Order Number 1346692

Architects' and laypeople's perceptions of interaction environments

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The University of Arizona, 1991

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ARCHITECTS' AND LAYPEOPLE'S PERCEPTIONS OF INTERACTION ENVIRONMENTS

by

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A Thesis Submitted to the Faculty of the

DEPARTMENT OF COMMUNICATION

In Partial Fulfillment of the Requirements
For the Degree of

MASTER OF ARTS

In the Graduate College

THE UNIVERSITY OF ARIZONA

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ACKNOWLEDGEMENTS

I would like to thank the following people for the contributions that they have made, not only to this thesis, but also to my life.

To Dr. Judee Burgoon: Thank you for your guidance and support throughout the last two years. You have taken a scared architecture student and given her the confidence to realize that there is life after design studio. You have shown caring and concern when I needed it, and sternness when I deserved it. I appreciate the opportunity I have had to learn from you and work with you, and I hope to continue to do so for many years.

To Dr. William Bailey: Since the first day I stepped into your class, you have continued to pique my curiosity. Thank you for inspiring me to see things from a different point of view, and to find the interesting in the ordinary.

To Dr. Dennis Doxtater: As my first architecture professor since my undergraduate days, I especially thank you for making me realize that not all architecture professors are ogres. You helped me to enjoy architecture again, and that was not an easy task to accomplish.

Thanks are also extended to Lesa Stern and Bret Niemeyer for their help and emotional support during this project, and to my brother, Stephen Buslig, who teaches me not to take life so seriously.

DEDICATION

What doesn't kill you makes you stronger.

-- Dr. Michael Burgoon
(and probably some
other famous person)

This thesis is dedicated to my parents, Dr. and Mrs. Béla S. Buslig, who taught me to never stop learning and exploring.

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ABSTRACT

This study was conducted to explore the influence of architecture on emotions and communication. Correlations were proposed between dimensions of affect (pleasure, arousal, dominance) and communication (formality, warmth, privacy, familiarity, constraint, psychological distance) in interaction environments. Hypotheses also proposed that affective and communicative responses would differ for architectural styles as well as for architects and laypeople. Three contemporary styles of architecture (Modern Traditionalism, Deconstructivism, and Post-Modernism) were depicted in photographs of houses. Using written self-report measures, architects and laypeople rated their affective responses and expectations for communication in stimulus houses.

Hypotheses were partially confirmed for correlations between affect and communication dimensions. Results also confirmed that different architectural styles are perceived differently in terms of affect response and expectations for communication. No differences, however, were found between architects' and laypeople's perceptions of architecture. Implications of the findings were discussed concerning the impact of architectural style on human communication and behavior.

CHAPTER 1

INTRODUCTION

As Winston Churchill once said, "we shape our buildings, and afterwards our buildings shape us" (cited in Glass, 1968, p. 29). Architects, as the shapers of our buildings and environments, are endowed with great power and responsibility to the public they serve. Because the architect's product is one which affects other people, his/her role in subtly influencing individual and societal behaviors should not be taken lightly. The architects of our built environments are the creating "gods" of those buildings and spaces in which we work, relax, sleep, or simply exist. As such, architects are allowed to greatly influence much of our everyday experiences, including our communication.

However, architects also assume the role of servant of the public by the very act of creating buildings for other people. Architects are called upon to create grand structures, inevitably ripe with symbolic meaning, which also provide for the comfortable functioning of the humans who inhabit them. Architecture is imbued with meaning, and architects are responsible, in large part, for choosing what kinds of meanings are conveyed. Architects design with symbolic intent (Bonta, 1979; Mikellides, 1980; Vickery, 1983). The use of a particular architectural

style can be seen as an attempt to physically manifest societal values at the time of the style's development. In choosing one style over another, the architect makes a conscious or subconscious decision to promote the meanings and values associated with the manifesto of that architectural style.

Because of the architect's power to influence people's affective and behavioral responses to various building types and styles, architects should be able to accurately assess and predict laypeople's responses to architecture. As a part of the human race, architects could be expected to react to architecture in much the same way as do most other people. Yet previous research has found that the training architects undergo alters their perceptions of architecture from those of their lay public (e.g., Groat, 1982; Hershberger, 1970; Nasar, 1989). Since perceptual similarities between the architect and the layperson cannot be counted on, it rests upon the architect to understand the differences in perceptions of his/her lay audience, and to take these differences into account when designing and communicating to his/her audience. Unfortunately, all too few architects actually address this issue of communication.

The present study is designed to explore some of the perceptual differences that exist between architects and

laypeople. Underlying the study is the assumption that if architects and laypeople have different perceptions of, and interpret different meanings for, the same building, the two groups will also have different expectations of what kinds of communication will take place in these environments. Given that a person's physical environment is known to influence and structure his/her interactions (e.g., Burgoon, Buller, & Woodall, 1989; Knapp, 1978, 1984), the potential disparity that exists between the architect's and the layperson's perceptions of architecture must be addressed. If a particular style of architecture is not interpreted by the layperson in the manner the architect intended, then the communication and interactions that take place in a setting of this (architectural) style are also likely to be different than the architect intended. Part of the architect's task is to design buildings that function well and communicate meaning to the public at large. A difference in the perceptions of architecture between architects and laypeople is a reason for concern for the architectural community.

Architects, Laypeople, and the House

Throughout history, people's changing values have been given physical form in the architectural styles that they utilize for their buildings (Jencks, 1988). Especially in the United States, the American house has been used to

promote particular meanings and lifestyles intended to represent the proper expression of American values (Bronner, 1983; Clark, 1988; Taylor, 1990; Wright, 1981). Changes in the style, plan, or form of the American house have generally represented changes occurring in other areas of American life as well. An expression of individual pride and values as well as societal ideals, the American house is laden with meaning (Gilman, 1970; Hayden, 1981, 1984; Wright, 1981).

In the United States' early history, the house was "designed" and built by the individual owner, the carpenter, or the community at large (Wright, 1981). Architecture was not yet recognized as a separate, professional endeavor. The establishment of architecture as a professional field was due, in part, to the successful promotion of the need for the architect's expertise and historical knowledge necessary to choose the proper architectural style for the expression of the client's individuality and his/her values (e.g., Clark, 1988; Hubka, 1989). The architect became responsible for creating architectural designs which spoke of the American public's societal and individual values. In the past, the architect's ability to accurately assess the wants and needs and values of his/her public has not always been successful (e.g., Blake, 1977; Rapoport, 1987; Sommer,

1983). Furthermore, studies have found that architects and laypeople sometimes fail to interpret the same meaning from the same styles of architecture (Devlin & Nasar, 1989; Groat & Canter, 1979; Nasar, 1989).

The relationship between the architect and his/her lay audience is one of several interdependencies. The client depends on the architect to put abstract ideas into the physical form of a building or other project. On the other hand, in most cases the architect depends on the client for the monetary backing necessary to see his/her creative visions actually built. Additionally, the architect has a secondary obligation to the rest of his/her audience, which includes the users of his/her buildings and the viewers of his/her projects as well.

Ego-involvement for both the architect and the client is high when working together to realize the construction of a project, which sometimes results in strained relations (e.g., Wodehouse, 1976). For both the architect and the client, the other is suspect. To the architect, the vulgar demands of the client certainly need guidance for their proper and tasteful expression in architecture (Hubka, 1989). To the client, the architect is often unrepentant in his or her economic and egocentric demands, and seemingly unheeding of the client's wishes (Wodehouse, 1976). Differing wants, desires, and expectations for

these two groups, the architects and their clients, makes the need for clear communication especially important.

The need for unambiguous communication exists for the relationship between architects and the rest of their audience as well. Arguably, if the client is not also the user of an architect's buildings, the users' needs are more important than those of the clients' because of their daily use of the building. This creates a potential conflict for the architect, who must please the client who is providing the economic support for a project, while simultaneously designing a building that is functional and pleasing to the users. Even the expectations of the distant viewer -- the people who see the building but do not use it -- is of some concern to the architect. Because of the service aspect of the architect's role in society, most architects cannot decide to completely ignore their audience's affective responses to their work.

Intuition is often all the architect has to rely upon to meet the needs and expectations of his/her various audience members. Were the architect's intuition finely tuned to the clients, users, and viewers of his/her audience, the issue of communication might not be of much import. However, studies have indicated that the training architects endure alters their perceptions and assignment of meaning to such a degree that they no longer can be

considered similar to the non-architect (Groat, 1982; Hershberger, 1970, 1974; Pennartz & Elsinga, 1990; Purcell, 1986). Furthermore, architects do not always seem to be able to accurately assess laypersons' responses to and preferences for particular architectural styles (Nasar, 1989). Yet because of the long lasting effects of the architect's work on the laypersons who use his/her buildings, the architect's knowledge of lay meanings and perceptions of architecture is imperative.

Dimensions of Architectural Perception

Architects regularly design sociofugal and sociopetal environments, relying on instinct and training to manipulate visual forms that elicit feelings such as pleasure, warmth, privacy, and constraint. However, the architect's predictions of the effects of his/her choices on the lay public are not always accurate. It is difficult to instinctively know how individual architectural elements, alone or in combination, will be interpreted by an audience, yet this is exactly what the architect is called on to do. For this reason, it is important to take a more methodical, rather than instinctual, approach to determine the effects of architectural styles on people's expectations for communication. As a first step toward this end, several dimensions of architectural environments have been categorized and studied in the past. Some of

these dimensions are cited and elaborated in the following paragraphs.

Perceptions of architectural environments have been classified in a variety of ways by researchers. Knapp (1978, 1984) proposed six dimensions of "interaction environments" which include perceptions of formality, warmth, privacy, familiarity, constraint, and physical or psychological distance. Hershberger (1970) identified space evaluation, organization, potency, pleasantness, and novelty/excitement as five factors in architectural perception. Nasar (1989), in his attempt to isolate meanings interpreted from housing styles, found that architects and laypeople differed in their perceptions along the dimensions of desirability, friendliness, and status. Pennartz and Elsinga (1990), in their review of environmental preference studies found themes of coherence, mystery, familiarity, complexity, perceived danger, and others in several studies. Burgoon, Buller, and Woodall (1989) discussed four continua with which to describe situations -- private/public, cooperative/competitive, informal/formal, and task/social. Additionally, Mehrabian (1976, 1980, 1981; Mehrabian & Russell, 1974) proposed that the emotional response to any environment can be categorized along three separate dimensions of pleasure, arousal, and dominance.

Many of the dimensions of environmental perceptions can be subsumed under two of the previously mentioned rating systems. Because of their affective and communicative foci, the following two rating systems will be discussed in more detail for the purposes of the present study: (1) Mehrabian's (1976, 1980, 1981; Mehrabian & Russell, 1974) three emotional response dimensions; and (2) Knapp's (1978, 1984) six percepts of interaction environments.

Dimensions of Emotional Response to Environments

Mehrabian (1976, 1980, 1981; Mehrabian & Russell, 1974) suggests that three dimensions -- pleasure, arousal, and dominance -- can be utilized to describe people's emotional response to any setting. Each of the three dimensions is considered to be readily assessable with semantic differential scales as well as through actual behavioral indicators. Factor analysis in three studies by Mehrabian (Mehrabian & Russell, 1974) yielded a set of 18 adjectival pairs with which to assess the dimensions of pleasure, arousal, and dominance. The pleasure-displeasure dimension corresponds to the semantic differential concept of "evaluation," measuring a person's perceptions of pleasantness of a setting. The arousal-nonarousal dimension is conceptualized as a combination of activity and alertness, which is affected by the "information rate" (amount of stimulation, level of complexity and novelty,

etc.) of a setting. The third, dominance-submissiveness, dimension is conceptualized as the inverse of the "potency" of an environment. In other words, dominance is perceived as the freedom to act in a variety of ways, and is a person's feelings of dominance, not his/her assessment of an environment's dominance (i.e., if a person feels dominant in a setting, the environment itself could be considered "submissive"). According to Mehrabian (1980, 1981; Mehrabian & Russell, 1974), the combination of these three dimensions can be used to describe any emotional response to an environment.

Mehrabian (1980, 1981) also suggests that pleasantness, arousal, and dominance interact with one another to promote or discourage liking and attraction (approach/avoidance tendencies) to an environment. Pleasant environments are rated more liked, preferred, and attractive (eliciting more positive attitude) the higher their arousing qualities. Conversely, if an environment is found to be unpleasant, the more arousing it is, the less it is liked, preferred, and found attractive. Furthermore, feelings of dominance or submissiveness in an environment are found to compound the effects of the pleasure-arousal combination. Mehrabian (1981) states that when environments elicit feelings of dominance, people are more likely to exhibit more variability in their choices for interaction and

communication, and more pronounced effects of the pleasure-arousal interaction are noted. However, when environments promote feelings of submissiveness, even extreme variations of pleasantness and/or arousal in a setting result in little variation in liking of others, situations, or things.

Perceptions of Interaction Environments

Knapp (1978, 1984) has forwarded a framework of six dimensions which describe not only individual emotional responses to environments, but which also describe some of the ways people's interactions and communication might be altered by the environment. According to Knapp (1978, 1984), the dimensions of interaction environments correspond to dimensions of growth and/or decay in communication as well (Knapp, 1984; Baxter & Wilmot, 1986). Features of the environment, including architectural styles and elements, are proposed to influence peoples's perceptions of formality, warmth, privacy, familiarity, constraint, and distance, which in turn affect the ways in which environments are used for interaction. Complex combinations of Knapp's (1978, 1984) dimensions can be created through the use of sundry architectural elements and styles. When analyzed in combination with Mehrabian's (1980) three dimensions, people's expectations for specific types of communication can be predicted from their

emotional responses to architectural environments.

Perceptions of formality in the architectural environment can result in less relaxed and more superficial, hesitant, and stylized communication (Knapp, 1978, 1984; Baxter & Wilmot, 1986). The communication components of perceptions of formality are presented in Table 1. The highly structured, restrictive nature of a formal environment is cause for heightened awareness to the appropriateness or inappropriateness of one's behaviors and communication. Therefore, Mehrabian's (Mehrabian & Russell, 1974) dimensions which seem of particular import to Knapp's dimension of formality are feelings of high arousal and low dominance. However, formal architectural environments may be perceived as either high or low in pleasantness.

Table 1

Perceptions of Formality in Interaction Environments and Communication

	More	Less
FORMALITY	formal	informal
	narrow range of topics	broad range of topics
	stylized communication	unique communication
	hesitant	spontaneous
	superficial	deep
	tense	relaxed
	difficult communication	efficient communication
	safe topics	risky topics

Perceptions of warmth result in interactions that are much the converse of those expected for formal environments. According to Knapp (1978), (psychologically) warm environments are more inviting than are "cold" environments, and the communication and interactions that take place in a warm environment are likely to be relaxed, slow, and comfortable. The communication components of warmth (Knapp, 1978, 1984; Baxter & Wilmot, 1986) are presented in Table 2. The dimensions of emotional response (Mehrabian & Russell, 1974) which correspond to warmth in an environment are high pleasure and high dominance. Although one might realistically assume that warm environments, because of their relaxed atmosphere, must also be low in arousing qualities, a higher level of arousal can still result in environments which are warm, inviting, and comfortable. For example, an environment can be "new" to a person, can be highly complex and stimulating in color, decor, and style, and still be perceived as warm, especially in comparison to the cold austerity of other, less complex styles (e.g., Minimalism).

Perceptions of privacy in an environment elicit feelings of protection, both visual and audible, from the intrusion of others. Communication in environments perceived as private is likely to be more personal and directed toward a specific other than in a setting where a person feels

Table 2

Perceptions of Warmth in Interaction Environments and Communication

	More	Less
WARMTH	warm personal spontaneous relaxed comfortable efficient communication	cold impersonal hesitant tense uncomfortable difficult communication

little shelter from the outside world (Knapp, 1978). Knapp and others (Knapp, 1978, 1984; Baxter & Wilmot, 1986) suggest that perceptions of privacy are also associated with the communication traits listed in Table 3. For these reasons, environments high in privacy are also likely to be low in arousing qualities but high in dominance-eliciting qualities. The pleasantness of a setting is also expected to be directly related to ratings of privacy, yet certain private settings may be considered unpleasant if they are perceived to be inappropriate for the situation (e.g., one may not find a private setting pleasant if one feels in danger).

Perceptions of familiarity in an environment allow people to feel more at ease because of a certain predictability of what to expect in that environment. In unfamiliar places and situations, communication will be more cautious,

Table 3

Perceptions of Privacy in Interaction Environments and Communication

	More	Less
PRIVACY	private	public
	broad range of topics	narrow range of topics
	flexible	rigid
	spontaneous	hesitant
	deep	superficial
	risky topics	safe topics

deliberate, hesitant, and controlled, at least until more exposure and experience is gained with the environment (Knapp, 1978). The dimensions of communication associated with perceptions of familiarity (Knapp, 1978, 1984; Baxter & Wilmot, 1986) are presented in Table 4. Low levels of arousal and feelings of dominance are also associated with the familiarity of an environment, yet just because a sight is familiar does not preclude it from being unpleasant (e.g., one may grow more and more displeased with a too small office space behind the door, or with a space in which one is not allowed to display any personal items). Still, as with perceptions of privacy, the general desirability of privacy and familiarity will cause these two dimensions to be more frequently associated with pleasant, rather than unpleasant, environments.

Table 4

Perceptions of Familiarity in Interaction Environments and Communication

	More	Less
FAMILIARITY	familiar	unfamiliar
	unconventional	conventional
	unexpected	predictable
	flexible	rigid
	smooth	awkward
	spontaneous	hesitant
	carefree	cautious
	impulsive	deliberate
	efficient communication	difficult communication

Perceptions of constraint are related to our perceptions of privacy, amount of space available, and the permanence of confinement in an environment, as well as the ease and ability to leave such an environment. The restriction of freedom that is the result of a highly constraining environment is likely to elicit feelings of displeasure, high arousal, and submissiveness, as categorized by Mehrabian (1976, 1980, 1981; Mehrabian & Russell, 1974). As one might surmise, environments perceived as highly constraining are less likely to promote intimate, disclosive, and comfortable communication. The communication characteristics proposed to correspond with constraining environments (Knapp, 1978, 1984; Baxter & Wilmot, 1986) are listed in Table 5.

Finally, perceptions of distance are affected by actual

Table 5

Perceptions of Constraint in Interaction Environments and Communication

	More	Less
CONSTRAINT	constrained	unrestrained
	narrow range of topics	broad range of topics
	confined	free
	superficial	deep
	safe topics	risky topics
	uncomfortable	comfortable
	nonintimate	intimate

physical distances between people as well as by barriers which act to psychologically distance people from one another. The emotional reaction to perceptions of distance, and the resulting communication that takes place, is highly dependent upon the desire for such distance. In situations where one is uncomfortable with, and does not desire, the close proximity of other people, such as strangers, environments that are amenable to creating psychological distance may evoke feelings of more pleasure, less arousal, and more dominance, than environments that do not allow easy distancing. However, in situations where intimate communication is sought, as with friends or romantic partners, environments that create psychological distance may not be preferred, and may evoke feelings of displeasure, arousal, and submissiveness. Thus, especially with Knapp's (1978) dimension of distance, the emotional

response to, and interaction expected in, a particular architectural environment is related to the type of communication desired in that environment. As the least positively or negatively distinct of Knapp's (1978, 1984) perceptual dimensions, corresponding communication traits of psychological distance are presented in Table 6 for situations in which close interpersonal contact and communication is desired.

Table 6

Perceptions of Distance in Interaction Environments and Communication

	More	Less
DISTANCE	distant nonintimate uncomfortable	close intimate comfortable

Using Mehrabian's (1980, 1981; Mehrabian & Russell, 1974) three dimensions, the affective responses of different groups of people, such as architects and laypeople, to various architectural styles can be measured. Furthermore, Mehrabian's dimensions, in combination with Knapp's (1978, 1984) dimensions of interaction environments, can be used to categorize the ways in which people might expect to communicate in a particular setting. These are summarized in Table 7.

Table 7

Proposed Relationship Between
Mehrabian's and Knapp's Dimensions

Formality	+/-P	+A	-D
Warmth	+P	+/-A	+D
Privacy	+/-P	-A	+D
Familiarity	+/-P	-A	+D
Constraint	-P	+A	-D
Psychological Distance	+/-P	+/-A	+/-D

Note: The following symbols were used to codify Mehrabian's (1980) dimensions of environmental perceptions:
P = pleasantness; A = arousal; D = dominance;
+ = perceptions of an environment in a positive direction;
- = perceptions of an environment in a negative direction.

From the above explication of the relationship between Mehrabian's (Mehrabian & Russell, 1974; Mehrabian 1980, 1981) emotional responses to environments and Knapp's (1978) interaction environments, the following hypotheses and research questions are proposed:

H1: As perceptions of formal communication in an environment increase, the environment is also perceived as creating moods that are (a) more arousing and (b) less dominant, and communication that is more (c) narrow in topic, (d) stylized, (e) hesitant, (f) superficial, (g) tense, (h) difficult, and (i) topically safe.

H2: As perceptions of warm communication in an environment increase, the environment is also perceived as creating moods that are (a) more pleasant and (b) more dominant, and communication that is more (c) personal, (d) spontaneous, (e) relaxed, (f) comfortable, and (g) efficient.

H3: As perceptions of private communication in an environment increase, the environment is also perceived as creating moods that are (a) less arousing and (b) more dominant, and communication that is more (c) broad in topic, (d) flexible, (e) spontaneous, (f) deep, and (g) topically risky.

H4: As perceptions of familiar communication in an environment increase, the environment is also perceived as creating moods that are (a) less arousing and (b) more dominant, and communication that is more (c) unconventional, (d) unexpected, (e) flexible, (f) smooth, (g) spontaneous, (h) carefree, (i) impulsive, and (j) efficient.

H5: As perceptions of constrained communication in an environment increase, the environment is also perceived as creating moods that are (a) less pleasant, (b) more arousing and (c) less dominant, and communication that is more (d) narrow in topic, (e) confined, (f) superficial, (g) topically safe, (h) uncomfortable, and (i) nonintimate.

H6: As perceptions of psychologically distant communication in an environment increase, the environment is also perceived as creating communication that is more (a) nonintimate, and (b) uncomfortable.

RQ1: How are perceptions of communicative formality, privacy, familiarity, and psychological distance in an environment related to pleasantness?

RQ2: How are perceptions of communicative warmth and psychological distance in an environment related to arousal?

RQ3: How is perception of communicative psychological distance related to dominance?

An additional comment must be made at this time to clarify the importance of these hypotheses and research questions to the research at hand. While architects and laypeople are assumed to perceive architecture in separate ways, the basic relationship between affective responses and elicited communication is presumed to be the same for the two groups. The problem arises when the architect thinks he/she is creating an environment that evokes particular emotional reactions, (which lead to particular types of communication and interaction), when in fact the layperson does not affectively respond as the architect predicted. This dilemma leads to the general question of how architects and laypeople differ in their perceptions of

different styles -- a question that will be addressed in more detail in the following paragraphs.

Users' Versus Designers' Meanings in Architecture

Rapoport (1990) suggests that a possible reason for the differences between architects' and laypeople's perceptions is that the two groups evaluate architecture in divergent ways. Rapoport distinguishes between users' and designers' meanings of architecture. In perceiving architecture, architects and laypeople "see" architecture through different lenses -- architects view architecture in perceptual terms, whereas laypeople view architecture in associational terms. Although the perceptual (visual) aspect of architecture is a building block upon which associational meanings are constructed, the inherent dissimilarity between the two views can lead to the assignment of conflicting meanings to the same piece of architecture.

Perceptual Meanings

The perceptual dimension that Rapoport (1990) asserts is the architect's common method of describing and evaluating architecture involves sensory perceptions such as light, space, color, materials, scale, sound, structure, et cetera, which stress the aesthetics of architectural design. Perceptual meanings deal less with the function of a building than with the visual, artistic side of design.

Phrases like "formal assurance, even when the shapes and objects seem overscaled" (Cook, 1984, p. 100), or "a particular juxtaposition of solids and voids . . . [that] produces within the mind a sense of a tension" (Eisenman, 1977, p. 59) represent the way perceptual meanings are often expressed. Perceptual meanings describe features or elements of architectural design (e.g., form, space, organization, circulation, proportion, scale; see Ching, 1979; Winters, 1986), while being devoid of any real affective components. While metaphor is a popular component of current architectural design, its use perceptually is most often a reference to historical imagery upon which a building's details may be based.

Associational Meanings

In contrast to perceptual meanings, Rapoport's (1990) associational dimension assigns meanings to architecture that are affective, symbolic, and communicative. Rapoport argues that laypeople use associational meanings to assess architecture, depending more on the "feel" of an environment than on the designer's perceptual methods of manipulating aesthetics. Associational meanings often depend upon traditional, institutionalized symbolic meanings to define appropriate elements for a building. For example, the house, as a symbol of home and haven and mother's love (Gilman, 1970; Hayden, 1984), should possess

certain characteristic features such as a hearth, a white picket fence, and a gable roof. Also, the use of metaphor or simile in associational meanings is not concerned with historical allusion, but rather with expressing comparison to something else (e.g., "it looks like a spaceship").

Whereas associational meanings often have a personal, subjective side to them, perceptual meanings are theoretically more objective, with highly consensual meanings that are easily understood, at least to the trained (i.e., architect's) eye. As an illustration, Rapoport (1990) cites the example of an old person's home where the users interpret the white frame and black infill elements of their building as a multitude of crosses and coffins. For the architectural community, the stark black-and-white contrast of the architectural elements create positive perceptual meanings, while for the users, the same elements are the source of highly negative, associational meanings. Such a disparity of opinion between the two groups is likely to result in vastly different interpretations of the type of communication and interaction that might take place in a setting.

While architects most assuredly do design buildings to elicit affective responses, because of the different perspectives taken by architects and laypeople, not only might meanings assigned by the two groups differ for the

same element, the elements focussed upon by the architect may not be the same ones embraced by the layperson. If different elements are stressed by architects and laypeople, different meanings are likely to be assigned, too. Since studies indicate that this is at least sometimes the case (e.g., Groat, 1982; Groat & Canter, 1979; Pennartz & Elsinga, 1990), divergent meanings could result in divergent interpretations of the use and effects of a building as well.

The House

The house is ideal for exploring differences between architects' and laypersons' perceptions of architectural styles. Nowhere is the architect's positive or negative influence on human existence more apparent than in the design of the house (or, more generally, the dwelling place). The house, as home, represents institutionalized and personal meanings to its inhabitants. The architect, as the form-giver of the highly symbolic house, is entrusted with much power to shape affective and behavioral responses to his/her creation. Because of the relatively large part a house plays in a person's daily existence, the architect's clear understanding of the messages he/she conveys through his/her application of a particular architectural style is especially important.

The House and the Architect

On the side of architecture, the house has been considered the perfect vehicle for fully realizing design principles. The single-family house is unique in that it is the smallest architectural program over which the architect can exercise full and absolute control (Wilson, 1969). The elements of the house are well known and fairly uncomplicated, lessening the amount of time needed for "programming" the building, and increasing the amount of time that can be spent on other concerns in the house. The house is large enough to allow architects to creatively manipulate space and form, yet small enough to allow them to indulge their attention in major and minor details.

Economically, it is more feasible for architects to experiment with the house than with other, larger building types. If an architect cannot find a client to support his/her architectural endeavors, the architect sometimes chooses to be his/her own client, able to finance a house when larger projects are not affordable. Also, the restrictions that come along with large commercial projects are much fewer in the design of a house.

The House and the Layperson

The house is also ideal for exploring laypeople's perceptions and meanings of architectural styles because it is a form with which most people are intimately familiar.

More than other types of buildings, the meanings associated with a house are much more central and significant to its users (Rapoport, 1990). As Rapoport notes (1968):

> In the case of housing, giving meaning becomes particularly important because of the emotional, personal, and symbolic connotation of the house and the primacy of these aspects in shaping its form as well as the important psycho-social consequences of the house. (p. 300)

The house, as a home, has strong connotations for people (e.g., Hayden, 1984; Keeler, 1979; Russell & Ward, 1982). The American house has, from its beginnings, represented the values of its owners and its society (e.g., Clark, 1988; Harries, 1987; Herman, 1984; Hubka, 1989; Wright, 1981). People expect the house to "perform" in certain ways.

Representation of the House in Architectural Magazines

The house has been featured prominently in several magazines published for both the layperson and the professional architect. Professional architectural magazines (e.g., Progressive Architecture, Architecture, and Architectural Record), which are targeted at an audience of architects and designers, often feature articles with photographic spreads of currently designed houses by prominent architects, as well as articles

discussing "vital issues" in housing and other architectural design. Popular architectural magazines (e.g., Architectural Digest, Better Homes and Gardens, and House Beautiful) also feature photographs of houses and discussions of "proper" architectural expression in the house, although aimed at a lay audience. Preliminary research comparing a professional and a popular architectural journal (Progressive Architecture and Architectural Digest respectively) over a 26 year span reveals that architects and laypeople do not necessarily value or emphasize the same qualities in a house (Buslig, 1991).

Architectural Styles

The manifestos upon which architectural styles are based are presumably conveyed through the concrete form of the finished product -- the building. The choice of a particular style by an architect implies his/her acceptance and support for that style's attendant philosophy (Harries, 1987). Further, the architect's own design philosophies, and the reasons given for particular details of a project, imply certain meanings that the designer wishes to convey to his/her public (Lang, 1988). The meanings interpreted by the layperson, however, are not always those intended by the architect, nor are the solutions that architects propose always the best solutions for the people involved

(Ackerman, 1990; Blake, 1977; Rapoport, 1987, 1990).

Three current stylistic trends in architecture are Modern Traditionalism, Post-Modernism, and Deconstructivism. Opinion concerning these three styles is widely varied within the architecture community as well as without (e.g., Jencks, 1980, 1982a, 1988; Marder, 1985; Pastier, 1980; Russell, 1989). The three styles are often considered a reaction to the failure of the International Style, although they represent very different attempts to solve the problems of the Modern Movement. Each style has been known by several other names as well, and occasionally all three styles are referred to as Post-Modern for the simple fact that they are architectural styles developed after the Modern Movement. However, the aesthetic referred to as Post-Modern in this study is that which is most associated with the term. The other styles are equally highly associated with the terms used in this study to describe them.

As will become apparent in reading the brief descriptions of the three styles, the philosophies guiding these styles give little direction to specific physical features. Rather, the buildings that result from the architectural manifestos need only meet very general physical appearance criteria to be considered of that style. It may be for this reason that some buildings have been labeled as

exemplars of several different styles, depending on the critic. For example, while the Gehry House by Frank O. Gehry is most often considered a prime example of Deconstructivist architecture (e.g., Johnson & Wigley, 1988; Klotz, 1989; Russell, 1989; Wines, 1987), the house has also been referred to as Post-Modern (Jencks, 1988; Pastier, 1980), Late-Modern (Jencks, 1980), and a host of other styles (see Marder, 1985, for a list). While architectural styles are generally identified by physical appearance cues, it is apparent that architects are more concerned with shaping their audience's reactions and responses to their buildings using whatever materials, details, and construction methods work.

Modern Traditionalism

The architectural style deemed "Modern Traditionalism" by the architect Robert A. M. Stern is based on the belief that architecture should arise out of the historical past, from which enduring values can be culled, rather than from the attempt to be original and "modern" (Reuda, 1986). In his own words, Stern proclaims:

> Architecture is less an issue of innovation than an act of interpretation . . . believing as I do in the continuity of tradition, I try to create order out of the chaotic present by entering into a dialogue with the past, with tradition . . . rather than breaking

> with the past, we must all try to root ourselves more deeply in it, because a knowledge of the past can nourish us and a sense of familiarity with its lexical subtleties can help reestablish a sense of decorum to our stridently individualistic present. (Reuda, 1986, p. 6)

Stern (1988) states that one of the key elements of the Modern Traditional style is the importance of cultural and physical context. The monumentality of the classical bent of Modern Traditionalism is tempered by contextual appropriateness, represented by the use of the vernacular in architecture. Stern (in Reuda, 1986) claims that "the pleasure of architecture lies . . . in fulfilled memory" (p. 6), and that this is the basis of the Modern Traditional style that he promotes.

Post-Modernism

Charles Jencks (1986) defines Post-Modernism in architecture as "double coding: the combination of Modern techniques with something else (usually traditional building) in order for architecture to communicate with the public and a concerned minority, usually other architects" (p. 14). Double coding, in this sense, refers to the simultaneous encoding of opposing meanings in the use of this style, in which the architecture can be seen as both elite/popular and new/old (Jencks, 1986). The goal of

Post-Modernism is to address the problems of its predecessor, Modernism. As explained by Jencks (1986), Modern architecture failed on two counts: (1) Modernism was elitist -- it failed to communicate effectively with the common person, the user of Modern buildings and projects; and (2) Modernism was not contextual -- it failed to make links with the city and history. Through the use of a paradoxical dualism, Post-Modernism attempts to remedy the shortcomings of the Modern style. The intention of the Post-Modern Movement was to apply the notion of pluralism, to use eclecticism, to design for varying tastes and needs (Jencks, 1986). Post-Modern architecture often employs extensive use of color and classical, historical architectural elements in order to create its effects.

Deconstructivism

The Deconstructivist and highly related Deconstructionist styles (the latter considered more extreme and destructive than the former) can be viewed as the antithesis of the Modern Traditional style discussed earlier. "De-architecture," as it is deemed by James Wines (1987) "is a way of dissecting, shattering, dissolving, inverting, and transforming certain fixed prejudices about buildings, in the interest of discovering revelations among the fragments" (p. 133). De-architecture promotes approaches inconsistent with traditional architecture, although

buildings in this style may have as their core "historical artifacts" which are transformed in a variety of ways (Wines, 1987). Deconstructivism does not promote the destruction of buildings, but instead seeks to locate the "inherent dilemmas within buildings . . . the impurity is drawn to the surface by a combination of gentle coaxing and violent torture: the form is interrogated" (Johnson & Wigley, 1988, p. 11). Deconstructivist architecture seeks the unfamiliar in the familiar, disrupting context and revealing the "shock of the old" (Johnson & Wigley, 1988, p. 18). Deconstructivism tries to be disturbing, alienating, subversive and stressful -- it does not attempt to be freeing or liberating, but rather to create tension (Johnson & Wigley, 1988).

From the descriptions above, we can see that the Modern Traditional, Post-Modern, and Deconstructivist architectural styles are all intended to have considerably distinct and powerful effects. However, as has been noted already, architects and laypeople do not necessarily perceive architecture in the same way. Architects and laypeople are expected to respond not only with different affective reactions, but also to interpret different communicative and interactional meanings for these architectural styles. As a preliminary step to empirically evaluate the similarities and differences between

architects and laypeople in judgments of the effectiveness of three current architectural styles to create meaning and communicate usage, the following hypotheses are forwarded:

H7: Architects and laypeople differ in their affective responses to different architectural styles on perceptions of (a) pleasure, (b) arousal, and (c) dominance.

H8: Architects and laypeople differ in their perceptions of communication evoked by different architectural styles on perceptions of communicative (a) formality, (b) warmth, (c) privacy, (d) familiarity, (e) constraint, and (f) psychological distance.

CHAPTER 2

METHOD

Overview

Sixty participants (architects and laypeople) completed a questionnaire about one of three stimulus houses representing different architectural styles. Participants rated the homes on pleasure, arousal, and dominance and on the dimensions of formality, warmth, privacy, familiarity, constraint, and psychological distance.

Participants

Participants were 30 architects and 30 laypeople (i.e., non-architects) from a large Southwestern city who participated voluntarily. Ten architects and 10 laypeople were placed into each of three conditions representing different architectural styles.

Architects were randomly chosen from a listing of all architects in the community. Architects were recruited via telephone contact and intited to participate. Because of the time constraints placed on architects by their profession, architects were scheduled one at a time at their convenience, in their own offices. Architects' ages ranged from 25 to 68 years old, with a mean of 44.2 years old. Seven female and 23 male architects participated in the study, and all participants had at least five years of architectural training or experience.

Laypeople were recruited from the local county jury room. Laypeople who consented to participate in the study completed the necessary task as they waited in the jury room. Laypeople's ages ranged from 20 to 73 years old, with a mean of 41.1 years old. Lay participants were 17 females and 13 males. Laypeople in this study have had no architecture or design training.

Procedure and Independent Variables

Participants were randomly assigned to one of three conditions: the Modern Traditional architectural style, operationalized as Robert A. M. Stern's neo-Shingle Style house at Martha's Vineyard (Scully, 1984; Filler, 1985); the Post-Modern style of architecture, operationalized as Michael Grave's Plocek House (Jencks, 1987); and the Deconstructive architectural style, operationalized as Frank O. Gehry's Gehry House (The architecture of Frank, 1986; Street-Porter, 1986).

Participants in each condition were shown a set of five photographs representing the architectural style of that condition. Photographs represented both exterior and interior views of the house. For all three styles, exterior views depicted two elevations of the house, one which featured the front entrance of the house. Interior views represented the living room, dining room, and master bedroom for two of the three styles. A third exterior

photograph was substituted for the bedroom picture for the Post-Modern style, because of a lack of adequate published photographic documentation for this house.

For each condition, participants were given a questionnaire composed of three parts (see Appendix A). Part one asked participants to view the photographs of the stimulus house and to rate it along a set of semantic differential scales, evaluating how the stimulus house might make people feel if they were interacting in it. Part two asked participants to rate the house as an interaction environment, evaluating how they thought the house would influence communication were two adults to interact in it. Part three elicited demographic and other information from participants, including whether or not individual participants could identify the particular stimulus house that they viewed. After completing the questionnaire, participants were debriefed and thanked for their participation.

Dependent Variables

Mehrabian's affective scales. Part one of the questionnaire elicited affective responses to the stimulus house through the use of 18 adjective pairs which cluster into three sets of six 9-interval semantic differential scales measuring pleasure, arousal, and dominance (Mehrabian 1981). Mehrabian claims that the combination of

these three independent dimensions accounts for any type of emotional response to a setting or situation. In a series of three studies utilizing factor analyses, Mehrabian (Mehrabian & Russell, 1974) reported a low correlation among the three dimensions (pleasure correlated -.01 with arousal, and .16 with dominance; arousal correlated .12 with dominance). Cronbach alpha coefficient reliabilities for Mehrabian's dimensions in this study were .91 for pleasure, .76 for arousal, and .64 for dominance.

Knapp's communicative scales. Part two of the questionnaire included twenty 9-interval semantic differential scales representing the six percepts of interaction environments outlined by Knapp (1978, 1984) and the communication dimensions which he proposes vary with them (Knapp, 1978, 1984; Baxter & Wilmot, 1986). The percepts of interaction environments included formality, warmth, privacy, familiarity, constraint, and psychological distance. Independence of the scales was not expected; they were considered to be influential upon one another, albeit in an unknown way (Knapp, 1978, 1984).

For the purposes of the present study, perceptions of communication in environments were analyzed both singly and as clustered measures of communication traits, as grouped previously in Tables 1 through 6. For Hypotheses 1 through 6, single item perceptions were used. Multiple-item

percepts of communication were used for Hypothesis 8. To alleviate confusion, for the remainder of this paper, multiple-item dimensions will be distinguished from single-item dimensions of the same name by the capitalization of the first letter of the former (e.g., multi-item Formality and single-item formality). Multiple-item dimensions of Formality, Warmth, Familiarity, Constraint, and Distance were formed from significant single-item correlations (see Tables 9 through 13). The dimension of privacy was maintained as a single-item measure because of a lack of significant correlations between privacy and any of its proposed communication traits. In cases where an item correlated significantly with more than one dimension, the item was assigned to the dimensional cluster with which it was most highly correlated. Cronbach alpha coefficient reliabilities for the multiple-item dimensions were .81 for Formality, .86 for Warmth, .82 for Familiarity, .86 for Constraint, and .90 for Distance.

The information gathered from Mehrabian's (1980, 1981) and Knapp's (1978, 1984) scales was used to determine the correlation between participants' affective responses to an architectural style and their assessment of that style's influence on communication and interactions. Also, participants' ratings on both Mehrabian's and Knapp's

dimensions were used to assess whether or not there are differences between architects' and laypeople's perceptions of architecture.

Demographic information. Demographic and other information was also collected from participants. Included in this last part of the questionnaire was information pertaining to participants' professional background and familiarity with the stimulus house they viewed (i.e., has the participant ever seen the house before, and could he/she identify it). Both architects' and laypeople's ability to correctly identify the architects or styles of the stimulus houses was low.

CHAPTER 3

RESULTS

Data were analyzed using Pearson product-moment correlations, *t*-tests, and analyses of variance. All correlations reported are for two-tailed tests.

Preliminary Measurement Analyses

Tests of independence of Mehrabian's scales revealed that correlations between the three dimensions were -.10 for pleasure with arousal; .33 for pleasure with dominance; and -.10 for arousal with dominance. The correlation between pleasure and dominance was significant at $p < .05$, leaving one with less confidence in Mehrabian's (1980) assertion that the scales are highly independent of one another.

Table 8

Correlations Among Knapp's Single-item Dimensions of Interaction Environments

	formal	warm	private	familiar	constrained	distant
formal	1.00					
warm	-.41**	1.00				
private	.03	.35**	1.00			
familiar	-.39**	.60**	.13	1.00		
constrained	.67**	-.41**	.05	.46**	1.00	
distant	.33*	-.78**	-.33**	-.55**	.51**	1.00

Note: For all correlations, * = $p < .05$; **$p < .01$.

Correlations between Knapp's (single-item) percepts of interaction environments are reported in Table 8. The large number of high, significant correlations confirms Knapp's expectation of interdependence among the dimensions.

Hypotheses and Research Questions

Hypothesis 1

Hypothesis one was partially supported. Environments perceived as creating more formal communication correlated with expectations for communication that is more stylized, $r = .64$, $p < .01$; hesitant, $r = .54$, $p < .01$; superificial, $r = .29$, $p < .05$; tense, $r = .42$, $p < .01$; difficult, $r = .26$, $p < .05$; topically safe, $r = .35$, $p < .01$; and narrow in topic, $r = .32$, $p < .05$. No significant correlations were found between perceptions of formality and arousal or dominance. To create a multiple-item

Table 9

Correlations Among Knapp's Formality and Other Communication Dimensions

	formal	unique	spontaneous
formal	1.00		
unique	-.64**	1.00	
spontaneous	-.54**	.61**	1.00

Note: For all correlations, * = $p < .05$; **$p < .01$.

dimension of Formality, perceptions of formality, uniqueness, and spontaneity were combined (see Table 9).

Hypothesis 2

Hypothesis two was partially supported. As perceptions of communicative warmth increased, perceptions of pleasantness, $r = .70$, $p < .01$, also increased. As perceptions of communicative warmth increased, so did expectations of communication that is personal, $r = .74$, $p < .01$; spontaneous, $r = .51$, $p < .01$; relaxed, $r = .65$, $p < .01$; comfortable, $r = .67$, $p < .01$; and efficient, $r = .46$, $p < .01$. No significant correlation was found between environmental warmth and dominance. To create a multiple-item measure of Warmth, single-item measures of warmth, personalness, relaxation, and efficiency were combined (see Table 10).

Table 10

Correlations Among Knapp's Warmth and Other Communication Dimensions

	warm	personal	relaxed	efficient
warm	1.00			
personal	.74**	1.00		
relaxed	.65**	.64**	1.00	
efficient	.46**	.48**	.61**	1.00

Note: For all correlations, * = $p < .05$; **$p < .01$.

Hypothesis 3

Hypothesis three was partially supported. Significant negative correlations were found between perceptions of privacy of communication and arousal, $r = -.32$, $p < .05$. No significant correlations were found for privacy and any of its hypothesized communication traits, nor for privacy and feelings of dominance. As such, no multiple-item measure for privacy was created.

Hypothesis 4

Hypothesis 4 was partially supported for perceptions of communication but was not supported for perceptions of moods. Perceptions of familiarity were significantly correlated with expectations of communication that is flexible, $r = .49$, $p < .01$; smooth, $r = .49$, $p < .01$; spontaneous, $r = .48$, $p < .01$; and efficient, $r = .33$, $p < .01$. Familiarity was significantly negatively correlated with expectations of cautious, $r = -.56$, $p < .01$, and deliberate, $r = -.33$, $p < .05$, communication. Arousal and dominance were not significantly correlated with perceptions of familiarity. A multiple-item dimension of Familiarity was created from the combination of familiarity, flexibility, smoothness, cautiousness, and deliberateness of communication (see Table 11).

Table 11

Correlations Among Knapp's Familiarity and Other Communication Dimensions

	familiar	flexible	smooth	cautious	deliberate
familiar	1.00				
flexible	.49**	1.00			
smooth	.49**	.50**	1.00		
cautious	-.56**	-.74**	-.32*	1.00	
deliberate	-.33*	-.50**	-.15	.70**	1.00

Note: For all correlations, * = $p < .05$; **$p < .01$.

Hypothesis 5

Hypothesis five was partially supported. Perceptions of communicative constraint in an environment were correlated with feelings of displeasure, $r = .45$, $p < .01$, as well as correlated with expectations of communication that is topically narrow, $r = .47$, $p < .01$; confined, $r = .74$, $p < .01$; superficial, $r = .63$, $p < .01$; topically safe, $r = .58$, $p < .01$; nonintimate, $r = .37$, $p < .01$; and uncomfortable, $r = .55$, $p < .01$. No significant relationship was found between constraint and arousal or dominance. The combination of communicative constraint, confinement, depth, and broadness and riskiness of topic was utilized to create the multi-item dimension of Constraint (see Table 12).

Table 12

Correlations Among Knapp's Constraint and Other Communication Dimensions

	constrained	broad	confined	deep	risky
constrained	1.00				
broad	-.47**	1.00			
confined	.74**	-.50**	1.00		
deep	-.63**	.47**	-.58**	1.00	
risky	-.59**	.51**	-.53**	.42**	1.00

Note: For all correlations, * = $p < .05$; **$p < .01$.

Hypothesis 6

Hypothesis six was supported. Perceptions of intimacy, $r = -.85$, $p < .01$, and perceptions of comfort, $r = -.73$, $p < .01$, decreased as perceptions of communication that was psychologically distant increased. The results correspond to expectations for a setting in which psychological distance is not generally desired, such as a home. Perceptions of distance, intimacy and comfort were combined to form a multiple-item measure of Psychological Distance (see Table 13).

Research Question 1

Research Question 1 sought to find how perceptions of formality, privacy, familiarity, and psychological distance were related to pleasantness. While no significant relationship was found for pleasantness and formality,

Table 13

Correlations Among Knapp's Distance and Other Communication Dimensions

	distant	intimate	comfortable
distant	1.00		
intimate	-.85**	1.00	
comfortable	-.73**	.69**	1.00

Note: For all correlations, * = $p < .05$; **$p < .01$.

pleasure correlated positively with perceptions of privacy, $r = .32$, $p < .05$, and familiarity, $r = .49$, $p < .01$. Perceptions of distance correlated negatively with pleasantness, $r = -.81$, $p < .01$.

Research Question 2

Research Question 2 addressed the issue of the relationship between arousal and perceptions of communicative warmth and psychological distance in environments. No significant correlations were found between arousal and either of the two dimensions.

Research Question 3

The relationship between psychological distance and feelings of dominance was addressed in Research Question 3. A negative correlation was found between distance and dominance, $r = -.28$, $p < .05$. As perceptions of psychological closeness in an environment increase, feelings of dominance also increase.

Hypotheses 7 and 8

Hypothesis 7 proposed that differences exist between the affective responses of architects and laypeople to different styles of architecture. Hypothesis 8 proposed that architects and laypeople also differ in their perceptual expectations of communication evoked by different styles of architecture. Neither hypothesis was confirmed in the present study (see Table 14 for a summary of means). Nine 2 X 3 analyses of variance revealed no significant interaction effects between profession (architect, layperson) and architectural style (Modern Traditional, Post-Modern, Deconstructive) for measures of affective response (pleasure, arousal, dominance), and communication traits (Formality, Warmth, privacy, Familiarity, Constraint, and Psychological Distance).[1]

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[1] *F*-values for tests of interaction effects are as follows: pleasantness, $F(2,59) = .87$; arousal, $F(2,59) = 1.92$; dominance, $F(2,59) = .01$; Formality, $F(2,59) = .48$; Warmth, $F(2,59) = .10$; privacy, $F(2,59) = 1.97$; Familiarity, $F(2,59) = .35$; Constraint, $F(2,59) = 1.09$; and Psychological Distance, $F(2,59) = .10$. For all tests of interaction, $p > .05$.

Table 14

Means for Architects' and Laypeople's Ratings of Architectural Styles on Dependent Measures

	Modern Traditional	Post-Modern	Deconstructive
PLEASURE			
Architect	5.75	4.97	4.35
Layperson	6.37	4.42	3.70
AROUSAL			
Architect	3.72	5.62	6.33
Layperson	4.12	4.85	5.48
DOMINANCE			
Architect	5.24	4.80	5.02
Layperson	5.62	5.20	5.52
FORMALITY			
Architect	5.47	3.00	5.70
Layperson	5.37	3.07	6.43
WARMTH			
Architect	6.25	3.42	4.57
Layperson	6.45	3.80	4.53
PRIVACY			
Architect	6.70	4.70	5.30
Layperson	6.30	5.90	3.90
FAMILIARITY			
Architect	5.70	3.88	5.08
Layperson	6.16	3.64	5.54
CONSTRAINT			
Architect	5.22	4.46	5.70
Layperson	5.74	3.58	5.90
DISTANCE			
Architect	6.17	3.43	4.30
Layperson	6.17	3.57	3.93

Note: For all cells, n = 10;
Higher scores reflect more pleasure, arousal, dominance, Warmth, privacy, and Familiarity, and less Formality, Constraint, and Psychological Distance.

ANOVAs also failed to show any significant main effects for profession.[2] However, ANOVAS did indicate significant main effects for architectural style. Therefore, supplemental analyses were conducted to probe the effects of architectural styles on affect and communication.

Supplemental Analyses

Significant main effects were found in 2 X 3 factorial ANOVAs for architectural style and all affective and communicative percepts except dominance. Significant differences in pleasantness, $F(2,59) = 7.53$, $p < .001$, $eta^2 = .21$, and arousal, $F(2,59) = 16.16$, $p < .0001$, $eta^2 = .35$ were found for affective responses to different architectural styles. Planned comparisons revealed that the Modern Traditional style was perceived as more pleasant than both the Post-Modern, $t(38) = 2.61$, $p = .013$, and Deconstructive, $t(38) = 4.02$, $p < .0001$, styles.

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[2] F-values for tests of main effects for profession are as follows: pleasantness, $F(1,59) = .20$; arousal, $F(1,59) = 1.94$; dominance, $F(1,59) = 1.74$; Formality, $F(1,59) = .40$; Warmth, $F(1,59) = .19$; privacy, $F(1,59) = .14$; Familiarity, $F(1,59) = .33$; Constraint, $F(1,59) = .02$; and Distance, $F(1,59) = .03$. For all tests of main effects for profession, $p > .05$.

Conversely, the Modern Traditional style was perceived as less arousing than either the Post-Modern, $t(38) = -3.92$, $p < .0001$, or Deconstructive, $t(38) = -5.78$, $p < .0001$, styles.

Other significant main effects for architectural style were observed for Knapp's various dimensions of communication and interaction environment percepts. For the present study, communication characteristics of each of Knapp's (1978, 1984) percepts of interaction environments were analyzed together (see Tables 9-13). Significant main effects for architectural style were found for communicative Formality, $F(2,59) = 24.94$, $p < .0001$, $eta^2 = .48$; Warmth, $F(2,59) = 16.08$, $p < .0001$, $eta^2 = .37$; privacy, $F(2,59) = 4.22$, $p = .02$, $eta^2 = .13$; Familiarity, $F(2,59) = 10.81$, $p < .0001$, $eta^2 = .28$; Constraint, $F(2,59) = 7.29$, $p = .002$, $eta^2 = .20$; and Distance, $F(2,59) = 11.95$, $p < .0001$, $eta^2 = .30$. More detailed analyses of effects of architectural style on perceptions of communication are described below, via paired comparisons between each of the three architectural styles tested (see Table 15 for main effect means). All reports of significance levels are for two-tailed tests.

Modern Traditional versus Post-Modern. Planned comparisons revealed that the Modern Traditional style was expected to create communication that is less Formal,

$t(38) = -4.37$, $p < .0001$, Constraining, $t(38) = -2.79$, $p = .008$, and Psychologically Distant, $t(38) = -5.01$,, $p < .0001$, than the Post-Modern style. The Modern Traditional style was also perceived as creating communication that is more Warm, $t(38) = 5.86$, $p < .0001$, and Familiar, $t(38) = 4.80$, $p < .0001$, than the Post-Modern style. Perceptions of privacy did not differ significantly between the Modern Traditional and the Post-Modern styles.

Modern Traditional versus Deconstructive. Comparison by t-tests indicated that the Modern Traditional style was perceived as conducive to more Warm, $t(38) = 3.21$, $p = .003$, and private, $t(38) = 3.47$, $p = .001$, and less Psychologically Distant, $t(38) = -3.89$, $p < .0001$, communication than the Deconstructive style of architecture. No statistically significant differences were found for perceptions of Formality, Familiarity, or Constraint.

Post-Modern versus Deconstructive. The Post-Modern style was perceived as creating communication that is more Formal, $t(38) = 6.54$, $p < .0001$, and more Constrained, $t(38) = 3.44$, $p = .001$, than the Deconstructivist style. Conversely, the Post-Modern style was rated as creating less communicative Warmth, $t(38) = -2.23$, $p = .032$, and Familiarity, $t(38) = -3.07$, $p = .004$, than the Deconstructive style. There were no significant differences between the two

styles for perceptions of communicative privacy.

Table 15

Main Effect Means for Modern Traditional, Post-Modern, and Deconstructivist Architectural Styles on Dependent Measures

	Modern Traditional	Post-Modern	Deconstructive
Pleasure	6.06	4.69	4.03
Arousal	3.92	5.23	5.91
Dominance*	5.43	5.00	5.27
Formality	5.42	3.03	6.07
Warmth	6.35	3.61	4.55
Privacy	6.50	5.30	4.60
Familiarity	5.93	3.76	5.31
Constraint	5.48	4.02	5.80
Distance	6.17	3.50	4.12

Note: For all cells, $n = 20$;
Higher scores reflect more pleasure, arousal, dominance, Warmth, privacy, and Familiarity, and less Formality, Constraint, and Psychological Distance.
(*Dominance not significant at $p < .05$)

CHAPTER 4

DISCUSSION

This study explored the influence of architecture on perceptions of communication, and how architects' and laypeople's perceptions might differ. The study is unique in its combination of past research efforts in the fields of architecture and communication. Empirical evidence for the influence of architectural style on affect and communication was demonstrated using Mehrabian's (1980) three dimensions of emotional reactions to environments, and Knapp's (1978, 1984) six percepts of interaction environments. Additionally, the relationship between Mehrabian's and Knapp's dimensions was investigated.

Previously in communication and psychology research, only conjecture and/or vague written descriptions were used to assess the influence of environment on people's communication (Knapp, 1978, 1984) and emotions (Mehrabian, 1976, 1980, 1981). Architectural research, on the other hand, consisted heavily of preference studies utilizing photographs or slides. Studies of the differences between architects' and laypeople's evaluation of architecture concentrated more on aesthetic and design oriented issues (e.g., Hershberger, 1970; Groat, 1982; see Pennartz & Elsinga, 1990, for a review of several studies), than on its supposed influence on people's behavior. With the

present study, ratings of affective and communicative expectations for particular styles of architecture were assessed, apparently for the first time.

Hypotheses Tests and Supplemental Analyses

The finding that different styles of architecture are perceived as influential over people's emotions and communication has several implications for architectural practice. In the past, particular architectural styles, with highly visible, visual manifestations, were presumed to have the potential to cure society's ills (e.g., Blake, 1977; Sommer, 1983). The presumptions were wrong, as the architecture often created more problems than it solved. The findings of this study suggest that the attempt with Post-Modernism to "correct the mistakes" of the Modern Movement (Jencks, 1986) might be no more successful than the Modern Movement itself. Instead of having an appeal to both the elite and the public (i.e., architects and laypeople), Post-Modernism received several negative and harsh reactions, especially from the public. At least the goals of Deconstructivism are more in line with the reactions it received.

The findings of this study help to confirm the belief that architecture acts as more than a mere backdrop for people's interactions. Studies by Maslow and Mintz (1972; Mintz, 1972) years ago found that "beautiful" and "ugly"

rooms affected people's judgment and behavior in such settings. The present study expands upon Maslow and Mintz's research to include reactions to the visual manifestations of architectural style.

Participants' feelings of pleasure and arousal varied widely between architectural styles, indicating that people tend to find the traditional (Modern Traditional) house most pleasant, while the less common Deconstructive and Post-Modern houses are more arousing. Higher ratings of pleasantness in a setting also correlated with ratings of communication traits that Knapp (1978, 1984) suggests are characteristic of more intimate interpersonal communication, including more warmth, privacy, and familiarity, and less constraint and psychological distance. Of Knapp's (1978, 1984) six percepts of interaction environments, only formality is not significantly correlated, positively or negatively, to feelings of pleasantness in a setting. However, when the communication traits of Formality are analyzed together (see Table 9), communicative informality is also found to be significantly correlated with pleasantness in a setting.

Mehrabian (1976) argues that no house should be unpleasant -- an assertion with which most people would agree. The house (that is called home) is an important building in a person's life, and certainly a place in which

one voluntarily spends a great deal of time. The possibility of negative effects resulting from "unpleasant" architecture, in the home or elsewhere, warrants attention. The short and long term negative effects discovered by Maslow and Mintz (1972; Mintz, 1972) of an "ugly," (or unpleasant) setting might be exacerbated in the home.

The influence of feelings of arousal on perceptions of communication are much less distinct than the influence of pleasantness in a setting. Although participants experienced different levels of arousal in reaction to the three architectural styles, a low negative correlation with perceptions of privacy in a setting is the only significant relationship found. The more aroused a person feels in an environment, the less likely he/she seems to feel a sense of privacy in that setting. An interesting observation culled from the data is that the architectural styles found to be most arousing (i.e., Post-Modern and Deconstructive) are also considered significantly more unpleasant than the non-arousing Modern Traditional style. Yet it is the arousal factor (a.k.a. potency or excitement; see Hershberger, 1970), <u>not</u> pleasantness, that is more often the goal of architectural design.

Similarly, dominance is significantly related only to perceptions of less constraint and less psychological distance in an interaction environment. When analyzed

together in their respective groupings, low, yet significant, correlations are found for the communication traits associated with Knapp's (1978, 1984) six percepts of interaction environments (see Tables 1-6), and feelings of dominance. Correlations indicate that as feelings of dominance increase, communication is expected to be more informal, warm, private, familiar, unconstrained, and close. However, feelings of dominance are not found to differ significantly from one architectural style to another. It is not surprising to find that environments that promote more dominant feelings are also judged as more accommodating of positive (i.e., informal, warm, private, familiar, unconstrained, and close) communication. The same appears to hold true for ratings of pleasantness, and one might reasonably expect that environments that create less submissive feelings will be considered more pleasant. However, while the three houses received vastly different scores from participants on ratings of pleasantness, participants' ratings of dominance hardly varied from neutral (see Table 14 for means).

The confusing findings for dominance might be the result of problems with the scale itself. The calculated alpha reliability for Mehrabian's dominance scale was only moderately high, yet the scale itself was found to be significantly correlated with Mehrabian's pleasantness

scale. This finding is contrary to Mehrabian's (Mehrabian & Russell, 1974) claim of independence among the dimensions. In particular, people appeared to have trouble understanding the adjective pairs that make up Mehrabian's dominance scale. An awareness of the inconsistencies observed helps us to better understand the findings of the study on the dimension of dominance. Also for these reasons, caution is urged in the interpretation of results on dominance.

If architectural style does affect people's emotions and communication behavior, as the results from the present study suggest, architects have a responsibility to use styles wisely. Architects who disregard the potential impact of their choices, stylistic or otherwise, when designing buildings for human use are neglecting their obligation to the people they serve. Laypeople should also be aware of the power of environments to influence their own and other people's communication and behavior. In the evocation of emotion, architecture, via styles or other elements, can contribute to the success or failure of human communication and interaction.

The most surprising finding of this study was that architects and laypeople did not differ in their affective responses to, or expectations for communication in, the various houses they rated. Contrary to previous research,

(e.g., Hershberger, 1970; Groat, 1982; Pennartz & Elsinga, 1990; Rapoport, 1990) which recorded various differences in architects' and laypeople's ratings of architecture, no such findings are found in the present study. While initially this finding of no differences might be encouraging, several rival hypotheses are possible to explain the lack of differences between the two groups' ratings.

One might conclude that architects and laypeople do not differ in their perceptions of architecture, but this assumption is much too facile, and contrary to past research and good sense. Extending this argument, however, to note that architects may not differ from laypeople in their expectations for communication behavior in a well known setting like the house may be more feasible. It is possible that people's expectations for the home setting are so ingrained in society -- that its "program" is so obvious -- architects and laypeople share a common understanding of the proper functioning and traits of a house. Yet the models used in this study are real life examples of built houses, providing contrary support for the assumption that everyone has the same basic penchant for a particular style of house. If architecture is actually a conservative field (Buslig, 1991), then drastic changes in the most dear of our institutions, the home,

might not be readily welcomed by the majority of people, even architects.

Another, more likely, explanation for the lack of differences found between architects' and laypeople's rating is related to the age and training of the architectural participants, and the recency of the styles tested. The houses chosen as stimuli for the experiment are all approximately ten years old (designed in the late 1970s to early 1980s), representing contemporary styles that have existed long enough to be "recognized," yet are recent enough to be part of current trends in architecture. The architects who participated in the study, however, tended to be older, (60% were over 40 years old, and 30% were more than 50 years old), and are likely to have been indoctrinated of other, less recent, styles of architecture. The newer styles used in this study seem to have their greatest impact on the younger generation of architecture students or graduates.

In addition to age, a large number of architects who participated in the study received their training at the local university. It has been suggested that the emphasis on various architectural concerns differs from region to region in the United States, and that the styles sampled in this study are not generally emphasized in the Southwest. In other regions, the practice of Deconstructivism and

Post-Modernism is more readily apparent in architectural schools. Younger architectural participants in the study generally tended to be graduates of the local university. While neither the age, nor the training that architectural participants received precludes them from responding the way other "typical" architects might, supposition from various architects before and during this study indicate that this is a viable explanation.

It is also interesting to note that while architects and laypeople do not differ significantly from one anotherin their ratings, the variance in reactions across styles is much greater for laypeople than for architects. In fact, although a main effect for style is found for all the measured percepts except dominance, a review of the means reveals that architects' ratings differ significantly between styles only for judgments of arousal, formality, warmth, and psychological distance. Architects' ratings for pleasure, the dimension most revealing of people's emotional response to a stimulus (Mehrabian, 1980), are relatively equal across all three styles. Laypeople's ratings of pleasantness, on the other hand, differ vastly between styles. Overall, architects' ratings appear to be more impartial to any one particular style than laypeople's ratings (see Table 14). Herein lies moderate support for the assertion that architectural training may at least

modify the way a person evaluates architecture. As further evidence for this proposition, at least one architect who participated in the study stated that while she did not like the Deconstructivist house, she thought it was the most "honest" (of the three styles sampled) to the practice of real architecture. Laypeople's responses to the same house were much less generous.

Limitations

Several limitations of this study must be recognized. The most obvious weakness of the study is the use of photographs of houses to elicit how people <u>think</u> they would communicate in a setting. People's speculative ratings on a questionnaire are often quite different than their actual behaviors, and photographs are imperfect substitutes for the actual experience of being in a particular setting. However, monetary and practical constraints make the use of real houses impractical. Several studies have successfully used photographs or slides to elicit responses to environments (e.g., Groat, 1982; Hershberger, 1970; Pennartz & Elsinga, 1990). In order to create a more realistic environmental experience, multiple photographs of the interior and exterior of each house were used, instead of single photographs used in the past.

Another weakness of the present study also concerns the photographs. Even though the examples chosen for this

study are high profile houses designed by high profile architects, adequate photographic documentation in published sources is limited. Every attempt was made to find photographs which depicted: (1) an exterior elevation; (2) an exterior detail, particularly of the entry; and interior views of (3) the living room, (4) dining room, and (5) master bedroom. Because a photograph of the bedroom was unavailable, a third (exterior) shot of the Post-Modern house was substituted. Of similar concern regarding the photographs is the inherent inequality of architectural details for each house. Differences in camera angles, and the presence or absence of furnishings may have contributed in an unknown way to people's perceptions. However, the weaknesses of photographic comparability are at least in part due to typical architectural photojournalism, in which interior scenes of even noteworthy buildings are in little evidence. Though it is no excuse, the public is asked to lavish attention and praise on buildings that they will never see personally, and of which they are allowed only the most minimal pictorial information.

A third limitation is the blur between architectural style and architectural aesthetics. For this study, no distinction was made between the two, but rather, style was operationalized by its physical, visual, manifestation in a house. The stimulus houses exhibited were chosen because

of their predominant association with the styles they represent. If, as Rapoport (1990) suggests, architects are more visually oriented and laypeople are more associationally oriented in regards to architecture, then to what each group responded in the pictures is unknown. It is conceivable to propose that the nature of the experiment led both architects and laypeople to respond to similar elements (i.e., the visual representations as well as the associational attributes of the home) in the houses. To what degree participants' responses were based on style alone has yet to be determined.

Finally, the small number of participants in this study made factor analysis of Knapp's (1978, 1984) communication traits and environmental percepts an impossibility. An attempt was made to group the most related (hypothesized) communication traits together for analysis, but whether or not factor analysis would result in the same clusters is questionnable. Also, correlations between traits not hypothesized to go together were not reported, even if the strength of the correlation was greater than any included in this study.

Directions for Future Research

The role of architecture as an influential factor on communication has been largely ignored. Architectural studies seek to find out what (mostly) visual elements

influence people's preferences for architecture and environments represented by single photographic images. On the other hand, communication studies by and large elicit responses to environments, situations, or settings via written descriptions. More research should be conducted that incorporates the efforts of the two disciplines, which will yield increased benefits for both fields as well.

The problems experienced with Mehrabian's (1980; Mehrabian & Russell, 1974) three dimensional affective scale, in this study and another (Buslig, 1990), suggests that further refinement of his adjectival pairings might be in order, especially for his dominance scale. Mehrabian's proposal that emotional responses to environments vary along the dimensions of pleasure, arousal, and dominance should not be abandoned, but results of this study suggest that the reification that has already occurred may be premature. The attempt in the present study to elicit responses on Mehrabian's scale using photographic, rather than written, stimuli, also seems a logical step for the use of his scales.

In the same vein, empirical evidence should be collected to either support or refute Knapp's conjecture about the effects of interaction environments on perceptions of communication, before his suppositions are widely disseminated as "fact" (e.g., Knapp, 1978, 1980, 1984).

Factor analysis of the communication traits associated with Knapp's percepts of interaction environments should be conducted. Additionally, the development of scales to measure ratings of visual elements might help indicate which elements contribute to perceptions of particular types of communication in an environment. For example, do architecturally formal environments actually promote formal communication? A review of architectural research may turn up several scales already developed and tested from which to start.

Also, a more realistic approach to the study of architecture and communication than the use of photographs and self-reports would include methodical study in carefully constructed laboratory settings. Laboratory settings would enable the experimenter to control the architectural and environmental variables being studied, making different settings identical (or nearly so) on other details. The laboratory setting would allow participants' actions and behaviors to be recorded audio-visually, for objective coding, in addition to letting participants actually experience communication in the setting. However, the expense and difficulty of conducting such studies has been extremely limiting up to this point, and will probably continue to be so. Modified versions of a post-occupancy evaluation, using an already existing building or

environment, might prove a useful starting point, although strict control over environmental variables is limited.

Most directly related to the present study, more research should be conducted to determine the extent to which architectural style affects people's feelings and communication. For this study, architectural style and the visual representation of it were presumed the same. A clear definition of the elements of style being tested needs to be laid out, and a method of distinguishing pure style from visual aesthetics should be proposed. To this end, replication and repeated measures might help to eliminate variability in stylistic evaluation due to peculiarities of a particular building. Additionally, more architectural styles, especially contemporary styles, should be studied to yield data helpful to the architectural profession. Empirical evidence can help take the guess work out of designing buildings and environments, so that design "disasters" in the future can be lessened or avoided.

APPENDIX A
DEPENDENT MEASURES

APPENDIX A

Thank you for consenting to participate in this research project about architecture and communication.

You are going to be shown several photographs of a house. Imagine 2 adults interacting and communicating in the house. After getting into the mood of the house, rate how you think the people might feel in this setting using the adjective pairs below. Some of the pairs might seem unusual, but you'll probably feel more one way than the other. So, for each pair, if 1 is the adjective on the left and 9 is the adjective on the right, circle the number between 1 and 9 that best represents your feelings.

Happy	1	2	3	4	5	6	7	8	9 Unhappy
Contented	1	2	3	4	5	6	7	8	9 Melancholic
Relaxed	1	2	3	4	5	6	7	8	9 Stimulated
Sleepy	1	2	3	4	5	6	7	8	9 Wide awake
Aroused	1	2	3	4	5	6	7	8	9 Unaroused
Influenced	1	2	3	4	5	6	7	8	9 Influential
Awed	1	2	3	4	5	6	7	8	9 Important
Autonomous	1	2	3	4	5	6	7	8	9 Guided
Annoyed	1	2	3	4	5	6	7	8	9 Pleased
Despairing	1	2	3	4	5	6	7	8	9 Hopeful
Sluggish	1	2	3	4	5	6	7	8	9 Frenzied
Controlling	1	2	3	4	5	6	7	8	9 Controlled
Submissive	1	2	3	4	5	6	7	8	9 Dominant
Satisfied	1	2	3	4	5	6	7	8	9 Unsatisfied
Bored	1	2	3	4	5	6	7	8	9 Relaxed
Jittery	1	2	3	4	5	6	7	8	9 Dull
In control	1	2	3	4	5	6	7	8	9 Cared for
Excited	1	2	3	4	5	6	7	8	9 Calm

APPENDIX A CONTINUED

Now consider the communication you think might take place in the house you are viewing. Again, imagine 2 adults having a conversation in this house. Using the adjective pairs below, describe the type of conversation and interactional behavior that you would expect the people to exhibit in this setting.

Narrow range of topics	1	2	3	4	5	6	7	8	9 Broad range of topics
Formal	1	2	3	4	5	6	7	8	9 Informal
Private	1	2	3	4	5	6	7	8	9 Public
Conventional	1	2	3	4	5	6	7	8	9 Unconventional
Warm	1	2	3	4	5	6	7	8	9 Cold
Unexpected	1	2	3	4	5	6	7	8	9 Predictable
Confined	1	2	3	4	5	6	7	8	9 Free
Intimate	1	2	3	4	5	6	7	8	9 Nonintimate
Close	1	2	3	4	5	6	7	8	9 Distant
Rigid	1	2	3	4	5	6	7	8	9 Flexible
Awkward	1	2	3	4	5	6	7	8	9 Smooth
Impersonal	1	2	3	4	5	6	7	8	9 Personal
Stylized communication	1	2	3	4	5	6	7	8	9 Unique communication
Hesitant	1	2	3	4	5	6	7	8	9 Spontaneous
Unfamiliar	1	2	3	4	5	6	7	8	9 Familiar
Cautious	1	2	3	4	5	6	7	8	9 Carefree
Deliberate	1	2	3	4	5	6	7	8	9 Impulsive
Relaxed	1	2	3	4	5	6	7	8	9 Tense
Deep	1	2	3	4	5	6	7	8	9 Superficial
Comfortable	1	2	3	4	5	6	7	8	9 Uncomfortable

APPENDIX A CONTINUED

Efficient communication	1	2	3	4	5	6	7	8	9 Difficult communication
Safe topics	1	2	3	4	5	6	7	8	9 Risky topics
Constrained	1	2	3	4	5	6	7	8	9 Unrestrained

1. If you could, would you like living in the house you just looked at?

Not at all 1 2 3 4 5 6 7 8 9 Definitely

2. How would you rate the house you looked as an example of good architecture?

Excellent example 1 2 3 4 5 6 7 8 9 Terrible example

3. Have you ever seen this particular house before, either in photographs or in real life? (circle one)

NO YES

4. Can you identify the house by name, architect, and/or architectural style? If you can answer any of these questions, please do so.

Name of house_____

Architect_____

Architectural Style_____

APPENDIX A CONTINUED

5. Please complete the following demographic information for this study. Your answers will be kept anonymous and confidential.

a. What is your profession?_____

b. Have you ever had any architectural or design training?

NO YES (If yes, how many years?) _____years

c. What is your level of education? (check one)

_____ Some high school
_____ Some college
_____ 4 or 5-year college graduate
_____ High school graduate
_____ 2-year college graduate
_____ Post-graduate education

d. What is your ethnic background? (check one)

_____ White, Non-Hispanic
_____ Hispanic
_____ Native American or Alaskan Native
_____ Black, Non-Hispanic
_____ Asian or Pacific Islander

e. What is your age? _____

f. What is your gender? (check one) _____ Male _____ Female

Thank you for participating in this project.

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