Stanford Anderson
"Form and Use in Architecture,"
an exhibition at Hayden Gallery, MIT January 28
- March 2, 1969. Typescript.

Preliminary Documentation of the Exhibition:

Invitations
Acknowledgements
Essay

FORM AND USE IN ARCHITECTURE

Hayden Gallery, Massachusetts Institute of Technology

January 28 - March 2, 1969

Sponsored by the Committee on the Visual Arts and the Department of Architecture, Massachusetts Institute of Technology

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ACKNOWLEDGEMENTS

Construction

Koppers Company, Incorporated: Mr. Philip I. Liston, Pittsburgh
Mr. Stuart Adler, New York City
Mr. Joseph Boswell, Bristol, Virginia

We are indebted to Koppers and its representatives for their excellent service and generosity in supplying the fiberglass reinforced polyester structural sections used in the gallery construction. It is of interest to list a few of the properties of this unusual material: The 8" X 8" X 1/2" Wide Flange beams weigh 7.59 pounds per foot. Such shapes have an ultimate tensile or compressive strength of 20,000 psi. The tensile modulus and the compressive modulus are both 1.5×10^6 psi.

Massachusetts Lumber Company, Cambridge: Mr. Eliot Snyder
Mr. Paul Redden, Sr.

Special consideration on the cost of lumber has been critical to the realization of this exhibition.

Equipment

Mr. Wayne Soverns of Manifestation, Cambridge, has been invaluable in his assistance in selecting and supplying projection equipment.

Professor Bruce Wedlock and Mr. Michael Monnet of the Massachusetts Institute of Technology Department of Electrical Engineering arranged for the special coordination of projectors.

Exhibition Loans

Mrs. Truus Schröder-Schräder of Utrecht and her daughter, Professor Han Schroeder of Rockville Center, New York, have lent their full enthusiasm to the exhibition, and to them we owe most of the material of the de Stijl exhibition.

Professor Florence Maly, Rockville Center, New York: the color drawings of the interior of the Schröder House.

Mr. and Mrs. Peter Eisenman, New York City: the facsimile of Rietveld's "red and blue" chair.

The Museum of Modern Art, New York, and its director of the Department of Architecture and Design, Arthur Drexler: the Riemerschmid chair and the large model of the Schröder House.

Professor Konrad Wachsmann of the University of Southern California: the Becher photographs of industrial complexes.

Lt. Harvey Schorr of Jacksonville, Florida: his lapsed time films of the use of Italian squares.

Mr. Cedric Price, London: compilation of slides for section seven.

Gian Carlo De Carlo, Milan, and Melvin Charney, Montreal for the loan of slides.

Rotch Library, Massachusetts Institute of Technology, for its helpful service during the preparation of the exhibition and for the loan of slides.

Numerous students and faculty of Massachusetts Institute of Technology for the loan of slides and exhibition material.

AN EXHIBITION THAT CHANGES: Three invitations to the viewer.

Those who have participated in the organization of this exhibition have worked quite independently, but within the general context presented in the essay that follows. We intend that the individual and collective learning experience should extend through the time of the exhibition and possibly into the publication of a final document on this endeavor.

Especially in an academic community it seems reasonable to encourage that an exhibition should change according to initiatives that emerge only during the course of the exhibit. The viewers should have the opportunity to aid and inform the organizers of the exhibition. Consequently we extend the following invitations. Responses may be initiated on the last sheet of this document.

CRITICISM

We solicit criticism of the material exhibited, of the use of the exhibition space, of the concept of a changeable exhibition, of the ideas presented in this document or in the exhibit.

SEMINAR OR ESSAY DISCUSSION

We invite viewers - especially scholars in other disciplines - to propose seminar or essay discussions that extend or inform the ideas and materials of the exhibition. Two

possible forums for such discussion would be the spring term seminar in the Criticism of Art and Architecture (4.66, Professors Rosalind Krauss and Stanford Anderson) and the final published document of the exhibition.

DIFFERENT EXHIBITION MATERIAL

We would welcome the loan of better objects or slides for the exhibition - either in improvement of the material already exhibited, or in substitution for it.

The Exhibition Form and Use in Architecture

Stanford Anderson

An understanding of the confluence of form and meaning - such as can be isolated in works of painting and sculpture - is often obscured by the sheer usefulness of buildings. Consequently, critics and theoreticians primarily concerned with formal issues have usually considered architecture an intractable, and finally rather unfruitful, field of inquiry.

However, there is also a positive aspect of the complexity and practicality of architecture. The built environment presents in material form an unusually insistent critical exchange between the intellectual realm of form/idea/model and the empirical realm of fact/circumstance. In architecture, other criteria than those of internal formal consistency must be used to test the adequacy of form. Conversely, patterns of use contribute to the architectural formulation of larger, new and changing organizations of built form and human activity.

Thus, in the study of architecture, it is unreasonable to be antagonistic toward either issues of form or those of human activity. However, if we use the responsive reinforcement of form and use as a test, we will find ourselves critical of much of our physical environment.

Since there is no environment that could not be tested and criticized under the categories of form and use, it is necessary to say a word about what has been excluded from the present exhibition. For example, Eero Saarinen's Kresge

Auditorium at M.I.T. is a clear example of the disparity of form and use patterns. Saarinen's infatuation with the unadaptable form of a segment of a sphere thrusts aside the practical needs of this building. In Kresge, the spectator space is not without merit. However, that space is singly installed in an abstract shell, thus leaving intermediate spaces that are unsatisfactory both formally and practically. The stage is limited and the backstage area is virtually non-existant. The acoustics of the auditorium were solved in spite of, not in concert with, the structural shell. The entrances and the public spaces for arrival, intermission and departure are abrupt and especially inadequate in less than perfect weather. The closed form of Kresge is thus a source of disparity with the surrounding environment, too.

Kresge Auditorium is a striking example of form-use disparities, but it is far from unique - even on the M.I.T. campus. Such buildings are often said to be "formalistic," meaning something like "self-consciously and arbitrarily formed." That is true, but such references also oversimplify the problem. The weakness of "formalistic" buildings is not that they have been consciously formed, but rather that the formal conception is in some way inadequate. The form is usually inadequate in that it is incapable of adjustment to the complexities of the problem. Understood in this way, it is not even nesessarily problematic that the original form may have been arbitrary. It is, rather, unfortunate

the mutual adjustment of form and use did not, or could not, continue to a satisfactory conclusion.

It is curious that so many of the buildings of renowned modern architects can be easily criticized for their inadequate or even destructive relationship of form and use. Often, as in the case of Kresge, this has resulted from the reduction of design to the act of selecting a shape. One other common source of form-use disparities should be mentioned. Modern architects have often willingly prostrated themselves before the historically determined fictive deity "The Spirit of the Time." The compulsion to make this spirit manifest in the environment has led to the endorsement of such motifs as simple total shapes, flat roofs, so-called modern materials (glass, steel, concrete), or the repetition of identical elements at regular intervals. The experience of modernism teaches that these motifs quickly become ends in themselves, masters rather than servants. The motifs selected for their presumed appropriateness to the time become coercive of actual, even distinctively new, conditions. This situation not only occurred but was endorsed at the outset of the Modern Movement. Peter Behrens, the master of Walter Gropius and Ludwig Mies van der Rohe, embraced the notion that the artist is charged to give form to the Zeitgeist - even if this artistically willed fulfillment should run contrary to the material or other dictates of the problem.[1]

Thus this exhibition excludes those buildings where

the designer has not developed a form-use interaction or where his convictions about the Zeitgeist have distorted his decisions about form and use.

Having excluded buildings from such categories, the exhibition presents examples from that vein of artifacts where form and use are closely allied. The fact that these alliances are, nevertheless, of varying kinds accounts for the diversity of the exhibition and for its groupings of material.

THE GENERAL PROBLEM

The mind's ability to construct general explanations by means of abstract models and the recalcitrance of matter in conforming to these models has been a characteristic intellectual problem since the pre-Socratics. In the arts, Albrecht Durer's engraving Melencolia I offers a poignant exposition of this conflict between the dictates of idea and fact. According to Erwin Panofsky,[2] Durer shifted the understanding of melancholy from a condition of mere lethargy to the idea of latent energy paralyzed by fruitless searching. Durer personified Melancholy as an acute female brought to inaction by the awareness that acts accord only crudely with intentions.

The collection of symbolic forms that crowd Durer's print are witnesses to the sensed discontinuities of knowledge and experience. Significantly, Durer used the

contrast between architecture, or pure knowledge, and carpentry, or applied knowledge, as an apt means of portraying a more general problem. The sphere and the truncated rhomboid of stone, as emblems of the ideal knowledge behind architecture, contrast with the incomplete building and the primitive wooden ladder. The same contrast exists in the builder's tools which range from the comparative precision of the master builder's compass and book to the craftsmanly elegance of the carefully shaped carpenter's plane and the ordinariness of the crooked nails. In the lower left hand corner of the print, the juxtaposed sphere and carpenter's plane contrast the ideas of knowledge and actuality, light and substance, abstraction and physical presence.

If the sphere is an emblem of architectural knowledge, the difficulty of projecting such knowledge into real objects (or the difficulty of "holding" Durer's sphere within the context of the engraving) is an instance of the phenomenon that induces melancholy.

However, can we assent to the idea that the carpenter's plane represents, at best, an inadequate kind of knowledge? The form of the carpenter's plane could hardly be more directly expressive of the materials from which it is made, of the way in which it is made, of its interaction both with the material to be shaped and with the man who shapes. The plane may be seen as an eloquent if humble witness to a form-giving process that is achieved through the interaction of the thing with its environment.

1. ONE-ONE. FORM-USE RELATIONSHIP FOR SINGLE, WELL-DEFINED USES.

The carpenter's plane suggests the possibility of a design process almost wholly free of a priori intellectual formulations. Form is achieved and continues to evolve through careful attention to empirical conditions. One senses a similar process in the more complex and articulated plough. The early electric meter, especially the internal brass frame, extends this contextual method from crafts into industry.

At the turn of the century, certain designers wanted to express the functional relationships of the parts of objects through visual metaphors of organic action. In this way, the connections between parts became counterparts of acts as holding and gripping or of such physiological elements as tendons and membranes.

Richard Riemerschmid's chair is an unusually fine instance of this type of design; here each part is not only differentiated according to its role but also suggests the continuities of part-to-part and part-to-whole that characterizes the structure of plants and animals.

2. ENVIRONMENTAL TOOLS

Thus one may achieve non-preconceived, use-generated, highly specific forms not only in tools but in more complex, additive assemblies as will: in more generalized use-objects

such as chairs or even tool-like buildings. However, the architect may well hesitate before embracing this as a general method of design.

To the extent that the forms of tools are narrowly use-generated, these forms are totally contingent upon the viability of that use. Many magnificent tools have become museum pieces because the task to which they were directed, or the manner in which they addressed the task, changed. Highly specific forms obsolesce with the obsolesence of their use. In the case of easily amortized small objects, this presents no problem. The extension of such a condition to large environments would at least be problematic.

However, an examination of increasingly large constructions reveals that environmental tools are not as narrowly use-generated as hand tools. Environmental tools are often built up from abstract elements, and the ordering of parts will support multiple patterns of use. Such a fusion of intellectual conventions and use-generation provides these large-scale systems with an adaptability to changing use - even quite different uses than those originally intended. When such environments appear to obsolesce, the poverty of our imagination may be as much in question as the limitations of these places.

In observing that the organization of form in these large-scale systems permits changing use, we have moved from the one-to-one form-use relationship of the tool to an adaptive, one-many, or many-many form-use relationship.

3. PERCEPTUAL FORM AND PERCEPTABLY USABLE FORM

This discussion began with a respect for use as a form-generator and moved to a recognition that form may generate or serve new uses. This emphasis on use in the appreciation of industrial architecture is quite different from the Modern Movement's emphasis on perceptual form. Illustrating the great cylinders and cubic forms of North American grain elevators, Le Corbusier wrote:

> Our eyes are constructed to enable us to see forms in light.
> Primary forms are beautiful forms because they can be clearly appreciated.
> Architects today no longer achieve these single forms.
> Working by calculation, engineers employ geometrical forms, satisfying our eyes by their geometry and our understanding by their mathematics; their work is on the direct line of good art.[3]

The aspect of the American elevators that moved Le Corbusier stimulated American printers and photographers to show these rearing forms against the openness of the lakes and plains of the Middle West. But this is the appreciation of an outsider coming to these buildings as a tourist in a state of disjunction from the workings of the elevators. An insider's view is of the elevators as organized systems that animate the shells of the buildings and extend out through a landscape of conveyor belts, travelling loading towers, railroad yards, docks and ships.

4. ONE-MANY, MANY-MANY FORM

While Le Corbusier spoke of mass and the play of

primary forms in light, the Dutch artists and architects of the de Stijl group undertook the exploration of form in a quite different manner. Rather than speaking of mass and platonic forms, they attacked the problem of design armed with what they considered the fundamental elements of artistic construction: straight lines, planes, primary colors, black and white. In furniture and architecture, sticks of unit cross-section and planes constructions simulated the fundamental elements. The formal system required the preservation of the integrity of the element - even when used in larger constructs; this was accomplished by having the elements pass by one another with only tangential connections. Such a formally derived relation of part-to-part is obviously the antithesis of the organic-functional analogy exemplified by Riemerschmid's chair above.

In the Schröder House by Truus Schröder-Schräder and Gerrit Rietveld (Utrecht, 1924), spatial and utilitarian concerns are embedded in the development of the de Stijl formal system.

Direct experience of the Schröder House reveals the intellectual formal principles that concerned the de Stijl group; it is the embodiment of a set of ideas in substantial form. However, unlike buildings that embody a formal idea in whole, object-like volumes, the de Stijl forms of the Schröder House were generated additively. In this way the perceptual experience of the house and the demands of use contribute to the construction of a whole that is consistent with the formal intent but not wholly preconceived. Visiting the house, one

becomes aware of the formal system behind the design, and simultaneously aware of the use-implications of the formal organization.

Even though the de Stijl group consciously suppressed the nature of materials, they do stand as one of the few exemplars of a solution to the form-use problem. For de Stijl objects and environments attest to the possiblity of conventions accomodating, even encouraging, patterns of use that are convincing in both intellectual and utilitarian terms.

5. ONE-ONE, ONE-MANY USE ELEMENTS.

6. ONE-MANY, MANY-MANY ENVIRONMENTS.

If one seeks a specific relationship between use and form, what happens when use changes? The specific relationship is broken; the form, the use, or both, may be seriously strained.

The idea of a universal space, as it appears in the work of Mies van der Rohe, was conceived as a means of avoiding obsolesence caused by changing use. Yet, what one finds so alienating about these spaces is that they have not been inflected by any specific vision of human use.

These two sections of the exhibition present material in which a distinct use orientation does not imply obsolesence.

If one does not conceive of use as some total, goal-oriented activity (for example, managing a corporation;

sustaining a family; operating a research program), but rather as an organization of local, non-goal-oriented actions (for example, being alone; being with one, two, many people; meeting people; talking informally; storing something), the apparent form-use schism can be closed.

Under this interpretation, small scale environments are given a rather close (one-many) form-to-use relationship - or even a one-one relationship - such as several of the slide collections exhibit. The designer can then deploy these elements that support non-goal-oriented activity to permit multiple, and even unforeseen, organizations of these activities into goal-oriented uses. It is this phenomenon that one begins to see in the environmental tools of section two. It is still more apparent in the organization of many villages and towns.

The architects exhibited in this show have designed such local places and have assembled them into organizations which relate them to one another. The designer thus makes places that motivate the conception of more than a single pattern of use. Furthermore, these "worlds" of form-activity places can adapt, receive additions, and accomodate changing use without any abuse to a total form.

7. CHANGING ENVIRONMENTS

The foregoing contains a number of assumptions which the exhibit attempts to illustrate and open to examination. For example, the assumption underlying the entire argument is that a considerable degree of accomodation between form and use

is desirable for the satisfactory transaction of human affairs. This concept extends beyond the simplistic approach that would demand nothing more than adequate elbow room and a few temperature controls. It is also assumed that making some part of the human environment is a relatively large expenditure of design, construction and material resources, and that such environments should therefore accomodate some range of activities without physical reconstruction. The challenge to these propositions comes from architects in love with technology who argue that our physical environment could be a great tool-toy that constantly adjusts and rebuilds itself, thus maintaining a one-to-one form-use relationship without obsolesence of anything more than amortized parts.

Man rarely, if ever, builds without also seeking to extend his understanding beyond the knowledge of things to the knowledge of self. The forming, construction and use of buildings also include the element of play and the search for a perceivable order. The de Stijl works, among others, are as much a search for that knowledge of self as for any knowledge of possible forms of construction.

This essay discusses form and use as though they were easily distinguishable, if often reflexive, manifestations of intellect and empirical fact. As useful as this distinction is in analyzing and presenting certain concerns, it is also good that the actual gallery construction and many of the works illustrated challenge us on the more elusive questions of self-knowledge as well.