

During the last few years a great deal of attention has been given to the problem of design methodology and to the process of design as a branch of the wider process of problem-solving. Many people believe—not without reason—that the intuitive methods of design traditionally used by architects are incapable of dealing with the complexity of the problems to be solved and that without sharper tools of analysis and classification the designer tends to fall back on previous examples for the solution of new problems—on type-solutions.

Typology and Design Method.

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One of the designers and educators who has been consistently preoccupied with this matter is Tomás Maldonado. At a seminar at Princeton University in the fall of 1966, Maldonado admitted that in cases where it was not possible to classify every observable activity in an architectural program, it might be necessary to use a typology of architectural forms in order to arrive at a solution. But he added that these forms were like a cancer in the body of the solution and that as our techniques of classification become more systematic, it should be possible to eliminate them altogether.

Now, it is my belief that beneath the apparently practical and hard-headed aspect of these ideas lies an aesthetic doctrine. It will be my purpose to show this to be the case and, further, to try to show that it is untenable without considerable modification.

One of the most frequent arguments used against typological procedures in architecture has been that they are a vestige of an age of craft. It is held that the use of models by craftsmen became less necessary as the development of scientific techniques enabled man to discover the general laws underlying the technical solutions of the preindustrial age.

The vicissitudes of the words "art" and "science" certainly indicate that there is a valid distinction to be drawn between artifacts that are the result of the application of the laws of physical science and those that are the result of mimesis and intuition. Before the rise of modern science, tradition, habit, and imitation were the methods by which all artifacts were made, whether these artifacts were mainly utilitarian or mainly religious. The word "art" was used to describe the skill necessary to produce all such artifacts. With the development of modern science, the word "art" was progressively restricted to the case of artifacts which did not depend on the general laws of physical science but continued to be based on tradition and the idea of the final form of the work as a fixed ideal.

But this distinction ignores the extent to which artifacts have not only a "use" value in the crudest sense but also an "exchange" value. The craftsman had an image of the object in his mind's eye when starting to make it. Whether this object was a cult image (say, a sculpture) or a kitchen utensil, it was an object of cultural exchange, and it formed part of a system of communication within society. Its "message" value was precisely the image of the final form which the craftsman held in his mind's eye as he was making it and to which his artifact corresponded as closely as possible. In spite of the development of the scientific method, we must still attribute such social or iconic values to the products of technology and recognize that they play an essential role in the generation and development of the physical tools of our environment. It is easy to see that the class of artifacts which continues to be made according to the traditional methods (for example, paintings or musical compositions)

has a predominantly iconic purpose, but such a purpose is not so often recognized in the creation of the environment as a whole. This fact is concealed from us because the intentions of the design process are "hidden" in the overt details of the performance specifications.

The idolization of "primitive" man and the fundamentalist attitude which this generates have also discouraged the acceptance of such iconic values. There has been a tendency since the eighteenth century to regard the age of primitive man as a golden age in which man lived close to nature. For many years, for instance, the primitive hut or one of its derivatives has been taken as the starting point for architectural evolution and has been the subject of first-year design programs in the schools, and it would not be an exaggeration to say that frequently a direct line of descent is presumed to exist from the noble savage through the utilitarian crafts to modern science and technology. Insofar as it is based on the idea of the noble savage, this idea is quite baseless. The cosmological systems of primitive man were very intellectual and very artificial. To take only kinship systems, the following quotation from the French anthropologist Claude Lévi-Strauss will make the point clear: "Certainly," he says, "the biological family is present and persists in human society. But what gives to kinship its character as a social fact is not what it must conserve of nature; it is the essential step by which it separates itself from nature. A system of kinship does not consist of objective blood ties; it exists only in the consciousness of men; it is an arbitrary system of representations, not the spontaneous development of a situation of fact."¹

There seems to be a close parallel between such systems and the way modern man still approaches the world. And what was true of primitive man in all the ramifications of his practical and emotional life—namely, the need to *represent* the phenomenal world in such a way that it becomes a coherent and logical system—persists in our own organizations and more particularly in our attitude toward the man-made objects of our environment. An example of the way this applies to contemporary man is in the creation of what are called socio-spatial schemata. Our senses of place and relationship in, say, an urban environment, or in a building, are not dependent on any objective fact that is measurable; they are phenomenal. The purpose of the aesthetic organization of our environment is to capitalize on this subjective schematization and make it socially available. The resulting organization does not correspond in a one-to-one relationship with the objective facts but is an artificial construct which *represents* these facts in a socially recognizable way. It follows that the representational systems which are developed are, in a real sense, independent of the quantifiable facts of the environment, and this is particularly true if the environment is changing very rapidly.

However, no system of representation, no metalanguage, is totally independent of the facts which constitute the objective world. The Modern Movement in architecture was an attempt to modify the representational systems which had been inherited from the preindustrial past and which no longer seemed meaningful within the context of a rapidly changing technology. One of the main doctrines at the root of this transformation was based essentially on a return to nature, deriving from the Romantic movement but ostensibly changed from a desire to imitate the surface of natural forms, or to operate at a craft level, to a belief in the ability of science to reveal the essence of nature's mode of operation.

Underlying this doctrine was an implied belief in biotechnical determinism. And it is from this theory that the current belief in the supreme importance of scientific methods of analysis and classification derives. The essence of the functional doctrine of the Modern Movement was not that beauty or order or meaning was unnecessary, but that it could no longer be found in the deliberate search for final forms. The path by which the artifact affected the observer aesthetically was seen as short-circuiting the process of formalization. Form was merely the result of a logical process by which the operational needs and the operational techniques were brought together. Ultimately these would fuse in a kind of biological extension of life, and function and technology would become totally transparent. The theory of Buckminster Fuller is an extreme example of this doctrine.

The relation of this notion to Spencerian evolutionary theory is very striking. According to this theory the purpose of prolonging life and the species must be attributed to the process as a whole, but at no particular moment in the process is it possible to see this purpose as a conscious one. The process is therefore unconscious and teleological. In the same way, the biotechnical determinism of the Modern Movement was teleological, because it saw the aesthetic of architectural form as something which was achieved without the conscious interference of the designer but as something which nonetheless was postulated as his ultimate purpose.

It is clear that this doctrine contradicts any theory which would give priority to an intentional iconic form, and it attempts to absorb the process by which man tries to make a representation of the world of phenomena back into a process of unconscious evolution. To what extent has it been successful, and to what extent can it be shown to be possible?

It seems evident, in the first place, that the theory begs the whole question of the iconic significance of forms. Those in the field of design who were—and are—preaching pure technology and so-called objective design method as a necessary and sufficient means of producing environmental devices persistently attribute iconic power to the creations of technology, which they worship to a degree inconceivable in a scientist. I said earlier that it was in the power of all artifacts to become icons, no matter whether or not they were specifically created for this purpose. Perhaps I might mention certain objects of the nineteenth-century world of technology which had power of this kind—steamships and locomotives, to give only two examples. Even though these objects were made ostensibly with utilitarian purposes in mind, they quickly became gestalt entities, which were difficult to disassemble in the mind's eye into their component parts. The same is true of later technical devices such as cars and airplanes. The fact that these objects have been imbued with aesthetic unity and have become carriers of so much meaning indicates that a process of selection and isolation has taken place which is quite redundant from the point of view of their particular functions. We must therefore look upon the aesthetic and iconic qualities of artifacts as being due, not so much to an inherent property, but to a sort of availability or redundancy in them in relation to human feeling.

The literature of modern architecture is full of statements which indicate that after all the known operational needs have been satisfied, there is still a wide area of choice in the final configuration. I should like to cite two designers who have used mathematical methods to arrive at architectural solutions. The

first is Yona Friedman, who uses these methods to arrive at a hierarchy of organization in the program. Friedman, in describing methods of computing the relative positions of functions within a three-dimensional city grid, has acknowledged that the designer is always faced, after computation, with a choice of alternatives, all of which are equally good from an operational point of view.²

The second is Yannis Xenakis, who, in designing the Philips Pavilion while he was in the office of Le Corbusier, used mathematical procedures to determine the form of the enclosing structure. In the book which Philips published to describe this building, Xenakis says that calculation provided the characteristic form of the structure but that after this, logic no longer operated, and the compositional arrangement had to be decided on the basis of intuition.

From these statements it would appear that a purely teleological doctrine of technico-aesthetic forms is not tenable. At whatever stage in the design process it may occur, it seems that the designer is always faced with making voluntary decisions and that the configurations which he arrives at must be the result of an *intention* and not merely the result of a deterministic process. The following statement of Le Corbusier tends to reinforce this point of view. "My intellect," he says, "does not accept the adoption of the modules of Vignola in the matter of building. I claim that harmony exists between the objects one is dealing with. The chapel at Ronchamp perhaps shows that architecture is not an affair of columns but an affair of plastic events. Plastic events are not regulated by scholastic or academic formulae; they are free and innumerable." Although this statement is a defense of functionalism against the academic imitation of past forms and the determinism it denies is academic rather than scientific, it nonetheless stresses the release that follows from functional considerations rather than their power of determining the solution.

One of the most uninhibited statements of this kind comes from László Moholy-Nagy. In his description of the design course at the Institute of Design in Chicago, he makes the following defense of the free operation of intuition. "The training," he says, "is directed toward imagination, fantasy, and inventiveness, a basic conditioning to the ever-changing industrial scene, to the technology-in-flux. . . . The last step in this technique is the emphasis on integration through a conscious search for relationships. . . . The intuitive working mechanics of the genius gives a clue to this process. The unique ability of the genius can be approximated by everyone if only its essential feature be apprehended: the flashlike act of connecting elements not obviously belonging together. . . . If the same methodology were used generally in all fields we would have *the* key to our age—seeing everything in relationship."³

We can now begin to build up a picture of the general body of doctrine embedded in the Modern Movement. It consists of a tension between two apparently contradictory ideas—biotechnical determinism on the one hand and free expression on the other. What seems to have happened is that, in the act of giving a new validity to the demands of function as an extension of nature's mode of operation, a vacuum has been left where previously there was a body of traditional practice. The whole field of aesthetics, with its ideological foundations and its belief in ideal beauty, has been swept aside. All that is left in its place is permissive expression, the total freedom of the genius which, if we but knew it, resides in us all. What appears on the surface as a hard, rational discipline of design turns out rather paradoxically to be a mystical

belief in the intuitional process.

I would like now to turn back to the statement by Maldonado which I mentioned earlier. He said that so long as our classification techniques were unable to establish all the parameters of a problem, it might be necessary to use a typology of forms to fill the gap. From the examples of the statements made by modern designers, it would seem that it is indeed never possible to state all the parameters of a problem. Truly quantifiable criteria always leave a choice for the designer to make. In modern architectural theory this choice has been generally conceived of as based on intuition working in a cultural vacuum. In mentioning typology, Maldonado is suggesting something quite new and something which has been rejected again and again by modern theorists. He is suggesting that the area of pure intuition must be based on a knowledge of past solutions applied to related problems, and that creation is a process of adapting forms derived either from past needs or from past aesthetic ideologies to the needs of the present. Although he regards this as a provisional solution—"a cancer in the body of the solution"—he nonetheless recognizes that this is the actual procedure which designers follow.

I suggest that this is true and, moreover, that it is true in all fields of design and not only that of architecture. I have referred to the argument that the more rigorously the general physical or mathematical laws are applied to the solution of design problems the less it is necessary to have a mental picture of the final form. But, although we may postulate an ideal state in which these laws correspond exactly to the objective world, in fact this is not the case. Laws are not found in nature. They are constructs of the human mind; they are models which are valid so long as events do not prove them to be wrong. They are models, as it were, at one remove from pictorial models. Not only this. Technology is frequently faced with different problems which are not logically consistent. All the problems of aircraft configuration, for example, could not be solved unless there was give-and-take in the application of physical laws. The position of the power unit is a variable; so is the configuration of the wings and tail plane. The position of one affects the shape of the other. The application of general laws is a necessary ingredient of the form. But it is not a sufficient one for determining the actual configuration. And in a world of pure technology this area of free choice is invariably dealt with by adapting previous solutions.

In the world of architecture this problem becomes even more crucial, because general laws of physics and the empirical facts are even less capable of fixing a final configuration than in the case of an airplane or a bridge. Recourse to some kind of typological model is even more necessary.

It may be argued that, in spite of the fact that there is an area of free choice beyond that of operation, this freedom lies in the details (where, for instance, personal "taste" might legitimately operate). This could probably be shown to be true of such technically complex objects as airplanes, where the topological relationships are largely determined by the application of physical laws. But it does not seem to apply to architecture. On the contrary, because of the comparatively simple environmental pressures that operate on buildings, the topological relationships are hardly at all determined by physical laws. In the case of the Philips Pavilion, for example, it was not only the acoustic requirements which established the basic configuration but also the need for a building which would convey a certain impression of vertigo and fantasy. It is in the

details that these laws become stringent and not in the general arrangement. Where the designer decides to be governed by operational factors, he works in terms of a thoroughly nineteenth-century rationalism, for example in the case of the office buildings of Mies van der Rohe and Skidmore, Owings and Merrill, where purely pragmatic planning and cost considerations converge on a received neoclassical aesthetic to create simple cubes, regular frames, and cores. It is interesting that in most of the projects where form determinants are held to be technical or operational in an avant-garde sense, rationalism and cost are discarded for forms of a fantastic or expressionist kind. Frequently, as in the case of Archigram, forms are borrowed from other disciplines, such as space engineering or Pop Art. Valid as these iconographic procedures may be—and before dismissing them one would have to investigate them in relation to the work of Le Corbusier and the Russian Constructivists, who borrowed the forms of ships and engineering structures—they can hardly be compatible with a doctrine of determinism, if we are to regard this as a *modus operandi*, rather than a remote and utopian ideal.

The exclusion by modern architectural theory of typologies and its belief in the freedom of intuition can at any rate be partially explained by the more general theory of expression which was current at the turn of the century. This theory can be seen most clearly in the work and theories of certain painters—notably Wassily Kandinsky, both in his paintings and in his book *Point and Line to Plane*, which outlines the theory on which his paintings are based. Expressionist theory rejected all historical manifestations of art, just as modern architectural theory rejected all historical forms of architecture. To it these manifestations were an ossification of technical and cultural attitudes whose *raison d'être* had ceased to exist. The theory was based on the belief that shapes have physiognomic or expressive content which communicates itself to us directly. This view has been subjected to a great deal of criticism, and one of its most convincing refutations occurs in E. H. Gombrich's book *Meditations on a Hobby Horse*. Gombrich demonstrates that an arrangement of forms such as is found in a painting by Kandinsky is, in fact, very low in content, unless we attribute to these forms some system of conventional meanings not inherent in the forms themselves. His thesis is that physiognomic forms are ambiguous, though not wholly without expressive value, and that they can only be interpreted within a particular cultural ambience. One of the ways he illustrates this is by reference to the supposed affective qualities of colors. Gombrich points out in the now famous example of traffic signals that we are dealing with a conventional and not a physiognomic meaning, and he maintains that it would be equally logical to reverse the meaning system so that red indicated action and forward movement, and green inaction, quietness, and caution.⁴

Expressionist theory probably had a very strong influence on the Modern Movement in architecture. Its application to architecture would be even more obvious than to painting because of the absence, in architecture, of any forms which are overtly representational. Architecture has always, with music, been considered an abstract art, so that the theory of physiognomic forms could be applied to it without having to overcome the hurdle of anecdotal representation, as in painting. But if the objections to expressionist theory are valid, then they apply to architecture as much as to painting.

If, as Gombrich suggests, forms by themselves are relatively empty of meaning, it follows that the forms which we intuit will, in the unconscious mind,

tend to attract to themselves certain associations of meaning. This could mean not only that we are *not* free from the forms of the past and from the availability of these forms as typological models but that, if we assume we are free, we have lost control over a very active sector of our imagination and of our power to communicate with others. It would seem that we ought to try to establish a value system which takes account of the forms and solutions of the past if we are to gain control over concepts which will obtrude themselves into the creative process, whether we like it or not.

There is, in fact, a close relationship between the pure functionalist or teleological theory that I have described and expressionism, as defined by Professor Gombrich. By insisting on the use of analytical and inductive methods of design, functionalism leaves a vacuum in the form-making process. This it fills with its own reductionist aesthetic—the aesthetic that claims that “intuition,” with no historical dimension, can arrive spontaneously at forms which are the equivalent of fundamental operations. This procedure postulates a kind of onomatopoeic relationship between forms and their content. In the case of a biotechnico-determinist theory, the content is the set of relevant functions—functions which themselves are a reduction of all the socially meaningful operations within a building—and it is assumed that the functional complex is translated into forms whose iconographic significance is nothing more than the rational structure of the functional complex itself. The existent facts of the objective functional situation are the equivalent of the existent facts of the subjective emotional situation, in the case of expressionist theory. But traditionally in the work of art, the existent facts, whether subjective or objective, are less significant than the values we attribute to these facts or to the system of representation which embodies these values. The work of art, in this respect, resembles language. A language which was simply the expression of emotions would be a series of single-word exclamations; in fact, language is a complex system of representation in which the basic emotions are structured into an intellectually coherent system.⁵ It would be impossible to conceive of constructing a language *a priori*. The ability to construct such a language would have to presuppose the language itself. Similarly a plastic system of representation such as architecture has to presuppose the existence of a given system of representation. In neither case can the problem of formal representation be reduced to some preexistent essence outside the formal system itself, of which the form is merely a reflection. In both cases it is necessary to postulate a conventional system embodied in typological problem-solution complexes.

My purpose in stressing this fact is not to advocate a reversion to an architecture which accepts tradition unthinkingly. This would imply that there was a fixed and immutable relation between forms and meaning. The characteristic of our age is change, and it is precisely because this is so that it is necessary to investigate the part which modifications of type-solutions play in relation to problems and solutions which are without precedent in any received tradition.

I have tried to show that a reductionist theory according to which the problem-solution process can be reduced to some sort of essence is untenable. One might postulate that the process of change is carried out, not by a process of reduction, but rather by a process of exclusion, and it would seem that the history of the Modern Movement in all the arts lends support to this idea. If we look at the allied fields of painting and music, we can see that in the work

of a Kandinsky or a Schoenberg, traditional formal devices were not completely abandoned but were transformed and given a new emphasis by the exclusion of ideologically repulsive iconic elements. In the case of Kandinsky it is the representational element which is excluded; in the case of Schoenberg it is the diatonic system of harmony.

The value of what I have called the process of exclusion is to enable us to see the potentiality of forms as if for the first time and with naïveté. This is the justification for the radical change in the iconic system of representation, and it is a process which we have to adopt if we are to keep and renew our awareness of the meanings which can be carried by forms. The bare bones of our culture—a culture with its own characteristic technology—must become visible to us. For this to happen a certain scientific detachment toward our problems is essential and with it the application of the mathematical tools proper to our culture. But these tools are unable to give us a ready-made solution to our problems. They only provide the framework, the context within which we operate.

The work of Le Corbusier differs from that of the majority of his fellow modern architects in the extent to which it makes reference to the architectural tradition or to examples of existing buildings. Most of the theoretical statements by the modern architects of the 1920s, including those of Le Corbusier himself, stress the need to reject tradition in favor of an architecture derived from a new technology or destined for new functions. Yet in his work Le Corbusier refers constantly to the architectural tradition either by invoking its principles and adapting them to new solutions or by overtly contradicting them in such a way that some knowledge of the tradition is necessary in order to understand his architectural message. The modification or contradiction of traditional works is the constant leitmotiv in his work.

Le Corbusier was the only modern architect to prescribe architectural rules for the new architecture.⁶ It was possible for him to do this because he took as his starting point the rule system of the academic tradition (in contrast to the majority of modern architectural theorists who based their arguments on matters of content rather than form, or on physiognomic, expressionist aesthetics). This is demonstrated by the rules which Le Corbusier prescribed in his "Five Points," each of which takes its departure from an existing practice and proceeds to reverse it. The use of *pilotis*, for example, is a reversal of the classical podium; it accepts the classical separation of the piano nobile from the ground but interprets this separation in terms of void rather than mass. The *fenêtre en longueur* is a contradiction of the classical window aedicule. The roof terrace contradicts the pitched roof and replaces the attic story with an open-air room. The free facade replaces the regular arrangement of window openings with a freely composed surface. The free plan contradicts the principle by which distribution was constrained by the need for vertically continuous structural walls and replaces it with a free arrangement of nonstructural partitions determined by functional convenience.

It might be argued that any innovation is bound to contradict previous practice and that therefore it is redundant to include within the concept of innovation the practice which has been replaced. But the fact that each new set of rules in the "Five Points" takes as its basis the traditional articulation of building elements seems to indicate that, in the case of Le Corbusier, the original practice and the new prescription constitute a paradigmatic or metaphoric set, and that the new can only be fully understood with reference to the old, *in absentia*.

It is therefore legitimate, when discussing Le Corbusier's creative process, to speak of the "displacement of concepts" and by this to indicate a process of reinterpretation, rather than one of creation in a cultural void. The change in the arrangement and interpretation of existing elements found in Le Corbusier's work takes several forms, two of which seem to be of particular importance. The first occurs when elements of the "high" tradition are radically transformed under conditions alien to their normal use. The second occurs when elements belonging to a tradition outside that of "high" architecture are assimilated into architecture and given a symbolic significance which they have not hitherto possessed.

I have already mentioned, in connection with the "Five Points," the reversals involved in the invention of *pilotis* and the roof garden. Both these transformations belong to a larger problem: the gradation of the multi-story building. In the Pavillon Suisse the *pilotis* and the roof garden/penthouse are the two

Displacement of Concepts in Le Corbusier

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outside elements of a tripartite division, whose middle term (corresponding to the piano nobile in a classical building) consists of *all* the repeating floors of student rooms (fig. 19). These floors are enveloped by a curtain wall whose purpose is to suppress the succession of individual floors. Le Corbusier's procedure here is identical in overall conception to Louis Sullivan's principle of tripartite division in the skyscraper office block (fig. 20). But Sullivan interprets this tradition more literally. The podium, though pierced with large windows, still provides a massive base for the superstructure, while the superstructure itself is provided with a colossal order of pilasters embracing the repeating floors of offices. Similarly the attic is simply an additional floor pierced by smaller windows and topped by a cornice whose size is adjusted to the great height of the building.

17 *Cartesian Skyscraper*⁴

Le Corbusier, 1935. Model.

18 *Secretariat, Chandigarh.*

Le Corbusier, 1958. Southeast facade.

19 *Pavillon Suisse, Paris.*

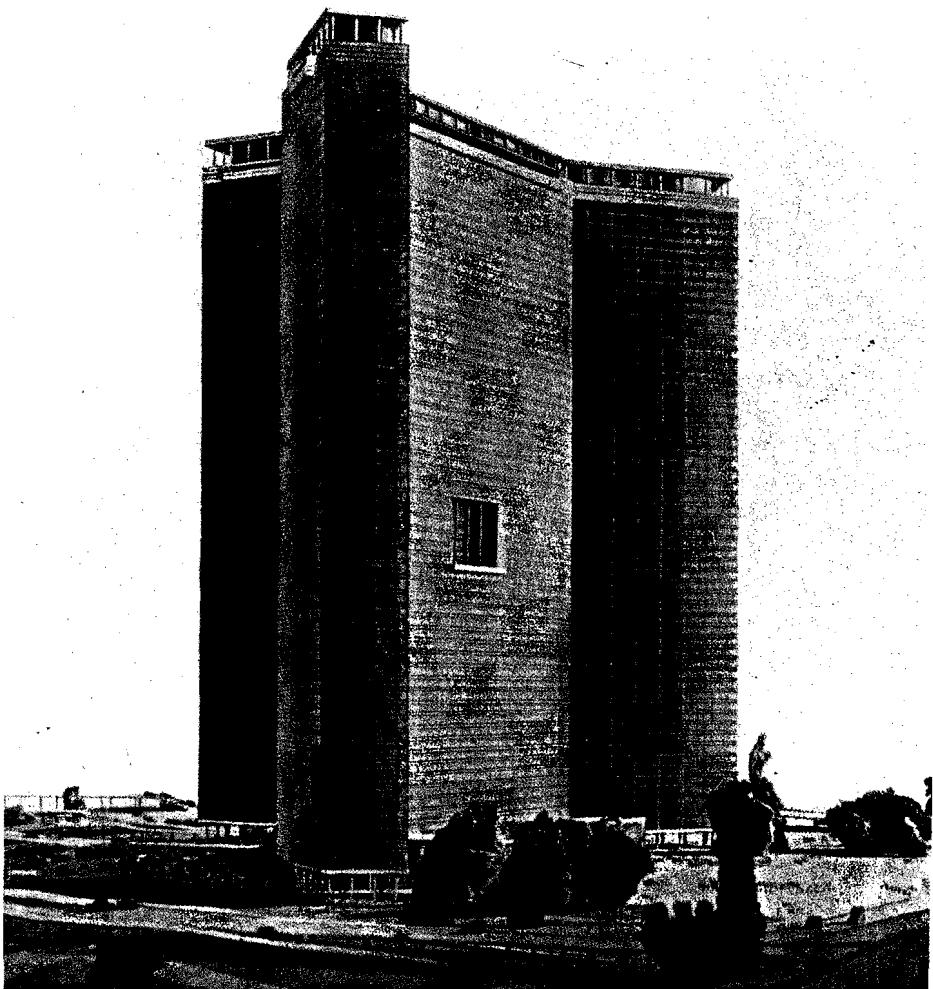
Le Corbusier, 1930-1932. South elevation.

20 *Wainwright Building, St. Louis, Missouri. Adler and Sullivan, 1890-1891.*

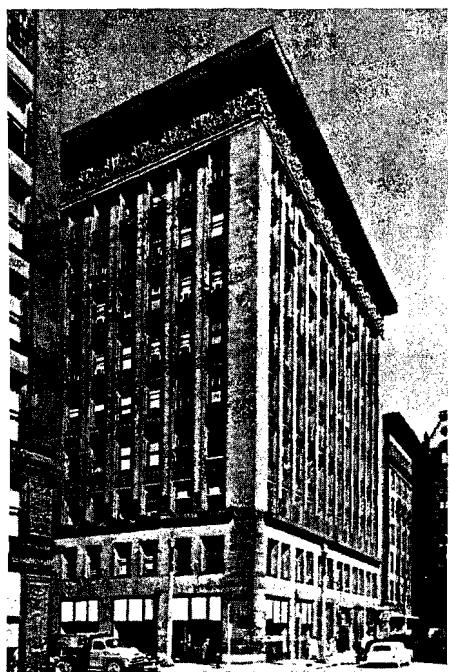
In the case of the Pavillon Suisse, the central section does not have pilasters but is conceived of as a cube which, due to its lack of architectural articulation and its suspension over a void, seems to defy gravity. It is like an element in a painting rather than an element of architecture—a pure form, devoid of weight, and not suggestive of any particular scale. The scale has to be inferred from its relation to the *pilotis* and the attic floor and from the subdivision of delicate window mullions—the only elements of the facade that relate directly to the scale of the human being. Thus, while Le Corbusier's general scheme is the same as that of Sullivan, the “cues” by which the observer can relate it to his normal architectural experience are fewer and less certain, and to some extent deliberately ambiguous or contradictory.

In the case of the *fenêtre en longueur*, the replacement of the repetitive, vertical window and the elimination of any static element threatened to remove all coherence from the facade. But Le Corbusier, unlike many other architects of the Modern Movement, retained the traditional isolated window, at the same time transforming it from a repetitive to a unique element. The presence of windows (or quasi-windows) in Le Corbusier's facades has the double effect of intensifying the generalized surface created by the *fenêtre en longueur* or the curtain wall and of referring to especially important episodes in the building. In the Cartesian Skyscraper (fig. 17), a large recessed aedicule is placed at the center; and in the Secretariat at Chandigarh (fig. 18) and the Algerian Skyscraper (fig. 21), this becomes a series of large openings. In all three cases these openings refer to the “brain” of the building—the directors' rooms or the council rooms. In the Cartesian Skyscraper the effect is schematic and surreal because of the lack of support which the element has in the total facade. But in the other two schemes the previous introduction of *brise-soleil* allowed Le Corbusier to construct the large openings out of the elements forming the general facade system and therefore to give them a more concrete meaning. (A similar organizational feature had already been incorporated by the Vesnin brothers in their 1923 competition project for the Palace of Labor (fig. 22), in this case related to the expressed structural frame—for which, in one sense, Le Corbusier's *brise-soleil* configurations are a substitute.)

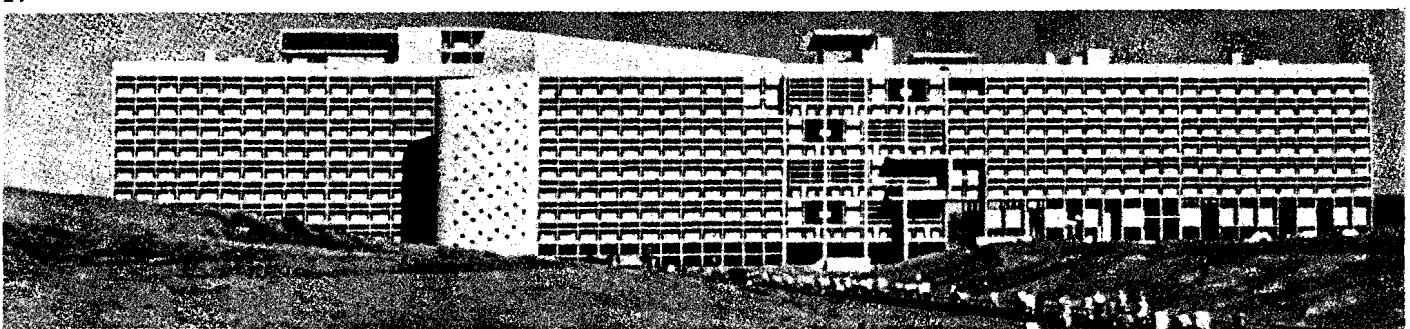
In the Villa Stein in Garches there are two “windows”—one placed centrally on the attic floor of the entrance facade, the other placed at one end of the first and second floors of the garden facade. One of the effects which both these openings have is to provide the same kind of human referent as is provided by the classical window aedicule. But at the same time, there has been a transformation: each “window” is unique in its own facade, and its function has been altered. In the entrance facade the opening has become



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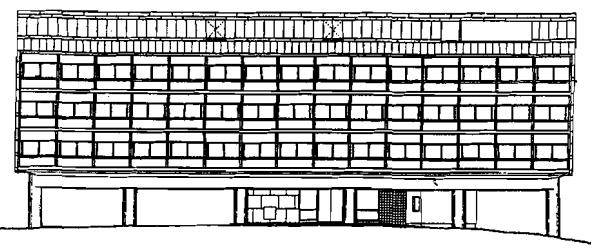


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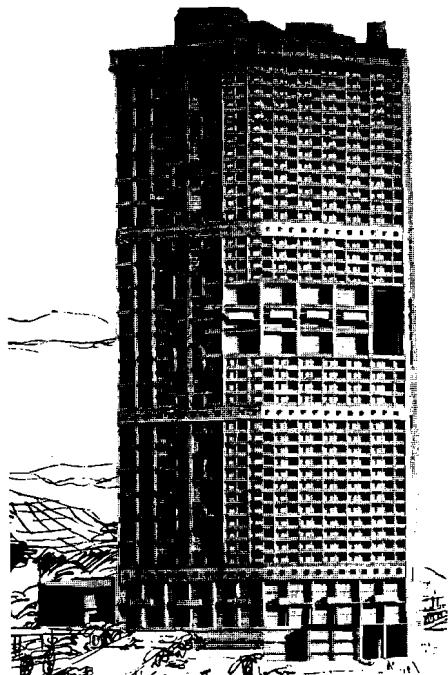


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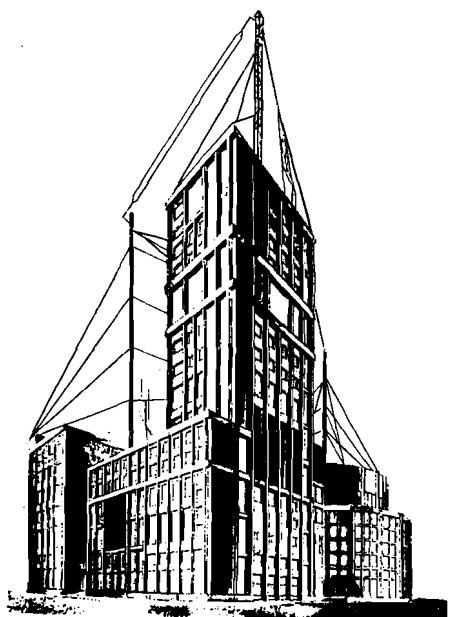
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completely detached from any literal denotation; its purpose is simply to bring the facade to rest, to create a focal point, and to indicate the penetrability of the thin surface and its expression as volume rather than mass (fig. 23). In the garden facade its function is that of a loggia, which is both "inside" and "outside" the building, and it serves to link the building and the garden (fig. 24). By being placed asymmetrically, it establishes the "free" and diagonal organization of the internal spaces on the facade. In spite of the new meanings attached to these openings, it is legitimate to speak of them as "windows," if we extend this term to mean any opening which, by its proportions and position, indicates a volume behind it that is not part of the spatial continuum but is a special point of rest.

An example of a much more literal use of windows, which seems to escape the definition given above, is seen in the corridor facade of the Pavillon Suisse (fig. 27). Here the window has a different function. Its small size and repetition indicates some secondary and anonymous use (in this case "walking down an access corridor"), since the more obvious solution of the continuous strip (as in La Tourette, for example) would be inconsistent with the way in which the curtain wall suppresses the floors on the opposite facade. However, with the exception of these repeating windows, Le Corbusier's use of the window is usually anthropomorphic. The unique, over-scaled aedicule acts as an "eye" and animates the facade by giving it a suggestion of the human face.

The window in Le Corbusier's ideolect plays a special part in relation to all the other elements in the facade, a part which is different from that played by the traditional window. It therefore constitutes a radical transformation. But a displacement has occurred, which, in order for its full significance to be grasped, depends on the residual semantics of the traditional window.

An aspect of the survival and transformation of tradition in Le Corbusier, which belongs less to the organization of the facade than to the conditions of its existence, is the problem of frontality. Other writers have drawn attention to the fact that Le Corbusier tends to organize his internal and external surfaces so that they form a series of planes (actual or phenomenal) at right angles to the line of movement of the observer (fig. 26). Colin Rowe, Robert Slutzky,⁷ and Kenneth Frampton⁸ cite the Bauhaus at Dessau (fig. 25) and Hannes Meyer's project for the League of Nations (fig. 28) as counter-examples in which the buildings, far from being organized frontally, are consciously treated as three-dimensional "machines," for the understanding of which it is necessary to move around and within the building. This "space-time" aspect was widely taken as one of the primary attributes of modern architecture and was linked by Sigfried Giedion to Albert Einstein's theory of relativity in order to demonstrate modern architecture's participation in the *Zeitgeist*. But there is no connection, in fact, between Einstein's mathematical model and the phenomenal experience of architecture, whether this is assumed to take place instantaneously or through the passage of time—a fact which was well understood by El Lissitzky.⁹ The notion of space-time was quite alien to Le Corbusier's concept of the *promenade architecturale*, which is the temporal experience within a building that has already imprinted itself on the mind as a conceptual and spatial unity, and which seems to be connected with Le Corbusier's parallel conception of the dialectical relationship between Platonic form and empirical accident, to which reference will be made later.

The notion of frontality is at the root of the concept of the facade. The non-

21 *Cité d'Affaires, Algiers.*

Le Corbusier, 1938-1942. East elevation.

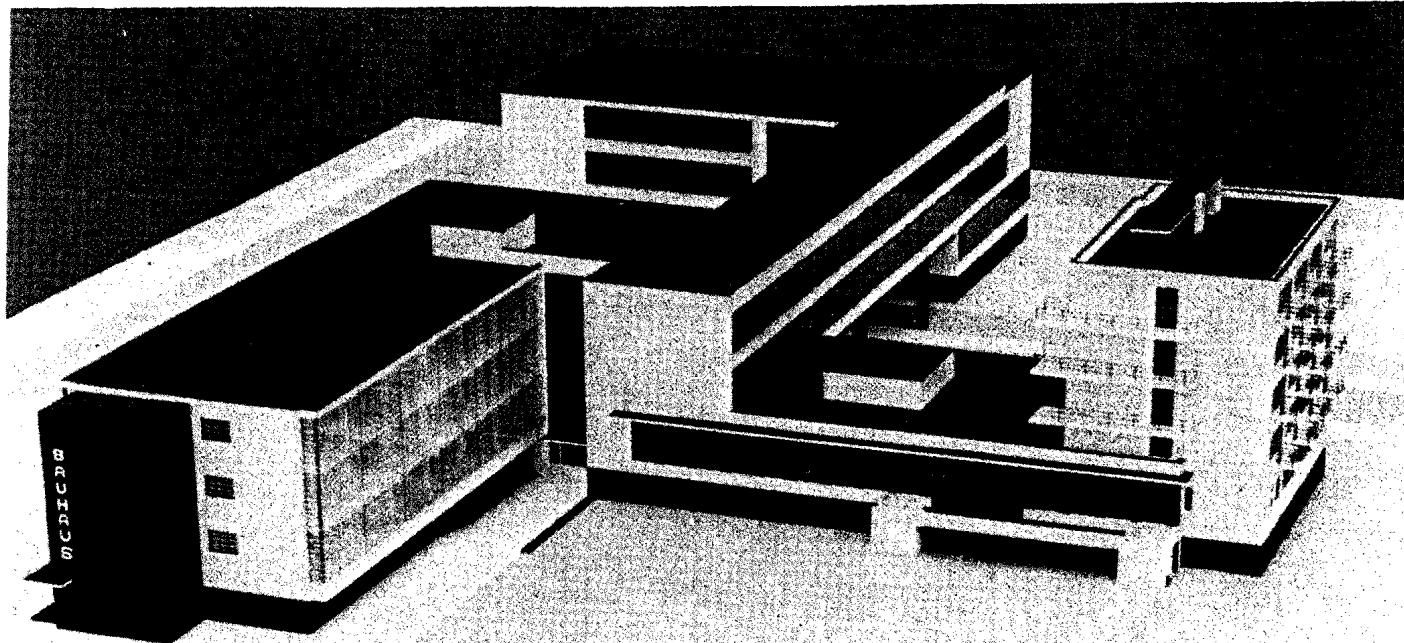
22 *Project for the Palace of Labor, Moscow. Alexander and Leonid Vesnin, 1922-1923. Perspective drawing.*

23 *Villa Stein in Garches.*

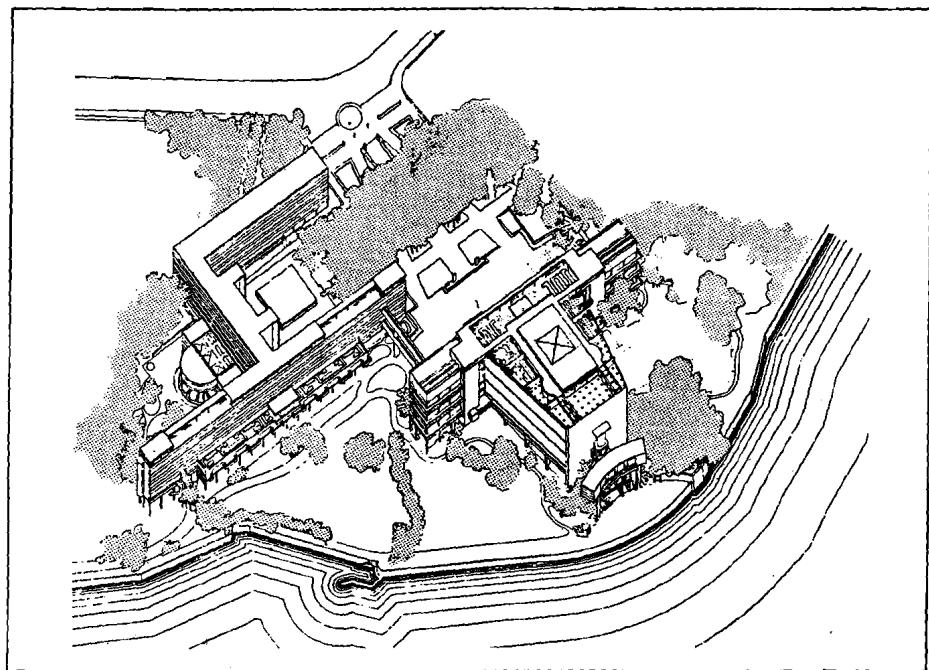
Le Corbusier, 1927. Entrance facade. Photograph by F.R. Yerbury. Collection of the Architectural Association, London.

24 *Villa Stein. Garden facade.*

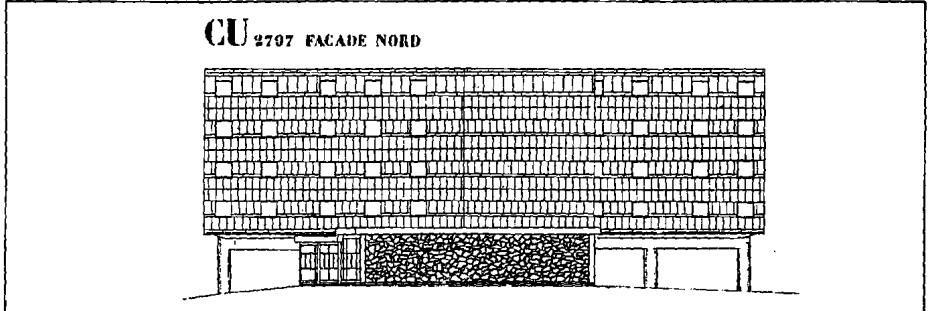
Photograph by F.R. Yerbury. Collection of the Architectural Association, London.



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frontalized building was for other exponents of the Modern Movement a logical extension of the fact that modern buildings should not have facades—the surface being merely the edge condition of an internally generated organization. In Le Corbusier the facade of a building is the critical boundary which one has to cross in order to pass between two types of space which are phenomenologically distinct. The fact that he created ambiguous spaces of which it is impossible to say whether they are “inside” or “outside,” far from contradicting this basic difference, depends on it, since before an ambiguity can be set up, it is necessary to establish the two terms in relation to which the ambiguity is being created.

Both the organization of the facade (including the “window”) and the frontalized composition are elements in which we see the “high” tradition of architecture being transformed by Le Corbusier—the displacement of concepts already in existence—and which therefore constitute part of the meaning of his buildings.

The second kind of displacement which I wish to discuss in Le Corbusier consists not of transformations of the themes of “high” architecture but of the assimilation into architecture of elements outside this tradition. Little can be said here about assimilations from vernacular building, which ought to be the subject of a separate study. One might list, among other numerous examples: the Catalan vault (fig. 29); the use of rubble walls (fig. 30) and rough-cut timber (fig. 33); the use of parallel brick walls and short spans (fig. 31); the grouping of houses in sympathy with the configuration of the ground, a notion derived from the vernacular traditions of Greece and Italy (figs. 32, 34)—as in the Cap Martin project of 1949. It is not so much the case that these vernacular elements are added to the “high” tradition, as that the tradition itself is modified to include them. The process is not peculiar to Le Corbusier; it is a general feature of the Modern Movement in its second (1930s) phase, though in Le Corbusier it gave rise to an inventiveness which was only rivaled in the work of Alvar Aalto (figs. 35, 37). We can see in this an echo of Le Corbusier’s own “National Romantic” phase and an attempt to reintegrate into modern architecture ideas which stem from the *Lebensphilosophie* of the late nineteenth century.

One should also mention in this context Le Corbusier’s assimilations of monastic architecture, particularly Carthusian, which date from his visit to the Monastery of Ema near Florence. Architecture as the symbol of, and vehicle for, the collective life was a recurrent theme in Le Corbusier, as it was in Aalto. The difference between their two interpretations lies in the fact that whereas Aalto was inspired by its secular forms—especially as found in the late medieval hill towns of Italy—Le Corbusier was more attracted to its religious forms, to organized and hierarchical communities whose regularity and economy implied an ascetic and disciplined life dedicated to a coherent system of beliefs (fig. 36). The monastic organization of the Carthusians, which provided each monk with an apartment set in a walled garden, became the model for the Immeubles Villas (1922) (fig. 38), and later, after considerable modification, for the various Unités d’habitation—though in both of these other typological influences were at work.

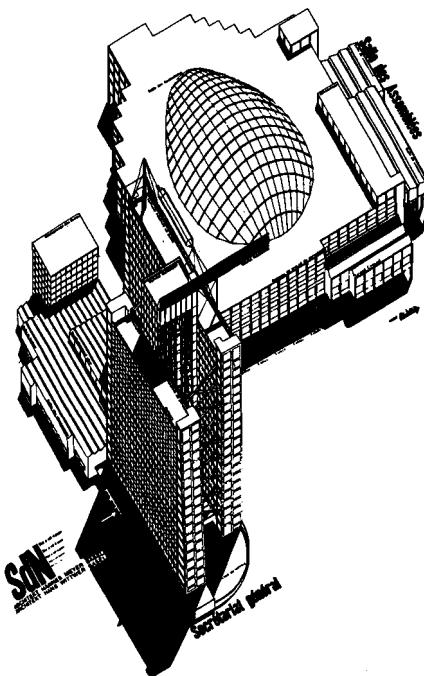
Influences on Le Corbusier from outside the mainstream tradition can also be discovered in the urban traditions of Paris. I do not refer to the well-known examples of the small cafe and artist’s studio but to eighteenth-century *hôtels*

25 Model of the Bauhaus, Dessau.
Walter Gropius, 1926.

26 Project for the League of Nations, Geneva. Le Corbusier, 1927–1928. Axonometric view.

27 Pavillon Suisse, Paris.
Le Corbusier, 1930–1932. North elevation.

28 Project for the League of Nations, Geneva. Hannes Meyer with Hans Wittwer, 1926–1927.
Axonometric of preliminary study.



29 Weekend House, Paris.
Le Corbusier, 1935. Axonometric.

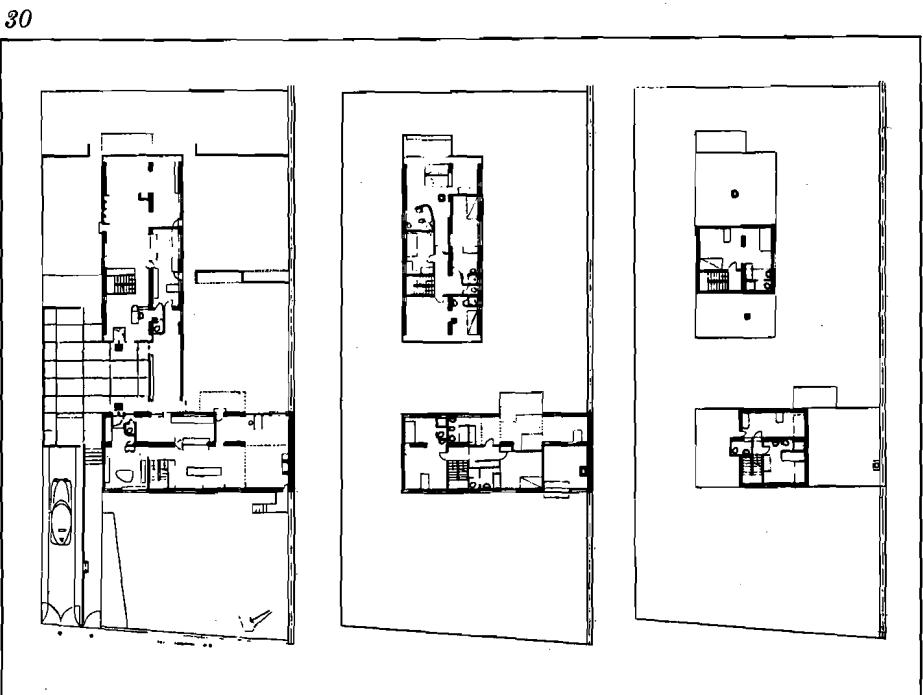
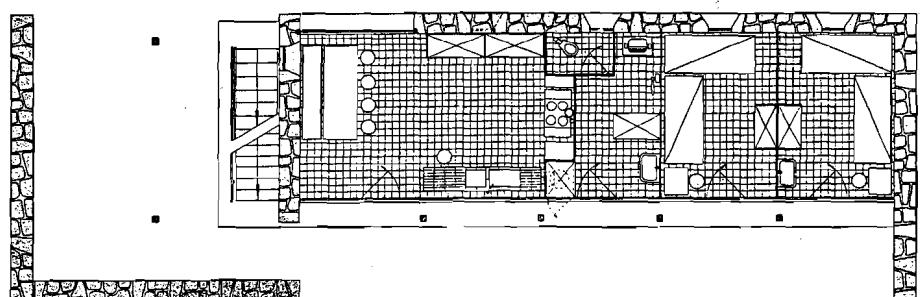
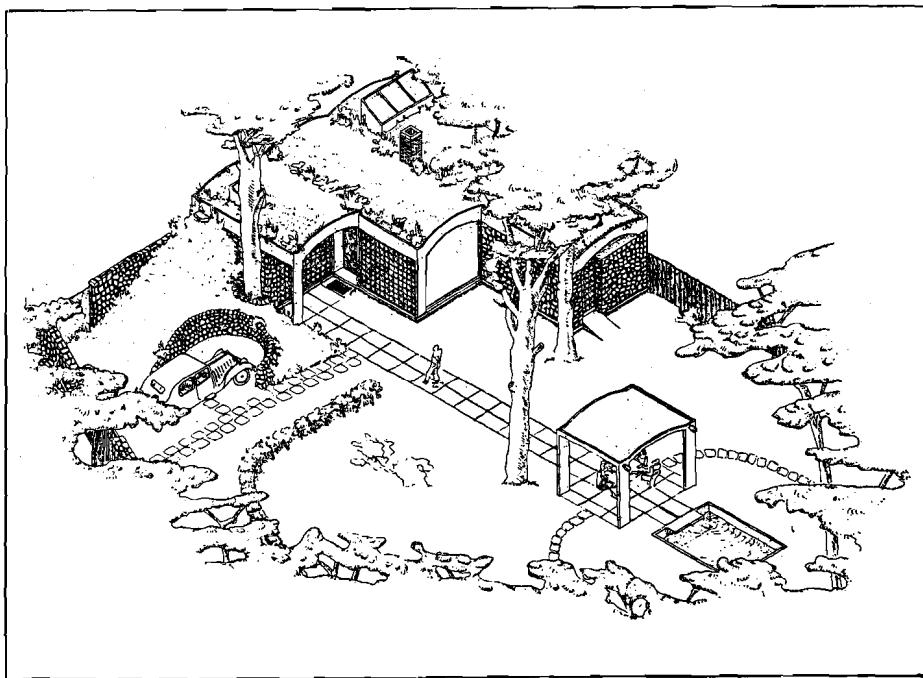
30 House at Mathes, Bordeaux.
Le Corbusier, 1938. Ground floor plan.

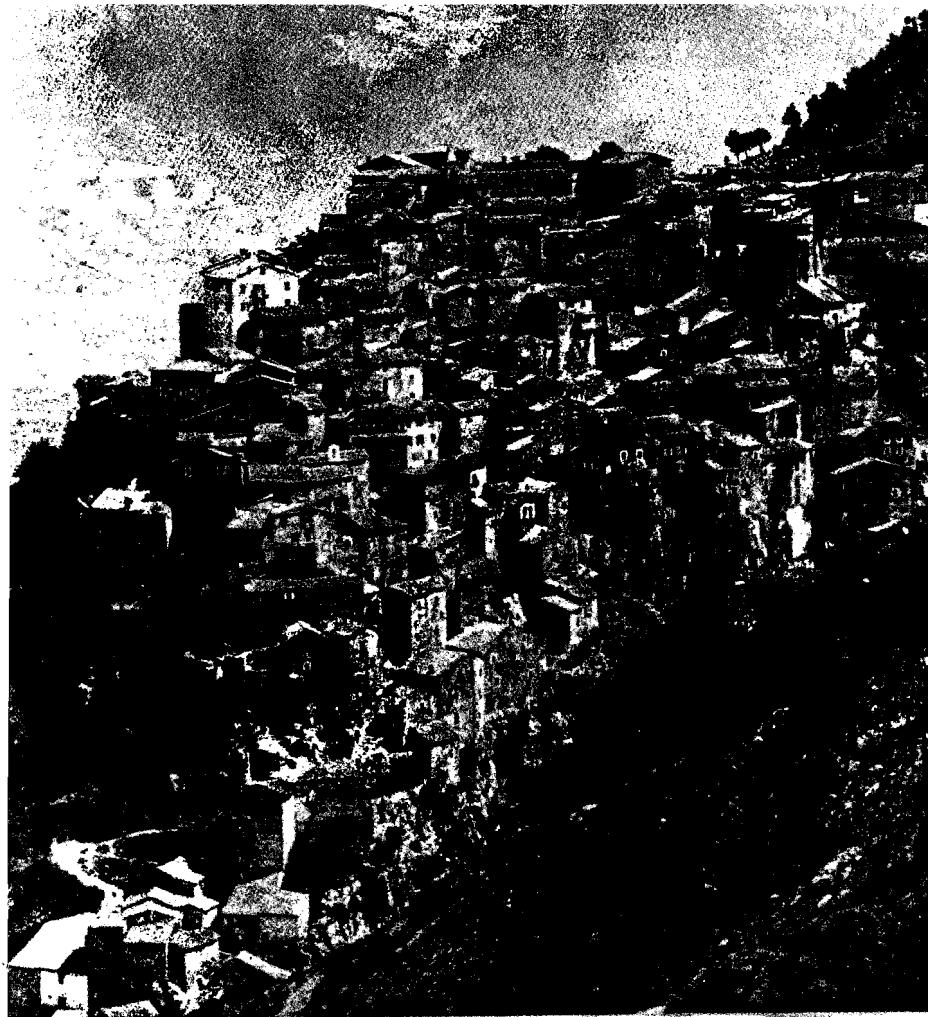
31 Maisons Jaoul, Neuilly.
Le Corbusier, 1954-1956. Plans

32 Anticoli Corrado village in the Sabine Mountains, Italy.

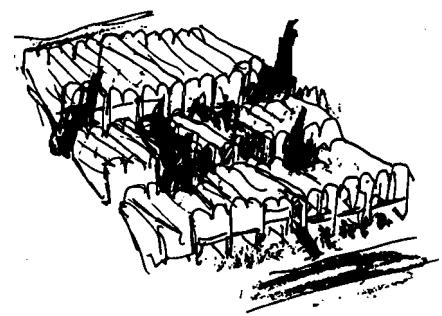
33 Errazuris House, Chile.
Le Corbusier, 1930. Perspective sketch.

34 "Roc et Rob" housing, Cap Martin. Le Corbusier, 1948.
Preliminary sketch.

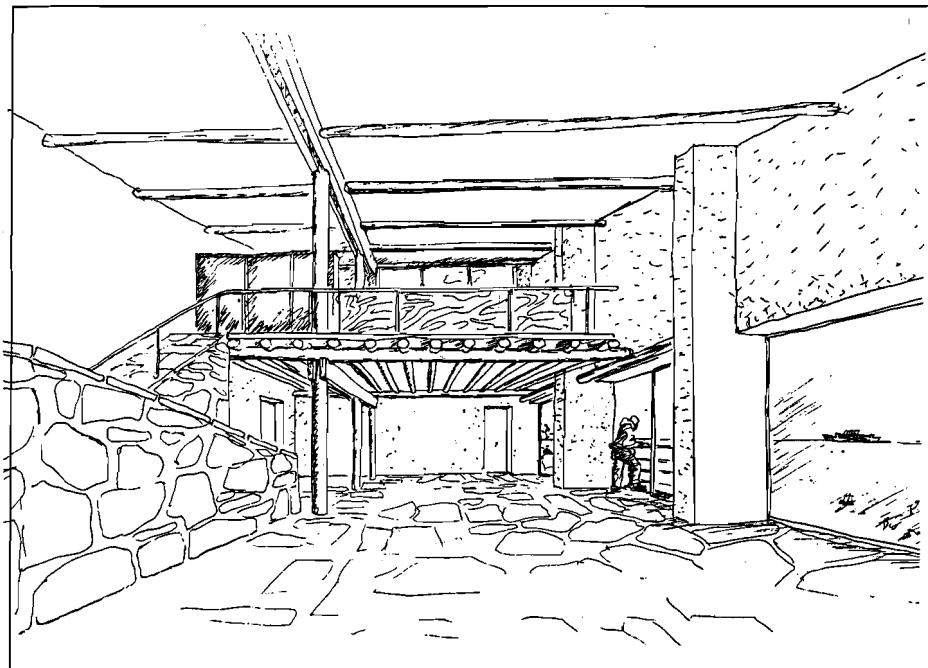




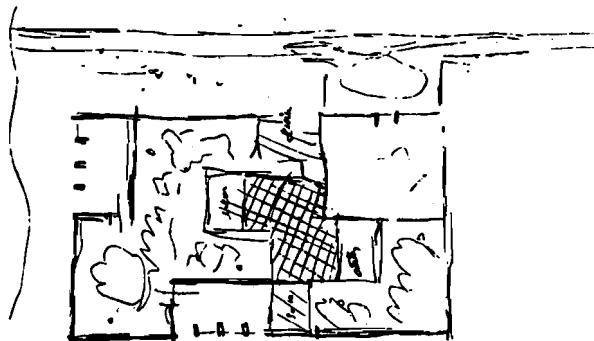
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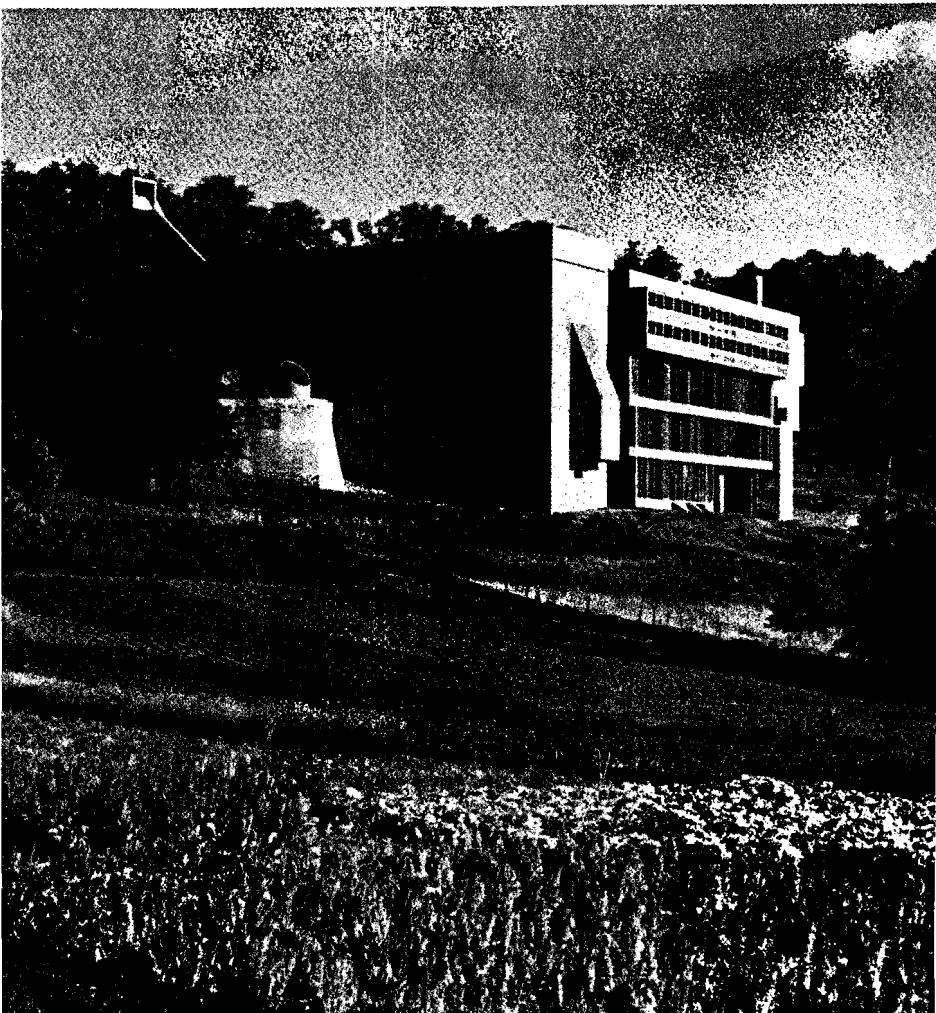
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35 Residence inside an agricultural estate near Cherchell, North Africa. Le Corbusier, 1942. Sketch.

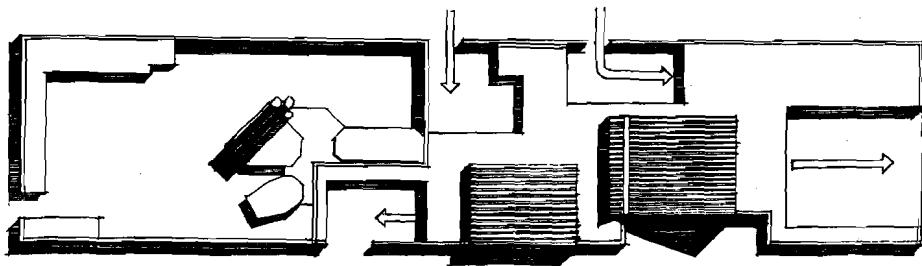
36 Monastery of La Tourette, Eveux. Le Corbusier, 1957-1960. View from the northwest.

37 Project for a cemetery with a burial chapel, Lyngby, Denmark. Alvar Aalto, 1952. Plan.

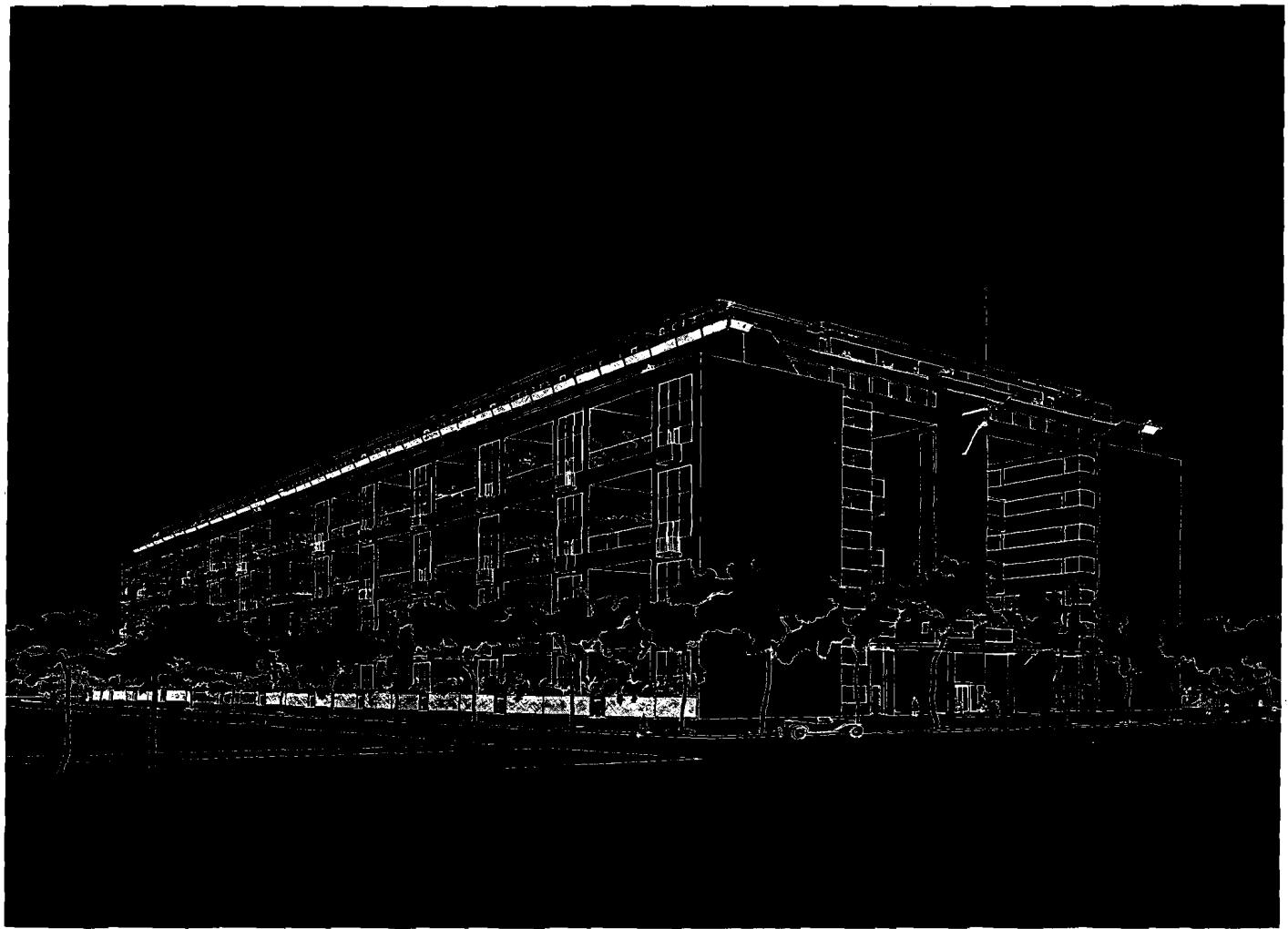
38 "Immeubles Villas." Le Corbusier, 1922. Perspective drawing.



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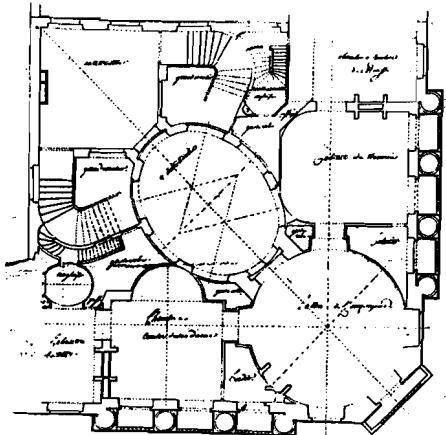


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39 Hôtel de Montmorency, Paris.
Claude-Nicolas Ledoux, 1770. Plan
of original design.



39

particuliers. In the plans of these houses there were specific spaces which were not part of the “architecture” but which were necessary to the practical functioning of the building. This planning by means of *poché*, which became codified in the teaching of the Beaux-Arts, is noticeable in many eighteenth-century Parisian *hôtels* where the needs of comfort and privacy demanded a sometimes quite elaborate series of service corridors and stores tucked away behind the main rooms, which are arranged according to the Baroque tradition, *en échelon* (fig. 39). Whether or not Le Corbusier was consciously influenced by this, the plans for the grand houses designed by him in the 1920s had similarly complex secondary spaces, a characteristic which clearly differentiates his planning from that of other modern architects (fig. 40). But there is a crucial displacement of concepts. According to the theory of the free plan, these spaces are no longer concealed but become an integral part of the architectural experience. Inherent in the idea of the free plan, though never explicitly mentioned by Le Corbusier, is the principle that every kind of space has a right to architectural expression and that no part of the building should be concealed. If a wall creates a convex surface in one space, there must be a corresponding concave curve in the adjacent space; in this way the structure of the space is entirely explained and there is no “space left over.”

This principle is closely related to the procedures of Cubism, in which a representation must include all the space within the pictorial volume, and not merely the space between objects (fig. 45). Just as a Cubist painting is a description of the structure of the pictorial space, so Le Corbusier’s houses are descriptions of the structure of the architectural space.

Thus Le Corbusier’s transformation of *poché* spatial planning not only facilitates the pragmatics of the free plan and the attribution of equal status to different spaces; it also makes the house a complete representation of its own spatial structure. Nonetheless, this transparent “exhibition” of space retains, while it inverts, the traditional distinction between service areas and living areas, giving to the first positive and to the second negative spatial characteristics.

In certain ways this procedure is similar to that of the De Stijl architects, in their articulation of space by independent planes. But there is an important difference. Even when service spaces are implied by a crowding together of the planes, as in Mies’s Brick House project, the spaces differ only in degree (fig. 42). In Le Corbusier the traditional difference between the main and service spaces is maintained, just as the Beaux-Arts principles of distribution are never entirely abandoned. However “free” a plan of Le Corbusier’s may be, not only does it consist, in large part, of quite traditional “rooms,” but a certain axial magnetism persists which has the effect of emphasizing the process of explosion and distortion to which the plan has been subjected. Such a spatial “discourse” does not exist in De Stijl plans, where the blowing apart of the “box” and the assertion of crystalline structure are never met with any resistance, and where the intensity of the plan regularly diminishes from the center toward the infinity of outside space. With Le Corbusier the semantic connotations of *poché* planning are maintained, only to be contradicted by the fact that now these spaces are felt to contribute to the total architectural experience, nudging and distorting the major spaces.

This interaction is no more than a special case of the general tendency in Le Corbusier’s work toward the setting up and artistic reconciliation of opposites.

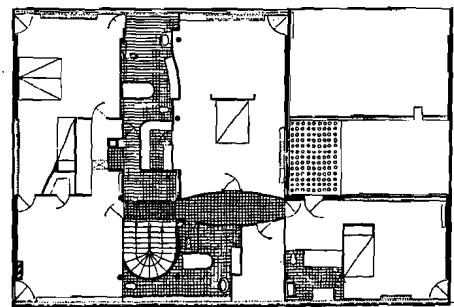
The main elements of this opposition are traditional "high" architecture and the characteristic "equipment" of the modern industrial world, the one asserting an idealist epistemology and eternal verities (as enshrined in a particular cultural tradition), the other denying this in favor of a "value-free" scientific empiricism. Throughout his writings, Le Corbusier constantly refers to this dichotomy, without ever attempting to resolve it on a theoretical level. "Reason" and the "heart" are adduced as complementary faculties, but sometimes reason is used to support a positivist position, and sometimes, as in the "*satisfaction de l'esprit*," it is associated with experiences of a higher order to which matters both of sentiment and of practical convenience are subjected.

The resolution of this conflict takes place on the plane of the building as a work of art. It can do so because the work of art is not limited a priori to a set of forms but is able (and indeed compelled) to absorb raw elements from the "real" world, although these are apparently in opposition to its idealistic essence. It is in the assimilation of objects of technology in architecture that we can obtain the clearest insight into this process of absorption and reconciliation in the work of Le Corbusier. The presence of elements of technology in his work might be thought to be no more surprising than their presence in the Modern Movement as a whole. Technology provided the means of rescuing architecture from the false rhetoric into which it was thought to have degenerated in the nineteenth century and of reestablishing that identity between technique and representation which existed in the periods still dominated by a craft tradition—an identity by virtue of which the essence of a building consisted of the objectification of the building process. But in Le Corbusier, more than in any other modern architect, technology had a metaphorical role, in which complete machines became paradigms for the new architecture. One of the most important of these paradigms was the ocean liner. Not only was the ocean liner designed according to scientific principles, it provided, for the limited period of its use, all the requisites of communal life. It was a symbol not only of objective design, in which the arbitrary choice of the designer was reduced to the minimum, but also of a human society organized according to rational principles.

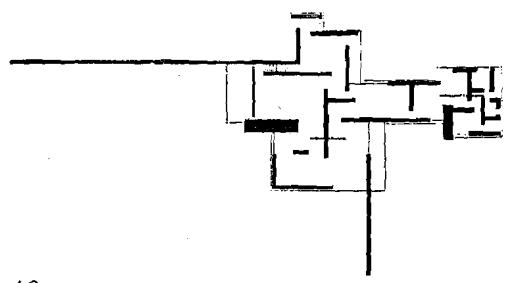
In the Unité d'Habitation not only are the rational principles underlying the ocean liner involved but also the poetry of its forms. The building is poised on its *pilotis* like a ship afloat; its inhabitants have the same relation to the surrounding countryside as the passengers of a liner have to the sea. It reproduces the liner's communal promenade decks and its private cabins; its plant is arranged on the roof like the liner's funnels and superstructure. But this is not just a picturesque evocation. Every visual analogy is tied to a functional correspondence. The liner is not just a romantic image of the modern age; it is an example of its very principles at work and is thus a valid model for architecture (fig. 41).

But the liner is dumb. It is the result of imperative but limited demands. Not until these demands have been deepened to satisfy the needs of a rational society and have become a conscious object of the social will can such a structure achieve the status of architecture. Thus, in Le Corbusier, the reverse process to that proposed by Hannes Meyer takes place. According to Meyer, architecture should become like machinery, unconsciously following the dictates of an implacable economic destiny. According to Le Corbusier, machinery has to be raised to a conscious level—in fact, to become architecture—before it can truly serve and represent man; it has to be humanized and

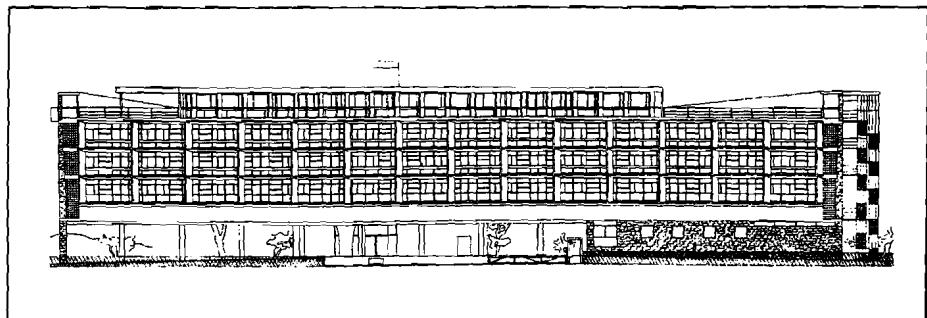
40 Villa Stein in Garches.
Le Corbusier, 1927. Third floor
plan.



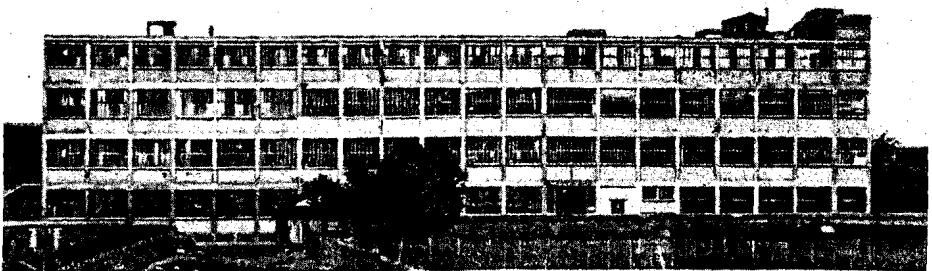
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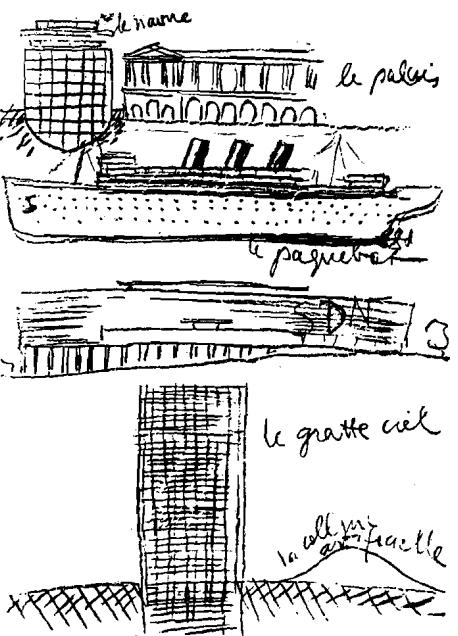
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filled with philosophy and art, which are the truly human realms.

The final type of displacement which I will discuss here concerns industrial buildings. In *Vers une architecture* Le Corbusier followed other propagandists of the Modern Movement in giving examples of warehouses, silos, and factories to illustrate the pure formal qualities of industrial buildings. Such buildings not only made use of advanced structural techniques but, because of their economic and utilitarian criteria, they expressed this construction in a way which resulted in a repertoire of basic plastic forms. The relationship of these forms was based on a new, if unconscious, compositional principle, according to which the elements were distributed purely on the basis of practical necessity. This type of building suggested to Le Corbusier a new kind of conscious architecture; it was not, itself, this architecture. It suggested a method which might supersede the "rules of Vignola," but it remained latent until its pragmatism could be converted into ideal architectural forms.

This conversion involves an apparent contradiction. The organization of the parts, which has merely been suggested by unconscious, naive design, has to be the result of aesthetic "ordering," but the very freedom on the basis of which this "ordering" must now take place (without academic rules) is dependent on the laws of practical distribution, and the more stringent they are, the more they deny to the designer any freedom of manipulation. This contradiction can be resolved only if it is assumed that a consciousness of the reasons for practical organization in some way becomes a part of the aesthetic experience of the building. The "designed" building thus becomes something in which the elements of order and the elements of disorder (or chance) achieve a momentary equilibrium.

That this is what Le Corbusier achieves in the transformation of industrial buildings into architecture can be seen by comparing his factory at St.-Dié (fig. 43) with a factory illustrated in *Vers une architecture* (fig. 44) and noting the remarkable parallels between them.¹⁰ The fact that this example is a case of transformation from one industrial building to another does not weaken the argument for displacement in the broader sense, since we are less concerned here with displacements between different building types than with those between processes outside and those inside the realm of architecture. Moreover, this example illustrates very clearly the way in which Le Corbusier worked. With him it is not a question of establishing general and abstract principles before becoming involved with a particular design; the concrete vision and the general principles always seem to appear simultaneously.

The architectural solution already exists in embryo in the factory which Le Corbusier uses as a model. The shop floors consist of a repeating grid into which an office with a different scale of window is inserted on the ground floor. On the roof further random elements occur, completing the suggestion of the tripartite division we have seen in the Pavillon Suisse—a ground floor and a roof where the particular incidents can occur, and a middle section which is completely regular.

In the factory of St.-Dié this implied separation of parts is made more distinct. The office is now inserted within the space of the *pilotis*, and the plant on the roof is joined by a range of penthouse offices. The ground floor and the roof are no longer the same tentative and accidental events but precise and important ones, which give life and meaning to the regular middle section.

41 Sketch from *Précisions*, 1929.
Le Corbusier.

42 Project for a Brick Country House. Ludwig Mies van der Rohe, 1922. Plan. Collection, Mies van der Rohe Archive, The Museum of Modern Art.

43 Factory, St.-Dié, France.
Le Corbusier, 1946–1951. Southeast elevation.

44 Factory illustrated in *Vers une architecture*, 1923.

45 Pablo Picasso, Three Musicians, 1921. Oil on canvas, 79×87¾".
Collection The Museum of Modern Art, New York. Mrs. Simon Guggenheim Fund.

Nothing could illustrate more clearly the way in which Le Corbusier "architectures" the given elements of a practical building program. The form of the building is not—as with Mies—reduced to an overall simple order in which the random elements of life are invisible. These elements become part of the architectural message and are aesthetically integrated with the building as a whole.

The phenomena analyzed here no doubt represent only one aspect of the work of Le Corbusier. But it is, I believe, an important aspect, and one which has not received sufficient attention. Architectural theory has been dominated for the last decade or so by various forms of determinism or populism, neither of which recognizes architecture as constituting a cultural entity in its own right. But the raw material of architecture is, to a large extent, the architectural culture at any one moment in history. Unless those aspects of architectural creation which have been discussed—aspects which involve the transformation of an existing culture—are understood, we are not going to achieve an architecture by which cultural meanings can be carried.

Perhaps the most crucial problem in architecture today is that of its relationship with the culture of society as a whole. Is architecture to be considered as a self-referential system, with its own traditions and its own system of values, or is it rather a social product which only becomes an entity once it has been reconstituted by forces external to it?

There is undoubtedly today a strong current of opinion which tends toward the first of these alternatives. These ideas seem to have appeared as a reaction against the weak theoretical position forced on architecture during the last fifteen years or so, during which its defenses have been attacked by successive waves of operationalism, systems methodology, poetic technology, social realism, and even certain semiological discussions, all of which have had as their chief aim the dismantling of "architectural values"—what Reyner Banham has called the "cultural baggage." On the one hand, architectural creation has been postponed until an apparently endless process of induction and analysis (whether technical or social) has been completed; on the other, aesthetic fervor has been encouraged, provided that its roots were either expressionistic or populist, and the existence of any valid system of rules or norms belonging to the tradition of "high architecture" has been denied. If it has been admitted that architecture is a "language," then it is a language which springs from intuition, unhampered by any previous knowledge of the subject—a language more natural than natural language itself, since it does not have to be learned.

These tendencies—which are still very strong—are, in one sense, the result of one of the most powerful motives of avant-garde art since the mid-nineteenth century—the drive toward "realism" or "naturalism." The successive artistic revolutions of the last 150 years have all been attempts to "get behind" the "stylistic" representation of ideas, to destroy the artificial rules which not only mediate between the representation and the reality but also give this representation a particular ideological coloring. It is true that this search for a primordial language with which to express man's relation to reality eventually took a form which seems almost the antithesis of realism, when, instead of imitating structures which were immediately given, it attempted to discover hidden and underlying structures. This turn toward formalism, which sought to create analogues of the real world, not only affected painting and literature as "imitating" arts but also architecture and music, where the humanizing and reassuring elements of style belonging to the "classical" repertoire were rejected in favor of more elementary structures. But if the aim of this revolutionary force was to eliminate style and to discover essences, it was in the end bound to come up against the fact that our mode of understanding "reality" and our mode of "representing" reality artistically are separate things.

Already in the 1920s Boris Tomashevsky drew attention to the infinite regress in which the avant garde found itself in literature:

"In general the nineteenth century abounded in schools whose very names hint at realistic techniques of motivation—'Realism,' 'Naturalism,' 'the Nature School,' 'Populism,' and so on. In our time the Symbolists replaced the Realists in the name of some kind of transnaturalism . . . a fact which did not prevent the appearance of Acmeism . . . and Futurism

"From school to school we hear the call to 'Naturalism.' Why, then, has a 'completely naturalistic school' not been founded . . . ? because the name 'Realist' is attached to each school (and to none). . . . This explains the ever present antagonism of the new school for the old—that is, the exchange of old and obvious conventions for new, less obvious ones within the literary pattern.

Rules, Realism, and History

This essay was first published in German translation as "Regeln, Realismus und Geschichte" in the "Realismus in Architektur" issue of Archithèse, n. 19, 1976.

On the other hand, this also shows that realistic material in itself does not have artistic structure and that the formation of an artistic structure requires that reality be reconstructed according to aesthetic laws. Such laws are always, considered in relation to reality, conventional.”¹¹

The facts stated here, though clearly admissible in the case of the “nonutilitarian” arts, might be questioned in relation to architecture, which has to embrace both the real and the representational—the work of architecture being part of the real, “usable” world, as well as a representation of that world. It could be argued that the Modern Movement radically confused these two aspects, attributing to the need for practical buildings a representational function or, conversely, burdening the representational function with the responsibility for solving practical building problems. But if it did this, the reason must lie in the fact that these two aspects of architecture, which are independent from a logical point of view, are never independent experientially, and that the search for the “essence” of the building has an aesthetic motivation, embracing a certain idea of utility and its representation—one in which the transparency of the form was symbolic of a reality which could be totally described and manifested.

Thus the “materialism” of modern architecture was just as “metaphysical” as architecture had ever been, and this seems to show that when we are talking of architecture, we are referring to a system of representation of essentially the same kind as that found in the other arts. It is no more possible in architecture than any other system of representation to arrive at the *ne plus ultra* in which the representation and the represented coincide; the need for aesthetic laws of construction must be admitted. Such laws are not like the laws established on the basis of hypothesis and experiment in the physical sciences—laws which, according to Karl Popper, have to be capable of falsification. If we are to make a scientific analogy, we should rather say that they are like the “paradigms” which, in Thomas Kuhn’s analysis, determine the area of scientific discourse. They are norms, and a complete description of the phenomenon of architecture could no more neglect to include them than could a description, say, of football omit to include those rules which alone render the game intelligible. In Tomashevsky’s terms, they are “conventional.”¹²

But however much the necessary existence of such laws may justify a view of architecture as a self-referential system, it does not support a view which would regard such a system as dependent on laws which are absolute and unchanging. The laws regulating aesthetic construction are subject to change, and this change comes about not from inside the aesthetic system but from outside.

That this is true can be seen even in a system so apparently independent of technical and economic conditions as music. The change in musical language which came about in the eighteenth century, when a contrapuntal gave way to a homophonic method, can only be explained by a change in the social function of music. What took place was, of course, a purely *musical* change, and it can be completely explained in terms of rules which belong to music alone. Nonetheless, the motivation of the change was external to music.

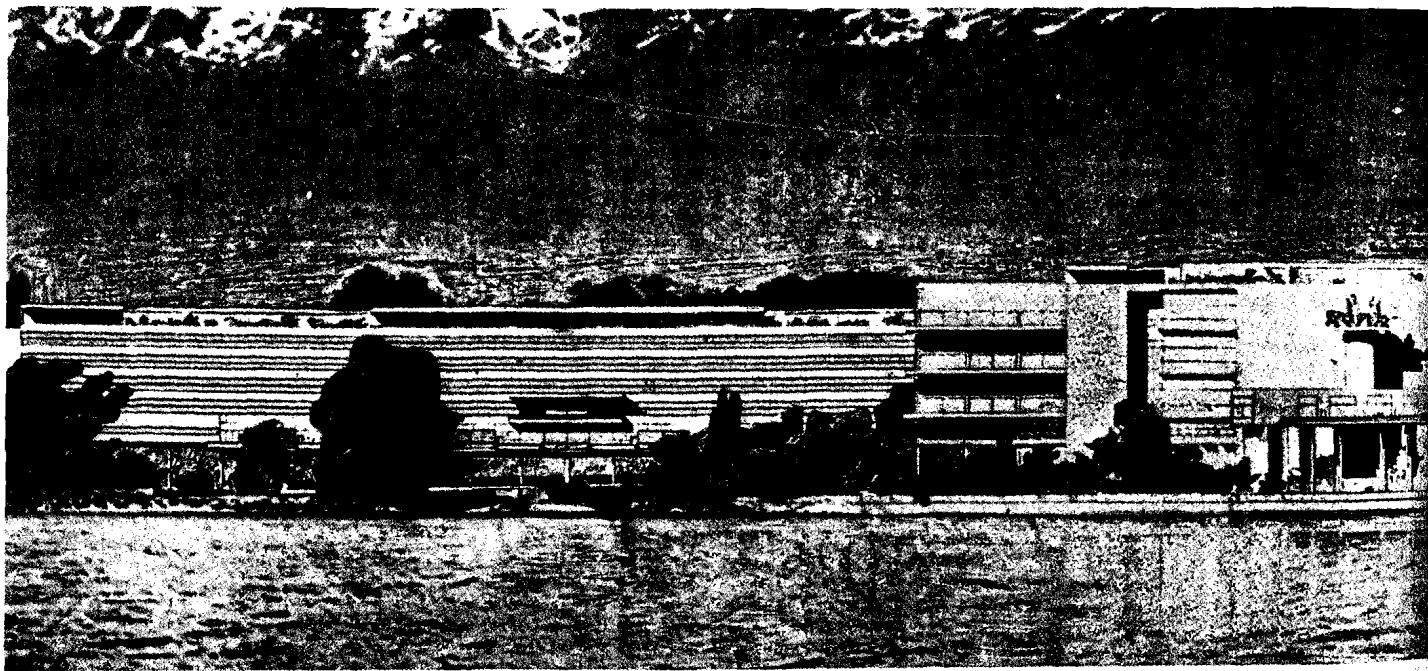
Up until the nineteenth century, the external pressures on architecture were no more than on the other arts, but since the Industrial Revolution, and with increasing intensity in the twentieth century, architecture has been subject

to social and technological pressures of a more direct kind than in the other arts. Changes in patterns of settlement and work, technical changes involving the use of new materials, economic changes due to a vast increase in the profitability of land development, changes in the method of distributing people and goods, have radically altered the architectural infrastructure. None of these changes has originated from inside architecture; all of them have necessitated a change in architectural rules.

Such a process, involving two variables—the socioeconomic system and the aesthetic rule system—can only be accounted for dialectically. As an example of this process in operation, let us look at what might be called the “facade problem” in modern architecture. In the early days of the Modern Movement this problem was widely held to be nonexistent. According to the organic analogy, the external form of a building was supposed to be the result of its internal organization; “facadism” was identified with an architecture of false rhetoric. Yet certain architects, notably Le Corbusier, retained the facade and the related function of frontality as part of their architectural language. The problem of frontality is not simply the problem of the outside appearance of the building, though this in itself is bound up with the whole problem of the building as a representation in the public realm and cannot be attributed to superficial rhetorical needs. It is also connected with the problem of the interface between public and private and the transition from “outside” to “inside.” In these terms it is a purely architectural problem—a problem that will not dissolve however much the conditions external to architecture change.

But the problem cannot be solved by recourse to any unalterable system of architectural rules. It can only come from taking the existing rule system, adapting it to the new conditions, and laying down a revised set of rules. In all his major buildings, we see Le Corbusier facing this problem with unrivaled inventiveness: the turning of the staircase through ninety degrees at the Villa in Vaucresson (fig. 47), the system of virtual frontal planes in the League of Nations building (fig. 46), the elaborate entrance system in the Salvation Army hostel (fig. 49), the invention of the *brise-soleil* (fig. 48), to mention only a few cases. As a counter-example we might take one of Herman Hertzberger’s projects (fig. 50). In his attempt to generate the plan as a system, Hertzberger has ignored the problem of the facade. His buildings can only be comprehended as internally generated, and no reference is made to the problem of the building as a representation or to the approach to the building from outside. The building is seen as a fragment of “real” space, whose laws of extension lie in the building’s internal organization, and the space between buildings as a specifically architectural problem is ignored. These criticisms are objective. The faults which they expose are the result of the belief that architecture can be created without the establishment of aesthetic norms.

It is also to Le Corbusier that one must turn for an example of new architectural rules. The most obvious of these are the “Five Points,” and with this example one notices a characteristic of the modern situation which differs from the past; rule systems tend to be invented by individual architects and tend to attain only a limited degree of acceptance. What in previous epochs was part of the *langue* has become a function of the *parole*. Mies’s invention of a network of virtual structure superimposed on the curtain wall is another such rule system. The rule system can even extend to the behavior of people within a building—as can be seen in Le Corbusier’s drawings—thus annexing to the architectural sphere something which, in earlier periods, belonged to



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46 Project for the League of Nations, Geneva. Le Corbusier, 1927-1928. View from the lake.

47 Villa in Vaucresson.

Le Corbusier, 1922. Street facade.

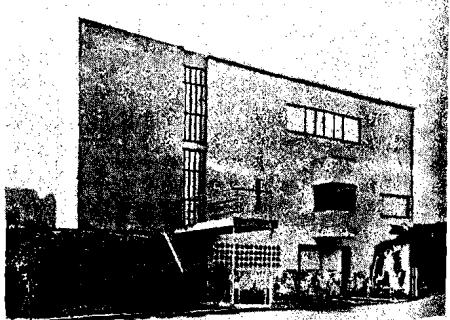
48 Millowners' Association Building, Ahmedabad.

Le Corbusier, 1954. West facade.

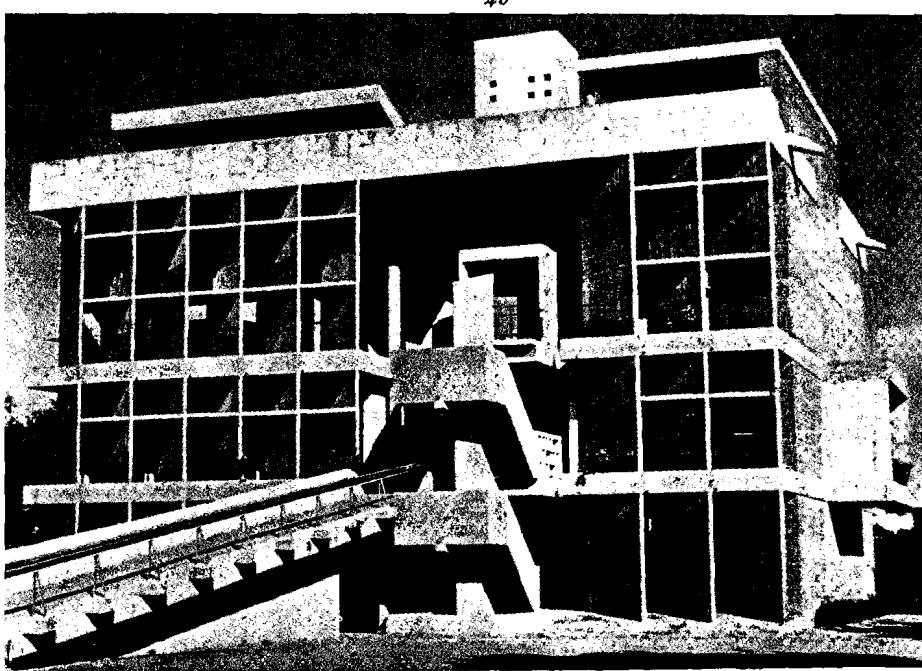
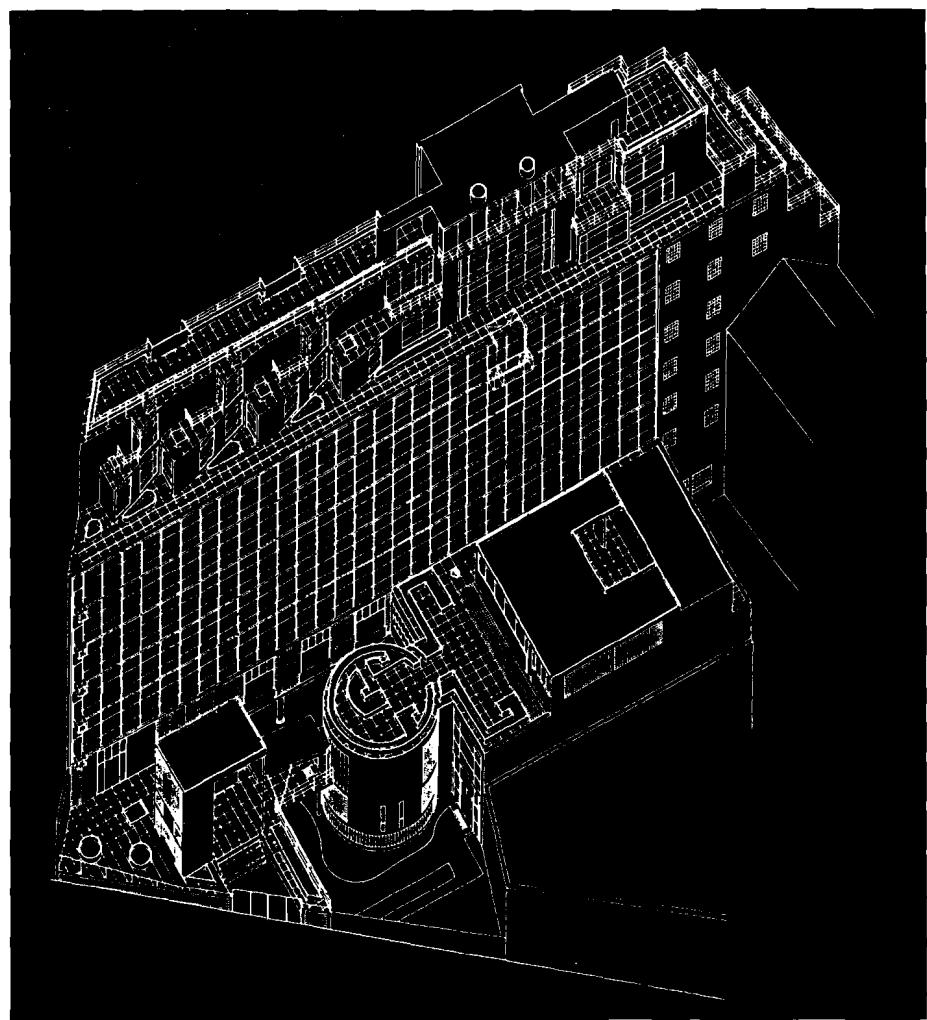
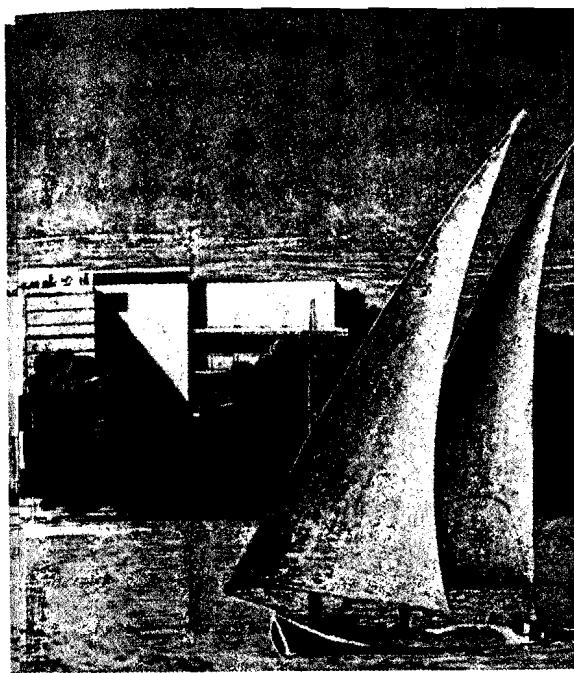
49 Salvation Army Hostel, Paris.

Le Corbusier. Axonometric view.

Redrawn from original plans with verification by H. Lapprand.



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an external rule system (rules of social behavior) (fig. 54).

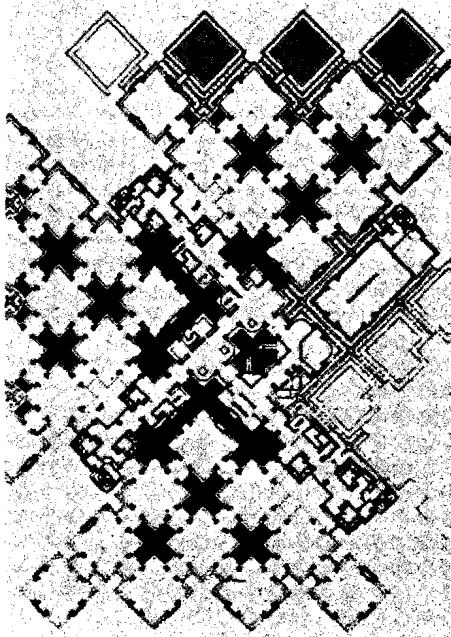
The invention of rule systems by individual architects has often resulted in the transformation of buildings in accordance with a contradictory rule system. One of the most striking examples of this is the modification of Pessac, where the organization of homes according to the principles laid down in the "Five Points" has been altered to conform to petit-bourgeois norms requiring small windows, shutters, pitched roofs, and so on (figs. 51, 52).

The proposition that architecture is a self-referential system has been accompanied by a "softening" of the rule system which was developed during the 1920s and which has, albeit with important developments and shifts in viewpoint, governed architectural practice until recently. Owing to the fact, mentioned above, that the rule systems of modern architecture were made by individual architects, or, at most, by small groups claiming to stand in some special rapport with the *Zeitgeist*, there cannot be said to exist, within the framework of the Modern Movement, any firm basis for excluding alternative rule systems.

The norms of modern architecture have no "right of exclusion," and the very fervor with which the Modern Movement insisted on the inextricable links between architecture and the approaching "world culture" meant that, once that great ideological vision had faded, the rules of architectural form supporting it would also tend to weaken.

It is therefore possible to see the modern tendencies toward historicism, not as constituting an alternative to a monolithic Modern Movement but simply as acting out a centrifugal tendency which was never far beneath the surface. But this development nonetheless has its paradoxical side. However much architecture derives its historicity from its own internalized tradition, it still depends for its realization on the "occasion." And the occasions which are provided by modern social life for the symbolism inherent in the rule systems of classical architecture are very rare. In this way we seem to see a separation taking place, not only between architecture and the broader ideological patterns, but also between architecture and those very occasions which a "realistic" architecture should accept. From a situation in which "style" was finally to be superseded, we find ourselves in a situation in which everything is "style"—including the forms of the Modern Movement itself—a type of eclecticism more arbitrary than that of the nineteenth century, since at that time the choice of a style was based on its ability to represent certain political, philosophical, or religious ideas.

An example of this can perhaps be seen in Aldo Rossi's Gallaratese (fig. 53), where the "virtual" elements—giant *pilotis*, a "classical" arrangement of windows—refer less to the program than to some kind of "absent" architecture. The function of the rule system seems less to establish an architecture of meaning than to bring architecture back from the verge of an empty garrulousness, where reality is reflected in endless functional episodes each more banal than the last—those stair towers and service shafts which so often form the lexicon of modern buildings. Whatever one may say in defense of such an architecture of polemic, there is a danger that the belief in an architecture which is purely self-reflective might lead to a devaluation of the building program and to an architecture which would no longer need to be built. The dichotomy posed earlier (architecture as an internally or externally referential



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50 *Centraal Beheer, Apeldoorn, The Netherlands. Herman Hertzberger, 1974. Plan.*

51 *Pessac workers' housing.*

Le Corbusier, 1926. Street facades.

Photograph by F.R. Yerbury.

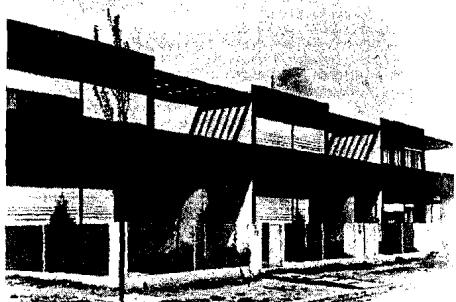
Collection of the Architectural Association, London.

52 *Pessac workers' housing transformed by its inhabitants.*

53 *Residential units in the Gallaratese district, Milan. Aldo Rossi, 1970. Elevation.*

54 *Wanner Project, Geneva.*

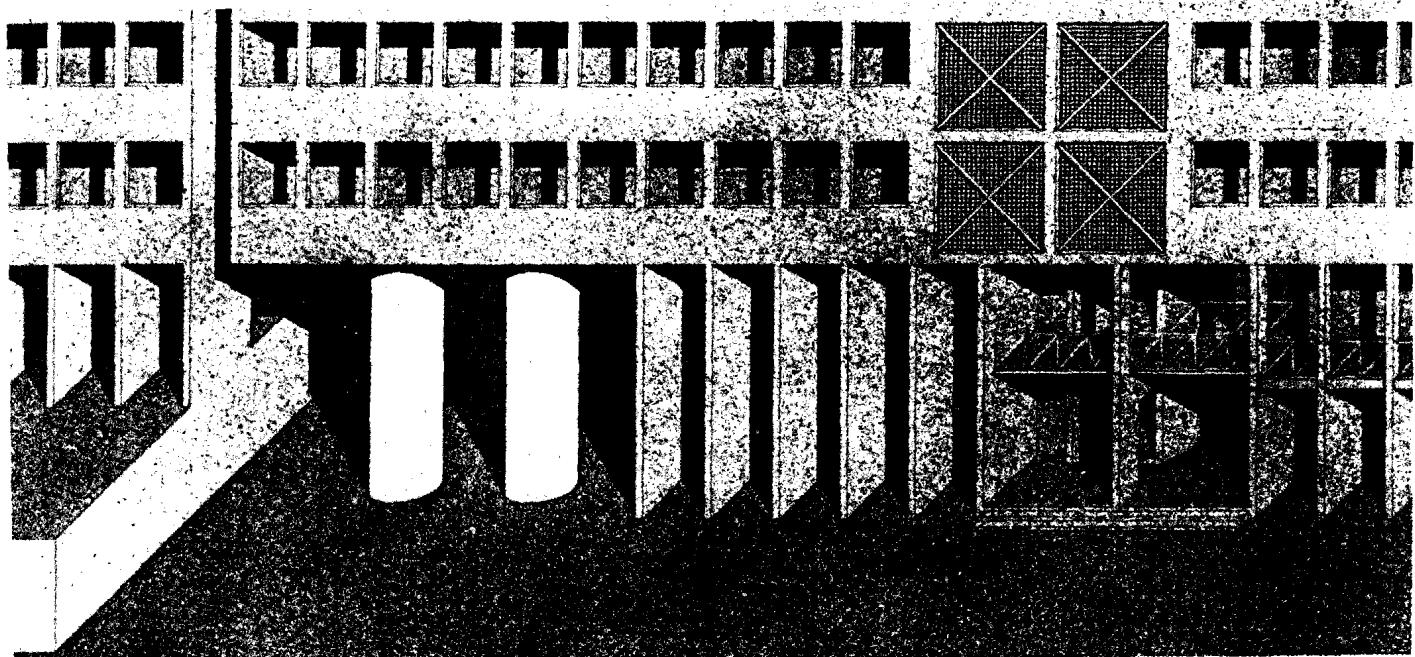
Le Corbusier, 1928-1929. Sketch of a "jardin suspendu."



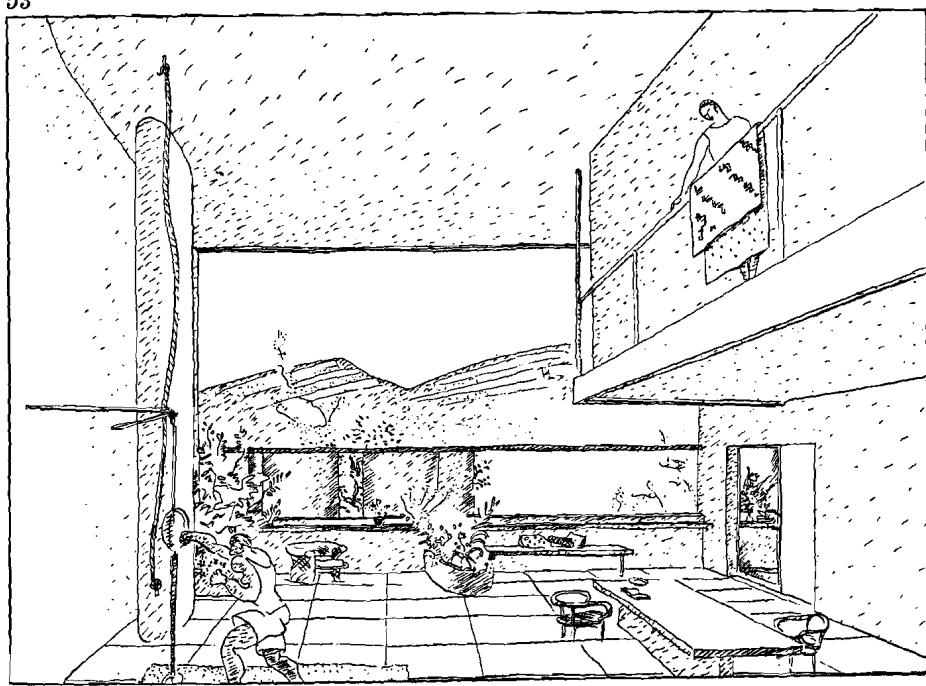
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system) should be replaced by a less simplistic concept—that of a dialectical process in which aesthetic norms are modified by external forces to achieve a partial synthesis.

The kind of realism according to whose tenets a fundamental language can be disclosed, and which rejects the mediation of style, should be replaced by a new realism which would gain its validity both from existing aesthetic structures and from a reality which would affect and alter these structures—a realism which accepts the fact that it is not possible to foresee a society whose unity is fully reflected in the forms of its art.

This essay was first published in L'Architecture d'Aujourd'hui in 1976.

Although his first major projects—the Paimio Sanatorium and the Viipuri Library—belong to the canon of the 1920s, from the start Alvar Aalto's work diverged from that of the main Dutch, German, and French architects of the period. What was lacking in Aalto's work was the equation of functionalism and rationalism. Although Leonardo Mosso is no doubt right to deny any direct influence from Frank Lloyd Wright, it is easy to see how this idea arose. Aalto's work has many features in common with the romantic and expressionist wing of the Modern Movement—the wing which was descended from the Arts and Crafts movement through Henry van de Velde, as opposed to Hermann Muthesius. Aalto interprets function in terms of a Heraclitean, rather than a Platonic, view of nature. What interests him in nature is its emergent and phenomenal forms, rather than the rational order to which it may be reduced. The Modern Movement in its early phase was concerned with the general schemata by which both society and architecture could be reconstructed according to rational principles. Apparently Aalto never concerned himself with such a universalism. He was content to remain "close to the ground" and to follow where his instinct for form led him.

But it would be an error to associate his work too closely to that of Expressionists such as Hugo Häring and Hans Scharoun. He was as remote from their formalism as he was from the schematization of their opponents. His forms always pick up meanings from the context and are not based on a priori categories. Thus, the complexity and variety in Villa Mairea are the result of a response to particular features of the program (fig. 56). Neither the main living area nor the bedrooms face the concave space of the garden, as a simple binary classification (open/closed) might have suggested. Instead, this initial implication is contradicted, and the space of the house expands in both directions, permitting a variety of views and lighting and a generosity of life style which would have been denied by a more exclusive interpretation of the *parti*. Each zone of the house is allowed its own individual character without being dominated by a strong unitary concept: the bedroom windows lean toward the sun, the studio introduces an entirely new formal theme, the cluster of poles which screens the staircase echoes the forest outside (fig. 55). All these statements and counterstatements come about because the causes of things are seen to be multiple; the greater order aimed at must not be so elementary as to stifle the life of the parts. Aalto's strength lay in his ability to maintain artistic control over many contradictory elements and an apparent excess of ideas, which he was able to synthesize into a rich metonymy of architectural forms.

There are many analogies between Aalto's work of the late 1920s and 1930s and the work of other schools within the Modern Movement. But Aalto gives to these common themes an entirely new interpretation. For example, in the Library in Viipuri, although the overlapping volumes suggest a compositional method characteristic of De Stijl, they represent separate organizational types rather than irreducible spaces (fig. 57). Again, Aalto's use of repetition, reminiscent of Constructivism and of certain works of László Moholy-Nagy, is less concerned with mechanical reproduction as such than with establishing an analogy between mechanical reproduction and biological or geological processes (fig. 60).

Aalto's relationship with Le Corbusier is more complex. At first sight one could not imagine two architects with more contradictory sensibilities. Aalto seems to have had no interest either in Le Corbusier's *esprit du système* or



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55 *Villa Mairea, Noormarkku, Finland. Alvar Aalto, 1938–1939. View from the entrance into the hall.*

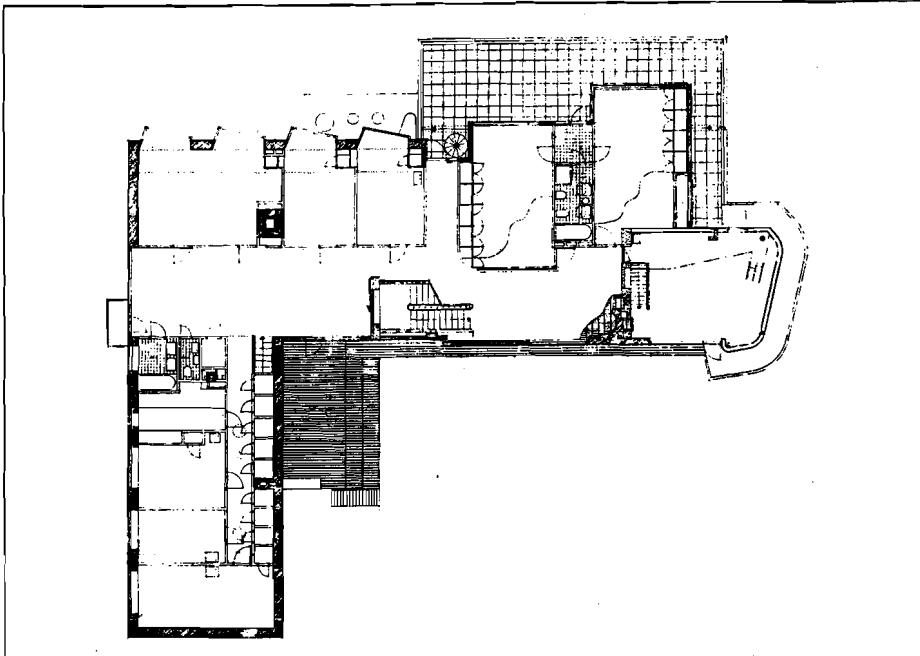
56 *Villa Mairea. Upper level plan.*

57 *Municipal Library, Viipuri, (now in the USSR). Alvar Aalto, 1930–1935. Aerial view.*

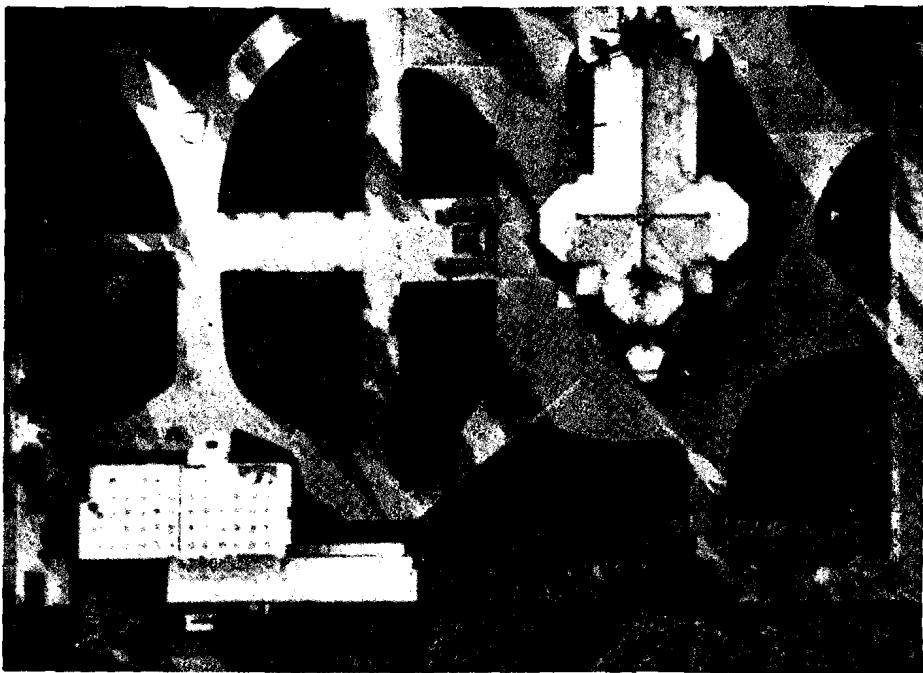
58 *Pedagogical University, Jyväskylä. Alvar Aalto, 1953. View of teachers' and students' dining halls.*

59 *Pedagogical University, site plan.*

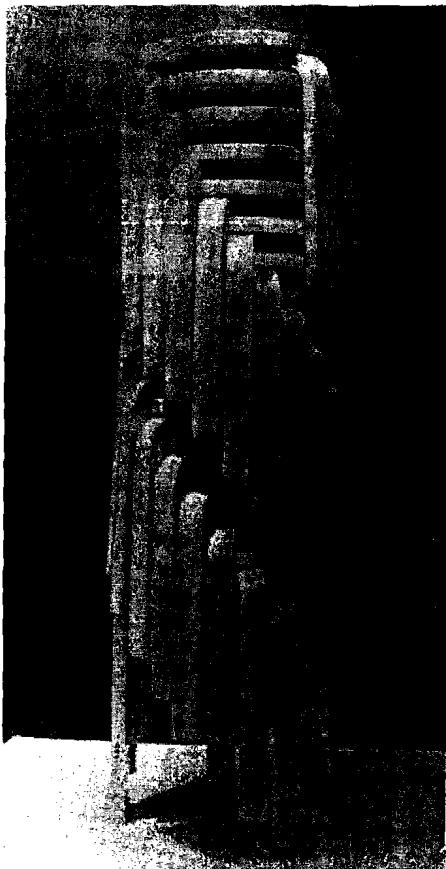
60 *Bentwood stools for the Library, Viipuri. Alvar Aalto, 1938.*



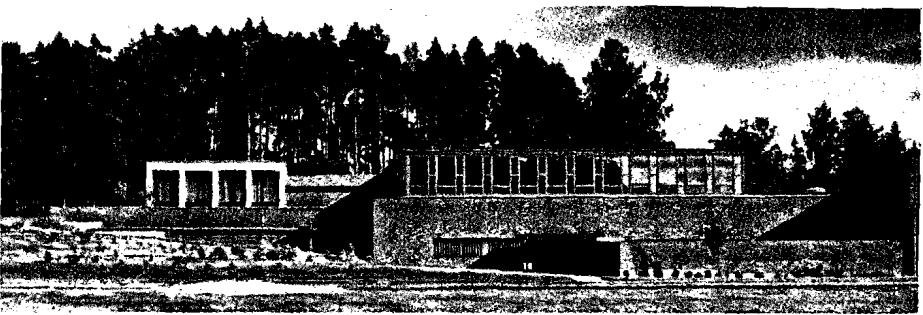
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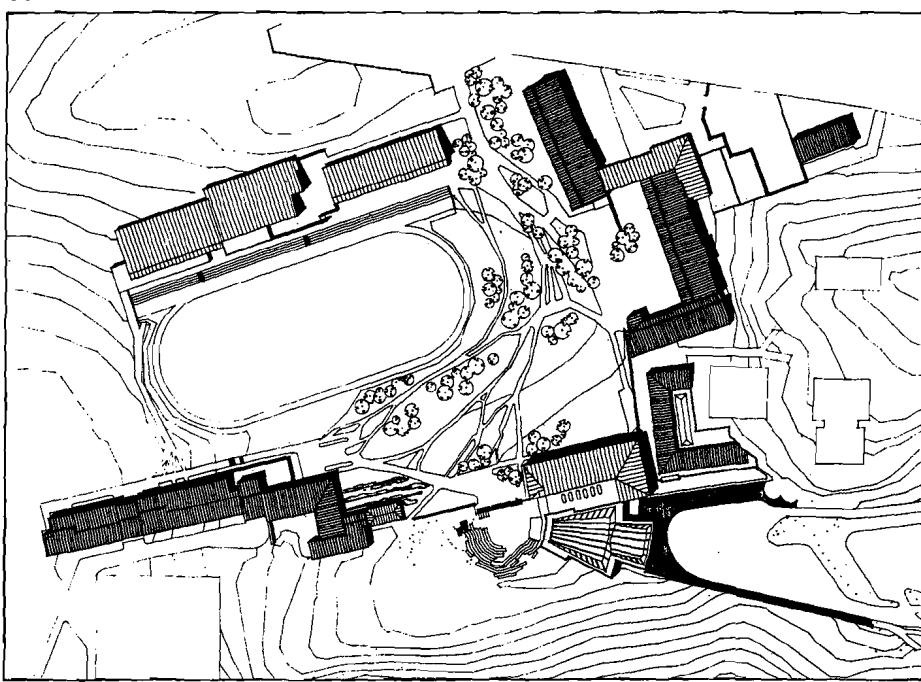
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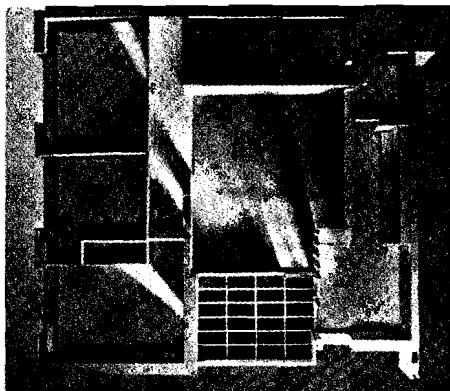


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in the spirit of French classicism, which was so important a feature in Le Corbusier's work. This is demonstrated in their differing attitudes toward the plan. For Le Corbusier the plan gives order and intelligibility to the whole building. In Aalto's early work the plan is dealt with pragmatically, and at Viipuri, for example, there is a clumsiness in the entry system which comes from trying to create an axis across the stratified volumes which leads to the projecting porch and large window terminating the block—both of whose relationships to the main masses seem unresolved. In Aalto's later work the plan becomes more closely integrated with the principle of overlapping and ambiguous volumes, but in doing so it seems to diverge even further from Le Corbusier. However, as Demetri Porphyrios has pointed out,¹³ in Aalto's work there is, together with a sensitivity to contingency, a typological drive which relates him to Le Corbusier. The difference between them is that for Le Corbusier the emphasis is on the creation of new types established on rigorously rational principles, while for Aalto the type is something which already exists as a historical and social reality. As such it is not reflected in his work as formally complete but as an underlying idea capable of almost infinite paraphrase and extension (fig. 59).



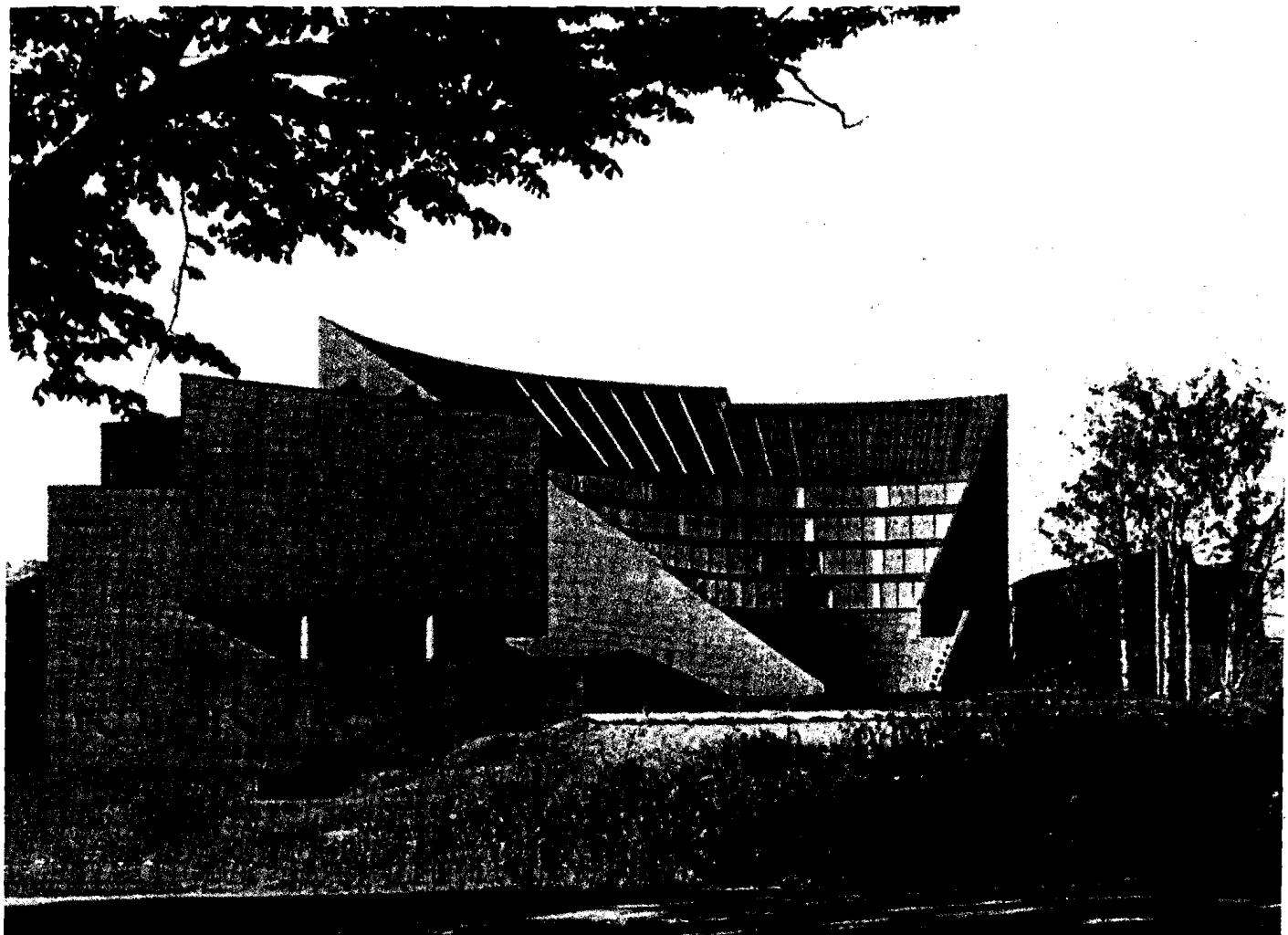
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Aalto is reported to have admired Le Corbusier more than any other modern architect. This may perhaps be partially explained by his recognition of powers of intellectual formulation which he himself lacked. But it may also owe to certain preoccupations which they had in common. These preoccupations included an admiration of both the architecture of peasant societies, particularly around the Mediterranean (which dates back to their early involvements in National Romantic movements), and the architecture of Neoclassicism, which they saw as providing a core of traditional doctrine outside the confines of modernist doctrine (fig. 58).

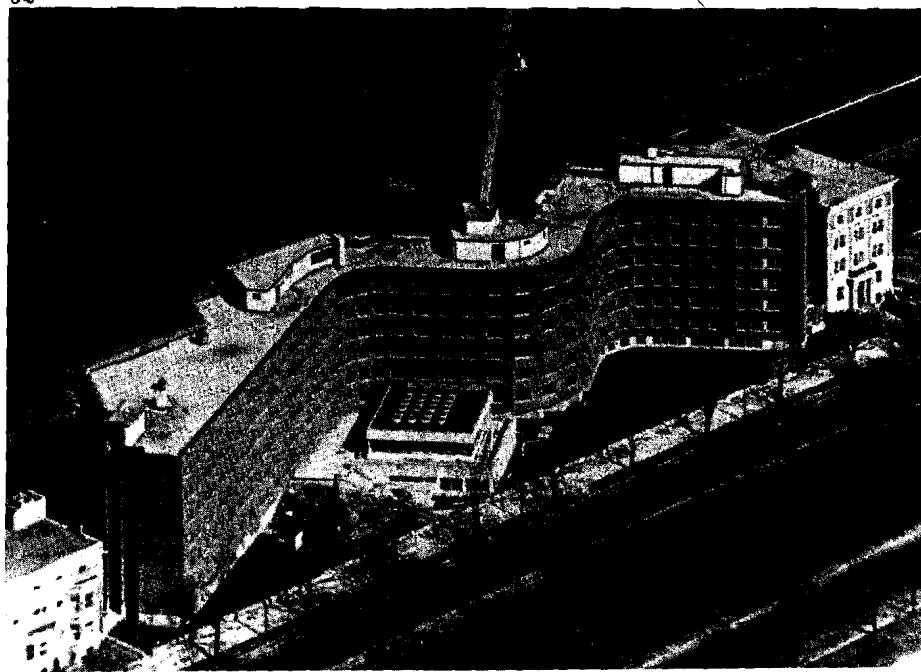
Perhaps the most outstanding feature of Aalto's work, and one which seems related to his study of Italian towns, is the way in which he strives to make each building into a social microcosm. The majority of Aalto's projects were of a type to encourage this interpretation—libraries, cultural centers, theater complexes and churches—but he even aims at the same spatial hierarchy in individual apartments, as in the Hansaviertel apartment block in West Berlin (fig. 61). But whereas in Le Corbusier a clear external form establishes precise limits to the universe of the building, in Aalto the subsidiary elements are freely grouped around the central core. The building becomes a kind of town, whose outer elements take up their positions as if through a tropism. A number of functions are classified into a closed set, each of which is partially opened up again into the neighboring set or into the core itself. This "peeling away" of forms is an important ingredient of Aalto's work: the *subtraction* of forms is as important as their addition or juxtaposition.

This characteristic leads to the extraordinary impression that parts of Aalto's buildings are, in fact, ruins. Thus in the library of the Institute of Technology at Otaniemi the form of the auditorium roof creates the impression of an archaic fragment (fig. 62). Fragmentation, in Aalto, has a metaphoric dimension, unlike in De Stijl, where it is formal and systematic.

In the conflict in Aalto's work between a typological approach and a reliance on contingency and function to generate architectural form, certain general problems related to functionalism make themselves felt. There are two levels in the notion of function. At the first level a function exists as a generalized



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61 *Hansaviertel apartment block, West Berlin. Alvar Aalto, 1955–1957. Model of the “patio-apartment.”*

62 *Institute of Technology, Otaniemi, Finland. Alvar Aalto, 1964. View of the auditorium.*

63 *Baker House dormitory, The Massachusetts Institute of Technology, Cambridge, Massachusetts. Alvar Aalto, 1947–1948.*

type bringing together many dimensions of meaning. At the second level it exists as the solution to a specific operational problem. Aalto sometimes starts from this specific level, as in the Baker House dormitory at the Massachusetts Institute of Technology (fig. 63), where the undulating wall is intended to reduce traffic noise or to provide views up the river, or in the Church at Imatra (fig. 64), where the volumetric articulation satisfies the need for multiple uses. In neither of these cases is the form-determining function really fundamental to the idea of the program, and yet it establishes the overall configuration of the building. The fact that the forms have "poetic" contents which reverberate far beyond the original functions does not bring them any nearer the central meaning of the program. In some of his late work Aalto seems to depend on minor and accidental aspects of the program to produce ever-varying solutions to basically similar problems. In his late churches the relations between altar, spatial axis, and light source are always being modified according to criteria which are not altogether clear, as if the idea of a church was no longer able to provide him with a typical solution (figs. 65, 66).

64 *Church, Vuoksenniska, Imatra, Finland. Alvar Aalto, 1957-1959.*

Exterior view.

65 *Protestant Parish Center, Zurich-Alstetten, Switzerland.*

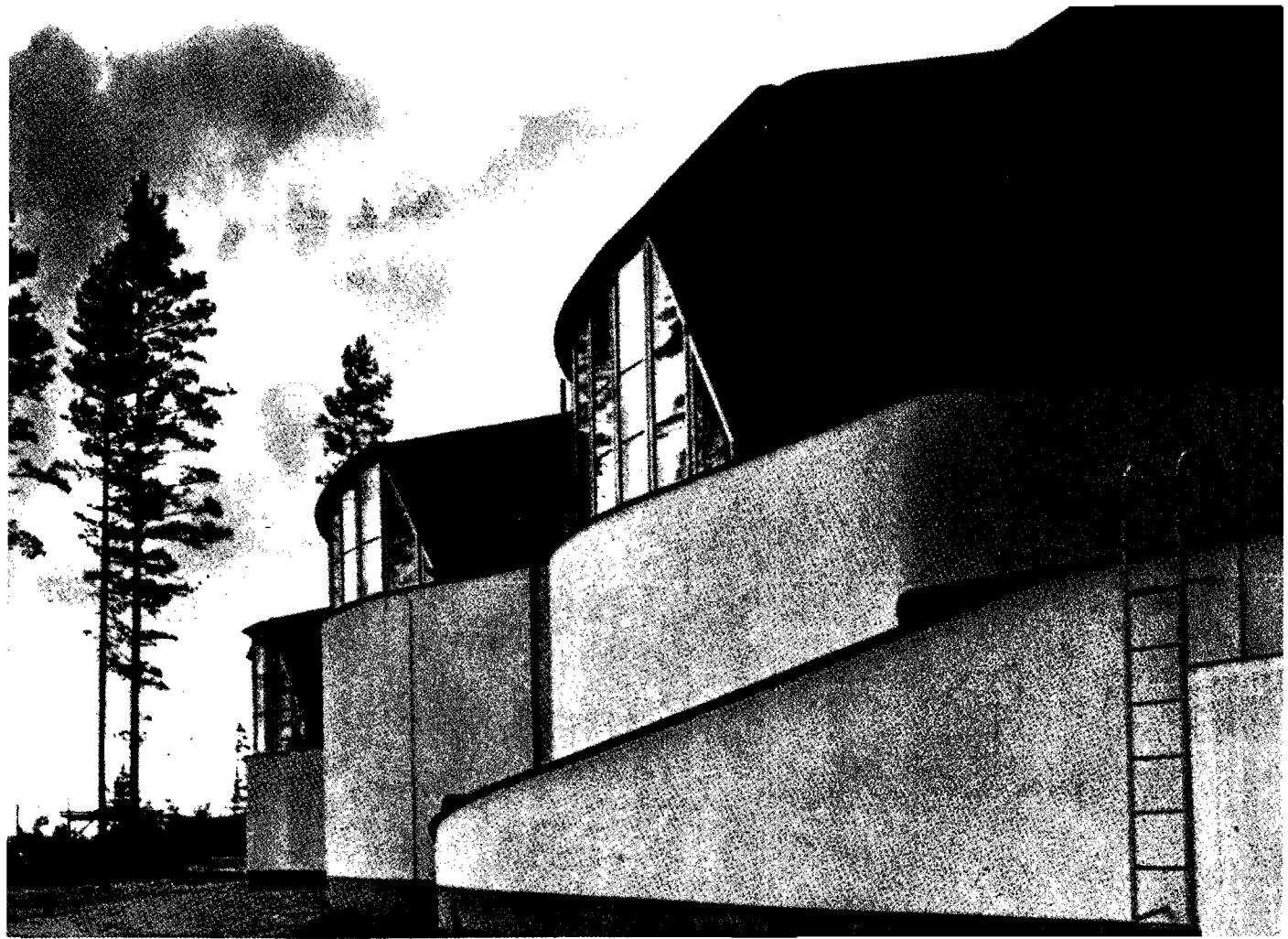
Alvar Aalto, 1967. Interior model of the church.

66 *Protestant Parish Center. Cross-section with indications of light incidence.*

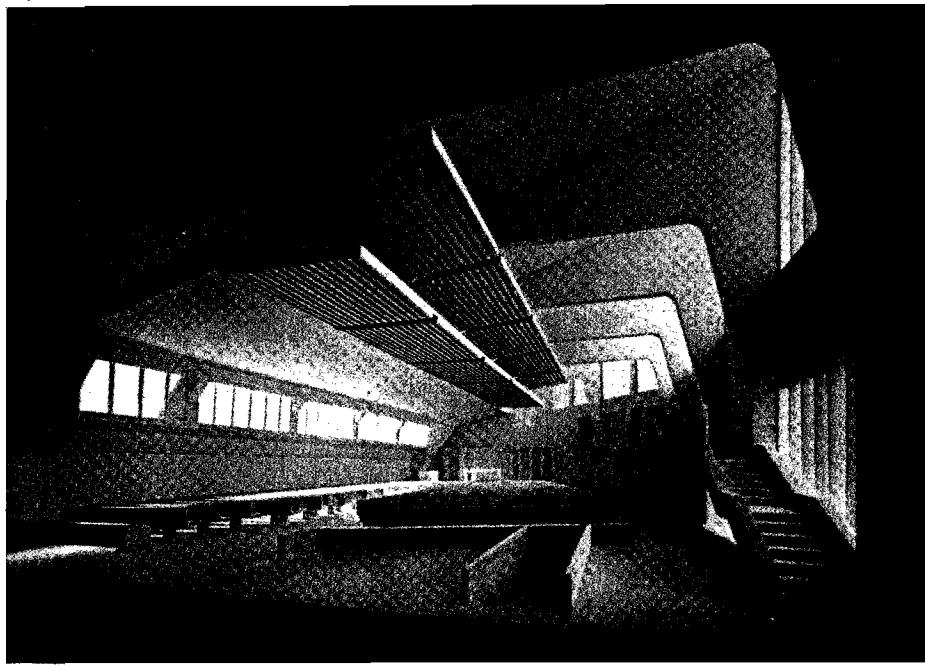
For Aalto to have submitted to external norms—to the idea of "type" advocated by Muthesius and Le Corbusier, for instance—would have meant an artificial restraint on spontaneous invention and a denial of architecture as the expression of the richness and complexity of life. But it is here, in the idea of architecture as expression, that we may find the clue to weaknesses in certain projects of Aalto, to some of which I have alluded. It is doubtful if the undulating walls at the Massachusetts Institute of Technology or the billowing masses at Imatra actually "express" anything, for the simple reason that the functions they represent do not correspond to any expectations which users or observers of the buildings would be likely to have. They therefore become pure forms, meaningful perhaps in terms of a nominalism which would consider all functions as of equal importance, but meaningless in terms of the architectural program and its cultural context.

That Aalto himself was aware of this problem can be seen from one of his articles in which he discusses the different meanings of towers in the landscape and differentiates between towers with potentially cultural meanings, such as church spires, and those whose meaning is restricted to ideas of mechanical function, such as water towers.¹⁴ Here he is implicitly admitting that the meaning of forms is due less to their innate expressive power than to their semiotic function. To act according to this admission would not necessarily entail a rigid conservatism, but it would entail an awareness of preexistent values which form part of the architectural message.

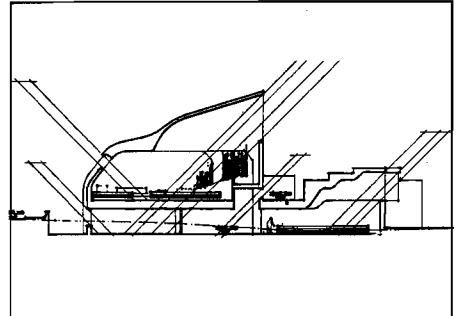
The value of the best work of Aalto lies in the fact that it does show such an awareness. But a consideration of the work of the greatest exponent of "expressive function" in the Modern Movement inevitably leads us to question some of the basic tenets of the functionalism to which he was committed.



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