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STRATEGIES FOR CONTEXTUAL DESIGN: A PARTIAL ORDER SCALOGRAM ANALYSIS

The intent of this research study is to generate some general principles for guiding architects in the design of new buildings in older settings through the use of user/observer assesments of exemplary projects. A conceptual framework for defining the design strategies of a variety of contextually-designed projects was developed. A set of 25 buildings, simulated through color photos, was evaluated by 72 subjects at 3 separate sites. The results indicate that these non-architects generally prefer buildings that highly replicate, especially in terms of stylistic features, the existing context.

In recent years, the problem of designing a new building for an older setting has increasingly become the focus of considerable debate among architects and conservationists in both North America and Europe. In the United States the problem has become particularly significant in the last few years because the simultaneous pressures of economic trends and public sentiment have led to a relatively higher proportion of adaptive use projects and infill building. In Europe, where adaptive use and urban infill have been a more common phenomenon over the years, recent stylistic trends in architecture have nevertheless generated considerable debate about the appropriateness of previously-accepted strategies for the design of new buildings in older settings.

These conditions increasingly require architects, conservationists, and review board commissioners to bring a genuine sensitivity to the consideration of how to link new design elements with an existing building or neighborhood fabric. However, while established design conventions and conservation area standards do provide some guidance for making these judgments, there are actually no well-documented sources of information about what design qualities the general public values (or even notices). So for example, when an architect is asked to design a new addition to an historically significant building, neither the architect, the client, nor the local review board has any way of evaluating what design strategies (high replication, strong contrast, or some combination thereof) might be viewed as particularly desirable for insuring compatibility between old and new.

The purpose of this study, then, is to provide a general set of guiding principles for contextual design through the investigation of user and observer assesments. More specifically, the research addresses two particular design problems: 1) new additions to older buildings, and 2) infill projects in already developed urban and suburban areas.

This research thereby lays the groundwork for a new- but necessary- area of investigation which thus far has only been addressed tangentially through the generally disconnected efforts of several disciplines. There are at least six sets of literature that have some bearing on the problem of fitting new architecture to old:

1) Landscape assesment studies, which incorporate perceptions of lay observers in evaluations of the visual impacts of proposed developments in the non-urban landscape (e.g. Zube, et al, 1975).

2) Urban planning studies that focus on the evaluation procedures for assessing the impact of new buildings on the skyline profile of an urban environment (e.g. Stewart, 1980).

3) Urban design analyses of contextualism that consider the relationship of buildings to their sites as comparable to the principles of figure/ground relationships in art (e.g. Rowe and Koetter, 1978).

4) Research studies on environmental aesthetics that have tangential implications for understanding principles underlying perceived compatibilities in the built environment (e.g. Oostendorf & Berlyne, 1978).
5) Design guidelines documents that outline requirements for infill building in historic districts or conservation areas (Lu, 1980).
6) Architectural criticism which offers anecdotal and/or theoretical evidence for identifying the essential design principles of contextual fit (e.g. Brolin, 1980).

Despite the precedents established by these sets of literature, there is still no established body of literature which addresses the issues of compatibility between old and new architecture at the building scale from the point of view of user and observer assesments. The research described here was thus initiated to fill this gap.

Objectives

A number of interrelated objectives form the basis of this study; two of these objectives serve to inform the segment of the study reported here. These objectives are: 1) to develop a comprehensive conceptual framework for categorizing the range of contextual design strategies, and 2) to determine what (or if) normative standards of compatibility between old and new architecture can be identified.

With respect to the first objective, the conceptual framework was generated as a result of a careful review of the existing architectural analyses of contextualism, including the limited typologies offered by authors such as Brolin (1980), Smith (1977), and Worskett (1982). Yet, although it draws from these sources, it is significantly more comprehensive in at least two respects.

First, the range of factors that affect contextualism are organized into three major segments; and these segments are ordered according to the degree of control that an architect is likely to exercise over them in the design process. The significance of this analysis for the research is that it helps to clarify the appropriate structure of the study. Factors that the architect usually has no control over (such as building type, size of project, and site location) can be held constant across a set of building projects, while the factors that the architect does have control over can be considered as variables to be tested.

Second, and more important, the major segment of the model-- which defines the factors over which the architect has substantial control-- is organized hierarchially. Thus it distinguishes the critical design issues-- which define an overall STRATEGY-- from the specific features-- or TACTICS-- which embody a given strategy in built form. According to this framework, any given design strategy is defined by six distinct issues: exterior site organization, interior spatial organization, exterior massing, interior arrangement of semi-fixed elements, exterior style, interior surface treatment. Each of these sixe issues then forms the basis of a rating scale-- from contrast to replication-- by which the relationship of any building to its neighbors can be evaluated. The significance of this analytical procedure for the research study is that the design strategy of any given building project can be defined in terms of a PROFILE generated from a specific set of ratings.

The second major objective of the research study-- to suggest standards of compatibility between new and old architecture through user and observer assesments-- is to a large extent dependent upon the development of this conceptual framework. Analyses of user/observer preferences are used, not only to identify specific successes or failures, but also to identify the design strategies (defined by rating profiles)

that are typically viewed as successful or unsuccessful.

Method

The research design for this study cross-references the case study method with the environmental simulation technique. Used in tandem, these two techniques provide both the breadth and depth necessary for this topic. The case study approach is particularly useful for uncovering reactions resulting from long-term familiarity with a building; while simulation makes it possible to test people's responses to a wider range of environments than would be possible in situ.

The simulation materials consisted of color photographs of 25 building projects (both additions and infill), representing six building types. Within each building type category, similarity of project size and site location were maintained. On the other hand, the design strategies of the projects (defined by rating profiles of exterior design factors only) represented as wide a range as possible.

Three of the 25 projects were selected as case study sites. At each site, 24 people (including 12 users and 12 neighbors) were interviewed. The hour-long interviews consisted of a combination of sorting tasks, ranking exercises, open-ended questions concerning noticeable features of preferred and disliked buildings, and open-ended questions about the case study site.

For the purposes of this paper, the data derived from the ranking task is the most relevant. Subjects were asked to rank order the 25 projects according to their preference for the relationship between the underlined building and its neighbors as represented in the photos.

Results

Spearman's rank order correlations among the aggregated responses at the three case study sites are all significant at at least the .01 level. The sorting task data and informal interview commentary also suggest a high degree of consistency among the respondent groups.

The aggregated rank order for all three sites was then compared to the design strategy profiles established for all 25 projects through the use of partial order scalogram analysis from the Guttman-Lingoes series of programs.

It was found that the most highly preferred projects were all clustered in one region of the scalogram; and similarly the least preferred buildings were generally clustered at another corner of the scalogram.

Conclusions

Several important conclusions can be drawn from this aspect of the study. First, the results suggest that the conceptual framework developed for the study does in fact identify variables of contextual design strategies that are critical to the public's evaluation of contextual appropriateness.

Second, several generalizations can be made about the relative success of various design strategies. In general, the most preferred buildings were ones that represented a high degree of replication; whereas the least preferred buildings were ones that represented high contrast. A particularly significant design variable in this regard is style; buildings that represented high replication in spatial organization and massing but NOT in style were less preferred than buildings where the reverse was true. This conclusion is also supported by the informal commentary offered by the subjects during the interviews.

These results thus suggest some basic principles that are relevant for any architect who would design a new building or addition in an older setting. A further benefit of this study is that it establishes a set of procedures that could be used for evaluating design proposals for any type of contextual design project where input from the public is desired.

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THE EFFECT OF PROFESSIONAL EDUCATION AND EXPERIENCE ON THE PERCEPTION OF BUILDING EXTERIORS *

Summary

The effect of people's educational and professional background on their perception of the built environment was studied. Using semantic ratings, 20 practicing architects and 20 non-architects (chemical engineers), aged 40-65, judged standardized color slides of 24 building exteriors, 12 one family houses and 12 multiple family highrise dwellings. Specific individual data, amongst others a creativity measurement and eye movement behavior, when looking at the slides, were gathered. On the basis of the various data, the individuals were sorted into subgroups and their evaluations and other measurements compared. The results indicate no great differences between the architect and laymen groups with regard

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