

# The Architecture of Making in Search of a Critical Theory of Building

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"Painting is not interior decoration; it is an instrument of war for attack and defense against the enemy."

—Pablo Picasso

## Introduction

*Building* is defined as the object of architecture as well as the process of architecture. The noun *building* and the verb *to build* are interrelated by a synthesis of product and production. This point of departure includes the understanding that the relationship between the objects of architecture and the procedures suggested by the objects is equivalent to the interconnection between the product process of architecture and the products created by that process.

The acceptance of such a reciprocal relationship regarding the role of objects or things in connection to their process of becoming is portrayed in the recent work of the Rumanian-American artist Javacheff Christo. The art work is not limited to the creation of an object, where the final product is considered to be art, but includes every step of the process as the art work, from the creation of an initial idea, through legal and administrative steps and construction, to the final removal of the work. (Fig. 1,2,&3)

The term *work* embraces both predicate and subject, both action and state of being. In this duality lies the core of the investigation to attempt to reveal the essence within the



1. Christo, *Running Fence Project, 1972-75. Legal Procedures.*

process of making, and to reveal within the object the inherent structure of process.

The work of art, whether a painting, a poem, a piece of music, or even a building, according to Martin Heidegger, is to be seen primarily as 'thing' in its most fundamental sense.<sup>1</sup> This identification relates the subject to questions of origin of *Ursprung*, opening the field towards an exploration of the sources, causes, and preconditions of things and the way they are made.

## Aristotle's Doctrine

One of the first attempts of categorization to understand and arrange the things and processes that our experience of the world presents

to us was made by Aristotle. In "Physics," Book II, we find the fullest continuous account of Aristotle's doctrine of the four causes:

- the *causa materialis*
- the *causa formalis*
- the *causa finalis*
- the *causa efficiens*

These constitute the framework where questions about the structure of substances are investigated. This model or doctrine can be explained by describing the causes of a particular example, such as a man-made artifact, in order to establish the understanding of one of the first historical models referring to the interrelationship between the object and the elements involved in the act of its creation.<sup>2</sup> Also, *substance*, as used by Aristotle, includes not just pro-

ducts of human skill but encloses also all natural substances. The model was probably derived from the context of man-made artifacts and extended to natural processes by metaphor.

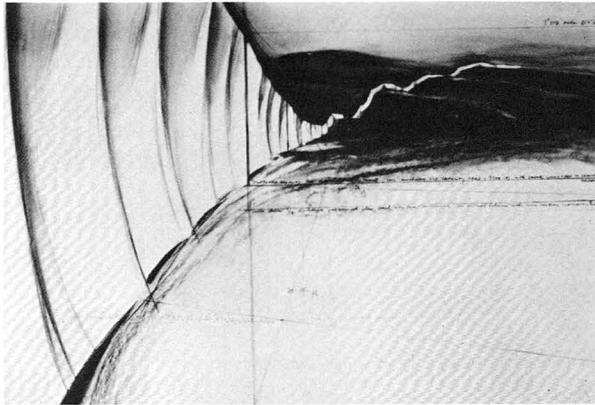
A building's materiality is one of its predominant characteristics: its material condition reflects its state of being in a direct and literal sense. Wood, stone, brick, concrete, steel, or glass constitute the building's matter, or "material cause." The term *matter* originates from the root for timber (one of the most common building materials), meaning "of which a thing is made." Also, the word has its source in the root *mater*, meaning *mother* — the one able to give birth.

The materials engaged in the structure of built architecture are arranged according to a definite plan and put into a definite order. In other words: "the thing is formed matter." This, which identifies the shape or form, Aristotle called the "formal cause." Such distinguishes the finished object of architecture from any random accumulation of raw materials or any accidental aggregation of building parts. Therefore, the building is not reduced to, a *priori*, a function of its material condition, but reflects its indebtedness to architecture as being the factor or element of formal identification.

The third cause, the *cause finalis*, is responsible above all for the creation of the object and can be seen as the



2. Christo, *Running Fence Project*, 1972-75.  
Construction Process.



3. Christo, *Running Fence Project*, 1972-75.  
Sketch of completed work.

essential source in generating the thing. This, in advance, confines the building to what it will be after production. The 'final cause' is the purpose, for example, the function of architecture as shelter in relation to which the building is determined as to its matter and form.

The fourth cause, the 'efficient cause', is also called the "moving cause." By definition it comprises the action by which the form is imposed on the relatively unformed matter for achieving a specific purpose. Here, the operations of the maker — in our case the activity of the builder or architect — allow the three previous causes to be unified within the act of creation. "Making," in this sense, extends beyond mere manufacturing and into the realm of bringing things into existence, into a state of being.

The outline of the model makes explicit the coalescence of the different causes, each cause being related to one another; the function and the meaning of the architectural object determines the form in which the building materials are arranged. The art of building is to possess the form, as its precondition, in order to engage in the production of architecture. Therefore, the efficient cause embraces both the maker and the art of the profession, the discipline of architecture, which in itself constitutes

the theory of knowledge within the field.

At certain points in history, some causes were regarded with special preference, establishing hierarchical relationships between the different causes. Expressions such as "Form follows Function" or "Form comes from Form" favor one cause versus another. The former expression functionalizes the structure of the model by implying its transformation into a set of operational rules, whereas the latter formula reduces the model to a self-referential system; elements derive their meaning from themselves.

Although we are dealing with simplifications the attempt to structure Aristotle's doctrine is significant of the fact that the model on causality itself represents the undertaking to establish a specific order within man's system of thought and action.

#### Conceptions of Technology

The essential condition on which the doctrine of Aristotle is based is the acceptance of the principle of cause and effect, also identified as the causality principle.

The term *causa* has its etymological origin the verb *cadere*, which means "to fall" or that which brings it about that something turns out as a result in

a certain way. This mode of making, involving a true course of reasoning, is the base of the so-called traditional or "Aristotelian" conception of technology.

At the basis of this concept is the view that technology is a human arrangement of knowledge and technics to serve and to make possible the accomplishment with an end in itself, but rather a means towards a determined end.<sup>3</sup> Underlying this is the distinction made by Aristotle between natural things and artificial, manmade objects. Thus, within technology the maker gives form to matter obtained from nature, producing things from other things through action. Therefore, technology is seen as being extrinsic in nature and instrumental to man in order to overcome his natural condition. Technology's position in relation to man is primarily external to him, detached from any values — a "neutral" tool.

Today we have to acknowledge that technology as such cannot be isolated as a totally neutral operational device. It no longer makes sense to maintain that it is simply, an instrument which, for better or for worse, serves man. Also, the traditional conception of the relationships between nature and technology have become obsolete. "Nature is no longer revealed as an ensemble of individual things that are intrinsically formed, but something

which reveals itself in experimental contexts and not in naive observation conjoined with contemplation."<sup>4</sup> Nature has lost its formed character and has become elementary and abstract, capable of receiving a multiplicity of forms. Aristotle's distinction between matter and form, artificial and natural things, is therefore not applicable. Most importantly, "Nature" is no longer understood as being originally formed. Herein lies the core of a new understanding of technology as part of nature and part of the existential structure of man's being. Rather than standing in some kind of external relation, as in the traditional conception, technology is inherently connected to the human condition. In other words, technology is seen as from within.

Martin Heidegger states clearly that only by overcoming a purely instrumental and operational definition of technology will man be able to undertake the task towards the attempt to reveal what the essence of technology might be.<sup>5</sup> Only in this attempt of understanding will the fundamental modes within the relationship of "thing" and "process" find clarification.

But before opening the discourse in search of a better understanding of this new conception of technology, let us analyze the situation within the field of architecture.

#### Architectural Technology

The current (or popular) general practice of architecture, the routine of daily *praxis*, has been transformed into a process of production without essential meaning, clearly defined aims, or reference to human values. Its interest is directed towards the material efficiency of design and construction. The process of architecture has been reduced to operational procedures following predetermined rules, which as variables of economical functions

determine the mode of *things* and the way they are manufactured.

As a result of that condition, different propositions have been suggested within the last decade to overcome the confined state of things. These manifestations shall be presented in regard to the different conceptions of technology (the external traditional conception and the internal conception), and critiqued on the basis of identifiable modes of making:

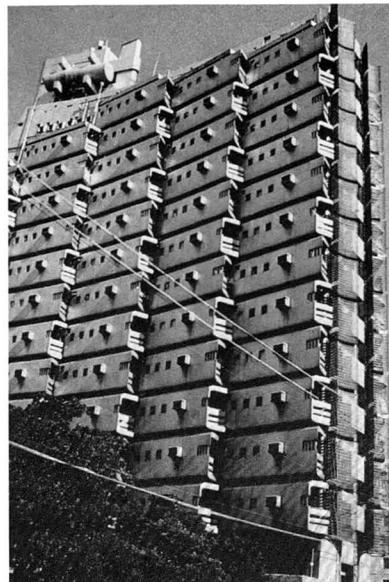
- the *technocratic* mode
- the *scenographic* mode
- the *tectonic* mode

The first furthers the domain of an optimized technology, indulging in accessible projections for the future. The visions are based on real assumptions pushed into the realm of utopia by extrapolating the means of technology. This method of architectural determination can be recognized, for instance, in projects by the English group Archigram and the work of Cedric Price, which is closely tied to the technocratic ideology of the American designer Buckminster Fuller.<sup>6</sup> The commitment of a *high tech*, light-weight, infrastructural approach brought these different fractions paradoxically close to forms of science fiction and into the glorification of a technocratic understanding of architectural technology.

What was on paper during the 1960's became reality in the succeeding decades. Kurokawa's "Nakagin Bachelor Capsule Tower" and Yoji Watanabe's "Sky Building 3" (Fig. 4) are within the Japanese Metabolist movement, which followed the megastructural lead given by Kenzo Tange's Tokyo Bay scheme of 1960. With the "Centre National d'Art et de Culture" by Renzo Piano and Richard Rogers, this form of architectural manifestation, a brilliant tour de force in advanced technique, might have finally culminated.

These examples share (although originally the source of a critical position) the base of the underlying philosophy that even the most audacious concepts in architecture are feasible with modern technological aids. In these terms, Aristotle's doctrine functionalized, and therefore reduced to an operational expression of its formal manifestation. This fundamental contradiction may be best expressed in Claude Schnaidt's essay, "Architecture and Political Commitment":

*"These futurist architects may well have the merit of taking technology to its logical conclusion but more often than not their attitude ends up in technocracy. The refinery and the space capsule may serve as models of technical and formal perfection, but if they become the objects of a cult the lessons they can teach will completely miss their mark. This unlimited confidence in the potentialities of technology goes hand in hand with a surprising degree of disingenuousness concerning the future of man . . . Such visions as these are soothing to many architects: braced by so much technology, or such confidence in the future, they feel reassured and justified in their social and political abdication."*<sup>7</sup>



4. Sky Building No. 3, Tokyo. Yoji Watanabe. 1971.

If this mode of supporting the belief in progress, supporting an utopian technocratic attitude towards the future, the second mode to be analyzed reflects a more sentimental anti-quarian position toward the past.

It manifests itself in terms of a scenographic display of architectural form in which technology serves that form by taking a position of being non-existent. "We are exposed to the edit of a new Heimatstil," wrote Kenneth Frampton in his article "Place, Production and Architecture": "State authorities now increasingly limit residential development to conventional house types and even go so far as to insist on pitched roofs and pierced windows. At the same time they insist on 60mph radial curves in local street layouts in order to assure optimum use of the automobile."<sup>8</sup>

Operational efficiency is combined with kitsch imagery which allows social control to be maintained through the imposition of petit-bourgeois cultural values.

The critique refers to the recent propagators of Post-Modernism, supporting historical reference through transposition of architectural form as metaphor and pure imagery — a kind of superficial masking. This is dramatically demonstrated in the Portland City Annex building by Michael Graves, where the constructional fabric bears no relation whatsoever to the "representative" scenography applied to the building inside and out. (Fig. 5) While the structural system is a simple reinforced concrete construction, the applied system of decorative elements refers to a vocabulary of form taken from the entire history of architecture: capitals on giant pilasters, medallions made out of fiberglass, and even over-dimensioned keystones covered with strip windows. The role of technology within this mode of making is a technique or means to

achieve the imagery and to carry out the picture.

Herein lies an overemphasis of the *causa formalis* by establishing formal priorities within the process of design. Furthermore, form is declared to be *a priori the causa finalis*, deriving its physical manifestation from its own historical system. In other words the importance lies in the "what," in the object appearance, and not in the "how," in the objects process structure, the essential term within the tectonic mode of making.

In "The Anti-Aesthetic," a publication of essays by different authors on the subject matter of postmodern culture, Kenneth Frampton characterizes the situation:

"Architecture can only be sustained today as a critical practice if it assumes an *arriere-garde* position, that is to say, one which distances itself equally from the Enlightenment myth of progress and from a reactionary, unrealistic impulse return to the architectonic forms of the preindustrial past. A critical *arriere-garde* has to remove itself from the optimization of advance technology and the ever-present tendency to regress into



5. The Portland Building, Portland, Oregon. Michael Graves. 1979-83.

nostalgic historicism or the glibly decorative. It is my contention that an *arriere-garde* has the capacity to cultivate a resistant, identity-giving culture while at the same time having discreet recourse to universal technique."<sup>9</sup>

Therefore, the primary principles toward an architecture of making resides in the tectonic rather than in the display of imagery: the tectonic is embodied in the phenomenal revelation of construction through which the syntactical form of the object is determined. The tectonic is not to be confused with purely instrumental devices, for it is more than the literal reveling of material conditions and technics, by reference to construction as art form.

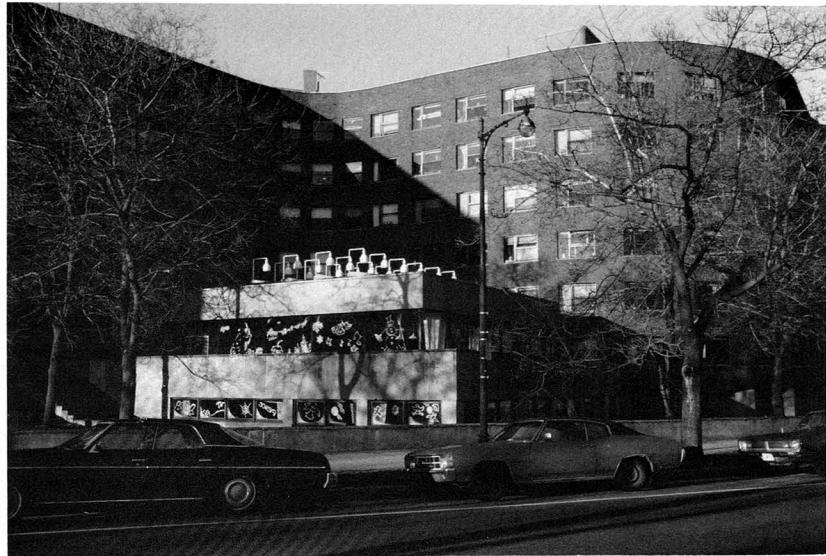
The tectonic is a potential means, for integrating constructional methods with architectonic structure in connection to conceptual intentions. This is demonstrated in the "Baker House" by Alvar Aalto on the campus of M.I.T. (Fig. 6). In this example, the relationship between product and process is explicitly addressed as material form; the tectonic value of each component depends upon the expressed density of Aristotle's terms of causality, understood in their most original sense. These are unified in conjunction with the architectural conception, establishing the ground for the operational procedures involved in the process of making. For instance the load bearing system, a reinforced concrete structure articulated as a three-dimensional grid, conflicts with the formal manifestation of the curved wall facing the river. This opposition is resolved by physical distortion of the grid structure, allowing space to contract and expand in respect to the dialogue established between the orthogonality of one system and the curvature of the other.

The tectonic approach declares to be proposition for disclosing the inherent

meaning of things, depending on the quality of their objecthood through the fundamental revelation of technique taken beyond mere instrumentality.

#### In Search for a Method

Building by virtue of physical actuality and relative permanence has no choice but to exist in its own historical moment. In these terms, architecture can be identified as what Jean-Paul Sartre in "The Progressive-Regressive Method" proposes to call "the project," referring to tasks or objects that will come into existence through *praxis*.<sup>10</sup> Within the project's realization the material conditions circumscribe the field of possibilities for the object that shall be created. Yet this field of possibilities exists as a strongly-structured region which depends upon all of history and which includes its own contradictions. By transcending the given toward the field of possibilities and by realizing one possibility from among others, the *praxis* of making will lead to the object and will therefore contribute to *History*. Therefore, every operation in the process of creation is grounded in the past. Simultaneously, the new creation must surpass its past and be understood as future. This is the *project* which must cut across the field of instrumentality, recalling these instrumental techniques and moving toward the revelation of what Martin Heidegger called the bringing forth of the state of being of things into existence. This process of objectification allows the maker to surpass his own subjectivity towards objectivity. This means that the subject finds its place in the resulted object and that the projected meaning of action resolved in the physical reality of things. The maker divorces himself from his creation, allowing the thing to exist alone. By means of the tectonic mode of making this line of action will be achieved as an internal resolution of forces, or casualities, allowing the ob-



6. Baker House, M.I.T. Senior Dormitory, Cambridge, Massachusetts. 1947-48.

ject to exist in its own terms. Herein lies the attempt to define an ontology of building and to identify the *modes of being* of process and object within their own existence, in their own historical moment. Technology, therefore, must reside within any action as an integral part of the art of building buildings.

In this lies the attempt to present the essence of things within the process of making and to reveal within the object the inherent structure of process.

#### NOTES

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