

NATURE AS POETRY – NATURE AS SCIENCE

by Kathryn Firth

Nature as Poetry, Nature as Science: deux façons opposées de voir la Nature et de concevoir l'architecture à des époques de grands changements: L'Age des Lumières et le début du vingtième siècle.

Art by means of its representation, while remaining within the sensuous sphere, delivers man at the same time from the power of the sensuous...but the mind is able to heal this schism which its advance creates: it generates out of itself the works of fine art as the first middle term of reconciliation between pure thought and what is external, sensuous, and transitory, between nature with its finite actuality and the infinite freedom of the reason that it comprehends.¹

Hegel made the above statement near the end of the eighteenth century, the period known as the Enlightenment. The schism, or duality, he discusses is not a unique one, nor was it a new perception at the time. However, this period, also referred to as the Age of Reason, was distinct in its conscious juxtaposition of reason and passion against one another. Vast scientific progress brought into question the role of nature and man's relationship to it. Nature, taken in its Aristotelian sense—pure and empirical, was now not only a source of poetry and passion, but it was also a scientific informant.

Within the discipline of architecture the dual character of nature had great potency. The previous era, the Rococo, had been anything but subtle in its licentious use of natural forms. A few architects, such as Boullée and Ledoux, now infused with the belief that nature had a strict underlying order, attempted to enhance the passionate and poetic side of their designs through the use of the fervorous scientific and mathematical investigations occurring all around them. According to Boullée: "Art, in the true sense of the word, and science, these we believe have their place in architecture."²

More than a century after Boullée and his contemporaries had been concerned with reconciling the new-found science of nature with the heart-felt poetic aspect of nature, Walter Gropius, on the subject of architectural mass, said: "the clear, perceptual form is to be grasped in one glance, without any suggestion of the complexity of the technical organism. Technical form and art are thus fused into organic unity."³

Gropius and his fellow architects, such as Behrens and Mies van der Rohe, had both a "Rococo" period, in the form of "Art Nouveau", and an "Age of Enlightenment", in the guise of a new machine age, to respond to. The early twentieth century represents another period when the correlation of reason and passion was consciously attempted by a few architects. It is no surprise then, to find, at this time, architectural manifestations similar to those of the late eighteenth century—a freedom from ornament, the use of simple geometric forms and a reference to classical proportional system. Technical progress was to inform the deeper, passionate side of design while nature continued to be the source of both science and poetry.

It is a grand and beautiful sight to see man emerge from obscurity somehow by his own efforts; dissipate, by the light of his reason, the darkness in which nature has enveloped him; rise above himself; soar intellectually into celestial regions; traverse with giant steps, like the sun, the vastness of the universe; and what is even grander and more difficult—come back to himself to study man and know his nature, his duties, and his end. All of these marvels have been revived in recent generations.⁴

Jean-Jacques Rousseau made this statement to the Academy of Dijon in 1750. Given that the Discourse in which it appeared won a prize, one may conclude that the sentiment expressed was a shared one.

Rousseau, in his strained acclamation of human nature progress was attempting to encourage a careful and passionate study of nature. Living in the Enlightenment, he was not only witness to an indiscriminate obsession with the novelty of science but also to an ostentation and a sense of ornament in style and manner left over from the preceding Rococo era. Over-specialization and affection in general conduct plagued society.

Although Rousseau's Second Discourse of 1754 brought him little applause, it was at this point that he described

man's own path to ethical and political corruption. It was here that he stripped the civilized human being down and returned to a theoretical state of nature, for:

as all the progress of the human species continually moves it farther away from its primitive state, the more new knowledge we accumulate, the more we deprive ourselves of the means of acquiring the most important knowledge of all; so that it is, in a sense, by dint of studying man that we have made ourselves incapable of knowing him."⁵

Unlike Rousseau, both Hegel and Kant made direct reference to aesthetics during this period. They were instrumental in shaping new systems of aesthetics. According to them, the old hierarchial system was limited in its dependence on solid masses for expression. For Hegel, the immaterial expression determined how effective a work of art could be. Although architecture was exalted for its symbolic value, it was considered to be the highest art form since, "its characteristic peculiarity lies in the power with which it subjects to the mind and to its ideas the sensuous element from which music and painting in their degree began to liberate art."⁶ Similarly, Kant united the synthetic, the experience of sensations, with the analytic, the ability to reason. What we perceive, with the exception of the Beautiful, or experience with our senses, is then ordered by our mental faculty.

the pleasant and the good have both a reference to the faculty of desire; and they bring with them—the former a satisfaction pathologically conditioned,—the latter a pure practical satisfaction, which is determined not merely by the representation of the object, but also by the represented connection of the subject with the existence of the object.⁷

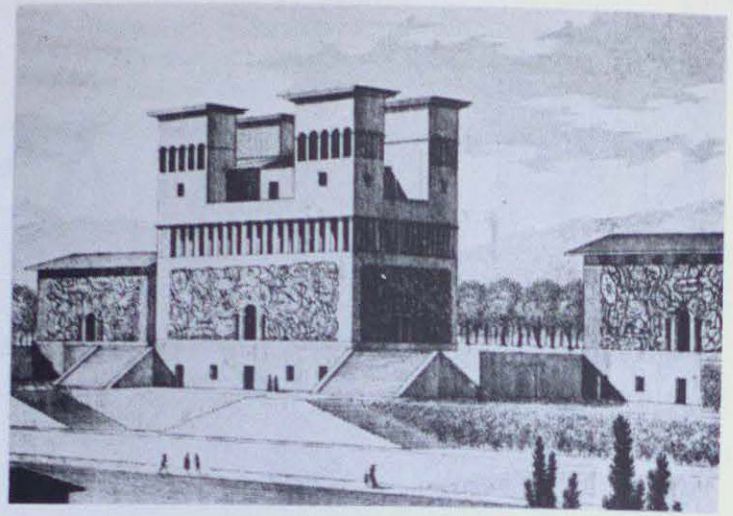
What is striking in the philosophies of Rousseau, Kant and Hegel is the desire to strike a balance between issues of the head and those of the heart: science and poetry. Rousseau's claims against the pursuit of scientific knowledge often appear rather rash: "how many errors, a thousand times more dangerous than the truth is useful, must be surmounted in order to reach the truth."⁸ However, like Kant, he may be considered part of a limited lineage of natural philosopher-scientists. His fears were of useless overspecialization and knowledge for the sake of showiness, which he saw as prevalent in his day.

Many architects at this time were attempting to investigate the senses and place an emphasis on observation in their work. The strict hierarchy of the Baroque was being broken down. It was not so much that the rules of composition and architectural control were being disposed of, but rather they were to be re-examined through new eyes, new criteria.

The desire to strip things down to their elemental characteristics was permitted literal expression within the discipline of architecture. The desire to be rid of busy, flamboyant Rococo tendencies and reconcile scientific advances with poetic architectural ideas was nowhere stronger than the work of Etienne-Louis Boullée.

Initially, Boullée may be aligned, in a superficial manner, with Rousseau—on the basis of his quite extremist position in the arguments of the day and his disregard of the pressures of fashionable society. More importantly, both he and Rousseau find nature to be the source of both the romantic and rationalist stances, that is the passionate or instinctive and the logical or scientific.

The Rococo era had left a bad taste in the mouths of designers who were now striving to scientifically analyze nature's forms. It had been a style which indiscriminately introduced curvature and ornament while clinging to a symmetry



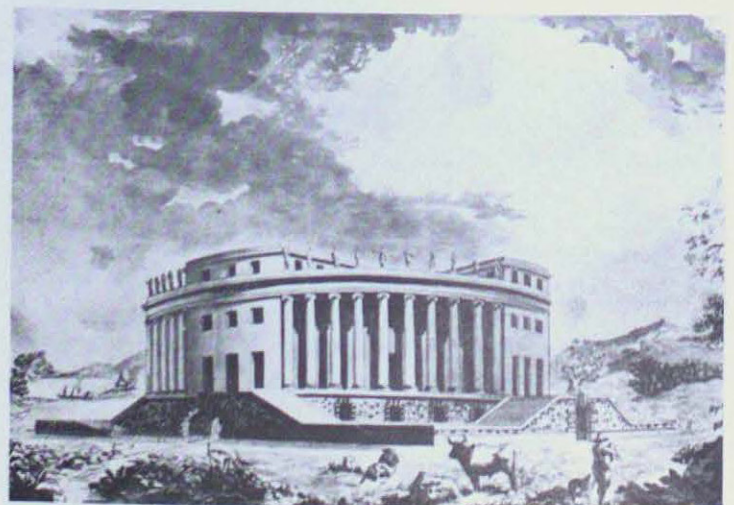
Hunting Lodge, Ledoux

and hierarchy which after a certain point began to appear arbitrary. States Rousseau:

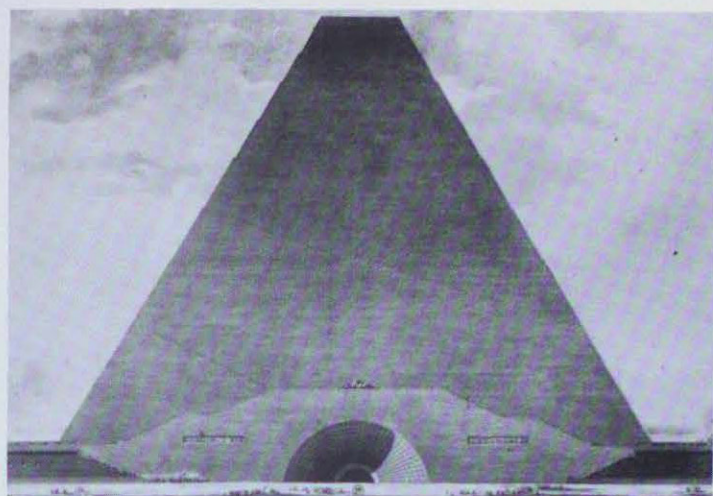
It is in the rustic clothes of a farmer and not beneath the gill of a courtier that strength and vigour of the body will be found. Ornamentation is no less foreign to virtue, which is the strength and vigour of the soul. The good man is an athlete who likes to compete in the nude. He disdains all those vile ornaments which hamper the use of his strength, most of which were invented only to hide some deformity.⁹

For Boullée and Claude-Nicolas Ledoux the rejection of ornamentation and a turn to bolder, simpler forms entailed what may be interpreted as a somewhat romantic stance—a reversion to Platonic forms, a longing glance to the past. Just as Rousseau urged the return of man to his original state, the state of nature, so these 18th century architects rediscovered basic geometric forms as provided by Nature herself. The hope was that in these simple volumes such as spheres, pyramids and cubes, a timeless character might be found.

In a loose sense this was a revival of classicism. The classical in architecture simply operated as a counterpart to Rousseau's pre-architecture state of nature. The sense of design was more rational than that of the Renaissance and Baroque periods. Geometric order was clear and antiquity was a source of inspiration due to its emphasis on precision and the intellect. This reference to the classical was not confined to the discipline of architecture. In describing the dependent aspect of Beauty, Kant referred to the classical temple as the structure perhaps nearest to his definition of free Beauty.¹⁰ Subsequently, Hegel named the three universal



House of M. de Witt, Ledoux



Pyramidal Cenotaph, Elevation, Boullée

stages through which art develops as being the symbolic, for example architecture, the classical, such as sculpture, and the romantic, which includes painting, music and poetry. In this case "the classical type attained the highest excellence, of which the sensuous embodiment of art is capable."¹¹ This, then, recalls that aspect of classicism which draws its inspiration from natural forms—sensual yet pure.

In conjunction with this renewed interest in classicism the Vitruvian notion of "unity in variety" was revived. Unity, or order, was considered a symbol of wisdom. "Unity and Plurality" was the thousand times repeated cliché in all aesthetic theories of the eighteenth century.¹² While the disagreement between eighteenth century and classical aesthetic theory lay in the definition of Beauty. Boullée conceded that "all disparity is loathsome in art founded on the principle of parity. I add that (beauty) is pleasing because it is the image of order and unity."¹³

While both Boullée and Ledoux grounded their work in pure geometric forms, they worked with them in different manners. Ledoux tended to take pure volumes and chisel away at them. The Hunting Lodge for the Prince of Bauffremont, 1778, is an example of this. Here the cubic form of the main building has substantial bites taken out of it each side at the top, producing smaller, similarly cubic belvederes. Staircases are carved out of solid masses of stone, just as archways puncture solid hedgerows. Likewise, the House of M. de Witt, 1781, begins as a cylinder and pieces are then removed to form colonnades, entrances and windows.

In the case of Boullée a stricter adherence to pure form is present. In the instances of his cenotaph designs the schemes

are not only monuments to people who have died, but also monuments to the grandeur of pure volumetric geometry. Of the design of a pyramidal cenotaph Boullée said: "I have given this pyramid the proportions of an equilateral triangle because it is in perfect regularity that the beauty of form lies."¹⁴ Boullée's devotion to the tutorage of Nature as a poet and as a scientist is unsurpassed by his peers. Agreeing once again with Rousseau he says:

If men based their ideas on the study of nature, they would be less likely to fall into all sorts of errors. Each one of us believes that he is right: but reason is the fruit of study: thus, before we announce our confirming views with the proofs we derive from it...The real talent of an architect lies in incorporating in his work the sublime attraction of Poetry.¹⁵

Boullée and Ledoux were both concerned with visualizing the new concepts of space arising in physics and cosmology. Previously, the vastness of the universe, let alone man's place in it, had not been a questionable issue. The Baroque and Rococo, though often grand in scale, had not displaced man's central and primary position in the universe.

Ledoux's appeal to the distant past for rules led him to study Vitruvius. From him, he learned about salubrity, proportion and economy—lessons which, in the end, made him into a practically based architect of commercial desirability. Boullée, on the other hand, took the Hegelian concept of Spirit, as the synthesis of an idea and nature, and fused it with Kant's romantic notion of the sublime, that aspect of nature which goes beyond any laws, to achieve a view of nature uniting science and poetry. Such a view did not, however, reinforce man's central position in the universe. Man simply became subsumed in the vast realm of nature; the tendency was to view man more as a part of nature. Many interior spaces of Boullée's projects are evocative of this point of view.

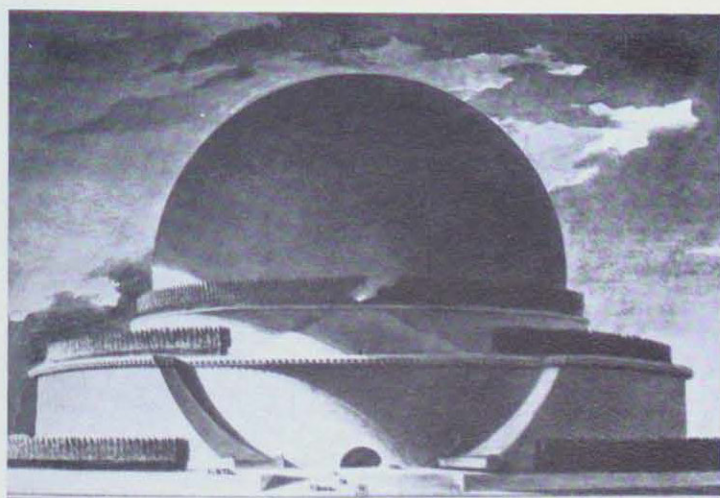
Rousseau and Boullée, in advocating a discriminatory examination of the poetic and scientific sides of nature, show little admiration, if not scorn, for the enquiries of their day. However, both single out the work of Newton as worthy of note. Said Rousseau at the point when one is sure he was demanding the chastisement of all scientists:

What shall we think of those compilers of works have indiscreetly broken down the door of the sciences and let into their sanctuary a populace unworthy of approaching it; where as it would be preferable for all who could not go far in the learned profession to be rebuffed from the outset and directed into arts useful to society...Those whom nature destined to be her disciples needed no teachers, Verulam, Descartes, Newton, these preceptors of the human race had none themselves; indeed what would have led them as far as their vast genius carried them? ¹⁶

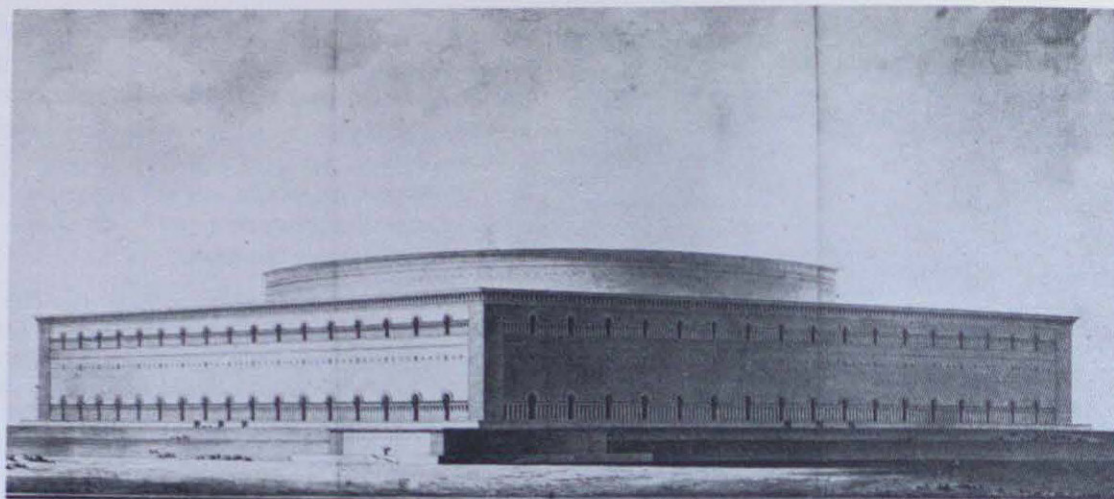
Newton was the only person Boullée dedicated any of his cenotaphs to. To Newton he pledged the sphere, the geometric image of perfection.

*Dans le cenotaphe de Newton, j'ai cherché à réaliser la plus grande de toutes les images, celle de l'immensité. C'est par elle que notre esprit s'élève à la contemplation du Créateur. Le corps sphérique nous offre la solution d'un problème qui pourrait être regardé comme un paradoxe, s'il n'était démontré géométriquement que la sphère est un polyèdre infini. C'est que de la symétrie la plus parfaite, dérive la variété la plus infinie.*¹⁷

Newton was thus placed in a somewhat heroic position as a scientist who devoted his life to an unpretentious study of nature, out of which useful discoveries emerge. Rousseau quite blatantly, and Boullée in a more subtle manner, placed high-



Newton Cenotaph, Elevation, Boullée



Municipal Palace, Boullée

est value on those arts which are useful to society. This usefulness, or functionalism, as we refer to it, ties in with the rather radical political stance held by these men.

In Rousseau's Second Discourse, "Discourse on the Origin and Foundations of Inequality Among Men", his essential contention, and primary motive for the turn to nature, was that, in fact, men are "naturally" equal.

Everyone must see that, since the bonds of servitude are formed only from the mutual dependence of men and the reciprocal needs that unite them, it is impossible to enslave a man without another; a situation which, as it did not exist in the state of nature, leaves each man there free of the yoke, and renders vain the law of the stronger.¹⁸

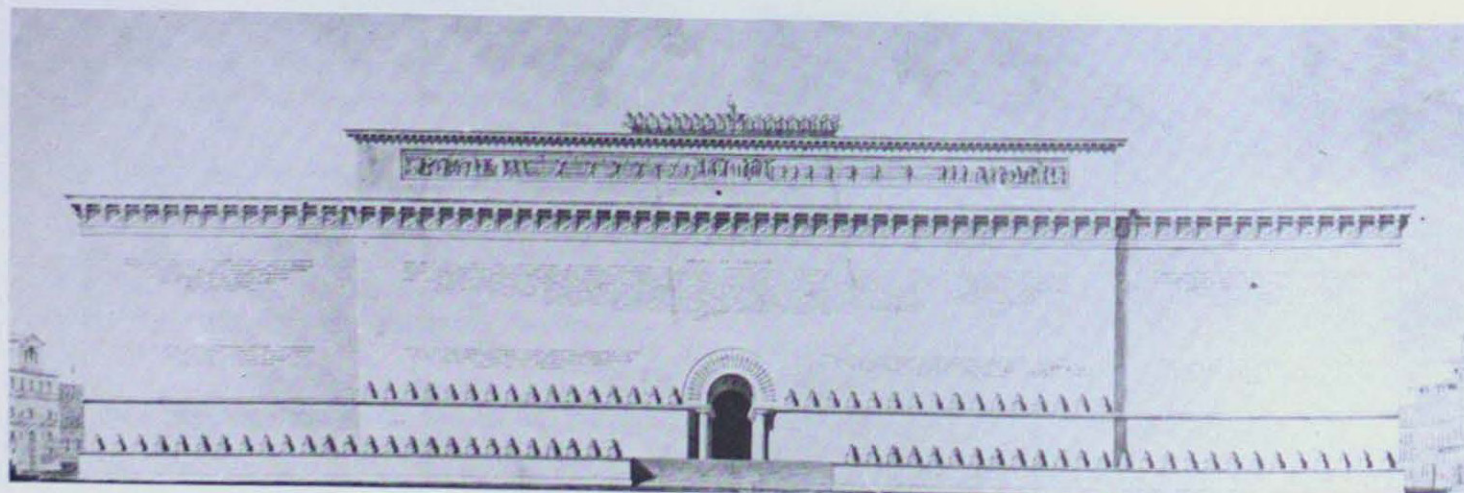
Rousseau also advocated judging a citizen according to his usefulness to society. "The ranks of citizens, therefore ought to be regulated not upon their personal merit but upon the real services that they render to the state, which are susceptible of a more exact estimation."¹⁹ Rousseau seemed to hold that a state ordered by the citizens would, in the end, be a truer cause for civic pride—certainly in comparison to the present state founded on aristocratic favouritism.

Boullée, in concurrence with Rousseau, concentrated his design on expressions of civic pride. His interest lay in the masses, unlike Ledoux, who worked mainly through private patrons. Not only did Boullée wish to escape the flamboyant ornamentation of his predecessors, he went so far as to seek inspiration in the simple and austere dwellings of the poorer classes. The relatively bare walls and large unbroken surfaces of civic buildings such as the National Assembly Hall and the

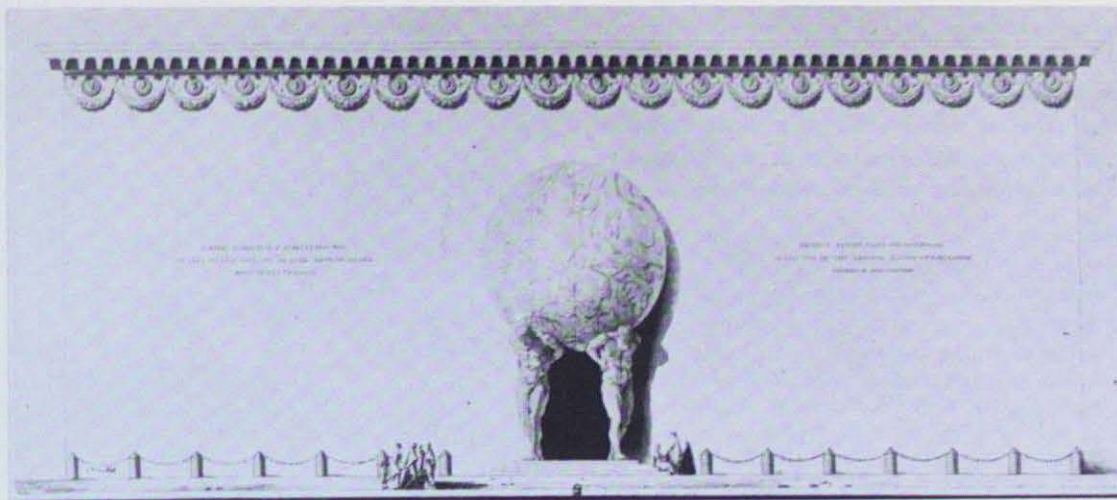
Municipal Palace are examples of this. Each of these display elevations which minimally express their base and cornice lines. In section it can be seen that even the interior decoration is restricted to sparse embellishment of the fenestration. Where ornament is used in a grander manner, as on the entrance facade of the National Library, one can be sure it is of symbolic significance. In contrast to Ledoux's residences and villas for the wealthy, Boullée's projects contained dwelling units as one more example of his constant concern with social and collective considerations.

By the end of the nineteenth century the surface and sculptural expression of nature was prevalent in architecture, as well as in most other areas of artistic endeavour. Structural and technical aspects, although advanced by the previous scientific progress, once again became subservient to an interpretation of nature embodied primarily in ornament. Romanticism here, in its emotive sense, drew on nature in what may be considered a rather superficial manner. While natural growth was often a theme at this time, it was interpreted in a non-scientific mode. Growth as allowing for the depiction of elongated sinuous forms took precedent over viewing growth in terms of a series of distinct steps in a metamorphosis. While the architecture of the Rococo period grew out of the rigidity of the Baroque and a referral to basic rules of classicism, Art Nouveau made almost no classical references. Fluidity of decoration, while in the form of nature, camouflaged structure rather than decorated it, as has been the case in the Rococo.

As early as 1890, Louis Sullivan was, however, attempting to address the scientific aspect of nature. His belief that



National Assembly Hall, Boullée



National Library, Boullée

nature was the origin of all form finally led him to pronounce that often used phrase: "form follows function". He contended that it is function which determines form and in turn these forms must be expressive of that function through implication. This contention took nature beyond the realm of mere ornament and into that of scientific enquiry. Sullivan's investigation was spurned on by philosophers such as Taine, who in 1870 wrote:

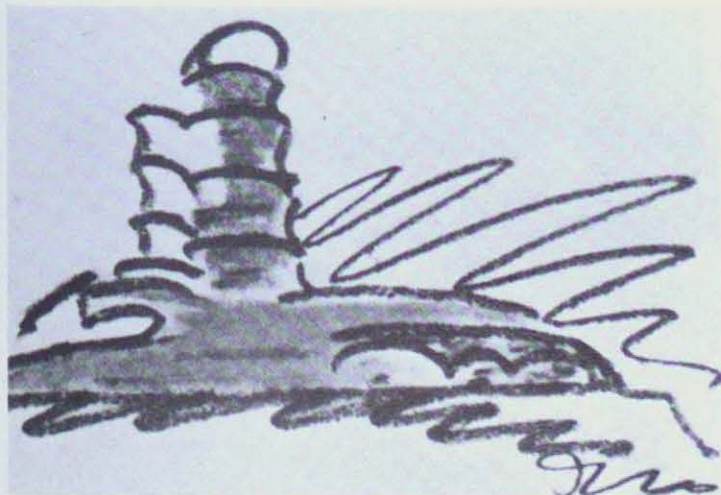
What is art, and in what does nature consist? Instead of dictating a formula, I shall appeal to you with facts, for facts exist here as elsewhere—positive facts open to observation; I mean works of art arranged by families in galleries and libraries like plants in an herbarium and animals in a museum. Analysis may be applied to one as well as to the other. It is allowable to investigate a work of art as it is to investigate a plant or an animal.²⁰

However, just as the Enlightenment had provided an infusion of scientific advancement, the prolific developments in industry and mechanization at the beginning of the twentieth century were somehow necessary to trigger the serious consideration of nature in an analytic light. This is not to imply that such consideration and its poetic counterpart occurred the instant mass production was possible. On the contrary, before this could happen a romantic reaction to the acceptance of Darwin's theories of evolution and against industrial domination took place. This reaction is referred to as Expressionism elevated to the subjective and the irrational. Nature's role in the creative process lay in human instinct and emotions. Kant's objective and abstract reasoning was rejected in favour of Kierkegaard's subjectivism.

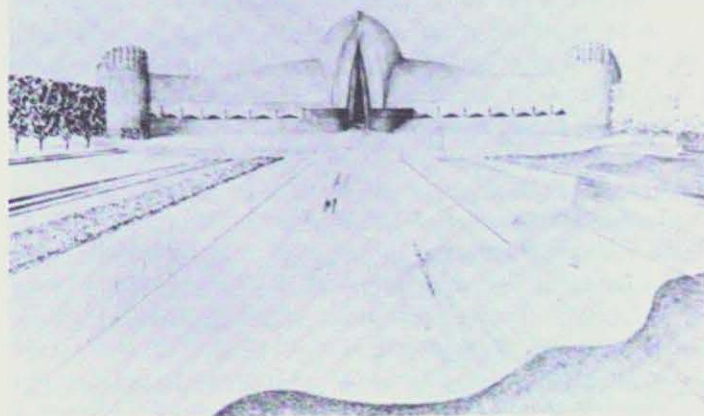
The thing is to find a truth which is true for me, to find the idea for which I can live and die: what would be the use of discovering so-called objective truth, of working through all the systems of philosophy and of being able, I required, to review them all and show up the inconsistencies within each system; what good would it do me to be able to develop a theory of the state and combine all the details into a single whole, and so construct a world in which I did not live but only held up to the view of others...²¹

Expressionism was, at least in part, a manifestation of the fear that the individual would be submerged by the advance of mass production. While Art Nouveau drew on the physical offerings of nature's appearance as a refuge from stolid tradition, Expressionism set out to elevate the experience and sentiments of Rousseau's noble savage. It is not surprising that during this period some of history's most organic, but specifically anthropomorphic, building designs were produced. Wijdeveld's vulviform People's Theatre in Vondelpark and Mendelsohn's phallic Einstein Observatory Tower are blatant examples of this. It is interesting in the latter case that the program carries extremely rational and scientific implications.

Even the Bauhaus, including its master, Walter Gropius, considered a bastion in the struggle to balance nature as a science with nature as an art or poetry, was Expressionist in its works for about four years. However, building on the writings of critics Sharp and Pehnt, Cornelius Van de Ven writes: "...the functionalist movement developed naturally out of Expressionist and Functionalist tendencies in (the architect's) own design process. In fact, most of the architects of the Bauhaus were actually, at the outset of their careers,



Einstein Observatory, Mendelsohn



Design for a People's Theatre, Wijdeveld

Expressionist architects."²²

The need to resolve scientific advancement with notions of subjectivism and go beyond expressionism was evident in the writings of Max Dessoir (1867-1947), a philosopher and professor whose theories tended to parallel those of Gropius. Dessoir quite frankly called for a "General Science of Art":

Like every other science, ours springs from the need for clear insight and from the need to explain a group of facts. As the field of experience which this science has to make intelligible is the field of art, there arises the peculiarly troublesome task of transforming the freest, most subjective and synthetic activity of man's in the direction of necessity, objectivity and analysis.²³

Gropius, having participated in the Expressionist surge and having been a student of Peter Behrens, was well equipped to search for a balance between art and technology, passion and reason. Behrens was optimistic about the potentials of industrialism and mass production and his belief that they would issue forth the "new style" eventually rubbed off on Gropius:

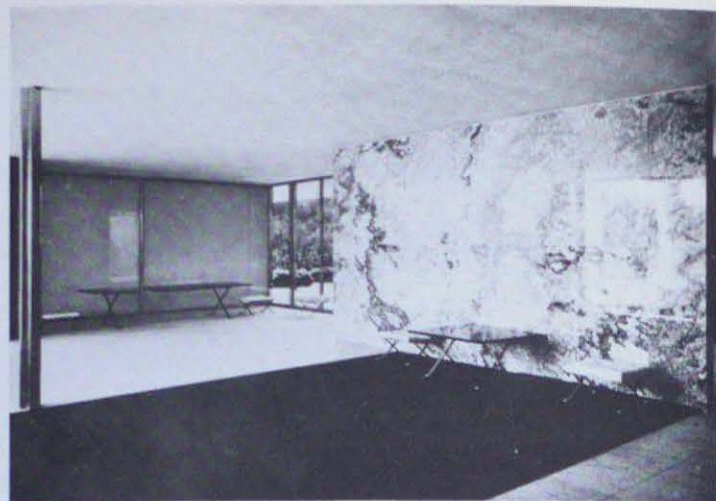
For the last century the transitions from manual to machine production has so preoccupied humanity that, instead of pressing forward to tackle the new problems of design postulated by this unprecedented transformation, we have remained content to borrow our styles from antiquity and perpetuate historical prototypes in decoration. That state of affairs is over at last.²⁴

Gropius and his school, including artist-architects such as Kandinsky and Moholy-Nagy, sincerely asked: "Is there a science of design?"²⁵ They followed Dessoir in their search for key systems in a science of art, a science of space. The systems may be numerous and various, but what is important is that they exist. Dessoir was a precursor of this view stating:

He who should undertake to construct thereof a clear intelligible unity of concepts, would destroy the energy which now proves itself in the encounters, the crossing of swords, and lively controversies of scholars, and would mutilate the fullness of experience which now expresses itself in the manifold special researches. System and method signify for us to be free from one system and one method.²⁶

The new investigations and advances in physics, and investigations into the fourth dimension, time, led to an emphasis on fields of force through space in architecture rather than on mass. Materials became tools for the creation of space. As in the Enlightenment, sensory observation was considered vital in the realm of scientific and, consequently, architectural progress. Just as importance had been placed on the space inside Boullée's cenotaphs, so the space between walls, whether free-standing or structural, and other architectural elements were crucial in the early twentieth century. Mies van der Rohe's Barcelona Pavillion is a more than a competent example of this. Free-standing walls and columns define the boundaries of the space, while the actual physical limits of the building are in glass, playing down its true mass. In Boullée's cenotaph to Newton the manipulation of light is used for the same ends, making up for the yet undiscovered structural possibilities. The element of time is also addressed through lighting effects. Day-time inside the sphere is created during the night by a large lantern, while night-time inside is assimilated by day when star-like points of light come through punctures in the sphere.

The so-called "new style" set out to liberate architecture from the nettles of ornament, which it seems to get caught in periodically. Walls were to be free of superfluous decoration



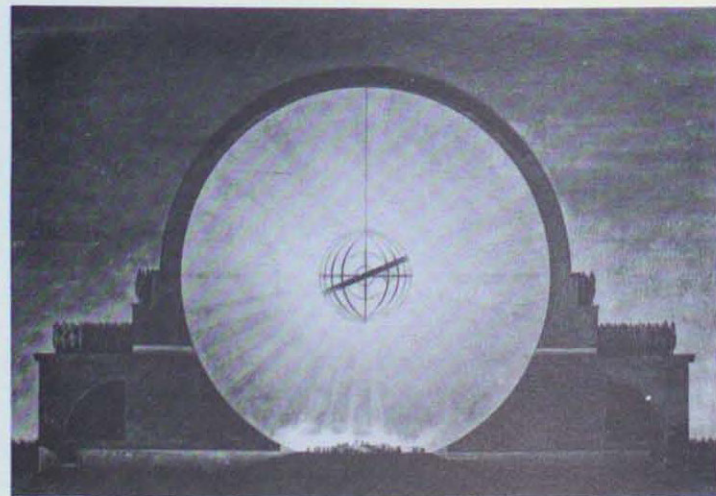
Barcelona Pavilion, Mies Van der Rohe

and to become light, often acting as screens. Classical ideals including spatial harmony and traditional proportional relationships were goals attained through new structural techniques. The flat roof was now possible—an engineering feat Boullée and Ledoux would have appreciated in their pursuit of Platonic forms.

Clear cubic forms prevailed in the work of Gropius and many of his peers. While Ledoux had chiselled away at the forms, and Boullée solidified them, the architects of the early twentieth century tended to either puncture them or imply them through the use of structure. The Studio Apartment Building is essentially a box out of which holes are punched. The slab balcony floors appear to almost be the punched out pieces. The workshop wing is clad in glass through which one can see the rectilinear structure of the building. Nature in its most analytic and dissected sense is represented here. The point where leaves on a tree or skin on an animal is merely cladding is blatantly revealed. Mies van der Rohe's skyscraper in glass and steel is perhaps the most extreme example of the anatomical representation of a building.

Although the forms which appeared were often not completely Platonic in their actual configuration, what they did illustrate was a desire to return to that elemental level of design and structure.

Gropius, in his attempt to reconcile romantic nature with rational nature, outlined four aspects of the idea of space. Illusory space is the first. It draws on the Kantian concept of man's intuition and metaphysical powers. Dessoir echoed this saying: "what we experience aesthetically extends from our animal to our divine nature. So artistic creation is rooted



Newton Cenotaph, Section, Boullée



Bauhaus, Studio Apartment Building, Walter Gropius

in bodily states, premonitions, emotions, obscure voices and forms; slowly it rises from the subsoil to purity and clarity."²⁷

The second aspect of space is rationalist in that it addresses the mathematical space of the intellect. It refers to the rules of geometry which are applied in constructing a drawing. Thirdly, Gropius discussed the material space of the reality beyond us. It is unclear whether he is referring to the tactile space we perceive. If this is the case, then he is utilizing Kant's idea of monumental reality, as opposed to the phenomenal reality which we cannot perceive. Finally, he included the romanticist notion of a "spiritual idea of space, controlled by our physical and intellectual attributes, made vital and brought to emotional expression."²⁸

The Bauhaus members, like Boullée, spent much energy establishing a pedagogy for design. They agreed that the student should begin with the material world, comprehensible through the faculty of reason, and then he should be led to realize the poetry possible within a design. Mies spoke of guiding the student from the material to the functional and then, eventually, to the spiritual. Similarly, Gropius described the human being as experiencing spatial reality by means of the mind, the senses and the soul. In the end, then, the artist creates out of a synthesis of these three qualities. Nature as reason and nature as instinct are to be equally stressed, and in that order.

They (the students) had objective tuition in the basic laws of form and colour, and the primary condition of the elements of each, which enabled them to acquire the necessary mental equipment to give tangible shape to their own creative instincts.²⁹



Bauhaus, Workshop Wing, Walter Gropius

Boullée believed in first introducing the student to the theory of volumes in order to demonstrate that the basic principles of architecture are established in nature. However, he went on to say that:

The best reasoning in the fine arts will never help to form Artists. Why not? Because reasoning will never help us experience sensations and because the art of expressing these sensations, which derived from our sensibility, is the purpose of the fine arts. The way to study the fine arts is to exercise one's sensibility; we must seek the means of developing it in the most beautiful human creations and above all in those of nature.³⁰

Gropius, again in accord with Rousseau and Boullée, scorned the Academies of his day. He claimed that "Salon Art" was remote from everyday life. By educating his students in every stage of the design and construction of a building or an object he gave equal status to the artist and the artisan and guarded against over-specialization.

Matching art and industry, art-form and technical-form, Gropius hoped to arrive at the most economical use of space and time. However, mechanization was not to be seen as an end in itself. Gropius, like Boullée, was interested in the useful arts, in functionalism. "But in the last resort mechanization can have only one object: to abolish the individual's physical toil of providing himself with the necessities of existence in order that hand and brain may be set free for some higher order of activity."³¹

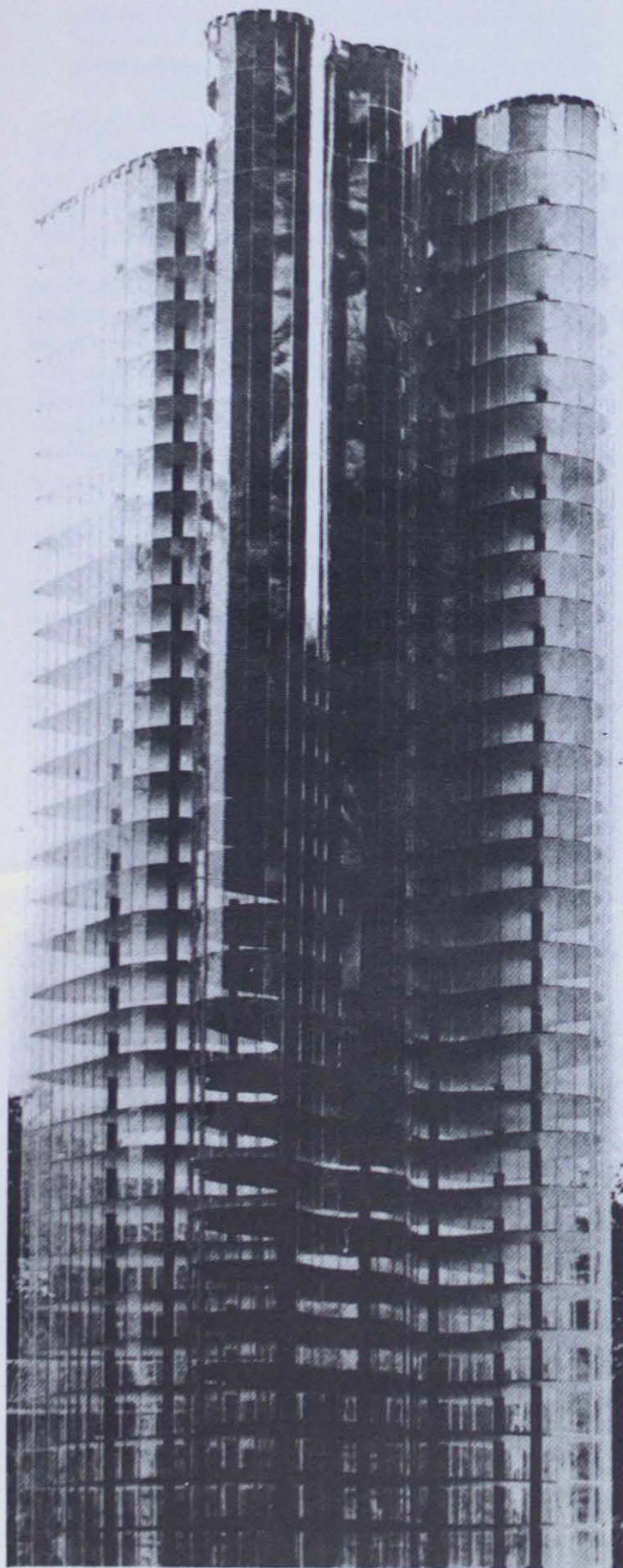
The fear in this age of mechanization was of standardization and mass production. As voiced previously by the Expressionists, there was a sentiment that all individuality would be lost. Gropius saw beyond this sentiment and reiterated the "unity in variety" dictum. For him maximum standardization allowed for maximum variety. Technique could efficiently be standardized while the designer would have the freedom to compose out of a vast choice of prefabricated materials and components at a low cost.

Standardization is not an impediment to the development of civilization, but, on the contrary, one of its immediate prerequisites...In all great epochs of history the existence of standards—that is the conscious adoption of type-forms—has been the criterion of a well-ordered and polite society; for it is a common place that repetition of the same things for the same purpose exercises a settling and civilizing influence on men's minds.³²

The architectural attempt to fuse poetic nature and scientific nature, as I implied previously, is not unique to the architects or architectural movements I have cited. Both periods discussed were of similar time spans and followed paths which went from the overtly romantic to the intensely rational. In both cases there emerged instances of architects devoted to reconciling and uniting the two extremes.

It is possible to speculate that a certain clarity and acuteness tends to be evident in these attempts at unification during periods when extensive scientific advancement is made. Progress in the field of science seems to act as a catalyst to design otherwise based mainly on the passions. The period from the 1950's to the early 1970's is the less blatant, though still illustrative, example of this pattern.

As if in opposition to the technological advancement of the 1950's, the 1960's went to great extremes to romanticize nature. By the late 1970's and early 1980's greater scientific knowledge about the universe is constantly clothed in both technological garb and romantic fiction. No medium illustrates this as well as film, however, architecture inevitably serves as a vehicle for this recurring desire to bring nature as science into harmony with nature as poetry.



Glass Skyscraper Project, Mies Van der Rohe

NOTES:

1. Peyton Richter, (ed.), *Perspective in Aesthetics*, Bobbs-Merrill Co. Ltd., Indiana, 1967, p.162.
2. Rosenau, Helen, *Boullée and Visionary Architecture*, Academy Editions, London, 1976, p.83.
3. Van de Ven, Cornelius, *Space in Architecture*, Van Gorcum Assen, The Netherlands, 1980, p.142.
4. Rousseau, Jean-Jacques, *The First and Second Discourses*, St.Martin's Press, New York, 1964, p.35.
5. Ibid, p.192.
6. Richter,
7. Richter, *op cit* p.132.
8. Rousseau, *op cit* p.49.
9. Rousseau, *op cit* p.37.
10. Van de Ven, *op cit* p.147.
11. Richter, *op cit* p.169.
12. Van de Ven, *op cit* p.147.
13. Porphyrios, Demetri, "Selected Aspects of Architecture and Philosophy in 18th Century Theory", *International Architect*, No.4, Vol.1, 1981, p.31.
14. *Visionary Architects*, University of St. Thomas Press, Houston, 1968, p.25.
15. Rousseau, *op cit* p.112.
16. Rousseau, *op cit* p.62.
17. Van de Ven, "In the cenotaph to Newton, I came to realize the greatest of all 'images', that of immensity, it is through this that our spirit is brought to contemplate the Creator. The spherical form offers us the solution to a problem which may be seen as a paradox, that the sphere is an infinite polyhedron, though this may not be geometrically demonstrated. That is to say, the symmetry is the most perfect, deriving the most infinite variety." *op cit* p.56.
18. Rousseau, *op cit* p.140.
19. Rousseau, *op cit* p.227.
20. Richter, *op cit* p.286.
21. Bretall, Robert, (ed.), *A Kierkegaard Anthology*, Princeton University Press, New Jersey, 1973, p.261.
22. Van de Ven, *op cit* p.154.
23. Dessoir, Max, *Aesthetics and the Theory of Art*, Wayne State University Press, Detroit, 1970, p.21.
24. Gropius, Walter, *The New Architecture and the Bauhaus*, The M.I.T. Press, Cambridge, 1965, p.24.
25. Van de Ven, *op cit* p.227.
26. Richter, *op cit* p.309.
27. Dessoir, *op cit* p.121.
28. Van de Ven, *op cit* p.227.
29. Gropius, *op cit* p.78.
30. Rosenau, *op cit* p.113.
31. Gropius, *op cit* p.30.
32. Gropius, *op cit* p.31.

BIBLIOGRAPHY:

1. Banham, Reyner, *Theory and Design in the First Machine Age*, The Architectural Press, London, 1977.
2. Bretall, Robert (ed.), *A Kierkegaard Anthology*, Princeton University Press, New Jersey, 1973.
3. Dessoir, Max, *Aesthetics and the Theory of Art*, Wayne State University Press, Detroit, 1970.
4. Gropius, Walter, *The New Architecture and the Bauhaus*, The M.I.T. Press, Cambridge, 1965.
5. Hitchcock, Henry Russell & Philip Johnson, *The International Style: Architecture since 1922*, W.W. Norton & Company, Inc., New York.
6. Lesinkowski, Wojciech, *Rationalism and Romanticism in Architecture*, McGraw-Hill Book Co., New York, 1982.
7. Pérouse de Montclos, Jean-Marie, *Étienne Louis Boullée*, George Braziller, New York, 1974.
8. Pevsner, Nicholas, *An Outline of European Architecture*, Penguin Books, Great Britain, 1977.
9. Peyton E. Richter (ed.), *Perspective in Aesthetics: Plato to Camus*, Bobbs-Merrill Co. Inc., Indiana, 1967.
10. Rosenau, Helen, *Boullée and Visionary Architecture*, Academy Editions, London, 1976.
11. Rousseau, Jean-Jacques, *The First and Second Discourses*, St. Martin's Press, New York, 1964.
12. Porphyrios, Demetri, *Selected Aspects of Architecture and Philosophy in 18th Century Theory*, *International Architect*, No.4, Vol.1, 1981, pp.30-36.
13. Rowe, Colin, *The Mathematics of the Ideal Villa and Other Essays*, The M.I.T. Press, Mass., 1976.
14. Van de Ven, Cornelius, *Space in Architecture*, Van Gorcum Assen, The Netherlands, 1980.
15. *Visionary Architects*, University of St. Thomas Press, Houston, 1968.

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