

\*(Editor's comment: Four hours per journal spent on filing under any system would leave little time for research. We would like to see *the improvement of*

*the quality of living* rank along with the primary goals of I.F.)

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## BOOK REVIEW

HOUSES GENERATED BY PATTERNS, Center for Environmental Structure, Christopher Alexander, Director, 2531 Etna Street, Berkeley, Calif., 94705, 1969, 219 pp., \$7.50.

In January of 1969 the United Nations with the Banco de la Vivienda of Peru initiated a closed international design competition for a 1500 unit low income project in Lima. This publication is the Center's entry in the competition. It is really two books in one, and this may cause the reader some confusion. In the past, the Center has concentrated upon the production of patterns for use by other designers. In this case, however, the Center not only produced the patterns, but also produced a specific design using these patterns. Thus, while this format affords readers the opportunity to see the spirit of the patterns translated into an actual design, it should be remembered that the Center's ultimate aim is to make the patterns accessible to Peruvian architects and clients.

Theoretically, variety should emerge from a unique tailoring of a house to a client via the manipulation and interpretation of the raw patterns. This would involve the client actually designing his own house by deciding how he was going to deal with the issues raised by the patterns. The Center is presently working together with a group of graduate students to see if this is possible. By working with actual clients they are beginning to discover precisely what aids a non-architect needs in order to design his own house. Much work needs to be done before user-designed housing becomes feasible. The special nature of a design competition, and the economic unfeasibility of individual design for low income clients at the present time, necessitated a specific design with a wide variety of built-in options.

One of the patterns is entitled "Long Thin House." It states that in the case of a small house containing several people, "The interior of the house is so shaped that the mean distribution between rooms is as high as possible. This means that the inside of the house is, effectively, long and thin, but the outside of the

house may take many physical forms: it may be S-shaped, U-shaped, tall, many storied, or it may itself be long and thin."

The function of this pattern, of course, is to minimize the effects of over-crowding. And, as the pattern itself states clearly, the feature which solves this problem is "long-thinness" as opposed to "compactness." Now of all the possible house shapes which satisfy this pattern, the actual design submitted by the Center consisted of linear houses. Another designer, using the same patterns, might have opted for a U-shaped unit in order to preserve a handsome tree.

Consider the group of leaves on the branch of a tree. Study will show that their development is being governed by principles (or rules) which are obeyed by all the leaves—they all are long and thin; they occur in doublets; the successive doublets are rotated 90° relative to each other, etc. But we also notice that no two leaves are identical. Each is inclined in such a manner as to maximize its light and air, each is in a slightly different stage of development. In short, each leaf is waging its own individual struggle for survival subject to the principles which govern its development.

Now some examples of indigenous architecture seem to operate in a similar fashion. The traditional Japanese house and the African hut village can thus be thought of as generic types in the same sense that we call the elm tree a generic type. Each house or hut is unique, yet each is clearly obeying a common set of principles. In the case of architecture, these principles are called patterns. But note that the term "generic" can only refer to the set of principles themselves, never to an existant specific specimen. Our notion of what is meant by "elm tree" is derived (abstracted) from observation of many individual trees: Plato's "ideal elm tree" exists only in the mind, not in nature. And here, I think, the Center has caused some confusion by labelling their solution as the "generic house" instead of possibly an "individual solution." True, their solution can be adapted to each family by different-size rooms, different locations within the



ell, by location in different-character cells, etc. But it is still adaptation of a given house plan, i.e., manipulation of the given form. It is possible to extract the patterns upon which the individual houses are based by simply looking at a very few specific examples. Contrast this kind of variety with that found in the Japanese house. In this case, each individual house *develops* from basic patterns as it is designed by the family who will live in it. As a result, the full range of possible variety actually occurs in the plans, so much so that many different examples must be studied before the patterns emerge clearly.

This true organic quality is found in the Center's site plan. At first glance, the fact that all elements are obeying patterns is evident. But the patterns are so closely interwoven, the elements simultaneously obeying so many subtle rules, that the visual pattern dances before our eyes, and provides endless visual entertainment. This variety is occurring at many levels, from the largest elements (main pedestrian spine, or *paseo*) to the smallest (individual house set-backs). None of the cells have the same shape exactly; none of the cell centers are identically situated, and none of the community facilities opening off the *paseo* are identically sited. Yet the patterns are recoverable by careful study of the plan. Another characteristic of a truly organic system is that the patterns are so densely inter-related that external manipulation of any element will result in a wave of repercussions throughout the other elements, like dropping a stone in a quiet pool of water, or like the contraction and cure of a communicable disease in an individual. In

discussing their site plan, the members of the Center recalled that during its development any adjustment required in one small part of the site would require a whole series of adjustments spreading over the whole system.

The Center's concern for the organic extends (perhaps least successfully) to the structural system of the houses. Both the materials used and the skills required for their assembly were chosen with the local resources in mind. It is easy to note where their system is *not* organic. But this is perhaps the most difficult task of all—to design a structural system which has the properties of those found in nature-systems where every element is necessary and is doing work but where redundancy is always the case.

Other theoretical issues will be raised by this recent work of the Center: Is this approach the appropriate response to a developing nation's aspirations? What is the proper use of behavioral data obtained in the field? How can technological advances best be incorporated into the creation of a new indigenous architecture? In addition to reading the Center's publication, serious students of the Center's work will want to read R. Montgomery's recent review of their work (*Architectural Forum*, Jan/Feb 1970, p. 53) and may wish to compare the Center's approach to low cost housing in Peru with that of their competitors (in *Toshijutaku*, Jan. 1970, from Kajima Publishing Co.)

—Max Jacobson

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The *Design Methods Group Newsletter* is published monthly (except for two double issues annually) by Sage Publications, Inc. and is sponsored by the College of Environmental Design, University of California, Berkeley in co-operation with the Department of Architecture, Washington University, St. Louis.

Manuscripts: The *Newsletter* welcomes submission of material related to design methodology, especially news items, abstracts of papers, reports, theses, and books, and outlines of new educational programs or research in progress. Material received by the 25th of each month will be printed in the next issue (space permitting). Address all material to the Editor, 232 Wurster Hall, University of California, Berkeley, California, 94720.

Subscriptions: Individual—1 yr. \$7.50; 2 yrs. \$14.00; 3 yrs. \$20.00 (including annual membership directory). Institutional—1 yr. \$10.00; 2 yrs. \$19.00; 3 yrs. \$27.00 (add \$1.00 per year if annual directory is desired). Special student rate—1 yr. \$5.00 (including directory). Outside the U. S. and Canada add \$1.00 per year for postage or \$4.00 per year for airmail postage. *Order from Sage Publications, Inc., 275 South Beverly Drive, Beverly Hills, California, 90212.*

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