

This essay is a classic of the postmodern period, having appeared in four different publications. From its first printing in the British journal *Arena* in 1967, to its reprinting in *Perspecta*, Yale University's esteemed architectural journal, and in two anthologies, Alan Colquhoun's questioning of modernist design methods has had significant impact. In addition, the piece is one of the earliest postmodern writings on typology in English, asserting that "Recourse to some kind of typological model is...necessary."

Colquhoun, an architect, theorist, and educator, comes to this conclusion after an examination of the Modern Movement's supposedly "objective" or scientific design methodology. He finds in its two components an inherent contradiction. The primary component, "biotechnical determinism," takes a teleological view of the evolution of forms in architecture. But since this approach does not help with "determining the actual configuration," architects must then turn to the second and incompatible component, intuition, an important element in modern expressionist theories. Intuition is used in making choices in the design process, choices which together constitute the designer's intention. The author turns to the Italian theorist Tomás Maldonado's idea

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.

Colquhoun sees the transformation of past solutions (i.e., using typology as design method) as a means of acknowledging the role of precedent in design. This is a radical break with the Modern Movement, which rejected type and theories of imitation in favor of innovation.

In a later piece entitled "Modern Architecture and Historicity," written as the introduction to his collection of essays for *Oppositions*, Colquhoun

goes further, to assert that typology, as an instrument of cultural memory, is a *condition* of architectural meaning. It is the context within which new work is understood. In line with the contemporaneous structuralist thought of Roland Barthes and Claude Lévi-Strauss, Colquhoun reads architectural artifacts as coded by layers of cultural signification. Typology is a mechanism to retrieve this signification, used by the neorationalists Aldo Rossi (ch. 7) and Leon Krier.

ALAN COLQUHOUN

TPOLOGY AND DESIGN METHOD

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.

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.

From *Essays in Architectural Criticism: Modern Architecture and Historical Change* (Cambridge: Oppositions Books and MIT Press, 1981), 43–50. First published in *Arena* 83 (June 1967). Republished in *Perspecta* 12 (1969). Also published in Charles Jencks and George Baird, eds., *Meaning in Architecture* (New York: Braziller, 1969), 267–277. Courtesy of the author and MIT Press.

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 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 togetherIf 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 [Arnold] 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 naiveté. 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—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.

- 1 *Structural Anthropology*, Claire Jacobson and Brooke Grundfest Schoepf, trans. (New York: Basic Books, 1963), 50.
- 2 Friedman discussed this issue at a lecture given at the Architectural Association in 1966.
- 3 *Visions in Motion* (Chicago: Paul Theobald, 1947), 68.
- 4 It is interesting that since his book came out it has been reported that the Chinese have, in fact, reversed the meanings of their traffic signals.
- 5 For the study of language as a system of symbolic representation, see Ernst Cassirer, *The Philosophy of Symbolic Forms*, Ralph Manheim, trans. (New Haven: Yale University Press, 1957). For a discussion of language in relation to literature (metalanguage), see Roland Barthes, *Essais Critiques* (Paris: Éditions du Seuil, 1964).