PSYCHOLOGICAL ASPECTS OF CONTEXTUAL
COMPATIBILITY IN ARCHITECTURE:
A Study of Environmental Meaning

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SUMMARY

The intent of this study is to investigate contextual compatibility in architecture from a psychological perspective. More specifically, the study examines contextual compatibility as an aspect of environmental meaning.

Within the framework of this research, the term contextual compatibility is defined as the degree of fit between a new infill building and the immediately adjacent buildings within an urban or campus setting. As such, contextual compatibility is clearly a very specific and narrowly defined phenomenon; yet it nevertheless represents one of the most publicly debated and architecturally significant manifestations of environmental meaning. For example, the emergence of increasing numbers of design review commissions, the often vociferous public debates on the appropriateness of particular design proposals, and the increasing willingness of architects to employ non-Modernist vocabularies all suggest the importance of contextual compatibility in people's experience of architecture.

Because this study represents one of the first empirical investigations of contextual compatibility at the architectural scale, the research is focused on three of the most fundamental aspects of the topic: 1) what meaning does contextual compatibility have for people? 2) what kind of contextual design strategies are most consistently preferred? and 3) what types of physical features are most commonly seen as contributing to or detracting from contextual compatibility? In addition, a further goal of the research is to offer an account of the psychological processes that are implicit in these questions.

These questions are considered in the light of three major sets of literature: 1) general discussions of environmental cognition and meaning in the psychological literature, 2) specific substantive research studies on contextual compatibility, primarily drawn from the environmental psychology literature, and 3) critical and theoretical analyses of design strategies for contextual fit, drawn from the architectural literature.

This diverse literature yields several alternative explanations of the bases for people's judgments of contextual compatibility. These explanations, in effect, constitute a series of testable hypotheses, the validity of which are explored in this research. Thus, within the psychological literature, Gestalt analyses suggest that contextual compatibility is achieved when an individual building can be seen as a part of the larger compositional order that links a set of buildings together (e.g. Arnheim, 1977). On the other hand, much of the psychological research in experimental aesthetics would suggest that compatibility is in part a function of the level of complexity among neighboring buildings (e.g. Berlyne, 1971; Geller et al, 1981). Alternatively, research in landscape assessment would indicate that buildings which embody a relatively low degree of contrast with their settings are seen as most compatible (e.g. Wohlwill and Harris, 1980). And finally, within the design literature, contextual compatibility is seen to derive from: consistency in site alignment and massing (e.g. Smith, 1977); or alternatively, the replication of small-scale stylistic details and ornament (e.g. Brolin, 1980); or, the symbolic
associations derived from specific design concepts or site conditions (e.g. Graves and Wolf, 1980); or, the unique design solution of the creative architect (e.g. Cavagneri, 1980).

A further consequence of the literature review is that a broad range of potentially significant facets—or aspects—of the psychology of contextual compatibility in architecture are identified. In accordance with the general principles of the facet theory approach to research design (proposed by Louis Guttman and his colleagues), these facets are used as a framework for organizing the methodological structure of the empirical research (Canter, 1985). One of these facets is defined in terms of the distinction between the non-expert and expert status of the respondents (Bruner et al, 1956; Neisser, 1976; Smith and Medin, 1981). This distinction serves as the basis for generating two separate segments of the empirical research.

The focus of the initial segment of the research is on public (i.e. non-expert) responses to contextual fit. Environmental simulation procedures are used within a set of three case studies to combine the breadth of the simulation procedures with the depth of the case study method. A total of 73 people were interviewed at three case study sites located in the Upper Midwest of the United States. At each site, 3 distinct groups of local respondents were interviewed: building users/residents, near neighbors, and distant neighbors.

All respondents were asked to comment on the contextual fit of 25 urban infill buildings simulated through color photographs; included among this set of photos was a photograph of the case study site itself. Each respondent was interviewed individually according to a sequenced interview format that required 1 to 1 1/2 hours to complete. Categorizations of the photographic materials were elicited through open-ended sorting procedures and open-ended questions; preferential judgments of contextual fit were elicited through structured sorting and ranking exercises.

The second, and related, segment of the empirical study focuses on the responses of review commissioners (i.e. experts) to contextual fit. A total of 24 respondents, 8 respondents from each of three design review commissions in the Milwaukee area, were interviewed. The review commissioners included both design-trained and non-designed trained individuals. They were interviewed according to the same interview format used in the first segment of the study and were asked to comment on the same set of 25 photographs. The only major difference between the two sets of interviews is that the review commissioners were not being interviewed as users/neighbors of a particular case study site.

The interview data is analyzed through a combination of content analyses, inferential statistics, and multidimensional scaling, specifically the SSA-I and MSA-I programs of the Guttman-Lingoes suite of MDS programs.

Among the major research findings are the following:

1) Concern for contextual compatibility: Contextual compatibility represents one of the most commonly considered constructs in the respondents' conceptualizations of the urban scenes used in this study.

2) The meaning of contextual compatibility: For both expert and non-expert respondents, the issue of contextual compatibility tends to be either a dichotomous or ordered judgment. Composite analyses of the respondent groups'
sortings suggest that they think of buildings as being either more or less compatible with the surroundings; they do not think of buildings as representing qualitatively different types of contextual compatibility.

3) Preferred contextual relationships: Respondents generally preferred contextual relationships in which the infill building was highly replicative of the surrounding buildings.

4) Significance of facade design: Facade design features are relatively more salient than either site organization or massing in the respondents' conceptualizations of contextual relationships.

5) Comparison of expert and non-expert judgments: There is a high degree of consistency between experts and non-experts in their preferential judgments of contextual relationships.

6) Familiarity: With respect to the judgments of contextual compatibility of each of the three case study sites, a high degree of familiarity with the case study building was generally associated with a more positive evaluation of its contextual compatibility.

These findings lend support to at least two of the explanations of contextual compatibility found in the literature. Judgments of compatibility were found to be strongly associated with both: 1) low levels of contrast (e.g. Wohlwill and Harris, 1980), and 2) replication of stylistic ornament and facade detail (e.g. Brolin, 1980).

The implications of this research are discussed with reference to: 1) future research on the topic of contextual compatibility in architecture, and 2) general theoretical issues pertinent to psychology, environmental psychology, the design review process, and architecture.
I would like to express my special gratitude to David Canter who has provided invaluable commentary and consistently encouraged a comprehensive perspective.

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1. INTRODUCTION

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1.6 The Facet Theory Approach to Research
1.1 The Topic

The problem of how to insert a new building into a surrounding older context is one which builders and architects have necessarily had to confront since the time when civilizations began erecting "permanent" buildings. Nevertheless, the intentions of the early builders must usually be inferred from the buildings themselves. This is because documented discourse on how to fit new construction to older settings is a relatively recent phenomenon, dating from the early 1800's (Overby, 1980). Indeed, a considerable body of 19th century architectural commentary is concerned with this issue.

Throughout most of the 20th century, however, architects were generally more concerned with design qualities such as technological or functional expression than with contextual compatibility. It has only been within the last five or ten years that the issue of how to fit new buildings to older settings has become a major topic of discussion, not only within the architectural profession but in the public media as well (Biddle, 1980).
"Does it look too tacked-on?"

Fig. 1-1

Drawing by Ned Riddle:

From T. Morton (ed.), "I Feel I Should Warn You...."
1.2 An Example

Consider a recent and internationally publicized example (Dunlop, 1984). The new building in question is the proposed addition to the National Gallery in Trafalgar Square, London. The winning scheme in a competition, it was selected by a jury which included several notable architects. However, once the winning scheme was unveiled, a vigorous debate quickly ensued.

Shortly thereafter, Prince Charles exacerbated this controversy by suggesting in a speech to the Royal Institute of British Architects that the Modernist design proposal resembles "a vast municipal fire station, complete with the sort of tower that contains the siren." He then went on to characterize its effect on Trafalgar Square as "a carbuncle on the edge of a much loved and elegant friend" (Wales, 1984).

To the Prince's mind, the proposed addition represents a totally inappropriate contrast to both the original gallery and the square as a whole. Thus, he argued passionately for an addition which would "complement the elegant facade of the National Gallery" and which would continue "the concept of columns and domes."

Perhaps in anticipation of charges that his comments would be labelled "reactionary" or "uninformed," the Prince attacked the architectural profession for ignoring the sentiments of ordinary people. The public, he argued, should not be "made to feel guilty or ignorant if their natural preference is for more traditional designs, for arches and porches, ornament, and soft materials."
How this particular design controversy is resolved is still open to question. At last report, a wealthy British family had come forward with a sizable donation in order to insure that the addition would be redesigned in a style more in keeping with that of the National Gallery.
1.3 Environmental Meaning

This controversy over the addition to the National Gallery is significant in at least three respects. First, the Prince’s comments exemplify, in many ways, the range of concerns that are frequently expressed in public debate over the contextual appropriateness of new infill schemes. Second, the incident also demonstrates the potential impact of this design issue in the public realm. And third, the controversy also suggests how particular aspects of the built environment may lend themselves to a wide range of interpretations. In this sense, the phenomenon of contextual compatibility clearly falls within the area of environmental psychology that is commonly labelled environmental meaning.

This area of inquiry is generally concerned with the variety of psychological processes involved in the "comprehension" (Hershberger, 1974) of the physical environment. Although there is as yet no clear consensus about how to classify the various types or levels of environmental meaning (e.g. compare Hershberger, 1974 with Dexter and Lindsey, 1976), most researchers do seem in general agreement that the comprehension of environmental meaning does entail a variety of interrelated perceptual, cognitive and affective responses to the environment (Ward and Russell, 1981b). In other words, the study of environmental meaning is about how people perceive, make sense of, feel about, and, in general, interpret their environment.

Within the scope of this broad definitional framework, a considerable body of empirical research has emerged within the last 15-20 years. Many, perhaps even the majority, of these
studies have attempted to investigate environmental meaning by adopting a relatively broad focus. In operational terms, this has typically meant that a diverse set of environmental scenes is rated according to a battery of verbal scales by a group (or groups) of respondents. The primary objective of such studies has typically been to uncover the several most salient dimensions of meaning that are common to people's experience of the environment.

While this approach has proved useful in identifying some of the more common aspects or dimensions of meaning, it has nevertheless been criticized for its lack of specificity regarding the particular environmental features which give rise to such meanings (e.g. Wohlwill, 1976; Canter, 1977). More specifically, Canter has observed that the actual specification of psychologically-significant physical elements is a more critical issue than is commonly acknowledged in the research literature on environmental meaning.

Recently, Groat (1983) has extended this argument by suggesting that the literature on architectural criticism and theory offers an appropriate source of psychologically relevant explanations (though empirically untested) for relationships between built form and meaning. This is because many architectural practitioners and critics frequently record how they expect people to interpret or react to specific physical attributes of an environment. These design speculations thus offer the potential of forging links between the specification of environmental features and many of the psychological aspects of environmental meaning already identified in the empirical research.
1.4 Basic Goals of This Research

The intention of this research is to investigate the issue of contextual compatibility as an aspect of environmental meaning. The assumption is that by simultaneously drawing on both the underlying psychological and design issues, this investigation will thereby achieve a more thorough explanation of this particularly significant aspect of environmental meaning.

This approach is seen as consistent with the two major goals of this research.

First, on a pragmatic level, the primary intention of this research is to provide some practical guidance for environmental designers who are concerned about the problem of contextualism in the urban environment. In particular, it is hoped that by achieving a clearer picture of the underlying psychological processes, designers will be able to develop a keener appreciation of how contextual compatibility is perceived and interpreted by the general public.

And second, on a theoretical level, a further intention of the study is to clarify the dynamic relationship between built form and meaning in such a way as to shed some light on the topic of environmental meaning as a whole. More specifically, it is hoped that by focusing on an aspect of environmental meaning with such clear design implications, a better understanding of the link between form and meaning can be achieved.
1.5 Three Research Objectives

Because a basic goal of this research is to focus on an aspect of environmental meaning that has very clear real-world significance, it is important that the specific research objectives of this study be formulated with these real-world issues in mind. In other words, if this research study is to have ecological validity, then the kind of issues raised by incidents such as the National Gallery addition must be addressed directly.

A close analysis of some of the most notable public controversies over contextual compatibility suggests that there are three important themes which may form an appropriate basis for a set of research objectives. These research objectives are then elaborated with reference to the most pertinent aspects of both the psychological and design literatures.

The Meaning of Contextual Compatibility

Many of the public discussions about the contextual appropriateness of a given design proposal seem to hinge on rather differing interpretations of the term "compatible".

Consider, for example, the recently proposed entry pavilion for the Louvre in Paris. Designed by the world renowned architect I. M. Pei, this glass pyramid structure is to be located at the center of the grand Cour Napoleon which is embraced by the two major wings of the palace. Although the plans were announced nearly two years ago, the recent excavation of the site has served to embroil the proposal in a debate that "is shaking up the hearts and minds of all France" (Hoelterhoff, 1985).
On the one hand, opponents of the proposal argue that the translucent glass structure constitutes an aesthetic obtrusion in the forecourt of this hallowed and historic institution. On the other hand, proponents of Pei's design have argued that the design is not only pleasingly "insubstantial", but also appropriate symbolically. More specifically, the pyramid, it is argued, is an appropriate reference to the Egyptian exploits of the Emperor Napoleon, who was responsible for opening part of the Louvre as a museum.

By arguing for the Pei proposal on these associational and symbolic grounds, these critics are echoing sentiments that are clearly evident in the design literature on contextual compatibility. This viewpoint is perhaps most clearly expressed by Graves and Wolf (1980) who have argued that such associational references constitute a potentially more meaningful manifestation of contextual compatibility than the "superficial" resemblance of form.

A second example of a widely publicized public debate over an infill proposal suggests yet another interpretation of "compatibility." In this instance, residents of a Greenwich Village (New York City) neighborhood were outraged by a proposal to replace a traditional 19th century townhouse (accidently destroyed by a Weatherman bomb in 1970) by a new design that combined traditional brick detailing with a triangular wedge projecting from the facade. The neighborhood group tried unsuccessfully to persuade the local authorities that the new townhouse should closely replicate the original building and the neighboring townhouses.
Proponents of the scheme, on the other hand, found a number of reasons to justify their support. One local architectural critic labelled it "a brilliant synthesis of new and old" (quoted in Brolin, 1980; 1985). And yet another architectural critic argued that "history's mark on that place" should not be erased. Moreover, he goes on to say: "A terrible occurrence was part of the block's history, and it is right that the area acknowledge this" (Goldberger, 1980, p. 260). In this regard, Goldberger is echoing a number of other architectural critics and historians who maintain that architecture should visibly reflect the passage of time. Thus, new infill buildings are appropriately compatible when they maintain the documentation of authentic architectural history.

These various commentaries suggest that contextual compatibility may be conceptualized quite differently by different people. The examples of the Louvre and the Greenwich Village townhouses suggest that these conceptualizations of compatibility may take one of three different forms. For example, the commentary of the opponents to both the Louvre and Greenwich Village proposals suggests that some minimal level of formal similarity is a necessary prerequisite for compatibility. For these people, it may be that infill buildings are seen as either fitting or not, simply based on this formal property.

Alternatively, it is possible that some of these people may conceive of a more scalar interpretation of fittingness. In other words, they might think of the various buildings as representing degrees of either more or less compatibility.
In psychological terms, both of these conceptualizations of compatibility are consistent with Kelly's definition of a construct, which he considered to be essentially bipolar (Kelly, 1955). Although Kelly defines the bipolarity of constructs as being primarily dichotomous in structure, he also acknowledges that "it is still possible to conceive of gradations... along a dimensional line" (Kelly, 1955, p. 141). This scalar conceptualization of compatibility has already been hypothesized on an a priori basis by Wohlwill (1978b; 1982) in his investigation of built structures in landscape settings.

Yet a third possible conceptualization of compatibility is suggested by the commentary of the designers and critics already cited in the preceding examples. If compatibility can be interpreted in terms of symbolic associations in one case and historic continuity in another, it may be that people can recognize several types of compatibility. Thus it could be argued that buildings are not more or less compatible, but compatible in qualitatively different ways.

Finally, it is possible that contextual compatibility may not even be a visible concept for a great proportion of people. Even though the Pei design for the Louvre is said to have shaken all of France, and even though the new townhouse design aroused the anger of many neighbors, it is possible the issue was important only to a vocal minority. In other words, the silent majority may not even care or take notice.

In conclusion, then, the first research objective of this study is to explore the meaning that contextual compatibility
has for people. This objective can be expressed in terms of
the following set of questions:

Do people really construe contextual compatibility to be
an important characteristic of the urban environment?
If so, how do they actually conceptualize it?
Are buildings interpreted as being simply compatible or
not?
Or, are infill buildings evaluated in terms of
representing degrees of compatibility?
Or, are buildings categorized in terms of several
different types of compatibility?
How important is contextual compatibility compared to
other aspects of environmental meaning?

Preferred Contextual Design Strategies

One point of debate which frequently emerges in
discussions of contextual fit is the extent to which judgments
of compatibility are a matter of "taste". In other words, a
common assumption is that compatibility (like beauty) is in
the eye of the beholder. Even the author of one of the few
books on contextual design has argued that preference for
certain types of contextual relationships must certainly be a
matter of taste (Brolin, 1982). The implication of this point
of view is that one would expect to find few, if any,
consensual patterns of preference among any reasonably diverse
set of people.

But are judgments of preferred contextual relationships
likely to be that diverse and inconsistent? Is it possible
that certain contextual design strategies might be
consistently preferred over other design strategies? To take
just one example, it may be that the type of replicated
Georgian townhouse style that the most vocal Greenwich Village residents demanded was, in fact, consistent with the preferences of larger neighborhood group. And more significantly, perhaps it was also consistent with the preferences of a much more diverse set of people.

The degree of consensus in environmental preference is an issue which several environmental psychologists have commented on. At a general level, Kaplan (1979) has argued that preference judgments are neither arbitrary nor idiosyncratic, but instead reveal common patterns of aesthetic values. More specifically, with reference to architecture, Oostendorf and Berlyne (1978c) argue that "individual differences in taste for architectural styles may not be as large as, especially, art theorists want us to believe" (p. 149).

A second, and equally as important aspect of people's preferences for certain contextual design strategies is the extent to which these preferences are related to their judgments of the individual buildings on their own. In other words, is it possible that a person's preferences for certain styles or types of architecture correspond with their preferences for certain types of contextual design strategies?

Prince Charles suggests as much in his speech to the RIBA. Having first criticized the architectural profession for ignoring the feelings of "ordinary people", he then goes on to argue that people shouldn't be made to feel guilty if their natural preference is for "traditional design, arches, porches, ornament, and soft materials." His assumption appears to be that, because most people tend to prefer traditionally styled buildings, they would certainly prefer a traditionally
styled addition, especially for a traditionally-styled building.

Some support for the notion that preferences for particular contextual relationships might be systematically related to preferences for certain infill building designs is suggested by the results of Wohlwill's research in landscape settings (1978b; 1982). He found, for instance, that preference judgments of the contextual relationships were consistently higher for the preferred buildings.

In addition, Wohlwill (1978b; 1982) also found that judgments of contextual relationships seemed to be related to people's responses to the surrounding settings. More specifically, the more preferred contextual relationships were consistently associated with the more preferred landscape settings.

In conclusion, the second research objective of this study is to identify the patterns of preference which are associated with judgments of contextual compatibility. This objective can be expressed in terms of the following set of questions:

What kind of contextual design strategies are most consistently preferred?

How similar are the preference judgments both within and between diverse groups of people?

Do people's preferences for a given contextual relationship correspond to their preferences for the infill building on its own?

Do people's preferences for a given contextual relationship correspond with their preferences for the character of the context itself?
Yet another important aspect of how people conceptualize contextual compatibility is revealed by the kind of design features that are noticed as either contributing to or detracting from a given contextual relationship.

The significance of specific design features in relating a set of buildings to their context is very poignantly revealed in the example of row housing in Philadelphia (Starr and Kasindorf, 1985). Early in 1985, a tragic fire destroyed over 60 rowhouses in a middle-class Black neighborhood after a police attack on a radical political group's stronghold accidently started a fire. The city government quickly pledged to rebuild the housing, but the initial design scheme was soundly rejected by both the local community and the local architectural critic. The reason was simply that the new design did not incorporate the front stoop, which in Philadelphia traditionally includes columns and a gabled roof. The architectural critic argued that the rowhouse design sans stoop was "decidedly un-Philadelphian." And the local city councilman declared: "You don't have that [the stoop], it's like taking everything away." As a consequence, the residents' themselves banned together with a volunteer architect who produced a new rowhouse design with a stoop, a design that the city has now pledged to build.

The significance of certain key features is also revealed in Prince Charles' commentary on the National Gallery addition. More specifically, Prince Charles argued that the columns and domes of the original National Gallery were key features that ought to be carried through in the new addition. In the framework of Prince Charles' speech, these design
elements seem to signify the Prince’s predilection for a Renaissance-inspired architectural style.

The significance of specific key features in linking old to new is a topic which figures strongly in much of the recent architectural literature. However, there is considerable controversy among the critics and practitioners as to precisely which design features are the most crucial for establishing compatibility. For example, Brolin (1980) argues strongly that small-scale details of facade design are particularly significant. On the other hand, another leading architect has recently been quoted as saying that "new designs can be made to blend in with the old simply by paying attention to scale and materials" (Johnson, 1984). And yet another architect has written that compatibility can be just as well achieved through either massing (volume and shape) or site organization (alignment, etc.) (Cavaglieri, 1980).

Thus, the third research objective of this study is to identify the specific design features which most consistently and frequently contribute to contextual compatibility. This objective can be expressed in terms of the following set of questions:

What are the specific design features which are most consistently seen as contributing to contextual compatibility?

What are the specific design features which are most consistently seen as detracting from contextual compatibility?
The preceding discussion has revealed that the topic of contextual compatibility in architecture involves a number of complex and interrelated issues. And although these issues have been organized to some extent by the specification of the three research objectives, there remains the need for a still greater degree of definitional refinement. In other words, what is needed is a systematic framework or model for clarifying the precise scope of the research.

The facet theory approach to research, developed over a period of many years by Louis Guttman and his colleagues, was developed in part to meet this need for definitional clarity. Indeed, according to Canter (1983), the ideas behind facet theory initially emerged as a consequence of Guttman et al's growing dissatisfaction with the lack of clarity provided by existing social science procedures in the definition of research problems.

The essential principles of facet theory are most clearly enumerated in Louis Guttman's definition of theory. Theory, according to Guttman (quoted by Borg, 1981, p. 50), "is an hypothesis of correspondence between (1) a definitional system for a universe of observations and (2) an aspect of the empirical structure of these observations, together with (3) a rationale for such an hypothesis." One of the essential implications underlying this definition is that any research investigation, assuming it is directed toward the eventual formulation of theory, should incorporate all three elements of Guttman's definition.
Of particular significance for this discussion is the first of the three components of Guttman's analysis, that is, the "definitional system." This is provided by what is called a mapping sentence. Or to put it another way, the mapping sentence defines the parameters of the research study. Donald (1985) explains the significance of a mapping sentence in similar, but stronger, terms: "the mapping sentence places a strict framework on the research; it does not merely guide the research, it is the research" (p. 181).

A mapping sentence is structured around several components, the most essential of which is the facet. Although technically, a facet is defined as "any set of mutually exclusive categories" (Canter, 1985, p. vi), it can loosely be thought of as a variable type (e.g. sex). Second, each facet consists of a number of mutually exclusive constituent elements (e.g. male, female). Third, the mapping sentence must also specify a response range (e.g., a 5-point scale of like to dislike). And finally, these components of a mapping sentence must be linked together by connectives which describe the relationship between the facets.

While a mapping sentence does bear some resemblance to a conventional hypothesis, it is also significantly different. Perhaps the most fundamental difference is that a mapping sentence is considerably more comprehensive. For example, in a complex multifaceted research study, it is often common for a set of several hypotheses to be specified; yet each hypothesis typically defines only one expected relationship. On the other hand, a mapping sentence expresses all expected relationships simultaneously. It not only identifies all relevant facets, but also the relationship among the several facets and among the elements within a facet. In other words, whereas an
hypothesis describes relationships atomistically, a mapping sentence describes an entire set of relationships wholistically.

The process by which an initial mapping sentence is generated typically begins with a very broad-based literature review. As Canter (1985) describes it: "Various concepts and relationships between concepts, with varying degrees of empirical support, will be scattered about the research literature and the facet researcher will be trying to make systematic sense of all this, by identifying major facets..." (p. 266). Moreover, this review of the pertinent literature may be particularly exhaustive if no previous facet research has been conducted on the particular topic of interest.

In the case of this research study, the intention is to draw on three major sets of literature: 1) general discussions of environmental cognition and meaning in the psychological literature, 2) specific substantive research studies on contextual compatibility, primarily drawn from the environmental psychology literature, and 3) critical and theoretical analyses of design strategies for contextual fit, drawn from the architectural literature.

Each of these sets of literature is be reviewed in the following three chapters.
THEORETICAL BASES FOR RESEARCH ON CONTEXTUAL COMPATIBILITY: A Review of Relevant Psychological Models

2.1 The Gestalt Approach to Visual Perception
   Overview
   Applications of Gestalt Principles to Architecture

2.2 The Ecological Approach to Visual Perception
   Overview
   Ecological Psychology to the Analysis of Architecture

2.3 Semantic Space and the Measurement of Meaning
   Overview
   The Measurement of Meaning in Architecture

2.4 Experimental Aesthetics
   Overview
   The Relevance of Berlyne’s Model to the Research

2.5 Semiology, Structuralism, and the Analysis of Meaning
   Overview
   Semiology, Architecture and Environmental Psychology

2.6 Cognitive Processes and Conceptual Systems
   Overview
   Neisser’s Model of the Perceptual Cycle
   Kelly’s Personal Construct Theory
   Concepts and Categories
   A Cognitive Psychology of Art
   Expert and Non-Expert Conceptualizations
   A Cognitive Approach to Research on Architecture
2.7 Environmental Role: A Purposive Model of Place Evaluation

Overview

Environmental Role

Environmental Role and Contextual Compatibility

2.8 Summary
By definition, the concept of environmental meaning links together a broad range of psychological issues, each of which has typically been treated as a separate topic in the psychological literature. The particular psychological issues most clearly pertinent to the study of environmental meaning include the following: perception, meaning, empirical aesthetics, semiotics, cognition, and place evaluation.

Within each of these areas of psychology (including environmental psychology), there has been sufficient empirical research to generate a more or less substantiated theoretical model or conceptual framework. Taken individually, however, none offers a conceptual framework that is directly and immediately applicable to research on contextual compatibility.

Fortunately, the particular insights that derive from these several models can nevertheless be exploited in a more comprehensive way. One of the important advantages of the facet theory approach to research is the explicit and systematic way in which a broad variety of pertinent research can be incorporated within the conceptual framework of a single study (Canter, 1985). Operationally, this means that the iterative process of developing and refining a mapping sentence represents an important device for synthesizing a wide range of research precedents. In this sense, the significant and common themes of the several psychological perspectives reviewed in the following chapter sections must be considered for their potential as either facets or facet elements of a mapping sentence.
To this end, each psychological perspective discussed in this chapter is presented in a consistent format that includes: 1) a general overview of the theoretical perspective, and 2) a critical analysis of its strengths and weaknesses in relation to research on contextual compatibility. Finally, the several psychological perspectives are reviewed comprehensively for their relevance to specific facets of this research study.
2.1 The Gestalt Approach to Visual Perception

Overview

Gestalt psychology, since its inception around 1910, has enhanced the general level of understanding in a great many aspects of psychology (Hunter, 1977); yet its primary contribution, and the one most pertinent to this study of contextual compatibility, is in the realm of visual perception.

In and of themselves, however, the general principles of visual perception advanced by the early proponents of Gestalt psychology are of limited relevance to this study of contextual compatibility. This is because nearly all of the concepts of Gestalt psychology were investigated in reference to two-dimensional stimuli. And, although Koffka specifically claimed that Gestalt principles were equally applicable to three-dimensional form, this assertion remained a largely untested hypothesis (Koffka, 1935; Jules, 1984).

For this reason, and also because the influence of Gestalt psychology has been so widely acknowledged in the psychological literature, this review does not include a summary of the more general gestalt principles. Rather, the intention is to consider in detail the applications of gestalt psychology to environmental perception.

Applications of Gestalt Principles to Architecture

Until recently, little or no systematic effort was made to link Gestalt principles to an analysis of architectural form. In this regard, Rudolph Arnheim's recent book represents an important contribution (Arnheim, 1977). The relevance of this book to the empirical study of contextual compatibility
is limited, however, in two important respects. First, Arnheim's analysis is a theoretically-based application of Gestalt psychology; it has not been derived from any empirically-based research. And second, although he does comment on the relationship among neighboring buildings at various points in the book, his principal focus is, nevertheless, on the perception of individual buildings. Only in his chapter on order and disorder does he concentrate on the relationship among buildings in the urban setting.

Despite these limitations, Arnheim does offer some important insights about how the issue of contextual compatibility might be understood from the Gestalt perspective.

One of the central themes in Arnheim's discussion of relationships among buildings is the concept of "order." He argues, in fact, that order is an essential component of architecture; a building "cannot fulfill its function and transmit its message unless it presents an ordered pattern" (Arnheim, 1977, p. 162). Unfortunately, Arnheim stops short of defining precisely what constitutes order in architecture. Rather, he defines it by negation, that is by defining disorder. Disorder, he explains, is "discord between partial orders" (p. 171); and elsewhere he adds that disorder is perceived when "relation is suggested but not provided" (p. 204). And more importantly for the purposes of this study, he equates disorder with incompatibility.

Having presented the general principles of order and disorder, Arnheim then applies these concepts to the analysis of facade design. In general, he stresses the value of hierarchically ordered compositions in which the overall facade design is clearly subdivided by prominent features. In
turn, these subsections of the facade maintain their own compositional order while also relating to the composition of the whole. When a building is not designed in accordance with these principles, he argues, then "the total design is unreadable, because each relation one tries to follow is destroyed by unrelatable counteraction" (pp. 172-173).

Arnheim then goes on to apply these principles to his analysis of the urban environment. In general, he finds the urban fabric typical of most 20th century cities to be sadly dominated by disorderly relationships. Taking a stance not unlike that of many contemporary commentators, he states that both our social and physical worlds reflect "an atomized mind." By this he means that we are collectively generating an environment in which people and objects are treated as isolated individuals rather than as communities. This state of mind is also reflected in the built form of our architectural environment, where we are encouraged to focus only on individual buildings with no expectation of an orderly relationship between them. He even suggests that when two adjacent buildings are very incompatible, one cannot truly apprehend both at the same time. Giving attention to one necessarily requires that we eliminate the other from conscious attention.

Finally, in what must be his most speculative analysis of urban quality, he seems to contradict the spirit of the previous argument. In a vague reference to the concept of sensory overload, he suggests that it may be "exhausting" to respond to the undisturbed coherence of an old European town. This is because, "every building addresses us with a discourse so compellingly understandable that we cannot ignore it" (Arnheim, 1977, p. 176). Here he seems to suggest that each of
the traditional buildings is itself so properly ordered that we cannot easily limit our attention to one item at a time, and as a consequence may find ourselves "raised to a painful level of intelligent alertness."

Unfortunately, Arnheim does not clearly specify what sorts of people are most likely to react in this way: American tourists? European travellers? or local residents? The reader is left to sort it out.

Three other authors (Prak, 1977; Gombrich, 1979; Jules, 1984) have also made an effort to apply the Gestalt perspective to the analysis of architectural design principles. Of the three, Jules' analysis is the most clearly focussed and directly derivative of Gestalt principles. On the other hand, Prak attempts to integrate Gestalt concepts with a number of other psychological perspectives; and Gombrich combines several psychological perspectives in his rather broad analysis of decorative art, of which architecture is only a part.

In many respects, Jules' discussion of Gestalt applications to architecture echoes some of Arnheim's themes. In particular, Jules also emphasizes the importance of compositional hierarchies, or "nested gestalts" as he labels them. Thus, his interpretation of Gestalt principles is that individual buildings should not only be composed of clearly defined and ordered parts, but the urban streetscape should be composed of clearly defined and ordered sets of buildings.

Similarly, Gombrich's analysis of the decorative arts also emphasizes the significance of order and compositional hierarchy. With regard to the principle of order, Gombrich argues that understanding the perception of order is essential to our understanding of decoration. And indeed, the title of
The book itself is "The Sense of Order." Second, with regard to the principles of compositional hierarchy, Gombrich suggests that the essence of most pattern-making involves hierarchy. He then goes on to suggest that "...any hierarchical arrangement presupposes two distinct steps, that of framing and that of filling. The one delimits the field of fields, the other organizes the resultant space" (p. 75). In essence, this ordering principle seems no different than Arnheim's discussion of order in facade design.

As these several analyses indicate, the Gestalt perspective on visual perception has a very direct relevance to the problem of contextual compatibility in architecture. In general, these interpretations of Gestalt principles have shown the importance of order, pattern, and hierarchy in the perception of relationships among buildings. Unfortunately, however, the analyses have been carried out only on a theoretical level and described in essentially anecdotal terms. In addition, some of the most pertinent concepts (e.g. Arnheim's use of the term "order") have not been defined in terms that lend themselves easily to direct application in empirical research.
2.2 The Ecological Approach to Visual Perception

Overview

On the face of it, the Ecological approach to visual perception developed by the Gibsons and their followers appears to offer significant advantages over the Gestalt approach. Whereas the early Gestalt psychologists could be criticized for limiting their work to two-dimensional displays, and the latter-day gestaltists can be faulted for maintaining an essentially artistic viewpoint towards the three-dimensional environment, the Gibsons have concerned themselves with the perception of the three-dimensional environment as experienced by human beings in motion.

Indeed, Gibson's appropriation of the term "ecological" to describe his approach to perception reflects his concern that the environment is necessarily perceived "relative to" a human organism (Gibson, 1982a). Thus, the primary focus of their research has been on how people distinguish objects in the environment as they move through it and conduct their activities within it. According to this model of perception, then, people distinguish one object from another as a result of how the flow of light, impinging on the retina, specifies the edges of these objects.

Despite the evident advantages of considering the three-dimensional reality of environmental perception, the Ecological approach has been roundly criticized for its epistemological assumptions. Foremost among these critics is Ulric Neisser who, while commending the Gibsons for their contribution to a descriptive analysis of the physical environment, argues that the Ecological approach takes an excessively radical behaviourist stance (Neisser, 1976).
Indeed, Gibson has argued that perception is direct, requiring no thought or analysis. That people do have ideas about the world is a fact, but it is not a prerequisite for perception (Gibson, 1979).

Although the major emphasis of the Ecological approach has been on clarifying the structural properties of the environment that affect the perceptual response, the Gibson's have also formulated the theoretical construct of "affordance" to account for the meaning of perceived objects. Thus, according to Gibson: "The meaning or value of a thing consists of what it affords" (Gibson, 1982b, p. 407). The "affordance" of a given object is defined as what that object offers, provides, or furnishes to the perceiver; or in more prosaic terms, an affordance is usually synonymous with the primary function of the object. For example, a hammer affords hitting, and a liquid affords pouring (Gibson, 1982a). Therefore, according to the Ecological model, when a person perceives an object, s/he is simultaneously perceiving its affordance.

This concept of affordance has, however, been challenged by other psychologists. For example, Neisser has made the perhaps obvious observation that the affordance of an object depends on who is doing the perceiving (Neisser, 1976). Second, on a more general level, it can also be argued that the concept of affordance is inadequate as a theoretical framework for describing the nature of environmental meaning. Whereas Gibson seems to argue that such qualities as the shape, size, and composition of an object simply determine what it affords the observer (Gibson, 1982b), evidence from research studies of environmental meaning suggest that these qualities may constitute important meanings in and of themselves (e.g. Hershberger, 1974; Groat, 1982).
Ecological Psychology to the Analysis of Architecture

Despite the intention of Ecological psychology to consider visual perception in terms of the three-dimensional environment, there is relatively little discussion in the literature concerning how it might be applied to an analysis of architectural form. The one architectural researcher who has undertaken such a task has identified a number of architectural issues which might be fruitfully explored from an Ecological perspective (Jules, 1984). Jules attempts to analyze the principles of Ecological perception in terms of a number of architecturally relevant topics, among them contextual compatibility. Nevertheless he is hardpressed to state precisely how the Ecological approach can be brought to bear on this issue. He simply concludes that a high degree of contrast between and among buildings would help people to perceive and make their way through the environment.

Jules' analysis and the preceding discussion of the concept of affordance suggest that the Gibsonian approach to perception is one which emphasizes the functional and behavioral aspects of perception. In this regard, the Ecological approach complements the more aesthetic and formal preoccupation of the Gestalt approach. Thus, the Ecological approach represents a potentially useful theoretical contribution in the understanding of the architectural environment. On the other hand, however, the approach's emphasis on the simple differentiation and contrast among buildings for the purposes of wayfinding represents a relatively minor aspect of the contextual relationship among buildings.
2.3 Semantic Space and the Measurement of Meaning

Overview

One of the most significant and influential approaches to the study of meaning is represented by the work of Charles Osgood and his colleagues. Indeed, since the time of its publication in 1957, "The Measurement of Meaning" has provided a theoretical framework for much of the psychological research on the perception of meaning. In this respect, the theoretical principles of Osgood et al.'s work have been taken far beyond the researchers' stated area of concern in the realm of psycholinguistics. For this reason, it is important to highlight some of the most fundamental aspects of Osgood et al.'s original theoretical assumptions.

1) Epistemology. Although Osgood et al. did acknowledge the influence of semiotic theory—at least the American version of it as established by Peirce (1958) and developed by Morris (1971)—they also firmly linked their work to the behaviorist tradition in psychology. In this regard, they envision a synthesis of the Morris' formulation of the sign process and the traditional S-R model. Thus, they define meaning as "a representational mediation process" whereby words (or signs) "represent things because they produce in human organisms some replica of the actual behaviour toward these things (Osgood et al, 1957, p.7).

More specifically, Osgood et al. propose a two-stage model in which both the decoding and encoding stages constitute separate S/R cycles. As they describe it: "The first stage, which we may call decoding, is the association of signs with representational mediators, i.e., 'interpretation.' The second stage, which we may call encoding, is the association of
mediated self-stimulation with overt instrumental consequences, i.e., 'expression of ideas’" (p. 8). The authors then argue that one significant advantage of this model is that all the "conceptual machinery" of the classic S/R model can be incorporated in this two-stage version without radical reformulation.

2) Measurement. The semantic differential scaling technique is probably the most well-known and influential aspect of Osgood et al.'s research. Although technically, the semantic differential refers only to the specific set of bipolar scales developed by Osgood and his colleagues (Canter, 1975), the term is commonly used to describe any set of 7-point bipolar adjective scales.

While the semantic differential technique has been widely used and accepted by psychologists, several important criticisms have been raised about its validity. The most significant of these are concerned with: 1) the assumption of bipolarity, and 2) the relevance of the semantic differential scales to the conceptual framework by which people really interpret their environment.

With regard to the first point, Osgood et al defend the bipolarity of the semantic differential by citing research studies in ethnolinguistics which indicate that the principle of semantic opposition is common to virtually all language systems (Osgood et al, 1957). This may be true, but recent research suggests that not all meanings are construed in terms of polar oppositions (Young, 1979; Groat, 1982; Donald, 1985).

With regard to the second point, Osgood and his colleagues do, in fact, acknowledge that the semantic differential may "force the subject to use some dimensions he
[sic] would not use otherwise" (Osgood et al., 1957, p. 328). However, the authors offer neither a theoretical defense nor a methodological alternative. Thus, other researchers have more recently argued that meaning should more properly be measured through response formats that elicit the meanings people actually use in interpreting their world (Leff and Deutsch, 1973; Groat, 1982; Canter et al., 1985).

3) Semantic Space. Osgood et al. typically used the semantic differential in tandem with factor analysis as a means of defining the key dimensions of "semantic space." Consistent with the theoretical assumptions of the factor analytic model, the authors hypothesized that "the variance in human semantic judgments would be explained in terms of a small number of orthogonal factors" (Osgood et al., 1957, p. 325). Indeed, their empirical work in a variety of cultures and substantive domains led them to conclude that meaning could be defined principally by three factors: evaluation, potency, and activity.

In their initial discussions of this model, however, Osgood et al. acknowledge some of the major theoretical limitations to their work. First, the authors clearly emphasize that the semantic space they have defined is principally connotative or emotive in nature. They have purposefully not considered referential or denotative meaning. Furthermore, they admit that even this "connotative" semantic space may be confounded with more generalized aspects of cognition.

Second, the authors also acknowledge that a large portion of the variance remains unaccounted for. In other words, many meanings that are operative in the semantic space could not be identified or defined.
And third, although Osgood et al were hoping to identify a ubiquitous semantic structure that would be pertinent to all possible concepts, the authors reluctantly conclude that this would likely be impossible. Thus they suggest that the semantic differential scales may have to be modified for various classes of concepts.

In an important sense, then, Osgood et al’s work represents more of a theoretical and methodological basis for research on environmental meaning than a substantive one. Indeed, much of the research on environmental meaning represents an attempt to identify and define an appropriate set of dimensions for the study of architecture and the urban environment. It is to a discussion of these efforts that this review must now turn.

The Measurement of Meaning in Architecture

Over the last fifteen years, environmental psychologists have amassed a considerable body of research in an effort to identify the key dimensions of environmental meaning. Initially, the intent of the first "generation" of research in this vein was to test empirically the extent to which dimensions of environmental meaning actually correspond to the three dimensions which Osgood had identified (Canter, 1969; Collins, 1969; Hershberger, 1969; Vielhauer-Kasmar, 1970). These studies did yield considerable comparability with Osgood's results (especially with respect to the evaluation dimension), but they also generated a number of idiosyncratic dimensions. Of particular relevance for this research, two researcher have actually identified dimensions which are suggestive of contextual compatibility. More specifically, Canter (1969) identified a factor labelled "coherence" in
which the scale harmonious-discordant figured very strongly. And Kuller (1972) identified a "unity" factor, which included the scale "of pure style."

Canter (1975) summarizes the findings of these diverse studies and concludes that the most commonly identified dimensions of environmental meaning are: aesthetic, friendliness, organization, potency, and space. However, Canter (1975, 1977) also identifies some important weaknesses of such research. In particular, he argues: 1) that the search for independent dimensions may be psychologically invalid; 2) that aggregating data across groups of subjects may mask important individual differences; and 3) that the use of standardized bi-polar adjectives virtually precluded the possibility of finding psychological differences between subject groups.

In recent years, several researchers have attempted to augment the exclusive reliance on verbal measurement (e.g. the semantic differential) with the use of non-verbal measures. Thus, for example, Oostendorf and Berlyne (1978c) compared the dimensional structure derived from multidimensional scaling (MDS) of paired comparisons with the dimensional structure derived from factor analysis of bipolar scales. The results of their analyses suggested a semantic space of four dimensions: clarity; hedonic tone/arousal; uncertainty; and familiarity. According to Oostendorp and Berlyne, the hedonic tone/arousal dimension represents a merging of Osgood's evaluation and potency dimensions; and uncertainty is seen as equivalent to the activity dimension.

In a similar comparative study, Horayangkura (1978) used responses to a set of verbal scales (both affective and non-affective) as a means of interpreting the dimensional
structure from an MDS analysis of data generated from a single sorting task. This procedure yielded three underlying dimensions: evaluation, urbanization, and organization.

The most elaborate of these multi-method studies, however, was conducted by Ward and Russell (1981b). They compared the dimensional structure of responses from a total of seven different scaling techniques, including the semantic differential. Their major conclusions included the following: 1) that although Osgood's evaluation dimension is likely affective in nature, both the activity and potency dimensions are more cognitive than affective; 2) that the affective domain is substantially defined by two dimensions (pleasure and arousal), but is likely a more complex structure than can be adequately portrayed in a factor analytic model; and 3) that the perceptual-cognitive domain contains a large number of interrelated dimensions. In summary, Ward and Russell argue that the model implicit in most scaling techniques—"that of a small number of uniquely interpretable and independent dimensions—is inappropriate for the domain of the molar physical environment" (p. 148).

In combination, these analyses of the environmental meaning research derived from Osgood's work suggests very strongly that there are two significant limitations to this approach. First, at a very basic level of analysis, it can be argued that this body of research has been primarily concerned with aspects of evaluation rather than the full range of meanings by which people interpret their environment. Indeed, in nearly all of the the several studies mentioned here, the "evaluation" dimension is identified as accounting for the largest proportion of the variance. Second, as the suite of studies conducted by Ward and Russell (1981b) makes clear, it
may be that the concept of semantic space, as represented by
the factor analytic model, is inadequate as a conceptual
framework for understanding environmental meaning.

On the other hand, this body of research nevertheless
represents an important contribution to the study of
environmental meaning in at least three respects. First, at
its most basic level, Osgood's research helped to generate
interest in meaning as an area of worthy of investigation in
environmental research. Second, his formulation of the
semantic differential has served to underscore the potential
value of verbal descriptors in this area of research. And
thirdly, and perhaps most importantly, his concept of semantic
space has suggested the potential significance of
understanding the underlying conceptual structure of meaning.
2.4 Experimental Aesthetics

Overview

Experimental aesthetics represents one of the oldest areas of psychological study. Since its development in the 1860’s, it has been concerned primarily with elucidating the nature of aesthetic preferences in the arts, most typically the visual arts.

Over the course of this 120 year history, the relationship between experimental aesthetics and "mainstream" psychology has fluctuated considerably. Although initially experimental aesthetics represented a major aspect of psychological study, it later became a relatively isolated and esoteric branch of psychology, maintaining little or no connection with the mainstream of psychological theory (Berlyne, 1978).

Since the 1960’s, however, it appears that the field of experimental aesthetics has once again become more closely linked with other aspects of psychology. Daniel Berlyne, the preeminent leader of what he called "the new experimental aesthetics" has observed two major trends associated with this rapprochement: 1) a "marked intensification" of the research and teaching of experimental aesthetics, and 2) a willingness on the part of the new aestheticians to incorporate theoretical contributions from other disciplines and areas of psychology (Berlyne, 1978).

Berlyne himself has been described as "the single most influential contributor to the development of psychological aesthetics as an empirically as well as theoretically grounded field of investigation" (Wohlwill, 1976). For this
reason, this theoretical review relies chiefly on the work of Berlyne and his colleagues.

The theoretical framework which forms the basis of Berlyne's research program links together several key aspects of psychology and aesthetic theory. First, Berlyne considers the aesthetic response to be consistent with an S-R model of perception, though he suggests it is frequently modified by a mediating r/s cycle. More specifically, he suggests that the initial response "produces feedback or response-produced stimulation, which joins with the stimulation coming directly from the perceived object..." (Berlyne, 1971, p. 107). Second, based on his review of the non-empirical tradition of the philosophy of aesthetics, Berlyne concludes that the two essential components of aesthetic quality are encapsulated in the concepts of "complexity" and "order." And third, drawing heavily upon motivation theory, he identifies the psycho-physiological concept of arousal (defined as activation) as a fundamental component of aesthetic experience.

These three theoretical sources are the primary bases for Berlyne's model of aesthetic appreciation. According to this model, aesthetic appreciation involves the joint action of two factors: an hedonic tone factor and an arousal factor. The first of these, the hedonic tone (defined as pleasure and reward value) is characterized by an inverted-U function. This means that stimuli are viewed as increasingly pleasurable only up to a moderate level of stimulus uncertainty. On the other hand, the arousal factor is monotonically related to stimulus uncertainty. This means that stimuli are viewed as more and more interesting as the degree of stimulus uncertainty increases. This model has been represented by Wohlwill (1976) as follows:
Following this model, Berlyne has attempted to identify the range of stimulus characteristics that increase arousal. These stimulus characteristics are what Berlyne calls "collative variables." The term "collative" is intended to suggest that these variables involve comparison "between stimulus elements that may be present together or at different times" (Berlyne, 1971, p. 141). More specifically, these variables include: novelty, surprise, complexity, conflict, ambiguity, and instability.

Although this model of aesthetic appreciation has incorporated several important aspects of psychological and aesthetic theory, it has nevertheless been criticized in at least two respects. First, Crozier and Chapman (1984) have questioned whether even the results of Berlyne's research demonstrate that works of art actually affect the nervous system in the way the model suggests. And second, Wohlwill argues that the Berlyne model "fails to do justice to the complexity of aesthetic judgments, whether taken with reference to art, or to environmental stimuli" (Wohlwill, 1976, p. 43). According to Wohlwill, one of the most significant inadequacies of the model is that it places too much emphasis on the role of "structure" to the exclusion of
"content." In other words, the model virtually ignores the question of symbolic or associational meaning. Nevertheless, Wohlwill concludes that Berlyne's theory may still prove useful as a first approximation of aesthetic phenomena.

The Relevance of Berlyne's Model to this Research

Although the vast majority of Berlyne's research was based either on simple abstract stimuli or on non-environmental aesthetic forms (such as paintings, sculptures, etc.) three distinct aspects of his work appear relevant to the analysis of contextual compatibility in architecture.

1) Incongruity as a Collative Variable. The attribute "conflict" or "incongruity" represents one of the several collative variables that Berlyne has identified as contributing to the arousal effect of a stimulus. In operational terms, Berlyne used the term "incongruity" to describe pairs of stimuli (usually line drawings of objects or animals) that represent a juxtaposition of discordant elements (Berlyne, 1958, 1963).

Unfortunately, because Berlyne gave relatively little attention to this particular collative variable, the empirical evidence of its role in aesthetic appreciation is based only on the results of two early laboratory experiments. In the first of these, Berlyne found that the more incongruous stimuli of each pair (e.g. elephant with dog's body) consistently elicited longer looking times from the subjects (Berlyne, 1958). On the other hand, in the second experiment, Berlyne found that the incongruous stimuli were consistently rated as less pleasant than the congruous ones. In fact, the pleasantness ratings of the incongruous stimuli were considerably lower than the ratings for any of the other
indices of irregularity (e.g. heterogeneity, asymmetry, etc.) (Berlyne, 1963).

The combined results of the these two research studies would suggest that although incongruity may increase arousal, it may nevertheless be less desirable than congruity. Translated to the environmental scale, these results would suggest that people might find sets of incongruous buildings to be intriguing but relatively unpleasant.

2) The Role of Complexity in Aesthetic Appreciation.

Another of the several collative variables investigated by Berlyne is the attribute "complexity." According to Berlyne, a "pattern is considered more complex, the larger the number of independently selected elements it contains" (Berlyne, 1971, p. 149). He then elaborates this definition in aesthetic terms by suggesting that the most common artistic devices for increasing complexity are ornamentation and embellishment.

More importantly, Berlyne has argued that complexity is actually one of the most, if not the most, significant of the collative variables (Berlyne, 1974). Its potential significance in aesthetic appreciation is also underscored by the extent to which it has been studied, not only by Berlyne, but by other investigators of aesthetic phenomena (Wohlwill, 1976).

Another important aspect of Berlyne's analysis of complexity is his suggestion that aesthetically sophisticated individuals are most likely to prefer a higher level of complexity than their non-expert counterparts. In fact, Berlyne cites a great variety of empirical research (including some of his own work) to support this contention (Berlyne, 1971). Within the framework of Berlyne's model, the explanation of this phenomenon is that experts have become so
used to the particular artform that they require a greater degree of complexity in order to experience the pleasurable sensation of arousal. These findings, if translated to the architectural scale, would suggest that architects and other environmental designers would likely prefer a higher level of complexity both within individual buildings and in the relationship among buildings.

Turning now to the several analyses of complexity specifically focused on the environmental scale, most have based their theoretical perspective on a combination of Berlyne’s model and a range of other empirically-based sources. These analyses generally fall into one of two categories: 1) theoretical discussions which apply the principal findings of Berlyne and others to the architectural and urban scale, and 2) empirical studies which included complexity as one of the physical variables under investigation.

The first of these two categories includes the work of Rapoport and Kantor (1967), Prak (1977), and Smith (1977). These authors all present the argument that, since Modern architecture tends to be monotonous and simple, the urban environment as a whole suffers from being insufficiently complex, and therefore uninteresting and unpleasurable. Rapoport and Kantor extend this argument to suggest that recent urban design practice has also tended to value simplicity over complexity.

These arguments are appealing and suggestive, but their contribution to this study of contextualism is potentially limited because they do not directly apply their analyses of complexity to the relationship among individual buildings. For example, individually simple buildings may, in combin-
ation, form a very complex pattern; and conversely, a set of complex buildings may form a relatively simple and continuous form. Would these two conditions then be defined as equally complex? Or not? These more problematic considerations would therefore suggest that the role of complexity in urban aesthetics is itself a much more multifaceted issue than the existing discussions would acknowledge.

Of the various research studies that fall into the second category, a number of these have reported significant correlations between preference ratings for streetscape scenes and moderate to high degrees of complexity. For example, Geller et al (1981) reported that both small town and urban residents preferred urban scenes that had "at least a moderate level of complexity." Talbot (1981) compared the satisfaction levels in 38 neighborhoods in Ann Arbor and found that people living in areas with a medium degree of variety in styles, sizes, and ages of houses had the highest level of satisfaction. And Nasar (1983) reported that lay respondents tended to prefer urban residential scenes with higher degrees of diversity.

While these studies do underscore the potential significance of complexity in urban aesthetics, they do not, however, provide an entirely consistent picture of how complexity is linked to environmental preferences. First, the inverted-U function of Berlyne's model (which predicts that moderate levels of complexity are most preferred) was not consistently confirmed by these studies. For example, Nasar found that the most complex residential scenes tended to be most preferred. Nasar postulates that the downside of the inverted-U did not emerge because residential environments may not be diverse enough "to produce a decrement effect." On the
other hand, Herzog et al (1976) argue (based on the results of their own research study) that the relationship between complexity and preference ratings may vary considerably across different setting types. Indeed, these two examples point out a common problem in the environmental research on complexity. The problem is that the two ends of the inverted-U function are rarely hypothesized in advance. As a consequence, it is often hard to determine if a noninverted-U function means that the theoretical model is inappropriate or whether the stimuli did not represent the full range of complexity.

Another potential source of inconsistency among these several studies is their operationalization of the term "complexity." For example, whereas Nasar equates the factor "diversity" (derived from ratings of design professionals) with complexity, Geller et al (1981) provide a post-hoc definition of complexity based on their subjects' responses to open-ended questions. Given such clear differences in the operationalization of complexity, it is difficult to assess the comparability of these studies to each other or to Berlyne's model. This lack of comparability among the studies also lends support to Wohlwill's argument that complexity ought not to be treated as a unidimensional attribute (1976).

Finally, and most important for the development of this research study, is the potential relationship between complexity and contextual compatibility. The implication of much of the previously cited research is that some moderate degree of diversity among and between buildings is optimal. However, the one study that included a measure of fittingness along with complexity and preference ratings yielded rather ambiguous results. More specifically, Nasar (1983) found that the ratings of the "fittingness of buildings" did NOT emerge
as a major element in any of the factor analytically derived dimensions, including the diversity dimension; it also did NOT correlate with preference. Unfortunately, the significance of these results are difficult to interpret. In one sense, they may simply reflect the difficulty of rating an entire urban scene for the fittingness of its many constituent buildings. In a scene with five buildings, such a rating may imply a composite of many different relationships.

3) Berlyne's Research at the Architectural Scale. During the last years of Berlyne's career, he and one of his associates conducted a suite of studies on the perception of architecture (Oostendorf and Berlyne, 1978a,b,c). Formulated within the framework of Berlyne's model of aesthetic appreciation, this set of studies was intended to investigate: 1) the dimensional structure of aesthetic perception, 2) exploratory behavior in response to architectural stimuli, and 3) preference scalings.

Among these several studies, the one on exploratory behaviour bears the most relevance to the issue of contextual compatibility (Oostendorf and Berlyne, 1978b). In this particular experiment, the researchers chose to use a set of three questions as a measure of "exploratory tendencies". One question in particular—how much would you like to have this building in your city?—seems to be suggestive of a building's contribution to the cityscape, and therefore pertinent to the issue of contextual fit. Correlations between the several physical variables (rated separately by expert judges) and the scores for the three questions indicate that the "city" question correlated only with ornamentation.

Two important implications are suggested by these results. First, since Berlyne has defined complexity in
various artforms in terms of such attributes as ornamentation and embellishment, these results would tend to underscore the potential significance of complexity in the aesthetic appreciation of the urban environment. Second, if indeed people prefer a cityscape dominated by ornamented buildings, this may also suggest that the degree of detail may be an important factor in judgments of contextual compatibility.

In summary, then, Berlyne's approach represents a potentially valuable precedent for this research in two respects. First, it has demonstrated the effects on aesthetic appreciation of two physical qualities—inegruity and complexity—which have some bearing on the issue of contextual compatibility. And second, the work also represents a clear example of an effort to link particular qualities of physical form to people's aesthetic responses. This latter point, however, is both a strength and a weakness with respect to the topic of contextual compatibility. Although architecture can clearly be thought of in aesthetic terms, it may also be interpreted in many other ways; a building is not simply an art object that is viewed in contemplation. In this light, Berlyne's theory is likely to be only partially relevant in the development of a conceptual framework for understanding contextual compatibility.
2.5 Semiology, Structuralism, and the Analysis of Meaning

Overview

Semiology, or semiotics, is defined as the science of signs. Although semiology was originally conceived as an interdisciplinary science which would be part of social psychology, most of the early work in semiotic analysis was carried out within the discipline of linguistics. This is because it was a Swiss linguist, Ferndinand de Saussure (1974), who promulgated its development through a series of lectures at the University of Geneva from 1906-11. An American, C. S. Peirce (1958), contemporaneously proposed a science of signs to be called semiotics, but it was Saussure's work which became the fundamental source for the development of structuralism. (The terms semiotics and semiology are now generally considered interchangeable.)

Two significant aspects of the semiotic perspective have been particularly crucial to the development of semiotic theory, not only in linguistics but other disciplines as well.

1) The Synchronic Study of Language. According to the literary critic Terence Hawkes, "Saussure's revolutionary contribution to the study of language lies in his rejection of that 'substantive' view of the subject in favour of the 'relational' one" (Hawkes, 1977, p. 19). What Saussure argued was that language should not only be studied through its historical development (diachronic analysis), but also as a unified, self-sufficient system, that is, as it is experienced at any one time (synchronic analysis). Rather than tracing the development of a single element or part of a language,
Saussure argued for the examination of the relationship between those parts.

2) Language as an Arbitrary System of Signs. Saussure’s other major contribution to linguistic theory is his argument that language—like all other sign systems—depends on the fundamentally arbitrary relationship between a concept (the signified) and the sound-image (the signifier). In other words, there exists no necessary fitness between the idea of a tree and the word tree. Or as Hawkes explains: "The word 'tree' means the physical leafy object growing in earth because the structure of the language makes it mean that, and only validates it when it does so" (Hawkes, 1977, p. 26).

The importance of this analysis is that an arbitrary relationship between the signified (concept) and the signifier (sound-image) is also an essential attribute of any other system of signs. It is the relationship between the parts of a sign system which allows it to function and be maintained. Thus Saussure’s proposal for a science of signs is nearly inseparable from his "relational" perspective on linguistics.

The legacy of these theoretical principles is the doctrine of structuralism as it has come to be labelled and applied to other disciplines. Piaget in psychology and Levi-Strauss in anthropology are perhaps the most well-known proponents. In explaining how the methods of structural linguistics might be applied to other disciplines, Piaget offers the following summary of the essential and universal characteristics of a structure: In short, the notion of a structure is comprised of three key ideas: the idea of wholeness, the idea of transformation, and the idea of self-regulation. (Piaget, 1971, p. 5)
Hawkes elaborates what each of these three components of the definition implies. Wholeness suggests that the system is complete and self-defining. Transformation implies that the system is "capable of generating new aspects of itself (e.g. new sentences) in response to new experiences." And self-regulation is inherent in the system because it allows no appeal to a reality beyond itself. (Hawkes, 1977, p. 26).

The argument of the various structural theorists—and the fundamental basis of the structuralist perspective—is that these definitional principles can and should be applied to other aspects of human society, aspects which like language can be treated as systems of signs.

Semiology, Architecture and Environmental Psychology

The relationship of semiology to research on environmental meaning is a particularly problematic and fragmented one. Indeed, there appear to be at least two major perspectives within semiotic theory that offer conceptual linkages to environmental psychology.

One perspective is embodied in the structuralist psychology advocated by Piaget (1971). Remarkably, although Piaget's research in cognitive psychology has frequently been cited as an important theoretical source for environmental psychology (e.g. Moore and Golledge, 1976), the structuralist perspective has rarely, if ever, been drawn upon in environmental psychology, at least within the English-speaking research community.

The second perspective is evident in the various applications of the linguistic analogy to other cultural artifacts, including architecture. Although scholarly articles on the subject of architectural semiotics can be documented as
early as the 1930's (Broadbent, 1977; Mukarovsky, 1978),
discourses in English have been published only in the last 15
years (Jencks and Baird, 1969; Broadbent et al, 1980). These
essays typically apply linguistic concepts and terminology to
the analysis of architectural meaning.

Only a few environmental psychologists have attempted to
transform these theoretical analyses into a basis for
empirical research. The most ambitious effort to date has been
undertaken by Martin Krampen in his book "Meaning in the Urban
Environment" (1979). Krampen presents a thorough and elaborate
analysis of semiotic theory, combines it with principles from
information and set theory, generates his own semiologically-
based model of building recognition, and then operationalizes
this for empirical research.

Fundamental to Krampen's model is the important
semiological distinction between denotation and connotation.
Krampen argues that a building is first classified on a
denotative level on the basis of its building type (i.e. in
opposition to all other building types) and secondly on a
connotative level on the basis of style (i.e. in opposition to
the other ways that the same function might have been
achieved). This double classification is, Krampen maintains, a
necessary sequence in building recognition. He even goes so
far as to say that "before one can recognize stylistic
differences between churches, for example, one must be able to
recognize the difference between churches and other building
types" (Krampen, 1979, p. 94).

Krampen uses this model as a basis for structuring two
sets of research studies, one set focussing on building
type recognition, and the other, reactions to building styles.
In the latter of these studies, Krampen compares the
respondents' reactions to a variety of pre-1900 and post-1945 buildings. His results indicate that more positive meanings are generally associated with the pre-1900 buildings, which were characterized by the presence of decoration and heterogeneity. These findings would appear to be consistent with the results of Oostendorp and Berlyne's research on architectural meaning (1978b). Both studies suggest the potential significance of ornament and decoration in the appreciation of individual buildings.

Another attempt to link semiotic theory to empirical research on architectural meaning is presented in Groat's study of Modern and Post-Modern architecture (1979). However, Groat's analysis of semiotic theory is in no way as elaborate as Krampen's, nor does she offer an effective theoretical model that could be operationalized by other environmental psychologists.

Although the number of empirical research studies that have made use of semiotic theory is clearly limited, this approach nevertheless represents an important contribution. In particular, as Groat (1983) has pointed out, the significant strength of semiotic analysis is its fundamental emphasis on the essential symbiosis of the signifier (form) and signified (meaning). Although a recognition of this essential link can theoretically be accommodated by the other research perspectives that have been used to investigate environmental meaning, this is not always the case. In particular, the numerous studies using the semantic differential approach (See chapter section 2.3.) have only infrequently addressed this point. Thus, the semiological emphasis on the link between signifier and signified represents a potentially significant precedent for this research.
2.6 Cognitive Processes and Conceptual Systems

Overview

One of the most significant and common themes in much of the cognitive psychology literature is that the perceptual/cognitive process is essentially an interactive and constructive one. In other words, what a person perceives and how s/he interprets it is in large measure dependent on the particular environmental features the person chooses to attend to. These choices, in turn, reflect the nature of the individual's conceptual system, the essential components of which have been variously defined in terms of schemas, constructs, and categories.

This general point of view is common to several theoretical perspectives, including those offered by such prominent psychologists as Kelly (1955), Bruner (Bruner et al, 1956), and Neisser (1976). Although the several models offered by these authors should by no means be considered exactly equivalent, the disparities among them seem to constitute a difference in emphasis rather than a difference in fundamental concept. To illustrate this point, the essential themes of each of these models is highlighted in the following review.

Neisser’s Model of the Perceptual Cycle

According to Neisser (1976), perception is a "constructive" and cyclical process, one essential element of which is the perceiver's schema. While acknowledging his debt to Bartlett (1932) for the term schema, Neisser takes pains to define it in his own way. As Neisser defines it then, a schema "is that portion of the entire perceptual cycle which is
internal to the perceiver, modifiable by experience, and somehow specific to what is being perceived" (Neisser, 1976, p. 54). Within the process of the perceptual cycle, the schema's role is an anticipatory one; it prepares "the perceiver to accept certain kinds of information rather than others and thus controls the activity of looking" (Neisser, 1976, p. 20).

This process is graphically illustrated in the following figure:

![Fig. 2-2: The Perceptual Cycle.](image)

Neisser further elaborates the nature of this model by arguing that it is the cyclical quality of the perceptual cycle which helps to explain the role of meaning and categorization in cognition. For example, he suggests that the reason we seem to become aware of the meanings of objects is because our schemata predispose us to anticipate certain meanings. More specifically, some of these meanings are encapsulated in categorical schemata. On the other hand, perceiving does not necessarily involve categorization.
Neisser argues instead that people will not really bother to categorize unless the situation demands it.

Kelly’s Personal Construct Theory

As a clinical psychologist, George Kelly was primarily concerned with understanding the cognitive processes of patients within therapeutic situations. Thus the primary focus of Personal Construct Theory is on the structure of the individual’s conceptual system. The essence of this perspective is the assumption that each individual has a unique way of construing the world, i.e. a personal construct system. According to Kelly’s theory, a construct system is a "hierarchically linked system consisting of sets of bipolar constructs such as nice-nasty, here-there... and so forth and so on" (Fransella and Bannister, 1977, p. 2).

Although this theoretical formulation is significant in its own right, Kelly’s most influential contribution to psychology is the repertory grid—the interview technique he devised for revealing an individual’s construct system. The repertory grid is not, however, as unique to Personal Construct Theory as its proponents frequently claim (Canter et al, 1985). In fact, as Canter et al point out, Kelly himself even acknowledges that the grid technique has its roots in the sorting procedures which Vigotsky (1934) and others developed. In this sense, then, the repertory grid firmly links the formulation of Personal Construct Theory to other perspectives in cognitive psychology that have focussed on the nature of concepts and categories.
In their seminal book, "A Study of Thinking", Bruner et al state that "the learning and utilization of categories represents one of the most elementary and general forms of cognition" (Bruner et al, 1956, p. 2). And perhaps more significantly, the authors further argue that the process of categorization actually constitutes "an act of invention." By this they mean that the perceived similarity among objects (or events) within a category is merely limited by, but not determined by, "real" stimulus similarity. Thus the category structures a person "invents" will be influenced by a wide range of factors, including past history, present goals, and the ability of the individual to abstract features of the stimuli.

Bruner et al elaborate their analysis of the categorization process by defining three broad classes of categories: 1) functional (having to do with the purpose of the object/event), 2) formal (relating to the intrinsic attributes or properties), and 3) affective (having the least to do with the intrinsic properties of the object/event). The authors go on to speculate that the processes whereby these three category types are learned are "informatively different" (Bruner et al, 1956, p. 6). On the other hand, the authors also emphasize that there are also very close links among the three types, that they are often "convertible" one to another.

In the nearly thirty years since Bruner et al initially formulated their model of categorization, a number of psychologists have carried on the investigation of categorization in a variety of ways. Most significant among the more recent efforts is the work of Smith and Medin (1981).
These authors have attempted to delineate three distinct models of the categorization process. Their conclusion is that at least two of these models may actually be operative, though perhaps at different developmental stages or learning cycles. Their analysis thus tends to reconfirm the essential significance of categorization in the perceptual/cognitive process.

A Cognitive Psychology of Art

Recently a number of psychologists have begun to link some aspects of these several cognitive approaches to the realm of experimental aesthetics. In addition to the "core concept" of the schema, Crozier and Chapman (1984) have identified two other principal roots to these new developments: 1) the set of metaphoric models derived from computer and information technology, and 2) the insights on cognitive development arising from Piaget's research, in particular, and from the structuralist approach to cognitive psychology, more generally.

In evaluating these recent developments, Crozier and Chapman (1984) suggest that the cognitive approach is potentially very fruitful. Among the several reasons they cite are the following: 1) researchers working with the area of experimental aesthetics have gradually begun to attribute more importance to cognitive processes; 2) cognitive psychology is likely to introduce a broader range of "dependent variables", thereby helping to break away from the traditional over-reliance on judgments of preference, pleasantness and interest; and 3) the cognitive approach has already demonstrated that responses to real world works of art—as opposed to abstract stimuli—can be investigated without
losing the prerequisite rigor and methodological sophistication.

Ultimately, Crozier and Chapman (1984) see these trends as leading to a more comprehensive theory of the perception of art, one that links the emotional and biologically based models with the methods and principles of cognitive and social psychology.

Expert and Non-Expert Conceptualizations

An important theme that repeatedly emerges in the several analyses cited above is the distinction between expert and non-expert conceptual systems. The general point expressed by most of these authors is that experts learn to perceive and categorize their environment in significantly different ways than the non-experts.

Neisser’s analysis of expert perception is, not surprisingly, closely linked to his model of the perceptual process. First, he argues that any perceiver (equipped with a highly articulated schema) makes a positive perceptual choice about the features of a stimulus s/he attends to. Contrary to other models of perception, he maintains that there is no internal mechanism that filters out stimuli. In other words, perceptual choice represents a positive—not a negative—process. Thus the difference between the expert and non-expert is that the expert perceiver is tuned to the more subtle features of their environment, while the unsophisticated perceiver is tuned to the more superficial features.

A further elaboration of expert cognition is offered by Smith and Medin. Consistent with their analysis of categorization types, the authors suggest that younger learners are more likely to rely on more concrete category
types, whereas adult learners are more likely to rely on more abstract category types. The authors also go on to speculate that this developmental sequence may also occur when adults must learn a new concept.

Finally, Bruner et al suggest yet another important difference between expert and non-expert categorization. These authors observe, based on much empirical evidence, that there seems to be a greater consistency in the range of categories which subjects use when they are relatively less expert about a certain class of stimuli. In other words, more expert and experienced individuals are likely to use a more variable and extensive range of categories.

A Cognitive Approach to Research on Architecture

The common themes of the several models of cognition discussed in this chapter section have two important and interrelated implications for this research; one is methodological, the other substantive.

First, with regard to research methodology, the notion that every individual relies on a UNIQUE system of concepts and categories suggests that it is important to utilize research procedures that can actually reveal these conceptual systems. By implication, this suggests that the use of preselected rating scales is not likely to reveal a full and accurate view of people's conceptual systems. On the other hand, techniques (such as the repertory grid) which allow individuals to select their own criteria for evaluating their environment would be much more likely to reveal the nature of people's conceptual systems.
Second, an important substantive issue, revealed by the analysis in the previous section, is the issue of expert categorization. The consistency with which this topic emerges in the cognitive psychology literature strongly suggests that it may well be a pertinent issue in the perception of contextual compatibility.

Indeed, these two interrelated issues have formed the basis of several cognitively-oriented studies of the perception of architecture. A recent study by Purcell (1984) is particularly significant in this regard because he explicitly describes the cognitive model which forms the basis of his research design. Purcell’s model clearly represents an attempt to link together three different aspects of the psychological literature: 1) the concept of arousal, derived in part from Berlyne; 2) the notion of a prototype, or category schema, derived in part from the research of Rosch (1977) and Smith et al (1974); and 3) the concept of an the evaluative dimension, as revealed by judgments of preference and attractiveness. Briefly, Purcell argues that emotions are aroused as a result of the non-conformance of stimulus patterns to the relevant prototype.

Purcell chose to explore this theoretical model with reference to respondents’ conceptualizations of single-family housing. Two student groups, one consisting of architecture students and the other consisting of students from a variety of other disciplines, were asked to rate 43 slides of houses in terms of four concepts: goodness of example (i.e. conformance to the prototype), interest, attractiveness, and preference. Analyses of these data indicate that the attractiveness and preference ratings of the non-architects were not only highly correlated with each other but also with
the goodness of example rating. Conversely, although the attractiveness and preference ratings of the architects were also highly correlated, both these ratings were highly correlated with interest, but not with goodness of example. In other words, the preferences for the architects are more a function of arousal than conformance to prototype, whereas the reverse is the case for the non-architects.

These and other data analyses lead Purcell to conclude that the study not only lends support to the proposed cognitive model but also helps to make sense of attractiveness/preference and interest ratings in other studies. Thus, he argues that preference ratings are the effective "result" of two underlying processes—goodness of example and interest.

A second recent study of lay and expert interpretations of architecture was conducted by Low and Ryan (1985). This study is notable for its implicit application of the prototype model of categorization. The study was conducted in conjunction with a building survey carried out by the National Trust for Historic Preservation in a rural Pennsylvania country.

As a result of the Trust's building survey, eleven important features typical of the local farmstead buildings were identified. Several variations of each of these features were generated in the form of schematic line sketches. The local residents' conceptualizations of "typical" local architecture were then elicited by asking a small sample of townspeople to respond to the following three questions for each of the eleven sets of drawings: 1) Which of these drawings looks most like a farmstead/farmhouse that you would find in the Oley Valley? 2) Which of these drawings looks
least like etc.....? and 3) Which of the remaining drawings look like etc.....?

Thus the structure of the study enabled the researchers to compare the features of the prototypical "Oley-like" farmhouse that were identified by the townspeople with the features identified by the survey team. The results indicate that certain types of features--such as materials and chimneys--were more consensually prototypical than others.

Finally, a study by Groat (1982) also illustrates the use of the cognitive approach in conjunction with a comparison of expert and non-expert interpretations of architecture. The particular purpose of this study was to investigate the extent to which the conceptualizations of architects and non-architects conformed to the stylistic category schema postulated by a leading architectural critic. By using a multiple sorting task (in which the respondents were able to sort the building photos in category schemes as many times as they wished) in conjunction with MDS procedures, Groat was able to compare each individual's conceptual system with the critic's proposed schema. Her results indicate that, while the conceptualizations of the majority of the architects were consistent with the critic's stylistic categories, none of the non-architects' conceptualizations conformed to that stylistic schema.

In summary, then, three recent studies clearly reflect the two major themes already identified in the more general cognitive literature: the importance of a methodology that can reveal cognitive structures, and the distinction between expert and non-expert categorizations. In addition, these three studies clearly demonstrate two of the key advantages of
the cognitive approach which Crozier and Chapman (1984) identified: 1) the use of other measures in addition to preference, pleasantness, and interest, and 2) the use of real-life aesthetic artifacts rather than abstract stimuli.
2.7 Environmental Role: A Purposive Model of Place Evaluation

Overview

Because environmental psychology represents a newly-defined segment of psychological research, there are as yet relatively few theoretical models or conceptual frameworks to provide a cumulative basis for research. In this light, the model of place evaluation presented by Canter (1977, 1983) and Donald (1985) represents a particularly important contribution to the theoretical development of environmental psychology. It is a model which has been derived on an iterative basis from a series of research projects over a period of nearly ten years.

Moreover, this model has been generated with the framework of the facet theory approach.

The essence of the model is expressed in a general mapping sentence which has been proposed for place evaluation. This general mapping sentence is then particularized for each of the building types that have so far been investigated: hospitals (Canter and Kenny, 1981), housing (Canter and Rees, 1982), and offices (Donald, 1985). Because the place evaluation model was specifically generated for the purpose of investigating environmental interaction within particular setting types studies, not all the proposed facets are relevant to a consideration of contextual compatibility. However, one facet—that of environmental role—which was found to be of particular importance in the study of housing appears to be relevant to this research study. Thus, the concept of environmental role is reviewed in detail in the following chapter segment.
Environmental Role

The model of place evaluation has also been labelled by Canter (1983) as a "purposive" model of place. Canter has chosen to use the term "purposive" to emphasize the fact, in any environment, a person will have a particular purpose, and that this purpose will influence the particular "role" s/he assumes within that environment. The person's "environmental role" will, in turn, influence their evaluations of that environment.

Based on this definition of "environmental role," it would seem that the concept would, in operational terms, directly correspond with people's organizational roles in a particular setting. But this is not necessarily always the case. As Donald (1985) has taken pains to point out with reference to office environments, the empirical data has not supported any clear differentiation of environmental role based on a priori organizational roles. On the other hand, given the continuing predominance of sex roles in contemporary society, it is perhaps not surprising that the distinction between husband and wife emerges as the basis of the environmental role facet in the housing study (Canter and Rees, 1982).

In Canter's original formulation of "environmental role" (Canter, 1977), he also describes the differentiation between expert and non-expert conceptualizations as a particular subset of this concept. In reviewing the range of studies in environmental psychology that have addressed this issue (e.g. Canter, 1969; Hershberger, 1969; Canter, Watts and Robles, 1974), he concludes that many of these studies have found relatively small differences between expert and non-expert judgments. However, he suggests that this is more likely a
function of the research methodology (i.e. usually some form of semantic differential) than evidence of a lack of environmental role differences. More specifically, he suggests that when response formats which allow for an exploration of conceptual systems are used (e.g. the use of the rep grid in Leff and Deutsch, 1974), more substantial differences between environmental professionals and laypeople were found.

More recently, other researchers have also found important differences between expert and non-expert conceptualizations of environmental issues. For example, Groat (1982) compared accountants' and architects' conceptualizations of contemporary architecture. She found that the accountants generally construed the buildings in terms of their preferences and/or building type; whereas the architects were much more likely to consider the buildings in terms of formal or design quality issues. Similarly, in the realm of landscape evaluation, Kaplan (1979) has observed that the most reliable differences between different groups of respondents have typically been between expert and non-experts. More specifically, Kaplan (1976) suggests that experts tend to construe environmental artifacts according to constructs which are both more abstract and compact. The latter term is meant to suggest that the experts' constructs tend to operate as summaries of "essential" qualities. In this regard, Kaplan's analysis appears to complement Smith and Medin's observation that more advanced learners are likely to use more abstract categories (Smith and Medin, 1981).

Environmental Role and Contextual Compatibility

None of the research studies which have addressed the issue of environmental role has specifically done so with
reference to the issue of contextual compatibility. However, the previous discussion suggests that two distinct aspects of environmental role may be pertinent to this study.

First, Canter's formulation of place evaluation suggests that people's evaluations of contextual compatibility for a given environment may vary according to extent to which their everyday purposes (i.e. both activities and goals) are linked to that environment. In other words, a person who works in a specific building may evaluate that building's contextual compatibility differently than someone who does business there irregularly.

Second, the analysis of expert and non-expert roles vis a vis the environmental psychology literature substantially complements the analysis of these differences in the cognitive psychology literature. Taken together, these reviews suggest very strongly that this issue is one which is potentially pertinent to the investigation of contextual compatibility.
2.8 Summary

As the previous sections of this chapter indicate, each of the several psychological perspectives reviewed here tends to emphasize a unique focus (or set of foci) pertinent to the phenomenon of environmental meaning, generally, and contextual compatibility, more specifically. From this great range of literature, a number of important themes can be identified. These are summarized below:

1) Physical Features. Two of the psychological perspectives reviewed in this chapter—Gestalt and Berlyne's arousal model of aesthetic appreciation—have identified a range of physical features which seem to affect aesthetic appreciation in both art and the built environment. Indeed, these two models seem to be fundamentally linked in that they tend to emphasize the positive value of different points along the same continuum.

More specifically, the Gestalt perspective stresses the positive value of regularity and pattern recognition, while Berlyne's model (Berlyne, 1971; Wohlwill, 1976) of aesthetic appreciation stresses the reward value of moderately high degrees of uncertainty. Nevertheless, this apparent disparity between the two perspective is to some degree resolved by Berlyne's suggestion that regularity serves to correct the over-stimulating (i.e. negative) effects of too much uncertainty.

Although the combination of Gestalt principles and Berlyne's collative variables may begin to suggest some of the key design features which may affect the aesthetic appreciation of architecture, there are two important reasons that these particular physical attributes may represent only a
small portion of those pertinent to the perception of contextual compatibility: 1) These variables have been primarily investigated as attributes of individual stimuli or artforms rather than as attributes of relationships among several stimuli; and 2) Berlyne's model of aesthetic appreciation is just that, a model which focuses specifically on aesthetic phenomenon. By contrast, the experience of buildings along a streetscape, while it may well include an aesthetic response, is also likely to involve many other types of environmental interactions as well.

In summary, then, while the physical features that have been identified by either the Gestalt perspective or the research in experimental aesthetics may have some relevance to the perception of contextual compatibility, it seems important to consider as well other aspects of physical form, especially those identified in non-empirically based accounts of contextual compatibility. Thus, discussions of contextual compatibility in the design literature are reviewed for this purpose in Chapter 4.

2) The Structure of Conceptual Systems. Many of the psychological perspectives reviewed in this chapter are based on explicitly stated assumptions about the structure of conceptual systems. An important and emergent trend which is apparent from the preceding review is the growing dissatisfaction with linear models (e.g. Osgood's model of semantic space) and the consequent development of more complex models that stress principles of categorization and schemas (e.g. Neisser, 1976; Ward and Russell, 1981b; and Donald, 1985).

This emerging perspective on cognitive processes suggests two important implications for this research: 1) the need to
structure the format of this research in such a way that the respondents are able to express their responses in their own terms, using their own category systems; and 2) the importance of using statistical procedures which do not impose any a priori assumptions of cognitive structure on the data.

3) Environmental Role. Taken together, the cognitive psychology literature and Canter’s formulation of the model of place suggest that two distinct aspects of environmental role may be pertinent to this study (Canter, 1977).

First, a substantial body of both theoretical and empirical literature has suggested that the way an expert conceptualizes a given topic or field may be considerably different than the way a non-expert conceptualizes it. The very consistency with which this point is addressed in both the cognitive and environmental psychology literatures strongly suggests its potential relevance to this research.

Second, the model of place evaluation has suggested that a person’s role in an environment may substantially affect his/her evaluations of that environment. With respect to the topic of this study, this suggests that a person’s degree of contact with a particular site may affect his/her evaluation of that site’s contextual compatibility.

4) The Relation Between Form and Meaning. An important theme which underlies the consideration of each of the perspectives reviewed in this chapter is the degree to which the relation between form and meaning is addressed. As the discussions in Chapter 1 have already indicated, this issue is, by definition, central to the investigation of contextual compatibility in architecture.
Among the several perspectives reviewed in this chapter, only the semiotic approach clearly recognizes the essential symbiosis of the signifier (form) and signified (meaning). Although the perceptual psychology and experimental aesthetics perspectives clearly focus on the specification of physical features, these variables are typically linked only to preference judgments, but not to other aspects of meaning. On the other hand, the literatures concerned with semantic space and cognitive structure have concentrated on the elaboration of the range of environmental meanings, but typically without great attention to their link with physical form.

Thus, the task of these literature review chapters is to suggest how the variety of issues pertinent to contextual compatibility might be resolved into the more comprehensive framework. More specifically, in the terminology of facet theory, the various themes outlined above can be considered as the bases for the specification of facets in a mapping sentence.
3.1 Contextual Compatibility at the Architectural Scale

Review of the Research Precedents

Implications for This Research

3.2 Contextual Compatibility at the Urban Scale

Review of the Research Precedents

Implications for This Research

3.3 Contextual Compatibility of Built Form in the Landscape

Review of the Research Precedents

Implications for This Research

3.4 Summary
Although the contextual compatibility, or fittingness, of man-made structures in their settings is an aspect of environmental meaning with very clear relevance to public debate and regulatory policy, relatively little research in environmental psychology has directly addressed this issue. Indeed, this is one of the major points that Wohlwill (1976) makes in a major review article on environmental aesthetics. More specifically, he argues that research on contextual compatibility actually represents one of the clearest links between "the theoretically based experimental work in aesthetics" and the practicalities of the real world. Moreover, he specifically points out its special relevance to architectural design:

Considering how frequently ... sources of incongruity develop into the object of major controversies in which architectural designers become caught up..., it is remarkable how little systematic attention they have received from researchers. (Wohlwill, 1976, p. 55-56).

Nearly ten years after Wohlwill's energetic encouragement to environmental psychologists, the situation remains relatively unchanged. Although some pertinent research has been conducted at each of the three major environmental scales--architectural, urban, and landscape--these studies actually represent a very small proportion of the research on environmental meaning.

Despite the apparent dearth of research on contextual compatibility, some of these studies do represent important theoretical and methodological precedents. Thus, the intention of this chapter is to review these several studies in an effort to identify the major themes which might be usefully incorporated into the conceptual framework of this study. To this end, each of the three sets of research (corresponding to
the three environmental scales) is reviewed separately, but in a consistent format. This format consists of: 1) a general description of major substantive findings and methodological issues, and 2) a critical analysis of the implications for this research study. Finally the several salient themes that are derived from this review are analyzed for their relevance to specific facets of this research study.
3.1 Contextual Compatibility at the Architectural Scale

Review of the Research Precedents

Despite Wohlwill's very pointed remarks to environmental psychologists, almost no research at the architectural scale has investigated the issue of contextual compatibility. In fact, the only relevant examples of empirically-based research appear to be three studies which have considered contextual compatibility only as a tangential issue.

The first of these is Groat's study of Post-Modern architecture (1979). The primary intention of this research was to compare architects' and non-architects' responses to well-known examples of Modern and Post-Modern architecture. However, an intriguing reference to contextual compatibility emerged as a result of comparing the non-architects' preference rankings of the buildings with the architects' descriptive comments about the buildings. Interestingly, the two buildings most consistently preferred by the non-architects were categorized by one of the architects as "contextual." Groat suggests that the two buildings were labelled contextual because they are the only buildings in the study that are clearly reminiscent of an identifiable regional style. Groat then goes on to suggest that the non-architects' preference for this type of architecture represents an important avenue for future research.

The second study which addresses, though tangentially, the issue of contextual compatibility is a study of suburban housing preferences by Tuttle (1983). Among the many aspects of his investigation, Tuttle asked each of his respondents to indicate the extent of their agreement (on a 5-point Lickert scale) with each of a set of 34 statements representing the
"meaning" of housing. Among these 34 statements was one concerned with contextual compatibility: "fits into neighborhood." Tuttle found that this statement was the 5th most highly ranked "meaning" of the entire set of 34. In other words, it would appear that contextual compatibility represents one of the most important qualities of single-family housing for these Wisconsin suburbanites.

Finally, the third study also concerns housing preferences (Weeks, 1984). Because this study is a general evaluation of 50 multi-family housing projects, the sample of residents was questioned about a great variety of design features. Although contextual compatibility was one of these features, it nevertheless constituted a relatively minor one. Even so, Weeks was able to identify two major design qualities which seem to contribute to contextual compatibility: scale, and "obvious references to neighboring housing" (Weeks, 1984, p. 54). Both of these require some elaboration.

First, the small scale housing projects tended to be viewed as the most compatible. Given that most of the housing projects being evaluated had been built in relatively low-density, single-family neighborhoods, the residents' responses suggest that the lower levels of contrast were considered more contextually compatible. Second, the term "obvious reference" suggests the residents' desire for stylistic features that replicate to at least some extent the features of the neighboring houses. Thus, this finding as well tends to underscore an apparent preference for lower levels of contrast.
Implications for This Research

Because there are so few examples of empirical research on contextual compatibility at the architectural scale, only a very limited number of themes can be identified for investigation in this research. The three most consistently important themes are as follows:

1) The Significance of Contextual Compatibility. Tuttle's study of housing preferences strongly suggests that the concept of contextual compatibility in residential neighborhoods is an important one, at least for suburban residents.

2) Degree of Contrast. The results of both Groat's and Weeks' studies would seem to suggest that lay respondents tend to consider relatively lower levels of contrast with the surroundings to be more contextually appropriate. However, since these studies only tangentially addressed the topic of contextualism, it would seem that a much more clearly focussed and calibrated analysis of lay responses to various degrees of contrast is in order.

3) The Significance of Stylistic Features. Again, both Groat's and Weeks' studies also seem to indicate that the stylistic features of infill buildings may play a significant role in the respondents' response to contextual fit. Unfortunately, however, because neither study systematically investigated a broad range of design attributes, the apparent salience of stylistic features may simply be coincidental. This suggests that the present study of contextualism should be structured in such a way that the responses to a wide range of design attributes can be measured.
3.2 Contextual Compatibility at the Urban Scale

Review of the Research Precedents

The difference between considering contextual compatibility at the urban, as opposed to the architectural scale, is only a matter of degrees. Still, there is a subtle, yet important difference in emphasis. At the architectural scale, contextual compatibility implies a concern for how an individual building relates its surroundings. On the other hand, contextual compatibility at the urban scale emphasizes a concern for the relationship among buildings in the cityscape of an entire neighborhood, even the city as a whole.

The one empirical study conforming to the latter definition is an investigation of the perception of time in architecture by Bishop (1982). As is the case with research at the architectural scale, this study considers the respondents' evaluations of contextual compatibility only in a tangential way. The primary intention of Bishop's study (1982) was to investigate the significance of age in people's interpretation of built form; the research was structured as a case study of a Guildford, England, not far from London. In the process of exploring the role of building age in attitudes towards conservation, Bishop also uncovered some important attitudes towards old AND new buildings in the town center, particularly along the High Street.

His major findings concerning contextual compatibility are summarized as follows:

1) Although most of the respondents liked the idea of having both traditional and contemporary styled buildings in the town, they very much preferred that the modern buildings
be kept at a distance from the traditional architecture characteristic of the High Street.

2) If given a choice, most of the respondents preferred that any new buildings on the High Street conform to either the local vernacular or the mock-Tudor idiom, both of which were characteristic of the High Street.

3) Many of the respondents seemed to think of the High Street as a single entity rather than as a set of distinct buildings. Thus, many residents set a higher priority on conserving the High Street as a set piece than on conserving any one particular on the High Street.

Contextual compatibility at the urban scale has also received some attention in the urban planning literature. The emphasis in these analyses is generally on the assessment of skyline profiles. However, although reference is made to the empirical investigation of non-expert assessments, to date this material has typically taken the form of non-empirically based consultancy projects.

For example, Stewart (1980) reports on the efforts of a landscape architecture firm in a federal suit against the developers of five highrise buildings under construction across the Potomac River from the ceremonial center of Washington DC. The suit claimed that the buildings would substantially damage the views of the various Washington monuments. The impact assessment and graphic analyses provided by the design firm constituted a substantial portion of the evidence used in court.
Implications for This Research

The major findings of Bishop's research serve to underscore the potential significance of the same two themes that have already been identified in chapter section, 3.1.

1) Degree of Contrast. Bishop's respondents clearly seemed to interpret buildings which embodied a relatively low degree of contrast as more contextually appropriate.

2) The Significance of Stylistic Features. The desired continuity between new and old buildings on the High Street seemed to be viewed primarily as a function of architectural style.

Given that these two themes have emerged through empirical research at both the architectural and the urban scale, it would seem that they may warrant further investigation in this research study.
3.3 Contextual Compatibility of Built Form in the Landscape

Review of the Research Precedents

Since 1969, a considerable body of research in landscape assessment—or as it is sometimes called, visual resource management—has resulted from the U.S. National Policy Act of 1969. This legislation mandated that future developments on federal lands would be evaluated for their visual impacts; and further, that these evaluations would be based in part on user/observer assessments (Zube, Brush, and Fabos, 1975; Elsner and Smardon, 1979).

Given this mandate, it is therefore somewhat surprising that relatively few of these studies have directly addressed the issue of contextual compatibility. It appears, however, that much of the research effort has been directed towards assessing the scenic value of parklands and waterways in relation to continued conservation and/or future development (e.g. Zube, Pitt and Anderson, 1975; Brush and Shafer, 1975).

Fortunately, the few landscape assessment studies that address the issue of contextual compatibility do represent important and useful precedents for this research. Wohlwill’s research is particularly significant because Wohlwill himself is a well-recognized authority in the area of environmental aesthetics who has written extensively on the subject (e.g. Wohlwill, 1976; Wohlwill, 1980).

In this light, Wohlwill’s introductory commentary to one of his two major research studies on contextual fit is particularly telling. Having listed the two major research hypotheses of the study, Wohlwill concedes: "While there is admittedly no thoroughly developed theoretical or empirical basis for such a hypothesis, it is consistent with more
incidental observation...." (Wohlwill and Harris, 1980). The implication of this comment is that Wohlwill, informed as he is about potentially pertinent theoretical models (such as those reviewed in Chapter 2), nevertheless feels compelled to structure his research on contextual compatibility around hypotheses that can not be directly linked to these models.

In an important sense, then, Wohlwill's research on contextual compatibility in the landscape must be considered as breaking new ground. For this reason, each of Wohlwill's two major studies of contextualism are reviewed in extensive detail.

1) Built Forms in Coastal Settings. This study investigated the visual impact of major commercial development on California coastal scenery (Wohlwill, 1978b; 1982). The relationship between the buildings and the scenic quality was manipulated in the following way. Three conditions of coastal scenery (scenic, plain-undeveloped, plain-developed with other surrounding buildings) were simulated in model form. In addition two different building types (lodge, factory) were inserted into the three scenes; furthermore, five degrees of contrast were generated by manipulating both the color and size of these buildings. Thus, these systematic variations generated 30 different contextual relationships for evaluation.

Slides of these 30 scenes were shown to three groups of respondents, all college students. One group consisted of design students at a California university; the second group were psychology students at another California university; and the third were environmental studies students in Pennsylvania. The first two groups were simply asked to rate the appropriateness of the focal building to the various settings
on a 7-point scale. The third group, however, was asked for two ratings: one according to appropriateness, the other according to preference.

The major findings of the study are summarized as follows:

a) For all groups, high levels of contrast (levels 4 and 5 of the scale) were consistently regarded as inappropriate.

b) There was less consistency regarding the low contrast scenes (levels 1 and 2 of the scale), both across groups and for the two building types.

c) The California groups considered the lowest contrast scenes to be the most appropriate, while the Pennsylvania students considered the intermediate level of contrast to be the most appropriate for the lodge scenes.

d) The two sets of rating scores for the Pennsylvania students showed a very high degree of correspondence between the judgments of appropriateness and preference.

e) Overall, the ratings for the lodge scenes were higher than for the factory scenes.

2) Built Forms in Recreational Settings. In the second study, Wohlwill and Harris (1980) studied the contextual compatibility of built forms in urban and state parks in the U.S. Northeast. The various park scenes were simulated by a set of 48 slides of real park settings. These slides were first evaluated by a set of expert judges who rated the scenes according to their degree of "fittingness" along five scales: color, texture, size, shape, composite fittingness. The slides were subsequently rated by undergraduate students who rated them according to a set of evaluative semantic differential scales. In a second segment of the study, another group of
students were shown the same slides. They were allowed to control the number of exposures to each slide; the number of exposures for each slide was then measured by the investigator.

The major findings from this study can be summarized as follows:

a) High correlations were found between the various affective scales and the expert ratings of composite fittingness.

b) None of the four specific feature ratings was dominant as a determinant of the overall fittingness rating; texture, color, and shape were almost equally correlated with overall fittingness ratings, while the correlation for size was just slightly lower.

c) Exposure time was not correlated with positive affect.

3) More on Recreational Settings. In addition to these two major studies, Wohlwill also conducted a small, informal field study (described in Wohlwill and Harris, 1980). Visitors to state and urban parks were asked to rank order five park scenes (selected from the previous study) in terms of the fittingness "between man-made (sic) and natural features." When the composite rank orders of the 12 subject groups were compared to the original expert ratings of fittingness, it was found that the rankings for 9 of the 12 groups exactly matched the experts' rankings. Given the great diversity among the subjects-- both in terms of education and other background variables-- the high degree of consensus is notable.

4) The Impact of Setting Types. Finally, a recent study by Gobster (1983) explores the contextual compatibility of residential shoreline development in four distinct landscape
settings: wild, natural, recreational, urban. A major goal of Gobster's study was to investigate one of the important themes to emerge from Wohlwill's work, i.e. the effect of setting types on judgments of appropriateness. Slides of typical second homes or cottages were rated by the subjects for their appropriateness in each of the four setting types. In addition, the slides were rated by expert judges on four scales: naturalness, contrast, complexity, and setback. The results reveal statistically significant differences between evaluations of the four setting types. For example, high levels of contrast were judged most appropriate for urban and recreational settings, and most inappropriate for the natural and wild settings.

Implications for This Research

Because the previously cited research studies in landscape assessment were specifically intended to investigate contextual compatibility, a critical analysis of this material yields a broad range of themes of potential significance for this research. These several themes are summarized below:

1) Specific Design Features Contributing to Contextual Compatibility. Wohlwill and Harris (1980) analyzed four specific measures of fittingness—color, texture, size, shape—and found that each contributed almost equally to the overall fittingness of the building. These results suggest: 1) that the same specific features may also contribute to the contextual compatibility of buildings in an urban setting, and 2) that the relative salience of these and other design features in people's conceptualizations of contextual compatibility may prove to be an important aspect of further research.
2) Degree of Contrast. The degree to which a building contrasts with its surroundings is perhaps the pivotal issue in the evaluation of contextual compatibility. It has both methodological and substantive implications.

   a) Methodology. A common feature of the several landscape assessment studies is that the landscape scenes were rated by expert judges along a scale of fittingness/congruity vs. contrast. These expert ratings were used as an independent or "objective" measure against which lay judgments of appropriateness or preference could be compared. Given the consistency with which the contrast scale has been used in these studies, it appears to be a potentially appropriate strategy for this research as well.

   b) Substantive Findings. The several landscape assessment studies have yielded somewhat conflicting findings concerning the most acceptable level of contrast. Although buildings embodying the lowest level of contrast with the landscape are usually evaluated as the most appropriate, this is not always the case. For example, Wohlwill (1978b; 1982) found that the Pennsylvania students preferred an intermediate level of contrast; and Gobster (1983) found that in recreational and urban settings, the highest levels of contrast were actually evaluated as the most appropriate. These results clearly suggest that identifying the extent to which there is a preferred level of contrast in architectural settings may become an important focus of this research.

3) The Effect of Setting Types on Contextual Compatibility. Both Wohlwill (1978b; 1982) and Gobster (1983) found that different setting types resulted in statistically significant differences in judgments of contextual compatibility. Wohlwill, in fact, concluded that the desirable
quality of the scenic coastal setting resulted in what he called a "halo effect"; thus, the buildings tended to be more positively evaluated in the scenic setting. These results would suggest that appealing architectural settings might also produce a similar halo effect on an urban infill building.

4) The Effect of the Infill Building Itself. Another important issue which emerged in Wohlwill's study of coastal development is the effect of the building itself on the respondents' evaluations of fittingness (Wohlwill, 1978b; 1982). As he had anticipated, Wohlwill found that the lodge building was consistently evaluated as more appropriate than the factory. However, it is not clear whether this response pattern is based on "purely aesthetic grounds or on the grounds of the functional suitability of the two types of structures in these natural settings" (Wohlwill, 1978b, p. 56). Yet in either case, the results suggest that the qualities of the infill building itself may substantially affect people's evaluations of the contextual relationship as a whole.

5) The Significance of Regional Differences. Yet another significant variable that emerged in Wohlwill's research on coastal zone development was the apparent difference between the responses of the California and Pennsylvania groups (Wohlwill, 1978b; 1982). More specifically, the Pennsylvania students tended to prefer a greater degree of contrast than the California students. Although it may be possible that other background variables may have contributed to these differences, the consistency among very diverse groups of Pennsylvania respondents in Wohlwill's field study suggests otherwise. Thus, it would important to investigate the extent
to which regional differences may play a role in evaluating buildings in architectural settings as well.

6) The Relationship Between Judgments of Compatibility and Preference. Only in Wohlwill’s study of coastal zone development were lay subjects asked to rate landscape scenes both in terms of appropriateness and preference (Wohlwill, 1978). Unfortunately, Wohlwill was only able to get one of his three respondent groups to use both rating scales, so the generalizability of these results is limited indeed. Nevertheless, Wohlwill draws the following very suggestive conclusion: "The subjects did not differentiate clearly between these two judgments" (Wohlwill, 1978, p. 54). These results would suggest the need for further research to investigate the relatively ambiguous relationship between judgments of compatibility and preference.

Finally, this review of the landscape assessment research does suggest one theme which may prove to be of limited value for further research.

1) The Role of Arousal in Preference Judgments of Contextual Relationships. Wohlwill and Harris’ study (1980) of park settings investigated the relationship of exploratory behavior (a measurement of arousal and a key aspect of Berlyne’s model) to judgments of fittingness. The authors conclude that there is little or no relation between the behaviors. In this regard, Wohlwill and Harris’ findings appear to be consistent with the results of Purcell’s recent study (1984) which was described in chapter section 2.6. Purcell also found that preference judgments and arousal were not correlated for the nondesign-trained respondents. Instead, the non-designers tended to prefer housing that was more consistent with their conceptualizations of a prototypical
In this light, it may be that the preferred contextual relationships in Wohlwill and Harris' study are consistent with the respondents' prototypical image of a park scene. Given the already substantial criticism of Berlyne's model, these results would indicate that arousal may have little relevance to judgments of contextual compatibility, at least among non-designers.
3.4 Summary

As the previous sections of this chapter indicate, most of the major themes of potential significance for this research are derived from the analysis of the landscape assessment literature. Since these themes have already been presented in some detail in the previous chapter section, they are simply listed below without further elaboration:

1) Specific Design Features Contributing to Contextual Compatibility
2) Degree of Contrast as a Measure of Contextual Compatibility.
3) The Effect of Setting Types
4) The Effect of the Infill Building Itself
5) The Significance of Regional Differences
6) The Relationship Between Judgments of Compatibility and Preference

It is also important to point out that the significance of items #1 and #2 was also underscored by the analyses of research at the urban and architectural scales which were presented in chapter sections 3.1 and 3.2.

Finally, it is also important to consider the overall contribution of the research reviewed here in relation to the broader theoretical questions outlined in the previous chapter. In this regard, two interrelated issues are worth noting. First, taken altogether, these studies have investigated a range of psychological responses that includes: simple judgments of fittingness, preference, and combinations of other affective measures, including arousal. Unfortunately, however, this range of measures in no way incorporates the likely range of meanings that may be linked to the phenomenon of contextual compatibility. In other words, none of these
studies has attempted to consider the respondents’ conceptualizations of compatibility in relation to other aspects of their construct systems.

Second, most of these studies do make at least some effort to link form (signifier) to meaning (signified). Although the level of formal analyses are relatively crude (e.g. simple ratings of size and color in Wohlwill’s study of coast settings, or the designation of regional style in Groat’s research), there is nevertheless an attempt to consider these measures in relation to the respondents’ judgments. On the other hand, this lack of sophistication in the specification of design features suggests that more extensive formal analyses may be needed in order to conduct a comprehensive study of contextual compatibility in architecture. It is precisely for this reason that we now turn to a review of the architectural literature in Chapter 4.
4 DESIGN STRATEGIES FOR CONTEXTUAL COMPATIBILITY: A Review of the Relevant Architectural Literature

4.1 Competing Perspectives on Contextual Architecture

Historic Overview

Contextual Compatibility in Contemporary Architectural Theory and Practice

Theoretical Perspectives on Contextual Compatibility

Relevance to This Research

4.2 Evaluating Design Strategies and Tactics

Design Guidelines

Critical Analyses

Typologies

Relevance to This Research

4.3 Summary
This chapter reviews the broad range of architectural literature on contextual compatibility; it can be distinguished from the psychology and environmental psychology literature in at least three respects.

First and most obviously, the architectural literature is non-empirically based and intentionally prescriptive. In other words, although the critics and practitioners may well exercise their "objective" analytical skills, their primary goal is usually to evaluate and suggest "how to."

On a substantive level, however, the other two distinguishing characteristics of the architectural literature are revealed in two important and distinct levels of discourse.

The first of these is characterized by rather broad and almost philosophical discussions about the propriety of accommodating new building to the existing context. Thus, these discussions entail such questions as: Under what circumstances is it appropriate to replicate historic styles? Should new buildings invariably express contemporary technology and style? Is contextual compatibility an issue that is applicable primarily to problems of building conservation or to all architectural design? Questions such as these reflect a fundamental concern about the significance and meaning of contextual compatibility. And as a consequence, these architectural commentaries suggest aspects of environmental meaning which have been largely ignored by the existing empirical research.

The second level of debate is more pragmatically-based. Assuming that new construction should be designed with at least some conscious recognition of the contextual
conditions, the question then becomes: how should that relationship between an infill building and its setting be manifested? Which are the most critical design attributes and physical features? Should the relationship be expressed through the replication of a variety of specific design features or through only one or two of the most essential ones, for example scale and materials? As these questions begin to suggest, the analyses of physical form that are contained in this body of literature are both detailed and comprehensive. In this regard, they lay an essential foundation for the investigation of the link between form and meaning.

These two aspects of the discussions on contextual compatibility are obviously interlinked, but they are not precisely comparable. Thus, while it is clear that certain philosophical positions are likely to imply certain practical design strategies, it is not always possible to establish a clear-cut correspondence between the two levels of discourse.

For this reason, these two aspects of the architectural literature are reviewed separately in this chapter. Each of these segments of the literature is, however, presented in a consistent format consisting of: 1) a review of the several major perspectives represented in the literature; and 2) a critical analysis of the literature’s relevance to this research. Finally, the several salient issues that are derived from this review are analyzed for their relevance to specific facets of this research study.
4.1 Competing Perspectives on Contextual Architecture

Historic Overview

Written discussion and debate on the appropriate relationship between new and existing architecture appears to be a relatively modern phenomenon in architectural discourse; no manuscripts or other written materials prior to 1800 have been documented by architectural historians.

Despite this dearth of direct documentation, Overby (1980) nevertheless argues that the attitudes of the pre-Modern architects can be inferred from the evidence of the built environment. Based on such inferences, Overby draws the following three conclusions: 1) new buildings were generally designed in the "new" style; 2) architectural ensembles were created through techniques of urban design (such as baroque axes and vistas); and 3) "when older styles were imitated, it was rarely out of consideration for the old style of the immediate architectural context; rather, there was a desire for the added meaning that came by association with the borrowed style or out of respect for the authority of accepted historical models" (Overby, 1980, p. 26).

While Overby's observation that the general tendency was to build in the "new" style may well be accurate, it is important to bear in mind that the newness of any style prior to 1800 was severely constrained by such factors as availability of materials, the conventional technics of building, and the limited range of programmatic requirements. Clearly, the diversity of contemporary materials and the typical scale of today's building requirements would have been inconceivable to the pre-Modern culture.
According to Overby, however, it was neither these technical nor pragmatic innovations of the industrial age that provoked the architectural profession's initial concern for the relationship between new and old architecture. Rather, the development of architectural history as a discipline in the mid-18th century and the consequent reinterpretation of historic buildings touched off a number of significant restoration projects throughout Europe; and this trend, in turn, led to vigorous debate about the "right" way to restore historic buildings.

Many of the most renowned architects of the time, including Schinkel and Voillet-le-Duc, were active proponents of the restoration movement. According to Overby, the tendency of these restoration projects was to adopt a unified or purified style throughout the restored building. As Voillet-le-Duc himself acknowledged, the "restored" building might well be historically inaccurate, but accuracy was often secondary to the goal of portraying the ideal qualities of a particular stylistic period.

This idealized or romantic view of restoration represented the predominant ideology from the late 18th century well into the 19th century, when Ruskin began to voice strenuous objections to it. A few years later, William Morris echoed Ruskin's sentiment and established the Society for the Protection of Ancient Buildings in 1877. The essence of this anti-restorationist argument is that a building should be conceived of as an historical document, not as an idealized portrayal of some favored architectural style. (See Fig. 4-1 for a satirical version of this debate.) Thus Morris argued in the manifesto of the Society: "...if the present treatment of (historic buildings) continued, our descendants will find them
THE ART OF RESTORING.

The Original Designer (some few hundred years ago):—"There—that's my idea of the thing—something quite plain and simple." (My pants away, together with the few hundred years.)

The Modern Architect:—"Grand ruin, isn't it? Not enough to restore from? Bless you! I've restored a whole cathedral from a chip of pavement."

"There now, that's about the thing the Original Designer evidently intended—something florid and complicated."

"All you have to do, you know, is to get yourself thoroughly imbued with the spirit of the Original Designer."

Spirit of the Original Designer, taking a look round—"Well, what strange things these moderns do design, to be sure. Quite original, though!"

Fig. 4-1: Anti-Restorationist Cartoon

Drawing by J. F. Sullivan; Fun magazine, c. 1877

From T. Morton (ed.), "I Feel I Should Warn You...."
useless to study and chilling to enthusiasm" (Morris, 1966, p.109). And further, "...every change, whatever history it destroyed, left history in the gap and was alive with the spirit of the deed done midst the fashioning" (Morris, 1966, p.110).

The viewpoint of Ruskin and Morris is significant because it heralds the predominant ideology of the Modernist period; and as such it reflects one of the major viewpoints in contemporary debates on contextualism. Although initially, this "Modernist" attitude, as expressed by Morris, pertained primarily to the problem of restoration, other architectural critics extended this argument to apply to any new construction in an older setting. In other words, it was argued that the cityscape as a whole should accurately reflect the evolving and changing nature of architectural expression. The continuing prevalence of this attitude is reflected in many realms of architectural discourse, including architectural criticism (e.g. Goldberger, 1980), the policies of various governmental agencies, such as the U.S. National Park Service (Leccese and Berke, 1984), and the recommendations of international organizations, such as the International Council of Monuments and Sites (Overby, 1980).

Eventually this point of view was also linked to the Modernist concepts of space and urban design, with the result that Modernist buildings were typically conceived as isolated objects in space rather than as interrelated elements of an urban ensemble. In a recent analysis of these developments, Norberg-Shultz (1980) has argued that the early Modernists inappropriately transposed the concept of flowing interior space to the realm of the cityscape.
Although these Modernist sentiments were clearly predominant in the architectural literature of most of the 20th century, a few architectural writers ventured to voice contrary views. Among these, the English architect A. Trystan Edwards is perhaps the most notable. His book, "Good and Bad Manners in Architecture" (1924) is simultaneously quaint and remarkably contemporary, both in his references to the social virtues of good manners and in his insightful criticisms of Modernist ideology.

In presenting his argument for good manners in architecture, Edwards anticipates contemporary semiological analyses of other cultural artifacts (e.g. Eco, 1973). More specifically, he draws an analogy between the social convention of dress among people and formal expression in architecture. Just as one wears formal clothes for formal occasions and casual clothes for informal ones, buildings should reflect their relation to the social order. And similarly, just as people in society must learn to get on with each other, buildings should also make an effort to get on with their neighbors.

Secondly, Edwards perceptively faults Ruskin and Morris for their inadvertent contribution to Modernist ideology. He argues that their insistence on "honesty" in the use of materials and on craftsmanship divert attention away from the civic quality of buildings and simultaneously foster a preoccupation with the individual building itself. Perhaps even more remarkable for this early date, Edwards suggests that the major shortcoming of Modernist architecture is its failure in urban design: "Noble buildings in isolation this generation of architects has produced, but the horrible secret is coming out that they cannot yet design a street which is in any sense
comparable to the work of our forefathers of a hundred years ago" (Edwards, 1924, p. 45).

Finally, Edwards’ arguments concerning the civic goal of architecture lead him to suggest procedures which are not far removed from the contemporary concept of design review commissions. In fact, he argues strongly that design proposals ought to be reviewed by the general public for their "social aspect" and that such public debate will actually enhance, rather than detract from, the architect’s prestige. A further goal of such procedures would be to provide greater "stability of purpose" to architects who would then be obliged to "defer to a common cultural standard" (Edwards, 1924, p. 160).

Needless to say, although Edwards’ book was well read among English architects for nearly 25 years (Overby, 1980), the principles which Edwards proposed were substantially ignored by the more prominent and influential architects. Especially after World War II, the Modernist ideology remained virtually unchallenged among architectural practitioners in most of Europe and North America.

Contextual Compatibility in Contemporary Architectural Theory and Practice

In the last 10-15 years, the problem of ensuring compatibility between new buildings and their older settings has become a particularly significant concern to both designers and the general public.

The reasons for this growing concern appear to be both multifaceted and interrelated. Some of the most significant of these reasons are described under the following headings:
1) Major Shifts in Architectural Values. Although Modernist ideology remained preeminent throughout the 1960’s, significant challenges to some of the basic Modernist assumptions had already become evident. Perhaps the most significant of these was the publication of Robert Venturi’s book, "Complexity and Contradiction" (1966). Although even today Venturi still calls himself a Modernist (1982), this book argued against the contrived simplicity which came to be the hallmark of the Modern glass box architecture. In addition, by buttressing his argument with numerous examples of Mannerist and Baroque Italian architecture, Venturi challenged the Modernist antipathy towards architectural history as a source for contemporary design.

Another early challenge to the ahistorical perspective of Modernism was heralded by the commentary of the renowned architect, Philip Johnson. Just prior to the publication of Venturi’s book, Johnson made the now frequently-quoted statement: "We cannot not know history" (Jacobus, 1962). This pithy comment is now viewed as emblematic of the gradual shift in architectural values that has now evolved into what is called Post-Modernism.

Since the mid-1970’s, a variety of diverse and interlinked trends in architecture have been given the label Post-Modernism. Although the definition of this multifaceted movement continues to vary substantially among both architects and critics, the writings of Jencks (1977) and Stern (1977) provided some of the earliest definitions of the Post-Modern movement. Significantly, both authors’ definitions of Post-Modernism suggest a concern for contextualism.
An essential aspect of Jencks' analysis is his argument that Post-Modernism emerged as a result of 6 different trends in contemporary architecture: historicism, revivalism, neo-vernacular, urbanist, ad hocism, metaphor, and post-modern space. The first four of these implicitly suggest some degree of sensitivity for the immediate context.

Stern's definition of Post-Modernism quite explicitly incorporates the notion of contextualism. He states: "Three principles, or at least attitudes, characterize post-modernism at this time..." (Stern, 1977, p. 286). He then goes on to enumerate them: contextualism, allusionism, and ornamentalism. Contextualism, according to Stern, "holds out the possibility that the form, colour, and scale of a new building may be closely related to that of an old building which it abuts" (p. 286).

Since Jencks and Stern first offered their definitions and partisan appraisals of Post-Modernism, a number of architects and critics have offered competing, and sometimes contentious, analyses of contemporary architecture. Recently, some critics have even suggested that other trends such as Neo-Rationalism (Mack, 1984) or the New Modernism (Viladas, 1983) may already be competing with or supplanting Post-Modernism. Such theoretical disputes among architectural critics, however, do not alter the fact that two related issues continue to have an important influence on architectural practice: 1) an interest in architectural history and precedent; and 2) a substantial concern for designing with sensitivity to older contexts.

2) Strong Public Sentiment for Building Conservation. In the 10-15 years, strong public sentiment has encouraged a
variety of building conservation activities, including: adaptive use of older buildings, the designation of historic districts, neighborhood preservation, and the conservation of valued older buildings (whether they are of architecturally historic significance or not).

In and of themselves none of these is an entirely new development. As the previous chapter section indicates, building conservation and restoration have been systematically practiced since the late 18th century. Moreover, the adaptive use of older buildings—particularly in Europe—has often been a necessary and common means of accommodating new building requirements. What is new, however, is the extent to which all of these activities have been simultaneously and energetically supported by the public. In a recent article in one of the popular news magazines, the well-known American architect Hugh Hardy was quoted as saying: The people dragged the profession into renovation. It's a popular movement" (Davis et al, 1981, p. 84).

The same article also alludes to the general popularity of historic styles: "...there is a massive shift in taste as well, which sees in old, once despised styles... the sort of esthetic excitement hitherto reserved for new, vanguard styles" (Davis et al, 1981, p. 84). This suggests that the public supports the conservation of older buildings and historic districts not only because they maintain a link with the past, but also because they are valued as aesthetic artifacts in and of themselves.

In addition, the increasing prevalence of design review procedures (in both historic districts and non-designated neighborhoods) also suggests growing public interest in the aesthetic qualities of the environment. Furthermore, these
efforts towards effecting some degree of architectural management and control are increasingly being supported by the courts (Crumplar, 1974; Brace, 1980; Bohlman and Dundas, 1980).

As a result of this apparent reevaluation of our urban heritage, architects are increasingly called upon to design for situations that are now considered to be contextually sensitive.

3) The Economics of Building. In the mid-1970's, the economics of the development and construction industry in the U.S. gradually shifted to the point that adaptive use become a viable alternative to new construction. Although increased costs for building materials and transport have certainly contributed to this shift, the trend toward adaptive use has also been encouraged by substantial tax credits from the federal government.

The net effect of these various changes is that adaptive use projects are now seen to represent an increasingly high proportion of architectural commissions. A spokesman for the American Institute of Architects was quoted as saying that 77% of all construction activity in 1981 would involve "preservation, adaptive use and renovation" (Davis et al, 1981, p. 84). Though certainly not always the case, adaptive use projects frequently involve substantial modifications or additions to the original building. In an important sense, then, the trend towards adaptive use and renovation also underscores the increasing importance of contextualism in design.

Taken together these several trends both contribute to and reflect the prominent role which the topic of contextual
compatibility has recently assumed in architectural theory and criticism. Within the last 10 years, numerous architects and critics have written on various aspects of the topic. Although most of these analyses consider the problem of contextual compatibility with reference to relationships among adjacent buildings, some authors also discuss the relationship of buildings to the urban streetscape as a whole or even to regional building traditions. Thus, for example, Rowe and Koetter's (1976) analysis of the figure/ground relationship between streets and buildings is fundamental to their interpretation of the urban context and leads them to propose "collage" as an urban design strategy. And Norberg-Shultz (1980) analyzes the role of the regional landscape in the evolution of the genius loci (spirit of place) of cities such as Rome and Vienna.

While analyses such as these do provide an essential and wholistic framework for understanding the scope of contextualism, it is the critical literature on contextual compatibility among adjacent buildings which is the most directly relevant to this research study. Thus, the remainder of this discussion will focus specifically on this aspect of the literature.

Theoretical Perspectives on Contextual Compatibility

Contemporary architectural theory is nothing if not pluralistic; and this pluralism is clearly evident in the critical literature on contextual compatibility. Four major viewpoints can be identified and defined as follows:

1) Architecture as an Historic Document. This perspective on contextual compatibility has already been
described in reference to the discussion of Ruskin's and Morris' anti-restorationist arguments.

The essence of this position is that architecture embodies the history of a civilization, and therefore serves as a record of the evolution of built form. Thus, the common assumption among architects who hold this view is that new buildings should clearly express their newness and in no way mimic their older neighbors.

In contemporary architectural literature, this view has been expressed by a number of architects, critics, and conservation organizations. For example, Goldberger, in discussing the case of the Greenwich Village townhouse mentioned in Chapter 1, argues the following: "The new design by Hugh Hardy took into account materials, scale, and proportion; what it rejected was not respect for context, but respect for blind imitation....A terrible occurrence was part of that block's history, and it is right that the area acknowledge this" (Goldberger, 1980, p. 260).

Needless to say, however, even among those architects and critics who share this general viewpoint, there are often substantial differences of opinion as to what constitutes an appropriate relationship and what constitutes "blind imitation."

2) The Importance of Visual Continuity. This perspective tends to echo some of the arguments presented by A. Trystan Edwards (described in chapter section 4.1). The essence of this argument is that visual continuity among ensembles of buildings is one of the most important and valued qualities of the urban streetscape.
Typically, proponents of this viewpoint are prepared to endorse some degree of replication, particularly of small-scale detail and ornament, in order to achieve apparent continuity among buildings (e.g. Brolin, 1980; Zwirn, 1983).

3) Freedom for the Creative Designer. A third perspective argues that appropriate contextual design is best achieved by leaving the creative architect unconstrained by guidelines or other legislative mandates. In other words, proponents of this view are wary both of making generalizations about principles of good contextual design and of being bound by such generalizations.

Cavaglieri (1980) expresses this point of view well. "Good design," he argues, "is the result of artistic ability." Moreover, considerations of contextual compatibility "must be left to the discovery and interpretation of the imaginative designer" (Cavaglieri, 1980, p. 48).

4) Deeper Levels of Significance. The essence of this fourth perspective is that contextual compatibility should involve more than a superficial visual continuity among buildings; compatibility should suggest deeper symbolic and cultural relationships.

Although this viewpoint has been expressed by a number of authors, it is presented in its most radical form by Graves and Wolf (1980). For example, they suggest that one way for a building to be contextually compatible is for the new building to encourage the viewer’s reinterpretation of the older building. By way of example, they cite Graves’ design for an addition to the Benaceraf house. According to them, the open, fragmented form of the addition creates a transition between the enclosed, self-contained house and the landscape. Their
description of this design strategy is as follows: "The establishment of dependencies among existing buildings, the landscape and new structures allows one to understand all of these elements as a part of a greater, continuous organization" (Graves and Wolf, 1980, p. 70).

While these four perspectives do represent a great diversity of opinion, they should also not be regarded as mutually exclusive. It is entirely possible to subscribe to certain aspects of more than one perspective simultaneously, And, as stated earlier, although each perspective does tend to imply certain approaches towards contextual design, there is no clearcut or precise correspondence between the two.

Relevance to This Research

These several perspectives on contextual compatibility serve as the essential theoretical backdrop to this research study and underlie the three specific research objectives identified in Chapter 1. In an important sense, then, one goal of this research is to investigate the extent to which the general public's conceptualizations of contextual compatibility reflect any or all of the perspectives described above.

Because these perspectives are neither precisely defined nor mutually exclusive it is possible that aspects of some of all of these perspectives may be substantially evident in the responses of a majority of the respondents. Alternatively, it may also be that some degree of consensus may emerge around only one or two of these viewpoints.
4.2 Evaluating Design Strategies and Tactics

The architectural literature reviewed in this chapter section is both more specific and more pragmatically oriented than the material reviewed in chapter section 4.1.

Whereas the previously cited material considered the broader and more theoretical questions regarding the essential appropriateness of contextually-conscious design, the material reviewed here concerns the specific devices by which contextually-conscious design is best achieved.

Three major sets of architectural literature of the latter type are identified and discussed in the following subsections.

Design Guidelines

The majority of the design guidelines documents have been developed in connection with the designation of various historic districts. In addition, guidelines are sometimes established as a means of either maintaining the design concept of a planned community or preserving "a sense of place and character" in a given community (Bowsher, 1978, p. 9). Yet regardless of such subtle differences in purpose, nearly all guidelines documents do share two common characteristics: 1) they are by definition prescriptive, and 2) they are relatively context specific, i.e. they are typically tailored to the specific architectural features most characteristic of the area.

A third common characteristic among a great many of the guidelines documents in the U.S. is that their structure and format represent some variation of the document that was originally adopted by Savannah in the 1960's. This document
identifies 16 key design features or qualities (e.g. height, proportion of openings within the facade, materials, textures, etc.) and simply requires that 6 of these be used as a basis for establishing compatibility (Lu, 1980). Of the 16, only the height requirement is mandatory.

An important refinement of the Savannah guidelines is exemplified by the guidelines document developed for the Swiss Avenue historic district in Dallas. Two important innovations are incorporated in this document: 1) the 12 key design features are identified within four categories of design characteristics, each having to do with a different scale of design (e.g. the block, building form, building treatment, and facade accentuation); and 2) the value of these four categories of features are weighted in importance. Thus, new construction must meet the following criteria: both of the two requirements of block-scale features; two of the three building form features; and two of the five building treatment features (Lu, 1980).

Guidelines documents such as these serve to identify two related issues of potential significance for this research. First, and most importantly, they are an invaluable source for identifying the key physical features which are most likely to affect the evaluation of contextual compatibility. And secondly, the example of the Dallas guidelines further suggests the possibility of developing major categories of design features, thereby establishing a hierarchical framework for further analysis.
Critical Analyses

A second set of architectural literature includes a great variety of critical essays and articles on contextual design. These articles are most typically published in the architectural journals, sometimes within issues specifically focussed on the topic of contextualism (e.g. Canty, 1983; 1984). In addition, at least two edited books (e.g. Biddle, 1980; Ray et al, 1980) have also been compiled on the subject.

The great majority of these articles fall into one of two categories: 1) overviews, which typically offer generalizations about the key features and/or design principles which are essential for contextual design; or 2) case studies, in which the author presents a detailed analysis of a particular building or site.

Carlhian's article entitled "Guides, Guideposts, and Guidelines" (1980) is an example of the first type. The author begins by reviewing a wide range of contextually sensitive and insensitive buildings. In each instance, he mentions a few of the key design features which either contribute to or detract from the contextual compatibility of the whole ensemble. Then, having discussed a wide range of features, he argues that the three key factors in relating a new building to its setting are: height, site surface covered, and mass.

Dillon's article entitled "Darth Vader at the OK Corral" (1983) represents an example of the case study type. Dillon's article is essentially a critique of two new civic center buildings in Forth Worth, Texas. Thus he identifies some of the specific devices (e.g. segmented massing) which the architect consciously employed for the purpose of relating
these new buildings to their low-rise context. In the end, the author offers his own evaluation of the buildings' contextual compatibility—which is that they are not appropriately contextual.

Both forms of critical analyses—the overview and the case study—are equally relevant to this research. Each in its own way identifies the design variables that may be critical to the evaluation of contextual compatibility.

Typologies

Within the broad range of architectural literature on contextual compatibility, a few authors have attempted to develop typologies for the analysis of contextual design strategies. These several typologies represent a level of analysis which lies between the broad theoretical perspective reviewed in section 4.1 and the more specific guidelines and critical analyses described above.

Only four authors have attempted to generate analytical typologies (Smith, 1977; Blake, 1980; Brolin, 1980; Ministere de l'Environment, 1980). To illustrate the definitional quality of these several typologies, Smith's category scheme serves as a useful example. Briefly, he identifies four major contextual design strategies: 1) facsimile, in which the entire composition represents a high degree of replication; 2) simile, in which certain key features—such as bays or gables—are replicated; 3) correlation, whereby certain elements of the building (such as height or cornice) are carefully aligned with its neighbors, and 4) metaphor (the most elusive to define), a strategy which operates beneath
verbalization to establish "veiled links" (Smith, 1977, p. 246) between the building and its neighbors.

Each of the category schemes of the other three typologies are listed below. However, for the sake of brevity, they are listed without the sort of detailed descriptions presented above. First, Brolin's typology, like Smith’s, includes four categories: close copy of the existing design motifs; use of similar forms, but in rearrangement; invention of new forms with the same visual effect; and abstraction or original form. Second, the Ministere de l’Environment has proposed seven categories of contextual design: degree zero; integration, contrast, mockery, invisibility, analogy, and a combination of the above. Finally, Blake’s typology is the least comprehensive of the four. He includes just three categories: anonymous additions, polite deception, and invisible additions.

In general, the four typologies identify more or less comparable categories. Thus, for example, Brolin’s category "use of similar forms, but in rearrangement" seems to be comparable to Smith’s "simile" category. Unfortunately, however, none of the author’s have defined their categories precisely enough to be sure of what is really comparable. And in some instances, the authors’ definitions seem either idiosyncratic or contradictory. Thus Blake identifies the Matignon building in Paris as "polite deception" while the Ministere calls it "mockery." Do these authors mean the same thing by these terms? It is impossible to be sure.

Despite these inadequacies, these several typologies suggest an important issue for consideration in this research.
study: that is, the development of a typology or conceptual framework for analyzing contextual design.

Relevance to This Research

This critical review of the architectural literature on specific devices for achieving contextual compatibility has suggested two implications for this research: 1) the design guidelines and the analyses of design features serve to identify many, if not most, of the specific design features which may contribute to contextual compatibility; and 2) the typologies, as well as some of the design guidelines documents, suggest the possibility of developing a conceptual framework as a basis for categorizing the entire range of contextual design strategies.
4.3 Summary

This chapter has reviewed the broad range of architectural literature on contextual compatibility. As the introduction to this chapter indicated, this literature encompasses two distinct levels of discourse: one having to do with the theoretical issues concerning the proper role of contextual compatibility in architectural design, and the second having to do with the specific devices for achieving compatibility.

The review of the former has served to clarify the fundamental issues which underlie the three objectives for this research.

And the review of the latter had led to a consideration of two interrelated issues of particular relevance to this research. First, the identification of a wide variety of specific design features represents an important contribution to this research. As the analysis of the psychological literature in Chapter 2 makes clear, the most commonly researched design qualities (e.g. complexity) may have only limited applicability to research on contextual compatibility. Thus, the physical features identified in the architectural literature will likely provide a basis for the development of essential facets of this research.

Secondly, the possibility of developing a clearly defined typology or conceptual framework for analyzing the range of contextual design strategies also holds considerable promise. In fact, the development of a precise and comprehensive framework may well be an essential requirement of this research. After all, without some means of classifying individual examples of contextual design, it would be
virtually impossible to make any useful generalizations about the psychological bases underlying the public's responses to examples of contextual design.

The development and description of such a conceptual framework is central to the overall definitional framework of this study and the topic to which we now turn in Chapter 5.
5.1 A Conceptual Framework for the Analysis Design Strategies

Rationale

Procedures for the Development of the Conceptual Framework

Description of the Conceptual Framework

Scope, Limitations, and the Implications for This Research

5.2 The Research Strategy: A Simulation/Case Study Format

Strengths and Weaknesses of Environmental Simulation

Strengths and Weaknesses of the Case Study

Applying the Case Study/Simulation Strategy to This Research

5.3 The Specification of Three Mapping Sentences

Mapping Sentence #1: The Meaning of Contextual Compatibility

Mapping Sentence #2: Preference Judgments of Contextualism

Mapping Sentence #3: Design Features and Contextual Fit

Common Themes Among the Three Mapping Sentences
This chapter describes the overall conceptual framework of the research design.

As noted previously, in accordance with the facet theory approach to research, the definitional framework of an empirical study is typically expressed in the format of a mapping sentence. This definitional framework is generated largely on the basis of a comprehensive literature review.

In the case of this research study, the three distinct sets of literature reviewed in the previous chapters have yielded a number of interrelated issues, each of which is of potential relevance as a facet or facet element within the mapping sentence format. Thus the intention of this chapter is to explicate the development and specification of the set of mapping sentences that define the framework of this research.

However, before the definitional framework of this research can be fully elaborated, two important issues that significantly affect the specification of the mapping sentences must be reviewed and defined. Thus, the following two chapter sections present: 1) a description of a conceptual framework for the analysis of contextual design strategies; 2) the selection of an appropriate research strategy. The final section of this chapter presents the set of mapping sentences which define the scope and structure of the research.
Rationale

One of the major themes which has emerged in the preceding chapters is the central role that the link between built form and meaning must play in the analysis of any aspect of environmental meaning. This implies, in turn, the importance of clearly specifying the pertinent physical features which may ultimately be linked to particular meanings.

As the preceding literature review chapters have indicated, however, the several sets of literatures differ in the precision with which the physical attributes pertinent to contextual compatibility are specified.

More specifically, within the general psychological literature, several specific physical attributes (e.g. complexity, or the Gestalt principles of formal organization) have been identified as potentially relevant to this research study. However, these physical attributes have not been defined in such a way that they can be precisely applied to architectural artifacts, in general, or to the phenomenon of contextual compatibility, in particular.

A somewhat greater degree of precision in the specification of physical features has been achieved in the environmental psychology research reviewed in Chapter 3. Thus for example, Wohlwill and Harris (1980) used the physical variables of color, texture, size, and shape in their study of contextual compatibility in park settings. However, as Wohlwill (1976, p. 47) himself implies in his analysis of environmental aesthetics, the most pertinent physical attributes of the natural landscape may not be comparable to
those of the urban landscape. In this regard, then, even though these several physical attributes have been specified with particular reference to contextual compatibility, they should more appropriately be regarded as only roughly equivalent to the physical features most pertinent to contextual compatibility in architecture.

Finally, although the review of the architectural design literature indicates that there are already numerous analyses of the physical attributes pertinent to contextual compatibility, none of these analyses is presented in a form that is immediately applicable to this research study. More specifically, the review has revealed two distinct levels of physical analysis: one body of literature which focuses on specific physical features, and another set of materials which focuses on the broader level of design strategies.

This distinction in the architectural literature raises an important and legitimate question: what level of analysis is required for this research study? On the one hand, since one of the major goals of this study is to provide practical guidance for architects involved in contextual design, it is important that the analysis of contextual compatibility be tightly linked to specific physical attributes. Yet, at the same time, it is equally important to be able to generalize about the relative "success" of different types of design strategies. The latter point is one that has been made by S. Kaplan (1979) and Gobster (1983) with reference to landscape assessment research. Gobster (1983), in particular, argues that variables which synthesize several properties are better predictors than variables which identify highly specific features.
The perhaps obvious resolution of this issue is to develop a conceptual framework which is hierarchical in structure. In other words, the intention is to develop a framework which incorporates the specification of individual features—or tactics—as well as a broader classification of design strategies. In an important sense, the design guidelines for the Swiss Avenue district in Dallas (discussed in Chapter section 4.2) actually represent an initial effort in this direction. More specifically, this set of guidelines identified four major categories of pertinent design attributes; specific design features were then identified within each of the four categories.

In summary, then, the purpose of such a conceptual framework is to provide a systematic device for the analysis of the contextual design examples that will be used in this research. In this regard, the intention is to follow the procedures recommended Wohlwill (1976, 1982) for similar research in environmental perception. He suggests: 1) that the environments being studied should first be analyzed or rated according to "actual attributes of the environment" (Wohlwill, 1976, p. 63) rather than according to purely subjective experiences, and 2) these ratings should be carried out by expert judges with some professional expertise, a group who are entirely distinct from the respondents in the study who will ultimately be evaluating the environments according to other sets of more "subjective" criteria.

Procedures for the Development of the Conceptual Framework

The conceptual framework for analyzing contextual design strategies was derived from a systematic review of the critical literature on contextualism (Edwards, 1924; Smith,
1977; Biddle, 1980; Brolin, 1980; Ray et al, 1980). Since two of the major sources are edited volumes, this means that development of the framework was based on a review of more than 30 authors, most of them either critics, practitioners, or conservation specialists,

Each of these sources was reviewed for the two types of contextual analyses already described in Chapter 4: 1) design feature analyses, which specify the particular physical attributes identified by the various authors as either contributing to or detracting from contextual compatibility; and 2) broad-based analyses, which identify issues and concepts considered to be important in distinguishing between the variety of contextual design strategies.

With regard to the first of these, each feature type was listed on a separate notecard and referenced with a source code. Subsequent comments about the same feature type were referenced by source code on the same card.

With regard to the analyses of design strategies, the various issues or concepts were listed on another set of cards and also referenced by source code.

Initially, the design feature cards were sorted out into major categories. Next, the issues and concepts identified in the second set of cards were reviewed for major and consistent themes. These two sets of analyses were then combined to form the basis of a hierarchical conceptual structure.

Description of the Conceptual Framework

In its "final" version, the conceptual framework represents a unique descriptive framework. Although it was derived from a systematic analysis of the existing critical
commentary, its actual form bears little or no relation to any one source, or even to combinations of sources. Rather, it is the result of an iterative process of "design" which involved: several rereadings of the original source materials, frequent reevaluations, critical commentary from colleagues, and a search for comprehensive clarity.

In order to demonstrate how the framework can be used to analyze the design strategy of a given building, it is necessary to describe each of the constituent segments of the framework. (Because so many segments of the framework are not directly based on any specific source materials, no references are listed in the following description.) As Table 5-1 indicates, the three major headings of the framework define distinct sets of issues which are ordered according to the degree of control that an architect may exercise over them in the design process.

I Givens. The first of these segments delineates the three major contextual issues that are commonly beyond the architect's immediate control. These factors--site location, building type, and size of project--constitute the conditions which the architect must usually accept as givens at the outset of the project.

II Design Parameters. The second segment of the framework includes two significant issues over which the architect can usually maintain some control. However, because both issues--prominence and definition of context--are dependent upon aspects of the environment beyond the scope of the project itself, the architect must still acknowledge some considerable constraints on his/her design choices.

II-4 Prominence. This issue, in particular, is significantly influenced by the three factors (location, type,
Table 5-1: A Conceptual Framework for the Analysis of Contextual Design Strategies

I. GIVENS: Issues Typically Beyond the Architect's Control

1. Site location: __________________________
2. Building type: __________________________
3. Size: __________________________

II. DESIGN PARAMETERS: Issues Partially Under the Architect's Control

4. Prominence: minimum 1—2—3—4—5—6—7 maximum
5. Definition of Context: adjacent 1—2—3—4—5—6—7 regional

III. DESIGN STRATEGY: Issues Typically Under the Architect's Control

A. Space

6. Exterior Site Organization: contrast 1—2—3—4—5—6—7 replication

   Tactics:
   ______ footprint of the building on the site
   ______ circulation: pathways, etc.
   ______ vehicular access: driveways, parking
   ______ alignment, setback distances and angles
   ______ landscaping: site demarcations
   ______ other

7. Interior Spatial Organization: contrast 1—2—3—4—5—6—7 replication

   Tactics:
   ______ circulation paths, hallways
   ______ room/area layouts
   ______ level changes
   ______ placements of vertical circulation
   ______ other

(continued on next page)
B. Massing

8. Exterior Massing
contrast 1—2—3—4—5—6—7 replication

Tactics:

________ shape, complexity of overall form
________ articulation of base, body, top
________ roofline, vertical projections
________ other

9. Interior Semi-Fixed Arrangements
contrast 1—2—3—4—5—6—7 replication

Tactics:

________ overall configuration of partitions
________ arrangements of heavy furniture etc.
________ other

C. Style

10. Facade Design
contrast 1—2—3—4—5—6—7 replication

Tactics:

________ overall stylistic attributes
________ rhythm, proportion of fenestration
________ color
________ materials
________ degree of ornament, detail, relief
________ other

11. Interior Surface Treatment
contrast 1—2—3—4—5—6—7 replication

Tactics:

________ overall interior style
________ shape, proportion of surface details
________ color
________ materials
________ degree of ornament, detail, relief
________ other
size) already defined in the first segment of the framework. For example, if a massive office building is to be inserted into a small-scale commercial and residential area, the building will inevitably be prominent. Nevertheless, the architect can choose to minimize or maximize that prominence.

II-5 Definition of Context. This is an issue which is often left unresolved in many design situations. Although in many—perhaps even most—instances, the context is assumed to be the immediately adjacent buildings, the choice is actually much wider. For example, the context could be defined as a multi-block area, a local district, or an entire region.

III Design Strategy. The third segment of the framework defines the issues which are actually at the core of any contextual design problem—the design qualities over which the architect has primary control.

This segment of the framework is also the most complicated, because it is at this point that the hierarchical distinction between strategies and tactics becomes relevant. Thus, a design strategy is defined by the six constituent elements listed as major subheadings; and within each of these six subheadings is listed a very abbreviated set of tactics (design features) relevant to that subheading.

The six constituent elements of design strategy are derived by combining the basic principles of spatial organization, massing and style with issues of interior and exterior design. The resulting six elements can then be analyzed in terms of the degree to which a proposed design either replicates or contrasts with the existing context.

This scale of replication/contrast bears some similarity to Wohlwill's and Harris' use of the scale fittingness/contrast in their study of park settings (1980). However, the
term replication has been substituted for the term fittingness for two reasons: 1) it implies a greater degree of specificity and objectivity in assessing the relationship among the variety of design features, and 2) it is more typical of the terminology used in the architectural literature in assessing the quality of design strategies.

III-6 Exterior Spatial Organization. This aspect of a project has to do with the basic spatial pattern a building imposes on the site. Tactics such as setback distances, landscaping patterns, and circulation pathways all contribute to the definition of this spatial pattern.

III-7 Interior Spatial Organization. This aspect of design strategy is essentially concerned with the spatial flow within a building, as embodied by such tactics as room layouts and circulation paths. Although the inclusion of interior design issues in a discussion of contextual is rare, many interior features do, in fact, have a significant impact on contextual compatibility.

The problem of residential infill design in a block of Georgian rowhouses illustrates the point well, although the architect might choose to replicate virtually every exterior detail of the existing rowhouse pattern, s/he might nevertheless decide to create within the replicated shell an open spatial layout as a counterpoint to the segmented, rectilinear plan of the traditional rowhouses.

III-8 Exterior Massing. The exterior massing of a building is embodied in such tactics as height, shape, and complexity of overall form--design features which are traditionally associated with the definition of massing.
III-9 Interior Semi-Fixed Arrangements. Interior massing—the arrangement of semi-fixed features, such as major furniture and cabinetry—represents an unconventional design concept. Nevertheless, there are instance when it plays a critical role in the contextual relationship among buildings. For example, if the shelves of an old wing of a library were arranged in a linear pattern, a radial arrangement of shelves in a new wing would constitute a strong contrast to the original.

III-10 Facade Design. The term facade design here is used to mean the surface treatment of the planes (i.e. the elevations) which define the shell of the building. Manipulation of the facade is rendered not only through such stylistic tactics as Tudor or Georgian motifs, but also through more abstract features such as the proportioning of window openings or the use of color and materials.

III-11 Interior Surface Treatment. This aspect of contextual design strategy is simply defined as any surface treatment applied to the walls, ceilings, or floors of a building.

Scope, Limitations, and the Implications for This Research

The stated intention for developing the conceptual framework is to organize the various contextual design techniques described in the architectural literature into a comprehensive and hierarchical structure. As the previous description of the framework indicates, a great many of the commonly mentioned aspects of contextual design are explicitly incorporated into this framework.
Several frequently mentioned techniques for contextual design are, however, not represented by specific categories of the framework; rather they are implicitly incorporated into the structure of the framework. For instance, the commonly mentioned notions of rhythm, scale, and proportion can be subsumed within any of the 6 constituent elements of design strategy. Thus, one might discuss the rhythm of buildings on a streetscape (site organization), or the proportion of bays on a building (massing), or even the scale of window openings (facade design). And similarly, other properties of the particular design features can be implicitly embedded into the structure of the framework.

On the other hand, two significant issues are intentionally conceived as outside the scope of the framework: 1) the assessment of value or quality; and 2) semantic interpretation. With respect to the former, the framework is purposely analytical in nature; and no inherent value is meant to be attributed to either pole of the several scales that appear in the framework.

Second, concerning the issue of semantics, the framework is not intended to suggest what meaning a replicated window (or entrance, or any other design feature) might have for an observer. While its proportions might likely suggest the pleasing character of a Victorian shopfront to one observer, its lack of maintenance might just as well imply obsolescence to another observer.

To reiterate the point made earlier in this chapter, the framework is conceived as a device for analyzing the design strategies of the range of contextual design examples that will be investigated in this research. On the other hand, evaluative assessments and semantic interpretations represent
the sort of environmental meanings that must be elicited from the respondents who participate in this research study.

Finally, it is important to emphasize that the scope of the conceptual framework is considerably broader than the intended scope of this research study. The conceptual framework is intended as a comprehensive analytical tool. As such, it incorporates a variety of issues which may affect contextual compatibility, but which are also beyond the control of the architect. The determination of building type is an example of such an issue. Although the insertion of a commercial building in a residential area may well affect the quality of the contextual relationship, this is an issue which is typically dealt with in zoning regulations, not by the architect.

On the other hand, this research is primarily concerned with design issues which are within the architect's control. As the discussion in Chapter 1 indicated, a primary goal of this research is to provide some practical guidance for architects and other designers who are concerned with issues of contextualism. In this light, then, this research is concerned primarily with the issues that are identified in the Design Strategy segment of the framework. In other words, the intention of this research is to investigate the effect of different design strategy types on people's interpretations of compatibility.
5.2 The Research Strategy: A Simulation/Case Study Format

The selection of an appropriate research strategy must depend to a large extent on the definition of the research topic itself. This is no less the case in selecting a research strategy for the topic of contextual compatibility in architecture.

Two equally important, yet conflicting requirements, are particularly pertinent in the case of this research. First, the need to investigate a broad range of contextual design strategies is an inherent implication of the three research objectives identified in Chapter 1. The scope of these three objectives suggests strongly the need to compare responses across a number of different contextual design solutions. Moreover, the structure of the conceptual framework developed in the previous chapter section also suggests the importance of investigating a set of environments that adequately represent the potential range of ratings along the specified scales. Given the unlikelihood of finding the appropriate range of contextual design examples within a given locale, it would thus seem that some sort of simulation strategy would be a necessity for this research.

On the other hand, the very nature of contextual compatibility in architecture suggests that the complex three-dimensional quality of the design relationships among buildings can only be adequately appreciated in situ. This view is keenly expressed by Brolin (1980) who, by virtue of his book on the subject, is a recognized authority on contextualism in architecture. In the preface to his book, Brolin states that he has not included any buildings that he
has not seen in situ. This is because "...the only proper test of how well a building relates to its context is to see it in place" (Brolin, 1980, p.4). In light of these comments, it would seem that the qualitative and intensive format typical of the case study approach would best suit the requirements of this topic area.

To summarize the problem succinctly, then: the implicit requirements of the research objectives demand a research strategy which accommodates a breadth of focus, whereas the nature of the phenomenon itself suggests the need for qualitative depth.

In order to achieve some resolution of this apparent methodological dilemma, this research study cross-references simulation procedures with the case study approach. Thus the intention is to build on the special strengths of each of these research strategies, while at the same time offsetting their weaknesses by using them in tandem. This, in turn, implies that the strengths and weaknesses of both strategies must be explicitly understood and taken into account in the development of specific research procedures.

Strengths and Weaknesses of Environmental Simulation

As the previous chapter segment has indicated, the obvious advantage of the simulation strategy is that it allows the investigator to study environments that would be logistically difficult, if not impossible, to present in situ to the respondents.

A related and equally important advantage is that simulation also allows the investigator to exercise a much more refined control over the manipulation of pertinent physical variables. This can be achieved either through
careful selection of real environments or through manipulation of models, sketches, or photographs (Wohlwill, 1982).

On the other hand, the most obvious limitation to simulation is its potential lack of validity in actually representing the environments under investigation. Over the last 15 years, a number of studies have investigated the validity of such simulation procedures; and the general consensus among them is that there is relatively little distortion of "reality" in the use of certain media.

Although many of the validity studies have been based on non-architectural environments, three studies in particular have considered building simulations (Howard et al, 1972; Seaton and Collins, 1972; Hershberger and Cass, 1974). The range of simulation media investigated by these studies includes: color slides, black and white slides, color photographs, black and white photographs, multiple color slides, color film, black and white film, and black and white video.

Several general conclusions can be drawn from these three studies:

1) All three studies suggest that simulation has a dampening effect on responses to the buildings, such that judgments of simulated environments are usually less extreme than judgments of reality.

2) All three studies indicate that some mode of color representation—either color slides, photographs, or film—tends to yield results most similar to reality.

3) One study (Seaton and Collins, 1972) suggests that responses to single vs. multiple photographs are not significantly different. In other words, multiple views
of the same building may not significantly affect the validity of the responses.

The validity of simulation procedures has also generally been supported by other more recent studies. Among these, Feimer's investigation (Feimer, 1984) of a variety of urban and landscape scenes in Marin County, California is of interest for two reasons: 1) the study does include views of built environments, and 2) the scope of the study is unusually broad, with a respondent sample of over 1000 people. Feimer investigated the effects of several different simulation media and concludes that the magnitude of these media effects "is sufficiently small to be inconsequential for many practical and empirical applications" (Feimer, 1984, p. 77).

The only substantial challenge to the validity of simulation procedures has been presented by Danford and his colleagues (Danford and Willems, 1975; Starr and Danford, 1978; Danford et al, 1979). Their argument is that the verbal rating scales which are typically used to measure observer responses to simulated environments are too insensitive and therefore inappropriate for discriminating effectively between diverse environments. This problem is serious, but not inevitable. Other studies have successfully demonstrated that such scales do have the potential for demonstrating psychologically meaningful differences between responses to different environmental displays (e.g. Young, 1979; Espe, 1981). Recent research has also suggested that response formats that enable the observers to evaluate buildings using their own verbal criteria (e.g. the repertory grid) may be even more effective than rating scales for discriminating between environments (e.g. Leff and Deutsch, 1974).
While the relative validity of various simulation measures is clearly an important methodological issue, it is in one sense beside the point. In studies such as this, where a major goal is to inform architects about the public's conceptualizations of various design exemplars, there is reason to think of the photographic simulations as the "original" artifact. This is because architectural values are transmitted among the profession primarily through photographic representations. Frequently, certain design qualities are intentionally emphasized and others deemphasized for the purposes of critical analysis (Bonta, 1979). And since most architects are likely only to see the particular building in books and magazines, the photograph in a sense becomes the building, the primary artifact. As Bonta (1979) has pointed out, Mies van der Rohe's Barcelona Pavilion existed for only a short time, yet it remains one of the most influential buildings of the 20th century.

Thus, if the results of a study using simulated materials are published in the architectural literature, the major concern must be that the accompanying photographs are precisely those used in the study. It is the design values represented in those photographs that will convey the essence of the research results; the actual validity of those simulations is thus rendered phenomenologically irrelevant.

In this light, then, it is not the issue of validity which is the major weakness of the simulation procedure for this research. Rather, the most crucial weakness is simply that simulated environments can rarely, if ever, be experienced to the full measure of their significance for people in their daily lives. While it is possible to simulate
the three-dimensional experience of a building through multiple photographs or film/video, it is still not possible to replicate people’s "purposive" experience of that place. More specifically, this means that the very substantial effect that environmental role might play in people’s evaluations of contextual compatibility could not adequately be investigated through simulation procedures.

Strengths and Weaknesses of the Case Study

As the previous discussions have suggested, the relative strengths and weaknesses of the case study format reflect in mirror image the strengths and weaknesses of the simulation strategy.

Thus, the greatest strength of the case study is that it enables the investigator to explore the dynamic qualities of environmental interaction in great depth. In other words, responses to a given environment may be explored in relation to the purposes and values inherent in the naturally-occurring experience of that environment.

It is for this reason, of course, that the case study format is typically used in applied research studies such as post-occupancy evaluations. Unfortunately, as Donald (1985) has pointed out, these case studies are often so directed towards the investigation of the particularities of the given environment, that the findings are ungeneralizable to other circumstances and settings. Cumulatively-based research studies (e.g. Canter and Rees, 1982; Donald, 1985) are relatively rare. It would seem, then, that the tendency for case studies to be non-cumulative and ungeneralizable is an important, but not inevitable, shortcoming of the format.
A second, more practical problem with the case study format is a function of inevitably limited resources. The rather intensive focus of the case study format usually means that only a single or relatively small number of environments can be reasonably investigated within the scope of a research project. In the case of this research, exclusive reliance on the case study format would preclude an adequate investigation of the basic research questions.

Applying the Case Study/Simulation Strategy to This Research

The intention in devising the research strategy for this study is to combine the case study and simulation procedures in such a way that their potential weaknesses are minimized. Simply combining two separate sub-studies under the umbrella of a single research project does not achieve this goal. What is necessary is actually to mesh or interlink the two strategies in a more fundamental way.

One way that such an interlocking strategy can be achieved is as follows. First, a sufficiently broad range of contextual design exemplars is selected for simulation. Within this specified set of environments, a small number of these are selected as case study sites. Respondents at each of these sites are then asked to evaluate the full set of simulated examples, one of which is their own site. Additionally, the respondents at each site are asked a detailed and focused set of open-ended questions concerning that particular site.

Among the several advantages of this strategy are the following:

1) Responses to a wide range of sites can be investigated, while at the same time a more intensive analysis of several of these sites is achieved.
2) Responses to the several case study sites can be compared, while at the same time, patterns of responses to the simulated environments can be compared from case study site to case study site.

Finally, the specification of this research strategy represents a necessary prerequisite to the specification of the definitional framework of this research study. In other words, the distinction between simulated and case study sites must be reflected in the facet structure of the mapping sentence format. How these research strategy elements are integrated into the overall definitional framework is elaborated in the following chapter section.
5.3 The Specification of Three Mapping Sentences

Within the framework of the case study/simulation strategy outlined in the previous chapter section, it is now possible to generate the mapping sentences that define the scope of the specific research procedures for this study.

As many facet researchers have pointed out (Donald, 1985; Hans et al, 1985), the specification of the facets in a mapping sentence is a challenging and iterative process. Although a number of potential facets and facet elements have already been identified in the preceding literature review chapters, the actual specification of facets for this study is further complicated by the need to generate three separate mapping sentences. The reason for this unusual requirement is that each of the three research objectives identified in Chapter 1 defines a subtly different domain of concern.

Precisely how these several research objectives are reflected in the definitional framework of the three mapping sentences is best explained by reviewing each mapping sentence separately.

Mapping Sentence #1: The Meaning of Contextual Compatibility

The first of the three research objectives, as identified in Chapter 1, is stated as follows: to elucidate the meaning of contextual compatibility.

As described in Chapter 1, the domain of concern defined by this objective encompasses two levels of analysis: 1) the relative significance of contextual compatibility as compared to other aspects of environmental meaning, and 2) the content and structure of contextual compatibility as a construct in and of itself.
Table 5-2: Mapping Sentence #1, The Meaning of Contextual Compatibility

<table>
<thead>
<tr>
<th>Degree of Expertise</th>
<th>Construct Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. member of the public</td>
<td>1. contextual fit</td>
</tr>
<tr>
<td>2. review comm'r</td>
<td>2. non-contextual fit</td>
</tr>
<tr>
<td>1. w/design</td>
<td>[each of x number of other constructs]</td>
</tr>
<tr>
<td>2. w/o design</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Construes a set of infill scenes in terms of</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-x. case study sites</td>
<td></td>
</tr>
<tr>
<td>1-x. commission locations</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conceptual Structure</th>
<th>Range</th>
<th>Construe a set of infill scenes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. dichotomous</td>
<td>does</td>
<td></td>
</tr>
<tr>
<td>2. ordered</td>
<td>does not</td>
<td></td>
</tr>
<tr>
<td>3. qualitative</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The initial specification of facets for this domain of concern is presented in Table 5-2. Each of the constituent facets is described below.

1) Common Range. The common range facet is a necessary component for any mapping sentence; it "indicates the range of possible answers which may be given to questions asked of respondents" (Canter, 1985, p. 266). According to Canter, the common range frequently constitutes the essential starting point for defining the scope of the research project. (Though custom dictates that it is written at the end of the sentence.) This is because "similar questions may have quite different meanings and facet structures if they have different common ranges" (Canter, 1985, p. 266-7).

In the case of this mapping sentence, the common range is simply whether the respondent does or does not construe a set of infill scenes in terms of the construct "contextual fit."

2) Degree of Expertise. Most mapping sentences include at least one facet which defines variations within the population; these facets are commonly referred to as background facets (Canter, 1985). In the case of this research, degree of expertise represents such a background facet.

This facet is derived from a consideration of both the psychological and the design literature. First, much of the research from the cognitive psychology perspective (discussed in chapter section 2.6) has suggested that expert and non-expert conceptualizations of any given phenomenon are likely to vary significantly. Moreover, evidence of this facet is also found in Canter's discussion of environmental role (Canter, 1977) and in the findings of specific research in environmental psychology (e.g. Kaplan, 1979; Groat, 1982).
Secondly, the specific elements of this facet are suggested by the design literature. As the discussions in Chapter 4 indicate, an important group of "experts" in the public debate on contextual compatibility is represented by members of design review commissions. Furthermore, in many instances, these commissions include architects and other individuals with design training. Thus the non-designer and designer groups within the commissions are likely to represent a further two levels of expertise.

3) Location. Location represents a second background facet.

This facet is derived in part from the consideration of Wohlwill's study of contextualism in coastal settings (Wohlwill, 1978b; 1982) which was reviewed in Chapter 3. His findings suggest that people from different geographic locations may evaluate contextual compatibility in different ways.

Secondly, this facet reflects the case study/simulation research strategy described in the previous chapter section. Thus, the specific elements of this facet are the several case study sites that are selected for investigation. In addition, the locations of the review commissions also constitute elements of this facet.

4) Population. In any mapping sentence, it is necessary to define the population from which each respondent (identified as person x in the mapping sentence) is drawn. In the case of this research, the population is defined as individuals who are: 1) local residents who are directly familiar with one of the case study sites, or 2) members of design review commissions. (The specification of the
particular case study sites and review commissions is presented in Chapter 6.

5) Construct Type. This facet specifies the set of constructs used by the respondents in evaluating the infill scenes used in the study.

The facet is actually a hierarchical nesting of facets and sub-facets. The superordinate facet consists of two elements: the construct of contextual compatibility, and all other possible constructs used by the respondents in interpreting the meaning of the infill scenes. Within the second category are the sub-facets that specify all the other construct types. These are to be identified through content analysis of the data elicited from the interview procedure.

This facet encompasses an essential aspect of the stated research objective. As the discussions in Chapters 1 and 4 have already indicated, anecdotal evidence strongly suggests that contextual compatibility is a very important aspect of environmental meaning. Moreover, at least two empirical research studies have also suggested the relative importance of contextual compatibility as compared to other environmental meanings (Bishop, 1982; Tuttle, 1983).

6) Conceptual Structure. This facet specifies the manner in which the constituent meanings of each construct are organized.

More specifically, with reference to the construct of contextual compatibility, the three facet elements are defined as follows: 1) a dichotomous structure indicates that buildings are simply interpreted as being compatible or incompatible; 2) an ordered structure indicates that there are several gradations of compatibility from highly compatible to incompatible; and 3) a qualitative structure suggests that
there are several different types of compatibility, none of which is necessarily more compatible than the other.

These facet elements are loosely derived from a combination of the design literature and some of the empirical studies on contextualism. First, the dichotomous structure is suggested by the categorical nature of policy decisions that must be made by review commissioners; design proposals must either be approved or vetoed, judged compatible or not. Second, the idea of an ordered structure is one which is assumed by the use of rating scales typical in much empirical research; it also is the basis for the rating scales used by Wohlwill in his research on contextualism (Wohlwill, 1978b, 1982; Wohlwill and Harris, 1980).

Both types of conceptual structure are consistent with Kelly's formulation of the construct system. Although Kelly (1955) defined the personal construct system as being composed of a set of dichotomous constructs, he also acknowledged that they could be used in a scalar mode.

Finally, the qualitative argument is implicit in much of the design criticism literature. For example, the several typologies of contextual design strategies suggest that the authors imagine that contextual compatibility can be achieved in several characteristically different ways (e.g. Smith, 1977; Blake, 1980).

Mapping Sentence #2: Preference Judgments of Contextualism

The second of the three research objectives is as follows: to identify the patterns of preference which are associated with judgments of contextual compatibility.

As described in Chapter 1, this domain of concern encompasses an investigation of several different sorts of
Table 5-3: Mapping Sentence #2: Compatibility and Environmental Preferences

<table>
<thead>
<tr>
<th>Respondent (x) who is</th>
<th>Degree of Expertise</th>
<th>and who is</th>
<th>Degree of Familiarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. member of the public</td>
<td>1. w/design</td>
<td>1. user/resident</td>
<td></td>
</tr>
<tr>
<td>2. review comm'r</td>
<td>2. w/o design</td>
<td>2. nearby neighbor</td>
<td></td>
</tr>
<tr>
<td>3. distant neighbor</td>
<td>4. observer</td>
<td>4. observer</td>
<td></td>
</tr>
</tbody>
</table>

Location in 1-x. case study sites 2-x. commission locations evaluates an urban infill scene which is characterized by a design strategy of

Strategy Profile

<table>
<thead>
<tr>
<th>Site organization</th>
<th>Massing</th>
<th>Facade Design with respect to</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. contrast</td>
<td>1. contrast</td>
<td>1. contrast</td>
</tr>
<tr>
<td>↓ 7. replication</td>
<td>↓ 7. replication</td>
<td>↓ 7. replication</td>
</tr>
</tbody>
</table>

Building aspect

| 1. building itself | by stating the extent to which s/he likes very much the urban infill scene. |
| 2. surroundings | dislikes very much |
| 3. contextual relationship | |

Range
preference judgments associated with contextual compatibility. Most important of these is the identification of the most consistently preferred contextual design strategies.

In addition, this domain of concern also encompasses preference judgments of the infill buildings themselves and of the surrounding settings. In other words, an essential aspect of this research objective is to determine the extent to which preference judgments of contextual relationships correspond to preferences for the infill buildings and for the surroundings.

The initial specification of the facets for this domain of concern is presented in Table 5-3. Each of the constituent facets is described below.

1) Common Range. The common range specified in this mapping sentence indicates the degree of preference, from like very much to dislike very much. In other words, the respondents are being asked to evaluate their degree of preference for certain aspects of the set of infill scenes.

2) Degree of Expertise. This facet is also the same as the degree of expertise facet in mapping sentence #1.

3) Location. This facet is precisely the same as the location facet described in mapping sentence #1.

4) Population. The population is the same as that described in mapping sentence #1.

5) Degree of Familiarity. This is the second facet which is derived from a consideration of the concept of environmental role (Canter, 1977, 1983; Donald, 1985) which was described in chapter section 2.7. To reiterate, the notion of environmental role suggests that a person’s role in
an environment will influence their evaluations of that
environment.

In reference to this study, the elements of this role
facet are defined in terms of the frequency and extent of
direct experience with the case study site. Thus, each of
the four role categories are defined in the following way:
1) users are defined as someone who lives or works in the
building on a daily basis; 2) near neighbors are defined as
people living or working in close proximity, who would
therefore encounter the building on a daily basis; 3) distant
neighbors, defined as people who would encounter the building
on a less regular basis; and 4) observers, defined as people
who view the building only in simulation.

6) Strategy Profile. The strategy profile facet is
derived from the conceptual framework presented in earlier in
this chapter. This facet serves to incorporate the analysis of
physical features into the mapping sentence.

The constituent elements of this facet are actually three
separate sub-facets, each representing one of the exterior
design aspects (items # 6, 8, and 10) of the conceptual
framework. Since the vast majority of the contextual design
exemplars are represented only in simulation, the interior
design components were not included in this facet.

7) Building Aspect. The building aspect facet takes into
account the set of preference judgments being investigated in
this study.

The three constituent facet elements specify that
preference judgments are being made about: the infill
building itself, the setting itself, and the relationship
between the two.
The last of these is obviously central to the purpose of this research. The additional two facet elements are derived primarily from the empirical research on contextualism reviewed in Chapter 3. First, Wohlwill's study of contextualism in coastal zones (Wohlwill, 1978b; 1982) suggests that the degree of preference for the infill buildings themselves may influence people's judgments of their contextual compatibility. And second, the findings of studies by Wohlwill (1978b; 1982) and Gobster (1983) have suggested that judgments of contextual compatibility may also be influenced by preferences for the setting in which the buildings have been inserted.

Mapping Sentence #3: Design Features and Contextual Fit

The third of the research objectives is stated as follows: to identify the specific design features which contribute to or detract from contextual compatibility.

Thus, the domain of concern defined by this objective encompasses a relatively specific aspect of cognitive response to the urban infill scenes.

The initial specification of facets for this domain of concern is presented in Table 5-4.

1) Common Range. The common range in this mapping sentence indicates whether the respondent does or does not use each of the several design feature categories specified in the design features facet.

2) Degree of Expertise. This facet is the same of the expertise facet described in mapping sentence #1.

3) Location. This facet is the same as the location facet described in mapping sentence #1.
Table 5-4: Mapping Sentence #3: Noticed Design Features

<table>
<thead>
<tr>
<th>Degree of Expertise</th>
<th>Location</th>
<th>Design Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. member of the public</td>
<td>1-x. case study sites</td>
<td>Site organization [1-x. feature categories]</td>
</tr>
<tr>
<td>2. review comm'r</td>
<td>1-x. commission</td>
<td>Massing [1-x. feature categories]</td>
</tr>
<tr>
<td>2. w/o design</td>
<td>locations</td>
<td>Facade Design [1-x. feature categories]</td>
</tr>
</tbody>
</table>

4) Population. This is the same population as described in mapping sentence #1.

4) Design Features. The design features facet actually represents a set of many separate facets, the number of which is determined by content analysis of the data elicited from the interview procedures. This set of facets is organized in a nested hierarchy which corresponds to the three exterior design (items #6, 8, and 10) components of the conceptual framework.

5) Designation of Preference. This facet identifies whether the specified design features are ones that are associated with either the preferred or the disliked contextual relationships.

This facet is loosely derived from a number of studies in the area of environmental aesthetics. In many of these studies, the authors have sought to identify the specific physical features most commonly associated with either positive and or negative judgments (e.g. Oostendorf and Berlyne, 1978b; Nasar, 1983).

Common Themes Among the Three Mapping Sentences

Although the three mapping sentences have been described separately in the preceding chapter segments, they are nevertheless interrelated in several important respects.

1) Background Facets. Two background facets--location and the degree of expertise facet--are repeated in each of the three mapping sentences. The implication of this repetition is that the same background characteristics of the respondents are considered in each segment of the study.

2) Specification of Physical Attributes. Two of the mapping sentences (#2 & #3) make use of the conceptual
framework developed for the analysis of design strategies (described in chapter section 5.1). In operational terms, this means that the physical attributes of the various contextual relationships are being analyzed within a consistent analytical format, but at two different levels of architectural discourse. In mapping sentence #2, the analysis is concerned with the broader issues of design strategy; whereas in mapping sentence #3, the analysis is concerned with the level of tactics—i.e. the specific design features.

3) Specification of Preference Judgments. Preference judgments of contextual compatibility are used in two distinct, but related ways in mapping sentences #2 and #3. In mapping sentence #2, the preference judgments are specified in the common range facet. These judgments are then used as a basis for the preference designation facet in mapping sentence #3. Thus the preference judgments are used to distinguish between the physical features that are noticed in liked relationships and those that are noticed in disliked relationships.

Taken together, then, the three mapping sentences constitute three interrelated aspects of the overall investigation of how people interpret contextual compatibility in architecture.
6 METHODOLOGY

6.1 Interview Procedures: Sources, Sequence, and Rationale

Relevance of the Sorting Task to This Research

The Interview Sequence

Rationale for the Interview Sequence

6.2 The Selection of Simulation and Case Study Sites

Selecting a Preliminary Sample of the Urban Infill Scenes

Final Selection of Infill Scenes for Simulation

Selection of the Case Study Sites

A Partial Order Scalogram Analysis (POSA) of the Infill Scenes

6.3 The Respondents: Selection Procedures and Criteria

The Design Review Commissioners

Sample to Population Relationships
6.1 Interview Procedures: Sources, Sequence, and Rationale

According to the general principles of facet theory, the specification of a mapping sentence is absolutely central to the process of research design. Or to put another way, a mapping sentence "does not merely guide the research, it is the research" (Donald, 1985, p.181).

In this sense, then, the three mapping sentences described in the previous chapter section have already implicitly defined the interview procedures used in this study. This essential correspondence between the mapping sentences and the several segments of the interview sequence is illustrated schematically in Table 6-1. As this table indicates, the first two segments of the interview correspond to mapping sentence #1; the next five segments to mapping sentence #2; and the eighth segment to mapping sentence #3.

Table 6-1. Interview Sequence as a Function of the Three Mapping Sentences

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Buildings Assessed</th>
<th>Mapping Sentence #1</th>
<th>Mapping Sentence #2</th>
<th>Mapping Sentence #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Free sorting</td>
<td>25</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Alternative sorting criteria</td>
<td>25</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Building preference sort</td>
<td>25</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Building preference ranking</td>
<td>25</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Surroundings preference sort</td>
<td>25</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Contextual relationship sort</td>
<td>25</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Contextual relationship ranking</td>
<td>25</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Significant &amp; noticed features</td>
<td>6</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>9. Open-ended questions (case studies)</td>
<td>1</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Finally, the open-ended questions to the case study respondents were intended to elicit background information pertinent to the research study as a whole.

The full details of this interview procedure are described in a later segment of this chapter.

First, however, it is necessary to review some of the considerations which led to the use of the sorting task as the primary response format for the interview procedures.

Relevance of the Sorting Task to This Research

Variations on the sorting task model have maintained a long and credible history in psychological research. Although the specific task requirements may vary considerably from application to application, the general principle is essentially the same. Respondents are asked to make discrete categorizations of a set of elements based on judgments of relative similarities among those elements.

Some of the first uses of the sorting procedure in research on cognitive processes and concept formation can be traced through the early work of Vigotsky (1934) and later in the work of Bruner et al (1956) and Sherif and Sherif (1967). And as Canter et al (1985) have pointed out, even Kelly's repertory grid technique owes much to Kelly's reinterpretation (1955) of Vigotsky's sorting procedures. In this sense, then, the sorting procedure is firmly linked to much of the work in cognitive psychology that was reviewed in chapter section 2.6. More specifically, this means that the use of the sorting task is theoretically consistent with the notion that each individual relies on a UNIQUE system of concepts and categories.
One of the most significant advantages of the sorting procedure is its versatility; its format can be easily modified to suit the particular goals of a given study. Some of the most important of these modifications are: 1) whether the sorting categories are given labels or left unlabelled and treated as non-verbal data; 2) whether the respondent selects his/her own sorting categories or is required to use ones predetermined by the researcher, and 3) whether the items are sorted only once or several times.

Many of those who have employed the sorting task as an essentially non-verbal instrument have tended to use it as an alternative to pair-wise similarity judgments (Ward, 1977; Ward and Russell, 1981b). For example, although Ward (1977) argues that the process of sorting is probably more "natural" for the interviewee than similarity judgments, the key argument for its use seems to be that it is less time consuming than paired-comparisons, while at the same time it provides equivalent similarity data that is suitable for multidimensional scaling procedures. In addition, other researchers (Horayangkura, 1978; Ward and Russell, 1981a) have attempted to elucidate the nature of environmental meaning by comparing and combining the MDS analysis of non-verbal sorting data with the more common device of semantic differential/factor analytic techniques.

Another set of researchers have chosen to use pre-selected categories as a basis for the sorting task. For example, the Q-sort procedure generally requires that the respondents assign elements to pre-specified categories in a specified (usually normal) distribution (Pitt and Zube, 1979). On the other hand, other researchers have used prespecified categories without the distribution requirements typical of
the Q-sort. Both Krampen (1979) and Young (1979), for instance, required respondents to sort building sketches into a set of six pre-selected categories according to building type.

Yet another variation of the sorting task is to use it as a verbal response technique. Thus, in this case, respondents are asked to label the criteria (or constructs) by which they have sorted the elements and/or the categories into which they have grouped the elements. For example, Canter et al (1976) used the respondents' verbal labels as a basis for interpreting home buyers' sorts of real estate circulars. Similarly, Palmer (1978) and Garling (1976) also have elicited verbal criteria as means of interpreting respondents' sortings of landscapes and of suburban/urban scenes, respectively.

In addition, the potential value of using the sorting task as a verbal measure has even been suggested by researchers who have used it primarily as a non-verbal measure (Nasar, 1980; Ward and Russell, 1981b).

Finally, the sorting task can also be usefully employed as a repeated—as opposed to a one-time—measure. In fact Rosenberg and Kim (1975) specifically compared the results of the single-sort and multiple-sort procedures and concluded that the MDS structure which resulted from the multiple sorting task more adequately represented "the psychological categories and dimensions of a stimulus domain" (Rosenberg and Kim, 1975, p. 497). More recently, Groat (1982) has used the multiple sorting task to explore architects' and non-architects' conceptualizations of contemporary architecture. More specifically, this variation of the sorting procedure enabled Groat to investigate in depth the construct system of each of the individual respondents. As a result, she was able to
conclude that the non-architects' conceptualizations of contemporary architecture bore little relation to the conceptualizations hypothesized by several architectural critics.

In summary, then, the sorting task can be seen to offer important advantages as a procedure for investigating environmental meaning. It is a procedure which: 1) offers great versatility in format; 2) is relatively less time-consuming than other similar techniques; and 3) generally imposes fewer preconceptions on respondents' judgments than the more common rating scale procedures; and 4) enables the researcher to elicit aspects of each respondent's unique construct system.

The Interview Sequence

The standard nine segments of the interview sequence are described in outline form below. (The complete version of the interview instructions are reproduced in Appendix 1.)

1) Single Free Sort. The respondent sorts the building photographs, using the construct and categories of his/her own choice.

2) Alternative Sorting Criteria. The respondent is asked to suggest other possible sorting criteria (constructs), but is not actually asked to do the suggested sorts.

(Originally, alternative sorting criteria were to be elicited as part of a multiple sorting format. However, when the interview sequence was used in a pilot study, the full interview was found to take approximately 1 1/2 hours. This interview length was deemed impractical, particularly for any interviews that might be scheduled during normal working...
hours. In order to shorten the interview by half an hour, it was necessary to shorten the free sort format.)

3) Building Preference Sort. This represents the second complete sort; the respondent is asked to sort the photographs according to his/her degree of preference for the infill building itself. (For the sake of clarity, each infill building is indicated by a faint underline below the photograph.) The respondent is restricted to using the following five preference categories: like very much, like somewhat, neutral/mixed, dislike somewhat, and dislike very much.

4) Building Preference Ranking. As an elaboration of the preference sort, the respondent is then asked to use the previous sort as a foundation for rank ordering the entire set of buildings according to his/her preference for the building itself.

5) Surroundings Preference Sort. This represents the third complete sort, this time based on the respondent’s degree of preference for the surroundings (i.e. the visible neighboring buildings) to the infill project. Again the respondent is restricted to using the five categories.

6) Contextual Relationship Sort. This represents the fourth and final sort, based this time on the respondent’s degree of preference for the relationship between the infill project and the surrounding building(s). Again, the five prespecified categories must be used.

7) Contextual Relationship Ranking. The respondent is then asked to use the previous sort as a foundation for rank ordering the entire set of photographs according to his/her preference for the contextual relationship.
8) Identification of Significant Features. The three most liked and the three most disliked relationships are identified and confirmed with the respondent, based on the previous ranking exercise. For each of the six cases, the respondent is asked to identify the major features which contributed most significantly to the quality of the contextual relationship.

9) Open-ended Questions. Finally, the respondent is asked about his/her reactions to the case study site over time. These questions elicit comment about both interior and exterior features, as well as about the building’s relationship to its context beyond the immediately adjacent buildings. With respect to the questions about the interior, the users are encouraged to comment on their own personal work or living area; whereas the specificity of the neighbors’ comments vary somewhat depending on their level of familiarity with the building.

This particular segment of the interview sequence applies only to the case study respondents, and not to the design review commission members.

Rationale for the Interview Sequence

As mentioned earlier in this chapter, Table 6-1 illustrates how the various segments of the interview sequence reflect the three mapping sentences presented in Chapter 5. In addition, several related theoretical and methodological issues were considered in determining the specific order of the interview segments. These issues are described in detail below.

1) The various segments of the interview are structured so as to take full advantage of the sorting task’s versatility as both an open-ended response format and a prestructured one.
More specifically, the first two segments of the interview are open-ended in that they allow the respondent to select and label both the construct (sorting criterion) and the categories. In contrast, the later segments of the interview rely on the pre-structured format of the sorting task. In other words, the respondent is required to sort the photographs according to the constructs and categories supplied by the investigator.

For purposes of this research study, it was important that the free sort segments occurred at the beginning of the interview. Since the respondents were unaware of the study's focus on contextualism, the free sort format was used to investigate the extent to which the respondents naturally incorporated the concept of contextual fit in their own construct systems.

2) The specified interview sequence is intended to follow the "natural" pattern of human response to the environment, i.e. from the global and general to the more specific and analytical. Although the supposed naturalness of this sequence might well be disputed, several environmental researchers have presented the case for this viewpoint.

Rapoport, for example, has suggested that people "react to environments globally and affectively before they analyze and evaluate them on more specific terms (Rapoport, 1982, p. 14). In a similar vein, Kaplan argues that "...preference judgments are often made so rapidly that they precede rather than follow conscious thought" (Kaplan, 1982, p. 184). By contrast, Kaplan suggests, judgments about the presence or absence of certain features may seem unnatural to many people; "it is not a judgment they make frequently and intuitively" (Kaplan, 1979, p. 246).
In terms of this research study, then, the interview sequence can be understood as representing the following response sequence: 1) global responses are elicited in the free sort procedure, whereby the respondents can express their "gut" reactions by using any sorting criterion of their choice; 2) preference judgments are then elicited in the specified sort and ranking procedures; and finally 3) analytical descriptions of design features are elicited in the open-ended questions of segment #8.
6.2 The Selection of Simulation and Case Study Sites

Selecting a Preliminary Sample of the Urban Infill Scenes

Overall, the selection of urban scenes for user/observer assessments was a multi-stage process, involving the consideration of a number of diverse criteria and analyses. The most significant of these several considerations was the use of the conceptual framework (presented in Chapter 5) as a means of deriving an appropriately representative sample of buildings.

The multi-stepped selection procedure consisted of the following steps:

1) Preliminary Search. The intent of the preliminary search was simply to identify a wide range of infill buildings and additions in contextually sensitive locations.

The four major sources for this material were: 1) the several U. S. professional journals; 2) local AIA (American Institute of Architects) chapter magazines (from Wisconsin and two adjacent states); 3) the several major books on contextual architecture; and 4) suggestions from colleagues.

The single criterion for screening these sources was simply that the project constituted a new building within a clearly visible older setting. No selections were made on the basis of whether the project was considered a good or bad contextual fit. Similarly, there was no requirement that contextual compatibility was a central concern of the architect’s design intentions.

2) Preliminary Selection. Several related criteria, derived from the conceptual framework, were used as a basis
for the preliminary selection of a sample of infill buildings.

First, all the buildings identified through step #1 were classified by building type. Within each building type, the projects were sorted into sets, each consisting of buildings representing a similar range of building size and location. In other words, the intention was to find sets of buildings in which some comparability of the GIVENS (Segment #1 of the conceptual framework) could be achieved.

The development of building sets was intended to overcome the problem of confounding variables, whereby several factors typically beyond the architect's control (building type, site location, and size) might obscure the effect of differences in design strategies. For example, previous research (Young and McIntosh, 1978; Kramen, 1979; Groat, 1982) has suggested the importance that the perception of building function may have on the evaluation of buildings. Thus, the intention was to establish a structure which allowed for a fair comparison of buildings representing a range of design strategies.

Second, within each building type set, the projects were evaluated in terms of their design strategies. In this case, the design strategy of a given building was defined in terms of the three exterior elements of the conceptual framework (items #6, 8, and 10). The intention, at this point, was simply to make sure that each building-type set included buildings which embodied the broadest possible range of design strategies.

3) Procurement. As a result of the selection procedure described above, approximately 50 projects remained in the pool for further consideration. For each of these, an attempt was made to obtain some form of good quality, color
photograph. In most cases, a letter of request was sent directly to the architect or firm responsible for the project.

The criteria for selection of the photographic materials included the following: 1) clear representation of the surrounding context (at the least, the original building in the case of an addition, and the immediately adjacent buildings in the case of a new building); 2) a view taken from the eye-level vantage point of a pedestrian; and 3) good color reproduction.

Procurement of the photographic materials proved to be more difficult than anticipated. Suitable photographs of some of the projects could not be obtained, thereby eliminating those projects from consideration. Moreover, in some cases the lack of a suitable photograph for one project also meant that several other projects of that building type were automatically eliminated. this, then, brought the sample of projects down to approximately 35.

4) Pre-final Selection. At this stage, it was decided that a total of 6 building-type sets would be used, ideally with each set consisting of 4 projects. previous research has indicated that a range of 20-25 items is a reasonable number of items to be manipulated in a sorting task procedure (Canter et al, 1985).

The following building types were selected: 1) single family house, 2) multi-unit townhouse, 3) museum, 4) university campus building, 5) office building, and 6) bank.

Selection of these six building types thereby limited the sample of projects to just under 30. To assure a reasonably representative range of design strategies, a full analysis of the remaining projects was required.
Final Selection of Infill Site for Simulation

The final selection of buildings for this research was made largely as a result of a detailed analysis of design strategies, using the conceptual framework presented in Fig. 5-1. More specifically, the design strategy of each of approximately 30 buildings was analyzed in terms of the three exterior elements of the conceptual framework (segments #6—site organization, #8—massing, and #10—facade design), using a 7-point rating scale.

As a result of this analysis, it was then possible to assign a PROFILE SCORE to each of the approximately 30 buildings being analyzed. A profile score is defined here as the set of three ratings (e.g. 6-6-3 or 5-4-6) derived from the analysis of items #6, #8, and #10 of the conceptual framework.

This analysis of design strategies was conducted by two pairs of expert judges, all of whom had some familiarity with architectural research.

The exact procedure by which the pairs of judges established profile scores for each building was as follows:

1) Pair #1 viewed the slides of the infill projects and established a profile score for each project, based on the three 7-point scales (of contrast to replication) for site organization, massing, and facade design.

2) Next, pair #2 conducted their own analysis of the infill projects, according to the same consensual procedure used by pair #1.

3) All four judges reviewed the two sets of profile scores established by the two pairs of judges. Following extensive discussion and analysis, a consensual profile score was negotiated for each of the 30 buildings.
In nearly all instances, the consensual profile score was smoothly negotiated. This is because the original two sets of scores were so very similar. For example, for over half the buildings, the two scores were within 1 point of each other on all three scales. Similarly, on an additional third of the buildings, the two scores were within 1 point of each other on two of the scales. (See Appendix 2 for details of the expert judges ratings.)

This consensual model for establishing the design strategy profile scores was adopted for two reasons. First, since each rating scale simultaneously embodied a number of design features, it seemed likely that more accurate judgments could be made as a result of informed discussion. And second, subsequent analyses required that the profile scores be maintained in whole numbers, a requirement which could easily be achieved if the profile scores of the several judges had been averaged.

4) The final selection of the buildings to be used in the research interviews was made after the analysis of design strategies. There were three major criteria for the final selection: a) representation of the broadest possible range of design strategies within each building type; b) consistency of size and site location within each building type, although this was not always possible; c) clarity and lack of ambiguity in the photographic materials.

The final set of infill sites consists of 25 buildings—4 of each of five different building types, and 5 of the building type, single family residence. The fifth single family house was retained simply due to a reluctance to eliminate one of two comparably suitable houses, each having unique strengths and weaknesses for the research format.
The final set of 25 buildings—and their associated profile scores—are presented at the end of this chapter.

Selection of the Case Study Sites

The first decision regarding the selection of an appropriate set of case study sites was simply to determine how many case studies should be included. The decision to select three sites represents a compromise between budgetary and logistical limitations on the one hand and the need for representativeness on the other.

The three selected case study sites are: the addition to the Farmers' and Merchants' Bank, Columbus, Wisconsin, designed by Gornet and Shearman (the original bank having been designed by the renowned Chicago architect, Louis Sullivan); the Alumni Center at the University of Michigan, Ann Arbor, designed by Hugh Newell Jacobsen; and the Summit Place townhouses, St. Paul, Minnesota, designed by Robert Engstrom Associates.

These particular projects were selected for a combination of several reasons. First, on a theoretical level, these projects represent a variety of contextual design strategies, as defined by the profile scores assigned to them by the expert judges.

Second, the three sites represent a range of project types, particularly in the following respects: 1) functional building type, 2) size of town where the project is located, 3) site location (town center, campus, residential zone), 4) type of contextual dependency (addition vs. free-standing), and 5) geographic distribution, all three sites being at least 350 miles apart.
A Partial Order Scalogram Analysis (POSA) of the Infill Sites

One important way of evaluating the extent to which the selected set of 25 buildings actually represents the full range of design strategies is through the statistical device of partial order scalogram analysis (POSA) (Lingoes, 1973).

The POSA of the set of 25 selected buildings is presented in Fig. 6-1. Each of the 25 buildings is represented by a point on the roughly diamond-shaped plot and is identified by its building number. (See the photographic section at the end of this chapter for identification of the buildings.) Next to each building number is the profile score of its design strategy. The lines of the plot connect each point (building) to those points with the most similar profile score.

The arrangement among these 25 buildings is based upon both the quantitative and qualitative differences in the profile scores. The quantitative dimension by which these buildings are organized is represented by the vertical dimension of the diamond plot. In other words, the buildings with low total scores (i.e. the high contrast strategies) are found at the lower end of the diamond; whereas the buildings with high total scores (i.e. the high replication strategies) are found at the upper end of the diamond.

The qualitative differences between buildings are represented horizontally. This means that the buildings at the same horizontal level of the diamond are quantitatively similar (i.e. have roughly the same total profile score), but are qualitatively different. So for example, at the left side of the diamond is building #1 (the East Cambridge Savings Bank) with a 5-4-6 profile; and at the right edge is building #6 (the Maryland National Bank) with a profile of 6-6-2. Both buildings have similar total scores (15 and 14 respectively),
Fig. 6-1: A Partial Order Scalogram Analysis (POSA) of the Building Set
but the East Cambridge bank is lower on its site organization and massing scales and significantly higher on the facade design scale.

The general conclusion that emerges from this POSA is that a considerable range of design strategies is represented by this set of 25 buildings. The ordered arrangement of profile scores in the POSA clearly reveals that: a) only one profile is duplicated, and b) all but one of the possible scores on each of the three scales is represented. In this sense, then, the original intention of the research design (i.e. to include a broad range of design strategies) has been substantially fulfilled.

On a more sophisticated level, however, the POSA allows for a comparison of the ranges of profiles in both quantitative and qualitative terms. In this regard, the POSA demonstrates that the variation among profiles is greater on the quantitative (i.e. degree of contrast) than on the qualitative level (i.e. relative values on the three scales).

The range of strategies on the quantitative level is demonstrated visually by the number of "rungs" from the bottom to the top of the plot. This quantitative range in the profiles can also be established by adding up the totals of each profile score. Given the 7-point rating scale, the scores can range from 3 to 21. Of the possible 19 scores, 14 are represented by this set of buildings.

The range of design strategies on the qualitative level, however, is slightly less comprehensive. A visual inspection of the profile scores indicates that nearly all the profiles have site organization and massing scores that are similar to each other (i.e. within one or two points of each other), the one exception being building #14. Furthermore, the density of
the connecting lines at each side of the plot indicates that there are basically only two qualitatively different types of design strategy trends. The key difference between the two sides of the plot have to do with the facade design scale. Those on the left generally have high facade design scores, while those on the right have relatively lower facade design scores.

Two explanations could be inferred from this qualitative analysis. The first possibility is simply that the selection process was inadvertently biased, with the result that certain qualitatively different design strategy profiles (e.g. low-low-high or high-low-high) were eliminated in the selection process. The alternative explanation is that this set of 25 buildings is, indeed, representative of the most common contextual design strategies. If this were so, it would suggest that architects generally adopt only a certain range of design strategies while ignoring others. This interpretation of the POSA is of course speculative; and a great deal of further analysis would be required to support it.
6.3 The Respondents: Selection Procedures and Criteria

The process of selection and recruitment of the respondents for this research study occurred in two distinct phases. For this reason, the selection processes for each set are discussed separately.

The Case Study Respondents

Once the case study sites were selected, a letter of introduction was sent to an official at each site. (In the case of the Summit Place townhouses, the letter was sent to the president of the project's homeowners' association.) In general, the letter explained the nature of the research project in very general terms and requested cooperation. (See Appendix 3.) In all cases, the local "official" agreed to cooperate, so no alternative site selections had to be made. In the case of the Columbus bank and the Alumni Center, no further correspondence was necessary; in the case of the townhouses, individual letters of introduction were sent to each housing unit.

Each site visit occurred over an approximately one week period. Since cooperation from the case study users/residents had already been established, interview appointments were relatively easy to arrange with these individuals. In all cases, these interviews took place at the respondents' convenience in their office or—in the case of the townhouse site—home.

The selection and recruitment of the two neighbor groups at each site was, however, relatively more complicated. Since no prior contact had been established with these individuals,
all introductions and appointment scheduling had to be arranged during the site visit.

The recruitment sequence for the neighbor groups was basically similar at each of the three sites. First, it was necessary to determine what groups of individuals would fulfill the definitional terms of nearby and distant neighbors as defined in the mapping sentences. As the discussion in an earlier section of this chapter indicated, nearby neighbors are defined as people who live/work in close proximity to the site, and who would therefore encounter the infill building on a more or less daily basis. Distant neighbors, on the other hand, are defined as people who would encounter the infill building on a less regular basis. The specific groups at each site who were selected as representing these specifications are indicated in Table 6-2.

Once the two neighboring groups were specified, it was necessary to recruit a number of individuals who might be willing to participate in the study. At each site, at least some of the user/resident respondents were asked to suggest potential interviewees, particularly for the distant neighbor

<table>
<thead>
<tr>
<th>Table 6-2: Case Study Respondent Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CASE STUDY SITES</strong></td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>Columbus 12 Bank personnel</td>
</tr>
<tr>
<td>Ann Arbor 12 Alumni Center personnel</td>
</tr>
<tr>
<td>St. Paul 11 Summit Place townhouse residents</td>
</tr>
</tbody>
</table>
group. This recruitment strategy was adopted primarily because of the rather tight constraints of the site visit schedule. And this, in turn, was due primarily to the limited travel budget for the project.

In addition, at Columbus and St. Paul, letters of introduction were delivered to the shopkeepers and housing association members, respectively, who represented the nearby neighbor groups at those two sites. Follow-up phone calls requesting an interview appointment were made shortly thereafter.

The neighbor interviews (both nearby and distant) typically occurred at the location where the initial inquiry was made. Exceptions to this rule were: 1) the University of Michigan students who were interviewed at an office in the Alumni Center, and 2) one St. Paul neighbor who chose to be interviewed at the investigator's hotel.

The Design Review Commissioners

The selection of the design review commissions was not made until after the case study interviews had been completed. As a consequence, it was not feasible to make use of the same

<table>
<thead>
<tr>
<th>Commissions</th>
<th>Nondesign-Trained</th>
<th>Design-Trained</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milwaukee</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Snorewood</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Cedarburg</td>
<td>8</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>7</td>
<td>24</td>
</tr>
</tbody>
</table>
site locations for both case study and commissioner interviews. Moreover, budgetary and logistical considerations precluded travel outside the metro-Milwaukee area.

Thus, the decision was made to interview as many members as possible from the three Milwaukee-area commissions. Letters of introduction similar to those used at the case study sites were sent to each commission member. Phone calls requesting an interview appointment were made shortly thereafter.

The interviews took place at the respondents' convenience, either in their home or office.

Sample to Population Relationships

The several different respondent groups constitute different degrees of representativeness relative to the populations from which they were drawn.

1) With respect to the case study sites, a majority of the user/resident populations were interviewed. The specific proportions at each site are as follows: 1) approximately 2/3 of the Columbus bank employees were interviewed; 2) approximately 60% of the Alumni Center employees were interviewed, this figure representing roughly 80-90% of those available at the time of the site visit; and 3) approximately 80% of the townhouse residents were interviewed, this figure representing 100% of the residents who were available at the time of the site interview.

Furthermore, at each of the two non-residential sites, every effort was made to interview employees who represented all levels and job functions in the organization. So for example, at the Columbus bank the job functions of the interviewees ranged from janitor to president.
Thus, it seems fair to assume that all three user/resident samples are reasonably representative of the entire user/resident population.

2) With respect to the neighbor groups at the case study sites, the respondents represent a very small proportion of the specified population.

Given the budgetary and scheduling limitations of the case study visits it was unfeasible to implement a meaningful (in any statistical sense) sampling procedure—either randomized or stratified. As has already been stated, the recruitment procedure for these groups was therefore based primarily on convenience and efficiency.

As a consequence, this means that the investigation of environmental role differences at each of the case study sites must be viewed as essentially exploratory. Or to put it another way, the interview data concerning responses to the three case study sites should be viewed as suggestive of, rather than representative of, the local residents' response to that infill building.

3) Finally, with respect to the design review commissions, the respondents represent nearly 100% of the specified population. Only three communities in the immediate Milwaukee area are known to have some form of design review commission; and the members of all three were interviewed.

Taking each commission separately, the proportion of respondents to total membership is as follows: 1) all 8 Milwaukee commissioners agreed to be interviewed, 2) 8 of 9 Shorewood commissioners were interviewed, one member being unavailable due to being hospitalized; 3) 8 of 9 Cedarburg commissioners were interviewed, the town council's
representative having declined due to a stated lack of interest. Thus it seems fair to assume that the respondent group fully represents the design commission membership in the metro-Milwaukee area.
Bldg #1
East Cambridge Savings Bank addition
East Cambridge, Mass.
Charles G. Hilgenhurst & Assoc.
photo: Particia Gill
Profile Score: 5-4-6

Bldg #2
The Alumni Center
University of Michigan
Ann Arbor, Mich.
Hugh Newell Jacobsen
photo: John Rahaim
Profile Score: 6-5-6

Bldg #3
Valerio residence
Milwaukee, Wis.
Joseph Valerio
photo: Linda Groat
Profile Score: 6-3-3
Bldg #4
East India Marine Hall addition
Salem, Mass.
Philip Bourne
photo: Patricia Gill
Profile Score: 4-2-1

Bldg #5
Metropolitan Museum of Art addition
New York, N.Y.
Roche Dinkeloo Assoc.
photo: Naomi Leiseroff
Profile Score: 3-2-1

Bldg #6
Maryland National Bank
Annapolis, Md.
RTKL Associates Inc.
photo: courtesy of RTKL Associates Inc.
Profile Score: 6-6-2
Bldg #7
Frick Collection addition
New York, N.Y.
Harry Van Dyke
photo: Brent Brolin
Profile Score: 6-6-7

Bldg #8
Enderis Hall
University of Wisconsin-Milwaukee
Milwaukee, Wis.
Plunkett Keymar Reginato
photo: Linda Groat
Profile Score: 2-1-1

Bldg #9
Lincoln Park townhouses
Chicago, Ill.
Bauhs & Dring
photo: Linda Groat
Profile Score: 7-5-5
Idg #10

Law Building
University of Wisconsin
Madison, Wis.
Roger Kirchhoff
Photo: Linda Groat
Profile Score: 5-5-4

Idg #11

Beckley residence
Milwaukee, Wis.
Robert M. Beckley
Photo: Linda Groat
Profile Score: 2-1-1

Idg #12

Citizens Federal Savings addition
San Francisco, Calif.
LTW/Moore Lyndon Turnbull Whitaker
Photo: Robert Coven
Profile Score: 7-6-3
Bldg #13
Summit Place townhouses
St. Paul, Minn.
Robert Engstrom Assoc.
photo: Garth Rockcastle
Profile Score: 2-1-2

Bldg #14
Deutsch residence
Boston, Mass.
Graham Gund Assoc.
Profile Score: 7-2-3

Bldg #15
Salem Five Cents Bank addition
Salem, Mass.
Oscar Padjen Architects
photo: Patricia Gill
Profile Score: 4-3-2
ldg #16

Allen Memorial Art Museum addition
berlin College
berlin, Ohio
Venturi & Rauch
photo: courtesy of Venturi Rauch
Scott Brown
profile Score: 5-3-2

ldg #17

Beacon Street apartments
Boston, Mass.
James McNeely
photo: courtesy of James McNeely
profile Score: 6-5-3

ldg #18

Edge Center
Washington, DC
artmann-Cox Architects
photo: courtesy of artmann-Cox Architects
profile Score: 3-2-2
Bldg #19

Pacific Heights townhouses
San Francisco, Calif.
Daniel Solomon and Assoc.
photo: Joshua Freewald, courtesy of Daniel Solomon and Assoc.

Profile Score: 5-6-3

Bldg #20

Portland Public Services Building
Portland, Or.
Michael Graves
photo: Francis Downing

Profile Score: 7-5-3

Bldg #21

Farmers' & Merchants' Union Bank addition
Columbus, Wis.
Gornet and Shearman
photo: Valerie Johnson

Profile Score: 6-5-1
Bldg #22
Library
Mt. Mary College
Wauwatosa, Wis.
Pfaller Herbst & Epstein Inc.
photo: Linda Groat
Profile Score: 2-1-1

Bldg #23
The Asia Society
New York, N.Y.
Edward Larrabee Barnes Assoc.
photo: Nick Wheeler, courtesy of Edward Larrabee Barnes Assoc.
Profile Score: 3-3-3

Bldg #24
Frank-Carlsen residence
St. Paul, Minn.
Sylvia Frank/Peter Carlsen
photo: Garth Rockcastle
Profile Score: 6-4-3
Bldg #25
519 Ashland residence
St. Paul, Minn.
architect unknown
photo: Garth Rockcastle
Profile Score: 7-6-5
7 THE MEANING OF CONTEXTUAL COMPATIBILITY: Constructs and Categories

7.1 Setting the Stage for Data Analysis

The Character of the Site Location

The Interview Procedure: The Behavioral Conditions

The Facet Theory Approach to Data Analysis

7.2 Environmental Meanings: Contextual Compatibility and Other Meanings of the Built Environment

Content Analysis

The Relative Significance of Contextual Compatibility

The Range and Frequencies of the Sorting Criteria

Patterns of Sorting Criteria

7.3 Contextual Compatibility: Conceptual Structure

Alternative Category Schemes

Mixed Sorting Criteria and Multivalence

Aggregate Conceptualizations of Contextual Compatibility

7.4 Summary
As the discussions in Chapter 5 have indicated, the 3 mapping sentences presented in chapter section 5.3 provide the definitional structure of this research study. In accordance with this tripartate structure of the research, the data analyses are presented in 3 separate chapters. Thus the particular analyses that pertain to the domain of concern associated with mapping sentence #1 are discussed in this chapter. Chapters 8 and 9 present the data analyses that pertain to mapping sentences #2 and #3.

7.1 Setting the Stage for Data Analysis

This chapter section represents a preface to the details of the data analyses that form the core of this chapter. The intention here is to clarify three sets of conditions which necessarily affect the ultimate quality and substance of the research findings. These are: 1) the particular environmental and social conditions at each of the six interview locations, 2) the behavioral conditions of the interview procedure itself, and 3) the theoretical framework of the data analysis procedures.

The Character of the Site Locations

As the description of the site selection procedures in chapter section 6.2 indicates, the three case study sites were selected because they represent a variety of social and environmental conditions. Similarly, although all three review commissions are located in the metro-Milwaukee area, the three locations which they represent are also very different from
each other. For this reason each of the six site locations is described separately below.

1) The Columbus Site. Columbus, Wisconsin is a small farming community about 60 miles west of Milwaukee and about 30 miles northeast of the state capital. Despite its modest circumstances, the town receives numerous visitors from around the U.S, Canada, and Europe. This is because the Farmers’ and Merchants’ Union Bank, designed by the Chicago School architect Louis Sullivan, is an historic landmark and a prime example of Sullivan’s architecture.

The Columbus bank was built in 1919, the last of the eight Midwestern banks designed by Sullivan at the end of his career (Sandy, 1984). The infill addition, adjacent to the original bank building was completed in 1978 and designed by a St. Louis architecture and engineering firm. According to bank officials, the architects argued very strongly that the addition should represent a stylistic contrast to the original bank, the idea being that the addition would complement the old by not competing with it.

The bank is situated on a corner one block from the main intersection of the town center. Shopfront development in Columbus is largely contained within one block of this intersection.

Overall, the original Sullivan bank has been exceedingly well maintained; and virtually all the bank employees seem genuinely to appreciate the quality of its architecture.

2) The Ann Arbor Site. Ann Arbor is a city of moderate size, not far from Detroit. The town center is immediately adjacent to and largely dominated by the University of Michigan campus.
Photographic Set: Views of the central business district, Columbus, WI.
The Alumni Center building is situated on the university campus. It was designed by Hugh Newell Jacobsen and completed in 1982. According to the director of the Center, a major criterion for the selection of the architect was the ability to design a "good neighbor". Thus, while nearly a dozen architecture firms were interviewed for the commission, Jacobsen was selected largely because of his previous success in contextual design and his apparent sensitivity to the particular requirements of the Alumni Center project.

The Alumni Center site is located along one edge of a campus mall. Its most immediate neighbor is a brick and limestone building described as "Twenties Tudor" (Gaskie, 1983). Jacobson's stated design intention was to take the several contextual conditions into account while at the same time generating a building with its own distinct character.

3) Summit Place Townhouses, St. Paul. Together St. Paul and Minneapolis constitute the Twin Cities, a major U.S. metropolitan area. Situated in the Ramsey Hill area of St. Paul not far from downtown, the 13 units of the Summit Place townhouses were developed in two phases during 1980-81.

Of the three case study sites, the situation surrounding the development and design of these townhouses is by far the most complex, not only in terms of the physical context, but also the social and economic context as well. More specifically, the townhouses are part of a redevelopment project contracted by the St. Paul Housing Redevelopment Agency with a local design and marketing firm.

The townhouses thus represent just one increment in a much larger 2-block redevelopment scheme that involves a combination of restoration, adaptive use, and new construction. Moreover, the redevelopment scheme as a whole represents
The student pathway through the Alumni Center.

The Michigan League, adjacent to the Alumni Center.

The Modern Language Building and bell tower.

Photographic Set: Views of the Alumni Center and the university campus.
The "Victorian" triplex, Summit Place.

Riley Condominiums, an adaptive use scheme, Summit Place.

Typical housing adjacent to Summit Place.

Photographic Set: Views of Summit Place and the nearby neighborhood.
just one aspect of the overall revitalization of the entire Ramsey Hill historic district.

The Ramsey Hill area, once a very fashionable neighborhood of the city, suffered considerable deterioration in the 1940’s and 1950’s. However, by the early 1970’s, this cycle was beginning to be reversed as young urban pioneers began the slow process of gentrification. The St. Paul Redevelopment Agency acquired the 2-block parcel (later developed as Summit Place) during the period when derelict and rundown housing still predominated. After a number of false starts, development on the site began in the late 1970’s. The Summit Place townhouses constituted the second of the new construction projects in the development scheme.

Despite the involvement of the local government agency, the Summit Place development was never intended as a subsidized, lower-income housing scheme. Rather, all the housing units have been sold to individual homeowners, most of whom could be described as upper-middle class professionals.

The overall design strategy for the townhouses can be described as a very non-replicative interpretation of American Victorian design. So for example, the typical Victorian vocabulary of gabled roofs and bay windows are translated into a 3 1/2 story triangulated bay capped by a pair of triangular windows. This aspect of the design is so striking that it inspired the local residents to give the townhouses a nickname—Jaws I and Jaws II for the first and second phase units respectively. According to both the townhouse residents and the neighbors, the nicknames are a kind of "affectionate ribbing" rather than a derisive commentary.
4) Historic Preservation Commission, Milwaukee.
Milwaukee is a major U.S. city and constitutes the major metropolitan area in the state of Wisconsin.

Of the three review commissions which were selected for inclusion in this study, the Milwaukee historic preservation commission is the only one which is composed primarily of people who fulfill designated positions within the commission. Thus, the commission membership necessarily includes the following positions: architect, real estate finance expert, real estate development expert, historian, local council member, and three citizens.

5) Shorewood Building and Aesthetics Board. Shorewood is a small, well-to-do, suburban community on the northern edge of Milwaukee.

The membership of Building and Aesthetics Board presently includes 5 individuals who have had some form of design-training, although there are no specifically designated positions as there are for the Milwaukee commission.

6) Cedarburg Landmarks Commission. Cedarburg is a small town about 20 miles north of Milwaukee. Its town center is still dominated by reasonably well-maintained buildings that date from the late 19th and early 20th century. Although the town as a whole maintains a somewhat rural character and is surrounded by farmlands, many of its residents commute to Milwaukee for work.

The Cedarburg commission consists of 9 members, only one of whom must be a member of the town board. None of the other members fulfill a designated position; and none has any design-training.
The interview procedure is necessarily a form of social interaction. As Brenner (1978) has pointed out, the interview situation involves the enactment of roles (i.e., interviewer, respondent) within a rule-structured behavioral format. Indeed, as Brenner argues, the conventionally-held ideal of the interviewer as a "socially sterile" (Brenner, 1978, p.122) phenomenon is not only impossible to realize but theoretically untenable. If one accepts Brenner’s argument, then it is clear that the validity and semantic value of the responses elicited in an interview are, in part, a function of the social interactions inherent in the interview situation.

With respect to the specific data collection procedures used in this research study, two aspects of the interview situation are of particular importance: 1) the potential of the interview format for treating the respondents as individuals, each with his/her own unique conceptions of their environmental experiences; and 2) the interview procedure's potential for promoting perceptual learning.

1) The Respondents' Unique Construct Systems. The data collection procedures used in this study were developed with the specific intention of treating each respondent as a unique individual rather than as a "subject" of an experiment. At the most basic level, this is achieved, in part, simply through the use of the intensive one-on-one interview. But more importantly, the use of both the free sort procedure (in interview segments #1 and #2) and the open-ended features question (in segment #8) enabled each respondent to apply his/her own category schemes to his/her unique environmental experiences. In other words, these particular interview
segments enable the respondents to express their views of the world in terms that makes sense to them.

As such, these research procedures represent a marked contrast to those which are frequently used in studies of environmental meaning. Numerous examples of rating scales being administered to groups of respondents have already been reviewed in Chapter 2 (e.g. Wohlwill, 1982; Gobster, 1983). Few researchers, however, have been as forthcoming as Wohlwill in describing the potential inadequacies of such procedures with non-student "subjects". In describing his attempt to employ such procedures with a citizens' group at a public meeting, he comments: "Apart from from the practical problems of setting up a three-projector assembly..., it proved an even greater challenge to persuade such an ad hoc audience to engage with a modicum of seriousness and attentiveness in the task of making the ratings asked of them" (Wohlwill, 1982, p. 246).

No such problems emerged in the series of 97 interviews (and 19 pilot interviews) conducted for this study. In the first place, each respondent was asked individually if s/he would be willing to participate. And in the great majority of cases, participants expressed a positive interest, rather than a reluctant acceptance. Although no records of the acceptance rate were kept, it is likely that at least 90% of the people contacted agreed to participate. Secondly, because of the one-on-one format, any ambiguities in the directions for sorting and evaluating the buildings could be cleared up immediately. And most important, the interview instructions emphasized to each respondent that the purpose of the interview was to explore how they, themselves, reacted to the architectural environments portrayed by the photographs.
At one case study site, however, circumstances did combine to contravene these otherwise favorable conditions. More specifically, at the Columbus bank, management did exercise some control over which respondents could be interviewed at which times. This was due largely to concerns about servicing bank customers. In addition, given the conservative, hierarchical nature of the organization, there was no doubt some implicit pressure to participate in the study.

In summary then, the interview conditions for this research can be described as: 1) individually-oriented, and 2) sensitive to each individual’s unique understanding of architectural and urban qualities.

2) The Potential of The Sorting Task for Perceptual Learning. Two of Neisser’s observations concerning the nature of the "perceptual cycle" (Neisser, 1976) are particularly useful in putting the sorting task interview format into perspective. First, Neisser has argued that people are not likely to categorize the elements of their environment unless the situation requires them to do so. And secondly, he has suggested that when a given class of objects affords "information at several different levels of subtlety and complexity" (p. 44), these are opportunities for perceptual learning. The implication of Neisser’s analysis for this study, is that some respondents may actually be put in the position of consciously categorizing these types of environmental elements for the first time; and other respondents might well be categorizing the elements in subtly different or more complex ways.

This is a point which Canter, Brown, and Groat (1985) have also made in their discussion of the sorting task.
Echoing the arguments of repertory grid advocates, they suggest that reliability "can easily be a measure of the insensitivity of a procedure to changing circumstances rather than a valuable psychometric property" (p.110). More specifically, in regard to the sorting task, they speculate that stable individuals would likely "generate reliable responses over two or three sorting sessions, but only if the procedure itself did not contribute to a fuller understanding of their conceptual systems or their personal growth" (p.110).

Although the measurement of perceptual learning was not a specific goal of this research, the respondents' offhand commentary to the interviewers do give some indication of this phenomenon. Of the three case study sites, respondents in Columbus seemed most consistently in the position of being asked to categorize environmental elements which they would otherwise not have bothered to attend to. Indeed, a number of Columbus respondents commented on their lack of familiarity with architecture; and some admitted to basing their evaluations on comparisons with environments seen on TV or on infrequent visits to relatives in urban areas. For some of these respondents, the relative novelty of either the task, the topic, or the interview situation seemed to cause some discomfort and anxiety.

Given that Columbus is a small farming community (pop. approximately 4000), these reactions to the interview would seem to be consistent with the level of environmental experience to which most Columbus residents are accustomed. In general, the Columbus residents tended to distinguish themselves from the other case study respondents by being: 1) less familiar with a range of architectural environments,
2) less likely to have travelled or lived in other parts of the country or world, and 3) less likely to have been university-educated.

On the other hand, many of the respondents at the other sites (and even many from Columbus) seemed to find in the sorting task the encouragement to extend or modify their previous category schemes. In particular, the requirement to suggest alternative sorting criteria (in interview segment #2) seems to have encouraged some respondents to go beyond their typical range of categorization. In addition, the requirement to label the categories generated in the free sort (interview segment #1), seems to have forced some respondents to be more analytical than they would normally be. Some respondents even made comments to the interviewers which implicitly suggested that they saw the interview as a learning experience.

Finally, a number of respondents (especially the review commissioners) seemed to welcome the opportunity to exercise their mental capacities on a topic (i.e. the architectural environment) that was of particular interest to them. A few respondents commented that they were pleased to learn more about their own understanding of architectural issues. Still other seemed to relish the opportunity to express their feelings about environmental issues to someone (i.e. the interviewer) who would actually take them seriously.

In summary, then, the interview seems to have encouraged different levels of "perceptual learning" among the various respondents. For some the experience of the interview may well have a lasting, though subtle, effect. While many researchers would consider this an unfortunate, but perhaps unavoidable, consequence of the interview format, others-- particularly advocates of the repertory grid format-- would argue
otherwise. Indeed Stringer (1976) even argues that the principles of personal construct theory virtually mandate that the interview process SHOULD "be something that involves the individual beyond the occasion on which it happens" (p.100). The interview procedure used in this research study may well have done so in some cases.

The Facet Theory Approach to Data Analysis

The principles of theory construction proposed by Louis Guttman (and identified in Chapter 1) not only have important implications for research design but for data analysis as well. More specifically, he maintains that the structure of the empirically derived data must correspond to the structure specified by the proposed mapping sentence. In other words, the relationships among the facets and facet elements that are specified in the mapping sentence should also be evident in the empirically derived data.

To facilitate the testing of such hypothesized correspondences, Guttman and his colleagues have devised a set of MDS (multidimensional scaling) programs. As described by Shepard (1972), the general principles of MDS are well-suited to this purpose:

The unifying purpose that these techniques share, despite their diversity is the double one (a) of somehow getting hold of whatever pattern or structure may otherwise lie hidden in a matrix of empirical data and (b) of representing that structure in a form that is much more accessible to the human eye.... The objects under study ... are represented by points in the spatial model in such a way that the significant features of the data about these objects are revealed in the geometrical relations among the point. (Shepard, 1972, p.1)

Furthermore, whereas other multivariate statistical techniques are based on preconceived notions about empirical structure, MDS is relatively assumption-free. Whereas cluster
analysis assumes a hierarchical structure and factor analysis assumes a linear one, MDS allows for the possibility of realizing non-hierarchical and non-linear structures.

Although many researchers do limit their analyses of MDS material to the identification of the represented "dimensions" of the space, Lingoes (1979, 1981) has argued that the dimensions of an MDS plot are simply one of several formal aspects of the data space. According to Lingoes, two other formal aspects of these configurations can be at least equally effective as devices for understanding the underlying structure of the data: 1) the region (defined as a closed or bounded area of the space); and 2) the manifold (defined as an abstract generalization of a surface, such as a straight line, circle, or cylinder). The essential implication of this argument is that manifolds such as the circimplex (circle structure) or the cynlindrex (cylinder structure) describe relationships within the data; they are not imposed on it.

In the following chapters of this study, the data will be discussed in the context of two types of MDS procedures both from the Guttman-Lingoes series of programs: SSA-1 (smallest space analysis) and MSA-1 (multidimensional scalogram analysis). The particular features of each of these programs will be discussed with reference to specific data analyses in the following chapters.
7.2 Environmental Meanings: Contextual Compatibility and Other Meanings of the Built Environment

As described in Chapter 5, the domain of concern specified by mapping sentence #1 is the meaning of contextual compatibility. This topic area encompasses two primary levels of analysis which correspond to two of the facets of the mapping sentence: the construct type facet and the category scheme facet. Two of the other facets—degree of expertise and location—are considered in conjunction with the analyses of the other two.

This chapter section presents the data analyses pertinent to the construct type facet; chapter section 7.3 presents the analyses pertinent to the category scheme facet.

The data for both these analyses are derived from the first two segments of the interview sequence. In the first segment, the respondents were asked to sort the photographs of urban infill scenes according to any criterion of their own choosing. And in segment #2, the respondents were asked to suggest as many other sorting criteria as they could think of.

An important aspect of these first interview segments is that the respondents were not predisposed—by either the interviewer or interview description—to consider the issue of contextual compatibility. All respondents were simply told that the purpose of the interview was to explore their reactions to a variety of architecture. Thus, the underlying assumption of this set of analyses is that a respondent's selection of contextual compatibility as a sorting criterion suggests a real concern for that issue. Similarly, it is also
Table 7-1: Mapping Sentence #1, The Meaning of Contextual Compatibility

<table>
<thead>
<tr>
<th>Location</th>
<th>Construct Type</th>
<th>Conceptual Structure</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>living in</td>
<td>construes a set of in fill scenes</td>
<td>using a</td>
<td>does not</td>
</tr>
<tr>
<td>1. Columbus</td>
<td>1. contextual fit</td>
<td>1. dichotomous</td>
<td></td>
</tr>
<tr>
<td>2. Ann Arbor</td>
<td>2. non-contextual fit [each of 20 other constructs]</td>
<td>2. ordered</td>
<td></td>
</tr>
<tr>
<td>3. St. Paul</td>
<td></td>
<td>3. qualitative</td>
<td></td>
</tr>
<tr>
<td>4. Milwaukee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Shorewood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Cedarburg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>construe a set of in fill scenes.</td>
<td></td>
</tr>
</tbody>
</table>
assumed that the relative frequencies with which the various sorting criteria were selected is indicative of the relative significance that these issues have for the respondents. And finally, and most importantly, it is also assumed that these sorting criteria are an expression of the meanings by which people interpret the built environment.

In order to pursue these analyses, however, it is first necessary to establish some basis of comparison among the respondents' idiosyncratic sorting criteria. To achieve this basis of comparison, content analysis procedures were applied to the sorting criteria. These procedures are described in detail below.

Content Analysis

Content analysis has been defined as a procedure for identifying "specific characteristics of communications systematically and objectively in order to convert the raw material into scientific data" (Mostyn, 1985, p. 117).

Within this general definition, a variety of theoretical orientations and operational strategies are possible. Mostyn (1985) discusses at length the numerous distinctions between a highly quantitative approach to content analysis and a more qualitative one. According to Bainbridge, the quantitative approach typically relies on either word counts or scoring for the occurrence of specific themes. In contrast the qualitative approach attempts to go beyond the quantitative analyses and is "concerned with intentions in the interpretation of communications" (Mostyn, 1985, p. 121), that is with the more subtle and symbolic aspects of the discourse.

The content analysis procedures used in this research conform to the more quantitative orientation. Since the
respondents' recorded discourse consisted primarily of short descriptive phrases, there was little reason to attempt a more qualitative analyses.

Briefly, the specific content analysis procedures used in this research are as follows. Each sorting criterion and its constituent categories (when available) were written out on index cards. In the first step of the analysis procedure, a sample of approximately half the sorting criteria cards were organized into as few groups as possible based on the topical similarity of the criteria. The reliability of this classification system was then tested by a colleague familiar with the research. She was asked to assign the sample of sorting criterion cards to the same set of categories. The result of this verification exercise was that the two judges achieved agreement for 93.6% of the sorting criteria.

Two specific features of the data which significantly influenced the content analysis process are important to take note of:

1) The use of mixed sorting criteria. Approximately half of all respondents (53% of the case study respondents and 46% of the review commissioners) chose to use a combination of two or more sorting criteria within a single sort. In almost all cases, the respondents used the mixed criteria for the first free sort. Although the suggested sorting criteria (elicited in interview segment #2) were frequently described in terms of their constituent categories and could therefore have expressed mixed criteria, this was rarely so.

In terms of the content analysis procedures, these mixed sorts were initially separated into a separate group and then subsequently analyzed for their several criteria. Any criterion which was expressed in 50% or more of the categories
was deemed a sorting criterion, and was counted as such. This meant that a given sort could be counted as 2 or 3 separate sorting criteria. For example, one respondent used the following four categories: 1) old, whether really or not; 2) modern, but looks old and fits in; 3) modern, but doesn't fit and ugly; and 4) modern, sort of fits, but noticeable. This category scheme was counted as two sorting criteria: compatibility and age. In just a few cases, no one criterion dominated the category scheme. These cases were then counted as a single sorting criterion, labelled "no predominant criteria." (Details on the mixed sorting criteria can be found in Appendix 4.)

The theoretical implications of this sorting behavior are discussed later on in this chapter.

2) Age and Style as Sorting Criteria. One particularly problematic distinction among the various sorting criteria was the one between age and style. Although a strong argument could be made that the conceptual differences between the two were insufficient to warrant their consideration as two separate criteria, the dual designation was maintained. This is primarily because a number of respondents did use both criteria and clearly interpreted them as two distinct issues.

Thus the following conceptual distinction was made in the content analysis. Age was taken to encompass any category scheme which expressed a temporal orientation, as indicated by such words as: old, modern, traditional, contemporary, period, new. Style was taken to encompass any category scheme which expressed more formal stylistic terms, indicated by such words as: vernacular, Victorian, classical, style.
Given these substantial complications in the content analysis of the sorting data, the percentage of inter-judge agreement appears to be quite high. The 93.6% figure even takes into account the multiple classifications of the mixed sorting criteria.

The Relative Significance of Contextual Compatibility

The frequencies with which the various sorting criteria were selected by the several respondent groups are presented in Tables 7-2 and 7-3. The figures in the first three columns of each table indicate the number of people at each site location who used each of the various sorting criteria. The final columns indicate the total number and total percent of people using those criteria. These tables indicate that contextual compatibility represents a relatively important concern for both the case study respondents and the review commissioners.

More specifically, in the case of the case study respondents, contextual compatibility ranks third in frequency of use among the 21 sorting criteria; fully 41% of these respondents selected it as a basis for their sorting. With respect to the review commissioners, compatibility ranked second among the various sorting criteria, with over 70% of the commissioners choosing to use it. Furthermore, when the mixed sorting criteria (in which the issue of compatibility represented less that 50% of the constituent categories) are added to this calculation, the percentages for both groups are increased by 8%. In other words, 49% of the case study respondents and 79% of the commissioners indicated at least some concern with contextual compatibility at some point in the free sort interview segments. These figures thus suggest
<table>
<thead>
<tr>
<th>Sorting Criteria</th>
<th>Number of People</th>
<th>Percent of People:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Col</td>
<td>Ann</td>
<td>St P</td>
</tr>
<tr>
<td>1. Building Type</td>
<td>15</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>2. Age</td>
<td>15</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>3. Contextual Compatibly</td>
<td>4</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>4. Materials</td>
<td>8</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>5. Overall Form</td>
<td>12</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>6. Style</td>
<td>-</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>7. Location</td>
<td>2</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>8. Size/Scale</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>9. Blag Modifications</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>10. Aesthetic Quality</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>11. Windows</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>12. No Predomn't Criteria</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>13. Preference</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. Formal Elements</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>15. Color</td>
<td>4</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>16. Ownership</td>
<td>-</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>17. Landscaping</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>18. Siting</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>19. Land Use</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>20. Energy Efficiency</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>21. Miscellaneous</td>
<td>2</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 7-3: Sorting Criteria Elicited from Review Commissioners

<table>
<thead>
<tr>
<th>Sorting Criteria</th>
<th>Milw</th>
<th>Shwd</th>
<th>Cdbg</th>
<th>Total</th>
<th>All Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Building Type</td>
<td>7</td>
<td>6</td>
<td>7</td>
<td>20</td>
<td>.83</td>
</tr>
<tr>
<td>2. Age</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>.25</td>
</tr>
<tr>
<td>3. Contextual Compatibly</td>
<td>5</td>
<td>5</td>
<td>7</td>
<td>17</td>
<td>.71</td>
</tr>
<tr>
<td>4. Materials</td>
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<td>3</td>
<td>3</td>
<td>9</td>
<td>.38</td>
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<td>3</td>
<td>.13</td>
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<td>1</td>
<td>7</td>
<td>.29</td>
</tr>
<tr>
<td>8. Size/Scale</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>5</td>
<td>.21</td>
</tr>
<tr>
<td>9. Bldg Modifications</td>
<td>1</td>
<td>-1</td>
<td>1</td>
<td>2</td>
<td>.08</td>
</tr>
<tr>
<td>10. Aestetic Quality</td>
<td>-</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>.25</td>
</tr>
<tr>
<td>11. Windows</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12. No Predomn't Criteria</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>.04</td>
</tr>
<tr>
<td>13. Preference</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>.13</td>
</tr>
<tr>
<td>14. Formal Elements</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>.17</td>
</tr>
<tr>
<td>15. Color</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>.13</td>
</tr>
<tr>
<td>16. Ownership</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>.04</td>
</tr>
<tr>
<td>17. Landscaping</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>18. Siting</td>
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<td>19. Land Use</td>
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<td>-</td>
<td>1</td>
<td>1</td>
<td>.04</td>
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<tr>
<td>20. Energy Efficiency</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>21. Miscellaneous</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>.21</td>
</tr>
</tbody>
</table>
that contextual compatibility is a relatively important aspect of environmental meaning for both respondent groups.

On the other hand, these data also suggest that contextual compatibility is a relatively more salient aspect of environmental meaning for the review commissioners than for the case study respondents. Given the commissioners' greater degree of expertise in architectural issues and their frequent exposure to the issue of compatibility, the difference in response rates between the two groups is not surprising. The extent of the difference in the response patterns of the two groups is also underscored by statistical analyses. A chi-square test was calculated based on the frequencies shown in Tables 7-2 and 7-3. The obtained chi-square value was 5.25, which is significant at the .05 level.

An even clearer differentiation between the two groups is evident, however, when only the responses to the initial free sort are considered. In this first segment of the interview only 19 of the 73 case study respondents used compatibility as a basis for their sort; whereas 15 of the 24 review commissioners used compatibility in their free sort. A second chi-square test was computed on the basis of these frequencies; and the obtained value of chi-square was 9.09, which is significant at the .001 level. These results suggest that an important difference between the expert and non-expert respondents is the immediacy with which the experts apprehend the issue of contextual compatibility in the environment.

Yet another way of considering the data presented in Tables 7-2 and 7-3 is in terms of the site location facet. In this light, the data suggest that there is a consistent degree of concern for compatibility among two of the case study sites and among all three commission locations. It is
only at the Columbus site that the respondents seem to show considerably less concern for contextual compatibility. Earlier in this chapter, the relatively unique response to the interview that was expressed by the Columbus respondents was noted. In the light of that discussion, it does seem likely that the Columbus residents may be less concerned with contextual compatibility because they live in a small town where their exposure to issues of compatibility is relatively limited. However, without further interviews and more extensive data on the demographic characteristics of the respondent groups, it is impossible to determine exactly why this difference in emphasis exists.

Although this comparison of the various sorting criteria does suggest the relative importance of contextual compatibility, there are some limitations to this interpretation as well. Inevitably, the meanings—or sorting criteria—that the respondents extracted from the photographs are dependent on the content of those photographs. Yet it would be impossible to expect that all potentially meaningful aspects of the urban environment could be contained in this set of photographs. For example, since the qualities of the urban skyline are only barely represented in these photographs, it would hardly be likely for any of the respondents to use that criterion no matter how important it was to him/her. And conversely, in situations where the surrounding setting is of no particular value or interest (a condition not represented in the photographs) the relationship between an infill building and the setting may be relatively less significant. Thus, in this light, it is probably fair to say only that contextual compatibility is a potentially significant aspect of environmental meaning.
Finally, the general pattern of findings indicated in this data analysis is consistent with the results of several previous research studies. The relative importance of contextual compatibility in this analysis is consistent with the findings of Bishop (1982) and Tuttle (1983) which were presented in Chapter 3.

The Range and Frequencies of the Sorting Criteria

Another important aspect of the respondents’ sorting behavior is the range and combination of sorting criteria the respondents chose to use. The range of sorting criteria elicited from the several groups of respondents are represented in Tables 7-2 and 7-3. Thus, whereas the previous analyses have focused primarily on the to extent to which the respondents conceptualize contextual compatibility as an aspect of the urban environment, this set of analyses focuses instead on the entire pattern of environmental meanings selected by the respondents.

Several important issues are suggested by these data:

1) Consistency of Response among the Case Study Locations. At all three sites, there is a high degree of consistency in the frequency of the various sorting criteria. In other words, the criteria which were frequently mentioned at one site were also frequently mentioned at the other sites. And similarly, the criteria which were only rarely mentioned at one site, were also rarely mentioned at the others.

By far the most frequently mentioned criteria for the case study respondents are building type and age. And as stated in the previous chapter segment, contextual compatibility represents the third most frequently mentioned
criterion. And finally materials and overall form represent two other relatively common sorting criteria, with approximately a third of these respondents mentioning them.

The two most significant exceptions to this general consistency are associated with the criteria of compatibility and form. In both cases, the Columbus respondents are atypical of the others. In the case of compatibility, the Columbus respondents mention it much less frequently. (See discussion in the previous chapter segment.) And in the case of overall form, they are much more inclined to select it as a sorting criterion. The significance of this point will be discussed below.

2) Some Trends among the Review Commission Groups. Because each commission group consists of only a small number of members, it is more difficult to determine with any real accuracy exactly how much consistency there is among the three commissions.

Nevertheless, some of the observed frequencies are suggestive of some potentially important trends. By far the two most frequently mentioned criteria are building type and contextual compatibility, each of which were mentioned by more than 70% of the review commissioners. The next most common criteria were style and materials, but these two criteria were mentioned by only by 42% and 38% of the commissioners respectively.

3) Comparing the Experts and Non-Experts. In general, there is a moderate amount of correspondence between the sorting criteria frequencies of the case study respondents and the review commissioners. For example, 6 of the 7 most frequently criteria elicited from the case study respondents
were also most frequently mentioned by the review commissioners.

On the other hand, there are some notable exceptions to this overall correspondence; and these exceptions suggest some potentially important differences in the ways that experts and non-experts interpret the urban environment.

One important difference between the two groups concerns the use of the criteria age and style. Among the case study respondents, the criterion age is far more frequently mentioned; whereas the reverse is the case for the review commissioners. This suggests that non-experts are more likely to distinguish among the overall design qualities of buildings by using terms that imply a temporal distinction, such as: traditional, older, contemporary, modern. On the other hand, the experts are more likely to rely on terms that have a more precise formal implication, such as: Classical, Victorian, Beaux-Arts. This tendency to use different terminology for architectural design qualities is consistent with Groat’s (1982) findings in her study of architects and accountants.

A second difference between the responses of the two major respondent groups has to do with the use of the criterion "overall form." Although it represents one of the most frequently mentioned criteria among the case study respondents, it is hardly mentioned at all by the review commissioners. This means that whereas the case study respondents frequently described the buildings in terms of their height and/or shape, the review commissioners did so much less frequently. Moreover, among the case study sites, the Columbus respondents tended to use this criterion much more frequently than the respondents at the other two sites. On the other hand, the review commissioners tended to use the
criteria of aesthetic quality (expressed in terms of composition and/or some implied normative standard) and of formal elements (e.g. roof line). These differences suggest that the non-expert respondents tended to make broader, less precise distinctions in categorizing the formal qualities of the built environment; whereas the review commissioners seem to have been more specific and focused in their interpretation of formal qualities.

Patterns of Sorting Criteria Use

Another way to analyze the differences between the various respondent groups is to compare the pattern—or overall combination—of criteria selected by each of the individual respondents. This, of course, requires the use of some sort of multivariate analysis. In this instance, the MSA-I (multidimensional scalogram analysis) program from the Guttman-Lingoes suite of programs was used.

According to Lingoes (1972), one of the most significant features of this program is that it makes a "minimum" number of assumptions about the nature of the data. For this reason, Lingoes suggests that its particular value lies in "its wide applicability to many kinds of problems which often occur at the initial stages of investigation...." (Lingoes, 1972, pp. 61-62).

Another essential feature of the MSA-I program is that it accommodates categorical data. In the case of this analysis, then, the data matrix indicates whether a particular respondent has used/not used any one of the 21 sorting criteria listed in Tables 7-2, 7-3. The resulting two-dimensional plot locates the respondents according to the entire set of categorical (in this case binary) ratings for
the 21 sorting criteria. This means that the closer together any two individuals are, the more similar are their profiles in the data matrix.

A further principle of the MSA-I program is that the configuration of points is interpreted in terms of regions rather than dimensions. According to Lingoes (1972), a region "can assume any shape whatsoever" (pp.60-61), so long as its boundaries do not intersect those of another region. Levy (1985) adds a further clarification by emphasizing that a region is not a cluster, in that it is not discernible by having "empty space" around it. And finally, Brown (1985) points out that it is essential that there be some compelling reasons for defining and identifying the regions; typically the reasons derive from the initial facet analysis.

Figure 7-1 shows the MSA plot for the review commissioner respondents. In this case, it has been partitioned into two primary regions: one consisting of the nondesign-trained commissioners and the other the design-trained commissioners. A further subdivision of the design-trained region is indicated by the dotted line. This separates the individuals who are architectural practitioners from those who chose other career roles. This second group includes a planner, real estate investment analyst, and an industrial designer.

Thus this analysis strongly suggests that, as individuals, the design-trained group tends to employ a different set of sorting criteria than their non-design trained colleagues. And further that the architectural practitioners form a group which is particularly distinct from the other commissioners.

Similar MSA plots were generated for two other data sets: the case study respondents, and the combined set of case study
Fig. 7-1: MSA, Relationship Among the Review Commissioners Based on Construct Use

○ Design-trained
□ Nondesign-trained

Coefficient of Contiguity: .900
and commission respondents. (See Appendixes 5 & 6.) In both cases, no distinct regions based on either the location or the degree of expertise facet were interpretable. These results thus suggest that: 1) the relative differences among the case study respondents do not reflect any systematic differences between the three sites; and 2) the variation among the case study respondents is large enough to obscure the differences between nondesign and design-trained commissioners which emerged in Fig. 7-1. Or in other words, the variation among the two groups of commissioners is relatively less distinct than the variation among the group as a whole.
7.3 Contextual Compatibility: Conceptual Structure

The previous chapter section has analyzed the significance of contextual compatibility in relation to the full range of other meanings by which the urban environment may be interpreted. In this chapter section, however, the investigation focuses more specifically on the way in which contextual compatibility is itself conceptualized.

Alternative Category Schemes

One important indication of the way in which contextual compatibility is conceptualized by the respondents is provided by the category schemes that were elicited in the initial segment of the interview. Within the case study respondent group, 19 individuals chose to use contextual compatibility as their free sort criterion; and among the commissioners, 15 chose compatibility for their free sort option. Thus the data analyses reviewed here are based on the category descriptions provided by these 34 individuals.

Three distinct types of category structures have been identified as elements of the conceptual structure facet. These are as follows: 1) a dichotomous structure, which indicates that buildings are simply interpreted as being compatible or not; 2) an ordered structure, which indicates that there are several gradations of compatibility from highly compatible to incompatible; and 3) a qualitative structure, which implies that there are several different types of compatibility, none of which is necessarily more or less compatible than the other.

The data analysis procedures employed in this aspect of the investigation are similar to the content analysis
procedures described earlier in this chapter. Index cards which specified the complete set of verbal descriptors for the free sort—i.e. both the criterion and category labels—were classified as one of the three conceptual structure types. A second judge then carried out the same procedure independently. This classification process was somewhat complicated by the respondents' tendency to use multiple criteria within the same sort, such that the structures of the category schemes were not always obvious. Nevertheless, a 94.2% agreement was achieved between the two sets of judgments.

The results of this analysis are represented in Table 7-4. Table 7-4 clearly demonstrates that among the case study respondents, there is a strong tendency to conceptualize compatibility in terms of a dichotomous structure. In other words, for this group of respondents, buildings are typically viewed simply as fitting or not fitting their surroundings.

On the other hand, the table also indicates that the review commissioners are a more diverse group in their conceptualizations of compatibility. While a substantial number of the commissioners (40%) do conceptualize compatib-

Table 7-4: Conceptual Structure of Compatibility Sorts

<table>
<thead>
<tr>
<th>Structure Type</th>
<th>Case Study Resp'dts</th>
<th>Review Commrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. People</td>
<td>Percent</td>
</tr>
<tr>
<td>Dichotomous</td>
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<td>78.9</td>
</tr>
<tr>
<td>Continuum</td>
<td>1</td>
<td>5.3</td>
</tr>
<tr>
<td>Qualitative</td>
<td>3</td>
<td>15.8</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>100.0</td>
</tr>
</tbody>
</table>
ility in terms of a dichotomous structure, a slightly larger number (47%) tend to see it as an ordered structure. In other words, the commissioners are more likely than the case study respondent to think of relationships among buildings in terms of gradations of compatibility.

Moreover, neither of the two major respondent groups demonstrate any significant tendency to categorize contextual compatibility in terms of a qualitatively-based category structure. Thus these results do not support the implicit contention among some architectural critics that there may be qualitatively different types of compatibility (e.g. Smith, 1977; Graves and Wolf, 1980).

In addition, these results would also suggest that contextual compatibility does indeed constitute a construct, in the Kellyian sense of the word. Within the framework of personal construct theory, Kelly (1955) argued that a construct system is "composed of a finite number of dichotomous constructs" (Kelly, 1955, p. 59). However, he also acknowledged that constructs might sometimes be used in a scalar mode, "while still being bipolar in origin" (Bannister and Fransella, 1977, p. 25). Thus, Kelly's definition of a construct encompasses both the dichotomous and ordered conceptualizations used by the majority of the respondents.

Mixed Sorting Criteria and Multivalence

As the discussion of the content analysis procedures has already indicated, approximately half the respondents used a combination of several criteria for their initial free sort. More specifically, among the case study respondents the most frequently combined criteria were building type, age, and compatibility. Among the commissioners, both building type and
compatibility were frequently combined with each other or with other criteria. (Content analyses of the mixed sorting criteria are presented in Appendix 6.)

This tendency is particularly remarkable in at least two respects. First, the sorting task instructions specifically state that the respondents should sort the photographs into groups "according to one and only one criterion at a time...." (See Appendix 1.). And secondly, respondents in the one study with an interview format that closely parallels this one (Groat, 1982) revealed only a minimal tendency to use multiple criteria within a single sort. In that study the number of multiple criteria sorts was 10% or less.

Several interrelated factors may contribute to a partial explanation of this phenomenon.

1) Sequences of Environmental Response. As the discussion in chapter section 6.1 has indicated, the interview sequence was specifically organized so as to enable respondents to express global and affective responses before being asked to address themselves to more specific features of the urban environments. This intention is consistent with the general argument forwarded by several researchers (e.g. Kaplan, 1982; Rapoport, 1982), who have argued that people react globally and affectively before they take account of specific features or characteristics of the environment.

The data from this study would tend to support this contention. It may be that many people's first expressed reactions to a new experience may be a kind of "summary" of their most immediate impressions. This summary may thus incorporate a number of distinguishable characteristics that can later be analyzed individually.
2) Multivalence and Interrelated Dimensions. Writers in both the design and psychological literature have made the point that many types of meanings may be closely interrelated, and even modify each other. For example, in the design literature, Jencks has coined the term multivalence to describe this phenomenon. He suggests that a building that is multivalent actually pulls "together different kinds of meaning, which appeal to opposite facilities of mind and body, so that they interrelate and modify each other" (Jencks, 1978, p. 57).

Similarly, in some of the recent empirical research on environmental meaning, some authors have concluded that a model of meaning that assumes a small number of orthogonal dimensions is inappropriate. So for example, Ward and Russell (1981b) have argued that environmental meaning must be viewed as involving a wide range of categories and dimensions that are highly interrelated.

In this light, the data from this study would suggest that for some people certain types of meaning may well be inextricably linked. Defining the exact nature of this link would, of course, require additional research. One possibility is that, while respondents may distinguish between the several mixed criteria on an abstract basis, they may not do so experientially.

3) Environmental Differences. One explanation for the discrepancy between the sorting task behavior in this study and Groat's earlier study (1982) is that the environments portrayed in the photographs were fundamentally different in quality. In the earlier study, each photograph showed only one isolated building with little reference to context; all buildings had been built after World War II. This
means that there was little possibility of the respondents employing two of the most frequently mixed sorting criteria in this study: age and compatibility.

4) Population Differences. A second explanation for the discrepancy between the sorting task behavior in this study and Groat's earlier study (1982) is that the populations were essentially dissimilar in some fundamental way. One possibility is that the architects and accountants that Groat interviewed might have been more analytically-minded people. In the first place, architects are trained to abstract design attributes and to treat them analytically. And secondly, the accountants interviewed in the study were all university-educated, licensed professionals in a field that requires analytical clarity.

Some support for this suggestion emerges from an analysis of the data in this study. Of the seven design-trained review commissioners, only one used a mixed criteria sort. Unfortunately, not enough demographic material on the other respondents is available to compare their educational or professional training to that of the accountants.

Aggregate Conceptualizations of Contextual Compatibility

Another way in which the conceptual structure of contextual compatibility can be elucidated is by aggregating the category schemes generated by each of the two major respondent groups. Thus the intention is to generate two composite conceptualizations of contextual compatibility: one for the case study respondents and one for the commissioners. This can be accomplished through the use of the MSA-I program.
Fig. 7-2a represents the composite conceptualization of contextual compatibility for the case study respondents. Each point on the plot represents one of the 25 urban infill scenes which the respondents were asked to categorize. (They are identified according to the random identification numbers assigned to them, as represented in Chapter 6.) The right side of the plot is labeled "compatible" to indicate that these scenes were most consistently categorized as compatible. And conversely, the left side of the plot is labeled "incompatible" to indicate that these building were usually categorized as incompatible. These designations are based on the frequencies with which the relationships were assigned to such categories. Any relationship which was categorized at least 2/3 of the time as "compatible" or "fitting" is designated in that group; and similarly, any relationship that was categorized "incompatible" or "not fitting" at least 2/3 of the time is designated in that group.

Fig. 7-2b indicates that the MSA plot can also be interpreted in terms of the two distinct regions which are differentiated by the solid diagonal line. All the buildings below the line are non-residential buildings; whereas all the buildings above the line are residential. The residential region is further differentiated by a lighter line which distinguishes the single family house region from the multi-family housing. Thus, the MSA plot clearly reflects the combined conceptualizations of contextual compatibility and building type.

In this regard, the results are consistent with the findings reported in Groat's earlier study (1982) of architects' and accountants' conceptualizations of contemporary architecture. She found that 95% of the
Fig. 7-2a: MSA of the Case Study Respondents' Compatibility Free Sort

- Compatible
- Intermediate
- Incompatible

Fig. 7-2b: MSA of the Case Study Respondents' Compatibility Free Sort

- Residential
- Non-residential

Coefficient of Contiguity: .926
accountants used building type as a sorting criterion. Thus the results of this study tend to confirm the salient role of building type in the conceptualizations of lay respondents.

A further level of analysis can be achieved by considering the relationship between the partition patterns for the building type regions and for the compatibility regions. As Bloombaum (1968) has explained, the particular configuration of the various regional partitions is indicative of the underlying relationship between the category schemes. For example, a "similar but not identical set of lines would indicate a less than perfect association, while... perpendicularity would indicate independence between the two items" (Bloombaum, 1968, p. 88). In this case, the lines of the two partition patterns are relatively perpendicular. Thus, this suggests that the respondents' judgments of compatibility are relatively independent of their judgments of building type.

This finding would seem to contradict Wohlwill's (1978b, 1982) suggestion that building type may affect judgments of compatibility. However, Wohlwill's study included a factory, whereas this study did not include any potentially "noxious" building types. Thus, it may be that judgments of compatibility may only be affected when those judgments concern generally disliked building types. Additional research would be required to pursue this point.

Yet another level of analysis is also provided by the additional series of two-dimensional plots provided by the MSA-I program. In the terminology of this particular data, the MSA program generates a two-dimensional plot for EACH of the 19 separate free sorts. Within each of these plots, each point (urban scene) is designated according to the specific category to which it was assigned by the individual respondent.
In this way, it is possible to analyze the relationship between each individual's category scheme and the composite conceptualization presented in Fig. 7-2. Thus, if an individual category scheme can be partitioned into distinct regions, this suggests that the particular scheme is conceptually consistent with the underlying structure of the composite plot (e.g. Bloombaum, 1968). In this case, 7 of the individual sorts can be partitioned according to the respondent's category scheme. Of these 7, four of these sorts involve mixed criteria: two are combined with building type, one with age, and one with preference. Thus, this analysis strongly suggests that the case study respondents' conceptualization of the urban environment involves a melding of at least four criteria: building type, age, compatibility, and preference. Moreover, since three of these sorting criteria—age, compatibility, and preference—reveal similar patterns of partitioning, it suggests that these three are more conceptually linked than is the building type criterion.

Figs. 7-3a and 7-3b represent the comparable composite analysis of the review commissioners' categorizations of compatibility. In this instance, the data was generated by the 15 commissioners who used contextual compatibility as the criterion for their free sort. As is the case with the case study respondents' plot, the review commissioners' plot clearly differentiates between the more compatible (on the right) and less compatible buildings (on the left).

In addition, a line has been drawn to partition the residential from the non-residential buildings. However, three of the residential buildings appear on the "wrong" side of the partition. In addition, there is no clear distinction between the single and multi-family housing. Thus, this suggests that
Fig. 7-3a: MSA of the Review Commissioners' Compatibility Free Sort

- Compatible
- Intermediate
- Incompatible

Fig. 7-3b: MSA of the Review Commissioners' Compatibility Free Sort

- Residential
- Non-residential

Coefficient of Contiguity: .905
the issue of building type is much less relevant to the commissioners' initial conceptualization of the urban environment.

An analysis of the individual respondent's plots reveals that 4 of the 15 sorts can be partitioned according to the respondent's category scheme. In this instance, two of the four category schemes represent a dichotomous categorization; the other two represent an order categorization; none is combined with any other sorting criteria. Thus, these results strongly suggest that the review commissioners' composite conceptualization of contextual compatibility is much more "pure" than the case study respondents' view of it.
7.4 Summary

The purpose of this chapter section is simply to summarize the principal findings of the several analyses presented in this chapter. For clarity and convenience they are organized according to the several facets of mapping sentence #1.

1) Construct Type. The construct, contextual compatibility, was found to be one of the most frequently used criteria in the sorting task procedures. More specifically, 49% of the case study respondents and 79% of the commissioners indicated at least some concern for contextual compatibility at some point in the free sort interview segments. This suggests that contextual compatibility represents a relatively important aspect of environmental meaning.

2) Conceptual Structure. Among the respondents who chose to use compatibility as a free sort criterion, the great majority construed compatibility as either a dichotomous or ordered construct.

Nearly 80% of the case study respondents sorted the infill scenes according to a dichotomous structure, that is, according to whether the buildings fit or didn't fit the context; whereas nearly equal numbers of the review commissioners sorted the scenes according to either a dichotomous or ordered structure (40% and 47% respectively). Thus the review commissioners showed a relatively greater tendency to categorize the infill scenes according to gradations of compatibility.

These data also suggest that there is little evidence that people conceptualize contextual compatibility in terms of qualitatively different types of compatibility.
In addition, the construct contextual compatibility was frequently used in combination with other construct types, especially building type, age, and preference. This was found to be especially true for the case study respondents, and less so for the review commissioners.

3) Degree of Expertise. Substantial differences were found between the case study and the commissioner respondents with respect to both: a) the extent to which they construe the urban scenes according to the construct type, contextual compatibility; and b) their tendency to construe contextual compatibility according to particular types of conceptual structures.

4) Location. In general, the data presented in this chapter offer only minimal support for the effect of the location facet. No consistent differences were found to distinguish among the three review commissions. However, among the case study sites, the Columbus respondents were shown to be much less likely to construe the urban scenes according to the construct, contextual compatibility.
8 CONTEXTUAL COMPATIBILITY AND ENVIRONMENTAL PREFERENCES

8.1 Preferred Contextual Design Strategies
   Liked and Disliked Contextual Relationships
   The Design Strategies of Like and Disliked Relationships
   Preferred Contextual Relationships of the Respondent Groups

8.2 Comparing the Preference Judgments of Building Aspects
   Patterns of Category Usage
   Preference Judgments of Infill Buildings on Their Own
   Preference Judgments of the Surrounding Contexts

8.3 Preferences Among Different User Groups and Locations
   User and Neighbor Responses to the Case Study Sites
   Preferred Relationships from User and Observer Perspectives
   Preference Judgments of the Several User Groups
   Individual Preference Judgments of the Case Study Sites
   Individual Preference Judgments of the 25 Urban Scenes
   Familiarity and the User Role and Location Facets

8.4 Expert and Non-Expert Patterns of Preference Judgements
   Design Trained and Non-Design Trained Commissioners
   Preference Judgments of Experts and Non-Experts

8.5 A Multi-Facet Analysis of Preference Judgments
   Relationships Between Building and Relationship Judgments
   Category Use and Judgments of Specific Buildings
   Some Conclusions and Some Questions for Future Research

8.6 Summary
The domain of concern specified by mapping sentence #2 is the pattern of preferences associated with judgments of contextual compatibility. Within the mapping sentence itself, five facets are specified. Each of these is taken, in turn, as a major focus of one of the several chapter sections which follow.

The data which form the basis of the following analyses derive from segments #3-7 of the interview sequence. These segments consist of 3 directed sorts and 2 rank order exercises that constitute an elaboration of the directed sorts.

8.1 Preferred Contextual Design Strategies

The focus of this chapter section is on identifying the design strategies of the most and least preferred contextual relationships. Thus this aspect of the data analyses has a clear practical relevance for design decision makers.

Liked and Disliked Contextual Relationships

Tables 8-2 and 8-3 present the composite rank orders of the preferred contextual relationships for the case study respondents and review commissioners respectively. These rank orders were simply computed from aggregating the rank orders generated by the individual respondents. However, an adjustment was made to eliminate the influence of the case study site residents' ratings of their own site. (The relationship between residents' and non-residents' judgments of the case study sites is discussed in chapter section 8.3.)
Table 8-1: Mapping Sentence #2: Compatibility and Environmental Preferences

<table>
<thead>
<tr>
<th>Respondent (x) who is</th>
<th>Degree of Expertise</th>
<th>and who is</th>
<th>Degree of Familiarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. member of the pub</td>
<td>1. w/design</td>
<td>1. user/resident</td>
<td></td>
</tr>
<tr>
<td>2. review comm'r</td>
<td>2. w/o design</td>
<td>2. nearby neighbor</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td>3. distant neighbor</td>
<td></td>
</tr>
<tr>
<td>1. Columbus</td>
<td>Location</td>
<td>4. observer</td>
<td></td>
</tr>
<tr>
<td>2. Ann Arbor</td>
<td>living in</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Strategy Profile

<table>
<thead>
<tr>
<th>Site organization</th>
<th>Massing</th>
<th>Facade Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. contrast</td>
<td>1. contrast</td>
<td>1 contrast</td>
</tr>
<tr>
<td>7. replication</td>
<td>7. replication</td>
<td>7 replication</td>
</tr>
</tbody>
</table>

Building aspect

<table>
<thead>
<tr>
<th>Building itself</th>
<th>by stating the extent to which s/he</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. building itself</td>
<td></td>
<td>1. likes very much</td>
</tr>
<tr>
<td>2. surroundings</td>
<td></td>
<td>5. dislikes very much</td>
</tr>
<tr>
<td>3. contextual relationship</td>
<td></td>
<td>the urban infill scene.</td>
</tr>
</tbody>
</table>
Table 8-2: Ranking and Category Scores for Contextual Compatibility/Case Study Respondents

<table>
<thead>
<tr>
<th>Order</th>
<th>Mean Rank</th>
<th>Category Score</th>
<th>Building Number and Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.48</td>
<td>1.21</td>
<td>1 East Cambridge Savings Bank addition</td>
</tr>
<tr>
<td>2</td>
<td>4.85</td>
<td>1.53</td>
<td>7 Frick Collection addition</td>
</tr>
<tr>
<td>3</td>
<td>5.78</td>
<td>1.55</td>
<td>2 The Alumni Center, U. of Michigan</td>
</tr>
<tr>
<td>4</td>
<td>6.94</td>
<td>1.88</td>
<td>9 Lincoln Park townhouses</td>
</tr>
<tr>
<td>5</td>
<td>7.72</td>
<td>1.84</td>
<td>25 519 Ashland residence</td>
</tr>
<tr>
<td>6</td>
<td>8.43</td>
<td>1.99</td>
<td>17 Beacon Street apartments</td>
</tr>
<tr>
<td>7</td>
<td>10.44</td>
<td>2.32</td>
<td>15 Salem Five Cents Bank</td>
</tr>
<tr>
<td>8</td>
<td>10.60</td>
<td>2.44</td>
<td>23 The Asia Society</td>
</tr>
<tr>
<td>9</td>
<td>10.76</td>
<td>2.37</td>
<td>10 Law Building, U. of Wisconsin</td>
</tr>
<tr>
<td>10</td>
<td>11.59</td>
<td>2.51</td>
<td>19 Pacific Heights townhouses</td>
</tr>
<tr>
<td>11</td>
<td>12.00</td>
<td>2.68</td>
<td>12 Citizens Federal Savings</td>
</tr>
<tr>
<td>12</td>
<td>12.87</td>
<td>2.82</td>
<td>14 Deutsch residence</td>
</tr>
<tr>
<td>13</td>
<td>13.24</td>
<td>2.78</td>
<td>24 Frank/Carlsen residence</td>
</tr>
<tr>
<td>14</td>
<td>13.39</td>
<td>2.81</td>
<td>6 Maryland National Bank</td>
</tr>
<tr>
<td>15</td>
<td>15.71</td>
<td>3.47</td>
<td>3 Valerio residence</td>
</tr>
<tr>
<td>16</td>
<td>16.28</td>
<td>3.52</td>
<td>5 Metropolitan Museum of Art addition</td>
</tr>
<tr>
<td>17</td>
<td>16.72</td>
<td>3.52</td>
<td>20 Portland Public Services Building</td>
</tr>
<tr>
<td>18</td>
<td>17.18</td>
<td>3.58</td>
<td>18 Dodge Center</td>
</tr>
<tr>
<td>19</td>
<td>17.50</td>
<td>3.68</td>
<td>16 Allen Memorial Art Museum addition</td>
</tr>
<tr>
<td>20</td>
<td>17.61</td>
<td>3.77</td>
<td>4 East India Marine Hall addition</td>
</tr>
<tr>
<td>21</td>
<td>17.79</td>
<td>3.75</td>
<td>13 Summit Place townhouses</td>
</tr>
<tr>
<td>22</td>
<td>18.15</td>
<td>3.71</td>
<td>21 Farmers and Merchants Union Bank addition</td>
</tr>
<tr>
<td>23</td>
<td>20.14</td>
<td>4.21</td>
<td>8 Enderis Hall, U. of Wisconsin-Milwaukee</td>
</tr>
<tr>
<td>24</td>
<td>20.47</td>
<td>4.29</td>
<td>11 Beckley residence</td>
</tr>
<tr>
<td>25</td>
<td>20.51</td>
<td>4.34</td>
<td>22 Library, Mt. Mary College</td>
</tr>
<tr>
<td>Order</td>
<td>Mean Category Score</td>
<td>Bldg Number and Name</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
<td>-----------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.02 1.13</td>
<td>1 East Cambridge Savings Bank addition</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3.74 1.29</td>
<td>7 Frick Collection addition</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5.20 1.54</td>
<td>2 The Alumni Center, U. of Michigan</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6.48 1.67</td>
<td>25 519 Ashland residence</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>6.85 1.87</td>
<td>9 Lincoln Park townhouses</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>7.72 1.87</td>
<td>17 Beacon Street apartments</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>9.43 2.37</td>
<td>23 The Asia Society</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>9.76 2.37</td>
<td>15 Salem Five Cents Bank</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>10.70 2.63</td>
<td>10 Law Building, U. of Wisconsin</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>11.33 2.58</td>
<td>19 Pacific Heights townhouses</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>12.04 2.83</td>
<td>14 Deutsch residence</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>13.15 2.96</td>
<td>3 Valerio residence</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>13.28 3.00</td>
<td>24 Frank/Carlsen residence</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>14.20 3.25</td>
<td>6 Maryland National Bank</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>16.04 3.58</td>
<td>4 East India Marine Hall addition</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>16.28 3.67</td>
<td>18 Dodge Center</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>16.43 3.50</td>
<td>12 Citizens Federal Savings</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>16.52 3.67</td>
<td>20 Portland Public Services Building</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>16.83 3.67</td>
<td>5 Metropolitan Museum of Art addition</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>17.52 4.04</td>
<td>21 Farmers and Merchants Union Bank addition</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>17.61 4.04</td>
<td>16 Allen Memorial Art Museum addition</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>19.26 4.04</td>
<td>13 Summit Place townhouses</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>20.09 4.08</td>
<td>11 Beckley residence</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>20.48 4.42</td>
<td>8 Enderis Hall, U. of Wisconsin-Milwaukee</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>21.04 4.50</td>
<td>22 Library, Mt. Mary College</td>
<td></td>
</tr>
</tbody>
</table>
In addition to the rank order designation, both tables also indicate the average preference rating for each relationship. This score thus provides some indication of the relative enthusiasm or dislike for each relationship.

The composite rank orders for the two major respondent groups are very similar indeed. More specifically, 18 out of the 25 rank positions are either identical or only one position reversed; and only two rankings have been reversed by 5 or more positions. More importantly, the case study respondents' six most preferred relationships are also the review commissioners' most preferred relationships. And similarly, the case study respondents' three least preferred relationships are also the commissioners' least preferred relationships.

Computing a Spearman rank order correlation coefficient, a value of rho = .961 was obtained; this is significant at the .02 level. These results clearly indicate that at least at an aggregate level, the case study respondents' and commissioners' judgments of contextual relationships are very highly correlated.

Design Strategies of Like and Disliked Relationships

The previous analysis has simply identified the most and least preferred contextual relationships. To this must be added an analysis of the contextual design strategies. Already in chapter section 6.2, a partial order scalogram analysis (POSA) of the contextual design strategies has been presented. Fig. 8-1 is a reproduction of the original POSA; but in this instance, the case study respondents' rank order of preference has been superimposed on the figure. (The commissioners' rank
Fig. 8-1: The Rank Order of Contextual Relationships as Superimposed on the Partial Order Scalogram Analysis (POSA).
order has not been reproduced on the POSA simply because it is so similar as to be redundant.)

Visual inspection of the pattern of rank order designations indicates that the rank order of preference generally moves from the upper left-hand side of the plot to the lower right. In other words, the most preferred relationships are defined by strategy profiles characterized by a high degree of replication. On the other hand, the least liked relationships are typically defined by strategy profiles characterized by a high degree of contrast.

Further inspection of the pattern of rankings on the POSA also reveals some important differences in preferences across the qualitative dimensions (represented horizontally on the plot). Even though all the projects on each "rung" of the plot have a similar total profile score, the lefthand projects are consistently preferred over those on the right. The key difference among the profile scores is the relative score for each of the three scales. In the case of the preferred projects, the score on the facade design scale is always high.

Despite the generally consistent patterns of preference throughout the POSA plot, there are nevertheless some relationships which do not entirely conform to those patterns. For example, relationship #20 (Graves' Portland building) is ranked lower than would be expected from its position in the POSA plot. Similarly, both relationships #15 and 23 (The Salem Five Cents Savings Bank and the Asia Society) are ranked more highly than their position in the plot would suggest.

These anomalies of course suggest that the conceptual framework presented in Chapter 5 (upon which the relationship profile scores were based) is simply not sensitive enough to
all the design qualities which affect people's judgments of compatibility. Potential modifications of the conceptual framework are discussed in Chapter 10.

Despite the several anomalies in the POSA, it is still possible to draw some general conclusions from this analysis:

1) The design strategies of the most preferred relationships are characterized by a relatively high degree of replication;

2) The design strategies of the least preferred relationships are characterized by a high relatively degree of contrast; and

3) Replication of at least some aspect of facade design is more critical for perceived compatibility than replication of either site organization or massing.

These conclusions are generally consistent with the findings of the several empirical studies reviewed in Chapter 3. More specifically, the results of Wohlwill's two studies of contextual fit in landscape settings (Wohlwill, 1978b, 1982; Wohlwill and Harris, 1980) also demonstrated that the respondents generally preferred relationships with a relatively low level of contrast. Only one of three sets of respondents in his study preferred relationships with a moderate degree of contrast. Moreover, the results of several other studies which considered the issue of compatibility in a tangential way also suggest that low contrast/high replication relationships were more likely to be preferred (Groat, 1979; Bishop, 1982; Weeks, 1984).

Preferred Contextual Relationships of the Respondent Groups

This analysis compares the preference judgments of the various role and site location respondents groups. These
comparisons are based on the rank order data, aggregated for each respondent group.

To compare the overall response patterns among the three case study locations, rank order correlations were calculated for each pair of case study locations. These calculations do not include the respondents' ranking of their own site. This means that the correlations represent a comparison only of the ratings of the simulated infill scenes. For each of the three pairs of case study locations, correlations at the .02 level of significance were found. (The correlation coefficients for each of the calculations discussed in this chapter are included in Appendix 7.)

Secondly, rank order correlations were also computed for the several review commissioner groups. For each combination of the three commission groups, correlations at the .02 level of significance were found. In addition, a rank order correlation was also computed to compare the response pattern of the design trained and non-design trained commissioners. This calculation also yielded a correlation that was also at the .02 level of significance.

Finally, non-expert and expert preference judgments were also compared. Thus rank order correlations were calculated to compare each review commission with the composite case study group. In this set of analyses, all three correlations were found to be significant at the .02 level also.

Thus, this set of analyses strongly suggests that, at an aggregate level, there is a very high degree of consistency in the preference judgments of the various respondent groups. Wohlwill and Harris (1980) have also reported finding a very high degree of consistency in judgments of contextual
relationships. However, there is a subtle, yet important, distinction between the two sets of findings. Whereas the respondents in this study were asked to categorize the infill scenes according to degrees of preference, the 12 respondent groups in Wohlwill and Harris' study were asked to rank order the scenes according to "fittingness". In the absence of any contradictory findings, it would appear that both types of judgments of contextual relationships yield highly consistent responses among rather diverse groups of people. (A further discussion of the distinction between judgments of preference and judgements of compatibility appears in chapter section 10.2.)
8.2 Comparing the Preference Judgments of Building Aspects

The building aspect facet of mapping sentence #2 reflects the intention of this research to explore the relationship between judgments of contextual relationships, judgments of the infill building itself, and judgments of the surrounding context. The exploration of these relationships is the focus of this chapter section.

Patterns of Category Usage

One way to compare the judgments of the three building aspects is to analyze the overall use of the five prespecified categories of preference. Figure 8-2 presents this information graphically for the two major respondent groups.

Turning first to the judgments of contextual relationships, it is clear that the pattern of category use for both the case study respondents and the commissioners tends to be bimodal. In other words, both groups tend to evaluate the relationships as either liked or disliked, and much less frequently as neutral. In the case of the review commissioners, however, there is a slight tendency to use the more extreme (i.e. like very much, dislike very much) categories.

One implication of this finding is that the two respondent groups' tendency to use the extreme categories may be indicative of a certain degree of concern for— or ego involvement in— the issue of compatibility. And similarly, the review commissioners' slightly greater tendency to use the extreme categories may be indicative of a slightly higher level of ego-involvement in the evaluation of contextual relationships. Sherif and Sherif (1967) have shown that when individuals are asked to sort a range of attitude statements,
Fig. 8-2: Patterns of Category Usage.
they are more likely to use extreme categories if they already have a high degree of ego-involvement in the issue they are being asked to evaluate. Although the interview task described by Sherif and Sherif is not exactly analogous to the interview task in this study (their respondents were asked to sort attitude statements, and to do so in an objective manner), the results of this analysis do seem suggestive of a similar phenomenon.

Alternatively, this bimodal distribution may simply be indicative of the naturalness, ease and/or frequency with which people make judgments about contextual compatibility. Those case study respondents who used compatibility as a free sort criterion tended to conceptualize it as a dichotomous category scheme. And while many of the commissioners generated a greater number of category gradations for their free sort, the bimodal distribution in their preference sort may simply reflect their mandate as policy-makers who must in the end vote yes or no with some conviction.

With respect to the judgments of the infill buildings on their own, both groups again show a similar pattern of category usage. For both groups, the pattern is unimodal, with the category "like somewhat" being used most frequently. Overall, the bulk of the judgments fall at the middle three increments on the scale. For the case study respondents, approximately 70% of all judgments are within the middle three increments; and for the commissioners, approximately 72% are within the middle three increments.

Finally, with respect to the judgments of the surrounding context, both respondent groups reveal yet again a similar pattern of category usage. In this instance, the overall pattern is again unimodal, but this time the bulk of the
judgments are at the more positive end of the scale. Approximately 83% of the case study respondents’ judgments occur within the positive and neutral increments of the scale; while approximately 88% of the review commissioner’s judgments occur within the same three increments. The apparent tendency of the commissioners to make slightly more positive judgments of the surroundings would seem consistent with their roles as activists in building and neighborhood conservation efforts.

In summary, then, both groups reveal very comparable patterns of category use. Overall, the respondents tend to express: 1) very definite judgments (either positive or negative) of the contextual relationships; 2) less extreme judgments of the buildings themselves; and 3) generally positive or neutral judgments of the surrounding context.

Preference Judgments of Infill Buildings on Their Own

One important way to shed light on the relationship between judgments of contextual compatibility and judgments of the infill buildings themselves is to compare the actual preference rankings for these two building aspects.

Tables 8-4 and 8-5 show the composite rank orders of preference for the infill buildings, for the case study respondents and the review commissioners respectively. To compare each respondent group’s preference ranking for the infill buildings with the same group’s preference ranking of contextual relationships (Tables 8-2 and 8-3), Spearman rank correlation coefficients were calculated. The correlation coefficient (rho) for the case study respondent group was .795, which is significant at the .02 level. The correlation coefficient for the review commission group was .902, which is also significant at the .02 level.
Table 8-4: Ranking Scores for the Infill Buildings/Case Study Respondents

<table>
<thead>
<tr>
<th>Order</th>
<th>Mean Rank</th>
<th>Compat'b'y Rank</th>
<th>Bldg Number and Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.25</td>
<td>2</td>
<td>7 Frick Collection addition</td>
</tr>
<tr>
<td>2</td>
<td>6.91</td>
<td>1</td>
<td>1 East Cambridge Savings Bank addition</td>
</tr>
<tr>
<td>3</td>
<td>7.73</td>
<td>4</td>
<td>9 Lincoln Park townhouses</td>
</tr>
<tr>
<td>4</td>
<td>8.57</td>
<td>3</td>
<td>2 The Alumni Center, U. of Michigan</td>
</tr>
<tr>
<td>5</td>
<td>8.96</td>
<td>7</td>
<td>15 Salem Five Cents Bank</td>
</tr>
<tr>
<td>6</td>
<td>10.21</td>
<td>5</td>
<td>25 519 Ashland residence</td>
</tr>
<tr>
<td>7</td>
<td>10.76</td>
<td>12</td>
<td>14 Deutsch residence</td>
</tr>
<tr>
<td>8</td>
<td>10.80</td>
<td>18</td>
<td>18 Dodge Center</td>
</tr>
<tr>
<td>9</td>
<td>10.90</td>
<td>11</td>
<td>12 Citizens Federal Savings</td>
</tr>
<tr>
<td>10</td>
<td>12.12</td>
<td>6</td>
<td>17 Beacon Street apartments</td>
</tr>
<tr>
<td>11</td>
<td>12.26</td>
<td>16</td>
<td>5 Metropolitan Museum of Art addition</td>
</tr>
<tr>
<td>12</td>
<td>12.42</td>
<td>10</td>
<td>19 Pacific Heights townhouses</td>
</tr>
<tr>
<td>13</td>
<td>13.14</td>
<td>8</td>
<td>23 The Asia Society</td>
</tr>
<tr>
<td>14</td>
<td>14.09</td>
<td>14</td>
<td>6 Maryland National Bank</td>
</tr>
<tr>
<td>15</td>
<td>14.41</td>
<td>13</td>
<td>24 Frank/Carlson residence</td>
</tr>
<tr>
<td>16</td>
<td>14.57</td>
<td>17</td>
<td>20 Portland Public Services Building</td>
</tr>
<tr>
<td>17</td>
<td>14.85</td>
<td>23</td>
<td>8 Enderis Hall, U. of Wisconsin-Milwaukee</td>
</tr>
<tr>
<td>18</td>
<td>15.52</td>
<td>21</td>
<td>13 Summit Place townhouses</td>
</tr>
<tr>
<td>19</td>
<td>15.82</td>
<td>15</td>
<td>3 Valerio residence</td>
</tr>
<tr>
<td>20</td>
<td>15.99</td>
<td>20</td>
<td>4 East India Marine Hall addition</td>
</tr>
<tr>
<td>21</td>
<td>16.30</td>
<td>25</td>
<td>22 Library, Mt. Mary College</td>
</tr>
<tr>
<td>22</td>
<td>17.75</td>
<td>19</td>
<td>16 Allen Memorial Art Museum addition</td>
</tr>
<tr>
<td>23</td>
<td>18.45</td>
<td>24</td>
<td>11 Beckley residence</td>
</tr>
<tr>
<td>24</td>
<td>18.48</td>
<td>9</td>
<td>10 Law Building, U. of Wisconsin</td>
</tr>
<tr>
<td>25</td>
<td>18.65</td>
<td>22</td>
<td>21 Farmers and Mercants Union Bank addition</td>
</tr>
</tbody>
</table>
Table 8-5: Ranking Scores for the Infill Buildings/Review Commissioners

<table>
<thead>
<tr>
<th>Composite Rank</th>
<th>Mean Rank</th>
<th>Compatab'y Rank</th>
<th>Bldg Number and Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.78</td>
<td>1</td>
<td>East Cambridge Savings Bank addition</td>
</tr>
<tr>
<td>2</td>
<td>6.17</td>
<td>2</td>
<td>Frick Collection addition</td>
</tr>
<tr>
<td>3</td>
<td>6.46</td>
<td>4</td>
<td>519 Ashland residence</td>
</tr>
<tr>
<td>4</td>
<td>7.13</td>
<td>3</td>
<td>The Alumni Center, U. of Michigan</td>
</tr>
<tr>
<td>5</td>
<td>8.30</td>
<td>5</td>
<td>Lincoln Park townhouses</td>
</tr>
<tr>
<td>6</td>
<td>10.17</td>
<td>6</td>
<td>Beacon Street apartments</td>
</tr>
<tr>
<td>7</td>
<td>10.33</td>
<td>11</td>
<td>Deutsch residence</td>
</tr>
<tr>
<td>8</td>
<td>11.15</td>
<td>8</td>
<td>Salem Five Cents Bank</td>
</tr>
<tr>
<td>9</td>
<td>12.02</td>
<td>7</td>
<td>The Asia Society</td>
</tr>
<tr>
<td>10</td>
<td>12.26</td>
<td>12</td>
<td>Valerio Residence</td>
</tr>
<tr>
<td>11</td>
<td>12.87</td>
<td>10</td>
<td>Pacific Heights townhouses</td>
</tr>
<tr>
<td>12</td>
<td>13.07</td>
<td>19</td>
<td>Metropolitan Museum of Art addition</td>
</tr>
<tr>
<td>13</td>
<td>13.74</td>
<td>16</td>
<td>Dodge Center</td>
</tr>
<tr>
<td>14</td>
<td>14.26</td>
<td>14</td>
<td>Maryland National Bank</td>
</tr>
<tr>
<td>15</td>
<td>14.43</td>
<td>17</td>
<td>Citizens Federal Savings</td>
</tr>
<tr>
<td>16</td>
<td>14.65</td>
<td>15</td>
<td>East India Marine Hall addition</td>
</tr>
<tr>
<td>17</td>
<td>14.96</td>
<td>13</td>
<td>Frank/Carlson residence</td>
</tr>
<tr>
<td>18</td>
<td>15.02</td>
<td>18</td>
<td>Portland Public Services Building</td>
</tr>
<tr>
<td>19</td>
<td>16.63</td>
<td>9</td>
<td>Law Building, U. of Wisconsin</td>
</tr>
<tr>
<td>20</td>
<td>16.98</td>
<td>25</td>
<td>Library, Mt. Mary College</td>
</tr>
<tr>
<td>21</td>
<td>17.26</td>
<td>20</td>
<td>Farmers and Merchants Union Bank addition</td>
</tr>
<tr>
<td>22</td>
<td>17.61</td>
<td>23</td>
<td>Beckley residence</td>
</tr>
<tr>
<td>23</td>
<td>17.76</td>
<td>24</td>
<td>Enderis Hall, U. of Wisconsin-Milwaukee</td>
</tr>
<tr>
<td>24</td>
<td>17.78</td>
<td>22</td>
<td>Summit Place townhouses</td>
</tr>
<tr>
<td>25</td>
<td>18.20</td>
<td>21</td>
<td>Allen Memorial Art Museum addition</td>
</tr>
</tbody>
</table>
While these correlations clearly indicate that, at an aggregate level, these two sets of preference judgments are systematically related, an analysis of the two rank orders indicates that at least some of the urban scenes are evaluated quite differently. For the case study respondents, scenes #10 and #18 vary by 15 and 10 rank positions respectively, though in opposite directions. In addition, four other scenes vary by 5 or more positions in the rankings. (These variations in preference judgments are also consistent with the respondents' commentaries elicited as part of the open-ended questions concerning noticed design features in segment #8 of the interview.)

Among the review commissioners also, the rankings of two scenes change substantially. Scene #10 varies by 10 places; while scene #5 varies by 7 places. Only one other scene (#22) varies by 5 or more positions.

These examples of substantial variations in the preference judgments of the two building aspects strongly suggest that the respondents are indeed making a conceptual distinction between their evaluation of the infill buildings and their evaluation of the contextual relationships. This is an important point methodologically as well as substantively. With respect to the methodological issue, one potential weakness of the interview procedure is that the respondents are being asked to make three separate types of preference judgments based on one set of photographs. This means that in each sorting and ranking exercise, the respondent is being asked to concentrate only on a particular aspect of the photograph. Thus, it could be argued that the conditions of the task impair the validity of the interview. Nevertheless, the respondents do make substantially different judgments about
some of the buildings, and they do demonstrate different
category usage (see previous chapter segment) for the two sets
of ratings. Both these facts thus suggest that interview
sequences is indeed measuring different sets of judgments.

On the other hand, the high correlations between the
rank order scores for each group strongly indicate that
the two sets of judgments are strongly interrelated. In other
words, both respondent groups tend to prefer the infill
buildings which are also viewed as contextually compatible.

This finding is also equally true for the various
respondent subgroups. Rank order correlations were also
calculated for the three case study sites, the non-design
trained commissioners, and the design trained commissioners.
For all five groups, the correlations between the building and
relationship rank orders are significant at the .02 level.
(See Appendix 7 for correlation coefficients.)

This tendency for preference judgments of contextual
relationships to be related to the judgments of the buildings
themselves is a theme which was suggested by Wohlwill's study
of coastal settings (1978b, 1982). His results indicated that
the respondents generally preferred the contextual relation­
ships which showed a lodge as the infill building to the
relationships which showed the factory. Given that Wohlwill's
study included a very small range of infill building
variations, his results were necessarily speculative in this
regard. The results of this study, however, lend strong
support to the suggestion that the preference judgments of a
building are likely to be highly related to judgments of its
contextual relationship.
Preference Judgments of the Surrounding Contexts

In order to elaborate further the relationship between preference judgments of contextual relationships and the other two elements of the building aspect facet, it is necessary now to focus on the preference judgments of the surrounding contexts.

A composite rank order of preference for the surrounding context was computed separately for the case study respondents and for the review commissioners. Since the interview format did not include a rank ordering exercise for the surroundings, these rank orders were computed from the aggregated category ratings for the two groups.

In order to investigate the relationship between judgments of compatibility and judgments of surroundings, rank order correlation coefficients were computed for each of the two groups. For the case study group, the correlation coefficient (rho) was -.157; and for the review commissioners the coefficient was .165. Neither of these is statistically significant.

These findings would indicate that there is little or no systematic relationship between the order of preference for compatibility and for the surroundings. In other words, the preference judgments of the surroundings are in no way indicative of the respondents' judgments of compatibility.

These results are not easily reconciled with the findings of the two landscape assessment studies (Wohlwill, 1978b, 1982; Gobster, 1983) which investigate the role of setting variables in judgments of compatibility. Of the two, Wohlwill's study is the more directly relevant to this analysis. On the other hand, while the results of Gobster's study do suggest that judgments of compatibility vary system-
atically across setting types, the study does not directly investigate preference judgments of the settings themselves. As a result, his findings are not directly comparable to the analyses of this study.

Turning then to Wohlwill's study (1978b, 1982), his use of a model simulation format enabled him to measure responses to the same building design across different setting conditions. Under these circumstances, Wohlwill found evidence of a "halo effect", that is to say subjects tended to give highly contrasting buildings more favorable ratings in the scenic setting "possibly because the attractiveness of the setting spilled over" (1978b, p.54) so that the contextual relationship was judged more positively. Given the simulation format of this research, however, no such systematic variation of setting type could be investigated. Nevertheless, the lack of significant correlations between the ratings of the surroundings and the ratings of contextual relationships does not seem to support the notion of a "halo effect" comparable to Wohlwill's findings.
8.3 Preferences Among Different User Groups and Locations

The previous two chapter sections have focussed on the overall patterns of preferences as they relate to the design strategy and building aspect facets. This chapter section instead focuses on the two facets which distinguish among the several case study subgroups—the user role and the location facets.

These two facets are analyzed jointly because they are necessarily linked by the organizational structure of the study. For example, the respondents at a given case study location are, by definition, one of the 3 user groups at the site; but at the same time they are also observers (i.e. non-users) of the other two case study locations and of the remaining 22 simulated scenes.

User and Neighbor Responses to the Case Study Sites

The intention of this chapter segment is to review briefly, as a prelude to the data analyses, the local residents' commentary concerning their own case study sites. This material is derived from the open-ended questions in interview segment #9.

In general, the majority of the local residents were favorably disposed towards the case study site. Only at the St. Paul site was there a substantial number of neighbor respondents who found the building objectionable. The most salient comments from each of the sites are described below.

1) Columbus. A number of the columbus residents who commented favorably on the new bank addition considered it to be an improvement to the general condition of the street. The
central 2-block area which constitutes downtown Columbus consists almost entirely of late-19th and early 20th century buildings. Most of these have not been well-maintained, and many of the respondents seemed to have little interest in their restoration or preservation.

One respondent acknowledged that the new bank addition was indeed a contrast to the other buildings along the street and in addition observed that the original Sullivan bank was equally as much a contrast. His conclusion was that the contrasting effect of the new addition was therefore quite appropriate to the context.

Nearly all the comments about the interior of the bank addition were favorable. A majority of the bank workers mentioned that they liked at least some aspect of their work area. Specific features of the work areas that were mentioned were: the work stations themselves, the furnishings in general, and the large windows onto the street.

2) Ann Arbor. The most important aspect of the Ann Arbor respondents' reactions to their own site is simply the unanimity of their responses; all 24 respondents made favorable comments regarding the contextual relationship of the Alumni Center to the rest of the campus. A number of these respondents went so far as to suggest that the new Center was a very positive addition to the campus. One respondent even commented: "It's the best unifying building on the whole campus."

When asked to mention some specific buildings to which the Alumni Center was particularly well linked, a total of 11 different campus buildings were mentioned. Furthermore, some respondents even suggested that the Alumni Center helped to create a visual link between previously unrelated buildings.
By far the most commonly appreciated features of the building's interior have to do with its windows and the resulting daylight, views, and sense of openness to the outside. Other particularly liked features of the building were the main lobby and mezzanine space, and a small, intimate library room.

3) St. Paul. Most of the townhouse residents seemed to like the townhouse building on its own, but were much less enthusiastic about its contextual relationship. Some of the residents indicated that they particularly liked the eye-catching, distinctive design; and others added that they thought their uniqueness was acceptable in a diverse neighborhood.

Most residents liked the multilevel and dynamic spatial quality of the units. In fact, this seems to be the quality which inspired many of them to buy the townhouse in the first place. A number of related design features were also mentioned as enhancing this spatial quality: openness and light, views, loft space, and high ceilings.

On the other hand, a number of the distant neighbor respondents actually expressed some animosity toward the overall character of the development. They also found the contextual relationship of the townhouses to be quite objectionable.

Preferred Relationships from User and Observer Perspectives

One way to analyze the relationship between user and observer judgments is by examining separately the overall preference judgments for each of the three site locations. This analysis can be accomplished through the use of SSA-1 (smallest space analysis).
SSA-1 is, like MSA-1, part of the suite of MDS programs developed by Guttman-Lingoes (Lingoes, 1973). However, whereas MSA is designed to facilitate the analysis of categorical data, SSA is designed for either integral or binary data.

This particular analysis is based on the preference judgments of compatibility elicited from the sorting task. In this case, a separate data matrix was prepared for each site location. The data which form the cells of the matrix are the frequencies with which each of the 5 sorting categories were used in evaluating each infill scene. Fig. 8-3 represents a schematic diagram of this data matrix.

Fig. 8-3: Matrix for SSA-I, Based on Relationship Sort Data

![Matrix Diagram]

The resulting SSA plots thus represent the interrelationships among the 25 infill scenes based on the preference judgments and aggregated for each site. In interpreting the plots, the closer two scenes are to each other, the more similar their profiles in the data matrix.

Figures 8-4, 8-5, and 8-6 represent the SSA plot for each of the three case study locations. On each plot, the numbers of the three case study sites have been graphically coded. Two important analyses are facilitated by the SSA plots.

1) The Conceptual Struture of the Preference Sortings. In comparing the overall structure of the three plots, it is
Fig. 8-4: SSA, Columbus Respondents' Relationship Sort
Coefficient of Alienation: .151

Fig. 8-5: SSA, Ann Arbor Respondents' Relationship Sort
Coefficient of Alienation: .079

Fig. 8-6: SSA, St. Paul Respondents' Relationship Sort
Coefficient of Alienation: .131

○ Columbus Site
□ Ann Arbor Site
△ St. Paul Site
clear that the plots for Ann Arbor and St. Paul are more nearly similar to each other than to the Columbus plot. Both the Ann Arbor and the St. Paul plot are roughly horseshoe-shaped. In both plots the more preferred relationships are represented at the righthand end of the "horseshoe"; and the most disliked relationships are represented at the extreme lefthand end of the "horseshoe".

This type of horseshoe form is indicative of an ordered continuum, or more properly a "simplex" (Lingoes and Borg, 1977; Shepard, 1978). Although these two plots do not conform absolutely to the specifications of a simplex manifold (inter alia, neither "horseshoe" can be precisely transposed to a straight-line projection), they nevertheless embody a strong unidimensional quality. Indeed, the coefficient of alienation of the 1-dimensional SSA solution for the Ann Arbor data is .195, only .045 above the recommended level. And similarly, the 1-dimensional solution for the St. Paul data is .193.

In the Columbus plot, the most preferred and disliked relationships are also represented at the right and lefthand ends of the plot respectively. However, the overall configuration of the points within the plot is quite different from the other two. In this case, the configuration actually expands at its middle and contracts at either side of the plot. This configuration suggests that either a secondary facet or extraneous "noise" operating within the pattern of categorization.

It has already been noted in Chapter 7 that the pattern of response at the Columbus case study location was to some degree different from the pattern at the other two sites. In this light, the relatively unique SSA plot is consistent with previous analyses. It may be that, since the Columbus
residents are likely less experienced in evaluating compatibility, they may have no collective recourse to a consistent standard of judgment for the more "ambiguous" middle range of relationships.

2) User Evaluations of Their Own Sites. The overall relationship of points in the three plots indicates that the respondents at all three sites are making relatively similar judgments about the compatibility of each of the 25 scenes. This, of course, is consistent with the results of the rank order analyses which were discussed in chapter section 8.2.

On the other hand, it is also clear that both the Columbus and St. Paul respondent groups are making atypical assessments of their own site. In both instances, the local residents are making much more positive assessments than the non-residents are making. More specifically, in the Columbus plot, the Columbus site is positioned with the positively evaluated sites. In the St. Paul plot, the St. Paul site is positioned almost exactly at the mid-point of the horseshoe along with other relationships which are neither consistently liked nor disliked.

Finally, all three case study site groups rate the Ann Arbor site very highly. Evidence from the rank order exercise suggests that the Ann Arbor residents do tend to rate it more highly than the other respondents. However, since it is rated so highly by all groups in the first place, this difference in evaluation is considerably more subtle than the differences for Columbus and St. Paul.

Preference Judgments of the Several User Groups

The previous set of analyses has served to uncover differences between residents and observers (non-residents) in
their preference judgments of the case study sites. This analysis is concerned with examining, in addition, the differences among the user role groups at each case study site.

Table 8-6 presents the average ranking scores for each case study site listed according to the three separate user groups. These results indicate that there is considerable variation in the pattern of rankings when each of the three user groups are considered separately. However, when the two neighbor groups are combined, a slightly clearer pattern emerges. Three sets of the judgments—the two Columbus rankings and the St. Paul relationship ranking—are nearly identical; for the other three judgments, the neighbor groups is very clearly lower.

The considerable variation between the two neighbor groups is likely the result of a combination of two factors. First, each neighbor group consists only of 5-7 individuals, so any individual with extremely atypical judgments has a very substantial effect on the average ranking score. (The user groups consistent of 11-12 people, so individual variations have relatively less impact on the average.) And second, the conditions at each site are unique, such that the degree

<table>
<thead>
<tr>
<th>BUILDING</th>
<th>Users/Residents</th>
<th>Respondents</th>
<th>RANKING CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>F &amp; M Bank Addition (Columbus)</td>
<td>9</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Alumni Center (Ann Arbor)</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Summit Pl. townhouses (St. Paul)</td>
<td>13</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>10</td>
<td>21</td>
</tr>
</tbody>
</table>
of familiarity and attachment that each neighbor group has with the case study site is different at each site. For example, in St. Paul, the near neighbors are residents of other housing units in the same Summit Place development, whereas the distant neighbors have very little to do with the Summit Place development. On the other hand, the near and distant neighbors in Columbus are more likely to be almost equally familiar with the case study site.

A second way of analyzing the variation in judgments of the user and observer groups is through SSA. This analysis is more comprehensive than the previous one in that it is based on the user/observer groups' sorting judgments of contextual relationships for all three case study sites. The specific data which form the cells of the matrix are the frequencies with which each user/observer group used the sorting categories.

Fig. 8-7 represents the resulting SSA plot. Each one of the points on the plot represents one of the user/observer groups. Perpendicular lines have been drawn through the plot to indicate that the groups can be divided into regions, based on both the user/neighbor distinction and differences in site location. However, with the exception of the Ann Arbor site, the variation between user/neighbor groups is much less substantial than the difference between the case study sites.

Thus the significance of this analysis is twofold. First, it demonstrates very consistent differences between the user and neighbor group judgments. And second, it also demonstrates the very clear distinction among the judgments of the three case study sites.
<table>
<thead>
<tr>
<th>6 SP ngbrs</th>
<th>4 AA ngbrs</th>
<th>Col ngbrs 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 SP resdnts</td>
<td>3 AA users</td>
<td>Col users 1</td>
</tr>
</tbody>
</table>

Fig. 8-7: Relationship Among Case Study Respondent Groups Based Relationship Sort

Coefficient of Alienation: .042
Individual Preference Judgments of the Case Study Sites

The previous analyses of the location and user role facets have been based entirely on aggregated data. In other words, both the frequencies of category use and the ranking scores have been combined and/or averaged for each group of respondents. This analysis is concerned instead with sorting judgments of individual respondents and their relation, if any, to systematic differences among the various user and location groups.

This particular analysis is also more comprehensive than the previous analysis in that it is based on the individual respondents' judgments of the three case study sites with respect to ALL three building aspects. In this case, the cells of the data matrix are the categories to which each individual assigned the sorting task elements (urban scenes). Thus, the MSA-1 program was used because it is designed to accommodate categorical data.

Fig. 8-8 represents the MSA-1 plot for this data analysis. The plot has been coded to differentiate among both the case study sites and the user/neighbor subgroups of the three sites. These analyses of the the MSA-1 plot clearly demonstrate that there is no clear systematic difference between the several respondent groups, either by location or by user role. While there is some indication that the Columbus respondents are gathered more densely at the lower side of the plot, these respondents are nevertheless intermixed with the respondents from the other sites.

Thus it must be concluded that, on an individual basis, there are no systematic differences in the respondents' preference sortings of the three case study sites.
Fig. 8-8: MSA, Relationship Among Case Study Respondents Based on Sorting Judgments of Case Study Sites

- θ Columbus users
- o Columbus neighbors
- □ Ann Arbor users
- □ Ann Arbor neighbors
- △ St. Paul residents
- △ St. Paul neighbors

Coefficient of Contiguity: .950
Individual Preference Judgments of the 25 Urban Scenes

The analysis of individual differences can also be expanded to incorporate the respondents' judgments of the entire set of 25 urban scenes. In this instance, the preference judgments for each building aspect were treated separately. This means that three separate data matrixes were prepared. In each one, cells of the matrix contained an individual respondent's categorization of a sorting element (urban scene).

The three resulting MSA-1 plots associated with this analysis appear in Appendix 8. They are not included within the body of this chapter because no systematic differentiation among the respondent groups is evident in any one of them.

Thus, the conclusions which must be drawn from this set of analyses is similar to the previous one. In other words, on an individual basis, there are no systematic differences among the respondents' preference sortings of the 25 urban scenes. The implications of this are discussed in the following chapter segment.

Familiarity and the User Role and Location Facets

The several sets of analyses in this chapter section have investigated the two facets which distinguish among the several case study respondent groups—that is, the user role and the location facets. Both of these facets are linked to the issue of familiarity with a given environment. The three user/neighbor groups at each case study site represent varying degrees of familiarity with the case study site; and the location facet introduces a further distinction between the user/neighbors of that site and the observers from the other
two sites who must make their judgments on the basis of photographic simulation.

Several previous research studies have investigated the effect of familiarity on environmental evaluations. Two of these studies have found that people tend to evaluate an environment more favorably the more they are familiar with it. For example, Canter (1972) found a clear correspondence between increasingly favorable evaluations of a hospital building and increased familiarity with the building.

Another study by Hansvick (1977) investigated the role of familiarity in evaluating the residential desirability of 5 Canadian cities. She found that each set of city respondents ranked their own city higher than the other sets of respondents ranked it.

On the other hand, the results of other recent research has shown that increased familiarity is not always associated with more favorable evaluations. In Marans and Spreckelmeyer's post-occupancy evaluation of a federal office building (1982), the results showed that the office workers evaluated the architectural quality of the building less favorably than visitors and residents of the local community. Further analysis of their data revealed that the workers' evaluations of the building were strongly related to their evaluations of their immediate work area. And unfortunately, many areas of the building were viewed quite negatively.

The results of Marans and Spreckelmeyer's research, however, do not necessarily contradict the findings of the other two studies. Rather the general pattern which seems to underlie all three studies is that the overall quality of a group's experience within a particular environment (whether
positive or negative) is likely to affect their judgments about other aspects of that environment.

In this light, the results of this study are consistent with that general pattern. As the discussion earlier in this chapter section indicated, the respondent groups at all three case study sites reported generally positive reactions to a variety of aspects of the case study site. In addition, the previous analyses in this chapter section have shown that increased familiarity with the case study sites is generally associated with more favorable preference judgments of those sites. This is true, however, only at the aggregate level. Additional analyses of the individual patterns of response indicate that there is no systematic distinction between either role or location groups. Unfortunately, no comparison of these findings with the previous research is possible, since the other studies have reported results based only on aggregated data. This observation would suggest that future research on the role of familiarity should investigate individual, as well as aggregated, patterns of response.
8.4 Expert and Non-Expert Patterns of Preference Judgements

The focus of this chapter section is on the analysis of the second environmental role facet—the degree of expertise. This facet includes three distinct levels of expertise: the members of review commissions with design-training; the members of review commissions without design training; and the non-experts (i.e. the case study respondents) who have no particular familiarity with architecture or design review procedures. (In fact, any potential case study respondents who acknowledged such expertise were eliminated from the study.)

The response patterns of the first two of these groups (the review commission groups) are considered in the following chapter segment. And a comparison of the response patterns of all three groups are considered in a subsequent chapter segment.

Design Trained and Non-Design Trained Commissioners

Each of the three review commissions which were selected for inclusion in this study has a different quality of membership. The Milwaukee commission, as has already been mentioned, is the only one of the three commissions which designates several specific positions within the commission. Of these several designated positions, one is designated for an architect and one is designated for a real estate expert. Both of these positions are filled by individuals with architectural training. With respect to the Shorewood commission, 5 of the 8 members who were interviewed have design training. Three are architects, one is an architecturally-trained planner, and one is an industrial designer.
And finally, none of the Cedarburg commission members is design-trained. Thus, of the 24 commissioners who were interviewed, 7 are design-trained, but these individuals are unequally distributed among the 3 commissions.

Because the group of design-trained commissioners is so small, the value of comparing aggregated data from the two commission groups may be somewhat limited. Nevertheless, two Spearman rank order coefficients were calculated in order to compare the groups' rankings of contextual relationships and their rankings of the buildings on their own. The coefficient (rho) for the relationship rank orders was .914, which is significant at the .02 level. And the coefficient for the buildings rank order was .755, which—though somewhat lower than the first correlation—is nevertheless also significant at the .02 level. These correlations would therefore suggest that the two groups are making substantially similar judgments in the ranking exercise.

A more fine-grained analysis of the two groups can be achieved, however, by using MSA-1. Because MSA accommodates the categorical nature of the sorting data, it facilitates a comprehensive analysis of individuals' sorting judgments. In this instance, three separate MSAs were generated, one for each building aspect. Thus the cells of the matrixes indicate the categories to which individual respondents assigned the various sorting elements (urban scenes).

The first of these analyses is represented by Figs. 8-9a and 8-9b; it is based on the commissioners' preference judgments of the contextual relationships. Both versions of the plot represent the same configuration of points, each point representing one of the individual commissioners. Fig. 8-9a has been coded to differentiate among the commissioners
Fig. 8-9a: MSA, Relationship Among the Review Commissioners Based on Relationship Sort

- O Design-trained
- □ Nondesign-trained

Coefficient of Contiguity: .907

Fig. 8-9b: MSA, Relationship Among the Review Commissioners Based on Relationship Sort

- O Milwaukee
- □ Shorewood
- △ Cedarburg
according to their degree of expertise; and Fig. 8-9b has been
coded to differentiate among the three commission locations.

Fig. 8-9a clearly demonstrates that there is no distinct
regionalization based on level of expertise. However, a dotted
line has been drawn around an area which includes 4 of the 7
design-trained commissioners; these individuals are the
practicing architects. Since they are located in the densest
area of the MSA plot, it is clear that their preference
judgments of contextual relationships are relatively similar
to many of their commissioner colleagues. This is an important
point. Previous research (e.g. Groat, 1982) has shown that
architects and non-architects may often make substantially
different evaluations of buildings. In the case of the
architect-commissioners this is not at all true.

This lack of differentiation between the two commissioner
groups may be a result of at least two important factors.
First, the design-trained architects may be a self-selected
and atypical set of architects. In other words, it may be that
their unusual sympathy for public concerns has led to their
participation in a design review commission in the first
place. Secondly, the design-trained commissioners may
interpret judgments of contextual relationships as being
subject to more normative standards than other sorts of
preference judgments. This is a point which is discussed in
more detail in chapter section 8.5.

Fig. 8-9b demonstrates that there is also no regional-
ization within the MSA plot based on commission location. In
other words, none of the three commissions can be distinguish-
ed from one another based on the preference judgments of the
individual members.
A comparable MSA for the preference judgments of the buildings on their own is presented in Figs. 8-10a and 8-10b. Fig. 8-10a is coded to differentiate the design-trained from nondesign-trained commissioners. Four of the design-trained commissioners can be distinguished in a clear region, however the other 3 design-trained commissioners are located in close proximity to a number of the other commissioners. An examination of the MSA item plots does not indicate any clear or consistent pattern of partitioning. In other words, it is the overall pattern of categorization rather than the categorization for any set of specific buildings which distinguishes these four commissioners from the others.

As in the case of the previous MSA analysis, there is no evidence of a systematic distinction between the members of the three commissions.

The third MSA, represented by Figs. 8-11a and 8-11b, is based on the commissioners' sorting judgments of the surroundings. In this case, a line has been drawn around a region which includes 6 of the 7 design-trained commissioners. An analysis of the MSA item plots reveals that these individuals are partially distinguished from the other commissioners based on their consistently positive judgments of a set of 7 of the infill scenes (specifically for scenes #5, 8, 10, 11, 16, 17, and 19). However, there does not appear to be any consistent attribute or quality in the surroundings portrayed in these scenes to suggest a basis for this distinctive pattern of categorization.

Finally, there is again no evidence of any systematic differentiation between the 3 commissions.

In summary, then, it would seem that there is virtually no distinction between the design-trained and nondesign-
Fig. 8-10a: Relationship Among the Review Commissioners Based on Building Sort
- Design-trained
- Nondesign-trained

Coefficient of Contiguity: .988

Fig. 8-10b: Relationship Among the Review Commissioners Based on Building Sort
- Milwaukee
- Shorewood
- Cedarburg
Fig. 11-a: Relationship Among the Review Commissioners Based on Surroundings Sort

- Design-trained
- Nondesign-trained

Coefficient of Contiguity: .921

Fig. 8-11b: Relationship Among the Review Commissioners Based on Surroundings Sort

- Milwaukee
- Shorewood
- Cedarburg
trained commissioners in their judgments of contextual relationships. On the other hand, some of the design-trained commissioners can be distinguished from the other commissioners based on their consistently positive judgments of the surrounding contexts of certain urban scenes. However, since the MSA plots indicate that these individuals form only partially distinct regions, it is also the case that these are relatively subtle distinctions in preference judgments.

Preference Judgments of Experts and Non-Experts

Discussions of the design strategies and building aspect facets in earlier chapter sections have already revealed some important similarities between the judgments of experts (commissioners) and non-experts (case study respondents). More specifically, the rank order correlation coefficient (rho) for the two groups' ranking of contextual relationships was .961, which is significant at the .02 level. Secondly, analyses of the relationship among the three building aspects revealed very similar patterns of sorting category use.

Further comparisons of the two groups' preference judgments can be achieved, however, through a series of MSAs similar to those used in analyzing the review commissioners. Thus three separate MSAs were generated, one for each building aspect and based on the preference sortings for all 97 respondents in the study.

The three resulting MSA-1 plots associated with this analysis appear in Appendix 9. They are not included within the body of this chapter because no systematic differentiation is evident either between the expert and non-expert groups or between the design-trained and nondesigned-trained commissioners.
Thus the conclusion which must be drawn from this set of analyses is that, in terms of the three sets of preference judgments, there is no clear differentiation between the expert and non-expert respondents.
8.5 A Multi-Facet Analysis of Preference Judgments

The several sets of analyses discussed in previous sections of this chapter have each focused on only one or two facets at a time. The set of analyses described in this chapter section on the other hand, represents an attempt to analyze the interrelationships among elements of four of the facets in mapping sentence #2: 1) degree of expertise, 2) location, 3) strategy profile, and 4) building aspect.

Relationships Between Building and Relationship Judgments

One of the conclusions that was drawn from the analysis of the building aspect facet was that preference judgments of the buildings on their own and judgments of the contextual relationships are significantly related, at least at an aggregate level. The present analysis explores the relationship between these two judgments as it is manifested within each of the three case study groups and within the commissioner group.

To facilitate this analysis, 4 separate data matrixes were generated—one for each of the case study sites and one for the commissioner group. Within each of these matrixes, every individual sort (whether building or relationship) is treated as a separate row; each cell of the matrix designates the category into which each sorting element (urban scene) was placed. Using the MSA-1 program, this means that each respondent will be represented on the MSA plot by two points—one for his/her building sort, and one for his/her contextual relationship sort.

Figs. 8-12 to 8-15 represent the resulting MSA plots. In each plot, the points have been coded to differentiate between
Fig. 8-12: Columbus Respondents' Relationship and Building Sorts

- Relationship Sort
- Building Sort

Coefficient of Contiguity: .902

Fig. 8-12a: Two Discrete Sets of Respondents
Fig. 8-13: Ann Arbor Respondents' Relationship and Building Sorts

- □ Relationship Sort
- ○ Building Sort

Coefficient of Contiguity: .920

Fig. 8-13a: Individuals with Similar Building Sorts
Fig. 8-14: St. Paul Respondents' Relationship and Building Sorts

- Relationship Sort
- Building Sort

Coefficient of Contiguity: .948

Fig. 8-14a: Individuals with Disassociated Relationship and Building Sorts
Fig. 8-15: Review Commissioners' Relationship and Building Sorts

- Relationship Sort
- Building Sort

Coefficient of Contiguity: .906

Fig. 8-15a: Individuals Whose Building Sorts Fall Outside the Relationship Core
the two building aspect sorts. In addition, a line connects each individual respondent's two sorts.

Two obvious and important observations can be made about all four plots. First, in none of these plots is there an absolute regional demarcation of the two building aspect sorts. (Some regionalization is apparent in the commissioners' plot, and this will be discussed below.) Indeed, in all four plots there are many instances where one individual's building preference sort is far closer (i.e. more similar) to someone else's relationship sort than to other preference sorts. This characteristic of the several plots lends support to the conclusion drawn from the rank order analysis that judgments of the two building aspects are indeed related on an aggregate level.

Secondly, in each of the plots, there is at least one instance in which an individual's two sorts are more similar to each other than to any other sort. This suggests that for at least some people there is virtually no operational (though there may well be an intellectual) distinction between judgments of the two building aspects.

While the previous observations pertain to the configurational qualities common to all four plots, there are in addition other characteristics which are unique to the individual plots. Thus each MSA plot is discussed in detail below.

1) Columbus. The dominant characteristic of the Columbus plot is that there are basically two major groups of respondents (one on the left and the other on the righthand side of the plot) whose two sorts are disassociated from each other. Indeed as Fig. 8-12a demonstrates, with two individuals removed from the plot, two distinct, non-overlapping sets of
respondents are visible. In addition, there is one individual who is totally isolated (at the top of the plot) from the others.

This plot thus suggests a diversity of judgment patterns between sets of individuals in the respondent group. This indeed would seem consistent with the demographic characteristics of the respondents in Columbus. In comparison with the other two case study sites, the respondents in Columbus represent a more diverse range of socio-economic and educational characteristics.

2) Ann Arbor. In contrast to the dispersed pattern of the Columbus plot, the Ann Arbor plot reveals a much tighter network of relationships among the individual respondents. A line has been drawn around the "core" of the plot to indicate that there are only three respondents who are not represented by at least one sort within that core.

A further characteristic of the Ann Arbor plot is that a number of individuals demonstrate a similar relationship between the two types of judgments. More specifically, the preference judgments of these individuals are very tightly packed (i.e. similar to each other), and their relationship sorts are all found above and to the left of the preference sorts. Fig. 8-13a highlights these individuals to illustrate this point. This would suggest that nearly half of the Ann Arbor respondents reveal a pattern of both building and relationship judgments which are very similar to each other.

3) St. Paul. One important aspect of the St. Paul plot is emphasized by the heavy line which is drawn around the lefthand side of the plot. This demarcates the "relationship sort" side of the plot. All but four individuals' relationship
sorts are located on that side of the plot. A lighter line demarcates the "core" area where over half of the respondents' relationship sorts are located.

A further characteristic of the plot is that there are a number of individuals whose preference sorts are located at quite some distance from their relationship sort. For nearly all of these individuals (highlighted in Fig. 8-14a) their preference sort is located to the right of and above the relationship sort. Thus this aspect of the plot strongly suggests that approximately half the St. Paul respondents are making a relatively strong and consistent distinction between their preferences for particular buildings and their preferences for contextual relationships. (A more detailed discussion of the extent of that distinction is discussed in the following chapter segment.)

4) Review Commissioners. Of the four MSA plots being analyzed here, the commissioners' plot indicates the greatest extent of regionalization. A line has been drawn to indicate the boundaries of the relationship sort region. All but five individuals' relationship sorts occur in this relatively compact region. This would suggest that there is a considerably greater degree of consensus among the commissioners on the nature of preferred contextual relationships than on the preferred infill buildings.

Another important characteristic of this plot is the distribution of the preference sorts. Although a number of them are contained within the relationship sort region, quite a number of them are located at some distance from the relationship core. Fig. 8-15a highlights all those individuals whose relationship sort falls within the core region and whose preference sort falls outside it. This configurational pattern
suggests that there are a number of commissioners who hold a clear operational distinction between their judgments of the two building aspects. This is an important characteristic which seems to be shared with many of the St. Paul respondents.

Category Use and Judgments of Specific Buildings

One of the limitations of the previous analysis is that there is no way to gauge the relative distances (dissimilarity) between a pair of sorts for a given individual in one plot with a pair of sorts for an individual in another plot. In other words, each separate MSA plot represents a closed system; and any comparisons between them must rely simply on an analysis of the configurations themselves. Distances between two points in one plot are not directly comparable to distances between points in another plot.

Nevertheless it is possible to achieve some sense of comparison between the four site/groups by reviewing the item plots which are an integral part of the MSA print-out. In this case, there is one item plot for each urban scene, each point in the plot being identified by its category designation within a respondent's sort.

Close inspection of these plots reveals that there is considerable variation among the four respondent groups in the number of item plots that show evidence of regionalization. However, there is a consistent pattern which occurs in these regionalized item plots. Fig. 8-16 represents an example of the item plot for urban scene #1 for the St. Paul respondent group. A comparison of this plot with Fig. 8-14 reveals that the region of category numbers 2 & 3 includes the preference sorts of many respondents whose relationship sort is located
Fig. 8-16: MSA item Plot for Building #1
St. Paul Respondent Group
on the lefthand side of the plot in the category 1 area. Since this pattern of regionalization occurs consistently in a number of other St. Paul item plots, it becomes clear that there are a number of individuals who consistently rate a given urban scene as 2 or 3 (somewhat liked or neutral) for the building sort and then rate it more favorably (as #1) for the relationship sort.

This pattern is exactly reversed for a number of the least liked urban scenes. Thus these same individuals will rate the scene as #3 or 4 (neutral or somewhat disliked) for the building sort and then rate it more unfavorably (#5) for the relationship sort.

However, this pattern does not occur with equal frequency among the four respondent groups. More specifically, relatively clear regionalization occurs in a number of plots for both the St. Paul and commission groups. On the other hand, it occurs in only a few of the Ann Arbor plots, and only partially in one or two of the Columbus plots.

To facilitate a more detailed analysis of this variation among the four groups, Table 8-7 presents a summary of the category use for the three most preferred urban scenes (i.e. the ones most frequently regionalized). This table reveals at least two important points of comparison among the four groups: 1) the frequency of extreme judgments (use of category 1 in the case of the preferred scenes); and 2) the extent of variation between the use of categories 1 & 2 in each of the two types of sorts. The special characteristics of the four groups with respect to these two points are discussed in detail below.
1) Columbus. In comparison with the other groups, the Columbus respondents are particularly notable for their relative disinclination to use category #1 (like very much) in their building sort, and also to some extent in their relationship sort. In addition, the percent of respondents using category #1 for the relationship sort is nearly 20% lower than the highly consistent percentage of respondents at the other sites.

Moreover, although there is indeed greater use of category 1 in the relationship sort than in the building sort, it is difficult to identify specific respondents who make these changes in judgments on a clearly consistent basis. This represents a rather different condition than that which

Table 8-7: Category Usage for Buildings 1, 2, & 7

<table>
<thead>
<tr>
<th>Respdnt Group</th>
<th>Percent of Respondents</th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Cat. #1</td>
<td>#2</td>
<td>#3</td>
<td>#4</td>
<td>#5</td>
</tr>
<tr>
<td>Col.</td>
<td>25.</td>
<td>40.3</td>
<td>22.2</td>
<td>8.3</td>
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<td>6.9</td>
<td>2.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Ann</td>
<td>50.</td>
<td>34.7</td>
<td>9.7</td>
<td>1.4</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>77.7</td>
<td>16.7</td>
<td>4.2</td>
<td>0</td>
<td>1.4</td>
</tr>
<tr>
<td>St.P</td>
<td>44.4</td>
<td>37.3</td>
<td>13.3</td>
<td>5.3</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>77.3</td>
<td>18.7</td>
<td>0</td>
<td>4.</td>
<td>0</td>
</tr>
<tr>
<td>Cmnrs</td>
<td>30.6</td>
<td>43.1</td>
<td>23.6</td>
<td>2.8</td>
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<tr>
<td></td>
<td>77.7</td>
<td>12.5</td>
<td>9.7</td>
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</tr>
</tbody>
</table>

Table 8-7a: Category Usage for Buildings 1, 7, & 9

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<th>Percent of Respondents</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cat. #1</td>
<td>#2</td>
<td>#3</td>
<td>#4</td>
<td>#5</td>
</tr>
<tr>
<td>Ann</td>
<td>43.8</td>
<td>35.4</td>
<td>13.6</td>
<td>4.17</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td>67.7</td>
<td>21.9</td>
<td>7.3</td>
<td>2.1</td>
<td>1.0</td>
</tr>
</tbody>
</table>
characterized the example of the St. Paul item plot. In that example, it was possible to identify clearly a set of individuals who consistently changed to more extreme judgments in the relationship sort.

2) Ann Arbor. Unfortunately the analysis of the Ann Arbor response pattern is necessarily confounded by the fact that the Ann Arbor site is one of the scenes included in the calculations of the percentages presented in Table 8-7. As the discussion in chapter section 8.3 indicated, the Ann Arbor respondents' familiarity with their own site has likely led to an atypically high use of category #1 judgments for this scene. Therefore, to provide an additional index of the Ann Arbor response pattern, a second calculation has been provided in Table 8-7a which is based on the category use for scenes #1, 7, and 9. However, since scene #9 is generally less preferred both as a building and as a contextual relationship, it is also less likely to evoke category #1 responses— from both Ann Arbor and the other sites. Thus, it is likely that an "accurately comparable" set of percentages for the Ann Arbor site lies somewhere in between the two sets of figures.

Despite these necessary limitations to this analysis, it nevertheless appears possible to draw some cautious generalizations about the Ann Arbor group's response pattern. Overall the Ann Arbor group seems to represent an intermediate position between the Columbus and St. Paul group. On the one hand, they seem more likely than the Columbus respondents (and perhaps even the St. Paul respondents) to make highly positive judgments (category #1) about the buildings on their own. On the other hand, they seem less likely than the St. Paul group to change to more extreme judgments for the relationship sort.
Taken together, these two characteristics suggest that the two sets of sorting judgments are more highly linked for the Ann Arbor group than for either the St. Paul or commissioners group, and possibly even more linked than for the Columbus group. (The latter comparison is a bit more problematic because of the lack of systematic patterns in the individual responses.) Additional support for this conclusion is to some extent provided by the MSA configuration discussed in the chapter segment above. The tight network pattern of the MSA is consistent with the data analyses of Table 8-7. Additional support for this conclusion is also provided by the MSA item plots; as has already been pointed out, relatively fewer item plots show any pattern of regionalization as compared to the St. Paul and commissioners plot.

The implications of this apparent link between the two sets of sorting judgments are discussed in the following chapter segment.

3) St. Paul. The St. Paul respondent group represents a somewhat intermediate example between the Ann Arbor and commissioners groups. At this aggregate level, they tend to be slightly less favorable than the Ann Arbor respondents in their evaluations of the urban scenes for their building sort. However, since there is a greater change in judgments from categories #2 & #3 to category #1, their category use in the relationship sort is almost identical to the commissioner group. In addition, as has already been mentioned earlier in this discussion, the respondents most consistently responsible for the change in category use is the group which is isolated in Fig. 8-14a.
4) The Review Commissioners. The most striking characteristic of the commissioners' response pattern is their relatively great change in category use from the building to the relationship sort. Remarkably, their evaluations of the urban scenes for the building sort are nearly as low as the Columbus groups ratings. However, there is such a great change from categories #2 and #3 to category #1, that their ratings for the relationship sort are nearly identical to both Ann Arbor and St. Paul.

Careful review of the item plots also demonstrate that the individuals most consistently responsible for this type of change in judgment are the individuals isolated in Fig. 8-15a.

On this basis, it seems clear that quite a number, perhaps even the majority, of review commissioners make a consistent and clear distinction between their preferences for buildings and their preferences for contextual relationships.

Although this set of analyses was discussed in terms of the groups' sorting responses to three particular urban scenes, similar variations in the groups' response patterns also occur—though in a somewhat less distinct manner—in the responses to other preferred urban scenes. Moreover, similar variations are also evident in the responses to the most disliked buildings.

Some Conclusions and Some Questions for Future Research

The preceding analyses have attempted to provide a comprehensive understanding of the preference sort judgments for the 3 case study groups and the commissioner group. Already some conclusions have been drawn about the specific and unique response patterns of each respondent group.
However, in addition, it is possible to make some general observations of a more speculative nature; and these, in turn, raise important questions for further research. Again, these issues are discussed with reference to specific aspects of the four respondent groups.

1) Columbus. In many respects, the special qualities of the Columbus case study are the most difficult to discuss; this is because the individual respondents' sorting judgments appear to be characterized by a less obvious or consistent pattern than is evident among the other respondent groups. This in itself may be the most important point.

One possibility that warrants future investigation is that the Columbus site represents a relatively "naive" response to the issue of contextual compatibility. Several interrelated factors suggest this. First, it has already been noted that the site conditions are such that these respondents are less exposed to a variety of architectural conditions on a daily basis than the other respondent groups. And second, it was also noted in the discussion of the free sort task (Chapter 7) that only three of the Columbus respondents chose to use compatibility as their free sort criterion.

Taken together, these circumstances suggest that the Columbus respondents may be both relatively inexperienced with and uninterested in contextual compatibility among buildings. As a result they may feel either too uncertain or too little interested to make strongly assertive preference judgments (indicated by the use of categories 1 and 5) about the urban scenes.

Finally, one reason that it may be difficult to identify a clear or distinct pattern of responses for the Columbus group is that many of the individual respondents may not have
developed a consistent standard of judgment for architectural and urban design.

2) Ann Arbor. The combination of both the MSA configuration and the pattern of category use (presented in Table 8-7) begin to suggest that the Ann Arbor respondents demonstrate the greatest degree of similarity between their preference judgments of buildings and their judgments of relationships.

If this is indeed true, then an important question is why? At least two alternative explanations can be offered. The first makes reference to the level of expertise, an issue which was already mentioned in connection with the previous discussion of the Columbus group. It may simply be that the Ann Arbor group represents an intermediate developmental pattern between those represented by Columbus and the commissioners. Thus, the Ann Arbor respondents seem to demonstrate a greater conviction (use of extreme categories) than the Columbus group in their judgments of contextual relationships, but they have also not developed such a clear operational distinction between the two sets of judgments as either the St. Paul or commissioners groups.

The second explanation has to do with the impact of the Alumni Center building on the Ann Arbor respondents. Since the Ann Arbor respondents genuinely regard the Alumni Center as both a good building and as a positive contribution to the campus context, it may be that these respondents have come to evaluate architecture in terms of its potential for contextual compatibility. Unfortunately there is no way to investigate this suggestion adequately. Indeed, it would have required a pre-design set of interviews with the respondent group.
3) St. Paul. The two issues—level of expertise and the relationship to specific environmental conditions—discussed in relation to the Ann Arbor case study are also pertinent in the discussion of the St. Paul site.

With regard to the issue of expertise, it is a relatively more complicated task to discuss the pattern of response at the St. Paul site because there are at least two distinctly different patterns of response. As the MSA plot indicated, there is clearly a set of individuals who make relatively little distinction between the preference and relationship judgments; and there is another group for whom there is a relatively clear distinction. The former group's pattern of response seems to be more similar to that of the Ann Arbor respondents; while the latter group seems to make the sort of clear distinction between the two preference judgments which is more typical of the review commissioners. Indeed, this set of St. Paul respondents seems to make an even more radical distinction between the two judgments than the review commissioners. This point appears to be substantiated by the fact that a greater number of MSA item plots for the St. Paul group reveal some degree of regionalization.

The relatively radical distinction between building and relationship judgments revealed by the one set of St. Paul respondents is an important aspect of the second interpretation of this data. This explanation focuses on the particular environmental conditions of the St. Paul site. More specifically, the majority of the individuals in this particular set of respondents (7 of the 12) are residents of the Summit Place townhouses. In contrast to the Ann Arbor Alumni Center, the St. Paul townhouses are generally seen as being inappropriate to their context by a majority of the non-resident respon-
dents. Yet the townhouse residents nevertheless chose to buy these apartments, presumably because they liked them for other reasons. Informal conversations with these respondents revealed that many residents had bought the townhouses because of both the convenience and the ambience of the location and because of the unusually open quality of the interior spatial arrangement.

Thus, two sequences of environmental interaction are possible: 1) the residents were willing to buy into these townhouses because they do make a clear distinction between judgments of buildings and of relationships, or 2) they have come to make a clear distinction between the two sets of judgments because of their favorable experience with the townhouses. Or in addition, a combination of both sequences of influence may be operating. Obviously, a more elaborate longitudinal study would be required in order to assess these possibilities.

4) Review Commissioners. Several important observations can be made about how the review commissioners' pattern of response relates to the obligations of their role in the design review process.

First, it has already been observed that there appears to be a relatively high consensus in their judgments of contextual relationships. Only five individuals' relationship sorts do NOT fall into the "core" region of relationship judgments. In addition, since no more than two of these individuals are members of a given commission, this suggests that there is a fair amount of consensus in the judgments of all three commissions.

Second, to the extent that most of the commissioners seem to make a clear distinction between judgments of buildings and
of relationships, this would suggest that they are not likely to let their particular architectural preferences substantially influence their decisions on committee matters. This is a necessary and important aspect of their role. In her book on the role of design review processes, Bowsher (1978) writes: "...despite the temptation to promote design preferences, remember that the job of review board members is to interpret standards of appropriateness, not to design structures" (p. 44).

Finally, both of the preceding observations raise the question of the impact of the committee process in encouraging both the development of consensual judgments of relationships and the relative distinction between those and other preference judgments. One review commissioner (an architect), admitted in an informal discussion that his judgments had been substantially affected by his experience on the review commission. Clearly, this is an another aspect of the research topic which would require a longitudinal investigation.
8.6 Summary

The purpose of this chapter section is to summarize the principal findings of the several analyses presented in this chapter. The relation of these findings to those which are presented in both the preceding and subsequent chapters will be discussed in Chapter 10.

For clarity and convenience the following conclusions are organized according to the several facets of mapping sentence #2.

1) Design Strategy. The design strategies of the most preferred contextual relationships are characterized by a relatively high degree of replication, especially with respect to facade design.

This tendency is consistent among the several respondent groups, including: the three case study site groups, the nondesign-trained review commissioners, and the design-trained review commissioners.

2) Building Aspects. For both the case study respondents and the review commissioners, preference judgments of the contextual relationships are highly correlated with the preference judgments of the infill buildings on their own. In other words, both major respondent groups tended to prefer the infill buildings which were also viewed as contextually compatible.

On the other hand, there is little or no systematic relationship between preference judgments of the surrounding settings and judgments of contextual relationships.

With respect to overall patterns of category use, both respondent groups tended to employ a bimodal pattern in their judgments of contextual relationships. In other words, the
respondents made either positive or negative judgments more frequently than neutral ones.

3) Location and Degree of Familiarity. Each case study group tended to evaluate their own site more favorably than did the other case study groups.

Furthermore, each of the several user and neighbor groups demonstrated characteristically different response patterns in their judgments of the three case study sites.

On the other hand, no substantial differences were found when preference judgments based on the entire set of infill scenes were compared among the three site locations and several user groups.

4) Degree of Expertise. The design-trained and nondesign-trained review commission groups make substantially similar preference judgments of contextual relationships.

Similarly, the review commissioners and the case study respondents also make substantially similar judgments of the contextual relationships.

5) Overall Patterns of Preference Judgments. Characteristically different response patterns were found within each of the three case study groups and the commission group with respect to the relationship between judgments of contextual compatibility and of infill buildings.

Detailed analyses of these patterns suggest that they may be a function of one or both of the following: 1) differing levels of cognitive complexity with respect to environmental phenomena; and 2) qualitative differences in environmental experience resulting from conditions peculiar to each respondent group.
IDENTIFYING THE DESIGN FEATURES THAT CONTRIBUTE TO CONTEXTUAL COMPATIBILITY

9.1 Content Analysis Procedures

9.2 Comparisons Among the Several Respondent Groups
    Frequencies of the Feature Items
    Noticed Design Features: The Respondent Groups

9.3 Tactics for Design Strategies

9.4 The Design Features of Liked and Disliked Relationships
    Noticed Features of Liked Relationships
    Noticed Features of Disliked Relationships

9.5 Summary
The domain of concern specified by mapping sentence #3 is the identification of the particular design features which are most salient in people's conceptualizations of contextual compatibility.

The data which form the bases for the analyses described in this chapter derive from segment #8 of the interview sequence. In this interview segment, the respondents were first asked to confirm from the previous ranking exercise the identification of the 3 most preferred relationships and the 3 most disliked relationships. The respondents were then asked to identify the features which contributed or detracted from the quality of the contextual relationship.

9.1 Content Analysis Procedures

In response to the set of open-ended questions described above, the 97 respondents generated a total of more than 2000 feature items. These feature items were then analyzed according to content analysis procedures similar to those outlined in chapter section 7.2. Initially, a sample of approximately 500 feature items was organized into category groups based on the topical similarity of the items. The reliability of this classification system was then tested by a colleague familiar with the research. The result of this verification exercise was that the two judges achieved agreement for 90.3% of the items in the sample.

An additional index of reliability which takes into account the unequal frequency distribution of the various category groups (Scott, 1955) was also calculated. This reliability index yielded a value of .8975. This was deemed an
Table 9-1: Mapping Sentence #3: Noticed Design Features

Whether respondent (x), being a member of the public (1. review comm’r) or w/o design (2. w/o design) assesses the contextual fit of a set of urban infill scenes according to location:

<table>
<thead>
<tr>
<th>Location</th>
<th>Design Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Columbus</td>
<td>Site organization</td>
</tr>
<tr>
<td>2. Ann Arbor</td>
<td>Massing</td>
</tr>
<tr>
<td>3. St. Paul</td>
<td>Facade Design</td>
</tr>
<tr>
<td>4. Milwaukee</td>
<td>Preference Design’n of buildings</td>
</tr>
<tr>
<td>5. Shorewood</td>
<td>Range</td>
</tr>
<tr>
<td>6. Cedarburg</td>
<td></td>
</tr>
</tbody>
</table>

1. liked
2. disliked

Range: does not assess contextual fit according to the design features.
acceptable level of reliability; and subsequently the remainder of the features items were divided between the two judges for classification.

Taken together, the two indexes suggest that a relatively high degree of inter-judge reliability was achieved. This is an important consideration since nearly all the analyses described in this chapter are dependent upon these content analysis procedures.
9.2 Comparisons Among the Several Respondent Groups

The several analyses in this chapter section are concerned with the two facets which distinguish among the various respondent groups; these are the location and degree of expertise facets.

Frequencies of the Feature Items

One of the most basic analyses of these data is a comparison based simply on the average number of feature items generated by the individual members of the several respondent groups. This information is summarized in Table 9-2.

The table is organized to show the order of increasing feature item frequencies from one respondent group to another. These results reveal that there is a difference of nearly two feature items per person/per building between the Columbus respondents and the design-trained review commissioners.

More importantly, however, the sequence of feature item frequencies begins to suggest that the various respondent groups may represent different levels of cognitive complexity with respect to architectural/urban design issues. In other words, it is being suggested that the number of feature items generated by an individual may be indicative of the degree of cognitive sophistication that individual is able to bring to bear on the issue of contextual compatibility in particular,

<table>
<thead>
<tr>
<th></th>
<th>Col.</th>
<th>Ann</th>
<th>St. P</th>
<th>N-Dsgn Cmnr</th>
<th>Dsgn Cmnr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average No.</td>
<td>2.96</td>
<td>3.83</td>
<td>4.58</td>
<td>4.7</td>
<td>4.97</td>
</tr>
</tbody>
</table>
and on aspects of environmental interpretation more generally.

The issue of cognitive complexity is one which has been substantially explored within the framework of personal construct theory (Bannister and Fransella, 1977), and thus with reference to the concept of a personal construct system. In the realm of clinical psychology, it has been argued that a socially well-developed person will have more ways of describing other people than a socially less developed person. Canter (1970) has translated this concept into the realm of architectural training. He has found that architectural students who demonstrate a broad variety of ways by which they construe buildings perform better in their examinations.

Assuming then, that the feature item frequencies represent some measure of cognitive complexity, the rank order of respondent groups is notable in several respects. First, it confirms the expectation that design-trained commissioners would reveal more cognitive complexity than the nondesign-trained commissioners. And similarly, both review commissioners groups demonstrate more cognitive complexity than the case study respondents.

In addition, the order of the case study locations tends to confirm some conclusions which were tentatively drawn elsewhere in this study. More specifically, it was suggested in both Chapters 7 and 8 that the response pattern of the Columbus group may be indicative of a relatively low level of experience and sophistication in architecturally-related issues. In addition, it was also suggested in chapter section 8.5 that the Ann Arbor group may represent an intermediate level of sophistication; and that the St. Paul group may represent a greater degree of sophistication more similar to
the commissioners group. In effect, then, the present analysis lends support to these previous observations.

Noticed Design Features: The Respondent Groups

A set of 35 design feature categories were developed from the 2376 individual feature items elicited from the respondents. These feature categories form the framework for Tables 9-3 and 9-4, which present the incidence of category use for the case study sites and the review commissioners respectively.

These 35 feature categories are organized according to the topic areas defined by the conceptual framework presented in Chapter 5. A few of the respondents' comments, however, did not clearly correspond to the components of the conceptual framework, and these have been listed at the bottom of the tables.

The content of these non-framework categories requires some elaboration. By far the most predominant type of comments (item #2) were those that expressed very general observations about the contextual relationship, without specifying any particular design features. (Comments such as "It sticks out like a sore thumb," or "It just blends" are typical of this category group.) Indeed, approximately 96% of both the case study respondents and the review commissioners offered comments such as these, usually as their first response to the interview question. Most of the other non-framework categories refer to either the building itself or to the surroundings on their own.

Turning now to Table 9-3, the first three columns of figures indicate the number of people at each of the three
### Table 9-3: Design Features Noticed by Case Study Respondents

<table>
<thead>
<tr>
<th>Categories of Response</th>
<th>Number of People</th>
<th>% of People</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FRAMEWORK CATEGORIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. site</td>
<td>2 4 4</td>
<td>13.7</td>
</tr>
<tr>
<td>2. building type</td>
<td>3 2 4</td>
<td>12.3</td>
</tr>
<tr>
<td>3. size</td>
<td>2 11 15</td>
<td>38.4</td>
</tr>
<tr>
<td>4. prominence</td>
<td>1 3 2</td>
<td>8.2</td>
</tr>
<tr>
<td><strong>SITE ORGANIZATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 space between bldgs</td>
<td>4 4 4</td>
<td>16.4</td>
</tr>
<tr>
<td>6.2 circulation access</td>
<td>1 2 1</td>
<td>5.5</td>
</tr>
<tr>
<td>6.3 walls/fencing</td>
<td>3 5 5</td>
<td>17.8</td>
</tr>
<tr>
<td>6.4 site setbacks</td>
<td>4 4 5</td>
<td>17.8</td>
</tr>
<tr>
<td>6.5 landscaping</td>
<td>4 5 7</td>
<td>21.9</td>
</tr>
<tr>
<td>6.6 vehicular access</td>
<td>- - 3</td>
<td>4.1</td>
</tr>
<tr>
<td>6.7 small-scale site elem'ts</td>
<td>1 1 4</td>
<td>8.2</td>
</tr>
<tr>
<td>6.8 miscellaneous</td>
<td>- 1 1</td>
<td>2.7</td>
</tr>
<tr>
<td>6.9 views</td>
<td>- - -</td>
<td>-</td>
</tr>
<tr>
<td><strong>MASSING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1 overall massing</td>
<td>15 17 15</td>
<td>64.4</td>
</tr>
<tr>
<td>8.2 roof-line</td>
<td>10 17 15</td>
<td>57.5</td>
</tr>
<tr>
<td>8.3 delineation of stories</td>
<td>3 - 4</td>
<td>9.6</td>
</tr>
<tr>
<td>8.4 height of bldg</td>
<td>10 7 11</td>
<td>38.4</td>
</tr>
<tr>
<td>8.5 articulation base or top</td>
<td>1 3 1</td>
<td>6.8</td>
</tr>
<tr>
<td>8.6 secondary massing elem'ts</td>
<td>9 7 9</td>
<td>34.2</td>
</tr>
<tr>
<td>8.7 specific massing elem'ts</td>
<td>4 6 9</td>
<td>26.0</td>
</tr>
<tr>
<td>8.8 links betwn old/new</td>
<td>1 5 5</td>
<td>15.1</td>
</tr>
<tr>
<td><strong>FACADE DESIGN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.1 materials</td>
<td>19 21 23</td>
<td>86.3</td>
</tr>
<tr>
<td>10.2 windows</td>
<td>20 20 21</td>
<td>83.6</td>
</tr>
<tr>
<td>10.3 color</td>
<td>15 16 16</td>
<td>64.4</td>
</tr>
<tr>
<td>10.4 roof-line detail</td>
<td>8 14 14</td>
<td>49.3</td>
</tr>
<tr>
<td>10.5 degree of detail</td>
<td>12 12 18</td>
<td>57.5</td>
</tr>
<tr>
<td>10.6 style</td>
<td>14 11 13</td>
<td>52.1</td>
</tr>
<tr>
<td>10.7 age</td>
<td>14 22 18</td>
<td>74.0</td>
</tr>
<tr>
<td>style/age combined</td>
<td>19 24 21</td>
<td>87.7</td>
</tr>
<tr>
<td>10.8 thematic details</td>
<td>4 8 15</td>
<td>37.0</td>
</tr>
<tr>
<td>10.9 continuity of lines</td>
<td>11 12 13</td>
<td>49.3</td>
</tr>
<tr>
<td>10.10 permanence, condition</td>
<td>1 4 3</td>
<td>11.0</td>
</tr>
<tr>
<td>10.11 degree of 3-D relief</td>
<td>1 2 4</td>
<td>9.6</td>
</tr>
<tr>
<td>10.12 texture, pattern</td>
<td>2 6 6</td>
<td>19.2</td>
</tr>
<tr>
<td>10.13 doorways, entry</td>
<td>1 1 8</td>
<td>13.7</td>
</tr>
<tr>
<td>10.14 miscellaneous</td>
<td>1 - 1</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>NON-FRAMEWORK CATEGORIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. ass/detracts</td>
<td>3 6 7</td>
<td>21.9</td>
</tr>
<tr>
<td>2. gen'l compatibility</td>
<td>22 24 24</td>
<td>95.9</td>
</tr>
<tr>
<td>3. blog on its own</td>
<td>13 13 13</td>
<td>53.4</td>
</tr>
<tr>
<td>4. imagined history</td>
<td>4 9 8</td>
<td>28.8</td>
</tr>
<tr>
<td>5. associative meaning</td>
<td>5 11 9</td>
<td>34.2</td>
</tr>
<tr>
<td>6. evoked mood</td>
<td>2 8 6</td>
<td>21.9</td>
</tr>
<tr>
<td>7. intention activity</td>
<td>- 1 -</td>
<td>1.4</td>
</tr>
<tr>
<td>8. misc.</td>
<td>3 2 2</td>
<td>9.6</td>
</tr>
<tr>
<td>9. legibility</td>
<td>1 2 1</td>
<td>5.5</td>
</tr>
<tr>
<td>10. surrounding bldgs</td>
<td>3 6 5</td>
<td>19.2</td>
</tr>
<tr>
<td>11. evaluat'n of strategy</td>
<td>- 7 4</td>
<td>15.1</td>
</tr>
</tbody>
</table>
Table 9-4: Design Features Noticed by Review Commissioners

<table>
<thead>
<tr>
<th>Categories of Response</th>
<th>N-Dsgns No.</th>
<th>Dsgns No.</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td><strong>FRAMEWORK CATEGORIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. site</td>
<td>-</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>2. building type</td>
<td>2</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>3. size</td>
<td>10</td>
<td>4</td>
<td>57.1</td>
</tr>
<tr>
<td>4. prominence</td>
<td>3</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>SITE ORGANIZATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 space between bldgs</td>
<td>1</td>
<td>-</td>
<td>5.9</td>
</tr>
<tr>
<td>6.2 circulation access</td>
<td>-</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>6.3 walls/fencing</td>
<td>5</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>6.4 site setoacks</td>
<td>2</td>
<td>-</td>
<td>11.8</td>
</tr>
<tr>
<td>6.5 landscaping</td>
<td>3</td>
<td>1</td>
<td>14.3</td>
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<td>6.6 vehicular access</td>
<td>1</td>
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<td>5.9</td>
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<tr>
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<td>-</td>
<td>17.6</td>
</tr>
<tr>
<td>6.8 miscellaneous</td>
<td>1</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>6.9 views</td>
<td>2</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>MASSING</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>8.1 overall massing</td>
<td>10</td>
<td>4</td>
<td>57.1</td>
</tr>
<tr>
<td>8.2 roof-line</td>
<td>8</td>
<td>5</td>
<td>71.4</td>
</tr>
<tr>
<td>8.3 delineation of stories</td>
<td>3</td>
<td>-</td>
<td>17.6</td>
</tr>
<tr>
<td>8.4 height of bldg</td>
<td>7</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>8.5 articulation base or top</td>
<td>3</td>
<td>-</td>
<td>17.6</td>
</tr>
<tr>
<td>8.6 secondary massing elem'ts</td>
<td>2</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>8.7 specific massing elem'ts</td>
<td>3</td>
<td>3</td>
<td>42.9</td>
</tr>
<tr>
<td>8.8 links between old/new</td>
<td>5</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td><strong>FACADE DESIGN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.1 materials</td>
<td>15</td>
<td>5</td>
<td>71.4</td>
</tr>
<tr>
<td>10.2 windows</td>
<td>10</td>
<td>3</td>
<td>42.9</td>
</tr>
<tr>
<td>10.3 color</td>
<td>14</td>
<td>5</td>
<td>71.4</td>
</tr>
<tr>
<td>10.4 roof-line detail</td>
<td>6</td>
<td>4</td>
<td>57.1</td>
</tr>
<tr>
<td>10.5 degree of detail</td>
<td>3</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>10.6 style</td>
<td>9</td>
<td>4</td>
<td>57.1</td>
</tr>
<tr>
<td>10.7 age</td>
<td>13</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>10.8 thematic details</td>
<td>14</td>
<td>6</td>
<td>85.7</td>
</tr>
<tr>
<td>10.9 continuity of lines</td>
<td>5</td>
<td>3</td>
<td>42.9</td>
</tr>
<tr>
<td>10.10 permanence, condition</td>
<td>4</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>10.11 degree of 3-D relief</td>
<td>-</td>
<td>-</td>
<td>14.3</td>
</tr>
<tr>
<td>10.12 texture, pattern</td>
<td>3</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>10.13 doorways, entry</td>
<td>3</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10.14 miscellaneous</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>NON-FRAMEWORK CATEGORIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. adds/detracts</td>
<td>5</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>2. gen'l compatibility</td>
<td>16</td>
<td>7</td>
<td>100.</td>
</tr>
<tr>
<td>3. bldg on its own</td>
<td>12</td>
<td>6</td>
<td>85.7</td>
</tr>
<tr>
<td>4. imagined history</td>
<td>4</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>5. associative meaning</td>
<td>8</td>
<td>3</td>
<td>42.9</td>
</tr>
<tr>
<td>6. evoked mood</td>
<td>2</td>
<td>-</td>
<td>11.8</td>
</tr>
<tr>
<td>7. intention activity</td>
<td>2</td>
<td>-</td>
<td>11.8</td>
</tr>
<tr>
<td>8. misc.</td>
<td>3</td>
<td>-</td>
<td>17.6</td>
</tr>
<tr>
<td>9. legibility</td>
<td>2</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>10. surrounding bldgs</td>
<td>2</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>11. evaluat'n of strategy</td>
<td>6</td>
<td>6</td>
<td>85.7</td>
</tr>
</tbody>
</table>
case study sites who mentioned a particular feature category at least once. The last column indicates the percentage of the total number of case study respondents who used the various feature categories.

The most salient aspect of the response patterns revealed in this table is the overall consistency among the three sites. In general, the most frequently mentioned feature categories are mentioned by a comparable number of people at all three sites. For example, with respect to massing, the most frequently mentioned feature categories at all three sites are: overall massing, roofline, and height.

In the few instances where there is a substantial difference among the three sites, it is frequently the result of the low response rate at the Columbus site. Notable examples of this pattern are represented by the following feature categories: #3 size; #8.2 roofline; #10.4 roofline detail; and #10.7 age. On the other hand, in at least two important instances, the discrepancy among the sites is the result of the St. Paul group's atypically higher response rate. This is the case with feature categories #10.5 (degree of detail) and #10.8 (thematic details). Both these patterns are of course consistent with the notion of cognitive complexity which was discussed in the previous chapter segment.

Turning now to Table 9-4, it is possible to compare the response patterns of the design-trained and non-design trained commissioners both with each other and with the case study respondents. The format of Table 9-4 is similar to that of the previous table, however, since the number of non-design-trained and design-trained commissioners is so disparate, the percentage figures for these subgroups have been included so
as to facilitate more accurate comparisons. Even so, because the design-trained group includes only 7 people, each individual accounts for a variation of over 14%. Thus the percentages figures must be taken as only a very gross measure of comparability.

Despite these limitations in the figures provided by Table 9-4, it is nevertheless possible to make some cautious observations about the use of the feature categories by the two commissioner subgroups. In general, as is the case with the case study respondent groups, there is a clear and general correspondence in the frequencies with which the various feature categories are mentioned. Nevertheless, there are a few feature categories which seem much more likely to be mentioned by the design-trained commissioners. These feature categories are: #8.2 roofline; #10.4 roofline detail; and #11 evaluative comments on the design strategy. The last of these feature categories is of course entirely consistent with the role and training of designers; architectural criticism—which by definition implies evaluation of design strategies—is an essential part of architectural education, practice, and journalism.

Finally, a comparison of the response patterns of the review commissioners and the case study respondents also reveals a substantial correspondence for most of the feature categories. Nevertheless there are a few notable discrepancies between the two groups. For example, the review commissioners refer to the following feature categories much more frequently: #3 size (which includes the term scale); #6.3 walls/fencing; and #10.8 thematic details. On the other hand, the case study respondents demonstrate a much stronger tendency to use the following feature categories: #10.2
windows; #10.4 degree of detail (which incorporates comments such as "It's too plain" or "too busy"); and #10.7 age (which incorporates comments such as "The modern doesn’t fit with the old"). In the case of the feature "age," the case study respondents and the nondesign-trained review commissioners actually demonstrate a comparable level of use in contrast to the much lower level of use shown by the design-trained commissioners.

The relationship between these differences among the respondent groups and the strategy profiles of the preferred relationships is discussed in chapter section 9.3.
9.3 Tactics for Design Strategies

The focus of the analyses presented in this chapter section is on the set of design features facets. As mapping sentence #3 indicates, these facets correspond to the three segments of the conceptual framework (described in Chapter 5) which fall under the heading of design strategy. In other words, these analyses are concerned with the several feature categories which architects are typically able to manipulate as part of their contextual design strategy.

Table 9-5 summarizes the number of feature items elicited from each of the respondent groups according to their classification under the three major tactics of design strategy: site organization, massing, and facade design. The information provided by this table is thus distinguished from the previous tables (#9-3 and 9-4) in that it is based on the number of FEATURE ITEMS elicited from the respondents rather than the number of RESPONDENTS.

The most important conclusion to be drawn from this analysis is the relative predominance of the facade design features as compared to both massing and site organization. For all three of the case study sites as well as for the nondesign-trained commissioners, the facade design

Table 9-5: Noticed Feature Items per/Elements of Design Strategy

<table>
<thead>
<tr>
<th>Design Strategy Elements</th>
<th>Col.</th>
<th>Ann</th>
<th>St.P.</th>
<th>N-Dsgn Cmnr</th>
<th>Dsgn Cmnr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Organization</td>
<td>5.8</td>
<td>6.6</td>
<td>8.0</td>
<td>7.7</td>
<td>8.3</td>
</tr>
<tr>
<td>Massing</td>
<td>25.6</td>
<td>23.2</td>
<td>25.9</td>
<td>22.6</td>
<td>31.4</td>
</tr>
<tr>
<td>Facade Design</td>
<td>68.6</td>
<td>70.2</td>
<td>66.1</td>
<td>69.7</td>
<td>60.3</td>
</tr>
</tbody>
</table>
features account for over 2/3 of the responses. Although the facade design features account for just 60% of the designers’ responses, this figure still represents a very substantial proportion of the responses.

This finding is particularly significant in the light of previous analyses concerning the design strategy profiles of the most preferred buildings. The previous analysis (discussed in chapter section 8.1) revealed that the most preferred relationships consistently depended on design strategies with a relatively high degree of replication. In addition, it was also found that at least some replication of facade design is more critical than either site organization or massing. Thus the findings of the present analysis tends to corroborate the previous findings.

Another aspect of this analysis which warrants further discussion is the nature of the relatively subtle differences between the several respondent groups. Although the response patterns of all the groups are very similar, it is clear that the designers’ responses are the most atypical. Their relatively stronger emphasis on the site organization and massing features suggests that the designers do, in fact, concern themselves with the issues which are so frequently stressed in the critical literature on contextualism.

Finally, one potential limitation to this analysis of the design features must be acknowledged. Given the photographic simulation format, it is probable that some aspects of site organization—and perhaps some aspects of massing—may be less obviously apparent than the facade design features. If this is true, then, the overwhelming predominance of the
facade design features revealed in Table 9-5 may in fact be misleading.

On the other hand, two important indicators suggest that these findings are substantially valid. First, there is some evidence to suggest that at least some respondents do not tend to conceptualize site organization features as an aspect of contextual compatibility. More specifically, even though the Ann Arbor respondents were well aware that the Alumni Center was sited to respect an existing pedestrian path and the continuation of a central mall, very few of them specifically mentioned these features. And secondly, as has already been mentioned, the previous analysis of design strategy profiles revealed the critical role of facade design features.

Finally, the overall conclusion that the replication of facade design features is particularly critical to the success of contextual design lends support to the position Brolin (1980) has taken in his analysis of contextualism. As the review of the architectural literature in Chapter 4 indicated, Brolin is one of the leading advocates of the position that visual continuity at the level of small-scale facade detail is frequently necessary to achieve contextual fit. On the other hand, these results do not support the arguments of many of the other architectural critics who have emphasized the primary importance of massing or site organization over facade design (e.g. Cavaglieri, 1980).
9.4 The Design Features of Liked and Disliked Relationships

The analyses presented in this chapter section are concerned with the preference designation facet of mapping sentence #3. More specifically, the intention is to compare the respondents' conceptualizations of the design features associated with liked relationships with their conceptualizations of the design features associated with disliked relationships.

To facilitate such a comparison, four data matrixes suitable for the SSA-1 program were generated; separate matrixes for the liked and disliked features were prepared for both the case study respondents and the review commissioners. The data which form the cells of each matrix are binary; each cell indicates whether or not a particular respondent has mentioned a particular feature category. Each resulting plot maps the relationships among the 31 feature categories that have been classified under the design strategy segment of the conceptual framework.

Noticed Features of Liked Relationships

Figs. 9-1 and 9-2 present the SSA plots for the features associated with liked relationships. Most of the feature categories have been labelled, the exceptions being those in the most densely clustered regions. The two plots reveal essentially similar configurations. In each plot, a densely clustered area is located to the right; and a more scattered arrangement of feature categories is located to the left.

In interpreting the two plots, it must be kept in mind that the SSA-1 subroutine used in this analysis takes into account agreements between both the use and non-use of the
Fig. 9-1: SSA, Noticed Features of Liked Relationships--Case Study Respondents
Coefficient of Alienation: .141

Fig. 9-2: SSA, Noticed Features of Liked Relationships--Review Commissioners
Coefficient of Alienation: .143
feature categories. Thus the densely clustered areas in both plots represent the very infrequently used feature categories; whereas the points at the far left of the plot indicate the most commonly used feature categories. Thus, because of the extreme variations in the use of the feature categories, the major influence in the structure of the plots is the overall frequency of use.

Despite overall similarity between the structure of the two plots, there are nevertheless important differences between the conceptualizations of the two respondent groups.

1) The Infrequently-Used Feature Categories. Close inspection of the review commissioners' plot indicates that the less frequently used feature categories are less densely packed than is the case in the case study respondents' plot. This suggests that the commissioners' use of the various feature categories is a bit more even than the case study group's use of the categories. Visual inspection of the original data matrixes also confirms this interpretation.

2) The Frequently-Used Feature Categories. For the case study respondents, the categories of materials and windows are by far the most frequently used. But more importantly, their close proximity in the plot also indicates that both categories are frequently mentioned by the same respondents. In fact, calculations from the original data matrix reveal that over half the individual case study respondents made use of both categories.

On the other hand, while the position of the category materials indicates that it is the review commissioners' most frequently used category, it is not coupled in usage with the category windows. Indeed, the category windows is apparently a much less mentioned category among the review commissioners.
3) The Moderately-Used Feature Categories. In both plots, the moderately used feature categories form a partial ring around the lesser used categories. However, the position of the particular feature categories within that ring suggests some subtle differences between the two respondent groups. In particular, the categories of style and massing are in close proximity to each other in the case study group's plot, indicating that they are frequently mentioned by the same individuals. On the other hand, these two categories are located at opposite sides of the review commissioners' plot, suggesting that they are rarely used by the same individuals.

Noticed Features of Disliked Relationships

Figs. 9-3 and 9-4 represent the SSA plots for the feature categories of the disliked relationships. In this case the two plots are much less similar than the two in the previous set of analyses. Overall, the review commissioners' plot represents a much more even or dispersed configuration of points, which indicates the commissioners consistently mentioned a greater variety of feature categories. In contrast, the case study respondents tended to use two feature categories very frequently and the others much less so.

Because the two plots are relatively dissimilar, the details of the two plots are discussed separately.

1) The Case Study Respondents' SSA Plot. By far the two most frequently mentioned features in the disliked relationships are those associated with the apparent age (typically, the discrepancy between the apparent ages of the buildings) and the degree of detail (typically the infill being considered too plain). However, their great distance from each other in the plot suggests that they are not often mentioned
Fig. 9-3: SSA, Noticed Features of Disliked Relationships—Case Study Respondents

Coefficient of Alienation: .130

Fig. 9-4: SSA, Noticed Features of Disliked Relationships—REview Commissioners

Coefficient of Alienation: .139
by the same individuals. This suggests that the two feature categories may actually be to some extent synonymous. In other words, it may be that the respondents who mention apparent age don't think of mentioning degree of detail because it may imply the same physical qualities.

2) The Review Commissioners’ SSA Plot. As has already been mentioned, the review commissioners’ plot suggests a relatively more even use of the feature categories.

Another important aspect of this configuration is that most of the frequently used feature categories are located in a ring around the lesser used categories located in the middle of the plot. A further aspect of this overall structure is that many of the more frequently used categories are on opposite sides of the plot from each other. For example, massing is located quite on its own to the left of the plot, whereas three feature categories—roof form, windows, and materials—are located rather close together on the righthand side of the plot. This suggests that relatively few of the individuals who mentioned massing used any of the other three feature categories. On the other hand, the proximity of those three suggest that they are frequently mentioned by the same respondents.

One aspect of similarity between the commissioners’ and the case study respondents’ plots is the relationship between the categories of age and degree of detail. In both plots, these two feature categories are quite some distance from each other, nearly on opposite sides of the plot. The suggestion was already made that perhaps this is because the two categories are understood to express similar physical qualities.
This interpretation can even be expanded to describe the overall configuration of the review commissions' plot. In this view, four "sides" of the plot can be interpreted as alternative sets of feature categories which are in a sense equivalent to each other. For example, materials may imply many of the same physical qualities as color; and similarly, the categories of windows and roof form may be equivalent to style. Thus the two sets of feature categories form two discrete or "alternative" descriptors. In the same way, then, the category "apparent age" may constitute an alternative to style and color. Clearly, however, much additional research would be required to substantiate this rather speculative interpretation.
9.5 Summary

The purpose of this chapter section is simply to summarize the principal findings of the several analyses presented in this chapter. The relation of these findings to those which have been presented in the preceding two chapters will be discussed in Chapter 10.

For clarity and convenience the following conclusions are organized according to the several facets of mapping sentence #3.

1) Location and Degree of Expertise. Considerable variation was found in the NUMBER of design feature items elicited from the various respondent groups. This finding, in combination with other analyses from this study, suggests that the several respondent groups (the three case study sites, the nondesign-trained commissioners, and the design-trained commissioners) may represent different levels of cognitive complexity in the realm of environmental issues.

On the other hand, there was little difference in the RELATIVE FREQUENCY with which the various feature categories were mentioned by the several respondent groups. In other words, the features that were most frequently mentioned among one respondent group were generally the features most frequently mentioned by the other groups. Only subtle variations in this pattern were noted for particular design feature categories.

2) Design Features. For both the case study site respondents and the review commissioners, facade design features were much more frequently noticed than features having to do with either site organization or massing. Among the three case study groups, facade design features accounted for between 66% and 70% of the noticed features; among the
nondesign-trained commissioners they accounted for 69%; and among the design-trained commissioners, they accounted for 60%.

3) Noticed Design Features of Liked and Disliked Relationships. Both the case study respondents and the review commissioners seem to employ a relatively similar conceptualization of design feature categories in evaluating LIKED contextual relationships. For both groups the most frequently mentioned features of LIKED relationships included: materials, windows, color, apparent age, roofline, and style.

For the case study respondents only, the most frequently mentioned features of the DISLIKED relationships were: degree of detail and apparent age. The review commissioners tend to use a greater variety of feature categories than the case study respondents generally do.
10.1 Summarizing the Research Findings

Objective #1: The Meaning of Contextual Compatibility
Objective #2: Contextual Compatibility and Preferences
Objective #3: The Design Features Affecting Compatibility

10.2 Identifying the Common Themes

The Physical Attributes of Contextual Compatibility
Components of Environmental Meaning
Variations in the Backgrounds of the Respondents
Towards an Understanding of Contextual Compatibility

10.3 Implications of This Research

Cognitive Psychology
Environmental Psychology
Building Conservation and the Design Review Process
Architectural Practice and Education

10.4 Further Research on Contextual Fit in Architecture

Facet Analysis as a Basis for Cumulative Research
Specific Directions for Future Research
The purpose of this concluding chapter is fourfold: 1) to summarize the specific findings of this research study; 2) to identify the common themes which underlie those findings; 3) to clarify the implications of the research for psychology, environmental psychology, public policy, and architectural practice; and 4) to suggest directions for future research.

10.1 Summarizing the Research Findings

This research study of contextual compatibility in architecture was initially framed around the three research objectives presented in Chapter 1. In turn, these objectives served as the basis for the three mapping sentences (and their constituent facets) that have defined the structure of the research procedures.

Thus, the major research findings are briefly summarized under the headings of the three research objectives and under the subheadings of the several facets associated with each objective.

Objective #1: The Meaning of Contextual Compatibility

The first objective of this study was to explore the meaning that contextual compatibility has for people.

1) Construct Type: The Significance of Contextual Compatibility. The construct, contextual compatibility, was found to be one of the most frequently used criteria in the sorting task procedures. Thus, contextual compatibility appears to represent a relatively important aspect of
environmental meaning for both the case study and review commission respondents.

2) The Conceptual Structure of Compatibility. Among the respondents who chose to use compatibility as a free sort criterion, the great majority construed compatibility as either a dichotomous or ordered construct.

Nearly 80% of the case study respondents sorted the infill scenes according to a dichotomous structure, that is, according to whether the buildings fit or didn’t fit the context; whereas nearly equal numbers of the review commissioners sorted the scenes according to either a dichotomous or ordered structure (40% and 47% respectively). Thus the review commissioners showed a relatively greater tendency to categorize the infill scenes according to gradations of compatibility.

These data also suggest that there is little evidence that people conceptualize contextual compatibility in terms of qualitatively different types of compatibility.

In addition, the construct, contextual compatibility, was frequently used in combination with other construct types, especially building type, age, and preference. This was found to be particularly true for the case study respondents, and less so for the review commissioners.

3) Degree of Expertise. Substantial differences were found between the case study and the commissioner respondents with respect to both: a) the extent to which they construe urban scenes according to the construct, compatibility; and b) their tendency to construe compatibility according to particular types of conceptual structures.
4) Location. In general, the data presented in this chapter offer only partial support for the effect of the location facet.

Objective #2: Contextual Compatibility and Preferences

The second objective of this study was to identify the patterns of preference which are associated with judgments of contextual compatibility.

1) Design Strategy. The design strategies of the most preferred contextual relationships are characterized by a relatively high degree of replication, especially with respect to facade design. This tendency is consistent among the several respondent groups.

2) Building Aspects. For both the case study respondents and the review commissioners, preference judgments of the contextual relationships are highly correlated with the preference judgments of the infill buildings on their own. However, there is little or no systematic relationship between preference judgments of the surrounding settings and judgments of contextual relationships.

3) Location and Degree of Familiarity. Each case study group tended to evaluate their own site more favorably than did the other case study groups.

4) Degree of Expertise. The three respondent groups representing different levels of expertise made substantially similar preference judgments of the contextual relationships.

5) Overall Patterns of Preference Judgments. Characteristically different response patterns were found within each of the three case study groups and the commission group with respect to the RELATIONSHIP between judgments of compatibility and of infill buildings.
Objective #3: The Design Features Affecting Compatibility

The third objective of this study was to identify the specific design features which most consistently and frequently contribute to contextual compatibility.

1) Location and Degree of Expertise. Considerable variation was found in the NUMBER of design feature items elicited from the various respondent groups. However, there were only subtle differences in the RELATIVE FREQUENCY with which the various feature categories were mentioned by the several respondent groups.

2) Design Features. For both the case study respondents and the review commissioners, facade design features were much more frequently noticed than features having to do with either site organization or massing.

3) Noticed Features of Liked and Disliked Relationships. For both the case study respondents and the review commissioners, the most frequently mentioned features of the LIKED relationships included: materials, windows, color, apparent age, roofline, and style.

For the case study respondents only, the most frequently mentioned features of the DISLIKED relationships were: degree of detail and apparent age. The review commissioners tended to use a relatively greater variety of feature categories in evaluating the disliked relationships.
10.2 Identifying the Common Themes

The preceding summary of findings simply outlines the results of the several analyses associated with each individual facet in the 3 mapping sentences. However, a number of the facets are either linked in some way or appear in more than one mapping sentence. Thus, some of the most important results of the research are those which define major themes involving more than one facet or mapping sentence. Three particularly important themes are presented below.

The Physical Attributes of Contextual Compatibility

Two of the mapping sentences include facets concerned with the physical attributes of contextual relationships. These are: the design strategy facet set of mapping sentence #2, and the design features facets of mapping sentence #3. Both of these facet sets are based on the conceptual framework which was presented in Chapter 5.

The several analyses associated with these facets have revealed that: 1) all respondent groups tend to prefer infill buildings which are characterized by design strategies based on a relatively high degree of replication; 2) the replication of facade design elements is relatively more important for perceived compatibility than either massing or site organization; and 3) facade design features are relatively more noticed than either site or massing features for their contribution to perceived compatibility.

Taken together, these findings tend to support at least two of the existing accounts of contextual compatibility reviewed in the earlier chapters of this study. First, these findings are consistent with much of Brolin's analysis (1980)
of contextualism. He argues very strenuously that perceived compatibility frequently depends on the thematic continuity of the small-scale detail of facade design. Second, this study's findings are also consistent with Wohlwill's findings (1978b, 1982; Wohlwill and Harris, 1980) that people frequently prefer a relatively low level of contrast between an infill building and the surrounding landscape.

In addition, the results of this study also lend some support to the research in environmental aesthetics which suggests the significance of complexity as it is expressed in ornamented architectural styles (e.g. Oostendorf and Berlyne, 1978b). However, since there were no examples of traditionally ornamented infill buildings inserted into plainer surroundings, it is possible that the respondents' preferences for ornamented infill buildings are more a function of concern for low contrast or high replication than for the ornamented, complex quality itself.

On the other hand, the results of this study do NOT lend support to the interpretation of complexity which suggests that people prefer contextual relationships with a moderate or relatively high degree of variety among the buildings.

Finally, the results of this study also do NOT support several of the analyses of contextual compatibility suggested by various architectural practitioners and critics. First, the most typical interpretation of the "architecture as historic document" approach has been that, while some replication of site organization and massing is appropriate, substantial replication of facade details is not (e.g. Goldberger, 1980). Obviously, the findings of this research suggest that the vast majority of the respondents prefer contextual design
strategies with greater emphasis—not less—on replication of facade elements.

Two other design strategies for contextual compatibility—the "freedom for the creative designer" and the "deeper levels of significance" approaches, to be specific—were also not supported by the results of this research. Essentially both of these strategies emphasize the idiosyncratic nature of each contextual design problem, and therefore one would predict that there would be no consistent patterns of preference for any one type of design strategy profile. However, since the POSA which was presented in chapter section 8.1 clearly demonstrates that there is a consistent pattern of preference, the validity of these two idiosyncratic arguments must be questioned.

In summary, then, the analyses associated with the several physical attribute facets have usefully contributed to the investigation of the variety of psychological and design-based explanations of contextual compatibility.

Components of Environmental Meaning

In combination, the 3 segments of the interview sequence (which correspond to the 3 mapping sentences) encompass several components of environmental meaning. The free sort portion of the interview elicits any aspect of meaning which the respondents wish to express; the directed sorts and ranking are concerned with environmental preferences; and the third interview segment is intended to elicit a cognitive interpretation of compatibility.

As the initial statement of research objectives for this study makes clear, however, there is no particular intention in this study to define the overall conceptual structure of
environmental meaning. Nevertheless, the fact that this study
does elicit responses at various levels of meaning suggests
that this research may offer some opportunity to explore the
relationship between the various components of environmental
meaning.

In order to put the relevant findings of this study in
perspective, it is first necessary to review very briefly some
of the key issues concerning the components of environmental
meaning. As the literature review in Chapters 2 and 3 made
clear, a number of different terms have been used to define
the constituent aspects of environmental meaning. Thus for
example, Osgood—and those who made use of the semantic
differential in environmental research—have claimed to be
investigating "connotative" meaning (Osgood et al., 1957; e.g.
Canter, 1969). Krampen (1979) set himself the task of explor­
ing in a suite of studies both "denotative" and "connotative"
meaning. And Ward and Russell (1981b) have defined environ­
mental meaning in terms of perceptual, cognitive, affective,
and behavioral responses.

Moreover, these and other authors have made a great
effort to discover the inherent structure of these various
levels or components of meaning. Osgood's attempt to identify
the key dimensions of semantic space constitutes an early
effort in this direction. And Ward and Russell's set of
studies (1981b) represents a recent, and probably the most
exhaustive, attempt to clarify the components of environmental
meaning. They have concluded that, whereas affective meaning
can be defined in terms of two components (pleasure and degree
of arousal), the perceptual-cognitive component of meaning is
too complex to be represented by a small set of independent
dimensions.
In the topic area of contextual compatibility, Wohlwill has made some attempt to explore the relationship between affective and cognitive response to contextual compatibility. Essentially, he argues that judgments of "fittingness" are relatively "objective" (Wohlwill and Harris, 1980), "comparative" (Wohlwill, 1978b) judgments, characterized by an "implicit relation to some standard" (Wohlwill, 1978). Although he does not explicitly state that he is assuming this to be a perceptual/cognitive judgment, the implication is clearly there. On the other hand, he does explicitly define preference judgments (degrees of liking) as being indicative of affective response (Wohlwill, 1978a).

Unfortunately, Wohlwill has only investigated the relationship between judgments of "fittingness" and preference with one respondent group in one study (Wohlwill, 1978b). Nevertheless, his findings are suggestive. His results indicate that there is virtually no difference in the response patterns of the two judgments. Thus he concludes that "the subjects did not differentiate clearly between these two judgments" (p.54). Although Wohlwill's study is limited in scope, his findings are particularly intriguing because they are so entirely consistent with the results of this study.

With respect to this research, the particularly pertinent analyses are the MSAs of the respondents' initial compatibility free sort (chapter section 7.2) and the rank orders of preference for contextual compatibility (chapter section 8.1). As the discussion in Chapter 7 indicated, 19 case study respondents and 15 review commissioners chose to use contextual compatibility as their free sort criterion. Although many of these respondents actually combined other sorting criteria with compatibility, only one of them combined
compatibility with preference. More typically, the compatibility criterion was combined with apparent age or building type. This would suggest, then, that the respondents' use of the compatibility sort is primarily cognitive in nature. Nevertheless, if the rank order designations from the preference rankings are overlaid over the MSA plots, there is a very high correspondence between the order of fit and of preference for both the case study respondents and the review commissioners. In other words, it would seem that the contextual relationships are being evaluated in essentially the same way.

The implication of both Wohlwill's study and this one is that contextual compatibility is one aspect of environmental meaning for which the distinction between cognitive and affective response may be operationally irrelevant.

Variations in the Backgrounds of the Respondents.

Three facets of the mapping sentences pertain to the backgrounds of the respondents. These are: degree of familiarity, location, and degree of expertise. Two of them--location and degree of expertise--operate as facets in all three mapping sentences. Taken together, the research findings associated with these two facets begin to suggest issues about cognitive development and structure which go beyond the scope implied by the constituent elements of the two facets as they are presently stated.

Initially, the location facet was developed in anticipation that some variations in responses would likely be associated with the three case study respondent groups. The potential significance of such a facet was suggested by the results of Wohlwill's study of contextualism in coastal zone
settings (1978). As described in Chapter 3, Wohlwill found very clear differences between the responses of the two California respondent groups and the Pennsylvania respondent group. More specifically, Wohlwill found that the Pennsylvania group preferred a moderate level of contrast, whereas the California groups preferred the lowest level of contrast. Thus, Wohlwill’s results strongly suggested that regional variations could constitute an important facet of the research.

The operationalization of the location facet for this research study, however, necessitated certain compromises. Because of limitations in travel expenditures, it was not possible to select case study sites in distinctly different regions of the country. Instead, the decision was made to select as diverse and as distant locations within the Upper Midwest as possible. Thus the three sites are located more than 350 miles apart, in three different states; one is a small town, one a medium-sized city; and the other a major city.

Given the results of Wohlwill’s study, it seemed likely that respondents at the different locations, particularly the different case study sites, might well reveal substantially different preferences for contextual relationships. As the previous chapters have already indicated, this was not the case. Preference judgments of contextual relationships were significantly correlated among all the location groups; and analyses of the entire set of individual respondents revealed no systematic differences between individuals from the different locations.

Instead, the major differences among the case study sites concern the manner in which aspects of contextual compati-
bility are conceptualized. In this regard, the location facet becomes linked with the degree of expertise facet. In other words, differences between the case study sites may be more appropriately interpreted as differences in environmental expertise. Thus, in combination, the two facets begin to suggest important differences in cognitive complexity.

The concept of cognitive complexity has already been discussed in detail in Chapter 9. Briefly, it is argued that people with more well-developed understanding of architectural and environmental concerns will exhibit a broader variety of ways for construing the environment (Canter, 1970; Bannister and Fransella, 1977).

Examples of considerable variation among the case study locations across a range of cognitive measures have already been presented in the preceding three chapters. Specifically, differences between the three sites were found in: 1) the overall frequencies with which sorting criteria were generated (Chapter 7); 2) the degree of differentiation between preference judgments of the infill buildings and judgments of relationships (Chapter 8); and 3) the number of feature items elicited (Chapter 9). In each of these instances, the relationship among the sites is the same, the Columbus respondents revealing the least complexity, and the St. Paul respondents the most. In turn, the St. Paul respondents reveal relatively less cognitive complexity than the review commissioners.

If this interpretation of the results is valid, it may then be appropriate to consider the 5 respondent groups (the 3 case study sites, the nondesign-trained commissioners, and the design-trained commissioners) as representing different increments (or levels) of cognitive complexity with respect to
architectural and urban design issues. However, as Bannister and Fransella (1977) have been careful to point out, cognitive complexity is primarily relevant to considerations of construct sub-systems, not construct systems as a whole.

Towards an Understanding of Contextual Compatibility

The previous discussions summarizing this research have focused on specific facets of the study and the common themes that link them together. Casting a wider net, however, there is one question which implicitly infuses the entire study. That question is: what environmental values are implied by the respondents' conceptualizations of contextual compatibility?

Although this research study was not specifically developed to answer this question, a number of the research findings do provide some indication of the environmental value system of which contextual compatibility is a part. Perhaps the most obvious clue to the underlying value system of the respondents is provided by the final segment of the interview sequence. In that segment, each respondent was asked to specify the features which contributed to or detracted from the contextual compatibility of the most and least liked relationships. Even though the question is clearly concerned with identifying specific physical features, most of the respondents began by making general observations about the quality of compatibility (classified as non-framework item #2). Indeed, 94.5% of the case study respondents and 95.8% of the commissioners made comments of this type. The overwhelmingly predominant themes of these comments is simply the issue of fit, blending, and harmony. In other words, the underlying assumption of these comments is that the need to achieve harmony and consistency is reason enough to justify or
criticize a particular design relationship. In essence, these explanations appear to be a statement of what is seen as an indisputable value.

This response pattern is particularly significant in light of the polemical arguments of a number of architectural critics and practitioners who have argued that the principle of harmony and blending constitutes merely a superficial link between buildings (e.g. Graves and Wolf, 1980). Superficial or not, however, it is nevertheless the primary concern in the minds of the vast majority of the respondents.

This antipathy in value systems is important because it underscores a more general tendency among architects and critics to undervalue certain popular codes in interpreting the environment. Thus, in a similar vein, Jencks (1984) has criticized the attempt by the architects of the Hillingdon Civic Center in London for their attempt to make the building appear warm and inviting through the device of a cascade of sheltering roofs. According to Jencks, the architects have in effect succumbed to "naive populism" by assuming that one form (the pitched roof) can be equated with a straightforward meaning. Nevertheless Groat and Canter (1979) found that "warm" and "friendly" is exactly the image conveyed by the building, in large part because of the roofline.

Both these examples thus emphasize the potential problem of architects and critics dismissing popular environmental values in favor of more elite, even idiosyncratic, ones. While the values which architectural theorists wish to promote may be important, they will likely be accepted by the lay public ONLY if they are used to complement popular environmental values.
In this light, the overwhelming tendency to value harmony—apparently for its own sake—is a significant finding because it so clearly challenges several of the interpretations of contextual compatibility proposed by some of the architectural theorists. For example, as the literature review in Chapter 4 has revealed, many writers have argued that architecture should be regarded as a physical documentation of history. The results of this study demonstrate, however, that this concern is virtually irrelevant to most respondents. Not only do the respondents consistently reaffirm the value of blending, but they also specifically criticize incompatible buildings on the basis of the apparent discrepancy in "age".

This response pattern is consistent with the findings of Bishop’s research (1982). He found that residents of Guildford, England who mistakenly believed several 20th century "tudor" buildings were authentic were not at all disturbed to find they were fakes. In fact, when asked if their newly acquired knowledge changed their favorable opinions of the buildings, many respondents seem to find the question meaningless.

That the general public might not be particularly concerned with historical authenticity does not mean that architects and building conservation specialists should ignore the issue. Rather, it suggests that the legitimate concern for historical genuineness should not be taken to the point that it obscures the more commonly felt need for harmony in the built environment.

Another stance toward contextual compatibility is taken by theorists who argue that the particular symbolic associations of a given site should be elaborated and extended
by the new infill building. One notable version of this viewpoint is forcefully argued by Graves and Wolf (1980). They maintain, for example, that a new building should encourage a reinterpretation of the existing buildings. However, none of the commentary from any of the 97 respondents in this study (and that includes the review commissioners) provides support for this perspective.

Nevertheless, even if it is acknowledged that all the respondents in the study seemed to place a very high value on blending and harmony, it is still necessary to ask how important it really is to them. As the discussion of the free sort material in Chapter 7 indicates, nearly 1/2 of the case study respondents and 3/4 of the commissioners used some aspect of compatibility as a free sort criterion. Since the respondents were unaware of the special focus of the interview, this response pattern would seem to indicate a genuine concern for compatibility in the environment.

Yet another indication of the respondents' level of concern for compatibility is suggested by their pattern of category usage in the directed sorts. The discussion in chapter section 8.2 has already indicated that the pattern of category usage for both respondent groups is bimodal for the relationship sort but unimodal for the infill building sort. Drawing on the research literature on the cognitive implications of sorting behavior (Sherif and Sherif, 1967), it may be reasonable to assume that the respondents' relatively high use of the extreme categories (i.e. ratings 1 and 5) is indicative of a relatively higher level of emotional involvement with compatibility.

While the conclusions drawn from the category usage data may be open to some question, they are nevertheless consistent
with the findings of Bishop’s research (1982). More specifically, he found that residents of Guildford expressed more concern about conserving the High Street as an ensemble than about conserving any one of the buildings on the street.

Taken together, the results of this study suggest that many people do care about harmony in their environment. However, this is not to say that the respondents in this study rejected any appearance of newness. For example, many of the respondents who liked the quality of fit between the Cambridge Savings Bank (building #1) and its context liked it, in part, for the contemporary-looking glass link. Yet the respondents’ commentary also makes it clear that the conservatory form of the link is seen as consistent with and subordinate to the original formal themes of the building.

In summary, then, it would seem that the implication for design practice is that an evolutionary—rather than revolutionary—approach to the environment is much preferred. Change in design quality is welcome, but those changes should not overwhelm the existing context.
10.3 Implications of This Research

Because this study has drawn on a number of sources in the psychological and design literature, its results are also pertinent to these several disciplines. The particular implications for each specific area of inquiry are presented below.

Cognitive Psychology

Although this study was not specifically intended to investigate the nature of construct systems or their structure, the research nevertheless suggests possibilities for further investigation.

1) The Definition and Structure of Construct Sub-Systems. This research has focused on the content domain associated with one construct—contextual compatibility in architecture. As the discussion in Chapter 7 indicates, its conceptualization by the vast majority of respondents in this study is consistent with Kelly's definition of a construct (Kelly, 1955); in other words it is bipolar.

In addition, it is also clear from many aspects of the research findings that the construct of contextual compatibility is intimately linked with other constructs, particularly age, preference and building type. Thus this research has revealed not only the structure of a specific construct but also its relationship to other constructs in the environmental sub-system. In this sense, the research offers a model or prototype of how research on other constructs and construct sub-systems might be conducted.
2) The Process of Categorization. As the literature review in Chapter 2 made clear, categorization has recently emerged as an important topic of research in cognitive psychology. In particular, Smith and Medin (1981) have attempted to summarize this research by discussing it in terms of the three primary models of the categorization process. According to their analysis, two views of categorization—the component and the exemplar—hold the most promise for providing an understanding of the process. Briefly, the component view holds that a given item is categorized based on the probablistic occurrence of a number of features or dimensions. On the other hand, the exemplar view assumes that an item is categorized based on the item's criterial similarity to typical exemplars of the concept.

According to Smith and Medin, there is evidence to suggest that both mechanisms may be operative in the categorization process. More specifically, they have even suggested that among adults the exemplar process may be more common at the early stages of learning a new concept; whereas the component process is more likely to predominate after the learner gains more experience with the concept.

Although this research was in no way intended to test this proposition, the research results do seem consistent with Smith and Medin's argument. The analysis in chapter section 9.1 has already noted the differences between the various respondent groups with respect to the number of features mentioned as contributing to or detracting from compatibility. In that analysis, it was suggested the Columbus respondents—from whom the least number of features were elicited—represent the least experienced of the respondent groups. On the other hand, the design-trained commissioners—from whom
the most features were elicited—clearly represent the most experienced group. Although there is no way to substantiate this speculation, it would seem likely that the commissioners—given the higher response rate—were more likely to be relying on these features in their judgments of compatibility. And it that were the case, that means they were utilizing the component categorization process.

Unfortunately, there is no easy way to determine the extent to which the Columbus respondents were utilizing the exemplar approach. All that can be said—given their lower response rate to the features question—is that they seem less likely to have relied on the component approach.

In the end, then, the results of this research simply suggest the potential validity of Smith and Medin's speculation about the developmental differences in the process of categorization.

3) Cognitive Complexity. The issue has been discussed in sufficient detail in chapter sections 10.2 and 10.4. It is listed here simply because it is generally relevant to the concerns of cognitive psychology.

Environmental Psychology

This research contributes to the field of environmental psychology in at least 3 respects, each of which are outlined briefly below.

1) Filling the Gap in the Existing Research. As the literature review in Chapter 3 has indicated, there is already a small body of work on contextual compatibility in natural landscape settings; and there is also existing research on the meaning in architecture which emphasizes qualities of facade design or style. However, to date, there has been
little or no empirical research on contextual compatibility in primarily architectural settings.

In an important sense, then, this research study links together these two areas of existing research by broadening their foci. With respect to the research on compatibility, this study helps to extend the existing focus of research beyond the landscape setting and into another type of environmental setting in which contextualism plays an equally important role. And with respect to the research on architectural meaning, this study serves to extend the existing focus beyond the confines of individual buildings as solitary objects.

2) The Conceptual Structure of Environmental Meaning. As the discussion in chapter section 10.2 has suggested, several of the analyses contained in this study have revealed a close interrelationship between preference and cognitive judgments of contextual compatibility. Since there is already a substantial literature on the structure and relationship of the various components of environmental meaning, these results serve as a contribution to that literature.

In addition, because this study has focused on contextualism as a specific construct, it contributes to the existing body of research on other constructs of environmental meaning. For example, Bishop's research (1982) has focused on the construct of "age" in the environment. Taken together, both this and Bishop's study have demonstrated that perceived age is an important aspect of how people construe the environment. And more importantly, this study has shown that for some people the concepts of age and contextual compatibility are very much linked.

Similarly, the results of this study also have some bearing on several previous investigations of building type
(Krampen, 1979; Young, 1979). More specifically, the clear conceptual distinction between residential and non-residential buildings which was found in the free sort analyses (chapter section 7.2) is consistent with the findings of both Krampen’s and Young’s studies. In addition, this study has also suggested that the judgments of building type are made relatively independent of judgments of compatibility.

In summary, then, this study has suggested that there is a much closer relationship between the constructs age and compatibility than between building type and compatibility. Subsequent research on other discrete constructs can begin to elaborate more clearly the conceptual linkages between these and other common environmental constructs.

3) Environmental Role and the Model of Place. As the literature review in chapter section 2.7 suggested, the concept of environmental role (Canter, 1977) is an important aspect of the model of place. The essence of this concept is that a person’s role in the environment will influence his/her evaluation of that environment. This concept served as the basis for two facets of this research study—the degree of familiarity facet and the degree of expertise facet.

With regard to the user role facet, the results of this study have shown that the difference between users, neighbors, and observers did in fact affect the respondents’ evaluations of contextual compatibility at an aggregate level. Comparison of the individual responses, however, revealed no clear-cut differences between the different role groups.

With regard to the degree of expertise facet, the previous discussion in chapter section 10.2 has suggested that operationally this facet may be usefully considered in combination with the location facet. Taken together, the
analyses of these two facets seem to have revealed important differences in cognitive complexity among the various respondent groups. In some cases (e.g. the analyses discussed in chapter section 8.5), these differences could be traced to the influence of particular individuals within each group. However, when patterns of response were compared for the entire set of individual respondents (e.g. chapter section 8.3), there was no evidence of a clear differentiation between the several respondent groups.

These findings would suggest that the effect of environmental role on judgments of contextual compatibility is a relatively subtle one. This may be because the respondents are being asked to make judgments that draw upon—to only a limited extent—their "purposive" activities in that place (Canter, 1983). In other words, it is being suggested that, because the respondents were not asked to make judgments on aspects of the environment directly related to their purposes for being there, the differences in responses are less clearly related to those environmental role differences.

The relative subtlety of the role differences in this study nevertheless represents a contribution to the development of place theory. This is because it is important to determine both the conditions under which and the extent to which the effects of environmental role may be operative. Building Conservation and the Design Review Process.

The results of this research are relevant to a consideration of the design review process in several respects, each of which is discussed briefly below.

1) The Representativeness of Review Commissioners’ Judgments. As several analyses in this study have indicated,
the judgments of contextual compatibility of the review commission respondents differed very little from those of the lay respondents. In other words, although the degree of complexity and sophistication of the commissioners’ conceptualizations were generally greater, their actual evaluations of compatibility were very similar.

These results suggest that, at least for the Midwestern, middle class population which was sampled in this study, review commission members seem to be appropriately representative of the public’s environmental values. Although this degree of congruence can obviously not be assumed to exist in all communities, the extent to which it is evident in this study suggests that many design review commissions are successfully administering public policy.

2) Consensual and Normative Standards. Several analyses in this study have demonstrated very high correlations between judgments of compatibility among virtually all the respondent groups and sub-groups. Similarly, Wohlwill and Harris (1980) found that for 9 of 12 respondent groups (N = 7 to 10), the rank order of judgments of "fittingness" were identical; for the remaining three groups, there was only one reversal. Although Wohlwill and Harris' study involved the ranking of only five landscape settings, the results nevertheless demonstrate a very high degree of consensus.

In a similar vein, this study's analysis of the review commissioners' judgments of compatibility and of infill buildings (chapter section 8.5) demonstrated that this group of experts seemed to have developed a common standard of judgment for evaluating contextual compatibility. More specifically, the commissioners were able to maintain relatively idiosyncratic judgments of the infill buildings and
at the same time achieve a relative degree of consensus about contextual compatibility.

Taken together, these findings strongly suggest that contextual compatibility represents a concept for which it is possible to define a normative standard, acceptable to a great variety of people. This of course suggests that design review procedures, if exercised properly, can indeed reflect public consensus.

3) The Potential of The Sorting Task for Development of Design Review Standards. This study and other recent research have demonstrated that the sorting task is an effective interview procedure for eliciting people's interpretations of their environment (Canter et al, 1985). More importantly, its use in this study has demonstrated its appropriateness for eliciting evaluations of contextual compatibility. In addition, applications of the sorting task to the participatory design process have also proved successful (Grainger, 1980).

Such evidence suggests that the sorting task may be well-suited for use as a participatory tool in the development of design review standards. More specifically, in circumstances where a local community is interested in developing a set of design review guidelines for a designated district, a set of photographs of a range of local buildings may serve as elements of a sorting task.

This procedures could be especially useful in identifying the specific design features for which the district is particularly valued. Thus design qualities and features identified through this type of participatory process could then be combined with criteria established by historians and design experts. As a result the set of guidelines would embody both lay and expert values.
In fact, Low and Ryan (1985) have reported using a similarly participatory procedure in developing guidelines for the Oley Valley in Pennsylvania. Their procedures involved asking their respondents to select from an array of line drawings in response to specific questions. Although they have reported general success with this process, they also acknowledged that there were some difficulties in the interpretation of the very schematic drawings. Perhaps, however, the use of photographs of actual buildings in the sorting format might alleviate some of these problems. In any case, their success in achieving a consensual prototype of essential design features suggests that this type of participatory procedure has great potential for future use.

Architectural Practice and Education.

One of the original intentions of this research study is that it be ultimately of some clear relevance to architectural design practice. This goal has been substantially achieved in at least 3 important respects.

1) The Conceptual Framework in the Design Process. The conceptual framework as described in Chapter 5 was developed with two major purposes in mind: 1) as a heuristic device, to serve as a checklist for architects in their design process; and 2) as a research typology to serve as a device for the selection of infill sites used in this study.

The value of the conceptual framework for the second of these purposes has already been demonstrated in the earlier chapters of this study.

The value of the framework for the second of these purposes is to be considered here. In essence, it is being suggested that the framework can be used in a variety of
interrelated ways in the design process. First, the framework provides a checklist of the major issues that affect the compatibility between old and new, with the result that the designer is at least able to deal with them all in a conscious way. Second, in its basic organization, it helps to clarify the degree of control an architect is likely to exert on the range of design issues. And finally, by describing the elements of a design strategy hierarchically, it enables the designer to consider initially the general principles of his or her solution without becoming simultaneously bogged down in the details of the specific forms, i.e. the tactics.

These suggestions as to how the conceptual framework might become integral to the contextual design process have also been presented in an article published in one of the professional architectural journals (Groat, 1983). (See Appendix 10.) In addition, the framework has also been used as an analytical tool in several studio projects at the Department of Architecture at the University of Wisconsin-Milwaukee.

2) Exemplars of Contextual Design Strategies. Another way in which this research can be of use to practitioners is by clearly identifying specific infill projects as exemplars of appropriate and inappropriate contextual design. Architects frequently rely on existing buildings as precedents for new designs. Thus, by identifying specific "good" and "bad" examples, architects may be able to abstract appropriate design analogies for their own projects.

In an effort to facilitate this potential application of the research, a "catalogue" of contextual design was prepared. (See Appendix 11.) This catalogue summarizes, for each of the 25 infill projects in this study, the key design features mentioned by the case study respondents. This catalogue
appeared in a research report which was distributed to interested architects, design review commissioners, and researchers.

Secondly, an article for one of the architectural journals also adopts the exemplar approach to the analysis of design strategies (Groat, 1984). (See Appendix 12.) More specifically, the article presents a detailed account of the case study respondents' reactions to several of the infill projects in the study. The specific projects were selected because they represent the range of design strategy types as identified by the conceptual framework.

3) Design Education. This research study has clearly demonstrated that contextual compatibility constitutes a relatively important environmental value. And more specifically, what is generally valued is harmony and continuity—rather than contrast—among buildings.

The most obvious implication for design education would seem to be that there needs to be a greater emphasis on the significance of contextual relationships among neighboring buildings. This is no doubt important, but the question of contextual compatibility raises wider issues about appropriate training in both architectural and urban design. Moreover, these wider issues echo some of the theoretical debates from earlier in this century which were reviewed in Chapter 4.

At a deeper level of analysis, the principle of contextual compatibility implies that there is a relatively greater concern for the composition of the streetscape than for any one building within that streetscape. In other words, it implies a focus on ensembles of buildings. However, for a number of years, probably since the postwar ascendency of the Modernist ethic (Goldberger, 1985), design education
has emphasized the design of isolated, individual buildings without concern for the continuity of the urban fabric. Thus, although architectural students are taught the skills necessary to design buildings, they are much less likely to learn the basic principles of urban design.

This tendency in design theory and education is now reflected in the quality of the urban landscape. Recently, the New York Times architectural critic (Goldberger, 1985) has commented on the inability of architects to design competently the kind of background buildings which are essential to a successful cityscape. He argues that, prior to World War II, architects recognized that the city requires two kinds of buildings: "buildings that make a background as well as buildings that make foreground." Moreover, he ruefully observes the current cityscape of New York demonstrates that architects have lost the ability to provide the former. What is needed, he argues are "civilized" buildings that are not only pleasing in and of themselves, but are also successful as parts of an urban whole. In other words, he is taking a stance which in many ways echoes that of Edwards (1924) over 60 years ago.

The results of this study would suggest that architectural educators would be doing an important public service if they were to instill in their students a fundamental respect for background buildings and the urban whole.
10.4 Further Research on Contextual Fit in Architecture

An essential and important contribution of any research study is the foundation it provides for further research. Some of the implications of this study for related research in cognitive and environmental psychology have already been mentioned in chapter section 10.3. In addition, this research provides a basis for further research on the specific topic of contextual compatibility in architecture.

These possibilities are first discussed in relation to the development of cumulative research within the framework of facet theory. In addition, specific directions for future research are also presented.

Facet Analysis as a Basis for Cumulative Research

Many facet researchers have argued that one of the chief advantages to the facet theory approach to research is its potential for the development of truly cumulative research. Indeed, Donald (1985) has argued that "cumulative research is an integral part of facet theory's philosophical rationale" (p. 175). Two important and interrelated aspects of facet theory contribute to its potential for facilitating cumulative research.

1) Meta-analysis. The term meta-analysis is used to describe the analysis (or more properly the reanalysis) of a number of different studies. As Canter puts it, "various types of data and publications in an area of study are examined in toto in order to establish major trends" (Canter, 1985, p.ix). Thus, the goal of meta-analysis is to achieve a more cumulative scientific base.
Although meta-analysis can be achieved to some extent within any research orientation, Canter (1985) has argued that meta-analysis is an essential underlying principle of facet theory. He emphasizes this point by adding that "in some senses everyone who uses the facet approach is essentially a meta-analyst" (p. x). This is, in part, because the process of developing and refining a mapping sentence usually involves a search for trends that are common across a wide range of studies.

2) The Conceptual Clarity of the Mapping Sentence. Brown (1985) has observed that many investigators who regularly use the facet theory approach claim that it appropriately enforces clear thinking in outlining the content of a study. This point serves to emphasize that the requirements of developing and refining a mapping sentence are likely to be more conceptually rigorous than the specification of an hypothesis or set of hypotheses.

The precision with which the facets and constituent facet elements must be stated in a mapping sentence not only serves to clarify the domain of concern for a particular research study but it also clarifies that domain for the benefit of subsequent research efforts. This is not to say that the conceptual structure of non-facet based research is not documented. Rather, what is being suggested is that the mapping sentence makes that structure virtually "transparent" (Guttman quoted in Brown, 1985), and thereby more clearly accessible to refinement in subsequent research.

This research has attempted to take advantage of both these aspects of facet theory. With respect to the principles of meta-analysis, this research has incorporated facets from a variety of diverse sources, including both social science and
design. Thus, any further research on this topic can benefit from this effort to synthesize these diverse sets of literature.

With respect to the issue of the clarity or "transparency" inherent in the mapping sentence format, this research has incorporated a wide range of diverse facets within 3 interlocking mapping sentences. As such, this represents a relatively complicated definitional framework. However, were it not for the mapping sentence format, the full range of research issues and their interrelationships might remain ambiguous to investigators hoping to build on this research. As these sentences stand now, they are open to any degree of refinement -- large or small-- in subsequent research.

Specific Directions for Future Research

This study has touched on a variety of facets pertinent to an understanding of contextual compatibility in architecture. Any one of them warrants further investigation. However, two aspects of the research seem to be particularly fruitful areas for further research.

1) Gestalt Principles of Hierarchical Composition. The conceptual framework presented in Chapter 5 was utilized in the research as means of classifying the design strategies of the infill projects evaluated in this study. As the analysis in Chapter 8 indicated, the combination of framework elements did indeed clarify the systematic differences between the preferred and disliked contextual relationships. However, it did not do so completely. And this fact suggests that further refinements to the set of facets derived from the conceptual framework would be in order.
One way in which the framework might be improved would be to incorporate some aspect of hierarchical compositional principles derived from Gestalt-based analyses of art and architecture. Although Gestalt principles were reviewed as a potential basis for facets of the research, they were not incorporated in a distinct way because their relationship to contextual compatibility was not clearly defined by the various authors. Nevertheless, two aspects of the research findings suggest that it may be worth the effort.

First, the results of this study have clearly shown that the respondents in this study value the harmony between the parts and the whole of a building ensemble. However, what defines the boundaries of the contextual ensemble into which an infill building is placed? Some authors (e.g. Jules, 1983) have attempted, based on extrapolations from Gestalt principles, to speculate about the extent to which particular cityscape might be perceived as either an integrated or separate composition.

This study has not considered issues such as these at all. This is in part an unconscious decision and in part a necessity. In the first place it proved exceedingly difficult to find an appropriate range of photographs with even the immediately adjacent buildings visible. It would have been virtually impossible to find photographs with enough visible context to allow respondents to comment on the extent of the compositional boundaries, if any.

A second aspect of the research which suggests the potential relevance of Gestalt analyses concerns the facade design of the infill buildings themselves. Most of the preferred contextual relationships involved infill buildings which substantially replicated elements of facade design in
the pre-Modernist adjacent buildings. The basic compositional principle of these neighboring buildings is what Jules (1984) would term "nested gestalts," meaning that subsections of the facade maintain their own compositional order while also relating to the composition as a whole. Similarly, Arnheim (1977) discusses the importance of facade compositions being clearly subdivided by prominent features. And Gombrich (1979), in discussing the principles of pattern making, argues: "...any hierarchical arrangement presupposes two distinct steps, that of framing and that of filling. The one delimits the field or fields, the other organizes the resultant space" (p. 75). All three of these authors have drawn in a general way from Gestalt principles, and have come to similar conclusions about their application to design composition.

In addition, there is also some limited empirical support for the importance of hierarchical composition in aesthetic preference. In a study by Dorner and Vehrs (1975, referenced in Wohlwill, 1980), respondents were asked to indicate their preference for "aesthetically satisfying" mosaic patterns. Each of these mosaic compositions were independently scaled for patterning at three levels of composition. The results indicated that the respondents found the mosaics which were ordered at all three levels to be the most satisfying.

The potential significance of compositional hierarchy is also suggested by other aspects of this research study. More specifically, analyses of both preference judgments and informal comments suggest that many of the respondents find patterned buildings without hierarchy to be unpleasant. Two of the infill projects with non-hierarchically composed patterns
(#8 and #16) frequently elicited comments that they were too busy, and therefore disliked.

In summary, these several analyses suggest that it would be important in future research to analyze the compositional hierarchy of the various infill buildings in their settings. This includes an analysis of the relation between facade subsections and the facade as a whole, and the relation between the building and the larger composition of the building ensemble.

2) Longitudinal Analyses of the Conceptualization of Contextual Compatibility. A number of analyses in this study (including chapter sections 8.5, 9.1, and 10.4) have suggested that the several respondent groups in this study may represent differing levels of cognitive complexity with respect to architectural and urban design issues. Although the issue of cognitive complexity was implicitly acknowledged in the specification of the degree of expertise facet, there was no anticipation that it might also differentiate among the three case study sites.

These findings suggest that the acquisition and development of conceptual sophistication in interpreting compatibility in the built environment warrants further investigation. In particular, it would be useful to determine the relative significance of the various factors which may contribute to the development of cognitive complexity. More specifically, two background factors—level of education and extent of urban experience—would seem important to investigate. In this study, only limited demographic information was collected, so it was not possible to carry out accurate analyses of these issues. Moreover, these two issues are necessarily confounded. Columbus respondents seemed to have
the least formal education and also the least urban experience; whereas the St. Paul group were generally young urban professionals, having the most urban experience and the highest educational levels.

In addition, it would also be important to investigate further the potential impact of specific environmental experiences. The suggestion was already made in chapter section 8.5 that the extent of differentiation between judgments of infill buildings and of relationships might reflect the particular qualities of the case study sites. If that is the case, then, these influences may modify in some way the "normal" response pattern of the various levels of cognitive complexity.

Taken together, the several findings mentioned above all suggest the dynamic nature of people's conceptualizations of the built environment, in general, and of contextual compatibility, more specifically. In this light, one particularly promising direction for future research would be to focus explicitly on people's ongoing interactions with a specific infill site and their changing conceptualizations of it. Such research would serve to test, and perhaps, substantiate the findings of this study.


Wales, HRH The Prince of (1984). Speech made at the Royal Institute of British Architects Gala Evening, Hampton Court.


APPENDICES

Appendix 1: Interview Instructions and Data Sheets
Appendix 2: Expert Judgments of Building Profile Scores
Appendix 3: Letter of Introduction to Site Respondents
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Appendix 7: Spearman's Rank Order Correlation Coefficients
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Appendix 10: "Measuring the Fit of New to Old"
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Appendix 12: "Public Opinions of Contextual Fit"
Appendix 1: Interview Instructions and Data Sheets

Introduction

As you may know, I am going to be interviewing you about your reactions to a variety of architecture. There are two different sections to the interview. In the first part of the interview, you will be looking at photographs of buildings and making some comments about them. In the second and shorter part of the interview, I will be asking some specific questions regarding (the case study site).

But before we start the interview, I want to assure you that your answers are strictly confidential. For example, we will be assigning a code number, rather than your name, to the interview form. The results of the study are likely to be published only in either an architecture or academic publication. At no time will your particular responses be attributed to you by name.

If you should have any questions about the research or the interview procedure, I'll be happy to answer them at the end of the interview.

Instructions for Sorting Tasks

1. Free Sorts

This packet contains photographs of 25 buildings. As I mentioned to you before, what I'm interested in exploring with people is what and how people think about buildings. So please consider these photographs as representations of actual buildings rather than as photographs. Now please arrange these in front of you so you can see them all.

(Give packet to participant.)

This particular set of buildings was selected so as to cover a broad range of architecture from around the country; however, it is likely that you will be familiar with perhaps one or two buildings. This is not a problem. I will simply take note of any buildings that you are quite sure you have seen part way through the session.

Another thing you may notice about the pictures is that there is a faint line at the bottom edge of each picture. That line is there to indicate that your attention should be primarily on the building which is underlined. However you may certainly consider the information provided in the rest of the picture when you carry the first sorting task you will be asked to do.

Now, what I'd like you to do is to sort these buildings into groups which make sense to you—that is, so that the buildings within each group are similar in some significant way. The number of groups is up to you, and you may even leave some out if they don't seem to fit in any group. Since the point of the task is to reveal how you think about the buildings, there are absolutely no correct or incorrect answers.
Most likely you will see a number of ways in which the buildings could logically be placed into groups. However, for the sake of clarity, please sort them into groups according to one and only one criterion at a time, using the most obvious or significant criterion that comes to mind first. Then, after you've completed the first arrangement, you will have an opportunity to suggest other ways of grouping the buildings.

2. Preference Sort

Now, I'm going to change the instructions somewhat. What I'd like you to do is to sort this set of buildings according to your preference. Please concentrate this time ONLY on the underlined building in each picture. And this time I'm going to tell you how many groups to sort them into, although you can put as many or as few as you want into each group. So, there should be five groups, as follows: like very much, like somewhat, neutral or unsure, dislike somewhat, dislike very much.

Probe: If the respondent has difficulty, ask if it is hard to consider only the building.

Now that you've done that, I'd like you to do one more thing with each of the five groups. Within each group, can you please rank them from most to least preferred.

3. Adjacent Buildings Sort

Now what I'd like you to do is to sort these same pictures according to your preference for the other buildings shown in the picture. In other words, please consider ONLY the buildings which are NOT underlined. If there are several buildings shown, simply give your reaction to the overall set. Please use the same five groupings as you did in the previous sort. If the underlined building is obviously an addition, please indicate your preference primarily on the basis of the building it is attached to.

4. Relationship Sort

Now what I'd like you to do for the last sort is to arrange these buildings according to your evaluation of the appropriateness of the relationship between the underlined building and the other buildings shown. Again, please use the same five groupings as you did in the previous sort.

Taking the three most preferred relationships one at a time, can you tell me what physical features you notice in each building that make them relate well to their neighbors?

And finally, can you take the three least preferred relationships, again one at a time, and tell me what features you notice that make these buildings relate so poorly?
FEATURES

1. Most Preferred #1

2. Most Preferred #2

3. Most Preferred #3

4. Most Disliked #1

5. Most Disliked #2

6. Most Disliked #3
Case Study Building Interview Guide:

As you realize from the preceding part of the study, (case study site) is one of a number of buildings being considered in this research project. As someone who has known the building for an extended period of time, you may be able to offer some additional commentary beyond what has been indicated by your responses to the photographs.

So, if you don't mind, I would like to ask you a few questions in order to find out a little more about your reactions to this building.

1. How long have you been familiar with this building?

2. How have your reactions to the building changed over time? Probe, in what way, why, etc.

3. About the interior of the building:
   * Anything you particularly like?

   * Anything you particularly dislike?
4. About the exterior:
   * Anything you particularly like?

   * Anything you particularly dislike?

5. Do you feel it has an appropriate relationship with any of the nearby buildings? For instance,________________________?

6. How important to you is the issue of a building's relationship to its surroundings? (Probe, for example: Is it something you ever consciously think about?)

CONCLUSION:
I'd like to thank you for your time today. If you have any questions about either the research or the interview, I can answer them now.

Finally, I have one very important request to make; we'd like to ask that you refrain from discussing the content of the interview with anyone until after the end of the week when we've finished our interviewing in (town/city). The reason is that the whole point of the interview is to explore how each person individually feels about the various buildings and issues we've asked you about. If you were to discuss the interview with someone before we've had a chance to interview them, it might significantly alter how they would answer the questions. Please remember that we are interviewing other people nearby (in town, etc.) so please don't discuss this with them either.
Appendix 2: Expert Judgments of Building Profile Scores

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Appendix 3: Letter of Introduction to Site Respondents

24 June 1983

Mr. • ?
President
Summit Place Master Association, I
310 Selby Avenue
St. Paul, Minn.

Dear Mr. Quam:

I am an architecture professor at the University of Wisconsin-Milwaukee and am currently working on a 12-month research study on contemporary architecture funded by the National Endowment for the Arts.

After a comprehensive review of recent architectural projects in the upper Midwest, my research assistant and I have concluded that the contemporary townhouse development at Summit Place is uniquely appropriate for our study. This is because it clearly fulfills our stated criteria that the project be a recently built multiple-housing development in the Minneapolis-St. Paul area. And in addition, it also fulfills our other stated design-related criteria.

Our research study as a whole is organized around three case study buildings, each of which must meet a specific set of criteria, developed during the first 9 months of the study. Our proposed study of your townhouse development would thus constitute one of these case studies. The other already-scheduled studies are at the Alumni Center at the University of Michigan and a small bank building near Madison, Wisconsin.

I am writing to let you and the homeowners' association know that my research assistant and I will be coming to St. Paul the week of 18 July to conduct our study. An important part of the study will consist of interviews with a sample of residents, neighbors, and people involved with the design and development of the project. (I have already spoken with Nell Carter about the latter.) Once we arrive in St. Paul, we will be contacting residents of Summit Place and the adjacent neighborhood to set up individual interviews.

I will be calling you sometime in the next few days in order to answer any questions you might have about the study. I look forward to speaking with you soon.

Sincerely,

Linda N. Groat
Assistant Professor
Appendix 4: Content Analyses of Mixed Sorting Criteria

★ Denotes construct types referred to by at least 50% of the sorting categories in a given sort. Any individual sort listed above (or on the following pages) which designates only one construct type also includes mention of other construct types, but in fewer than 50% of the categories.

CONSTRUCT TYPE
1. BLDG TYPE
2. AGE
3. COMPAT'Y
4. MATERIALS
5. OVERALL FORM
6. STYLE
7. LOCATION
8. SIZE/SCALE
9. BLDG MODIFIED
10. AESTHETIC QUAL.
11. WINDOWS
12. NO PREDOMINANT
13. PREFERENCE
14. FORMAL ELEMENTS
15. COLOR
16. OWNERSHIP
17. LANDSCAPING
18. SITING
19. LAND USE
20. ENERGY EFFIC'Y
21. MISC.
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Appendix 5: MSA, Case Study Respondents' Construct Use

Coefficient of Contiguity: .928

Some respondents have identical response profiles; the MSA program prints only one profile designation and renumbers the entire set of respondents accordingly. Thus: 1-22, Columbus; 23-45, Ann Arbor; and 46-62, St. Paul.
Appendix 6: MSA, Case Study Respondents and Commissioners Construct Use

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Coefficient of Contiguity: .924

Some respondents have identical response profiles; the MSA program prints only one profile designation and renumbers the entire set of respondents accordingly. Thus: 1-22, Columbus; 23-45, Ann Arbor; 46-62, St. Paul; 63-82, review commissioners.
Appendix 7: Spearman's Rank Order Correlation Coefficients

Chapter section 8.1: Correlations of Rank Orders of Contextual Relationships Among Respondent Groups

1. Correlations among Case Study Sites.*
   - Columbus/Ann Arbor: .900
   - Ann Arbor/St. Paul: .947
   - Columbus/St. Paul: .858

2. Correlations among Review Commission Groups.*
   - Milwaukee/Shorewood: .918
   - Shorewood/Cedarburg: .902
   - Milwaukee/Cedarburg: .905
   - Design/Nondesign: .914

3. Correlations between Review Commissions and Case Study Respondents.*
   - Milwaukee/Case Study: .971
   - Shorewood/Case Study: .921
   - Cedarburg/Case Study: .915

Chapter section 8.2: Correlations Between Rank Orders of Contextual Relationships and Rank Orders of the Buildings on Their Own.

1. Correlations for Each Respondent Group.*
   - Columbus/Columbus: .730
   - Ann Arbor/Ann Arbor: .731
   - St. Paul/St. Paul: .871
   - Design/Design: .855
   - Nondesign/Nondesign: .872

* All correlations are significant at the .02 level.
Appendix 8.3 MSAs, Relationship Among Case Study Respondents Based on Preference Sorts for Each of the Three Building Aspects.

Coefficient of Contiguity: .913

1-24, Columbus; 25-48, Ann Arbor; 49-73, St. Paul

Not all 73 numbers are printed on the plot; if two points are plotted in nearly the same location, only one of them can actually be printed.
Coefficient of Contiguity: .906

1-24, Columbus; 25-48, Ann Arbor; 49-73, St. Paul
Appendix 8 (p.3)

Surroundings Sort

Coefficient of Contiguity: 924

1-24, Columbus; 24-48, Ann Arbor; 49-73, St. Paul
Appendix 9: 3 MSA's, Relationship Among Case Study Respondents and Commissioners Based on Preference Sorts for Each of the Three Building Aspects.

Relationship Sort

Coefficient of Contiguity: .92

1-24, Columbus; 25-48, Ann Arbor; 49-73, St. Paul; 74-97, Commissioners

Not all 97 numbers are printed on the plot; if 2 points are plotted in nearly the same location, only one of them can actually be printed.
Coefficient of Contiguity: .902

1-24, Columbus; 25-48, Ann Arbor; 49-73, St. Paul; 74-97, Commissioners
Coefficient of Contiguity: .967
1-24, Columbus; 25-48, Ann Arbor; 49-73, St. Paul; 74-97, Commissioners
Measuring the Fit of New to Old

A checklist resulting from a study of contextualism. By Linda Groat

What are the factors that make a building suitable to its context, that make a new building compatible to its older neighbors? Which are the most important of these factors? Which are under control of the architect?

The answers to such questions are varying and sometimes contradictory. A Greenwich Village town house by Hardy Holzman Pfeiffer is described as contextual because of its materials, scale, and proportion. Michael Graves' addition to the Benacerraf house is discussed in terms of the spatial linkage it creates between the house and the landscape. Philip Johnson's addition to the Boston Public Library claims compatibility because of its axial composition and matching cornice line.

To facilitate a more systematic search for answers to questions such as those above, I undertook a research project aimed at formulating a conceptual framework within which they could be asked. A checklist derived from that framework is reproduced at right.

The first segment of the checklist delineates the three major contextual issues that are commonly beyond the architect's immediate control. These factors—site location, building type, and size of project—constitute the conditions that an architect must usually accept as givens at the outset of the project.

Why, then, should these issues be included as part of this framework? First, it is useful for any architect facing a challenging design problem to recognize the basic limitations of the project and to confront the extent to which these limitations will ultimately affect the success of that design. And secondly, on the occasions when the architect can either assume the role of the developer or exercise persuasive power over the client, he or she must recognize that the initial decisions about building size, site, and use will set important constraints for a contextual design strategy.

The second segment of the framework includes two significant issues over which the architect can usually maintain some control. However, because both issues—prominence and definition of context—are dependent upon aspects of the environment beyond the scope of the project itself, the architect must still acknowledge some considerable constraints on his or her design choices.

The issue of prominence, for example, is significantly affected by the three factors (size, location, use) already defined in the first segment of the framework. Clearly, if a massive office building is to be inserted into a small-scale commercial and residential area, the building inevitably will be prominent. Nevertheless, the architect can choose to minimize or maximize that prominence.

The definition of context is the second issue over which the architect has at least some control. Unfortunately, in many of the published examples of contextual design, the definition of the context actually remains ambiguous. In fact, defining the scope of the context is a critical question that should be con-
...the context is assumed to be the immediately adjacent buildings, the choice is likely to be much wider. In some instances, the architect may choose to define the context as a multiblock area or local district; in other instances it could well be defined as an entire region.

A building in Huelva, Spain, is an interesting example of the latter case. It borrows heavily from the architectural vocabulary of southern Spain in its use of white stucco and ironwork balconies. But although it does not relate specifically to any of the nearby buildings, it is clearly contextual to its particular site. Similarly, the Grundtvig Church by Klint echoes the vernacular tradition of step-pedimented facades that are found throughout Denmark.

The third segment of the framework defines the issues that are actually at the core of any contextual design problem—the design qualities over which the architect has primary control. This segment of the framework also is the most complicated because at this point the hierarchical distinction between strategies and tactics becomes relevant. The central idea being proposed here is that an architect can achieve a better understanding and mastery of the design problem if the design choices are conceptualized in terms of strategies—the general design principles for contextual fit—and tactics—the physical features that embody these design principles.

The hierarchical relationship between strategies and tactics is represented visually in the checklist. A design strategy is defined by the six constituent elements listed as major subheadings; a very condensed and abbreviated set of tactics relevant to each element of the strategy is listed underneath.

In order to illustrate the practical applications of this aspect of the framework, however, it is first necessary to define more precisely the six major elements that define a contextual design...
Applying the framework to specific situations.

strategy. These are derived by combining the basic principles of spatial organization, massing, and style with issues of interior and exterior design. The resulting six elements can then be analyzed in terms of the degree to which a proposed design either replicates or contrasts with the existing context.

For example, the exterior site organization of a project has to do with the basic spatial pattern a building imposes on the site. Tactics such as setback distances, landscaping patterns, and circulation pathways all contribute to the definition of this spatial pattern. Analyzing a given building or proposed project in these terms would involve evaluating the degree to which the existing contextual patterns of site planning are replicated or contrasted.

Or alternatively the interior spatial organization of a project is concerned with the spatial flow within a building as embodied by such tactics as room layouts and circulation paths. Although the inclusion of interior design issues in a discussion of contextual fit may at first seem peculiar, many interior design features can, in fact, have a potentially significant impact on the relationship between old and new buildings. Consider, for example, some residential infill inserted in a block of Georgian row houses. Although the architect might choose to replicate virtually every exterior detail of the existing row house pattern, he or she might nevertheless decide to create within the replicated shell an open spatial layout as a counterpoint to the segmented, rectilinear plan of the traditional row houses.

The third and fourth elements of design strategy have to do with massing, which can be considered in terms of both its exterior and interior design implications. The conventional definition of massing suggests the exterior volumetric composition, rendered through the tactics of height, shape, complexity of form, etc. Interior massing—the arrangement of semifixed features, such as furniture and cabinetry—is a much less conventional concept. Although it is probably the least significant aspect of contextual fit design, there are instances when it is a critical issue. Consider, for example, the addition of a new wing
to the stack section of a library. If the shelves in the old wing are arranged in a linear pattern, a radial arrangement of shelves in the new wing would constitute a strong contrast to the original.

Finally, the fifth and sixth elements of design strategy both have to do with style—the surface treatment of the planes (particularly the elevations) that define the shell of the building. Again, most discussions of contextualism focus on style as it relates to the exterior surface composition; yet the treatment of interior surfaces can have equally as significant an impact on the compatibility between a new building and its older setting.

The net effect of this series of six design elements is to create a framework by which the architect can analyze the design strategy for relating any building or project to its context. In other words, by rating the relative degree of contrast or replication of these six elements, the architect can generate a profile that defines the design strategy of any building. In most instances, it would be sufficient to use a rather informal set of ratings, such as high contrast, moderate contrast, moderate replication, high replication. An 11-point numerical scale is used here, but this degree of refinement is not always necessary or appropriate for every design problem. And, similarly, in circumstances where one has only minimal familiarity with the defined context of a building, it may be sufficient to analyze only the exterior design elements.

How then might these ratings of design strategies be applied to some specific buildings? A few examples should suffice to illustrate the kind of ratings that form the basis of this segment of the framework. For the sake of brevity and simplicity of presentation, these examples will be rated only in terms of the three exterior elements of design strategy—site organization, exterior volumetric composition, and exterior surface treatment.

The examples of Enderis Hall on the University of Wisconsin-Milwaukee campus and the new alumni center at the University of Michigan are an interesting pair of campus buildings in that the design strategies they embody are so completely different. Enderis Hall is essentially a high-contrast building in all respects: site organization (by virtue of contrasting landscape treatment, parking, and setback), massing, and style. The alumni center, on the other hand, substantially replicates its immediate neighbors. Both its style and site organization (which conforms to the site plan of a mall) represent high replication. However, massing represents only moderate replication, primarily because the gabled roofline is oriented perpendicular to that of its neighbors.

A more complicated example is the Citizens Federal building in San Francisco. Completed in the early-'60s, its design strategy represents one that is more typical of early attempts at contextualism. In both its site organization and style it attempts to replicate the expected pattern of building on the street; but in style it remains moderately in contrast with its context.

How are these analyses, or even the framework as a whole, useful to the practicing architect? And how is this process any different than what architects already do? In some ways, it probably is not. The organization of the framework is not meant to imply a rigid sequencing of design decisions. So, as in any design problem, the architect may choose to start with major issues (strategies) and work down, or begin with the details of form (tactics) and work up.

Nevertheless, the conceptual framework can foster some significant improvements in the contextual design process. First, the framework provides a checklist of the major issues that affect the compatibility between old and new, with the result that the designer is at least able to deal with them all in a conscious way. Second, in its basic organization, it helps to clarify the degree of control an architect is likely to exert on the range of variables. And finally, by describing the elements of a design strategy hierarchically, it enables the designer to consider initially the general principles of his or her design solution without becoming simultaneously bogged down in the details of the specific forms, i.e. the tactics. 

Appendix 11: A Catalogue of Contextual Design Exemplars

The photographic series which is presented on the following pages represents a compilation of two separate data analyses: the rank order of preference for contextual relationships and the tabulations of the most noticed design features.

The building photographs are arranged according to the composite rank order of preference for the case study respondents. The tabulations which accompany each building are also based on the responses of the case study respondents only.

The terminology used in this analysis is defined as follows:

Number of respondents: This figure indicates the number of respondents (out of a total of 73) who picked the building as one of the most liked or most disliked relationships.

Features: The specific features mentioned by the respondents have been listed according to the segments of the conceptual framework. Under the segments headings, the most frequently mentioned design features are listed for each building. An additional category, called "non-framework," includes the respondents' more general evaluative comments.

Liked/Disliked: Tabulations for the number of respondents and the number of comments on design features are differentiated according to whether they refer to a liked or disliked relationship.
### East Cambridge Savings Bank (Bldg #1)

**Rank:** 1  
**Bldg Name:** East Cambridge Savings Bank (Bldg #1)  
**Profile Score:** 5-4-6  
**Number of Respondents:** 50 (Liked)

#### Liked Features

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>Givens &amp; Parameters</td>
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<tr>
<td>Massing</td>
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<tr>
<td>Glass transition link</td>
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<tr>
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<td>156</td>
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<tr>
<td>Material, stonework</td>
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<td>Arched windows</td>
<td>41</td>
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<td>Decorative frieze</td>
<td>28</td>
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<td>Similarity of style</td>
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<tr>
<td>Arch theme</td>
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</tr>
<tr>
<td>Non-Framework</td>
<td>25</td>
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<td>Appears as part of</td>
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</tr>
<tr>
<td>Same bldg</td>
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</tbody>
</table>

**Total number of comments:** 275

### Addition to the Frick Collection (Bldg #7)

**Rank:** 2  
**Bldg Name:** Addition to the Frick Collection (Bldg #7)  
**Profile Score:** 6-6-7  
**Number of Respondents:** 39 (Liked)

#### Liked Features

<table>
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<tr>
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</tr>
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<td>Cornice line</td>
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<td>Degree, quality of details</td>
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<td>Same classical design</td>
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<tr>
<td>Style</td>
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<td></td>
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<td>Continuity of horizontal lines</td>
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<td>Good blend</td>
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**Total number of comments:** 160
Rank: 3  
Bldg Name: The Alumni Center of the University of Michigan (Bldg #2)  
Profile Score: 6-5-6  
Number of Respondents: 36 (Liked)

<table>
<thead>
<tr>
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<tr>
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<tr>
<td>roof-line gables</td>
<td>18</td>
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<tr>
<td>chimneys</td>
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<tr>
<td>Facade Design</td>
<td>79</td>
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<tr>
<td>materials; brick &amp; stone</td>
<td>28</td>
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<tr>
<td>windows</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>style similar</td>
<td>7</td>
<td></td>
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<tr>
<td>mix of old &amp; new</td>
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<td>horizontal limestone</td>
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<td>bands</td>
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<tr>
<td>good blend</td>
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Total number of comments: 156

Rank: 4  
Bldg Name: Lincoln Park townhouses (Bldg #9)  
Profile Score: 7-5-5  
Number of Respondents: 17 (Liked)

<table>
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<tr>
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<tbody>
<tr>
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<tr>
<td>roofline</td>
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<tr>
<td>Facade Design</td>
<td>36</td>
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<tr>
<td>material, brick</td>
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<tr>
<td>windows similar</td>
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<td></td>
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<tr>
<td>color</td>
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</tr>
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<tr>
<td>Non-Framework</td>
<td>19</td>
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<tr>
<td>good blend</td>
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Total number of comments: 75
**Rank: 5**  
Bldg Name: 519 Ashland residence (Bldg #25)  
Profile Score: 7-6-5  
Number of Respondents: 15 (Liked)

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<td>roof line</td>
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</tr>
<tr>
<td>Facade Design</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>materials, clapboard</td>
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<td></td>
</tr>
<tr>
<td>windows</td>
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<td></td>
</tr>
<tr>
<td>color</td>
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</tr>
<tr>
<td>style</td>
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<tr>
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<tr>
<td>good blend</td>
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Total number of comments: 67

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**Rank: 6**  
Bldg Name: Beacon Street apartments (Bldg #17)  
Profile Score: 6-6-2  
Number of Respondents: 11 (Liked); 2 (Disliked)

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<thead>
<tr>
<th>Features</th>
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<th>Disliked</th>
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<tbody>
<tr>
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<td>Massing</td>
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<tr>
<td>vertical bays</td>
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</tr>
<tr>
<td>Facade Design</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>material, brick</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>windows</td>
<td>6</td>
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<tr>
<td>looks newer, but blends</td>
<td>4</td>
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</tr>
<tr>
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<td>blends well</td>
<td>4</td>
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Total number of comments: 47
### Salem Five Cents Bank (Bldg #15)

**Profile Score:** 5-3-2  
**Number of Respondents:** 4 (Liked); 1 (Disliked)

<table>
<thead>
<tr>
<th>Features</th>
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<th>Disliked</th>
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<tbody>
<tr>
<td>Givens &amp; Parameters</td>
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</tr>
<tr>
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<tr>
<td>Massing</td>
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<tr>
<td>Facade Design</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>color</td>
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<td>arch motif</td>
<td>3</td>
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<tr>
<td>Non-Framework</td>
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Total number of comments: 18

### Asia Society (Bldg #23)

**Profile Score:** 3-3-3  
**Number of Respondents:** 5 (Liked); 2 (Disliked)

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<td>angled forms</td>
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<td>Facade Design</td>
<td>6</td>
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</tr>
<tr>
<td>color</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>style too modern</td>
<td>3</td>
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<tr>
<td>Non-Framework</td>
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Total number of comments: 15

7
Rank: 9  
Bldg Name: Law Building at University of Wisconsin (Bldg #10)  
Profile Score: 5-5-4  
Number of Respondents: 10 (Liked); 6 (Disliked)

Features | Liked | Disliked |
---|---|---|
Givens & Parameters | - | - |
Site Organization | - | 1 |
Massing | 2 | 2 |
Facade Design | 13 | 12 |
material, brick | 4 | | |
material, use of tile | | 3 |
windows | 4 | 2 |
lack of detail, plain | | 2 |
Non-Framework | 9 | 7 |
good replication | 8 | 3 |
looks institutional | | |
Total number of comments | 24 | 22 |

Rank: 10  
Bldg Name: Pacific Heights townhouses (Bldg #19)  
Profile Score: 5-6-3  
Number of Respondents: 4 (Liked); 4 (Disliked)

Features | Liked | Disliked |
---|---|---|
Givens & Parameters | - | - |
Site Organization | - | - |
Massing | 5 | 2 |
overall shape | 2 | 2 |
contrast of straight vs. curves | | |
Facade Design | 6 | 7 |
windows, shape & size | 4 | 2 |
contrast of color | | 2 |
style too modern | | |
Non-Framework | 1 | 5 |
Total number of comments | 12 | 14 |
Rank: 11
Name of Bldg: Citizens Federal Savings (Bldg #12)
Profile Score: 7-6-3
Number of Respondents: 9 (Liked); 6 (Disliked)

<table>
<thead>
<tr>
<th>Features</th>
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<th>Disliked</th>
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<tbody>
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<td>Givens &amp; Parameters</td>
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<td></td>
</tr>
<tr>
<td>Massing</td>
<td>14</td>
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</tr>
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<td>overall shape, verticality</td>
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<td>2</td>
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<td>height, similar</td>
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<td>materials</td>
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<td>windows, too much glass</td>
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<td></td>
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<tr>
<td>degree of detail, too plain</td>
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<td></td>
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<td>Non-Framework</td>
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<td>5</td>
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<tr>
<td>too much contrast</td>
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Rank: 12
Name of Bldg: Deutsch residence (Bldg #14)
Profile Score: 7-2-3
Number of Respondents: 5 (Liked); 6 (Disliked)

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<tr>
<th>Features</th>
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<th>Disliked</th>
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<tbody>
<tr>
<td>Givens &amp; Parameters</td>
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<td>color attractive</td>
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**Rank: 13**  
*Name of Bldg: Frank-Carlsen residence (Bldg #24)*  
*Profile Score: 6-4-3*  
*Number of Respondents: 1 (Liked); 3 (Disliked)*

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<tr>
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<td>design too modern</td>
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<td>Non-Framework</td>
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Total number of comments: 7 (Liked) 8 (Disliked)

**Rank: 14**  
*Name of Bldg: Maryland National Bank (Bldg #6)*  
*Profile Score: 6-6-2*  
*Number of Respondents: 2 (Disliked)*

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<td>doesn't fit</td>
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<td></td>
</tr>
<tr>
<td>Site Organization</td>
<td>-</td>
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</tr>
<tr>
<td>Massing</td>
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<tr>
<td>Facade Design</td>
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</tr>
<tr>
<td>Non-Framework</td>
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<tr>
<td>unattractive</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>association-looks like</td>
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<td></td>
</tr>
<tr>
<td>round house or garage</td>
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Total number of comments: 8
Rank: 15
Name of Bldg: Valerio residence (Bldg #3)
Profile Score: 6-3-3
Number of Respondents: 2 (Liked); 8 (Disliked)

<table>
<thead>
<tr>
<th>Features</th>
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<td>Massing</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>overall shape, proportion</td>
<td></td>
<td></td>
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<tr>
<td>inappropriate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>roofline doesn't relate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>too few stories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facade Design</td>
<td>2</td>
<td>12</td>
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<tr>
<td>no windows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>degree of detail, too</td>
<td></td>
<td></td>
</tr>
<tr>
<td>plain</td>
<td></td>
<td></td>
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<tr>
<td>Non-Framework</td>
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Total number of comments 6 33

Rank: 16
Name of Bldg: Addition to the Metropolitan Museum of Art (Bldg #5)
Profile Score: 3-2-1
Number of Respondents: 4 (Liked); 8 (Disliked)

<table>
<thead>
<tr>
<th>Features</th>
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<th>Disliked</th>
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<tr>
<td>Site Organization</td>
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</tr>
<tr>
<td>Massing</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Facade Design</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>materials</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>contrast of modern/old</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Non-Framework</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>a good contrast</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>too much contrast</td>
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<td>4</td>
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</table>

Total number of comments 13 26
**Rank: 17**  
**Name of Bldg:** Portland Public Services Building (Bldg #20)  
**Profile Score:** 7-5-3  
**Number of Respondents:** 10 (Disliked)

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<td></td>
</tr>
<tr>
<td>Massing</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>unattractive, confusing, base/top</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Facade Design</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>degree of detail, confusing, busy</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Non-Framework</td>
<td></td>
<td>9</td>
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<tr>
<td>no similarity w/context</td>
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**Total number of comments:** 30

**Rank: 18**  
**Name of Bldg:** Dodge Center (Bldg #18)  
**Profile Score:** 3-2-2  
**Number of Respondents:** 17 (Disliked)

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<td>contrast of size</td>
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<tr>
<td>Site Organization</td>
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<td>2</td>
</tr>
<tr>
<td>Massing</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Facade Design</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>too modern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Framework</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>too much contrast with surroundings</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>like bldg on its own</td>
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<td>5</td>
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**Total number of comments:** 46
Rank: 19  
Bldg. Name: Addition to Allen Memorial Art Museum (Bldg. #16)  
Profile Score: 5-3-2  
Number of Respondents: 1 (Liked); 16 (Disliked)

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<tr>
<th>Features</th>
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<th>Disliked</th>
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<tbody>
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<td>Givens &amp; Parameters</td>
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</tr>
<tr>
<td>Site Organization</td>
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<td>-</td>
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<tr>
<td>Massing</td>
<td>-</td>
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</tr>
<tr>
<td>flat roofline a contrast</td>
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</tr>
<tr>
<td>Facade design</td>
<td>2</td>
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</tr>
<tr>
<td>colors too different</td>
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<td>5</td>
</tr>
<tr>
<td>check pattern ugly and</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>inappropriate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Framework</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>design out of place</td>
<td>-</td>
<td>6</td>
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<td>Total number of comments</td>
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Rank: 20  
Name of Bldg: Addition to East India Marine Hall (Bldg #4)  
Profile Score: 4-2-1  
Number of Respondents: 1 (Liked): 17 (Disliked)

<table>
<thead>
<tr>
<th>Features</th>
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<th>Disliked</th>
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<tr>
<td>Massing</td>
<td>1</td>
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<tr>
<td>Facade Design</td>
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<td>30</td>
</tr>
<tr>
<td>lack of windows</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>degree of detail, too</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>stark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>too modern</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Non-Framework</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>too much contrast</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>bldg. on its own unap-</td>
<td></td>
<td>5</td>
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<tr>
<td>pealing</td>
<td></td>
<td></td>
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<td>Total number of comments</td>
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Rank: 21
Name of Bldg: Summit Place townhouses (Bldg #13)
Profile Score: 2-1-2
Number of Respondents: 15 (Disliked)

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<tr>
<th>Features</th>
<th>Liked</th>
<th>Disliked</th>
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<tbody>
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<td>Site Organization</td>
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<td></td>
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<tr>
<td>Massing</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>rooflines unappealing,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>inappropriate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>angled forms too sharp</td>
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<td></td>
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<tr>
<td>Facade Design</td>
<td>26</td>
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<tr>
<td>materials</td>
<td>4</td>
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<tr>
<td>too modern for area</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>looks cheap, insubstantial</td>
<td>4</td>
<td></td>
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<tr>
<td>Non-Framework</td>
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<tr>
<td>conflicts w/surroundings</td>
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Total number of comments 58

Rank: 22
Name of Bldg: Addition to the Farmers and Merchants Union Bank (Bldg #21)
Profile Score: 6-5-1
Number of Respondents: 4 (Liked): 10 (Disliked)

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<tr>
<td>Massing</td>
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<td>2</td>
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<tr>
<td>Facade Design</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>materials, need more</td>
<td></td>
<td></td>
</tr>
<tr>
<td>brick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>degree of detail, too</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>plain next to ornate</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Non-Framework</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>too much contrast</td>
<td></td>
<td>8</td>
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Total number of comments 10 40
Rank: 23
Name of Bldg: Enderis Hall at University of Wisconsin-Milwaukee (Bldg #8)
Profile Score: 2-1-1
Number of Respondents: 26 (Disliked)

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<tr>
<td>size too large</td>
<td>11</td>
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<td>Site Organization</td>
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<tr>
<td>Massing</td>
<td></td>
<td>15</td>
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<tr>
<td>overall shape inappropriate</td>
<td>5</td>
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<tr>
<td>Facade Design</td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>materials too much contrast</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>color doesn't blend</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>degree of detail-too busy</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>design too modern</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Non-Framework</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>too much contrast</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>bldg. unattractive on its own</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>mood-alienating, uninviting, especially compared to warmth of others</td>
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Total number of comments 102

Rank: 24
Name of Bldg: Beckley House (Bldg #11)
Profile Score: 2-1-1
Number of Respondents: 30 (Disliked)

<table>
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<tr>
<th>Features</th>
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<tr>
<td>size too small for area</td>
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<td>Site Organization</td>
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<td>14</td>
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<tr>
<td>too squeezed in</td>
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<tr>
<td>Massing</td>
<td></td>
<td>25</td>
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<td>overall shape; too much contrast</td>
<td>7</td>
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<tr>
<td>flat roof inappropriate</td>
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<td></td>
</tr>
<tr>
<td>height too low</td>
<td>8</td>
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<td>Facade Design</td>
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<td>33</td>
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<tr>
<td>materials contrast too much</td>
<td>8</td>
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<tr>
<td>color stands out</td>
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<tr>
<td>too modern in area of traditional homes</td>
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</tr>
<tr>
<td>Non-Framework</td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>doesn't blend, poor fit like it on its own</td>
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Total number of comments 116
Rank: 25  
Name of Bldg: Library at Mt. Mary College (Bldg #22)  
Profile Score: 2-1-1  
Number of Respondents: 29 (Disliked)

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<td>Massing</td>
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<tr>
<td></td>
<td>overall shape inappropriate</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>roofline, too much contrast</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>too low</td>
<td>5</td>
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<tr>
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<tr>
<td></td>
<td>color too much contrast</td>
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<td>too modern w/traditional bldgs</td>
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<td>Non-Framework</td>
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<td></td>
<td>out of place, doesn't blend</td>
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<tr>
<td></td>
<td>like bldg on its own</td>
<td>5</td>
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<tr>
<td></td>
<td>unattractive on its own</td>
<td>7</td>
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</table>

Total number of comments: 107
Public Opinions
Of Contextual Fit

In interviews a group of laymen tell what they like and don’t like about some notable efforts. By Linda Groat

Contextualism has been an increasingly important topic of architectural discourse in recent years. But it has been discussed primarily from the architect’s or critic’s point of view and rarely, if ever, from the public’s point of view.

What makes a layperson say of a new building placed among older ones that it is “a good fit”—or alternatively, “totally out of place”? In other words, what specific design features influence people’s perceptions of how well a building fits its context?

In search of answers to these and related questions I undertook a two-year research study, interviewing 73 nonarchitects about the contextual compatibility of 25 buildings, some of them well known for their efforts to achieve it. The interviews took place in three cities in the upper Midwest, each containing one of the subject buildings. The interviewees were shown color photos of the other buildings. The following are several examples of the results.

Of the 25 contextual relationships represented in the study, the East Cambridge Savings Bank addition was by far the most well liked. Indeed, many of the respondents were quite enthusiastic about the project. Comments such as “it all looks like it belongs together” and “it’s a continuous flow” were typical of the reactions elicited.

When asked to be specific about the features they felt linked the two building segments together, most people mentioned several specific aspects of the facade design, the most frequently mentioned features being: the arched-form windows, the use of a consistent stonework, the decorative frieze, and the similarity of overall style.

These reactions to the East Cambridge bank are in many ways typical of the respondents’ reactions to other buildings in the study as well. They illustrate two of the most important findings (verified by complex statistical procedures): (1) that the physical features that seem to contribute most significantly to the perception of compatibility have to do with facade design, as opposed to either site organization or massing; and (2) that the most preferred contextual relationships are those that embody a relatively high degree of replication.

This latter point is not meant to imply that complete replication is necessary for the perception of contextual compatibility. Fortunately for the designer, most people seem to appreciate, and in fact prefer, a mixture of traditional and contemporary qualities, so long as some significant design elements, particularly facade design features, have been replicated.

The example of the East Cambridge bank illustrates this point well. The respondents’ comments clearly indicated that they appreciated not only the replicative features of the recycled wall segment but also the contemporary qualities of the glass link. For example, one respondent observed that the link helps to emphasize the two different eras of the building while simultaneously bringing them together.

Another contextual relationship that also illustrates the respondents’ overall preference for a moderately high degree of replication is the alumni center at University of Michigan in Ann Arbor. The Michigan campus was one of the three case study sites at which interviews were conducted with building users and nearby neighbors.

In general, the comments from the respondents, both in Ann Arbor and the other two case study sites, suggest that the alumni center is seen as blending successfully with the adjacent campus buildings. Moreover, the Ann Arbor respondents were particularly enthusiastic about the building, and their comments reflected their evaluation of the center in its larger campus context:

“It is both its own building and of the campus.”
“It looks as if it belongs on a campus.”
“It looks like it has been here forever.”
“It’s the best unifying building on the whole campus.”

In fact, the alumni center is considered so well-suited to the campus as a whole that when asked to name specific buildings with which the center is particularly compatible, the local respondents cited a total of 11 different campus buildings. Some
What then are the specific design features that contribute to this perceived compatibility? Again, as in the case of the East Cambridge bank, most of the specific features mentioned have to do with facade design. Of these, the most important were: the use of brick, including the limestone banding; the overall style; the mix of new and traditional facade elements; and the windows. In addition to these facade design features, two aspects of the massing were frequently mentioned: the gabled roofline and the overall shape.

Among the local respondents, however, one feature in particular—the four massive chimneys—was especially controversial. The architect's intent was to use them as a device for exaggerating the scale of the building so that it would stand up to its large neighbors. But while some local respondents actually liked the chimneys and appreciated the building for its feeling of largeness, others thought the chimneys inappropriate and outlandish.

Another generally liked contextual relationship is illustrated by the Beacon Street apartments. This building is slightly less replicative than the previous two examples, and interestingly, the respondents are slightly less enthusiastic in their opinion of its contextual compatibility.

Although several important design features—such as the use of brick and the vertical bay—contributed to the generally favorable response, other features—such as the rectilinear forms and the fenestration—were more controversial. More specifically, respondents who liked the building appreciated the counterpoint of rectilinear and curvilinear bay forms, while those who disliked the building found the contrast objectionable. In addition, some respondents appreciated the size and similarity of window placement, while others objected to the difference in their stylistic quality.

Across page, East Cambridge Savings Bank addition in Cambridge, Mass., by Hilgenhurst & Associates of Boston, which was the best liked of the 25 contextual relationships presented in the study; below, alumni center at the University of Michigan in Ann Arbor, by Hugh Newell Jacobsen, FAIA, of Washington, D.C., which users and visitors felt related well to the campus as a whole; right, Beacon Street apartments in Boston by James McNeely, AIA, of Boston, to which some respondents in the study objected to the contrast of rectilinear and curvilinear forms.
...search study as a whole—suggest three conclusions about how best to achieve contextual compatibility among buildings: 

Architects must first be willing to adopt an evolutionary—rather than revolutionary—stance toward architectural design. As the examples described in this article illustrate, the most preferred infill designs generally embody a moderately high degree of replication. And, while people do, in fact, express an appreciation for the counterpart established by mixing traditional and new elements together, most people find radical contrast to be objectionable. The challenge, then, is to find ways of achieving the appropriate balance between contrast and replication. In some circumstances, even a moderately contrasting design strategy can be perceived as contextually compatible. For example, in the design of the Salem Five Cents Savings Bank addition, a creative use of one or two key design features seems to be enough to create a perceived link to the archaic arcade, set prominently in front of the stark glass facade, maintains an appealing image that most respondents found it to be contextually compatible.

Facade design is more important than either site organization or massing in linking new to old. Buildings that only replicate site organization and massing patterns—but not facade design features—are usually not seen as contextually compatible. This is not only the case with the addition to the Farmer's and Merchants' Union Bank but also with a number of other buildings in the study. This does not mean, however, that indiscriminate mimicry of facade design features is necessary for compatibility. Rather, as the examples of the East Cambridge bank and the Michigan alumni center suggest, innovative features and imaginative re-interpretations of traditional facade elements can be blended together in ways that truly appeal to nondesigners. In other words, nondesigners seem actually to prefer buildings that express a character of their own to the challenge of unraveling merely as pale or undistinguished imitations of the original's.

Architects must seek new strategies for achieving the richness of detail typical of older buildings. Not surprisingly, the results of the study do confirm that nondesigners generally find the starkness of modernist architecture more typical of infill settings. But more important, the study also reveals that the respondents’ desire for moderation in the degree of facade detail is just as clearly manifested in their dislike of “busy” and “garish” features. Thus, those nonmodernist designs that embody an eclectic collage of formal vocabularies, especially when expressed in bold and colorful patterning effects, are frequently perceived as busy, confusing, and therefore inappropriate to their surroundings. This is the case not only with the addition to the Allen Memorial Museum but with other buildings in the study as well.

These three conclusions, then, offer to the practitioner insights into nondesigners’ interpretations of contextual compatibility. Quite purposefully, they have not been presented as prescriptive guidelines. Truly imaginative contextual design is more likely to emerge from an intuitive sensitivity of the nature of lay perceptions than from following form-giving rules. Thus, the conclusions stated above are presented in the hopes of fostering innovative contextual design that successfully combines artistic expression and popular values. □
Across page, addition to Louis Sullivan's Farmers' and Merchants' Union Bank in Columbus, Wis., by Gornet & Shearman of St. Louis, which Columbus residents found more contextually appropriate than study respondents; above, Allen Memorial Art Museum addition at Oberlin College in Oberlin, Ohio, by Venturi, Rauch & Scott Brown of Philadelphia, which drew a negative response because of its checkerboard pattern; left, the Salem Five Cents Savings Bank in Salem, Mass., by Padjen Architects of Topsfield, Mass., which was considered compatible by many respondents, despite its contrast.