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

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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. I.2.63)

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 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. 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 finitis
- the causa efficientis

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. Also, substance, as used by Aristotle, includes not just products 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 buildings 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 finitis, is responsible above all for the creation of the object and can be seen as the
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 the activity of the builder or architect the realm of bringing things into being unified within the act of creation.

Therefore, the efficient 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 uniformed 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.

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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 ethymological 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. 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." 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. 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. 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 Schnait’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 the cultivated classes 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.”

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 antiquarian 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 Heimatsstil,” 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.”

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-Modemism, 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 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-dimensional 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 practical 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 architectural 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..."
nostalgic historicism or the glibly decorative. It is my contention that an 
arrrière-garde has the capacity to cultivate a resistant, identity-giving 
culture while at the same time having discreet recourse to universal 
technique."

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 casualty, 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 relevancy of technic 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.\(^{10}\) 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 casualties, allowing the ob-


NOTES

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4. Ibid, p. 359
7. Ibid. p. 33
8. Ibid. p. 77