The Poetic Economy of the Frame: The Critical Stance of Auguste Perret

KARLA BRITTON, *Columbia University*

This essay explores Auguste Perret's justification for his technique in shaping an aesthetic for the material of reinforced concrete. Beginning with an archival document recording a conversation between Perret and the poet Paul Valéry, the argument first explores critiques of Perret's handling of concrete, using Reyner Banham as a point of reference. It then considers the contrasting themes of his working method: the priority of technique over material, the imperative of a modern structural frame being rooted in a classicist lineage, and the disciplined method of an elaborative practice that constantly seeks to define the relationship between economy and style.

IN THE PERSONAL PAPERS CONTAINED IN THE ARCHIVE OF AUGUSTE Perret (1874–1954), there is an undated, typewritten sheet of paper entitled "Conversation with Paul Valéry."[1] This fragment is intriguing not only as a historical record documenting a conversation between an institutionally weighty French architect and a culturally dominant poet, but especially as a condensed summary of Perret's technically innovative and stylistically constrained method of construction. The typed sheet consists only of a single question asked of Perret by Valéry, and Perret's short response to it. Valéry's question focuses squarely on Perret's conservative handling of reinforced concrete: Why does Perret choose to ignore the paste-like qualities of the material? And in turn, Perret's taciturn answer presents in outline form the overall critical intentions of his method, which it will be the purpose of this paper to explore under the rubrics of technique, classical lineage, and economy. The record of the conversation reads as follows:

> Conversation with Paul Valéry
> P.V. —"Since concrete is above all a paste, why don't you more often use the curve in your works?"
> A.P. — "Yes, concrete is a paste, but we shape it in molds and these molds are usually of wood, from whence comes this repetition of the straight line which brings us close to ancient architecture, since it imitated wood and we, we use wood, which is the most legitimate. The curved forms of wood would be costly, which would become a piece of work (*carrosserie*), and isn't it the economical use of the material which determines STYLE?"

Valéry's question concerning Perret's handling of concrete (why he chooses not to use more curve-like forms when concrete has a plastic consistency) takes us to the heart of critiques of Perret's work and a questioning of his overall contribution. Perret's buildings are characterized by clear, traditional compositions, which demonstrate a careful regard for the elemental geometry of rectangles and circles, and details are always held in check within the symmetry and regularity of the basic structural frames. Perret's work, for example, with a few exceptions such as two sweeping freestanding staircases in his atelier at the rue Raynouard and at the Musée des Travaux publics, does not demonstrate an interest in the plasticity that could be achieved by the material of reinforced concrete. When Perret uses curved forms in his buildings, as for example in the Théâtre des Champs Elysées (1913), the barrel vaulting of Notre Dame du Raincy (1923), the interior of the Salle Cortot (1929), or the Musée des Travaux Publics (1937), he does so only in a manner that conforms to the strict composition of the plan. Moreover, Perret was seemingly disinterested in using the material of reinforced concrete dramatically to capture or represent a mood or energy, as for example two immense works in Breslau, the Market Hall with large parabolic arches by Heinrich Küster (1908), and the Centennial Hall lying under a gigantic saucer dome by Max Berg (1913). Although he was intrigued with the skyscraper, designing his own "ville-tours" and focusing his reconstruction in Amiens around a central apartment tower, he did not, as a rule, seek to derive new shapes for his buildings expressive of achievements in technology, science, and industry. And while Perret worked on industrial commissions such as docks in Casablanca (1916), the Paris Esders factory (1919), and the Marinoni factory in Montataire (1920), he nonetheless grew increasingly intent on distinguishing his aesthetic as an architect from that of an engineer. So for the most part, what is emphasized again and again in Perret's forms is the simplicity of the straight lines of the trabeated frame, increasingly articulated with reference to a classical conception of composition and proportion.

It is not an exaggeration, then, to see in Valéry's question more than an occasional polite interest in the conservative contours of Perret's forms. For in the question's sharp and simple perceptiveness, it is ultimately critical, suggesting a contradiction in Perret's unwillingness to use concrete according to its full potential as a plastic material—as if by his insistence on using concrete in straight posts and flat beams as if it were wood, Perret were willfully imposing an alien technological aesthetic onto the material.

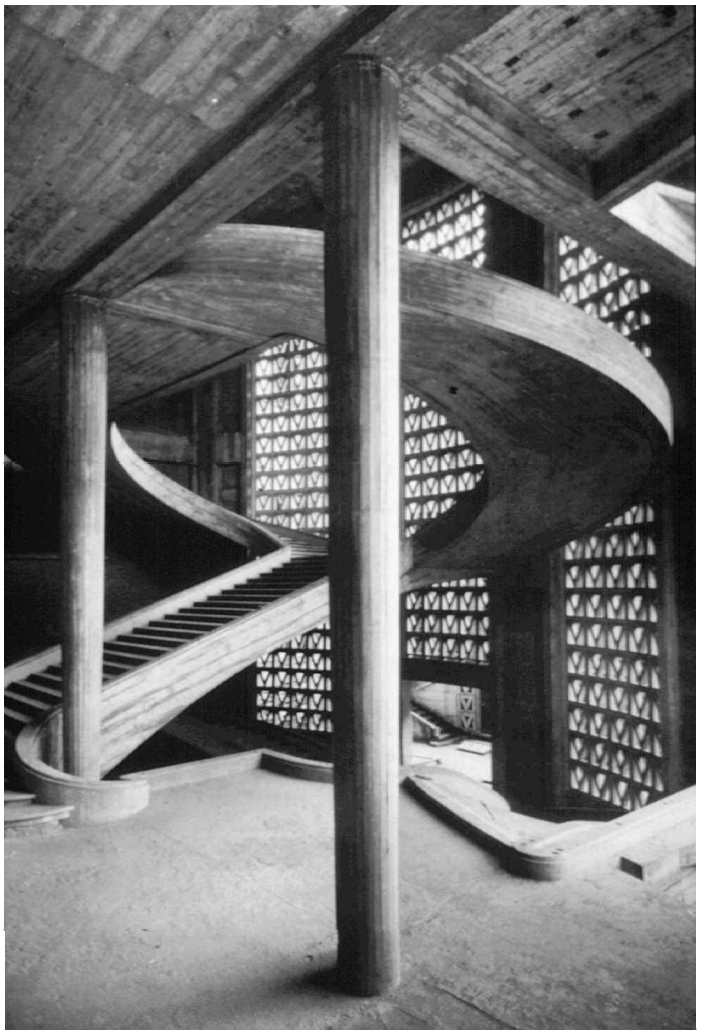
A relevant aspect of Valéry's question is that it cannot be divorced from his own curiosity about the relationship between the construction of poetry and the construction of buildings. For Valéry, the structural forms of poetry and the theoretical discipline required of the poet share a strong affinity with the working process of the architect. Valéry's interest in the subject of architecture (as expressed

Journal of Architectural Education, pp. 176–184

in his dialogue *Eupalinos, or the Architect* [1921]), explores this intellectual method required by the architect. The dialogue explores how the architect's method of working and of constructing with materials serves as a rigorous metaphor for any disciplined creative process. In *Eupalinos*, Valéry is primarily concerned with compositional method, yet as Bruno Foucart has noted, Valéry elsewhere exhibited more than a casual interest in the question of materials, perhaps derived from his readings of Viollet-le-Duc.[2]

Valéry's question to Perret suggests that he understood the rationale behind the handling of a material in a "truthful" way, that is, according to its natural properties. Valéry may have associated Perret's use of concrete as a new material with Viollet-le-Duc's own espousal of the potential of new materials to bring forth a new architecture for the twentieth century, shaped by the architect's ability to make full advantage of the distinctive physical properties of a material. Perret himself was embedded in this tradition of "truth" in construction; the writings of Viollet-le-Duc and Auguste Choisy were his heritage, and his indebtedness to their teachings are an essential part of any discussion of his formation and constructional intentions.[3] yet whether Valéry's question was intentionally insightful, or merely rooted in a spontaneous curiosity, his point nonetheless takes us directly into the crux of the problem of Perret: Why was he so wedded to trabeated structure, when concrete offered a paste consistency capable, in the hands of a maître, of the most delicate lines, novel forms, and plasticity of surface?

In a similar vein, Reyner Banham asks the same question about Perret's work as does Valéry. Whereas Valéry asks the question with the critical interest of a sympathetic observer, Banham asks it with a force that is intended to challenge the position of authority Perret has historically held in the development of a modern architecture. As an amplification of Valéry's question, Banham sketches the problematics of Perret's technique, pointing out the inconsistencies in Perret's method, and offering a reading of his prominence in light of the historical climate and mythological significance that was attributed to the material concrete in the first quarter of the twentieth century. This broad assessment of Perret is outlined by Banham in his 1960 essay entitled "The Perret Ascendancy" published in *Architectural Review.* Intended as a book review of Peter Collins' 1959 book, *Concrete: The Vision of a New Architecture* (to date the only extensive study of Perret in English), Banham sketches the difficulties surrounding Perret's affiliation with concrete and his vision for a "New Architecture," concluding that "No one, arguing from the viewpoint of genuinely progressive and evolving architecture . . . could conceivably accept [Collins'] estimate of Perret, even in the elegiac and modified form in which it appears in the closing paragraphs of the book, paragraphs that all but admit the inner contradictions and ultimate futility of Perret's position."[4]



1. Staircase under construction, Musée des Travaux Publics, 1937. Courtesy of Institute fran ais d'architecture.

Banham's argument about Perret deserves close attention, not only because it augments Valéry's question, but because he clearly states a historically powerful set of philosophical expectations for technique and material—aspirations that are ultimately at odds with Perret's own. Banham's critique of Perret stems from the same question asked by Valéry: Why does Perret handle concrete according to the most rigid and classical principles of design, when the material with its paste-like nature offers so much potential for new kinds of forms? Straight lines and rigid proportions, for Banham, are contrary to the material's plastic properties. Frustrating too for Banham, with his conviction that architectural form should be a phenomenon of progression and evolution, was that Perret ultimately had the authority to set architecture in a radically new direction. The unique position of respect that he held among the younger generation as a *constructeur* was such that, had Perret chosen to use the material according to its paste-like nature, architectural design could have developed far more imaginatively. But

2. Corner detail, Musée des Travaux Publics, 1937. Courtesy of Brigitte Desrochers.

Banham writes about what he thinks regrettably happened instead: "All over the world, Perret's vision of concrete as a trabeated material, to be used in straight posts and flat beams, was accepted without question. An Eibnik or a Hilberseimer might protest that concrete was a plastic material and Perret was imposing an alien aesthetic on it; their cries were lost in the roar of unquestioning approval. An Owen Williams, a Maillart, a youthful Nervi might demonstrate alternative ways of using the material: the profession doffed its collective hat to a *grand constructeur*—and relapsed at once into its former trabeated apathy."[54]

Trying to solve this riddle of Perret for himself, Banham looks to the writings of the engineer and scholar Auguste Choisy as the reason that Perret is accredited with such stature. Perret's authority in the development of twentieth-century architecture, Banham argues, has less to do with Perret's buildings and has everything to do with Choisy's writings. Banham reasons: Choisy's *Histoire de l'Architecture* of 1899 was widely read by a young generation of French architects in the first half of the twentieth century (many of the plates in Le Corbusier's *Vers une Architecture* were lifted from it, for example) and it was this body of historical work with its theme of the importance of technique, material, and construction that created a domain ripe for a figure like Perret, trained as a builder and interested in a new material. Also it is Choisy's influence, according to Banham, that explains why the material concrete embodied such a powerful mystique in the mind of a generation; it was a compulsive belief that this material could manifest a new architecture, logically communicating the social and economic conditions of modern life. For these reasons a generation of architects in the twenties latched on to the early works of Perret in which the use of the reinforced concrete skeleton is so pronounced: the apartment house in the rue Franklin (1903) and the garage in rue Ponthieu (1907).

The builders that Banham cites as alternative examples to Perret (Williams, Maillart, and Nervi), however, were concerned with the use of concrete as a material that was ideal for large-scale engineering projects, in structures such as grain silos, airship hangars, and bridges. Perret was altogether intent to distinguish himself from this engineering aesthetic, just as he attempted to distinguish architecture from the aesthetics of painting. His search was for a syntax that could ennoble the material beyond the mere functional uses to which engineering could put it, linking it to the tradition of monumental architecture. (A notable exception is the low-arching barrel vaults in Notre Dame du Raincy, which are themselves a *tour de force* of concrete construction.) Collins goes out of his way to clarify that Perret "evolved his basic principles of reinforced concrete expression with complete disregard for contemporary canons of design."[6] Indeed, Perret frequently emphasized the difference between an *architect* and an *engineer*—as he says in one of his unpublished aphorisms, "One becomes an engineer. One is born an architect."

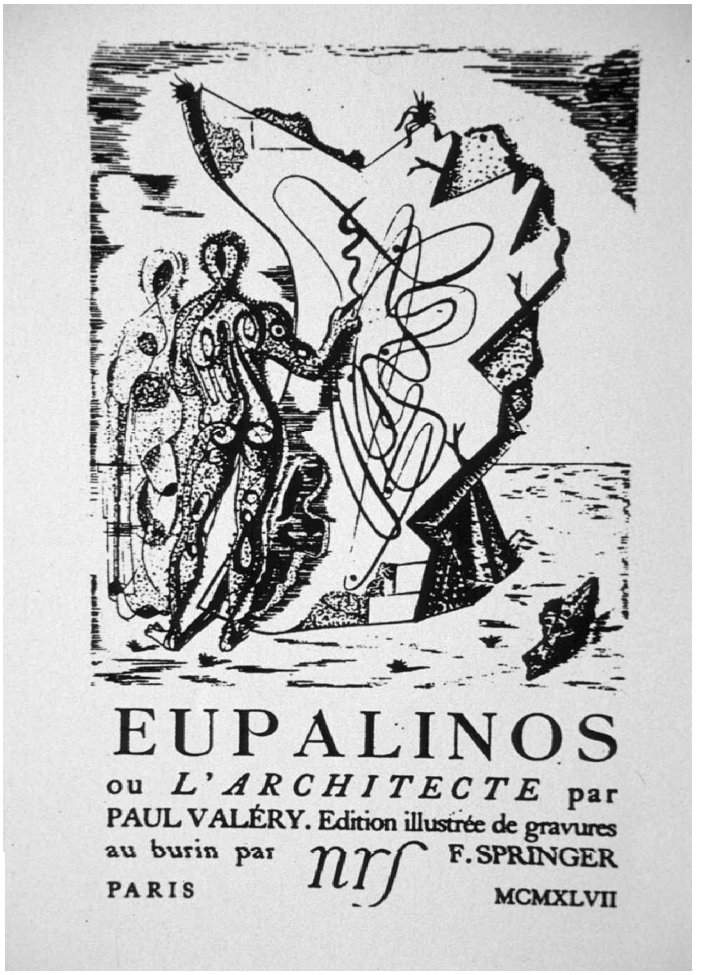
So contrary to the impression Banham gives in his criticism, Collins goes to great lengths in his own attempt to explicate the enigma of Perret, to justify why Perret understood trabeated form, despite contemporary canons of design, to be the necessary form for reinforced concrete construction. As Collins wrote, describing Perret's unwillingness to indulge in more daring uses of ferro-concrete construction: "It will be apparent that for an architect who could design Notre Dame du Raincy, and who had had the gratification of hearing it widely acclaimed by the younger generation, nothing could have been more tempting than to indulge in elaborate displays of structural virtuosity, for there can be no doubt that he had the imagination to conceive, the means to execute and the courage to defend designs as startling as anything produced by

Hennebique at Bourg-la-Reine. Indeed, the restraint by which he rejected such easy paths to notoriety must be almost unique in this present competitive age."[7]

Perret's reluctance to indulge in the more daring possibilities of concrete construction even extended to the use of cantilevered overhangs, now considered to be one of the material's structural advantages (although the balconies of the Théâtre des Champs Elysées are cantilevered, for obvious pragmatic reasons). His overall objection was that cantilevering ignores the essential framing function of construction, neglecting to make reference to the human body within. Moreover, Collins notes that Perret shared a sentiment expressed in Jacques-François Blondel's aphorism, "Everything which expresses effort fatigues the spirit." A cantilever, Perret thought, does exactly that.

In the end, Banham's evidence for judging the career of Perret rests squarely on this restraint in using the technical possibilities of reinforced concrete construction, Perret having chosen to use it almost exclusively as a trabeated material. Given Banham's criteria, Perret would be studied, then, primarily as a builder who advanced a certain technique and material, more or less successfully. And that perspective would allow us to examine this technique for a certain historical, though limited, significance in the history of construction. Yet in his summarial *Contribution to a Theory of Architecture* (1952), Perret claims for reinforced concrete the potential to express an "authentic architecture" unambiguously evolved from the classical building tradition, which in Perret's mind clearly implies a skeletal frame. But here we have reached a certain stalemate, in that the cultural and intellectual tradition to which Perret lays claim in his *Contribution* opens philosophical implications of construction that are far more portentous than a limited historical discussion of what Banham so derisively describes as "trabeated apathy." How, then, are we to account for the enigmatic discrepancy between Perret's stated purposes and the seemingly limited deployment of them through the material concrete?

Perret apparently found Valéry's question relevant or perhaps even provocative, for it was presumably he who took the trouble to record it and have it filed amongst his personal papers—those papers dedicated to the ideas and themes most seminal in shaping his working method: his definitions of "tradition," "the new," and "technique," as well as his list of unpublished aphorisms. Perret's response is therefore deliberately made, for the record of Valéry's question and Perret's answer revolves around Perret's homage to the theme of "technique," which is the necessary context for understanding his reply. Perret was very keen on the idea of technique and he developed his own definition for the term in the *Contribution,* which reads as follows:



3. Frontispiece, revised edition of Paul Valéry's *Eupalinos, or the Architect*, 1947. Courtesy of Librarie Gallimard.

> Technique —
> Permanent homage given to nature,
> Essential food of the imagination,
> Authentic source of inspiration,
> Of prayer, the most efficacious,
> Maternal language of every creator,
> Technique, spoken poetry, brings us to:
> A R C H I T E C T U R E

Technique, then, is a manner of working within the various constraints placed on the architect (the "permanent" and "transitory" conditions of nature and culture, respectively, as defined in the *Contribution*), such that the imagination of the architect is sharpened by the very limits imposed on it. Technique is at the meeting point of artistic intention with material realization in construction, where it unites with a poetic sensibility to yield true architecture. And inversely, technique influences both intention and realization: it is both a source and method of expression.

The use of technique as such an integrative concept was not, of course, unique to Perret, but a part of his architectural heritage, especially that of Julien Guadet (Perret's theory teacher at the Ecole des Beaux-Arts, who was frequently heard to remark, "No construction; no architecture."). Perret repeated his aphoristic appreciation of technique frequently, placing it in strategic locations as a kind of devotional petition in his writing. It first appeared as the closing to a lecture of 1933; then it served as the opening aphorism of the 1949 version of the *Contribution* published in *Techniques et archiecture*; it also ends his list of unpublished aphorisms; and finally it is used as a sort of linchpin in the 1952 version of the *Contribution.* One can note that, in keeping with the tone of this aphorism, in Perret's short response to Valéry's question there is a distilled outline of Perret's own technique, and it is clear from what Perret says that technique as an inspiration of composition is at the heart of his working process, rather than the technological dimensions of construction with concrete per se. In response to Valéry's question, then, Perret offers from this context his two sentence summation of his priorities as an architect, clearly shaped by this broader understanding of technique as governing his relationship to the properties of reinforced concrete.

First, Perret agrees in his response to Valéry that cement is a paste, *but* he asserts that the material is molded: it is poured in molds and set to harden, and molds are made from wood. Hence one could argue that from one perspective, the technique of working with concrete—the "permanent conditions" imposed by nature—is essentially a matter of crafting in wood, employing the skills of a carpenter, or constructor, rather than the skills of a sculptor working in clay or bronze. Along this line of reasoning, Perret could have elaborated in his response to Valéry that the structural design of concrete is more complicated than designing with steel or wood because there are more variables and the choices depend on the experience and trained judgment of the constructor, and that in handling this ancient material in a modern way, the concrete is always reinforced by using bars of steel, or welded wire fabric for reinforcement of slabs. Employing these additional materials in its handling implies that the architect is dealing with a material that is nonhomogeneous, composed of two materials (concrete and steel or wire), with differing strengths and structural shapes. Because of these kinds of complications, Perret and his brothers (Gustave and Claude, with whom he shared the family construction firm) believed that they had to be prepared to design according to an iterative process as a part of their technique; certain design assumptions were computed and then replicated again and again until the desired result was achieved.

4. The Perret brothers (from left to right): Claude, Gustave, and Auguste, 1950s. Courtesy of Institute fran ais d'architecture.

Collins emphasizes Perret's courage and skill in experimenting with the material in its early stages of development in the first decades of the twentieth century, seeking to derive a technique that could be expressed through it. While there were certain systems of concrete that Perret inherited, especially that devised by François Hennebique, Perret was the first architect, Collins argues, to attempt to derive an architectural language suitable to this material. Hennebique had already developed the essential technology of reinforced concrete construction, a method that he brought to a level of engineering sophistication in the mid-1890s and that Perret's father, Claude-Marie Perret, adopted in the framing of the 25 bis rue Franklin apartments in Paris.[8] Although Hennebique as a contractor had provided the technique, it was left to an architect like Perret to bestow on the new material and technology a prestige and respectability. Though mathematical and engineering skills were an obvious necessity for working with the medium, aesthetics could not be determined by mathematical calculation alone. Unlike building in steel, for example, reinforced concrete architecture demands that the constructor conceive a shape for the concrete before designing its reinforcement. And while an engineer may be equipped to determine by calculation exactly how much reinforcement to insert and how it is to be distributed, it takes an architect (presumably) to have the aesthetic background necessary to determine an appropriate external profile or form to be given to the structural member. In short, it takes a craftsman as opposed to a technician to pursue the new forms that were to be created with reinforced concrete. Collins is explicit that it is Perret's background as a contractor working with his father, combined with his architectural training at the Ecole des Beaux-Arts, that led to his "lifelong devotion" to the pursuit of determining an aesthetic theory for concrete. In other

words, for Perret the method of composition shared priority with the material itself. And while Perret, being versed in the teachings of Viollet-le-Duc and Choisy, knew that composition and material went hand in hand, ultimately for him the laws of architectural form shaped the architect's response to the two considerations.

After the centrality of technique, a second major point made in Perret's response to Valéry's question is the essential classical influence on his attitude toward concrete frame construction. Drawing additional significance from the fact that the molds used for the concrete are made with straight wood, Perret argues that from these straight lines one is led to the forms of antiquity. In an essay entitled "L'Architecture," for example, he argues (echoing the response to Valéry): "It is the use of wooden forms which gives to reinforced concrete its aspect of carpentry and makes it resemble ancient Architecture—because ancient Architecture imitated construction in wood and reinforced concrete *makes use of wood*."[9] Perret offers this argument as a balance to the consideration of reinforced concrete as a modern material requiring innovation and experimentation in its handling. So the relevance of this classical wooden frame is the underlying reference informing Perret's search for an architectural vocabulary for reinforced concrete.

Kenneth Frampton, in a nuancing of this idea of combining the technical and classical architectural traditions, writes in his *Studies in Tectonic Culture*, "For Perret, reinforced concrete was the perfect homogeneous system with which to reconcile the two-hundred-year-old schism lying at the very heart of the Greco-Gothic ideal, that is to say, to combine the asperities of Platonic form with the tectonic expressivity of structural rationalism."[10] In the rue Franklin building, Frampton notes the way the frame has a carpentry-like look that deliberately makes the construction appear as if it were handled as wood. Once again we are brought to the predominance of Choisy's *Histoire de l'architecture,* for Frampton suggests that Perret's handling of concrete is influenced to some degree by the historical description in this book of the classical Greek entablature as a transposition of archaic temple prototypes in timber. Choisy's writings, combined with the teachings of Julien Guadet (Perret's teacher at the Ecole des Beaux Arts) create then the "fundamental basis of Perret's lifelong obsession with the expression of the skeleton or *charpente*."[11] The point that Frampton makes that is worth emphasizing here is the importance of the idea of continuity for Perret: the skeletal form is retained in order to convey in built form the importance of permanence, perpetuation, and succession in time.

Collins adds a further twist on the classical lineage of Perret's framework and its inherently French understanding of the classical aesthetic. Collins points out that stone, though strong in compression, is weak in tension and is therefore inadequate to follow the structural forms of timber. The inability to employ this framed structure in stone, Collins argues, was apparent in the work of the French classicists of the seventeenth and eighteenth centuries. Collins observes a "French Classical drive towards a trabeated and framed architecture" (for example in the works of François Mansart, Jules-Hardouin Mansart, Claude Perrault, Jacques Jules Gabriel), with the characteristics of corner pilasters, unbroken entablatures, wedged window frames, infilling panels, continuously articulated columns, reinforced architraves, and flat roofs.[12] While Perrault and Gabriel reinforced stone blocks with iron, they had difficulty in expressing the classical framed structure and often applied it as ornament. But with reinforced concrete, Collins argues, a material was developed that is strong in both comprehension and tension and is produced in long posts and beams like timber, so it is possible to follow the timber post-and-beam construction of the Greeks—that at least was the argument of Auguste Perret. After tracing the French Classical drive of the seventeenth and eighteenth centuries towards a trabeated and framed architecture, Collins asserts that: "It may be contended that the French Classical architects were striving towards a form of architecture which could in fact only be logically produced with a material so far undiscovered, and that in approximating to the solution they desired, they unwittingly prefigured reinforced concrete forms. 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."[13] Perret made no secret of his awareness of taking his place in a particular French experience of a classical lineage, calling deliberate attention to this line of continuity that he saw as stretching forward and backward in time. It is this linear heritage that he spells out in the *Contribution* as being linked to a specific geographical location: the "soil of France," which becomes in one of the aphorisms the unique landscape for repeating, refining, and amplifying this continuation of a dynastic heritage. And it is this organic history that anchors the development of his use of the reinforced concrete frame.

As Perret outlines this "sacred" history in the *Contribution*, the earliest structures of architecture were of post-and-beam timber construction.[14] Later these structures were imitated in the more permanent material of stone and led to the column and beam construction that became such a fundamental feature of Greek architecture. The decorative aspect of the buildings were in a sense built in to the simplicity and refinement of the elements themselves—therefore the classical work of architecture sought to create a harmony of parts whose essence is, nothing but decoration. As Perret writes in his collection of aphorisms: "From the deep study of their

monuments one understand this truth that Architecture in its highest conception is not so much a construction that one decorates as a decoration that one constructs." Hence, he saw in the new medium of reinforced concrete an appropriate means of perpetuating the essentials of classical architecture, that is bearing a categorical resemblance to the standard architectural vocabulary derived from the ancient world. Perret understood his work, therefore, not as a revival of neoclassical style, but rather as an extension of principles of building that had their origin "in the beginning." Indeed, as he expresses in the essay, "L'Architecture," one of the most attractive aspects of using concrete was precisely this continuity with the classical building tradition of antiquity: "Of all the modes of construction concrete is at once the most ancient and the most modern."

As the literary critic Edward Said discusses in his own study of beginnings, such an appeal to a point of origin carries with it a sacral overtone, in which something essential and immutable is established as having been true "from the beginning."[15] This return to, and identification of, the primacy of a historical beginning is linked to utopianism, argues Said, in the sense that an identified origin implies an intentional lineage radiating from it, through which authority is exerted and received within a persistent and recognized tradition. Said, extending this theme of origins, links it to the program of classicism: "Classicism and neoclassicism are phenomena of simplicity. What matters in classicism and in the type of reflection of which it is a part (an interest in antiquity, giving special value to "primitive terms") is, I think, that the simple is usually accorded eminence because it came first, because it began that which has persisted and endured. And thus what is first, because it *is* first, because it *begins*, is eminent. Most utopian models derive their force from this logic. The beginning as first point in a given continuity has exemplary strength equally in history, in politics, and in intellectual discipline—and perhaps each of these domains preserves the myth of a beginning utopia of some kind as a sign of its distinct identity."[16]

Perret's inclusion in the *Contribution* of such a lineage derived from classical form is thus not merely a schematic historical survey, but a reach for a foundational authority. Like Valéry, then, Perret did not see himself as an innovator in his vocation so much as a translator of a received lineage. One might say that Perret sketches an understanding of *pure architecture* after Valéry's *pure verse,* that is a work whose content would be borrowed and only the form invented. For Valéry the mastering of this process of rendering, restatement, and interpretation is of utmost importance. It was for this reason that he held up as exemplary the great French poets of the seventeenth-century, whom he saw as having brought poetry to a level of excellence, not through their innovation but through their talent in transferring the essence of the ancients into a modern language.

This principle of translating a received authoritative tradition is highlighted by Perret in one of the aphorisms collected in the *Contribution to a Theory of Architecture* whereby he outlines his understanding of the frame and its organic derivation: "The frame is to the building as the skeleton is to an animal. Just as the skeleton of an animal is rhythmic, balanced and symmetrical, and contains and supports the most diverse and diversely situated organs, so the framework of a building must be composed as rhythmic, balanced and very symmetrical. It must be able to contain the most diverse and diversely situated organs and organisms demanded by the function and destination."[17]

This organic metaphor suggests an essential anthropometry in which there is a physiologically derived, as well as mathematically exact theory of proportions. It demonstrates Perret's allegiance not only to Viollet-le-Duc who wrote in a similar vein in the *Entretiens sur l'architecture*, but even more so to Vitruvius, who identified human proportions with those of buildings and parts of buildings, in order to demonstrate both the architectonic symmetry of the human body and the anthropomorphic vitality of architecture. In writing of the frame as analogous to the skeleton of an animal, Perret continues to speak in historical terms of the canon of artistic proportions, whereby artistic representation is understood according to a system of mathematical relations established between various members of a living creature. Thus, through his organic theory of the frame, Perret aligns himself with an entire tradition of understanding the representation of art through a rational system of anthropometric proportions and a definite geometrical scheme.

Here we are brought back to the conversation between Valéry and Perret, for after technique and the classical lineage, there is a third and perhaps most important reason that Perret gives to Valéry for his method: and that is *economy*. As we have seen, Perret knew that while it is possible to shape wood in curved forms so as to mold the material of concrete, this procedure is very costly. So at one level he speaks as a pragmatic professional when he evokes economy as an architectural principle. Perret's success, in terms of the economy of execution, was undoubtedly due to his knowledge of the *métier* of masonry construction, learned as his father's apprentice, combined with his innate appreciation for the principles of architectural design.

But there is, at another level, a subtler meaning of Perret's use of the word "economy" to which he points when he asks Valéry (rhetorically) if it is not economy that is the key to style. In doing so, Perret suggests to Valéry that as an architect he works accord-

5. View of the south colonnade, Musée des Travaux Publics. Courtesy of Brigitte Desrochers.

ing to the same methods of composition that Valéry himself follows in the writing of poetry, that is, the principle of maximum effect with minimum means. The realization of this principle is an act of distillation, in which the artist must sift through manifold possibilities, deriving from a multiplicity a singular litotic expression. Indeed, Valéry found the beginnings of the creative mind's aesthetic activity in the sensibility's *peculiar economy*, which sifts through the excess of stimulation to achieve this sort of distillation.[18] According to Valéry out of the excess of *useless* sensations and *arbitrary* acts, human beings have created a special domain of activity, the arts. Creative activity consists in conferring *utility* upon useless sensations and *necessity* upon arbitrary acts. A work of art always sustains the sensibility that produced it. Works of art, or as Valéry preferred to say, "works of the mind," are those works which the mind chooses to make for itself, for its own use and benefit, works that aim to act upon the sensibility and intellect, with no practical or utilitarian purpose. A work of art is something undertaken by the mind against its own nature, and something which tends to affect the mind of another, to cause in another the creation of value.

In order to clarify the meaning of this concept of economy as a major motive for the working process, Edward Said turns in his own study of Joseph Conrad to John Henry Newman's analysis in his essay on *The Theory of Developments in Religious Doctrines* (1872).[19] Newman's point is similar to Valéry's: that among the diffusion of emotions and sensations which constitute human experience (a diffusion which is so great as to appear chaotic), an inventive discourse—an economy—must be imposed whereby this multiplicity is compressed into episodic mechanisms, discrete structures, or analogies economically distilled out of the complex whole from which they were derived. Said cites Newman to help explain the relationship between the imaginative process, on one hand, and the ritual of the presentation or the produced thing, on the other. An economy is the distillation of the variety of human experience through the creative process, such that it may be expressed in a litotic form which is sufficiently clear and accessible as to be grasped, but which continues to speak of the larger reality of which it is only a part or an approximation.

Perret's use of the word economy helps to give a more precise illustration of this point, and conversely, this concept of economy helps to explain an ill-defined term that Perret repeats frequently: style. For Perret, style is the product of having achieved the necessary program for construction, but with an economy of means that leads toward beauty itself. Among his unpublished aphorisms, for example, is the following:

> Character — Style — Beauty
> Character is obtained in giving satisfaction to the program
> Style in fulfilling the preceding condition but with ECONOMY
> Beauty in satisfying all which precedes but with LYRICISM

Style, then, is not something which is born out of an unlimited freedom of expression—the expression of the chaotic multiplicity of human experience—but rather, it comes from the restraint of an economic means of expression. The paradox, however, is that this economy of expression is especially lyrical. That is to say, by its own restraint it becomes the "instrument of discovery" for truth (as described by Newman), which in turn is our access to beauty. Perret expresses this dynamic between economy and style in the *Contribution*: "Having satisfied the transitory and the permanent conditions, the building, now subject to man and to nature, will have character, it will have style, it will be harmonious. Character, style, harmony: these are the milestones which, via truth, lead to beauty."

Based on the principle of economy and its relation to truth and beauty, therefore, Perret through his defense of a creative restraint directly resists the interest of avant-garde movements in the proliferation of sensation. One might cite, for example, his comment to Marcel Mayer: "A locomotive merely has character; the Parthenon has both character and style. In a few years, the most beautiful locomotive of today will be merely a mass of scrap metal; the Parthenon will sing for ever."[20] Economy thus begins to shed light on both the logical and rhetorical uses of some favorite words in Perret's vocabulary: character, style, truth, and beauty. His use of these words makes him seem remote from today's architectural discourse and our reluctance to employ such universal or abstract concepts. Yet, to quote a text on the virtues that was recently au courant in Parisian intellectual circles, and with which Perret would most likely feel a strong affinity, "Does one think, because one has suppressed these words, that it will become more acceptable to lack the virtues which they designate? What a sad epoch, which suppresses the great words in order not to see its own triteness!"[21]

While words such as *truth* and *beauty* thus identify Perret clearly with one tradition—that which we have been at pains to describe in relation to a classical sensibility—yet they also distance him from the modernist tradition which, ironically, was interested in him principally for his experimentation with concrete. Valéry's question to him about his use of this material in frame construction thus gave him opportunity to express his own sense of positioning within his profession (once his typical brevity is fully explicated), delineating an alternative stance in regard to the relationship of technique, material, and form. Perhaps nowhere does Perret sound as distant from contemporary architectural discourse than in these aphorisms placed near the end of the *Contribution,* summarizing his understanding of the meaning of the frame:

> It is by the splendor of truth that a building attains beauty,
> Truth is in everything that has the honor and labor to carry or protect.
> This truth, it is the proportion which makes it resplendent, and the proportion is man himself.

So the frame is both a structure that forms and a system that controls; it is anthropometric proportion, and the creator of space; it is intention and technique; it is an instrument for discovery, and an expedient for practical purposes. And through these multiple dimensions, Perret sees it as an economy of intention, which is the subject of an inventive discourse about the evolution of construction, a myth about the unfolding of human feeling for space, and a filter for the excess of sensation that threatens the creative distillation of meaning. The economy of the frame is thus technologically dependent and yet also resistant to the unrelenting experimentation of the technologically possible, and the technique of constructing with it thereby becomes for Perret the disciplined method of an elaborative practice that constantly seeks to define the relationship between economy and style. Symbolic and hieroglyphic, as well as practical and earthbound, the frame is chosen by Perret (to use Newman's phrase) as "the nearest approximation to the truth which our condition admits."

Notes

1. "Conversation avec Paul Valéry," Archives d'architecture du XX^{e} siècle, Paris, Box 535 AP 326. For a preliminary catalogue and introduction to the Perret archives, see Réjean Legault, "Auguste et Gustave Perret," *Colonnes* 7 (1995).

2. Bruno Foucart, "Paul Valéry devant l'architecture de son temps, *d'Eupalinos* à Auguste Perret," in Musée Paul-Valéry de Sète, *Paul Valéry et les Arts* (Sète: 1995), p. 44.

3. See Joseph Abram, *Perret et l'ecole du classicisme structurel (1910–1960),* 2 vols. (Nancy: 1985).

4. Reyner Banham, "The Perret Ascendancy," *Architectural Review* 760 (1960): 373–375.

5. Banham, "The Perret Ascendancy," p. 374.

6. Peter Collins, *Concrete: The Vision of a New Architecture* (London: Faber and Faber, 1959), p. 161.

7. Ibid., p. 231.

8. Kenneth Frampton, *Studies in Tectonic Culture* (Cambridge, MA: MIT Press, 1995), p. 123.

9. Auguste Perret, "L'Architecture," *Revue d'art et d'esthétique* 1–2 (1935): 41–50. Originally given as a lecture at the Institut d'Art et d'Archéologie, May 31, 1933.

10. Frampton, *Studies in Tectonic Culture*, p. 123. Frampton points out the significant etymological fact that the French word for the skeletal frame, *charpente*, is derived from *charpentier*, the word for carpenter.

11. Ibid., p. 125.

12. Collins, *Concrete,* p. 171.

13. Ibid.

14. Perret describes this primordial structure as the "*abri souverain*," a shelter which as Gargiani has pointed out is a sort of mythical, fundamental sine qua non of all architecture. Roberto Gargiani, *Auguste Perret 1875–1954: Teoria e opere* (Milan: Electa, 1993), p. 118. See also Joseph Abram, "Auguste Perret: Le classicisme rationnel et la monumentalité," in Jean-Louis Cohen, ed. *Les années 30: L'architecture et les arts de l'espace entre industrie et nostalgie* (Paris: Editions du patrimoine, 1997).

15. Edward Said, *Beginnings: Intention and Method* (New York: Columbia University Press, 1975), p. 32.

16. Ibid..

17. Auguste Perret, *Contribetionu à une théorie d'architecture* (Paris: Cercle d'études architecturales, 1952) n.p.

18. Paul Valéry, "Notion générale de l'art," quoted in Jean Hytier, *The Poetics of Paul Valéry* (New York: 1953), p. 25.

19. Edward Said, *Joseph Conrad and the Fiction of Autobiography* (Cambridge, MA: Harvard University Press, 1966), pp. 45–46.

20. Collins, *Concrete*, p. 157.

21. André Comte-Sponville, *Petit traité des grands vertus* (Paris: PUF, 1995), p. 117.