs." Note, however, that says architects "...may, if the house is
well detached from others by a special disposition which makes it a complete unity within itself, follow his inspiration, without worrying about the heights of adjoining constructions." (69) Alternatively one may, Haussmann decrees, compose a linear, horizontal arrangement making the street a continuous sequence (ave. de l'Opera, for instance); or design a facade whose own unity is independent of the context. The strict bylaws regulating the building lines in Paris ensured consistency of overall heights, while Haussmann's "recommendations" guaranteed monumentality.

The relationship of the facade to the interior distribution was not considered, insofar as all facades expressed the new urban ideals rather than individual house configuration. The public realm had precedence over the expression of the individual house. If this attitude made possible the remarkable homogeneity of the Paris we admire today, it also crystallized the vision of the city as a gigantic organism to which all its constituent parts -- including its inhabitants -- must be subservient. (70)

The Hachette building is a good example of the Haussmannian facade. Its giant pilasters over the
entrances, the protruding balconies and monumental windows conferred a new dignity and even splendor to an otherwise flat facade. It is no longer simply a series of windows systematically aligned as on rue de Rivoli; the elevation is composed symmetrically, and each floors is treated differently, expressing the fact that this is the public front of not only palatial bourgeois apartments, but also of a luxurious hotel. By the late nineteenth century, however, the hôtel and the bourgeois apartment were obviously designed in the same spirit, using distribution à la Blondel, and similar facade configuration. Garnier's building provided the most coherent solution for the maison à loyer and would be frequently copied. If he did not really developed new concepts, he brought to fulfilment those already established (71). The apartment plan was organized around a large galerie-antichambre. All rooms were well lit and well serviced. The best equipment was installed. An elevator was provided that permitted easy access to the upper floors. The facade was distinctive and yet respected the city alignment. Even Guadet's analytical mind would find little to improve when, ten years later (1890), he designed a similar building also on blvd. Saint-Germain (fig. 9). Guadet's apartment plan, if more
modest is similar to Garnier's. The facade, like that of the immeuble Hachette, remains "composed" in the best Beaux-Arts tradition. It must be apprehended as a whole, its unity being derived from the particular arrangement of balconies. Guadet wanted each floor to have its own identity since each one of them housed one distinct dwelling unit. This conception, however, contradicted the fact that all units were identical, of almost the same height and of equal rental value (particularly since the use of elevators). Guadet, as Garnier before him, was in fact composing a monumental facade, hierarchically and symmetrically designed, to convey the impression of one palatial house -- an hôtel in fact -- rather than a stack of identical apartments.

* * * *

The qualities of Garnier's immeuble Hachette were duly recognized by architects facing similar problems. For architectural theoreticians, however, the maison à loyer, and even Garnier's elegant solution, were subject to criticism. Two views on the maison à loyer dominated the architectural debate in the
nineteenth century. On the one hand the maison à loyer was perceived as a modern creation deserving careful attention because, more than any other building type, it condensed within its organization the nature of the new social order (democracy):

Architecture used for the enhancement of the life of individuals and the introduction of comfort inside dwellings, are the two most notable characteristics of modern art. (72)

On the other hand, the maison à loyer was thought to present an insuperable problem. Because the maison à loyer housed a transient succession of tenants and was built, therefore, to respond to the taste and program of no particular patron or client, it was not considered by the theorists of the day as art. Such buildings did not serve any specific client, hence were devoid of strong characterization and were ultimately commonplace and banal. Daly in L'Architecture privée summarizes these two aspects of the maison à loyer:

If it is not art in a higher sense that ought to govern the construction of the maison à loyer, it is the practical reality of life. (73)

Architects thus perceived the maison à loyer as a "product" of modern times, conferring on the type a mass anonymity and blandness that placed it outside the realm of architecture. In a series of articles entitled "Le
mécanisme de la vie moderne" in *La revue des deux-mondes*
the Vicomte G. d'Avenel, along with a review of various
industries and technologies, devotes two sections to
buildings, one on the department store and another on
the Parisian house (maison à loyer). Both building types
were perceived as products of modern society,
inevitable, yet not exempted from criticism. The article
on the maison à loyer begins by observing that "Paris is
old but its houses are young. More then half of them are
less than twenty-five years old..." The city is then
metaphorically portrayed as a *fleuve en folie* (furious
river) bearing an uprooted population." And he
continues:

Here [in Paris], along these newly built
streets, under newly built wainscot, the
individual, who so often moves from one place to
another, ceases to bind his existence to the
material surroundings. A mobile heap of human
dust, the crowd sits, without ever developing
attachments, in front of fireplaces devoid of any
history, indifferent witness to its own joys and
sorrows." (74)

Such impassioned observations were also made by
architects: the maison à loyer, they felt, represented a
degradation of family life despite the increased comfort
it afforded. Only in a single-family dwelling could
one's life develop in true equilibrium (something
prescribed by both Daly and Viollet-Le-Duc (75)).
The maison à loyer nonetheless became the predominant building type in Paris during the course of the nineteenth century. Viollet-le-Duc, who morally despised the immeubles, felt nonetheless compelled to address the issue in the Entretiens. His project for an urban house was an attempt to come to terms with problems in this type of building (fig. 33). It was the first published example of a permanent, public structure with an iron frame which makes no pretense as to its material or methods of construction (76). It was also the only color lithograph published in the Entretiens. Viollet-le-Duc was essentially proposing the translation to iron of the medieval half-timber house. He provided a new -- and revolutionary -- solution to a key problem of the maison à loyer. The traditional contrast between upper floors and the commercial ground floor, with its large expanse of glass over which heavy stone pilasters seemed to hang in mid-air, was an illogicality that even Garnier, using traditional means, could only partly solve. Delicately sculpted stone facades seemed incongruous in view of the commercial nature of the ground floor; moreover they clashed with its garish signage and scrawny iron columns. The traditional
juxtaposition of solid over solid and void over void was in most cases impossible. Viollet-le-Duc had been explicit about this problem in the Entretiens:

Nothing shows more clearly the empirical character of the modern methods of building, than those shop-fronts which are contrived as an afterthought, without any account being taken of the stone piers or cast iron columns left in the clear. Nothing proves more evidently the influence of routine among us than this continuance of two structures in juxtaposition without any attempt to combine or unite them. (77)

Viollet proposed to use one consistent structural system, the iron frame with its main members continuous through the whole building. The recessed ground floor provided weather protection to pedestrians and shielded the shop window from rain and sun. Moreover, the plate in the Entretiens suggests that all floors above ground were standardized, another "correction" in the building type provided by Viollet-le-Duc.

Viollet wrote of his project in the Entretiens:

I do not have the pretension to propose this project as a type for future rental buildings, as the architecture of the future, but only a study without historical connotations ("reminiscences"), using the means now available to us through modern industry... I concede that it does not look like the palaces of Rome or Florence, nor like a house of the Renaissance or the reign of Louis XIV. It must be recognized, however, that in this project iron is used undisguised, it is frankly exposed. (78)
Viollet's aim was more ambitious than he would have us believe. What is important to note in our context is Viollet's efforts at rationalizing the type of the maison à loyer through the use of a more coherent and flexible structural framework.

Its revolutionary appearance made its immediate impact on the maison à loyer negligible though it did have a pervasive influence on industrial and utilitarian building types. For urban dwellings, Viollet's project was to gain more importance only at the turn of the century and then only transitionally. Simonet's small house on rue de Boursault (1901) (fig. 34), was one of the first instances of the use of an iron frame with a glazed brick infill (79). The house may have influenced the work of Jourdain at La Samaritaine but it did little to change the norms of the maison à loyer as established in the nineteenth century. Its real significance lay in the new relationship it established between ornament and structure; typologically it proposed nothing new. The same cannot be said of Sauvage's Cité l'Argentine (c. 1903) (fig. 35), which prefigures his more audacious experiment in low cost housing. The building considerably more blunt in its approach than Simonet's delicate structure. It was almost entirely devoid of ornament,
and its facade consisted of standardized floors. In the context of the ave. Victor Hugo, the building was a forceful statement. Many of its aspects are analogous to Perret's building on rue Franklin. The glazed ground floor, the exposed metallic structural frame, the identical repetition of floors and the open loggia above are similar to the 25b. With the absence of a precise date for Sauvage's building, it is impossible to affirm which building preceded the other. Their common source in Viollet-le-Duc, however, makes the question of priority less important. Moreover, the similarities between the work of Sauvage and Perret are only superficial. Sauvage's aim was primarily to develop a functionalist, hygienic aesthetic in low-cost housing. In works like the Cité l'Argentine, he addressed the problems of architectural standardization and rationalization in the building process, and took up some of Viollet-le-Duc's concerns stated in the *Entretiens*. These experiments were in strong opposition to his earlier Art Nouveau manner, which sought to blend new technologies with the development of a new "artistic" language. At this stage of his career, Sauvage seemed influence by the "mechanistic" aspects of
Viollet's theory at the expense of the more complex organic theory. The development of Sauvage's career subsequent to the Cité l'Argentine had a strong typological accent, as he attempted to develop an ideal urban house. The result of his research was the maisons à gradins first elaborated in the 1910's, which would have a definite impact on the French avant-garde of the 1920's. It formed one of the first coherent attempts to reevaluate the norms of the nineteenth century Parisian urban house. The building was of reinforced concrete sheathed in ceramic tiles and consisted in a series of apartments in a stepped formation, the floor above in each case recessed in relation to the floor below, thus providing spacious terraces on each floor of the street facade.

It is unfortunate -- though significant -- that Viollet illustrated only the lower portion of his urban house. The roof was another much criticized aspect of the typical Parisian house (81). The bylaws regulating the building line enforced the semi-circular mansard that, it was often deplored, provided a poor silhouette for the large boulevards of Paris. Gustave Kahn addressed the issue in his book L'Esthétique de la rue (1901). Significantly, the chapter about roofs had been
published separately in *L'Art décoratif* in June 1900. After a blunt criticism of the Parisian roofs and their "ugly chimneys," he advocates the roof-terrace which, he informs us, is a new fashion imported from America and which has been "taken up by the French very recently for new buildings." (82) "These roofs transformed into terraces of well being" would result in a Paris that "would have all summer its head covered by a crown of flowers." (83) These hanging gardens were intended by Kahn to fulfill the utopian goal of providing an infinitely large green area above the city where "the crowd of ill-housed proletarians would go and seek fresh and pure air." (84) It also provided a replacement for the traditional tin roof.

You would not know it from reading Kahn, but roof-top terraces were seldom tried before 1900. Lavirotte, on his house of the ave. Rapp (1900-01) (fig. 36), had devised a system of multilevel terraces well hidden behind a picturesque Gothic roof. Simonet on the rue Boursault had provided a similar amenity. Though not published until 1917, Tony Garnier's project for a *Cité industrielle* (c.1904) also proposed detached houses of reinforced concrete with flat roofs. Surprisingly,
Sauvage, for whom the terrace later became a major architectural theme, never used one in his earlier work. Before 1903, Sauvage focused his attention on the problem of villas, following in this respect the Art-Nouveau predilection for detached houses. Roofs, in these instances, were important picturesque elements. Terraces would have been redundant because these villas were usually built in the middle of green areas. Guimard's apartment block on the rue Lafontaine (1895), significantly named the "Castel" Béranger, was rather like an oversized villa with a series of picturesque roofs.

This preference of private houses had a long history in architectural thinking in the nineteenth century (85). Daly in L'Architecture privée had already stated strongly his favor for the suburban villa, which he considered the ideal bourgeois habitat. Viollet-le-Duc, a few years later would write:

Individuals and families will more and more wish to isolate themselves. Except in commercial quarters, in business centers, large rented houses will be no more in demand, because tenants will become fewer and fewer. Those who have formed the habit of living in a house of one's own...will be unwilling to re-enter a hired dwelling. (86)

Viollet's project for an urban residence also published
in the Entretiens, illustrates this well: the main corps de logis is almost completely detached and stands surrounded by greenery (fig. 37). The desire for a private dwelling separated from its neighbors was pervasive in the late nineteenth century. For Art-Nouveau architects, as for Daly and Viollet-le-Duc before them, family life could achieve its harmonious fulfillment only within private houses. In twentieth-century Paris, this became an overt criticism of the city, and the Art-Nouveau position simply refused to tackle the real issue. As Planat wrote in 1897:

...Since we are constrained, without possible avoidance, to live in houses seven stories high, there is no real utility nor any consolation in stating that we could all be better off in pretty little pavilions in the middle of big parks. (87)

The Art Nouveau's compositional system and its predilection for playing with masses could have only a small impact on the development of the apartment houses in the twentieth century, inasmuch as the problem of the maison à loyer, in certain aspects, had to be formulated in terms of standardization.

Despite the efforts of Guimard, Lavirotte, Simonet, Sauvage and others, in the first decade of the twentieth century the norms of the maison à loyer
changed little from the time of Haussmann. Perhaps the greatest victory of these progressive architects was the new city bylaws of 1902 which were drawn up to permit greater freedom to architects, allowing more pronounced projections of increased heights that would silhouette against the sky. The chief motivation behind the new regulations was that "art needed more liberty." (88) In fact, in 1900 everyone seemed to agree that the new regulations were necessary. The more conservative were motivated by the nostalgic argument that the relaxed regulations would permit a return to the qualities of picturesque old Paris. The progressive thinkers -- and particularly the Art-Nouveau artists -- obviously agreed that the more liberty given to the architect the better. The capitalistes could gain a significant increase in floor area by the addition of large bay windows; hence they approved the new bylaw. The hygienists would have no complaint since the 1902 regulations enforced greater dimensions for inner courts, bringing more sun and air to house interiors.

The wish for more picturesque forms was thus shared by many. In 1891 Chaine wrote that the maison à loyer was built from "plans that are often ingenious and well studied, but its looks are always banal and
pretentious, without charm and without any artistic character." (89) This summarizes the opinion of many architects of the late nineteenth century. In most cases plans were thought to be modern and convenient; however, facades were always found wanting in character. A concours de facade to stimulate new solutions was even instituted by the city of Paris in 1897.

Excepting the work of a few architects, the new regulations perpetuated the Parisian tradition of facade architecture. They only imposed the "reign of the bow-window," thus replacing one banality with another. As Anthony Sutcliffe wrote:

Avant-garde architects...hoped that when the bye-laws were modified the great mass of architects would be encouraged to experiment with similar innovations. But they reckoned without the Parisian property owner, whose philistinism belied the Gallic reputation for good taste, and who could be relied upon to use any loophole to put the last possible cubic centimetre of occupiable space on his side. (90)

The truth was that the "innovations" proposed by Art Nouveau architects consisted of an expensive form of ornamentation which no bylaws could ever enforce upon property owners.

The legalization of the bow-window led more rationalist architects to hope that the era of applied
decoration was over and that buildings could be freed of "l'arsenal de l'architecture classique," pilasters, capitals and Greek pediments. As Jacques wrote in *L'Art décoratif*: "The bow-window is the first blow to false decoration in bourgeois architecture. Others will come. Delanda Carthago!" (91) For Jacques, decoration was no longer needed to enliven a facade since the building itself could project and create exciting modulations. His hopes, however, were without much consequence. If architects did exploit the new possibilities of the bow-window, it did not follow that they would abandon "l'arsenal classique." Indeed the new regulations had been specially devised to add picturesqueness to the city scape and were never intended as a remedy to the strong taste for baroque decoration which characterized fin-de-siècle Paris. Nonetheless, Jacques' statement was characteristic among certain architects and writers. "Sancta simplicitas" was a slogan often used by socialists such as Lumet, Mauclair, Rambusson and others. Richard Cantinelli in *La revue bleue* (1903) claimed that "the love of simplicity is the surest guaranty against vulgarity and inelegance." (92) Cantinelli's recommendation, however, was without immediate effect on the maison à loyer. The real return
to simplicity in Parisian architecture would not be
effected before the 1920's when the "art deco"
sensibility would bring a more sober, geometrical and
abstract facade to urban houses.

In the end, the growing criticism of the maison
à loyer that surfaced in the late nineteenth century had
only limited consequences. The large majority of houses
built at the turn of the century were still -- though
often more richly decorated -- following the path laid
by Lesoufaché and Garnier. After the Art Nouveau
interlude at the end of the century, architects who had
once succumbed to its alluring novelty, returned to more
classical ornamentation and academic designs. Meanwhile,
the essential organization of the maison à loyer was
left intact.

* * * * *

As seen previously, Perret had addressed the
problem of the maison à loyer on only one occasion
before he designed his building on rue Franklin. His
house on ave. de Wagram was not substantially different
from the established norms. As Hitchcock notes, however,
it was "of much higher than average quality." (93) We have analyzed in chapter one of this study the architectural significance of the building. It suggested ideals similar to those manifest at rue Franklin. The maison à loyer -- in its functional organization and plan -- was little modified. Surely the austerity of the facade, with its standardized floors and widening windows, was far from the typical "Beaux-Arts" or even Art Nouveau compositions. These deviations were not meant as a modification of building type but as "architectural" (rather than functional) corrections. Even after the extraordinary breakthrough that reinforced concrete caused in Perret's career (at rue Franklin in 1903 and at rue Ponthieu in 1906) Perret would design very traditional maisons à loyer whenever he used stone construction. The apartment block on the ave. Niel (1904) (fig. 38) and the building on rue Raynouard of 1906, both of stone masonry, were competent but rather banal responses to the problem at hand. On the ave. Niel, the frame structure at the top of the corner tower evidenced -- like at the ave. de Wagram -- Perret's wish for an epuration of architectural forms. For Perret, however, the true reform of architecture could only be effected through the use of new materials,
particularly reinforced concrete. The traditional aspect of Perret's maison à loyer when built of stone masonry, indicates that such reform, for Perret, did not imply a restructuring of society. The rue Franklin building itself respected the traditional distribution of the maison à loyer. Its novelty of form was primarily motivated by the new material used and Perret's specific architectural beliefs. The safeguard of the traditional distribution within an entirely new form is the best proof of Perret's disregard of typological issues. Perret's aim was the renewal of architecture, not that of the building type.

For instance, the apartment plan of the rue Raynouard building designed at the height of Perret's career (dr. 21) is identical to Sedille's design for an apartment block on blvd. Malsherbe built some fifty years earlier (c.1875) (fig. 40). The free standing reinforced concrete columns are the only modifications allowed by Perret. This seemingly minor alteration to Sedille's design was of crucial architectural importance; typologically it meant little.
NOTES TO PART ONE
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1- This, however, was not official law in France. It was rather part of a code of ethics elaborated by Julien Guadet and which bore his name. It is certain that many architects who held the official degree from the École des Beaux-Arts were also contracting their own work.

2- Peter Collins, Concrete. A Vision of a New Architecture, p. 173.


4- Charles Chincholle, Les survivants de la Commune, p. 285. The information in this book should not be taken too literally. The same is true, however, of Champigneulle's claim that Perret's family was part of a long line of masons.

5- Champigneulle, p. 13-14.

6- The files of the École des Beaux-Arts kept in the Archives Nationales in Paris show that A. Perret won the following:

2nd class:
   March 7 1892: First prize for the "Élément analytique" (dr. 2).
   August 5 1892: Mention for a perspective study of a Renaissance well in the middle of a cloister.

1st class:
   November 2 1894: Medal for the rendering of the entrance porch of a XIIIth century church (dr. 3).
   January 3 1895: First prize for the "Prix de reconnaissance des architectes américains". Program: an hippodrome.
   August 5 1895: Mention for an esquisse for a fountain in the middle of the court of the Louvre.
March 13 1895: Perret is admitted to the first "concours" for the Grand prix de Rome.
April 4 1895: Medal for "an ecclesiastical retiring home".
May: Mention for an esquisse of a refuge in a mountain.
June 6 1895: Medal for a "vaulted church."
June 3 1897: First medal for the rendering of a seminary.

January 20 1898: First mention for the "concours Godaboeuf". Program: entrance to a grove.
July 26 1898: Medal for a drawn figure.
October 8 1898: First medal for a country house.
February 22 1899: Mention in the "concours Rougevin". Program: "monumental chimney."
December 28 1899: Mention for the "concours Godeboeuf". Program: a carpentry ceiling with exposed wooden beams.

7- A comparative examination of Perret's esquisse for a sculptor's studio submitted for admission at the Beaux-Arts (April 21 1891) (dr. 1) and a similar sketch done for the same problem after two years at the École (October 14 1893) (dr. 4) show how Perret developed a much stronger mastery of details and volumes. Otherwise the first sketch had a bolder simplicity and a double height studio not lacking in spatial interest.

8- See Chapigneulle, p. 15.

9- It is likely that Perret was also following de Baudot's courses given at the Trocadero, though no document confirms this. These courses were very popular and were often attended by students of the École. Obviously for someone interested in Viollet-le-Duc's theories, the course was of prime importance. It is also interesting to note that in 1908 Le Corbusier attended Lucien Magne's history classes at the Beaux-Arts, probably following the advice of Perret, in whose office he was then working.


11- Particularly Plumet, for whom it reflected the wish
for a continuity of the national tradition. This tendency is clearly apparent in Plumet's house on ave. Malakoff. Borsi and Godoli in Paris 1900 give a good account of Plumet's architectural contribution in the early years of the twentieth century.


13- There are no actual documents which could inform us of the exact modus operandi of the family enterprise of Perret et ses fils. As mentioned above, there is no question that Claude-Marie Perret was the unchallenged authority in the office. Auguste's architectural skills, however, probably gave him a privileged position in the office. It seems certain that, in this respect, Auguste had precedence over his brother Gustave, who was both younger and had been a somewhat less brilliant student at the Beaux-Arts. A certain ambiguity always remains, since all architectural drawings were systematically signed by both Auguste and Gustave, which makes it impossible to identify each individual's contribution. The tradition holds that Auguste was the designer while Gustave was a mere executor. This is surely a simplification, yet it seems undeniable that Auguste's strong personality gave him ascendancy over his brother Gustave. We will see subsequently how this is confirmed in the case of the project for the apartment building on the rue Franklin.


15- The Rationalistes in France were a diverse group of "radical" architects opposed, in principle, to the teaching of the École des Beaux-Arts. They professed, above all, structural integrity and the respect of material. A more extended discussion of the subject is offered in part two of this study.

16- An opinion shared by most historians; see particularly Hitchcock and Collins. Both historians, however, deliberately separate this work from the 25b rue Franklin, built one year later.

17- Plumet, at the turn of the twentieth century, was considered by many to be "the first representative
figure, whether abroad or in France, of the contemporary phase in our arts of architecture and furniture."
(Gustave Soulier, "Charles Plumet et Tony Selmersheim" p. 11). Plumet's enormous success at the beginning of the century was due in part to his "undeniable sense of publicity," (Borsi & Godoli, Paris 1900, p. 227), but also to his sense of moderation and control in his attempt at an architecture renewal. His architecture was in many aspects anti-classical, especially in its inspiration from medieval architecture. Plumet's formal discipline and his acute sense of symmetry, however, made him a favorite at the École des Beaux-Arts. Plumet had his earliest architectural education at the École des Arts décoratifs and subsequently through his own reading of Viollet-le-Duc's Dictionnaire and the Entretiens. His insistence on structural integrity, with ornament playing only a complementary role, was noted in La Construction moderne: "This [a house on the rue Marbeau by Plumet] is purely rational architecture, in which the construction itself furnishes the decorative elements," quoted in ibid, p. 232.

18- Collins, p. 178.

19- The article in L'Architecte was published only in 1906. It was perhaps intended as a form of publicity for the building, which was sold the same year. One should remember that Julien Guadet was one of the editors-in-chief of the periodical.

20- Frantz Jourdain, "Perret" in Architecture d'aujourd'hui, p. 4.
Notes to chapter two

21- 25b rue Franklin is not a well documented project. There is no written source that gives us a precise knowledge of the elaboration of its design and construction. The few drawings in the Perret archives at the Conservatoire National des Arts et Métiers are the only documents available. However, though the exact circumstances around which the project originated will likely never be known, certain evidence left by Perret's close entourage provides clues on which we may elaborate. Chapter 2 presents the extent of our knowledge on the creation of the project. It attempts a first interpretation of the building only in its relation to the city bylaws. More theoretical considerations will be dealt with in subsequent parts of this study.

22- Champigneulle lists the following works by A. & G. Perret dating before 1903, of which the most important have already been discussed:

1890: Family country residence in Berneval-sur Mer.
1899: Municipal casino in Saint-Malo.
1902: Apartment block at 119, avenue de Wagram, Paris.

Since 1901, Perret et ses Fils had also been involved in the construction of the cathedral at Oran in Algeria, designed by the architect Ballu. The project, which spanned several years, was built of largely reinforced concrete sheathed in stoneware tiles. It was Perret's first occasion to gain familiarity with both materials.

23- By then the three son's -- Auguste, Gustave and Claude -- had moved out of their father's house. Only Claude-Marie Perret's daughter, was still living in the parental home. Auguste had married Jeanne Cordeau on January, 1902, and was living on the rue Raynouard in
Quatremère de Quincy's old hôtel particulier.


27- In Perret's opinion, at least. In a letter to Le Corbusier, dated January 1916, Perret lists what he considers to be the important buildings of the nineteenth century. Out of six buildings named, four were exhibition pavilions and three of those had been located on the Champs-de-Mars: the Fine Arts and the Liberal Arts pavilions of 1889, and the Gallery of Machines at the same exhibition. The three other buildings listed by Perret were the Bibliothèque Nationale (1862-68), the Palace of Industry (1855), and the pavilions for "Les Halles centrales" (1853-58).


29- Émile Zola, from his preparatory notes for the novel *Une page d'amour* quoted by Armand Lanoux, "Préface" in *Zola, Une page d'amour*, p. VII.

30- Emile Zola, *A page of love*, vol. 1, p. 120-122. Significantly, in the review of the 25b in *L'Art décoratif* (1904), Uhry gave a similar description, obviously inspired by Zola.

31- Information given by Mme. Albert Le Donné, the granddaughter of M. Jacqueau, who owned the adjoining sites to the east and north (rue Vineuse) of the 25b.

32- Collins reports that Claude-Marie Perret had little sympathy with the new material and that he never allowed his firm to do work in reinforced concrete. Collins, p. 175.

33- Collins, op. cit., p. 174-175.
34- In the file of the rue Franklin in the "Archives de la Seine" there is a curious set of drawings dated February, 1903, for a building to be built at "25, rue Franklin". These plans, signed by M. Liger, indicate a site configuration which is very deep but only 15.75 meters wide on the rue Franklin, which corresponds to the width of the future 25b. Perhaps M. Liger had plans to buy the land at the rear of the site, linking the building to the rue Vineuse. This project was subsequently abandoned. However, if a building was planned on the site of Perret's future building in the winter of 1903, the site could not have been bought by the Perret family before the end of February, 1903, and necessarily not after April of the same year. This indicates that the site was probably sold to Perret in March, 1903.

35- If we may trust the date of April, 1903, on drawing no. 40, we can deduce that the first design sketches were elaborated sometime in early Spring, 1903, since the drawing shows the typical plan of the apartments completely resolved. Otherwise most plans are dated May, 1903.

36- In the file at the "Archives de la Seine" the first request for a building permit dates to 22 May 1903. The earliest structural drawings signed by the entrepreneurial firm of Latron et Vincent are dated early July, 1903. Construction, then probably began in the summer of 1903. A letter in the building permit file, dated 17 April, 1905, and signed by Auguste, informs us that the building had been built "for almost two years." Taken literally this is impossible, but it might offer an indication that the project was completed sometime in 1903. A report from the city commission dated 16 July 1904 speaks of the building as if it were completed. In the "Agenda de Paris," however, the office of Perret et ses fils is not listed at the 25b before 1905, and only in 1906 are any tenants recorded at that address. Even assuming that the Paris directory is slow in updating its listings, it implies that the building was completed sometime in 1904, probably around July, the date at which the article in L'Art décoratif was published (in which the illustrations indicate that the building was not quite completed; a painter's sign is fixed to the building and the decoration on the entrance doors are not yet in place). The city report of 16 July
1904 did not imply that the interior was completed and seemed more concerned with the exterior. Otherwise Perret's remark in the 17 April 1905 letter remains too vague and partial to offer conclusive evidence.

37- As mentioned in note 36, the Paris directory lists tenants for the first time at the 25b rue Franklin in 1906, from which we may infer that the first tenants has not moved in before 1905. It is interesting to note that three of the five names listed had their previous residence at the 27 rue Franklin. The vacant land immediately west of Perret's site was divided into three separate lots. The one adjacent to the 25b (no. "25") was sold quickly, and a building was erected on it almost simultaneously with the construction of the 25b. The architect Humbert who designed it requested a building permit in June, 1903. On the photograph of the 25b published in L'Art décoratif in July, 1904, (which was taken a short time before the end of the construction), the 25 rue Franklin has the conventional white marks on its windows indicating that they had just been installed.

38- The following are residential buildings built in reinforced concrete in Paris before 1903:
   29 ave. Rapp by Lavirotte
   14 rue d'Abbeville by Autant
   50 ave. de Segur by Ruprich-Robert
   1 rue Danton by Arnaud
   4 rue Claude-Chahu by Klein
Note that all these buildings had used some stoneware tiles to decorate the facade.

39- In the 1902 edition of Bigot's catalogue, Les grès de Bigot, no model comes close to what was used at the rue Franklin. Bigot wrote in the Introduction: "I have as a principle to put my artistic and scientific knowledge to the service of the architects who create their own models for their building. I have always done the experiments that were asked of me...", p. 1.

40- Contrary to what is often reported, the tiles on the infill do not represent a chesnut-leaf. Gustave in an interview to La Patrie on June 21, 1905, stated himself that they represented the leaves of the rhododendron.

41- Some of the most important drawings are signed by
Auguste only. Drawing no. 40, for instance, is signed "A. & G. Perret" but by Auguste's hand only. Drawing no. 13, probably the most significant in the Perret archives, is signed only by Auguste.

42- Collins, Concrete, p. 183.

43- To my knowledge, it is totally unprecedented. In L'Architecture moderne à Paris, which documents fifty new constructions done in 1901 in Paris, there is not one instance of a main salon without fireplace.

44- It is impossible to date these drawings precisely. They were drawn by Auguste himself in a style similar to that used for the original plans of the 25b. Perhaps the interior work at the ninth floor penthouse was started only after the legal problems with the city hall had been resolved (see below), which places it in 1905.

45- It is difficult to know when that window was installed. Perhaps Perret was already thinking of it when he made drawing no. 63, since a large undefined area is shown at the north wall of the main room (see the "coupe A-B" on that drawing).

46- See La Patrie, op. cit.

47- It is difficult to know when this structure was erected. It certainly dates after 1904, since none of the photographs taken of the building in that year show it. These, however, were taken before construction was completed. The photograph published in the Architectural Record in 1908 also shows the ninth floor without its concrete trellis. No date is given for this photograph. Clearly, the building was already lived in, which implies that the photograph was taken in or after 1905. A photograph of the building in the Carnavalet museum in Paris, dated 1910, shows faintly a concrete structure at the ninth floor but remains too blurred to establish conclusive evidence. An undated photograph published in Le ciment-roi (1927), shows the trellis. From these evidence we can only conclude that it was built after 1905 and before 1927 (perhaps before 1910).

48- Le Corbusier, Perret, p. 7.

49- On the margin of one of Perret's letter to the city
hall (dated April 17, 1905), in which he appealed to the municipal council for a special tolerance allowing him to keep the ninth floor as built, we can read the following: "I have the honnor to support this request to which I would be particularly glad that it be given satisfaction. Signed: Chantas (?), Municipal Counsellor."

50- For instance an apartment block designed by the architect Ch.-Al. Gautier in 1902 had a site of 80 square meter, almost half of Perret's site at the rue Franklin. Boileau, "Causeries", pp. 4.

51- From Louis Bonnier, Conférence... sur les réglements de voirie," p. 82.

52- Amenities listed in an advertisement for Perret's apartment house on ave. de Wagram but which also applies for the 25b.

53- At least this is what Bigot hints at in his catalogue of 1902, where he states that "soon" the price of reinforced concrete buildings sheathed with stoneware tiles would rival that of stone.

Notes to chapter three

55- Maison à loyer is the expression most often used in France to name the apartment block. However the term maison de rapport is also used when these buildings are considered as speculative, capitalistic ventures. Immeuble has the more generic meaning of rental building.

56- César Daly, "De l'architecture domestique en France," col. 167.


58- In chronological order: J. Ch. Krafft et N. Ransonnette, Plans, coupes te élévations des plus belles maisons...; Normand et Fils, Paris moderne; Krafft et Thiollet, Choix des plus jolies maisons de Paris...; G. Adams, Recueil des maisons modernes les plus remarquables, exécutées, a Paris, par...; Cesar Daly, L'Architecture privée...; Victor Calliat, Parallèle des maisons de Paris...; Theodore Vacquer, Maisons les plus remarquables de Paris...

59- Anne Thalamy, "Réflexions sur la notion d'habitat au XVIIIe et XIXe siècles" in Politiques de l'habitat, p. 8.

60- See Pierre Lavedan, Nouvelle histoire de Paris, p. 321 and Anne Thalamy, p. 39. Napoleon wrote the following, which illustrates well the point in question: "The Kings of France never had any administrative or 'municipal' sense.... They have shown themselves to be grand Seigneur but they have also ruined their gens d'affaire [business man]" quoted in Lavedan, p. 329.

61- Adeline Daumard, Maisons de Paris et propriétaires parisiens au XIXe siècle, 1809-1880, p. 205.

62- Marc Croisilles, "La construction a Paris", p. 204.

63- Daly wrote in L'Architecture privée, "In the rich and elegant districts of the city shall be built these beautiful maisons à loyer with vast apartments
brilliantly lit, which -- except for a greater number of floors and a less characterized physionomy -- are very similar to the private hotel." , p. 17.


65- For a good description of these different chambres, see Quatremère de Quincy, Dictionnaire historique de l'architecture, vol. 1, pp. 345.

66- César Daly, L'Architecture privée, p. 19.

67- A small strip of land approximately ten feet wide between the sidewalk and the face of the building was a "non-aedificandi" zone which was always heavily planted.

68- César Daly, L'Architecture privée, p. 6.


70- Particularly obvious in Zola, in whose writings Paris becomes a protagonist in its own right, even fatalistically controlling the life of the individuals. A title like Le ventre de Paris which describes the life around the gigantic market place of les Halles is a good example of this.

71- Already in 1864, Daly had illustrated examples of magnificent maisons à loyer. Lesoufaché in particular had worked out new solutions for the maison à loyer which prefigured the opulence of Garnier's building. His plans were also carefully designed incorporating large antichambre.


73- Daly, L'Architecture privée, p. 18.

74- D'Avenel, p. 279.


76- Frances H. Steiner, p. 109.


79- At least, it is the more prominent example. Paraire and Englebert on rue de l'Aqueduc had designed in 1879 an apartment block using an exposed iron frame combined with stone masonry. Though the project was published in the *Revue générale*..., it had no great repercussion amongst architects. Only a few years before Simonet's building was built, Sylvain Perisse had also designed a maison à loyer using an exposed structural frame.


81- Vicomte G. d'Avenel, part II, p. 796-797, and Paul Léon, "La beauté de Paris" p. 299.


83- Ibid, p. 103.

84- Ibid, p. 102.

85- Hélène Lipstadt, "Housing the Bourgeoisie: César Daly and the Ideal Home," p. 35.


87- Paul Planat, "Les idées de Marcel Prevost," p. 400.

88- Louis Bonnier, *Conférences... sur les reglements de voirie*, p. 34.

89- Henri Chaine, "Maison à loyer, Rue de Vaugirard," p. 91.


PART TWO

Rationalism
Two major factions dominated French architectural circles in the late nineteenth century. On one side stood the École des Beaux-Arts and its governing body, the Academy, for whom composition and detailing were the main concerns. On the other side was a group of more radical architects, all keen followers of Viollet-le-Duc, who wanted to reform architecture through renewed attention to modern needs and modern techniques. (1) Despite the complex intellectual debate in fin de siècle Paris, the crux of the debate within architectural circles could be summed up by this antagonism. To be sure, the old quarrel between Viollet-le-Duc and the Academy had died down since the events of 1863. (2) The École was often conciliatory and ready to consider varied positions. A question of attitude rather than precise doctrinal differences separated the two groups. As Francoise Boudon wrote, "the difference of tone was extreme between the calm self-satisfaction of the
Eclectics [the École]...and the desperate quest for reform of the Rationalists" (3). Guadet's *Éléments et théorie de l'architecture* (1901-03), however, illustrates how this divergence in attitude was based on real ideological and doctrinal differences.

This polarization of thought is significant because each point of view is representative of a larger rationalist tradition in France. It is also of crucial importance in this context since, as we have seen, Perret was exposed to both theories. To confront Perret's building at the rue Franklin with these polar positions promises to be enlightening. According to the received view, the chief virtue of the building at rue Franklin was its rationalism. Because the nature of Perret's rationalism has never been carefully explicated, it seems essential to discuss his work in relation to both the major French traditions. Perret himself has acknowledged his indebtedness to Viollet-Le-Duc, and he once told Pierre Vago: "Viollet-le-Duc was my real master; it was he who enabled me to resist the influence of the École." (4) Here Perret not only concedes Viollet's influence on his thinking but also claims to have struggled to efface Guadet's imprint:
"the influence of the École" could only mean "the influence of Guadet," whose teaching and writing epitomized the École's precepts. To dismiss Guadet's importance in Perret's work on the basis of this quote would be premature. Only an analysis of the building at rue Franklin will show how Viollet-le-Duc's theory of architecture formed the essential source of Perret's thinking.

Prior to embarking upon this analysis, it is important to digress from the object of our study, to discuss the sources of French rationalist theories of architecture and to determine the differences between Viollet-le-Duc's conception of a rational architecture and Guadet's "reasonable," common-sensical approach to design.

* * * *

Using the term "rationalism" to qualify architectural theories in France presents difficulties. Almost every French architect since the age of enlightenment has claimed to found his theories on "reason." Even in the late-nineteenth century, when dissension among factions was strong, Sédille could
calmly affirm that "all have become...rationalists." (6) The meaning of "reason," however, was the subject of quarrels. Whether architects asked for structural logic or scientific planning or even a more inclusive, practical attitude, architectural theories -- though all claimed to be "rational" -- would differ greatly.

Looking as far back as the seventeenth century, the first manifestation of the French rational tradition was related to the role of structure in architecture. The most striking aspect of Claude Perrault's facade for the Louvre was the straight-forwardness of its row of coupled columns. The Corinthian order was disengaged from the wall. It constituted the true structure and was no longer a mere decorative appliqué. The simplicity of Perrault's design was aimed at a renewal of French architecture through a return to sources, invoking both Greek and Gothic precedents (7). This work and some of Perrault's writings re-assessed, in the name of reason, the traditional dogmas in force at the Academy Royale. The ensuing quarrel known as the argument of "the Ancients and the Moderns" would prompt in France a
vigorous reexamination of the architectural cannons drawn from Vitruvius and the buildings of Roman antiquity. Though the validity of the classical orders was never really brought into question, their application was the subject of intense dispute.

Two writers of the beginning of the eighteenth century would forcefully call for reform -- Frémin and Cordemoy. Of particular interest in our context is that both authors, like Perrault, based their conclusions on an analysis of not only antique buildings but also Gothic cathedrals. The first theoretical foundation to néo-classicism and to the French rational tradition (150 years before Viollet-le-Duc) was concurrent to a renewed interest in Gothic architecture. Cordemoy, the most influential of the two writers, in his *Nouveau traité de toute l'architecture* (1706), perceived analogies between the architecture of the Greeks and that of medieval France. He proposed a return to a more rational application of the orders, using simplified geometrical forms. He called for the "dégagement" of architectural members -- free-standing columns, straight entablatures -- and he discouraged the use of ornaments. Following Perrault, Cordemoy was calling for a simplified expression of the structure, the orders in particular.
His efforts were aimed at isolating the first and thus the most primitive principle of design which he thought was basic to both Greek and Gothic buildings (8). For an architecture to be rational, believed Cordemoy, it had to follow the primitive principle, which simply consisted in the "independence" (dégagement) of all architectural elements and their clear expression without gratuitous additions.

Father Laugier, fifty years later, would take over most of Cordemoy's ideas. His Essai sur l'architecture (1753), however, proposed even more radical concepts than those elaborated by his predecessor. For Laugier, all architecture should derive from one single source -- the wooden "rustic hut" (fig. 41), which consisted of four posts spanned by a straight lintel beam and covered by a triangular pitch roof. Laugier's Essai was to become extremely influential in France and in Europe. The book, which had the character of a manifesto, clearly sanctioned what form architecture should take. The orders were simplified to the utmost limit since Laugier believed that they should always be subjected to the simple logic of the primitive hut; free-standing columns, straight entablatures and
triangular pediments were the essential elements. Anything else was superfluous. Even the classical proportions, according to him, were too complex in their ratios and therefore had to be simplified (9). In church design particularly, Laugier advocated simplicity combined with a "Gothic sense of lightness." (10) His ideal church consisted of a free-standing collonade along the main aisle supporting a straight entablature from which sprang a barrel vault. As Middleton has noted, the arrangement was suggested by Jules-Hardouin Mansart's (and Perrault is) chapel at Versailles (1698-1710).

Though criticized by the Académie Royale and Blondel in particular, Laugier's ideas had an immediate impact in France. The greatest instance of such influence was, of course, Soufflot's church of Sainte-Geneviève who used straight entablatures, a free-standing collonade and a very daring system of vaulting that had many of the qualities of the Gothic ogive. The "return to reason," which Laugier had so strongly called for, was not limited to such outstanding monuments but was felt at all levels of architectural activity. The austerity of neo-classical architecture spread to all building types including the design of hôtels
particuliers. Concomitant to Laugier's urgent demand for simplicity were newly emerging technical problems. The use of straight beams (or flat arches) to span large distances was not well suited to the masonry construction common in France. The desire for increased lightness in the design of church vaults would also occasion structural difficulties. The construction of the church Sainte-Geneviève would be a laborious affair in which the architects Perronet (working for Soufflot as engineer) and Pierre Patte had a lengthy quarrel over the soundness of the vault and the dome. An extremely complex system of iron reinforcement was finally devised by the engineer Rondelet. Hautecoeur reports that Rondelet was led to use reinforced concrete beams for the support of the large pediment on the facade of Sainte-Genevieve which would establish him as the first inventor of the system (11). This fact has never been confirmed, but whatever the case may be, it remains of interest in our context to note that a technology similar to reinforced concrete was derived in the eighteenth century to response to the neo-classical precepts of Laugier. In fact, the key monuments of the Graeco-Gothic ideal in the eighteenth century, such as
Perrault's eastern facade for the Louvre, Mansart's chapel at Versailles, or Gabriel's hôtel de la Marine, had incorporated similar systems of reinforced masonry. It is as if the emergence of the French rational tradition had been concurrent with the first germ of the idea of reinforced concrete.

In eighteenth century France, trabeated forms were understood as the rational form par excellence, independent of the material used. Laugier did not care that his primitive hut was built of wood and that its form was not akin to masonry construction. It was no less the most "reasonable" formal type. Consequently, a special system of construction had to be devised to accommodate the new ideal since Laugier and Cordemoy before him, had been specific that columns should be free-standing and not mere decorative relief. Trabeated forms had, in fact, a long history in French classical architecture. The most representative of French classical architects in the seventeenth century, Francois Mansart, had used this form of articulation in all his majors construction. Contrarily to practice elsewhere in Europe, he had a "punctilious regard to the placing of pilasters at the exact angles of buildings." (12) The French had always insisted on the most
convincing expression of a post-and-beam architecture, though such expression was not in accordance with the actual structure used. The originality of the neo-classical doctrine in the eighteenth century was: first, to have sanctioned this form as the most rational and natural, originating from a primitive type; second, to have demanded that such form be no longer a decorative relief but disengaged from the wall; and third, to have sought inspiration in Gothic architecture as a national example of the rational application of a structural system. Of course, Laugier still believed that the classical code was to be preferred, but he nonetheless admired (as Perrault, Frémin and the Cordemoy) Gothic architecture's rationalism and even its expressive power. Therefore, neo-classicism did not radically break with the formal code of the seventeenth century French classical tradition. Rather, it purified its forms through a return to sources, both classical (Greek) and national (Gothic). In theoretical terms, however, the break was radical since Vitruvius and the classical orders were no longer unquestioned authorities; proportions had no more divine attributes. Laugier's hut, pure and simple, was the new dogma. Eighteenth
century rationalism was still far from Viollet-le-Duc's concern with the inherent logic of material and still relied on the notion of ideal.

After the interlude of the French revolution in which an "irrational and emotive streak" (13) had interrupted the course of the architectural debate, two publications reinstated more "rational" tendencies in French architecture. The two texts were perceived at the time as complementary studies but already may be said to have characterized the two different brands of rationalism later to flourish in the nineteenth century. The first, the Traité théorique et pratique de l'art de bâtir (1802-03), was written by Rondelet who had worked with Soufflot at Sainte-Geneviève. To an extent, it reintroduced in the nineteenth century the Graeco-Gothic ideals of the eighteenth century rationalists and particularly its insistence on structure. The second book, Précis des leçons d'architecture données à l'école Polytechnique (1802-05) by J. N. L. Durand, was a reaction against Laugier's ideal of the rustic cabin and emphasized, to the exclusion of all other concerns, the utilitarian aspect of architecture. Rondelet and Durand were by no means opposed to each other. Both would
denounce decorative excess and would favor the virtues of economy and sound construction. In many instances, Rondelet would even defend and praise the doctrine of Durand (14). Rondelet's Traité and Durand's Précis, however, if taken by themselves, differed greatly in that the first was devoted to planning with little emphasis on actual construction techniques while the second was essentially a textbook on building construction.

Durand's utilitarian ideals translated into a systematic use of the orthogonal grid: "To learn to be an architect," he said, "one had only to learn to divide a square into a regular grid." (19) As a pupil of Boullée, he favored simple geometric volumes such as the square or the circle, though he justified the use of such shapes by the economy of material they entailed rather than by their intrinsic or poetical value. At the end, Durand favored an austere form of classicism, extremely formal and purified with little actual concern for construction logic. Despite his comparative studies of building types, he advocated plans that were always symmetrical and of simple geometric shapes, reflecting no interest in specific social context or convenience.
David Van Zanten has recently suggested that Durand's compositional rules were nothing other than the planning techniques that academicians long before him had taken for granted. His chief contribution was then to have codified these techniques for the use of engineers (15).

Rondelet's *Traité* was comparatively modest since it comprised no real theoretical discussion on architecture. Its exclusive concern was construction, and it formed probably the first comprehensive textbook on the subject (16). Its importance is undeniable since it provided concrete discussion on the most economical building techniques. Rondelet illustrated the technique of iron reinforcing bars used for Sainte-Geneviève and the Louvre collonade. With the most unassuming intentions, Rondelet would thus propagote neo-classical ideals and particularly its preference for trabeated architecture. Rondelet no longer referred to the ideal of the primitive hut, which he would have surely dismissed. His prejudice for trabeated forms was hidden behind the most prosaic discussion of building methods.

The rationalism of Durand and Rondelet would have a strong influence on the development of architecture in the nineteenth century. It should be remembered, however, that in the first decades of the
nineteenth century the architectural world in Paris was dominated by the doctrinaire Quatremère de Quincy who had taken over many of Laugier's ideas (particularly the idea of the primitive hut) but for the service of a rigid Graeco-Roman idiom opposed to any Gothicizing influence. The work of Percier and Fontaine would reflect this strict orthodoxy while displaying considerable skill and inventiveness. Only in the 1830's would a strong opposition finally developed. Through the influence of E. G. Gilbert, a pupil of Durand, a group of reformists would change the course of architecture; the architects Blouet, Labrouste, Duban, Duc and L. Vaudoyer, working closely together, would challenge the premises of Quatremère's ideals. The decisive impetus to the reform was of course Labrouste's reconstruction of Paestum that provoked a strong polemic in academic circles in Paris. Labrouste described the Greek temples of Paestum using, on the one hand, a strictly functionalist argument (showing how they derived from their social context), and on the other, proclaiming their superiority over Roman buildings which Labrouste perceived as an alien form of architecture. This was a strong blow against Quatremère's concept of the
primitive hut as the sole and unique originator of the architecture of antiquity. For Labrouste, buildings emerged from a specific context; therefore, classical antiquity could not be subsumed under one single banner. Moreover, Labrouste noted the purity of the earliest (according to his own reconstruction) of Paestum's temples as opposed to the technically more advanced but hybrid temples of the later period. If anything, then, the original principles of Greek architecture had degenerated over time rather than matured. Of particular importance in our context was Labrouste's description of the temple of Athena. He noted that the "stones used in the construction of this temple are of two kinds: the columns, the architraves, the frieze, and the pediment are constructed of hard stone, whereas soft stone was reserved for the parts decorated with mouldings, such as the capitals, the mouldings of the architrave..." (17). Labrouste's finding that, for some of the Greek temples, the load-bearing segments of wall were made of stronger material than the rest re-stated the notion of the framed structure basic to eighteenth century classicism. Labrouste's teaching at the Beaux-Arts was, of course, seminal to the future development of nineteenth century architecture: Lassus, Guadet and de Baudot would have
their first training in Labrouste's atelier. Apart from these key figures, the rationalist reform of Labrouste was extremely important for everybody practising architecture in the mid-nineteenth century. Labrouste also marks the point of divergence in rationalist doctrines in the nineteenth century. The so-called "romantic" movement grouped around Labrouste was not so homogeneous as it first appears. Blouet, in particular, a close follower of Rondelet, would develop a rationalist doctrine based on strict principles of structural economy and structural expression. Labrouste would himself propagate Blouet's rationalist doctrine but with stronger emphasis on classicism and functional (rather than strictly structural) expression. As Levine has suggested, Labrouste's chief concern was architectural "legibility" supported by an attention for structural integrity and the use of new materials and techniques. Labrouste's teaching combined the two forms of rationalism in French theories: structural (Rondelet) and functional (Durand).

Blouet, for his part, was almost exclusively concerned with structural rationalism. Moreover he had strong sympathies for Gothic architecture. His treatise,
Supplément au traité théorique et pratique de l'art de bâtir de Jean Rondelet (1847-48), showed his indebtedness to Rondelet and consequently to Soufflot. Blouet marks the first coherent attempt to codify the structural rationalist movement in the nineteenth century, which Lassus and Viollet-le-Duc would more fully articulate. Meanwhile, the more classical and functionalist tendencies of Labrouste would be propagated through the École des Beaux-Arts itself and would find application in the eclecticism of Garnier and later Guadet.

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The eighteenth-century sources for Viollet-le-Duc's rationalism may first surprise since he so obviously detested neo-classical architecture (though he admired Gabriel's hôtel de la Marine) and its "non-natural" use of masonry. Viollet's insistence that architecture should respect the nature of materials went against the ideal of the primitive hut which, for Laugier, was the ideal form whatever material used. Viollet-le-Duc had certainly learned from Labrouste, as he himself claimed (18), that all architectures were
distinct, each shaped by specific social conditions, local materials and available techniques. Yet the Gothic rationalist point of view developed by Viollet was an integral part of eighteenth century neo-classical ideas.

In the preface to the *Dictionnaire raisonné de l'architecture française du XIe au XVIe siècle* (published in installments between 1854 and 1868), Viollet-le-Duc wrote:

In the work we now present to the public, we have tried not only to give examples of the various forms which characterize Medieval architecture... but mostly and above all, we attempted to make clear the raison d'être of these forms, the principles which made them possible, the customs and habits around which they first originated. (20)

This interest in the origin of a first body of work mirrors Viollet-le-Duc's desire for a new beginning in architecture. Probably the chief characteristic of mid-nineteenth century architectural theory was this insistent demand for an architecture that would belong to the age. (21) The importance that Viollet-le-Duc gives to the origins of Medieval architecture can be seen in another context: to find a distinct principle at the origin of Gothic architecture was for him a way to confer on it a new legitimacy. The eighteenth century neo-classicists had valued Gothic architecture primarily
for its constructive and expressive properties but had never really considered it as "architecture" in the full sense of the term. (22)

Probably the fiercest critic of Gothic architecture in the first quarter of the century was Quatremère de Quincy, who never conceded that the style held any real value. Yet upon consideration, Viollet's wish to identify a principle from which originated the whole of Gothic architecture was a direct counterpart to Quatremère's notion of "type." When discussing Gothic architecture, Quatremère asks:

Though it has a very distinct physiognomy and has architects known to be original, does Gothic architecture have its own originality? In other words did it originate and was it developed in one given country, was it created as the result of certain natural causes which depended on the instinct of the inhabitants of such country, on the climate, customs, habits and institutions that were established in it? (23)

Because there were no clear answers to these questions, Quatremère was able to dismiss Gothic architecture out of hand. His statement, however, is so similar to Viollet's concerns as quoted above that it seems as though the Dictionnaire raisonné was a direct response to Quatremère's challenging questions.

For Quatremère de Quincy, Greek architecture was
derived from the original wooden hut, and in that lay its strength:

Only [Greek architecture] deserves to be called art because it had the advantage of finding in its first experiments a simple model, rich and varied, whose inventive imitation permitted architecture to reach the level of perfection which it attained. (24)

Like Laugier before him, Quatremère de Quincy reduces the simple model of the wooden hut to a structural system, which allows him to write: "Sans la charpente, il n'y aurait jamais eu dans l'architecture d'art raisonné." (25)

This propensity to reduce an entire architectural production to one single principle is equally evident in Viollet-le-Duc's theory of architecture. "L'architecture raisonnée" means an architecture which is logically deduced from a primitive "fermentation intellectuelle" of complex sources. (26) Viollet, however, refused to accept that all architecture should be derived from one single type. For Viollet, there were as many distinct principles as they were architectures. Only geometry, Viollet believed, formed a common ground to all architectures. Geometry was synonymous with reason and thus remained an abstract entity, not a formal type.

Even Viollet's idealization of the equilateral triangle (27)
did not necessarily entailed specific forms, since he had demonstrated that from the equilateral triangle all other geometric figures could be derived. Viollet-le-Duc nonetheless proposed an argument similar to neoclassicists when he based the legitimacy of Gothic architecture on its rational articulation of one original and distinct principle. Viollet-le-Duc's preference for Gothic architecture and his literal equation of architecture with construction have obscured the relationship between him and Quatremère de Quincy. Yet the former's frequent reference to "l'illustre auteur du dictionnaire d'architecture" (28) should have suggested to scholars such a kinship. It is true that by 1850, Quatremère symbolized classicism in its narrowest and strictest sense. This fact impelled Viollet to do for Gothic architecture what Quatremère had done for classical architecture.

"Style," wrote Viollet, "is the manifestation of an ideal through a principle." (29) This italicized sentence repeated twice in the Dictionnaire comprises Viollet's concise and fundamental definition of architecture. With it he attempts to reconcile the objective and the subjective realms -- and, in so doing,
he reacts against Durand. The "ideal," for Viollet, is one man's particular interpretation of nature (30), an operation which translates one's impression into a united whole. It does not imply that Viollet-le-Duc encouraged personal expression in architecture but rather that architecture should always reflect the "génie" or "spirit" of a specific nation or race. The idealization process which the architect follows is implicit from his context; it is not simply a personal caprice. In architecture, claims Viollet, this subjectivity is translated into a principle that forms the basis for a specific architecture. "Principle" may be defined, in most instances, as a structural system. The subjectivity of a nation is thus contained in the structural principle which originates its architecture. Hence, the role of the architect consists of developing rationally this primitive principle, using current materials and techniques. "Style," wrote Viollet, "is inspiration but inspiration subjected to the rules of reason." (31)

Invoking Frémin and Laugier, Viollet-le-Duc wrote in 1845:

Gothic architecture follows one unique and great principle that never varies;... it is the only
architecture which belongs to our soil, which is an art developed (développé) and original, the only one which is in harmony with our climate and our materials, and which has ever had unity... all the reasoning in the world will not change our "génie," our climate, our customs and our materials. (32)

For Viollet, as for Derand and Frézier before him (33), the original principle behind Gothic architecture was the "law of equilibrium" which had succeeded to the static loads of Greek architecture. This principle, for him, characterized the Christian/French spirit and could be reactivated thanks to the power of modern materials and techniques. "Reason" was essential to "develop" the new architecture, but for Viollet, the primitive seed was already given.

Consequently, Viollet never believed that reason could, in and of itself, originate a new architecture. When Viollet discussed medieval architecture of the fifteenth century, he was compelled to admit that "despite the excessive research for new arrangements, and because of the rationalism which regulates all parts of this architecture, one is not moved by the result of so much effort, in which one sees more calculation than inspiration.... Logic has killed poetry." (34) For him, the architecture of fifteenth-century France was only an abstract play of rationality, and "had slowly lost
sight of its premise." (35) Architecture, according to Viollet, starting from a first body of work of unclear origins, must follow certain rules which are, in a sense, autonomous and which often conform to a constructive logic. "The work of the architect," wrote Viollet, "cannot do without 'ideals' during its conception, and without the intervention of 'reason' during its development." [my emphasis] (36)

For him the Gothic style was the paradigmatic example of an architecture whose forms developed according to the logic of structure. One of the key lessons that can be learned from Gothic architecture according to Viollet, and to paraphrase John Summerson, is that architecture should seek to express its function dialectically -- to offer a visible argument to the spectator. (37) In this definition of the "rational point of view," the terms "function" and "visible argument" are ambiguous. "Function," for Viollet-le-Duc, was by no means limited to a building's purpose in a narrow sense. He wrote: "The needs that architecture must fulfill are not very varied. They always consist in sheltering man ... and permitting him to go about his occupations within this shelter." (38) The "purpose" is
here reduced to the need to enclose a certain amount of space. Viollet acknowledges that the way a space is covered varies according to nations, cultures, techniques and other more intangible factors. By contrast, "function" reflects the particular ideal of a nation or race, and it is embodied in the structural principle used. "To express function dialectically" does not mean to express the contingent purpose of the building; it can be construed as the clear presentation of the structural means used to shelter a given space. (39) "The visible argument" is thus a structural argument. Viollet explains this when he writes that "the principal quality that all architectural members should possess is that of appearing to fulfill the function to which they were destined." (40) It is in this sense that a form can be said to present an argument.

The main distinction between the rationalism of Viollet-le-Duc and that inherent in eighteenth century architectural theories was that Viollet had refused to give primacy to any specific form, either the Doric order or the primitive hut. Rationalism in its purer form may be regarded as a specifically nineteenth century phenomenon, the key impetus originating in
Labrouste's tenet that architecture be understood contextually rather than ideally.

Viollet-le-Duc's theory departed significantly from Labrouste in its insistence on the absolute primacy of structure and its sanction of Gothic as the sole expression of the French spirit. Labrouste sought to rationalize classicism. As Guadet later reported:

This pure classicist [Labrouste]... whose chief aim was to restore classical architecture by a return to its most basic principles... has once confessed to me that he had been sorry to see some of his students, who thought they were faithful to his teaching, adopt the Gothic manner which he himself squarely refused to take up. (41)

These students were Lassus, de Baudot, Boeswillwald and others, who would later group around Viollet-le-Duc.

Julien Guadet, for a few short years, was also a student of Labrouste. His main training, however, was at the Paris opera house where he worked for a long period under the direction of Garnier. This double exposure was significant. In the second half of the nineteenth century, Guadet would become one of the chief figures among the classical rationalists, combining Labrouste's rationalization of classicism with the attention given to composition by Garnier. Guadet was also influenced by
Léonce Reynaud's *Traité d'architecture* (1850) on which his own *Éléments et théorie de l'architecture* (1901-04) was modelled. Reynaud had been a pupil of Durand at the Polytechnique where he later became professor. The influence of Durand on Reynaud is evident. The *Traité* comprised a study of different building materials, an examination of the different elements of architecture (columns, beams, apertures, and so on, considered from a classical, anti-Gothic point of view) and finally a comparative study of building types. Though not as dogmatic in its approach, it combined the main elements of Durand's *Précis*: an insistence on function and composition, a predilection for classical architecture and some concerns for structural integrity and economy. Julien Guadet would provide no less in his *Éléments et théorie* published fifty years later, which summarized his teaching at the Beaux-Arts from 1871. Guadet would attempt to combine many aspects of architectural theories developed in the first half of the nineteenth century. This, in fact, would become a characteristic of classical rationalists. They would always oppose their common-sensical approach to what they would call the fanaticism of the "ultra-rationalists." (42)
Curiously, in the Beaux-Arts' ateliers, the young classicists would swear "haine à Viollet-le-Duc" on a copy of Durand's *Précis*, which was a no less extremist publication. But, by then, Durand's text had become the beloved guide book of the students at the École since, in it, the Beaux-Arts' rules of composition had been so clearly laid out. Guadet, who had been the chief instigator of the uproar against Viollet-le-Duc at the Beaux-Arts in 1863, would nonetheless adopt some aspects of Viollet's structural rationalism, particularly those that had already been taught by Labrouste. The core of his teaching, however, was composition and the classical orders to which everything was peripheral.

Julien Guadet's *Éléments et théorie de l'architecture* is, as J. L. Pascal wrote in the preface to the third edition, a "beau et bon livre." It is practical, comprehensive, and, at first glance, innocent of stylistic bias. Through its pages buildings of all times and places are brought into juxtaposition, and Guadet proudly asserts that the archeological battle between classicism and Gothic is now over: "Notre art s'est affranchi peu à peu de cette paléontologie." (43) The only buildings which attracted Guadet's attention were, as he wrote himself, the "classics," the premier
works of whatever period. These were the works sanctioned by sustained and informed opinion as to their intrinsic excellence regardless of style. This compendium of timeless masterpieces shows, according to Guadet, three underlying and invariable principles: reason, logic, and method. (44) Guadet added, however, that if architecture, of all arts, is based on the most rigorous principles, these can be demonstrated only through the eternal superiority of certain works. Paradoxically, Guadet claimed that to create good architecture, one needs "l'idée," and intuition is the only possible genesis of "l'idée artistique." (45) The remarkable limpidity and clarity of the prose in the first chapters of Éléments et théorie are deceiving: apart from its reiteration of the Vitruvian triad the text provides no clear understanding of architecture. The common sense that infuses the first volume of the book, however, is consistent with the very nature of Guadet's enterprise. Guadet never explored the nature of architecture itself but always addressed specific problems to be solved and provided exemplars. By the amount of material and information brought together, Éléments et théorie forms a history manual of sorts, but
Guadet never attempted to organize the mass of data with regard to its context. He never allowed history to have a significant bearing on architecture. Guadet was unconcerned with the origin of a particular architecture; he was solely interested in the genesis of individual buildings. It is not surprising, then, that only the most common generalities are enunciated in the first chapters of book 2, vol. I, titled "Principes généraux" and "Principes directeurs." Guadet's book reaches its full measure only in the second and third volumes, which propose a comparative analysis of buildings classified by types. Each building type is surveyed chronologically from antiquity to modern times and described, in terms of its plan.

Peter Collins' claim that Guadet's theoretical work had finally accomplished the synthesis of Gothic and classicism is illusory. (46) Guadet did not use his practical, common-sense approach to architecture as a means of bringing Gothic and classical art together on a par. The pragmatism masked his stylistic bias. Rykwert has already noted the overabundance of classical-versus-Gothic examples in Éléments et théorie. (47) There is no need to count and compare the plates in the four volumes; certain remarks of Guadet express direct
criticism of Gothic architecture. (48) This stylistic prejudice can be taken lightly and seen only as a matter of personal taste. Guadet's preference, however, reinforced the conventions favored at the École des Beaux-Arts and opposed itself to the Viollet-le-Duc faction. Guadet's aim is clearly revealed in his attempt, through a careful rhetoric to once again save the classical orders, which by 1900, had been abused by half a century of challenging experiments. Guadet accepted the rationalist precept of truthfulness to structure and material as long as it did not conflict with the classicist orientation of the École. Guadet's remarkable analysis of building types in the most functional and practical terms always remains within the tradition of set by carefully chosen precedents. Guadet may be called a functionalist, but his functionalism is framed by conventions. The masterpieces illustrated in the four volumes of Éléments et théorie de l'architecture never suggest how a new architecture should develop. The subject is never even broached. As Viollet-le-Duc wrote in 1863, eight years before Guadet started teaching at the Beaux-Arts: "On ne crée pas avec des chefs-d'œuvre, on ne peut que les admirer ou les
imitier." (49)

Guadet taught his students to "compose" with the program, that is, to solve a particular problem according to the design rules of the Ecole. One had to produce a "beau plan," which Guadet describes with his usual style as "un plan qui permet et promet de belles choses, de beaux interieurs et de belles facades." (50) Guadet's notion of a beautiful plan evokes J. F. Blondel's idea of a good distribution which he had summarized in 1752 as: convenience, proportion, symmetry, ordonnance, and harmony. (51) It is not insignificant that in 1904, J. Guadet and J. L. Pascal published a reprint of Blondel's Architecture française. Guadet no doubt agreed with Blondel's proclamation that "distribution must be the first subject matter of the architect; even decoration must be absolutely dependent on the plan." (52) This tyranny of the plan was in fact, for Guadet, the tyranny of the program. (53) But programs do not in themselves impose forms. Guadet therefore turned to precedents for guidelines, yet without ever discussing these works in their historical actuality. He simply acknowledged the symmetrical and hierarchical planning of his examples. Guadet's classicism was completely emaciated, reduced as it were
to a conventional necessity.

The man who most energetically attempted to put Gothic and classicism on an equal footing was the engineer Auguste Choisy. His *Histoire de l'architecture* (1898) extended Viollet-le-Duc's historical methodology to the whole of history. Like Viollet, Choisy believed that each architecture reflected a specific "génie" or "spirit" and that its development followed a logic imposed by construction. Choisy's *Histoire* was divided into two volumes. Significantly, half of the first volume was devoted to Greek architecture, while half of the second was concerned with Gothic architecture. For Choisy, these architectures formed the two poles of the European architectural tradition. It is clear that Choisy was calling for a synthesis of these two traditions, thereby reviving the eighteenth century Graeco-Gothic ideal. Choisy was well placed to break away from the sterile disputes between Classicists and Gothicists. He had been a student of Reynauds at the Polytechnique but had later worked in the entourage of Viollet-le-Duc (54).

He was thus directly exposed to both factions. His
indebtedness to Viollet-le-Duc was stronger since he developed with great clarity and consistency the type of structural analysis that Viollet-le-Duc had used in the *Dictionnaire*. His text was not as richly complex as that of Viollet's. Choisy never pretended to give actual guidelines for the future course of architecture. Nonetheless, his concision, clarity, dryness even, was potent at the turn of the century. His work was often understood as an overt criticism of Art Nouveau; the simplicity of his axonometric drawings reduced the architecture of the past to a few essential (structural) lines. Moreover, Choisy in his *Histoire* would marvelously expose how the essence of Greek and Gothic architecture relied on the concept of the framed structure. The trabeated forms of the Greeks were juxtaposed to the *nervures* (ribs) of the Gothic vault. The distinction between structural support and the protective membrane was thus construed by Choisy as the hallmark of a rational architecture. The idea was not new in France, but its concise exposition at the end of the nineteenth century would give it a renewed historical justification. Choisy not only extended Viollet-le-Duc's rationalism to the whole of history; he also re-stated the eighteenth century point of view. In
1900, he was the torchbearer of the structural rationalist tradition in France, more so even than de Baudot, Viollet-le-Duc's most devoted follower, who, in 1900, was still entangled in Gothic mannerism. In contrast, Choisy offered a clear, dry and forceful investigation of Greek and Gothic architecture that summarized a three-hundred-year-old tradition reaching as far back as Philibert de l'Orme.

Guadet and Choisy thus formed two poles at the end of the century. The former's *Éléments et théorie* reiterated J.F. Blondel's and Durand's emphasis on *distribution* and "composition." The later's *Histoire* gave a new application to Viollet-le-Duc's theories and reinstated some of the ideals of Fremin, Cordemoy and Laugier.

* * * *

Many aspects of Perret's building at rue Franklin reveals an affinity with the "ultra-rationalists" of Viollet-le-Duc's lineage. First, his decision to use reinforced concrete immediately presumed
a Gothic rationalist tendency to experiment with new, "modern" materials. Second, the absence of the orders, elaborate cornices or other classical elements was a break from Guadet's and the École's teaching. The small Gothic bosses pendent at the entrance way of the 25b was a clear avowal of Perret's adherence to the Gothic faction. Finally, the frank expression of the structural organization of his edifice was an application of Viollet-le-Duc's most essential precept, that buildings should display a structural argument to the viewer.

For Auguste Perret at rue Franklin the presentation of a structural argument was effected primarily through the exterior structural framework. Divided into many stories, only the building's exterior could present a coherent understanding of its structure. The interiors presented a fine modulation of the structure within the walls (figs. 21 & 42), but Perret did not mark this difference as emphatically as he did on the exterior. Interiors, for Perret, were more appropriately subdued and neutral to accommodate the varied taste of his future tenants. The discussion of the rationalism of the 25b will thus focus on the exterior "presentation" of the building.

As we have seen, the loggia and the small
terraces on the sixth and seventh floors follow to the inch the building line set by the 1902 bylaws. Perret's handling of the problem, however, has a more potent interest when approached from the point of view of the present discussion. The sixth-floor loggia and the terrace above present a constructive model for the understanding of the whole building (figs. A & 43). The loggia opening at the top of each bay disjoins the frame from the wall and thus isolates the basic structural component of the whole building. (55) Conversely, the curved projection on the seventh floor immediately above the loggias can be seen as a portion of the wall which has been freed from the constriction of the structural frame, as can the two strangely organic forms on both sides of the sixth-floor bays (fig. 44). These elements of the facade comprise the only curved surfaces of the exterior articulation, and as such they clearly assert the dialectical relationship between frame and infill. Collins has argued that the source to Perret's frame and infill system was to be found primarily in the French classical architecture of the seventeenth century. Moreover, Collins did not see Perret's use of these forms as simple imitation:
Outrageously paradoxical though it may seem, it was not Perret who illogically imitated the seventeenth century, but the seventeenth century which illogically anticipated Perret, since it was he, rather than they, who made the structural expression and the structure express one and the same thing. (56)

In this Collins more or less repeats Perret's own assertion:

Our modern construction has something more pure...[than Antique construction]. Its conformity to wooden construction does not derive from tradition but is imposed by the nature of the materials used. (57)

In other words, the use of wooden form work in concrete construction gives the appearance of a timber frame, which then is the logical consequence of the construction process used. Furthermore, reinforced concrete had properties analogous to wood: its ability to resist tensile strength and its "fibrous" nature (due to reinforcement) was similar to wood. Collins, however, has too quickly assumed that the trabeated articulation used by Perret was an exclusive expression of seventeenth century classicism. We have already seen how the notion of a framed structure was basic to some of the French architectural theories of the eighteenth and nineteenth century which derived from an analysis of both Greek and Gothic precedents. Perret's apartment buildings on ave. de Wagram and on ave. Niel both
invoked the "natural" or even primitive character of the frame. The small columns carved out of the masonry wall at the ave. de Wagram (fig. 6) recalled the tree structure of Laugier's primitive hut (fig. 41). This framed structure at the top of the ave. de Wagram building even infringed on Perret's rationalist principle by contradicting the nature of the wall construction. It is a decorative relief that denounces Perret's belief in the universal value of a framed structure. The ave. Niel building would go even further; the post and lintel structure at the top of the corner tower (fig. 38) invoked directly the idea of the rustic cabin, particularly in contrast with the massive walls below. The classical reference in the heavy cornice indicates Perret's adoption, after 1906, of a more definite classical language. The 1925 exhibition pavilion of the Librairie Centrale des Beaux-Arts (fig. 45) would of course form Perret's clearest endorsement of the idea of a primitive -- classicist -- model. In the context of the World Exhibition of Decorative Arts, it constituted a direct criticism of the pavilion of L'Esprit Nouveau by Le Corbusier. Thus in the midst of the avant-garde movement of the 1920's, Perret
unexpectedly proposed an eighteenth century neo-
classical model, derived in fact from Philibert de
l'Orme's plate for a rustic order (fig. 40).

The essential to retain in the context of this
chapter is that Perret held the frame as a model for
architecture over and above the material used: the
buildings on the ave. de Wagram and the ave. Niel
demonstrate that, for Perret, the frame had an inherent
rationality regardless of context. Reinforced concrete
would consecrate the validity of the system. In this
sense, Perret believed concrete to be the architectural
material par excellence, that which fulfilled to
perfection the wishes of many generations of
rationalists. It would be nonsensical, however, to claim
that Perret's trabeated articulation was the "logical"
imitation of seventeenth century French classicism, and
to assume that Perret was being entirely
deterministic in his use of the material. Rather,
Perret's frame originates in a theoretical discussion
going back to the eighteenth century in which, as we
have seen previously, the idea of reinforced concrete
was already immanent. Moreover, through Labrouste's
reform, Viollet-le-Duc developed further the French
rationalist tradition; it is Viollet-le-Duc who provides
the most direct source for the frame-and-infill system of the 25b.

Viollet-le-Duc's project for an urban house (fig. 33) is one of the clearest precedent to the 25b. Interestingly, Viollet's observations on the subject -- as in the eighteenth century -- derives not only from his analysis of classical architecture but also (and mainly) from his study of Gothic architecture. Under the heading "construction" in the Dictionnaire, Viollet discussed the early development of the Gothic vault. He wrote:

They [medieval builders] attempted to go further. They wanted the concave triangles of these vaults to be independent of one another; to achieve this, they designed their vaults with two distinct elements: the arches themselves and the infill; the arches were considered as a permanent and elastic support, while the infills were seen as a neutral concavity used only as a means to close up the empty triangles formed by the arches. (58) (fig. 72)

Hence from Viollet's point of view, as for Choisy later, construction which differentiated the structural frame from the infilling material was not exclusive to classicism. The favor that this form of expression enjoyed for a rationalist such as Viollet-le-Duc can be easily understood. The visual distinction between frame and infill is a direct reflection of the
different function that each element must perform. Thus each part "appears to fulfill its function," to use Viollet's expression. Skeleton construction was, for him, the analytical form par excellence. It visually discriminates what supports from what protects, and thus reveals the fundamental dialectic of buildings. The structure sets the general ordonnance of a building; it induces a particular order and rhythm. It thus represents the permanent realm. A change in the structural skeleton fundamentally alters a building. Structure is also what intimately links architecture to nature since it must respond to the laws of statics. These laws are permanent and can be scientifically apprehended. It was in this sense that rationalists believed structure constituted truth in architecture.

The infill is in dialectical opposition to the structural members in which it is framed. A "member" is precisely what the infill is not. By itself the infill has no consistency. It may be removed, changed, or altered without profoundly affecting the building. In the Entretiens Viollet wrote of his urban house, "One supposes an exterior skin [an infill] in glazed terra cotta following the taste of each and everyone," (59)
thereby implying that the light infill had the flexibility to adjust to different contexts. To push the argument further than Viollet himself had done, the infill, inasmuch as it forms the enclosure which shapes the diverse spaces of a building, may be a direct reflection of purpose. As Perret wrote in 1946:

> The naked skeleton satisfies the permanent requirements of architecture; whichever infill and furniture will satisfy the transient exigencies of function. (60)

The Gothic vault system described by Viollet is arguably only remotely similar to the trabeated expression at the rue Franklin. But between Viollet-le-Duc's analysis of Gothic architecture in the *Dictionnaire* and Perret's building of 1903, almost half a century of experiment had transposed the Gothic vault into a more abstract and practical schema. In fact, undoubtedly stemming from Viollet's own projects published in the *Entretiens*, the system of frame and infill soon became the paradigmatic expression of the "Rationalists" in nineteenth century France.

One of the first and most striking occurrences of skeleton construction in France was the Ménier chocolate factory in Noisiel on the outskirts of Paris, designed by Jules Saulnier (1828-1900) and erected in 1871 (fig.
47). (61) In the second volume of the Entretiens, Viollet commends this building. (62) Indeed his own project for an urban house uses an identical structural system and a similar infill material of brick and a glazed tile facing. The Ménier factory was built directly on the Marne and was supported by four stone piers between which were housed turbines. The iron structure spanning across these stone piers was constructed much like a bridge truss, a marvelous illustration of Viollet-le-Duc's theories on metal construction.

In its most generic sense, the real triumph of skeleton architecture came about at the various international exhibitions. From the Crystal Palace on, every major exhibition displayed great halls of iron skeleton construction. These large structures, often sheathed in glass, were so exceptional in their nature that their significance for our subject is limited. Nonetheless a strong association among industry, engineering, and skeleton construction was established. At the 1889 World Exposition in Paris, however, the use of a skeleton construction took on a new dimension. (63) Its application was no more restricted to large halls but was extended to a multitude of smaller buildings. (64)
Henri Chaine, one of the editors-in-chief of the rationalist periodical Encyclopédie d'architecture, when reviewing the exhibition of 1889, wrote:

To build using a structural skeleton and a light infill is the principle which imposes itself more everyday because of our needs and our modern materials. This construction process is very old, well-known and used daily by architects today. But rarely have we had the courage to express it plainly. (65)

Chaine's article implied that this form of construction would be the architecture of the future. It was at the same time the most rational way to build and the most practical. "It imposes itself" wrote Chaine.

The Rationalists of Viollet-le-Duc's entourage did indeed prefer this form of construction, even when using materials other than iron. A survey of the buildings published in the Encyclopédie d'architecture shows the dominance of this form of building. (66) Lycées, which became a building type favored by the Rationalists in the second half of the nineteenth century, were often built using a skeleton construction -- or at least displaying a frame-and-infill articulation. (67) Of these, Vaudremer's lycée Buffon of 1887 is certainly the most famous example (fig. 48). It combined the use of an iron frame with a stone facade
which clearly expressed the skeletal nature of the construction. L. C. Boileau, the editor-in-chief of L'Architecture, wrote about the building:

The type of architecture used is similar to that used by the Gothic Rationalists but presents substantial differences. We are not in the presence of an impoverished Gothic made to look like a factory, something which, according to the students of Viollet-le-Duc, should form the essence of Modern architecture. Vaudremer has succeeded in creating something which is neither Gothic nor Classic, but rather more primitive, in between Romanesque and the twelfth century. I do not think that this kind of architecture can be generalized but it is, nonetheless, very appropriate to such utilitarian buildings. (68)

Boileau's statement is revealing in that it summarizes the general attitude toward the expressive nature of a slender frame. More significantly, it suggests how Vaudremer had transposed Viollet-le-Duc's system of frame-and-infill originally derived from Gothic architecture into a more abstracted system. The building is "neither Gothic nor Classic but rather more primitive," Boileau cleverly notes. It is more likely, however, that Vaudremer intended his structure to be both Gothic and classic at the same time, reduced as it was to an elemental form of building common to both architectural styles. The affiliation to Gothic and its slender proportions was, so to speak, neutralized in its association with Greek trabeation. At least that was the
direction in which Vaudremer was pointing. In general his work -- even the "utilitarian" lycée Buffon -- had stylistic connections with Romanesque or early Renaissance architecture. His interest in these stylistic periods, which was shared by many of his contemporaries, resulted from the synthesis it offered between an austere structural rationalism and the symmetries and reposeful lines of classical architecture.

By the late nineteenth century, iron-skeleton construction was accepted by the profession as a legitimate building system. To a large degree, particularly with regard to its slender proportions, iron remained associated with medieval and Gothic architecture. Its strict utilitarian and industrial connotations were largely overcome by the new prestige of Labrouste's libraries and by numerous experiments with the material for ecclesiastical buildings by L.A. Boileau, Baltard and de Baudot. The system of iron frame used in combination with glazed brick or terra-cotta, however, was still used only for buildings of lesser prestige. The architect Bouvard would use the system repeatedly for buildings such as military barracks,
lycées and other utilitarian buildings. Auburtin at the École Alsacienne (built in 1881 and where Perret was a student), Chabat at the water works building on Quai de la Rapée (1889), and Brossard at the central Telephone building (1891) would use variation on this system of construction. De Baudot at the lycée Victor Hugo (1894-96) would make a first attempt at transposing the iron skeleton construction system to reinforced cement. De Baudot's work was still relatively timid, and the lycée Victor Hugo's outward expression was little different than other, more typical rationalist lycées built in the preceding decade.

In the last decade of the nineteenth century, reinforced concrete established itself as an advantageous replacement for steel in industrial buildings. (69) In France, it was Francois Hennebique who contributed most to the new popularity of the material. (70) Most of Hennebique's early works were concerned with civil engineering. However, only a few years after he had secured the copyright on his inventions (1892), Hennebique started to use his system for the construction of buildings. The first of these were of course industrial structures: the Raffinerie Parisienne de St-Ouen (1894-95); a spinning mill at
Tourcoing (1895); one at Lille (1896); and the Moulin Idéal at Nort (1898) (fig. 49). These structures are of special significance in our context since, through Hennebique's well-tuned propaganda campaign (71), they were the first reinforced concrete buildings to gain a broad diffusion among engineers and architects in France. Moreover their use of a skeletal structure brought a new dimension to the application of the frame-and-infill construction system. As Collins has already noted, the most significant building in this respect was the Moulin Ideal built in the spring of 1898. The building was designed by Chudeau, an architect from Nantes. The structure had a system of prefabricated thin posts that framed the windows, prefiguring in a striking way some of Perret's work of many years later. With respect to the 25b, however, it is probably more important to note the grandiose aspect of the frame building, evoked by a lithic quality and a classical sense of proportion absent from iron construction previously described. The Moulin de Nort, through the application of reinforced concrete alone, effortlessly attained some of the qualities Vaudremer could achieve only with the use of a stone veneer at the lycée Buffon.
In addition, the industrial nature of Chudeau's building made any direct stylistic affiliation unnecessary -- out of place, even. The structure, thus, had a neutrality and abstractness never realized by the Gothic Rationalists. For architects using concrete at the turn of the century, this lack of precise stylistic reference presented serious difficulties. One of the first efforts to use reinforce concrete for a work of "architecture" was by the architect Arnaud in the design of Hennebique's head office on the Place Saint-Michel in Paris. Critics were quick to note that the facade was a pastiche which had nothing to do with reinforced concrete itself. Pascal Forthuny wrote in Le béton armé in 1901:

Reinforced concrete is a new material, and has no links with the systems of construction which preceded it; it must thus necessarily draw from within itself its exterior aspects, which must be clearly differentiated from familiar motifs in wood, marble, or stone. How can one innovate lines and surface modelings in domestic architecture which are in some way the consequence of the use of reinforced concrete? Can one even ask of this method of construction alone a suitable decorative effect? M. Arnaud has doubtless not dared risk such an undertaking in this first great attempt in which so many other considerations all intervened for the first time. (72)

Arnaud's reply is significant:

I can only agree with all that you have said:
any new material must have its characteristic expression. But the expression proper to reinforced concrete is unfortunately still extremely vague.... We are accustomed to the fact that each material, whether stone, wood, marble, or iron, has, by its molecular constitution and its fabrication, a precise application in construction.... Concrete, for its part, may in turn replace structurally, iron, wood or stone... as M. Hennebique has said himself:
"There is nothing that reinforced concrete may not achieve, it can reproduce everything".... The distinctive character of concrete vanishes by the nature of its broad application. (73)

Concrete in this early stage of its development was thus perceived above all as a permissive material with no self-determining form. This neutrality was in itself very attractive to Rationalists since it precluded any imposition by convention and added to the material's "scientific" character. Forthuny wrote in the same article quoted above:

[Reinforced concrete] is not a matériau de hasard which gives approximate results. It is, amongst all materials, the one where mathematical precision is best achieved, the least disputed. It is constructed following determined laws, resulting in precise equations controlled by calculations. (74)

The "rationality" of concrete, plus its freedom from any conventional stylistic affiliation, made it an ideal material for the reform and renovation of architecture. By the same token, however, it was seen as a complication to architects, such as Arnaud, who found
themselves at a loss in the face of the immense flexibility of the material and who could only mold concrete following the formal codes of stone construction. The more audacious Art-Nouveau architects would of course use concrete's "plastic" quality to produce undulating and "dynamic" forms. These experiments were limited in Paris and used, in most cases, the Cottancin system of reinforced brickwork, rather than reinforced concrete proper.

Perret, for his part, would immediately perceive the affinity of Hennebique's system with timber construction. Its advantage from the point of view of flexibility and the construction process was obvious to Perret who was trained as a building contractor. Moreover, with seemingly the most unassuming intentions, it permitted Perret to bring new life to the French rationalist ideal of the frame and infill construction system.

The use of stoneware tiles at rue Franklin has often been perceived as a shameful excursion, by Perret, into the Art Nouveau domain. This form of cladding had indeed been used by Lavirotte, Guimard, Klein and other Art Nouveau architects. The use of ceramics, however,
was not exclusive to these architects; it had been used repeatedly in the second half of the nineteenth century. Viollet-le-Duc was one of the first to note the advantages of the use of colors and tiles in building. In the Entretiens, Viollet claimed that the Greeks had used color "as a powerful means of decoration, it served to emphasize architectural members and to clearly differentiate the various planes of the structure." (75) In the fifteenth century Viollet wrote that the "orientals have always been our masters in the application of decoration in architecture." (76) He admired particularly Islamic mosques where "a ceramic veneer covered...all surfaces whether interior or exterior...a splendid decoration, of perfect unity, keeping importance on all principal lines of the building." (77) For Viollet the decorative system used by the Muslim always "expressed the dominating thought;" he wrote:

We must realize that decoration is not a banal ornament ("parure") that may be used repeatedly for any building; decoration should be implicit starting right from the plan, from the first conception in the interpretation of the program; it is already inscribed in the structure; it holds to the building, not like a piece of clothing, but as muscles and skin on the human body." (78)
Viollet's praise of the mosque's ceramic veneer was also motivated by the fact that the "ornamentation is directly applied on the same material that is used for the construction of the building." (79) As we have seen, Viollet's project for an urban house used a colored terra-cotta veneer and this type of construction remained popular throughout the century for buildings using iron skeleton construction. It also had been used in many instances for suburban houses and country villas, particularly by Sédille who greatly favored this type of decoration. He had given a whole conference on the subject in 1877 which was later published in the *Encyclopédie d'architecture*. The question of polychromy had been raised earlier in the century by Hittorff and Labrouste but, for Sédille, "color was the greatest objective of all arts and industries supported by the discoveries of science," (80) It was, for him, the sine qua non condition of a "living" architecture. Ceramic and stoneware tiles were, of course, ideally suited for the incorporation of colors in buildings. This propensity to use color was popular among rationalists since it permitted a clear expression of the different architectural members. De Baudot at the church of Saint-Jean de Montmartre (1901-04) had done nothing more than
adapting Viollet's Islamic examples to reinforced cement covering his entire structure of a colorful veneer.

The 1900 World Exhibition had been, according to Boileau, "the triumph of stoneware tiles" (81) where in many instances, it was combined with reinforced concrete. In fact, stoneware tiles would be perceived very early on as a natural complement to concrete. Saunier wrote in 1908:

In some cases the use of ceramic tiles is absolutely indispensable; when, for instance, the problem is to mask materials of poor appearance which do not have inherent decorative potential as in the case of the useful, durable and precious reinforced concrete. (82)

Most residential buildings built of reinforced concrete at that time were covered with an exterior veneer made of ceramic tiles. (83) The association of concrete with ceramic tiles did not originate from practical or decorative reasons alone. Ceramic tiles had long been considered, like concrete, the ideal modern material. Tiles were industrially produced and thought to have incomparable resistance to weather: "Stoneware is eternity" wrote Boileau in 1903. (84) It was natural then that ceramic tile was associated with concrete, which had structural capacities beyond those of any traditional materials. Both materials could enhance one
another. Ceramic provided protection, color, and texture to an otherwise bland and neutral material. Concrete, on the other hand, provided the support which tile required and had a flexibility that related well to the decorative potential of tiles. Moreover, both were artificially produced and scientifically "designed" materials. The shape, size, thickness, color, and texture of tiles could be determined by the manufacturer or the architect. Hence, both materials were perceived as eminently rational.

Perret exploited the decorative and protective potential of ceramic tiles at rue Franklin. His building, however, dissociated itself completely from Art-Nouveau mannerism. Perret emphasized the structural frame of his building. In so doing, he established a relationship between his building and Hennebique's industrial structures, rather than Lavirotte's exuberant architecture. For Perret, the frame was concrete's natural configuration, because it respected the constructive logic of the wooden framework. The extensive application of this construction method in industrial buildings was a confirmation of its appropriateness. As Viollet-le-Duc had written in the
Entretiens: "At the present day, style has left the arts and taken refuge amid industries." (85) By "industries" Viollet meant industrial products such as locomotives or steam boats. Nonetheless, the connotation of integrity associated with industry soon extended to factory buildings themselves.

Perret's consistent use of the frame-and-infill system at the 25b rue Franklin does not mean, however, that the building's exterior articulation offers a transparent account of the actual structural layout. The use of tiles to cover the entire exterior surface permitted Perret to make all structural members appear uniform. A look at structural drawing no. 18 shows the great disparity in size of the various vertical supports. The most striking contrast is between the major piers at the side of each bay (column no. 11) and the two narrow members at the face of these bays (column no. 12). Drawing no. 8 shows that only a slight difference is manifest in the exterior articulation. A look at the plan section A-B on the same drawing makes this standardization process obvious. The very heavy piers which run continuously along the side of the bays have only half of their exposed surface faced with the beige flat tiles which are used at rue Franklin to
indicate a structural member. It should be noted, however, that the building as it was finally executed was given a different type of tile in the infilling section of these side piers (see fig. 50). The more abstract, geometric tile was a useful device for showing that this covering was of a different nature from the infill sections of the building, yet an apparent consistency in size was kept between all the structural members. In other words, if Perret does not present an articulation that is an exact reflection of the built reality, he, nonetheless, hints at the differences. He presents an argument -- a model -- from which to read the structural layout. He does not display structure in its nudity: he dresses it, which allows him to give a more suitable and coherent appearance to some of its components. As Emile Trélat wrote in 1880 describing the buildings of the Gothic rationalists: "All the hidden organs were expressed, and enamelled the skin of the building." (86)

Later in his career, Perret claimed that the only reason he covered the concrete with tiles was that he doubted that concrete was capable of protecting the steel reinforcement adequately. (87) In 1904, however,
he had given another explanation. As Edmond Uhry reported, in his review of the building: "Ceramics embedded in the soft mortar may be said to replace the ordinary aggregate: 'it is rich concrete on top of poor concrete' to use the architect's own terms." (88) Perret thus shared with his contemporaries the opinion that tile was a "natural" outer shell for concrete. For him, however, following Viollet's precept, it acted more as a skin which softened and corrected the coarseness of the core structure, expressing, nonetheless, its general configuration. It was analogous to the decorative system used by Orientals and described by Viollet. As H.M. Magne would later write:

The use of reinforced concrete will achieve, in modern buildings, the union of decor, form, and structure -- between art and science as was formally accomplished in Persian and Byzantine construction; the more so when the artist and the builder will be one and the same person. (84)

A building similar to the 25b had been erected in 1902 a few streets away from the rue Franklin. This apartment, designed by the architect Klein, was constructed of reinforced concrete using the Hennebique system and was sheathed with stoneware tiles (fig. 51). Collins has suggested that it was probably the sight of this building under construction (fig. 52) "which
inspired [Perret] with the germ of that idea [frame and infill] which was to have such a profound effect on the architecture of the modern world." (90)

In fact, Perret had many occasions to see the bare reinforced concrete frames of industrial buildings built around Paris by Hennebique's concessionaires. The comparison with Klein's building remains nonetheless interesting in our context. A glance at both exteriors immediately reveals that apart from their use of similar materials, the two buildings are profoundly different. Even if Klein has used so called "progressive" materials, he has reaffirmed the nineteenth-century type of the maison à loyer and has stayed within the established code. The comparison is particularly interesting because it emphasizes the industrial aspect of Perret's building. The slender skeletal articulation, flat roof, standardized floors, (fig. A), all combine to associate the 25b with industrial architecture. The industrial image of Perret's building does not derive only from its use of a slender frame. In fact, such distinctive features as simple cornices and wire railings emphasized its association with industry (fig. 53 & 54). Like Labrouste's bibliothèque Nationale and Viollet's project for an urban house, industrial
connotations (and actual use of industrial components) were used by Perret to relate the building organically to a modern industrialized society. All through the nineteenth century, Rationalists would favor such "industrialism." The World exhibition of 1889 would consecrate this attitude; for all rationalists (including Perret) this exhibition had been the truly victorious moment of nineteenth century architecture. Such an "industrial" aesthetic, however, had been largely confined to utilitarian or industrial buildings per se. (91) Perret boldly asserts the industrial presence into the midst of the elegant quarter of Passy where, until then, only a few carefully crafted buildings of Art Nouveau artists had disrupted the calm elegance of older houses. The position of the 25b, fronting directly the 1889 Exhibition grounds and the Eiffel tower; was significant. Perret's building was a twentieth century equivalent, in reinforced concrete, of this modern feat of engineering. However, Perret's response to an industrial society was but one stage in his search for a new architecture. The "industrialism" of the 25b supported its rationalism; it even proclaimed it. Industry already had an iconic value; but it was
more an icon of the building's own integrity than that of a new age. It said, in effect, that the building had "style" in Viollet's sense of the term: it was the "natural perfume" (92) of a good building which guaranteed its "strength, health and lasting quality" (93). Such industrial fragrance assured a basic level of integrity. Only from this neutral platform could a richer content be developed.
NOTES TO PART TWO
Notes to Part 2

1- In particular, Frantz Jourdain, Plumet, de Baudot, Paul Planat, Guimard, Sauvage, Simonet, LeCoeur.

2- Viollet-le-Duc resigned from his newly appointed position as Professor of the History of Art and Aesthetics at the Beaux-Arts under the antagonistic pressures of the students and the Academy. As we have seen previously, Lucien Magne, a long-time collaborator and a devoted student of Viollet-le-Duc, was named Professor of History at the École des Beaux-Arts in 1891.

3- Françoise Boudon, "La pensée et l'œuvre d'Anatole de Baudot," p.2.

4- Quoted and translated in Collins, Concrete, p. 155

5- And this despite Collins' contention that Guadet was in fact a reformer at the École, see Collins, p. 160. For a brilliant and concise expose of Guadet's relationship with the École, see Rykwert, J. "The École des Beaux-Arts and the Classical Tradition" in Middleton, R. D. ed. The Beaux-Arts and Nineteenth-Century French Architecture.

6- Paul Sédille, "Comptes-rendues: congrès des architectes," 1885, p. 73.

7- Robin Middleton and David Watkin, Neo-Classical and Nineteenth Century architecture, p. 9.


9- Ibid, p. 100.


13- Robin Middleton and David Watkin, op. cit., p. 29.

14- Louis Hautecoeur, op. cit., v. 5, p. 266.


16- Peter Collins, Changing Ideals in Modern Architecture, p. 204.


19- Middleton and Watkin, p. 31.

20- E. Viollet-le-Duc, Dictionnaire raisonné de l'architecture française du XIe au XVIe siècle, vol. 1, page IV.

21- See Peter Collins, Changing Ideals..., pp. 128

22- Though Soufflot used Gothic elements in the church of St-Genevieve, the style remained within the Classical code. J. I. Hittorff, for instance, who was considered in the late nineteenth-century to have been a progressive architect, would acknowledge the importance of Gothic architecture and even considered it necessary to incorporate some of its elements in his ecclesiastical work (See Hittorff, "Architecture" in Encyclopédie des gens du monde; répertoire universel des sciences, des lettres et des arts, Paris, 1833-44, vol. 2, p. 184. Hittorff's use of Medieval elements is particularly evident in the church of St-Vincent-de-Paul (1821-44) in Paris.). Yet Greek architecture remained, for Hittorff, at the core of the architectural discipline. Architects, in his opinion, needed to study "the theory and practice of their art by looking at the best monuments of Greece and Rome" (Hittorff, J. I., Notice historique et biographique sur la vie de Sir Charles Barry, Paris: Didot, 1860, p. 17).
25- Ibid, p. 112.
26- Viollet-le-Duc, Dictionnaire, vol. 8, p. 98.
28- Ibid, vol. 9, p. 34.
30- This concept finds a parallel in Quatremère's notion of "type", defined as "a true impression of nature" (Quatremere, op. cit. p. 115).
31- Viollet-le-Duc, op. cit. vol. 8, p. 475.
32- Viollet-le-Duc, "De l'art étranger et de l'art national," p. 505-06.
33- See Francois Derand L'Architecture des voutes; ou l'art des traits et coupe des voutes, first published in 1643 but issued again in 1743 and 1755 (Middleton and Watkin, op. cit., p. 18). Also Frezier's Mémoire de Trévoux.
37- Summerson, John, "Viollet-le-Duc and the rational point of view" in Heavenly Mansions, p. 149.
39- If Viollet-le-Duc does have functionalist ideas in the more conventional sense, they were not a direct reflection of his rationalism which was related, above all, to structure and its constitutive logic. Viollet's functionalism was born out of his notion of unity and his analogy with organisms and will be dealt with more
properly in the next chapters.


41- Quoted by Hautecoeur, op. cit., v. 6, p. 240.

42- An expression used by Esperandieu in the Revue générale..., 1872, p. 209.


44- Ibid, p.83.

45- Ibid, p. 100.

46- Peter Collins, Changing Ideals in Modern Architecture, p. 208.

47- Rykwert, p. 10.

48- For instance, in Chapter Two of Book II Guadet mentions in passing that Medieval civilization is further removed from modern French culture than is Antiquity (vol. I, p. 86), something he never attempts to demonstrate. In the following chapter, he writes that Antique architecture never committed any "artistic lies" and that in this lies its aesthetic superiority (vol. I, p. 112). In discussing Notre-Dame de Paris, Guadet describes the building as "astonishing" and "disturbing", qualities which, in Guadet's own terms, have little positive connotations. For him, only the facade of Notre-Dame is beautiful and worthy of consideration, which implies that he sees a lack of unity in the monument as a whole (vol. I, p. 116). These ramdom examples illustrate well Guadet's bias which is insinuated throughout the four volumes.


50- Guadet, p. 130.

51- J. F. Blondel, L'Architecture française, Book 1, p. 26

52- Ibid, p. 26. Guadet has himself placed emphasis on
this passage of Blondel in the preface to his reprint of L'Architecture française.


55- It is worth noting that in drawing no. 7 the loggias at the sixth-floor bays were drawn as segmental arches. Perhaps structural imperatives impelled Perret and Latron et Vincent to use regular beams for members "K" & "L" (see drawing no. 7). More likely, however, the decision was made on formal grounds, since all shorter spans at the interior used segmental arched beams. Perret probably believed an arch form might have lent overly direct stylistic connotations to the elevation. It certainly would have reduced to a large extent the straight-forwardness of the facade as built. It also would have weakened the opposition between the frame and the curved infill above.

56- Collins, Concrete, p. 171.

57- Auguste Perret, quoted by Charvet, Louis, in "Visites d'ateliers", p. 54.


60- Auguste Perret in Techniques et architecture, vol. 6, no. 1 & 2, 1946, p. 3.

61- For good documentation on the building, see E.d.A., 2nd series, vol. 3 and vol. 6, 1874 and 1877.


63- It should be remembered that Perret himself had participated in the design of one of the buildings at the exhibition, the Tour du Temple. As we have already seen (chapter three, note 6), this exhibition held, in Perret's mind, central importance in nineteenth-century architecture.
64- These minor structures were not sheathed in glass, yet their iron or wood skeleton was always proudly exposed to view on the exterior. One of the most striking example was the pavilion of Public Works designed by the engineer DeDartein (fig. 16). Its iron skeleton formed the most important part of the exterior articulation. The infill panels were of colored brick, which formed decorative patterns. The building which was developed on a central plan seems to have come directly out of the Entretiens. Other buildings, such as the pavilion for the Ministry of Finance, the Telephone pavilion, the pavilion of Argentina, and that of Chile used similar construction techniques. It should be noted that the exhibition of 1878 provided at least one significant precedent to these smaller structures. The gare du Champs-de-Mars designed by Jules Lisch used an iron-skeleton architecture. Its use of colored brick forming decorative patterns and the structural members are strongly reminiscent of Saulnier's factory at Noisiel.


66- Particularly in the 2nd, 3rd and 4th series of the E. A. spanning from 1872 to 1892. Of notable importance was the work of Anatole de Baudot who was probably the most devoted pupil of Viollet-le-Duc. In 1875, de Baudot had designed a small wooden structure for an artist's studio in Passy (see E.d.A., 2nd series, vol. 4, 1875, p. 30). The small building was elevated on pilotis and used the Medieval half-timbered technique (fig. ). The infill was built of hollow brick plastered on the exterior and interior. This type of construction would become very popular for country villas built in resort areas around Paris (see Louis Hautecoeur, Histoire de l'architecture classique en France, p. 234.)

67- Most of the high-school buildings constructed in the second half of the nineteenth century were designed by Rationalists of Viollet-le-Duc's entourage, such as de Baudot (who even wrote a small treatise on the subject), Auburtin, Gout, LeCoeur, L'Aisne, Train, and Vaudremer, who designed no less than five major lycees and undoubtably set strong precedents for others. Of noted importance (apart from the work of Vaudremer) were de Baudot's lycee Victor Hugo and lycee Lakanal, LeCoeur's
petit lycee Louis Le Grand, and Train's collège Chaptal. Another example was l'école Alsacienne designed by Auburtin which had around its interior courts an iron-skeleton structure with a colored brick infill. This last building has perhaps particular significance since Perret was a pupil of that school right after its construction in 1881.


69- For a precise account of the early development of concrete, see Peter Collins' Concrete.

70- See Collins for a detailed account of Hennebique's early career; Concrete, pp. 64.

71- Hennebique lost no opportunity to publicize the new material and buildings built under his patent. He held celebrations on the occasion of every thousandth contract; congresses on reinforced concrete were organized by his firm every year in Paris; and a monthly magazine, Le béton armé, was launched (first appearing in 1898), which illustrated the work of Hennebique's concessionaires. See Collins, p. 66-67.


73- E. Arnaud, "Réponse de M. Arnaud," p. 3-4.

74- Forthuny, p. 2.


77- Ibid, p. 205.

78- Ibid, p. 205.


83- Apart from Lavirotte’s work, the following buildings were sheathed with ceramic tiles: Autant's house on rue d'Abbeville (1901); Ruprich-Robert's building on rue de Segur (c. 1902); Klein's building on rue Claude-Chahu (1902); and Guadet's house for the Doctor Carnot on Avenue Élysée-Reclus (1908). Even Arnaud's office building on the rue Danton had some parts sheathed in stoneware tiles.


87- See Champigneulle, Perret, p. 131, n. 4.


90- Collins, op. cit. p. 181.

91- Before Perret's building on rue Franklin, only few residential buildings had displayed such an industrial aesthetic. Even Simonet's structure on rue de Boursault was well ornamented which mitigated its use of industrial components. Apart from Paraire and Englebert's building on rue de l'Arsenal (1879), and Périssé's house on rue de Montmartre (1898-99), iron construction was confined to lycées, utilitarian buildings made of concrete buildings. The only residential buildings made of concrete were covered with ceramic tiles but in such a way as to remove any industrial connotations.

92- Viollet-le-Duc, vol. 8, p. 476.
PART 3

ORGANICISM
The discussion on the rationalistic dimension of the apartment block at 25b rue Franklin centered on the exterior articulation of the building fabric. We saw that Perret's rationalism was meant to insure the integrity of his building. It gave his architecture a form of "grammatical" logic. "To consider art from the sole point of view of reason," Daly once wrote, "is to envisage only the science in art, that is to seek the science of art." (1) It is precisely in this sense that the rationalism of the 25b must be seen: it is a purely disciplinary aspect, imposing an abstract order. The industrial iconography of the 25b buttresses such rationalism. Industry, for Perret, was equated with science; its formal vocabulary, essentially embodied in the framed structure, was an abstract and neutral architectural form. Such "industrialism" guaranteed that Perret's building was unadulterated by convention, that it had perfect integrity.

In considering what may be called Perret's
"organicism," we now turn our attention to the question of authenticity. The distinction between integrity and authenticity is important: one secures the inner coherence of the building; the other brings substance to the architecture and links it to society, nature, and history. It is evident to a careful observer that Perret's architecture at rue Franklin was founded on such comprehensive theory. Many elements of the building indicate that, in Perret's mind, the creation of a "rational" architecture was entwined with more fundamental issues. Like many architects of the late nineteenth century, Perret thought that nature could provide a model for architecture. If in most Art-Nouveau buildings the organic analogy found its paradigmatic application in ornament and decoration, at the 25b it pervades the structure, the plan, and the ornamental outer shell of the building. The organic theory substantiates at all levels Perret's architecture.

The main theoretical source of Perret's organicism was the writing of Viollet-le-Duc. If other texts -- such as Owen Jones' *Grammar of Ornament* or some of Daly's theoretical writings published in the *Revue générale de l'architecture et des travaux publics* -- surely contributed to Perret's thinking, only Viollet-
le-Duc provided a close link between rationalism and organicism. It would be beyond the goals set by this study to attempt to untangle the complex sources and ramifications of the organic theory of architecture in nineteenth-century architectural thinking. Unlike the French rational tradition which, for one, has been amply studied but which also forms a clearly identifiable line of thought in French architecture, the organic theory is a more specifically nineteenth century phenomenon with sources outside the architectural discipline. Yet the neo-classicists and Laugier in particular had already laid some ground for an organic theory. In the Essai, Laugier had always equated reason and nature. The rustic hut provided the first term of an organic analogy: the four columns were in fact living trees (fig. 41) suggesting that nature itself had guided man's hand in the invention of the first and most essential architectural form. More fundamentally, Laugier's conception that all architectures should be rationally developed from one distinct type would later form the first creed of Viollet-le-Duc's organic theory. In this sense rationalism and "organicism" were founded on a similar assumption, namely, in Viollet's words, that
architecture should "start with a very simple principle which it modifies, perfects, and complicates without ever destroying its essence." (2) This law which underlies the whole of Viollet's theory of architecture insured "unity" in buildings, the most important attribute of the "organic." Rationalism and the organic theory were in fact inseparable, the former being only one facet of the later. In the following pages, only those aspects relevant to understanding 25b rue Franklin will be considered.

Perret's organicism can be divided for the purpose of analysis into three distinct themes: most basic and nearest to rationalistic considerations is the notion of "functionalism." The close correspondence of structure to plan partakes directly in the organic analogy. It assumes at the most rudimentary level the link between society, whose needs the building is asked to fulfill, and the building configuration. In this sense, it is a first guarantee of authenticity. More central to Perret's organic theory is the organic analogy proper, whereby the building manifests a direct, formal analogy with nature. Finally, Perret's architecture attempted at a "philosophical interpretation of the past," relating and connecting the
building to architectural tradition in its largest sense.

Perret's organicism was thus concerned with establishing links -- whether with society, with nature, or with architectural history itself. Unlike rationalism, which was strictly speaking an autonomous discipline, the organic theory attempted to root architecture, to create an architecture vivante.
Chapter 5

FUNCTIONALISM

Under the heading unité in the Dictionnaire, Viollet-le-Duc wrote:

Unity exists only insofar as there is an intimate relationship between architecture and its object [purpose].... Our monuments of the middle ages pre-eminently have "unity": first, because they fulfill exactly, scrupulously, and servilely the given programmatic requirements, and thus are the best expression of the civilization within which they were built; second, because their form is but the result of the means [structure] used; third, because all their parts are conceived in order to fulfill the needs for which they were built, insuring stability and long-lasting quality; fourth, because their "decoration" results from a logical order and is always subservient to structure; finally, because the structure itself has integrity, it is never dissimulated and uses only the necessary forces (3).

This emphatic appeal for an architecture which rationally "fulfills its programmatic requirements" presents clearly the nature of Viollet-le-Duc's functionalism. Unlike that of Guadet, the functionalism Viollet-le-Duc has in mind is not reduced to the relationship of program to plan (distribution); instead it emphasizes more the relationship between program,
plan, and structure. In fact, for Viollet, a plan should not be a "sort of embroidery pleasing to the eyes," (4) but rather a "direct result of the means used," that is, the structure: "On what should be based the law of unity if not on structure, in other words the means used to build." (5) "Unity," for Viollet, was principally the quality which insured a solid bond between plan and structure. For him, the concept could not be defined as a system of rules, and, in an implicit criticism of Durand, Viollet wrote: "Unity is not... a formula." (6) For him, unity had nothing in common with the compositional rules of the École des Beaux-Arts, such as those demanding symmetry or the balancing of masses. It had even less to do with the orders and specific proportions. It was a more encompassing notion drawn from the observation of nature:

We can never repeat it often enough, it is only in following the order which nature herself follows in its creations that we may, in the arts, conceive and produce according to the law of unity, which is the sine qua non condition for any creation... It is one of the glories of modern science to have correlated, through observation, the organisme universel to the law of unity. (7)

At its most basic level, unity required, for Viollet, that a creation follow an underlying order or principle. In architecture this meant primarily the laws
of statics, or more specifically, the particular geometry of a given structural system. Only when a clear relationship between structure and plan was already established was it possible to conceive of unity in buildings. It was thus the law that guaranteed the "organic" relationship between the very heart of the building fabric -- the structure -- and the spaces which it created. This, in turn, ensured that buildings were "the best expression of the civilization within which they were built."

The notion of unity, for Viollet, was not confined to functionalism but it did necessarily imply "rationalism" the way we have defined it in the previous chapters: "Only reason may establish correct links among all parts, put everything in place, and give to a work not only cohesion, but the appearance of cohesion." (8) Unity thus meant the presentation of a "visible argument." It entailed more, however, in that this "argument" had to reflect not only the structural logic of the building but its spatial and functional distribution. It bound structure solidly to society (purpose), the first prerequisite of an authentic architecture.
The correspondence between structure and use in Perret's apartment block on rue Franklin is immediately manifest. As seen earlier, the building is divided into a ground floor, intended for office use, seven stories of apartments of more or less standard size and shape; and two top stories, which are recessed and serve more marginal purposes. The layout of the columns reflects very closely the various functions. In fact to each functional modification there is a corresponding alteration in the structure: the first-floor columns are shifted from the position of the ground-floor ones, and again from the seventh floor to the eighth (fig. 55). This structural modulation is distinctly expressed on the exterior of the building. The glazed ground floor presents a clear tripartite division, with four supporting members (fig. 17) while the seven stories above -- which form the main body of the building -- have a contrasting and more delicate articulation. This follows Viollet-le-Duc's recommendation for the design of urban houses:

What is required in most apartment buildings is a ground floor devoid, as much as possible, of piers and walls; that is what businesses demand. Shops today must have a completely open floor area, separated from the street only by a glazed partition which lets light come in.... Therefore, no divisions at the ground floor;
many divisions at the upper floors. (9)

The structure at rue Franklin follows these prescriptions closely. The number of columns almost doubles from the ground floor to the apartment floors above (compare drawing no. 17 with no. 18). At the level of the apartments the placement of columns corresponds exactly to the room configuration (see drawing no. 12). At the ground floor the large piers are set back in relation to the columns above, and creates a large uninterrupted space of approximately ten meters by six meters (drawing no. 11). The larger but fewer columns at the ground floor not only permitted such a large open space, they also allowed a large glazed area which flooded Perret's office with light and also emphasized the connection with the sidewalk of this more public area of the building. Concomitantly the apartments above are recessed in relation to the street alignment, thereby indicating their more private nature.

We have seen how the juxtaposition of commerce with apartments was perceived both as a social and an architectural problem. Business activity on the ground floor of a residential building was often thought to destroy the aura of discreet elegance and privacy which should characterize residential buildings. The implicit
social criticism was an explicit architectural problem: solid stone facades often hung over a glazed ground floor. Perret's decision to use the ground floor of his building for his own office allowed him to address the issue. Perret's building is a radical solution to the problem: the building simply recedes over the large expanse of glass, while the two side bays line up with the major structural members on either side. The central bay at the ground floor appears as a separate pavilion set between the two side towers. (10)

Another aspect of Perret's building provides a rationalization of the type of the maison à loyer as described in chapter one: the total standardization of the first five floors of the building on rue Franklin was probably one of its most striking features in the early twentieth century. (11) This was both a reflection of Perret's structural integrity (and emphasized as well the building's link with industrial architecture) and of his functionalism. There was no need to emphasize one floor more than any other inasmuch as, with the advent of elevators, all floors were of equally easy access. At rue Franklin the upper apartments were perhaps more desirable because of the extended view of
Paris. The subtle widening of the upper windows, the loggia at the sixth floor, and the seventh-floor terrace brought distinction to these apartments and emphasized their choice location. In contrast to the typical Parisian apartment block built at the time (25 rue Franklin immediately to the left of Perret's building being a perfect example, fig. 57) the straightforward stacking up of stories of the 25b was an audacious gesture.

These "improvements" to the nineteenth century maison a loyer should not be understood primarily as the results of typological considerations per se. As we have seen, Perret was chiefly concerned with the "renovation" of the architectural discipline in general rather than of specific categories of buildings. What was determinant for him was the structural system used and its relationship to the functional layout of the edifice. Unlike Guadet, Perret could never have considered specific architectural elements (specific types of rooms or commodities) independently of a given structural system or, even, of a given building. Even Perret's suggestion that Paris be "surrounded by a belt of twenty-story houses," (12) was born out of his architectural theory and not out of urbanistic or
typological concerns. As we will see, these towers envisaged by Perret, would have been the greatest fulfillment of the organic theory; they would have been perfect "organisms," independant from one another. It mattered little for Perret that such structures be used as offices, hotels or apartments. Hence the corrections to the type at ave. de Wagram or at rue Franklin must be understood as means to achieve organic "unity" rather than as the elaboration of a perfect urban house type. Perret's later work supports this theory: the creation, after 1930, of a systematic architectural language was done independently of any specific functional concern. Perret's idea of L'Abri souverain under which any form of activity could be conducted, is a perfect illustration of such principle.

Perret's functionalism at rue Franklin goes beyond the intimate liaison of the building's structure and its functional organization. The typical apartment plan was carefully adjusted to the user's needs. This part of the building was manifestly the most demanding programmatic requirement, all other spaces being almost peripheral. This emphasis forms one of the outstanding features of the 25b.
To a large extent the apartment plan of the 25b was derived from Viollet-le-Duc's project for an urban residence published in the second volume of the Entretiens (figs. 10 & 37). A comparative examination provides conclusive evidence that the project was a direct source for Perret at rue Franklin. (13) Perret, incidentally, was not the only architect to have found inspiration in this work of Viollet; it had already been used as a precedent by Horeau, de Baudot, Horta, and Guimard. (14) Of all instances, however, the apartment plan at rue Franklin has the closest similarity to Viollet's plan (excepting Horeau's house the "Poplars"), which suggests that Perret was working independently of these architects. Perret's plan has not only a similar configuration but also uses a similar room shape and the same functional distribution as Viollet's project.

Viollet described his plan as follows:

The large central salon "E" open directly to a winter garden and obliquely to two salons "F" and "G" that also open to the green house. The salon "G", for the use of women, is terminated by a small salon [boudoir]. The salon "F" gives access to a small gallery with two doors opening on the garden and one leading to a smoking room "f"... In "h" is a small powder room with a closet for the ladies; in "i", a similar room for men. (15)

This plan arrangement was unprecedented in
France, and was especially unusual among urban hôtels. Yet it offered a very good response to the customary use of such houses. (16) As we have seen, the segregation between the male and female wings corresponds closely to the contemporary usage of separating company into female and male groups after meals (fig. 60).

At rue Franklin the arrangement is similar. On the earliest known floor plan, drawing no. 6 dated April 1903, the two end rooms at the side bays are labeled, respectively *fumoir* and *boudoir*. The main bedrooms adjoining salon were real reception rooms, intended mostly for the female guests. Likewise, the dining room, opened to both genders during meals, was also the conventional lounging area for men after dinner. To some extent, then, Perret managed to integrate in his plan Viollet's gender discrimination. The main salon is the central rendez-vous room, the neutral zone where men and women meet. Beyond the strict response to the mores, this plan organization may, more basically, allude to the intrinsic differences between the male and female "principles" and add a dimension to the organic analogy. (17) As in Viollet's project for an urban residence, this distinction translates into the form of the building itself. In Perret's case the "masculine" bay on
the left is slightly larger and projects further than
the one on the right. The difference is small and,
as seen previously, finds at least partial explanation
in the building code restrictions. Nonetheless Perret's
decision to assign the smaller bay to the female wing
suggests that Perret thought it important to emphasize
the distinction between the bays in a naive expression
of his organicism: buildings, like natural organisms,
should have a female and a male element. Moreover, it
was an extension of Perret's functionalism; the
distinction between each wing of the apartment expressed
the period's belief that each sex had an ascribed and
distinct role to fulfill.

Probably one of the most important
characteristics of Viollet-le-Duc's organic
functionalism was the notion that a building did not
result from the simple aggregation of different parts in
a functional sequence within a predetermined form, but
that a building must rather "grow" out of function,
taking form from within, outward. This approach to design
was made explicit in Daly's assertion that "an
organized being...develops itself from within outwards
and not by external aggregation." (18) It formed, in
fact, one of the most recurrent themes in organic theories of art. (19) This notion underlies most of Viollet-le-Duc's writings, but is particularly manifest in his project for an urban residence, about which he wrote:

In all buildings there is a principal organ, the dominating part, then secondary organs, the members, and finally all that is needed to service all these parts through circulation. (20)

This description depicts very well the plan configuration of Viollet's project. From the main salon grow and radiate all secondary organs in hierarchical order, while the service area is left in the residual space. Likewise, it would be difficult to find a better description of the typical apartment at rue Franklin. The main salon is the largest space, centrally "dominating" the apartment. On either side, the main bedroom and the dining room are slightly smaller in size. The end rooms are the smallest spaces and form two symmetrical arms on each side of the main core. Finally, all the residual spaces between the party walls and the main body of rooms are used for service and circulation.

This type of hierarchical planning was a corollary of Viollet-le-Duc's notion of unity. By designing from the heart of the program -- from the
principal organ and moving to subsidiary spaces -- the architect assured coherence and a good relation of space to function. The symmetry of the plan at the 25b was not the result of Beaux-Arts "compositional" rules. The side wings grow out, so to speak, from the central core. No two rooms are identical, but all are carefully adjusted to their specific location. (21) At the rue Franklin block the main room is exactly at the center of the plan and controls the succession of spaces on each of its sides. The party walls are unrelated to the arrangement of the five main rooms. This reflects perfectly the inward-outward development of the scheme: it is as if Perret never even considered the particular shape of the lot but designed from the center, providing as many rooms as the site would allow. The notion of an organic "unity" in architecture as we have defined it ideally precludes the subjection to constraining boundaries: an organic building is defined by its own inward development and should stand as an independent object.

Viollet's project for an urban residence is a good illustration of this precept. The main **corps de logis** stands free on all sides and ramifies itself without restraints in all directions. Its configuration,
especially in the context of Paris, evokes a country villa more than an urban residence. (22) We have seen in chapter one how the *maison à loyer* was denigrated in favor of the detached single-family house surrounded by greenery. Daly in particular emphasized the advantage of the suburban villa which allowed liberty of expression impossible with the banal maison à loyer, which stacked families one on top of the other. (23) We have seen that Viollet-le-Duc shared the same thoughts. This social concern was reinforced by Viollet-le-Duc's theory of architecture. A free-standing house was not only morally good, it also was an architectural imperative. An "organism" where "tout se tient, tout s'enchaîne" (24) had to stand alone in its own completeness.

Perret at rue Franklin, while respecting the city alignment, tackled these issues in several ways. Each floor of the 25b is like a small villa. The U-shaped configuration -- the paradigmatic form of the villa -- permits all rooms to overlook the magnificent landscape of Paris. The Trocadero garden lying directly in front of the building, supports the illusion. From within the apartments, one has the impression of complete freedom from the normal confines of a city
street. A look at the typical floor plan shows how the surrounding party walls were ignored: the perfect regularity and symmetry of the main body of rooms stand in complete contrast to the site configuration. The semi-octagonal recess at the front expresses externally the freedom of the building from its surrounding. The strong verticality of the elevation increases the building's independent stature. The building does not relate to its neighbors by horizontal articulation. It stands alone as a small tower, cleared, as it were, of the shackles of the street alignment. The building thus assumes an organic "unity."

This attempt by Perret to draw unity from within the building itself, where programmatic needs "develop" a form which grows inward-outward, represented a first attempt to root his architecture in the structure of society. Typological conventions were ignored. The city of towers proposed by Perret in 1905 (and implicitly suggested in the 25b's configuration) was thus a corollary of the organic theory. It did not reflect a desire for revolutionary social reform but showed Perret's wish for a functional/organic architecture.
Chapter 6

THE ORGANIC ANALOGY

The concept of "unity" used by Viollet-le-Duc in the Dictionnaire and basic to the architecture of 25b rue Franklin derived from the observation of natural organisms and their perfect adaptation of form to function. This functionalism remained, however, at an abstract level. There was little sense of a direct formal transposition from nature to architecture. The organic analogy considered in this chapter provides Perret with a formal apparatus with which to elaborate his work. It thus intimately ties the building form to nature itself. This formal "naturalism" can be discussed at different levels, some more explicit than others. The organic metaphor introduces some of the more subtle ramifications of Perret's architecture.
A- Style and Geometry

In our previous discussion on style we have seen how Viollet-le-Duc defined architecture as the embodiment of a given principle which originates from "an intellectual fermentation of very diverse nature." From this "fermentation," asserts Viollet, "geometry must take command" (25): "Inspiration must be subjected to the rule of reason." Daly had come to similar conclusions when he attempted to define his notion of an organic architecture:

All great styles [organic styles] must offer this double character: a specific construction system and a distinguishing aesthetic; aesthetic and construction system resulting in a specific geometry which forms the basis of style. (26)

For Daly geometry in architecture was directly related to the outward appearance of buildings. Thus, for instance, the trabeated system of Greek architecture was characterized by Daly as a rectilinear geometry. Each style had its own geometry. For Viollet-le-Duc, geometry was a more obscure concept. In his writing, geometry and reason are often equated. Indeed, he considered geometry to constitute the underlying order of the universe, the "primal" reason of nature. An ambiguous shift occurs, however, when geometry is
transformed by Viollet from a rational and neutral matrix which controls inspiration (or "sentiment" for Daly) to a mystical concept imposing its dictatorship on all creation: geometry is no longer merely a tool, but "a natural creative force." (27) Moreover Viollet reduces such transcendental geometry to one specific figure, the equilateral triangle (fig. 61):

[Nature] had to find one element, one unique element... that possesses absolute properties of resistance...: the equilateral triangle.... The first, basic creative element of the globe on which we live follows the rigorous application of this principle, the only one possible. (28)

A survey of Viollet's projects published in the Entretiens demonstrates clearly how a polygonal geometry of triangles was in fact used directly in his architectural work. The project for an urban residence discussed above has along its central axis a succession of three polygonal rooms based on octagons. (29) There was no structural imperative dictating this arrangement. It followed the configuration of the two side wings, jutting out at 45-degree angles on each side. Above all it inbued the building with a crystalline geometry analogous to the earth's own constitution. (30) Only the core spaces of the building have this prismatic quality: they comprise, as it were, the basic constitutive
element of the building from which grow more elaborate spaces that "modify and perfect" the elemental principle. (31)

The 25b assumes a similar geometrical configuration. The galerie-antichambre and the three main rooms are all prismatic in form. The polygonal geometry is less systematically applied than in Viollet's project for an urban hotel. The dining room and the bedroom are somewhat irregularly shaped, hardly reducible to one geometric figure. Drawing 20 & 24 (seventh floor plan) and drawing 23 & 21 (typical floor plan), however, illustrate Perret's intention to reduce his plan to a basic geometry of triangles: diagonals are drawn across the major rooms that separate the spaces into four isosceles triangles. (32) These lines probably formed a reflection of the ceiling, the diagonals representing mouldings between each of which a leaf motif is inserted. They illustrate Perret's original intentions to endow his plan with a visual expression of what was, according to Viollet, the primal geometric order of the universe. Not unlike Viollet's project for an urban hôtel, the semi-hexagonal central bay and the semi-octagonal recess at the front carry
this prismatic geometry to the exterior elevation. The articulation of the facade, with its sharp edges veneered with light beige tiles, conveys a crystalline image consistent with the interior configuration. When compared with Guimard's Hôtel Nozal of 1904, Perret's building would hardly seem to deserve the epithet organic. Yet its articulation derives from nature at a more fundamental level. The issue, for Perret as for Viollet-le-Duc, was not to mimic the modulated shapes of nature but to actually build according to the principles of nature's own basic geometry.
B- Une Architecture Vivante

The polygonal geometry of crystals provided an elementary correspondence with nature. For Viollet, this "logical order" characterizes all "phases of inorganic and organic creations." Creations -- whether human or natural -- acquired "style" through the application of this a priori law. (33) This basic geometrical constituent was not, however, specific to organic matter. Architecture, according to Viollet, had to establish a link to organic life itself. At the end of the article on style, Viollet summarized his views:

We use the term "organic" because it is difficult to describe better this medieval architecture which develops and progresses like a natural organism: it starts with a very simple principle which it modifies, perfects, and complicates without ever destroying its essence. Even the law of equilibrium applied to this architecture for the first time in history injects a sort of life into these monuments; opposing within their structure inverted forces, stresses to stresses, counterweights to cantilevers; breaking down weights and transferring them away from the points where they would tend vertically; giving to each profile a destination which relates to its position in the monument, to each stone a function such that none can be removed without jeopardizing the whole. Isn't this life, inasmuch as human beings are capable of communicating life to the works of their hands? (31)
In this text, Viollet clearly expresses what he considered to be the two fundamental aspects of the organic analogy: "It starts with a very simple principle which it modifies, perfects and complicates," which meant to him an underlying order as we have just described it. Then, Viollet asserts that "the law of equilibrium injects a sort of life" in architecture. He believed that this golden rule assured organic vitality to architecture. The "law of equilibrium" meant for Viollet the basic principle governing the whole of Gothic architecture. As Derand, Frezier and Lassus before him, Viollet believed that Gothic construction, essentially provided solutions to a problem of forces in equilibrium; the "principle organs" of Gothic cathedrals such as the ribs of the vault and the flying butresses were used to transfer loads from one point to another.

Describing Gothic buildings, Viollet wrote: "Just as the human body stands on the ground on two simple point supports and complicates itself progressively as it must contain more organs, the Gothic building sets down its point supports with the simplest means." (34) This description, which focused primarily on cathedrals, applied also to Medieval half-timber
houses whose structure stands on piers and becomes more complicated above (fig. 62). At the beginning of the seventeenth Entretien, Viollet wrote: "If the 'pyramidal principle' may be good for certain monuments, it is wrong when used for houses." (35) Viollet then criticizes the Parisian urban house type, which recessed above rather than below; for functional reasons Viollet recommends for houses configuration "A" rather than "B" (see fig. 63). The inverted pyramid arrangement was obviously an application of Viollet's "law of equilibrium" where "forces are transfered away from the point where they would tend vertically." Viollet's suggestion that urban houses should have no divisions on the ground floor and many divisions above, over and above its purely functional aspect, was another application of his vitalistic "law of equilibrium."

This vital quality was, for Viollet, one of the chief characteristics of Gothic construction, especially as contrasted with the architecture of antiquity:

Gothic construction is not as antique construction of one piece, absolute in its means; it is flexible, free and searching like the modern spirit. (36) The elastic, balanced, "living" resistances of French construction supplanted the passive resistances of Roman construction. (37)

Here Viollet made the flexibility of the Gothic
structural system connote life and modernity. It is as though the medieval craftsman had injected life into the pure but inert crystals of Greek architecture, allowing their buildings to adapt to the constant movement induced by the modern spirit.

The organization of Perret's structure is analogous to Viollet-le-Duc's description of Gothic buildings. Such a building, with its ground floor structural supports that ramify above, is, like the cathedral, comparable to the human body. In the case of Perret's building, the image that comes more strongly to mind is the tree. The leaf motif on the infill and the bark-like texture of the tiles covering the structural members are strongly evocative of a tree (fig. 16). The two entrance porches with their foliage decoration on the interior look like small shrubs (fig. 64). The large piers of the bottom structure that branch off into more slender but more numerous members at the level of the apartments above support the analogy remarkably well. We have no document that directly confirms that Perret thought of this metaphor when designing the 25b rue Franklin, though his dictum, "architecture must be decorative in the manner of a tree," is quite eloquent (38).
A survey of Perret's career shows that this image was applied repeatedly. (39) The analogy of the tree, if never used with much insistence by Viollet, was an image of long lineage in French architectural theories, especially as a metaphor in discussions of Gothic architecture. (40) For Perret at rue Franklin it offered a natural model for the organization of his structure which followed the guidelines set by Viollet-le-Duc.

The structural configuration of the 25b is similar to Viollet's project for an urban apartment house (fig. 33). Both Perret's and Viollet's project can, in turn, be correlated to half-timber Medieval houses. (41) The cantilevers at the two entrance doors of the 25b and the slanted members on the sides of the two porches conform to Viollet's description of the organic architecture of the Middle Ages. The side walls at the exterior of the porches are vertically inclined in two directions (fig. 18). Their inclination is directed outward rather than inward, evoking Viollet's "inverted pyramid," which itself relates to the configuration of the tree. The displacement of the vertical structural members of the ground floor in relation to that of the apartments above is directly
acknowledged at the two exterior entrance ways. Having the cantilevers partially supported by diagonal bracketing follows Viollet's suggestion that a building may be given vitality by breaking down weights -- transferring them away from the points where they would tend vertically. It is significant that the cantilevers are over the entrances. They emphasize the two major access points to the building. (42) The discreet cantilevers and their diagonal supports provide a dynamism which makes the user intimately aware of the equilibrium of forces in the structure. Perret thus applied, in a very subtle fashion, Viollet-le-Duc's notion of "vital equilibrium."

The inverted triangular geometry was transposed to the elevation of the side bays, where the windows become progressively wider and higher at each successive floor (fig. A). (42) In a fashion similar to Perret's building on Avenue de Wagram, the sixth-floor loggias disengage the structural frame from the wall: the facade, like a tree, is lighter at the top than at the bottom.

The tree metaphor was, for Perret, something fundamental, that went beyond the external geometry of
the elevation. The specific qualities of reinforced concrete gave the analogy its most potent significance. "The use of wooden form-works, Perret once wrote, gives reinforced concrete its appearance of a great timber frame." (44) Moreover, Perret thought that reinforced concrete's constitutive components made it analogous to wood:

Simple concrete may be used only for columns while reinforced concrete can also be used as a beam which spans the space between columns. In a word, steel makes concrete a fibrous material [my underlining]. (45)

For Perret, reinforced concrete was a dual-natured material, as massive as stone and as fibrous as wood. (46) The material thus had unsurpassed flexibility (like wood) and eternal durability (like stone). The monolithic quality of a reinforced concrete structure also implied a parallel with the tree form.

The homogeneity of the concrete frame was its most salient feature. It was unlike any previously known material, including steel; in steel construction the different parts were bolted together and thus could be taken apart and reassembled at will. Reinforced concrete, once set, was perfectly monolithic, like stone before it is quarried. "Concrete," wrote Perret in 1927,
"is stone that is newly created and that may last for eternity;" (47) "It is a new born material while natural cut stone is a dying one." (48)

The notion of a direct formal correspondence between cement and natural materials, whether stone or wood, was not unprecedented in France. The rocailleurs had, since the mid-nineteenth century, used reinforced cement concrete to imitate wood or stone. At the park of the Buttes-Chaumont large hills had been erected using artificial stone. Closer to rue Franklin, in the Trocadero gardens designed in 1900, handrails were built of reinforced cement imitating branches. Such rocaille ("rocky material" -- so called though it often imitated wood) had a long tradition in landscape architecture in the nineteenth century. It should be remembered that these projects represented the first public use of exposed reinforced concrete in central Paris, and certainly colored the first appreciation of the material.

The direct correlation between wood and concrete evident in those projects was remarked by Perret himself at the pavilion of the "Librairie Centrale des Beaux-Arts," which he designed in 1925 for the International Exhibition of Decorative Arts held in
Paris (fig. 45). The small pavilion had four posts made of real tree trunks, on which rested a reinforced concrete roof. As we have seen, this peculiar arrangement recalled some primitive constructive model (with references to Laugier's hut and Philibert's rustic order) and was intended by Perret as a manifesto expounding his theories on concrete and architecture.

The "Librairie Centrale" pavilion affirmed Perret's disdain for Le Corbusier's "false concrete," whereby brick walls are coated with cement to imitate concrete. The simple frame of Perret's small pavilion proclaimed what he considered to be the natural structural order of concrete.

The tree, for Perret, not only shared similarities with reinforced concrete but also provided a model for the structural layout of his building. It was naturally related to the tectonics of his construction: the structural members were like tree trunks and branches, and the infill like foliage.

This recalls Viollet's assertion that "the ornamentation of the best period of Gothic architecture is like a natural efflorescence of the structure." (49) To Perret, this meant a distinction between the foliage and the
stem, between the structure and the infill. It is in this sense that Perret's aphoristic statement that "architecture should be decorative in the manner of a tree" has to be understood. The infill was the decorative element of the building; it gave character, color, and texture to 25b rue Franklin. The structural frame, for its part, was the supporting body -- homogeneous and ramified. It was the permanent essence of the edifice. The monolithic and fibrous reinforced concrete frame, cast in wooden form-works was like a gigantic tree whose members accommodated every programmatic need. The infill gave protection and induced a lively and controlled disorder as leaves on trees. The beige tiles covering the concrete structure take on the appearance and role of protective bark on trees.

The infill at 25b formed, properly speaking, the ornamental feature of the building. This leaf-like arrangement resembled closely that shown in plate XCI (fig. 67) of Owen Jones Grammar of Ornament, a book that had been translated into French and which was widely read in France. Jones had laid special emphasis on this plate representing a chesnut-leaf motif. It was the first of a series captioned simply "leaves and flowers
from nature." Unlike other plates in the book, which depicted ornaments of various historical styles, these were intended as guidelines for the future progress of ornamental art. This "future progress" may be "best secured," wrote Jones, "by engrafting on the experience of the past the knowledge we may obtain by a return to nature for fresh inspiration." (50)

Unlike Jones, however, Perret did not think it mattered what type of leaf was used. (51) The tiles at rue Franklin are shaped in the form of rhododendron leaves and flowers, which are of a simpler contour than are chesnut-leaves -- and probably more easily manufactured in stoneware. If the tiles used by Perret at rue Franklin do not follow Jones' suggestion as to the leaf-type, the leaf arrangement, "radiating from the parent stem," (52) is exactly as Jones specified. Moreover, these "ornaments" inset between the structural members, "fill the interstices between the general lines of the building." (53) The leaf-shaped tiles used by Perret at the 25b are also "an expression of the intention of the whole work" (54): they reveal the analogy of the tree used by Perret.

The ornamental infill displays outwardly the
metaphor in which the structure partakes. It offers the key to the riddle. The beige tiles covering the structural members form a natural outgrowth of the reinforced concrete, a tough protective bark without meaning independent from the structural frame they express. They are of modular size, laid geometrically one beside the other. By contrast, the leaf-shaped tiles on the infill are more creatively applied by the workers. Perret did not follow Jones in his assertion that "by the ornament of a building we can judge more truly of the creative power which the artist has brought to bear upon the work." (55) If ornament did add a human element, it was not the artist's personal touch. In an article on stoneware tiles in L'Architecte (1908), Charles Saunier wrote:

> We insist on the new, original, and artistic manner with which MM. Perret have adorned the walls of their facade [25b]: using small stoneware tiles, cut in the form of leaves and fruit of the chesnut and freely applied on the humid concrete by the cement-maker, following a diagram that was fixed beforehand, but that could be modified as warranted. From such diverse initiatives, the most lively, the most natural decoration was created. (56)

If the decorative patterns of the infill panels show "creative power," it is that of both the worker and the architect: Perret, providing guidelines, channeled
the energies of the tradesmen who injected life into the work. This construction method recalls the building of the medieval cathedrals when the members of the craft guilds were free to improvise within the programs established by the master masons. More fundamentally this construction method was a way for Perret to achieve what Viollet had called the "freedom of the press" in art, (57) that is an art which develops from the people and not from conventional rules. It guaranteed authenticity to his ornament just as the industrial ingredient in his building guaranteed integrity to his architecture.

The notion of a popular art had special currency at the turn of the century in France. Louis Lumet had edited a book titled L'Art pour tous which consisted of a series of articles by, among others, Frantz Jourdain and Roger Marx, two early twentieth century French apostles of a "social" architecture. The goal was to "communiser la beauté": to make beauty available to the common people and to educate the masses. (58) For the Art-Nouveau artists in France, this meant the renewal of the decorative arts, including architectural ornamentation, through a reinterpretation of nature, more specifically the flora of France. It had
strong nationalistic and socialistic ends. Such ambition rarely reached its goal. As Camille Mauclair wrote in 1906:

From this mania "to play at being industrial artists" resulted the bizarre style that we know: composite and baroque, influenced by English and Belgian art, mixed with illogical vagaries, neither practical, nor luxurious, an amalgam of popular naivete with a Pre-Raphaelite aestheticism, the floral symbolism of the Nancy school and the spiral ornaments of William Morris.... This "Art Nouveau," this "Modern style" would require the pen of a humorist to describe it.... These "returns to simplicity" were in fact quite expensive, and this art had nothing "social" about it. (59)

This harsh criticism illustrates well the reaction against Art-Nouveau eccentricities which surfaced after the first decade of the twentieth century. Mauclair was himself a passionate advocate of a social art but this to him meant hygiene, simplicity, and a sense of "industrial drama":

Some artists have shown us the latent beauty of our industrial districts. The art of metals, the materials used for railways, provides greatness, a spectacle of energies; artists know how to understand this without prejudices.... (60)

These two facets of a "social art" -- renewed ornamental art and industrialism -- are both present at rue Franklin. Perret did not seek, though, to democratize art, but to authenticate his architecture:
not "art for all" but rather "art from all." Perret was nearer to Viollet-le-Duc's or Owen Jones' notion of a "living architecture." Belonging to the "aristocratic heights of Passy," (61) he never attempted to educate the masses. His goal was to renew architecture through a direct contact with the current means of production, whether created by industry or produced by tradesmen. At rue Franklin, a synthesis was achieved between the mechanical harshness of industry and the spontaneity and vivacity of the craftsmen's work. The former is more clearly embodied in structure and the latter in the infill: the lively patterns of the leaf-shaped tiles are framed by the strict articulation of the structure. This duality is incarnated in the window and balcony railings. A delicate flower motif punctuates the frame and grid made of industrially produced pipes and wire (figs. 68 & 69). Unlike Jones, Perret did not believe that ornament had in itself the power to renew architecture. It had to be part of the dialectic between structure and infill, industry and human beings, rationalism and idealism. The building, according to Perret, needed to be a unified whole, an organism whose every part was interlocked. The image of the tree was particularly effective since its ornaments (the leaves)
are an efflorescence of the structure (the branches), yet they are distinct entities, each fulfilling a different but complementary role.

From the core nature of concrete itself to its ornamental skin, the 25b rue Franklin partakes in the organic analogy. The hands of the workers themselves were used to imprint vitality on the building. The link with nature and life was secured.
Chapter 7

"A Philosophical Interpretation of the Past"

"...Dans l'histoire du monde où tout s'enchaîne"

Viollet-le-Duc (62)

Functionalism and the organic analogy, for Perret, ensured basic links joining his architecture with nature and with the social structure of his time. A third connection had to be established in order to wholly authenticate his work: Perret needed to establish a relationship with architectural history and tradition in a larger sense. We have seen how the site of 25b rue Franklin was particularly suited for such a confrontation. The building was located on one of the highest points of the capital and overlooked the entire city of Paris and its salient monuments.

The question of the link between architecture and tradition had been one of the major issues in architectural debates in the nineteenth century. The
"battle of styles" in its many facets was, in large part, a manifestation of the struggle to find continuity with history. To secure links with society and nature was, for Perret, the prerequisite to a genuine (organic) connection with history. But in the context of the nineteenth century, this did not suffice. One had to raise the question of architectural tradition in its largest sense.

In nineteenth-century France, the two architectural theorists who most urgently demanded that such a coherent bond should exist between contemporary architecture and its tradition were César Daly and Viollet-le-Duc. For both, such considerations grew out of their organic theories of architecture. In 1863 Cesar Daly wrote:

The organic school demonstrates the most energetic aspiration towards a new ideal; it institutes a philosophical interpretation of the past whose domination it seeks to overcome for the benefit of the present and mostly the future.... It must rise from modern society like the branch from the trunk.... The organic school is the school of the future. (63)

It is difficult to assess what, for Daly, constituted the "organic" school, inasmuch as he was the first to use the term in France; (64) Daly neither expounded on its nature nor adduced its representatives.
Nor did he make explicit the precise meaning of a "philosophical interpretation of the past whose domination it seeks to overcome." Daly made his views clearer, however, in a long article titled "L'Architecture de l'avenir" in the Revue générale (1869). This article, Daly himself claimed, was "the philosophical summary of a whole life devoted to the study of architecture in its relation to history and contemporary society." (65) To a large extent Daly elaborated on Viollet-le-Duc's organic theory promulgated in the Dictionnaire. As we have seen, Daly's definition of style as the geometrical expression of the marriage of a structural system with a given aesthetic is similar to Viollet's. The organic analogy remained to him very abstract and never assumed formal borrowings from nature. Daly never elaborated actual designs as did Viollet in the Entretiens; he always maintained the discussion at a theoretical level. In the article "L'Architecture de l'avenir," Daly essentially defines what constitutes a philosophical interpretation of the past. He wrote:

It is manifest that we are at the end of a transitional era. If one observes carefully, one realizes that the Éclectisme universelle has already assembled the whole aesthetic past of humanity and that it produced a work of
concentration and fusion... One realizes also that the Rationalists have summarized all the power that modern science and industry may bring to the service of the art of building. So we have two syntheses: the aesthetic synthesis of past societies, summarized and transformed in the modern aesthetic sentiment; and the synthesis of the constructive forces of our society.... These will unify within the new architectural style. (66)

For Daly, this union of "constructive forces" and "aesthetic sentiment" would produce a specific geometry on which the architecture of the future would be based. Daly naively prophesized that this future geometry would be founded on the ellipse, "the synthesis of all geometrical elements of past styles, which contains them all." (67) A "philosophical interpretation of the past" was thus, for Daly, the "geometrical synthesis of history," (68) from which would result an "organic" architectural style, solidly bound to the history of architectural forms.

Viollet-le-Duc's Dictionnaire was also an attempt at a global interpretation of architectural history. It differs markedly, however, from Daly's linear reading. Indeed for Viollet-le-Duc, Gothic architecture of the thirteenth century saw the first emergence of modern civilization, that is "a spirit for
research [and] the desire for knowledge." (69)
Consequently, the issue was not to synthesize past styles into new architectural forms but rather to revive the "national genius" and the modern spirit dormant since the Renaissance. For Viollet, this did not mean simply to copy Gothic forms; only through new materials and techniques could such "spirit" be reactivated. The only borrowing from Gothic which Viollet allowed (at least in theory) was the "law of equilibrium" which, as seen above, embodied the essence of the modern spirit. For Viollet, Gothic art had assimilated antiquity, reforming its terms to suit the génie moderne:

What distinguishes the XIIth-century Renaissance [birth of Gothic architecture] from the XVIth-century Renaissance, was that the first was impregnated with the Antique spirit while the second was only seduced by its forms. (70)

A synthesis was thus already implied in Viollet's "philosophical interpretation of the past." For him, the problem was to "restore" architecture rather than to create a new geometrical order. Not unlike Daly, however, Viollet assumed that modern architecture had to be based on modern techniques. Viollet's Entretiens closes with the following:

Few centuries have seen more scientific progress than our own.... Will our architects, like those who preceded them, use such sources for the
renovation of their art? No; they prefer to negate the necessary influence of science on art and to give us monuments of hybrid style, more or less modeled on the architecture of the last two hundred years. Well, I repeat it in closing: if they persist in remaining blindfolded, in refusing science the help it can provide, architects will no longer have any role in society; the role of the engineers will then begin, that is men who deal with problems of construction, who start from purely scientific facts and construct an art which derives from those facts and from the conditions imposed by our own age [my emphasis]. (71)

Viollet thus believed, like Daly, that the architecture of the future would evolve -- and not be invented -- from an understanding of the past combined with the means of the present.

For Perret at rue Franklin, the problem was formulated along similar lines. It was necessary both to "restore" an organic continuity with history using modern techniques and to achieve a synthesis of the past. In this respect, however, Perret followed more closely Choisy than Viollet-le-Duc. If Perret believed that Gothic was the chief source of "inspiration," such inspiration, for him, had to be mitigated by a classical sense of discipline. Perret, as Choisy, thus revived the eighteenth century Graeco-Gothic ideal. For Perret, however, the process was conducted in reverse: the Gothic half-timber urban house was induced with a
classical harmony rather than -- as at the church of Sainte-Geneviève -- the classical vocabulary given a Gothic sense of lightness. Perret accomplished his synthesis in two ways.

Most basic was the idea of the reinforced concrete frame. Choisy had clearly shown that the concept of a structure independent from the protective membrane was inherent to both Gothic and Greek construction. The use of a framed structure had been used for Greek temples and for medieval urban houses. In France Philibert de l'Orme had analyzed Gothic architecture as a sort of framed structure which he himself incorporated in his own designs. Seventeenth century architects such as Francois Mansart had privilidged such form of expression even if it was used only as a decorative relief on facades. The neo-classicists had gone further: the primitive hut was a framed structure on which, they believed, all architectures should be based. Moreover, their wish for a return to an essential, primitive principle embodied in the rustic cabin was born out of their admiration of both Greek and Gothic precedents. The frame, in and of itself, was thus already loaded with tradition.
Reinforced concrete would sustain further the authenticity of the frame. First, the frame could be easily assumed to be the most "natural" configuration for concrete since it was moulded in wooden formworks thus borrowing from timber its logic of assembly. This fact, supported by the "fibrous" nature of reinforced concrete, established a direct connection with antique construction which, it was commonly believed, reproduced in its major aspects the arrangement of early wooden temples. Concrete's lithic quality further asserted this analogy with Greek architecture.

In its slenderness, however, the reinforced concrete frame had also a definite similarity to Gothic architecture. In fact, at least since Felibien's 
Dissertation touchant l'architecture antique et l'architecture gothique (1699), lightness, slenderness (or maigreur, to use the derogatory French term), was thought, in France, to be Gothic's chief characteristic. (73) The slender structural members of 25b rue Franklin was thus an aspect which associated the building with Gothic. The capacity of concrete to resist strong bending moments (since it formed a monolythic continuous structure) and to transfer diagonal loads was also analogous to the "elasticity" that Viollet-le-Duc and
Choisy had assumed to the Gothic vault: "The Gothic vault," wrote Choisy, "is, so to speak, flexible and elastic ("deformable")." (74) Moreover, the slenderness of the reinforced concrete columns and the large spans that the material allows provided a flexibility comparable to that of Gothic construction which, again, was something that both Viollet and Choisy had noted. As we have seen above, the flexibility of the Gothic vault was, for Viollet, a manifestation of the modern spirit, "ceaselessly moving and searching."

The great potential for synthesis of the reinforced concrete frame may have suggested to Perret universality & anonymity, an idea that the "industrialism" of the 25b effectively portrayed. If Perret hinted at the absolute rationality of his frame structure, he was not satisfied with such an iconoclastic position. The obvious references of the 25b to the medieval half-timber urban house was a way, for Perret, to imprint a national character on his architecture, thereby substantiating even more his reform of architecture.

A comparison of Viollet's project for an urban apartment house (fig. 33) and the 25b shows clearly how
Perret classicized the type of the medieval house. At rue Franklin there are no obtrusive diagonal members; each bay keeps a strict and rectangular geometry. The frame disengaged from the wall at the sixth-floor loggia followed the simplest proportions (4:3) which was carried to all bays on the front elevation (except of course, the side walls of the two wings). The same proportional system was repeated throughout the whole volume, that is for the section from the first-floor terrace up to the first cornice. As seen previously, the tiles sheathing the facade permitted some "adjustment" to the structural members which then appear all standardized. Generally speaking -- and as Collins has previously noted -- the building has an "undeniable Classical character." It would seem exaggerated, however, to follow Collins' claim that that was its most salient feature. Perret instead brilliantly synthesized the verticality and delicacy of the medieval urban house with a Classical sense of repose. The two side bays display this synthesis particularly well. The slanted walls, the cantilevers, and the Gothic bosses at the entrance porches (fig. 18) assume a Gothic vitality in Viollet's sense of the term. These elements also endow this part of the building with a sense of human scale
that, also according to Viollet, characterized Gothic. (75)

In contrast to these lively features, the frame of
the sixth-floor loggia above affirms a clear geometrical
order of Classical discipline and restraint. The side
towers thus display in a critical fashion the
relationship between Classic and Gothic. At street level
-- where human activity is concentrated -- the building
subtly adopts an attitude of welcoming vitality while,
towering above, the frame keeps a lofty and abstract
purity.
Notes to part 3

Notes to chapter 5

1- Daly, César, "Introduction," col. 4.

2- E. Viollet-le-Duc, Dictionnaire, vol. 8, p. 495.


10- This building configuration was not unprecedented: Victor Horta's hotel Solvay in Brussels was similar (fig. 56). Significantly an article on the building had been published in L'Art décoratif in 1902 (vol. 4, pp. 230).

11- To be truly accurate certain changes do occur in these floors. The first story is slightly higher than other floors but by only 10 cm. which passes relatively unnoticed. The windows at the side bays increase in width as the floors go up.

12- Gustave Perret quoted by P. de L. in "Une maison à Paris."

13- The two wings converging at 45 degrees towards a central room in Viollet's project is similar to Perret's U-shape plan. The room "D" in Viollet's plan presents the same semi-octagonal configuration as the anti-chambre at the rue Franklin. The main salons in both schemes are
polygonal and centrally located. The small rooms "g" and "f" in Viollet's plan are respectively "boudoir" and "fumoir" like is indicated on Perret's drawing no. 6. Finally the entrance to Viollet's urban hôtel with a terrace above and a polygonal central bay is identical to the configuration of 25b at street level.

14- Hector Horeau had designed a house "The Poplars" built in London in 1855 that was closely inspired by Viollet-le-Duc's project. An undated project for a house by de Baudot was visibly inspired by Viollet's project for an urban residence (Francoise Boudon, "Recherche sur la pensee et l'oeuvre d'Anatole de Baudot," p. 49-50). The Aubecq house (1900) (fig. 58), an urban hotel in Brussels by Horta was also inspired by the same project. Nearer to Perret's building, on rue Ranelagh in Passy, Guimard designed in 1904 an urban villa, the Hôtel Nozal, which followed a similar arrangement of rooms at 45-degree angle converging towards a central hall (fig. 59). Both Guimard's and Horta's projects have traditionally been considered important works in their own respective careers. Borsi, in Paris 1900, p. 72-75, has already noted the kinship between these two projects but he fails to mention the 25b. Hitchcock, however, in Architecture: Nineteenth and Twentieth Centuries, p. 422, had noted an affinity between Horta's Aubecq house and Perret's building on rue Franklin though he does not recognize their common source in Viollet's project in the Entretiens.


16- My thanks to Henri Bresler -- Professor of architecture at U. P. 3 at Versailles and an authority on the mores and customs of nineteenth bourgeois Parisians -- for having pointed out to me how well Viollet's hôtel responded to the etiquette of Parisian receptions. Prof. Bresler has told me that he always used Viollet's project to illustrate to his students the use of an urban hotel in the nineteenth century, all functional zones being so distinctly articulated.

17- Among theosophists and free-masons the twin towers of Gothic cathedrals were thought respectively male and female. According to this interpretation, the towers were slightly different from one another to evidence the distinction: one was more robust and masculine, the
other more delicate and feminine. Viollet-le-Duc has never written on this matter since above all his intentions were to demonstrate the rationality and the organicity of the Gothic monument. He nonetheless recognizes that precise meaning was conferred to the different parts of the monument in the Middle Ages.

18- César Daly, "De l'architecture de l'avenir. A propos de la Renaissance francaise," col. 52.

19- Collins in Changing Ideals has pointed out Coleridge's assertion that "the organic form... is innate, it shapes as it develops itself from within, and the fulness of its development is one and the same with the perfection of its outward form" (p. 152). Collins traces this idea to Buffon himself in his speech on style given to the Académie Française in 1753.


21- Generally speaking the right wing of the apartment is slightly smaller than that on the left. The configuration of the bedroom and the boudoir is also different than the dining room and the fumoir. See dr. 12.

22- A thought confirmed by the perspectival rendering of the project (fig. 37) that depicts a country-like landscape in the background rather than an urban scape.

23- César Daly, L'Architecture privée, vol. 1, p. 23.

Notes to Chapter 6

26- César Daly, "L'Architecture de l'avenir", col. 20.
29- A similar geometry was used even more systematically for the project for a vaulted hall in the Entretiens.
30- In a laborious discussion under the heading "style" of the Dictionnaire, Viollet has shown how the rhombohedron which contained the octagon or the square within its geometry, could, in fact, be reduced to equilateral triangles.
32- It is similar to the rib patterns of the vault in Viollet's project for a vaulted hall. It is also closely similar to ill. 4 under the heading style of the Dictionnaire where Viollet discusses the geological formation of the globe (fig. 61).
36- E. Viollet-le-Duc, Dictionnaire, vol. 4, p. 58.
39- A slender trunk running on the sides of the bays which branched off at the first cornice level was the only ornament used on the facade of the apartment block on the Avenue Wagram. The small columns on the sixth floor were little trees of sorts with capitals.
consisting of small arrangement of leaves. The house built 25 years later on rue Raynouard incorporated the same image but it was limited to the core structural members whose configuration undeniably suggests that of a tree (fig. 65). The analogy was pointed out in articles dedicated to the house in La Construction moderne (1934) and in Architecture d'aujourd'hui (1930). Undeniably this aspect of the rue Raynouard building was important to Perret since he asked the studio Chevojon to take a picture of the building during its construction, a photograph which was later reproduced in publications on Perret. The photograph had special importance since once the building was completed this particularity of the structure became invisible. The small pavilion of the "Librairie centrale des Beaux-Arts" designed by Perret for the 1925 Exposition had four posts made of real tree trunks on which stood a reinforced concrete roof (fig. 45). Trees also provided a model for the column which became a trademark of Perret in his late career. About the peristyle of the "Musée des Travaux publics", Perret reported: "The strength of reinforced concrete is due to the monolythic character of the skeleton, where every piece is embedded in another; it is to express this that we were driven to make the point supports, contrarily to tradition, larger at the top then at the bottom. We have hesitated for a long time before daring to use this shape. It was in Egypt the sight of a group of palm trees whose smooth trunks sprang from the ground up to its palm leaves with a progressively wider diameter, that finally made us come to a decision" (Champigneulle, p. 79-80). This passage shows clearly Perret's wish to found his architecture in a model taken from nature.

40- In France such analogy was used by Philibert de l'Orme, J. F. Felibien, Frézier, Laugier, Chateaubriand, and Viollet-le-Duc to name only the most obvious. Closer to Perret, Huysman's novel La cathédrale (1898) had used the image of the tree and the forest to describe Gothic architecture. The tree metaphor had also currency amongst Art-Nouveau architects. Frantz Jourdain's La Samaritaine of 1907 is the most obvious example. The ornament at the top floors which form an outgrowth of the structure was probably derived from a literal interpretation of Viollet-le-Duc's statement that "ornamentation ... is like a natural efflorescence of the structure" (Dictionnaire..., vol. V, p. 508). This
way of thinking was well enunciated in an unsigned article in Art et décoration (1901) titled "Le modernisme dans l'architecture": "With the principle of the moulded mass...architecture rediscovers the source of its natural processes...the additional element is born as if from the growth in the principal mass" (p. 190). The same article quotes Schoellkopfs: "Another consideration which has guided me is that we admire old monuments in ruins, on which the action of time has interrupted lines, blunted too sharp edges and altered the whole mass. Nature behaves quite differently from architects. The branches of a tree are connected to the trunk not by a line, but by an enfolding form; the branch is one with the tree" (p. 190). Quoted in Borsi and Godoli, p. 247.

41- Some example of which had been built at the 1900 World Exhibition in Paris (fig. 66).

42- The entrance leading to the staircase and elevator on the left is slightly wider (10 centimeters) and somewhat higher (a difference of approximately 33 centimeters due to the slope of the street) than the one on the right.

43- The elevation, drawing no. 7, is inaccurate in this respect.

44- Auguste Perret, "Conférence" translated in Collins, Concrete, p. 164.


46- Louis Charvet, "Visite d'ateliers," p. 56.

47- Auguste Perret quoted by Louis Charvet, p. 58.


49- E. Viollet-le-Duc, ibid, p. 508.

50- Owen Jones, Grammar of Ornament, p. 2.

51- Apart from the laurel leaves around the entrance doors which had conventional meaning of peace and hospitality. Ruprich-Robert discusses this symbolism in
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**Flore ornementale.**

52- Owen Jones, ibid, p. 157.

53- Ibid, p. 5.


55- Idem.

56- Charles Saunier, p. 84.


60- Camille Mauclair, "Le nouveau Paris du peuple, p. 82.

61- Camille Mauclair, ibid, p. 80.
Notes to Chapter 7

63- César Daly, "Ma nouvelle publication," col. 164-65.
64- Peter Collins, Changing Ideals, p. 156.
65- César Daly, "De l'architecture de l'avenir", col. 10.
66- Ibid, col. 70.
67- Idem.
70- Ibid, vol. I, p. 146-147 see also the "Sixth Entretiens" in Entretiens which is entirely devoted to a complex historical discussion showing how Greece had in fact a profound influence on Medieval architecture.
72- Louis Charvet, p. 57.
73- Robin Middleton, ibid, p. 301.
75- This human dimension in Gothic is something that, following Lassus, Viollet and Choisy had insisted upon. The Antique system of proportion was, for them, abstract and mathematical with no relationship to the human body. Gothic, for its part, had taken man as the measure of all things. "Nothing in the Antique orders, claims Viollet, recalls a sense of scale;" it is an "abstract art" based on proportions alone "independant of dimensions." Cathedrals, however, "have always one typical scale [échelle type], the dimension of man." Dictionnaire, vol. I, p. 147-48.
Conclusion

The preceding text proposed that Auguste Perret's building on rue Franklin be understood at two levels: first, Perret's rationalism laid emphasis on the structure and its proper outward expression; second, the organic theory offered Perret grounds to link his architecture with nature and tradition.

We have seen, in the Rationalists' discourse and in Viollet-le-Duc's theory of architecture in particular, how these two levels of inquiry complemented one another. For a building to be termed "organic," a basic principle -- an idée-mère -- had to be consistently developed into a unified whole; and, in Viollet's own words, "only reason could establish correct links among all parts ... giving a work not only its cohesion but the appearance of cohesion." (1) An architecture needed to be rational in order to present a coherent "argument." As such, Viollet's rationalism
played a role similar to that of rhetoric in antique discourse. The ideal, derived from the organic theory, could be conveyed only through the channel of reason: "The work of the architect," wrote Viollet, "cannot do without 'ideals' during its conception, and without the intervention of 'reason' during its development." (2)

For the Rationalists, the translation of an ideal into a rational architectural form meant its transformation into a structural configuration. Structure and reason, in their theory, were closely associated. The structure had to obey the laws of nature and was thus, of all aspects of a building, the closest to science. Moreover, from the structural layout of the building would result its general form. It therefore had to be rationally ordered to convey the "idea" underlying the conception of the edifice clearly.

The "rational" use of material was also, for the Rationalists of the second half of the nineteenth century, a way to guarantee the "modern" character of an architecture. A building that was "rationally developed" would necessarily avoid the illogicality which most often characterized conventional forms, and therefore, the rational architect would always find renewed, "modern"
solutions to new problems. One of the most important aims behind Viollet-le-Duc's elaboration of abstract, rational principles was to dislodge architectural forms from the empty mold of convention. It followed that Viollet encouraged the development and use of modern materials and building technologies which then formed the first corollary of the rationalist theory.

The organic theory of architecture, simultaneously developed by Viollet-le-Duc, encouraged a contrary movement: if Viollet's rationalism favored abstraction and was directed towards the new, his organismism ensured that such new forms be tied back to tradition. This obviously did not mean that Viollet would finally yield to rules of convention. Rather, his aim was to "restore" architecture -- bring it back on the right track -- reactivating the true French/Christian/modern spirit which had lain dormant since the Renaissance. Viollet's theory was thus not strictly "mechanistic" (new material = new architecture) but comprised also more formal concerns. His formal directives, however, were based on his historical analysis and his study of nature (geology in particular) and never on a Guadetesque examination of building
types. In the end, the radicalism implied in Viollet's rationalism was supported by the organic theory which also searched to break from the immediate past to found architecture in the essential tradition. The fundamental question, for Viollet and his followers, was to inject new life in Gothic "principles" through the power of new materials and techniques which would consecrate the modernity of the ancestral spirit, "inspiration [collective memory and spirit] subjected to the rules of reason." (3)

At rue Franklin, Perret combined with unprecedented clarity the organic theory with rationalistic discipline. The fusion of reason and organicity can be discussed at both the level of the building technique and the general building configuration.

Following a long tradition of rationalist theory going back to the eighteenth century, if not before, Perret believed that the framed structure formed the basis to a truly rational architecture. The flexibility of this construction system was particularly appropriate to the modern age which was "characterized by perpetual transformations... everlasting movement." (4) The frame
consequently became the most rational expression of such modern conditions: it provided a clear presentation of the different tectonic parts of the building assembly while its fine point supports offered maximum flexibility. Reinforced concrete sustained the rational/modern character of the skeleton construction. More than any other material, concrete could be subjected to scientific thinking since it was entirely composed by man. Its "modern" character was self-evident since it only had been recently invented but was furthermore confirmed by its ability to espouse any form and by its unprecedented flexibility of use.

The rationality of the reinforced concrete frame was complemented by its organicity: the metaphor of the tree gave a "natural" legitimacy to the otherwise abstract system of frame and infill. As seen previously, reinforced concrete itself, by its "fibrous" and homogeneous nature, was for Perret analogous to wood and trees. The analogy with the tree and timber construction invoked some reminiscence of the primitive hut which had been illustrated in countless French architectural treatises starting from Philibert de l'Orme. The framed structure was thus for Perret the most elemental, most
natural and most rational building form. It simultaneously assumed references to classical architecture, which was traditionally believed to derive from a primitive wooden cabin essentially consisting of a post-and-lintel construction. The modern reinforced concrete frame, however, was not only analogous to such "classic" timber construction but, because of its homogeneity, was also analogous to trees themselves.

The organic metaphor was made explicit at rue Franklin through the tile veneer that covers the entire front elevation. Despite what Perret reported in his late career and which was hastily taken for granted by most historians, the use of the ceramic veneer does not have to be seen as a breach of Perret's rationalist ideals. In fact, the facing supported the rationality of his structure. First, it permitted Perret to unify his structural frame into a coherent whole. The difference in size of the different structural members were deemphasized (though left legible), resulting in a simplified and more effective expression. Perret could thus compensate his lack of experience with the new material, carefully regulating his structure into a more rational ensemble. As often stressed by Viollet-le-Duc, the prime necessity was to give a clear expression to
the structure confirming its perfect cohesion rather than simply providing a transparent and exact account on the building fabric. In fact, the ceramic veneer permitted Perret to differentiate even more clearly between infill and frame: the free and lively pattern of the leaf-shape tile versus the geometric assembly of the beige-tile clearly expressed the different functional nature of the infill and frame. If the brick infill had been left exposed to view, an ambivalence would have been generated since brick is itself a structural material. The tiles of the 25b should not, therefore, be seen as a protective clothing hanging on the structure but rather as an expression of the essential reality of the building fabric. The veneer had thus a representational -- rhetorical -- role perfectly in line with Viollet-le-Duc's rationalism.

The organic metaphor, once again, supports such rationalism: the stoneware tile was not an extraneous element to the building fabric but formed, so to speak, a natural outgrowth of the building, like the bark on the tree. It then became logical that the different functional parts of the building (frame vs. infill) have a shell of different appearance. Viollet-le-Duc in the
Entretiens had praised the decorative system used in Islamic mosques which so clearly "expressed the dominating thought" and where the ceramic veneer "holds to the building, not like a piece of clothing, but as muscles and skin hold to the human body." (5) Tile decoration, from Viollet's impetus, would flourish in Rationalists circles in France particularly when used with iron. Later, at the International Exhibition of 1900 and through the work of de Baudot and Lavirotte, it would become directly associated to concrete construction. When Perret told Uhry in 1904 that his ceramic veneer was "rich concrete over poor concrete," he was thus reiterating the commonly held opinion that tile was a natural complement to concrete.

The 25b rue Franklin can be considered at the more general level of the overall building configuration and be found to combine rationalist and organicist ideals. As seen previously, two distinct precedents were used by Perret on rue Franklin. On the one hand, the 25b had formal connections with industrial buildings through its straightforward expression of a slender frame and its standardized floors. Moreover, certain details (particularly the terrace and window railings) enhanced its references to industrial architecture. On the other
hand, the rue Franklin block evoked the medieval half-timbered town house: a ground floor of largely spaced piers on which stands, cantilevered, a more slender and ramified structure.

The industrial connotations of Perret's building were directly associated with his rationalism. Indeed, for Viollet-le-Duc and most rationalists after him, the most unassuming and logical use of modern materials and techniques could be seen principally in industry and civil engineering. In fact, for many architects, industry (and by extension, industrial buildings themselves) had become, in the nineteenth century, the very symbol of modern science and the rational mind. The 1889 exhibition, which was, according to the Rationalists and Perret himself, the truly victorious moment of nineteenth century architecture, had consecrated such an attitude.

Probably the most engaging aspect of industrial buildings for the rationalist mind was its abstraction, its freedom from conventional "styles." The Moulin Idéal de Nort from which Perret drew precedent was at the same time modern and a-historical: in its abstractness and its simple grandeur, it was the
rational monument par excellence. Industry at rue Franklin thus played a purgative role. It guaranteed that Perret's building was modern and rational, hence comprised the basic ingredient of style. As previously discussed, the frame disengaged from the wall at the sixth floor loggias alluded to an elemental form of classicism. The classical tradition, however, was then understood by Perret primarily as a universal discipline -- as a rational ordering using specific proportions devoid of precise historical or stylistic presence.

The true substantiating form at rue Franklin was that of the medieval half-timber house type. It was this precedent which rooted the 25b in the French and Christian spirit. Viollet-le-Duc had demonstrated in the Entretiens, through a functionalist discourse, the appropriateness of the medieval urban house to modern conditions: the ground floor of widely spaced piers could well accommodate its commercial nature while the stories above, which housed more complex functions, were suitably more complex structurally; also the ground floor, recessed in relation to the other floors provided weather protection for the shop window. Viollet-le-Duc's own project for an urban house which translated in iron the medieval type, had already set an example for
Beyond the functional argument, it is obvious, however, that, for Viollet-le-Duc as for Perret, the medieval town house had other qualities. It was one of the most coherent examples of a rational/organic building type. Rational, as we have seen, for its frank expression of the frame. Organic for its intimate response of structure to function; for its use of the "law of equilibrium" ("opposing within their structure inverted forces, stresses to stresses, counterweights to cantilevers; breaking down weights and transferring them away from the points where they would tend vertically"); and finally for its very historicity, as a medieval house type born at the same time as the French nation and the French spirit. The historic medieval half-timber house thus forms the underlying type -- the idée-mère -- at the basis of the 25b. Perret's rationalism then assures the correct "presentation" of this germinal idea which it reorders according to a classical discipline and adapts to suit modern conditions, techniques and materials, in this case reinforced concrete. The industrial connotations gave validity to the use of a medieval precedent: it confirmed its modernity and actuality.
Notes to conclusion.

1- E. Viollet-le-Duc, *Dictionnaire...,* vol. 9, p. 345.
BIBLIOGRAPHY

Abbreviations:

- **E. A.**: Encyclopédie d'architecture.
- **C.M.**: La construction moderne.
- **A.D.**: L'Art décoratif.


------ "Préface" in *L'Architecture vivante*, vol. 1, no. 1, 1923, p. 5.


------ "Le nouveau visage de l'art: un théâtre moderne," in *Conferencia*, vol. 20, no. 5, 1926, pp. 244.


------ "Conférence faite à l'institut d'art et d'archéologie" in *C.M.*, vol. 51, 1936, p. III-IV.
Bibliography / page 284

----- "Le gentil esprit francais: méditations architecturales" in L'Architecture d'aujourd'hui, vol. 7, no. 6, 1936, pp. 5.

----- in Techniques et architecture, vol. 6, no. 1 & 2, 1946, p. 3.


B- Selected bibliography on Auguste Perret, listed in chronological order. For a more complete list see George E. Pettengill, Auguste Perret: A Partial Bibliography, 1952.

Anon., "Casino municipal de Saint-Malo" in C.M., vol. 6, 1900, pp. 244.


ANON., "Maison -- avenue de Wagram" in C.M., vol. 9, 1902,


P. de L., "Une maison à dix étages" in La patrie, June 21 1905, unnumbered pages.


P. Couturaud, "Le théâtre des Champs-Élysées" in *C.M.*, vol. 19, 1913, pp. 75.


Jean Labadie, "À la recherche du home scientifique" in *Science et la vie*, no. 102, 1905, pp. 545.


Emmanuel de Thubert, "Un immeuble -- 51-55, rue Raynouard a Paris" in *C.M.*, vol. 50, 1934, pp. 224.
Roger Claude, "Auguste Perret et la demeure" in *Formes et couleurs*, vol. 6, no. 4, 1944, pp. 17.


Vittorio Gregotti, "Classicisme et rationalisme d'Auguste Perret" in *Architecture, mouvement,*. 
Pierre Devinoy, "Thématique" in Architecture, mouvement et continuité, no. 37, 1976, pp. 11.


C.-Selected bibliography of major XIXth-century theoretical texts on the maison à loyer and architecture in general.


-----, "Introduction" in R.G.A.T.P., vol. 24, 1866,


Julien Guadet, Éléments et theorie de l'architecture, Paris: Librairie de la construction moderne, 4 v., 1901-03.


Quatremère de Quincy, Dictionnaire historique d'architecture, Paris: Librairie d'Adrien Le Clere, 1832.


Eugène-Emmanuel Viollet-le-Duc, Dictionnaire raisonné de l'architecture francaise du XIe siècle au XVIe siècle, Paris: B. Bance, vol. 1-6, 1854-63; A. Morel,
vol. 7-10, 1864-68.


D— General bibliography on the maison à loyer.

A. D., "Hôtel particulier -- rue Boileau à Paris" in *C.M.*, 1911, pp. 353.

A.D., "Maison de rapport -- avenue Perrichont" in *C.M.*, June 1908, pp. 449.


Louis Bonnier, Conférences faites à l'hémicycle de l'école nationale des Beaux-Arts les 22 et 29 octobre 1902 sur les règlements de voirie, Paris: Charles Schimd, 1903.


Richard Cantinelli, "L'architecture domestique moderne" in La revue bleue, 4th series, vol. 19, 1903, pp. 691.


Marc Croisilles, "La construction à Paris" in L'Architecture moderne, 1912, pp. 204.


Contesse de Gencé, Le cabinet de toilette d'une honnête femme, Paris: Bibliotheque des ouvrages pratiques, 1909.

Albert Guillaume, Madame est servie, Paris: Simonis, 1897.


Tiercelet, L'Architecture moderne où l'art de bien bâtir pour toute sorte de personnes, Paris: Jombert, 1728.


------, "Une petite maison à loyer" in Art et décoration, vol 11, 1902, pp. 123.


-----, "La beauté de Paris" in *La revue de Paris*, vol. 16, 1909, pp. 280.

Hélène Lipstadt, "Housing the Bourgeoisie: César Daly and the Ideal Home" in *Oppositions* 8, 1977, pp. 34.


E. Molinier, "Le castel Béranger" in *Art et décoration*, vol. 5, 1899, pp. 76.


Paul Planat, "Une maison moderne" in *C.M.*, vol. 9, 1894, pp. 289.


-----, "Les idées de Marcel Prevost" in *C.M.*, vol. 12,
1897, pp. 400.

-----, "La maison de rapport" in C.M., vol. 22, 1907, pp. 349.


Gustave Soulier, "Maison de ville et maison des champs" in A.D., vol. 5, pp. 60.


Paul Vitry, "Le castel Béranger" in Art et décoration, vol. 5, 1899, pp. 76.

Émile Zola, Pot-bouille
Bibliography / page 294

E- General bibliography

A. D., "Constructions en céramique -- Le pavillon de la céramique de Sèvres à l'exposition de 1900" in L'Architecture, v. 6, 1903, p. 482.


Arnaud, Cours d'architecture, Paris: Imprimerie des Arts et Manufactures, 1923.


-----, "Atelier de peintre à Passy," in E. A., vol. 4,
1875, pp.30.


------, "Le ciment armé et l'art de l'architecte," in *L'Architecture*, vol. 8, 1895, pp. 454.


P. Bourdeix, "L'Urbanisme" in C. M., 1919, p. 34.


J. "Le modernisme dans l'architecture," in A. D., 1899, pp. 45.


Le Corbusier, "Construire d'abord," in L'Architecture d'aujourd'hui, no. 10, 1934, pp. 29.

-----, "...Il laisse son oeuvre," in Zodiac 5.

Jules Lisch, "Gare du Champs de Mars," in *E. A.*, vol. 7, 1878.


Lucien Magne, "L'Architecture moderne," in *Art et Décoration*, vol. 3, 1898, pp. 44.

Lucien Magne, "Union centrale des arts décoratifs, IXe exposition, rapport général de L. Magne," in *E. A.*, vol. 6, 1887-88, pp. 41.


Camille Mauclair, "Où en est notre art décoratif," in *La revue bleue*, no. 17, tome 8, 1909, pp. 520.

-----, "La décoration lumineuse," in *La revue bleue*, tome 7, no. 21, 1907, pp. 656.

-----, "La crise des arts décoratifs", in *La revue bleue*, tome 5, 1906, pp. 755.


Paul Sédille, "La terre cuite et la terre émaillée dans la construction et la décoration," in *E. A.*, vol. 6, 1877, pp. 51.


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Plan du RZ-de-Chaussée

Plan du 1er Etage
Fig. 59 / page 383

Piédroit de Plan de Rez-de-Chaussée
CÔTE DES HOMMES

— Eh bien, messieurs, vous avez tout ce qu'il vous faut?
— ...excepté la société des dames!
— Alors, il ne vous manque rien.

CÔTE DES DAMES

— Elle donne toujours ses dîners la veille de son jour... les fleurs et les petits fours seront encore très frais pour demain.
Fig. 71 / page 395

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Construction de Rapport