ARCHITECTURE AND ITS OCCUPANTS: PERCEPTIONS OF STUDENTS AND FACULTY AT TWO PROGRAMS

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ABSTRACT

This study aimed to identify the perceptions of students and faculty at two architecture programs in the Southeastern United States about the effects of architecture design decisions on occupants. The data revealed that students and professors acknowledged various human issues in the design projects which were divided in five categories: (1) Interaction with building, (2) Image of the building, (3) Effects on occupant behavior, (4) Feeling within the space, and (5) Other related concerns. These categories are discussed and comparisons drawn to identify the nature of architecture pedagogy with reference to occupants' experiences in architectural spaces. Suggestions are made for architecture curricula to ensure that the understanding of these concerns among students and faculty is fully harnessed and nurtured.

Keywords: Architecture, Occupant behavior,

INTRODUCTION

Dewey (1925/1981) stated that "Experience is of as well as in nature. It is not experience which is experienced, but nature – stones, plants, animals, diseases…" (p. 12). As a result of built structures becoming an integral part of the surrounding, a large part of nature has now been replaced by environment (Lippard, 1997) and human experience is mostly confined within built environments. The essence of architecture and interior design should include the interaction between spaces and their occupants to effectively fulfill their pragmatic maxim (Bhatia, 2005; Ziff, 2000).

Scholars have commented on the structure of architecture education and the need to incorporate reflective inquiry of students' everyday encounters with the environment to encourage designs that are more responsive to spatial experiences (Gelernter, 1988; Livingston, 2000; Nicol & Pilling, 2000; Quayle & Paterson; 1989; Waxman, 2003). In that context, this study aims to identify the perceptions of students and faculty at two architecture programs towards occupants' experiences in architectural design and to understand the extent to which architecture programs incorporate the relationship between designed spaces and their occupants in the structure of their design studios. An extensive review of all environmental, experiential and behavioral psychological theories related to architecture is neither the intent nor within the scope of this paper. The following sections provide an overview of the literature which provides the context for this study.

Occupants' Experiences and Architecture

There is a reciprocal interaction between human beings and the places they enter (Lippard, 1997). The identity that human beings bring to a place undergoes some alteration based on the place, the relationship to the place, and other occupants of the place. Holgate (1992) argued that there are certain emotional or psychological states and reactions associated with elements of building designs, which are in a constant interplay with the occupants' rational responses to the same. The design of spaces affects people's perception of the space, sense of security, sense of place, and feelings such as empathy and nostalgia. Scholars have widely emphasized and studied the need for incorporating theories of behavioral psychology and the interaction of human beings with the built environment as important stages in the architectural design process (Gifford, 2004; Honikman, 1975; Rudd, 1985).

Deasy (1974) summarized the psychological and social effects of spaces as working in three ways: (1) the stress people experience in accomplishing their goals – group or personal, (2) the form and nature of people's social contacts, and (3) people's feelings of identity and self-worth. Spaces that are not designed with these concerns impose unnecessary handicaps on their occupants. In other words, the designed spaces

essentially affect occupants' psychological states, relationships with others, and personal opinions. There are several discussions on the idea of architects working in association with behavioral scientists and social psychologists to design and build structures that are responsive to society and human psychology (Gutman, 1972; Deasy, 1974). Deasy (1974) stated that this association will be proven highly feasible and rewarding by outlining a design process that starts with the study of the people whom the building will serve. Rambow and Bromme (1995) emphasized a need for including the study of psychology in architecture training to enhance the evaluation of pre-theoretical personal experiences in postulating the assumptions and beliefs that guide professional practice.

Concerns related to occupants' experiences with spaces may be best discussed with reference to architectural experience and sensory perception, essentially the aesthetics of architecture. Several philosophers (Dewey, 1970; James, 1907) discussed the importance of experience and sensory perceptions in shaping lifestyles, beliefs, and identities. The belief that everything in people's minds is a result of their sensory experiences formed the basis of empiricism in the eighteenth century and has been prevalent in philosophical discussions (Gaarder, 1994). Empiricist thought is based on the idea that human understanding is confined within the boundaries of experience (Scruton, 1995). Scholars noted that pragmatism is derived from the interaction between human beings and art works, an active analysis of the experiences during this interaction, and the consequent reorientation of people's beliefs toward themselves and events surrounding them (James, 1907; Rorty, 1989; White, 1998).

Pragmatism

Pragmatism is the philosophy which guides this study because of its emphasis on the importance of experience (Dewey, 1958; Dewey, 1925/1981). The basic premise of pragmatic philosophy is the idea that experience consists of interaction between human beings and their environment (James, 1907) and, by extension, human beings' experience with art (Dewey, 1958), including architecture. The test of the 'truth', the authenticity of experiences lies in its validation in real life. James (1907) defined the pragmatic method as one that steers away from supposed necessities and first impressions and focuses on consequences and facts. Spiegel (1998) identified art as existing in order to achieve certain designed purposes in terms of its effect on its audience. Anderson (2003) outlined the underlying assumption behind pragmatic theories of art as the need for art to do something meaningful while paving the way for the social, political, and spiritual betterment of the world. Pragmatically, the functions of art are to maintain the values, attitudes, and sense of reality across generations and to give character, identity, and status to communities, individuals, and institutions; like styles of architecture (McFee, 1970).

Neo-pragmatic art educators proposed that pragmatic methods of instruction will enable students to actively analyze their experiences, eventually reorienting their beliefs toward themselves and the events that they encounter (White, 1998). Applied to architecture, the pragmatic method will involve a thoughtful analysis of experiences resulting from the interaction between occupants and their environment (Gelenter, 1988; Nicol & Pilling, 2000). This will help architects and architecture students to develop insights into the way architectural elements affect occupants' experiences and behavior in a space, as well as their worldview. This study is grounded in the pragmatic view of experience, architecture, and the means to explore and analyze. The active analysis of architectural space will include an assessment of aesthetic criteria which are central to the experience and interaction between people and the space they occupy and therefore the response to the space (Hill, 1999).

Aesthetic Experience and Architecture

Discussions of beauty and aesthetics have been prevalent since Plato and his definition of absolute beauty as a concept that could only be comprehended by intellectuals (Holgate, 1992). Cherryholmes (1994) stated that beauty, harmony, pleasure, joy, success, and well-being are all criteria that should be used in assessing consequences of bringing out aesthetic implications of the pragmatic maxim. Aesthetics in architecture goes beyond beauty and acts as a tool toward the fulfillment of its pragmatic purpose. The main goal of architecture should be to create buildings where the aesthetic aspect is related to experiential reality (Fitch, 1972; Fitch, 1988).

The idea of aesthetics in built forms has been restricted to visual stimuli (Fitch, 1972; Holgate, 1992). Scholars argued for a need to encompass the other senses; to include qualities that are pleasing to the mind, exalt the senses, and appeal to taste and pleasure (Holgate, 1992; Spiegel, 1998; Ziff, 2000). Fitch discussed the need to include context, physical conditions of viewers, their psychological state, and the response of the occupants to the impact of the building on them. Hill (1999) defined aesthetic experience with respect to architecture as an architectural experience which is accompanied by a sense of place and the emotions attached to occupants' interaction with the space. Bhatt (2000) argued that people's aesthetic experiences become justifiable reactions, emotions, acts, and perceptions of their experiences. A study of the interaction between human beings and their environment will yield important information for architects with respect to the emotional and behavioral reactions that the interactions provoke (Gifford, 2004).

Environmental Psychology and Architecture

In his book *Environmental Psychology:* Principles and Practice, Gifford (2004) defined environment as built settings. He defined environmental psychology as "the study of transactions between individuals and their physical setting" (p. 1). He mentioned that these studies would lead to more humane environments and improved interactions between people and their built as well as natural surroundings. Gifford stated that environmental perception includes gathering of information about the environment as well as the means of assessing the environment. This process of information gathering is primarily visual but includes other senses (Gifford & Ng, 1982). Robson (1999) mentioned three modes of perception in human beings: (1) operational mode, in which we concentrate on elements of the environment important to accomplishing a task; (2) the responsive mode, which includes our everyday noticing of things around us; and (3) the inferential mode, in which we focus our attention on elements that support our knowledge of the environment. An environment which provides information on all three levels is a successful environment especially when it also presents things that are familiar and relate to past experiences of the occupants.

Pelli (1999) discussed emotions and architecture and stated that "architecture is one of the great arts. We find proof of this in the depth of emotion that good buildings provoke in us." (p. 9). Architectural elements of a space affect the perception of spaces and consequently the emotional and behavioral responses to the environment (Holgate, 1992). These architectural elements include, but are not limited to, walls, ceiling, floors, windows, light, and color (Gifford, 2004).

Color has a significant impact on daily life and plays an important role in self-presentation as well as forming of impressions (Hemphill, 1996). The behavioral connotations of color influence the states of mind as well as the perception of physical qualities of the immediate environment (Wells, Need & Crowell, 1979-1980). If used resourcefully in the design of spaces, color can influence the user's emotional and mental balance (Portillo & Dohr, 1993; Wells et al, 1979-1980). Hogg, Goodman, Porter, Mikellides and Preddy (1979) identified five factors related to color that influence the perception of an environment. These factors include dynamism, spatial quality, emotional tone, complexity and evaluation. Another factor that influences perception of space is lighting. Sorcar (1987) mentioned that there is an association between illumination and the mood created in interior spaces. Lighting affects impressions of space, relaxation, privacy, pleasantness, boredom, excitement, confusion, insecurity, and brightness. Lighting conditions in a space also affect the perceived color. Occupants' personalities and their perception of various architectural elements will have significant effect on their behavior and personal, as well as social space.

***Personal and social space.* Gifford (2004) defined personal space as "the geographic component of interpersonal relations" (p. 122). Although the term is *personal space*, it actually refers to the distance between individuals and their relative orientation when they interact. Other than personal and social factors, physical environment and settings influence personal space. Theories of personal space can provide architects with information that can be incorporated into building designs. They can provide important "behavioral basis for humane design of buildings" (p. 143).**

Hall (1968) defined space as a medium of communication between individuals and

introduced zones of proximal development to identify boundaries of social interaction and feelings of privacy. He identified proxemic zones based on relationships between people and objects within the microenvironment. De Long (1991) introduced axial orientation of occupants in the space as a factor in defining the zones. The arrangement of objects and the occupant's relative orientation in the space is an important factor affecting these relationships. De Long mentioned that the zones are based on occupants' perceptions and interpretations of the space and their feelings of relative privacy. The zones identified by Hall and De Long are a means of incorporating behavioral studies in the planning and arrangement of microenvironments. These zones may be used to identify the optimum or preferred proportionality of living spaces, furniture arrangement, location of areas relative to the entrance to the space, and the perception of relative formality and informality in the space (De Long, 1991). The arrangement and design of spaces with consideration of proxemics will play an important role in predisposing occupants to certain behavior in the space.

Design and Social Behavior

Deasy (1974) discussed a movement which proposed that the fundamental purpose of design goes beyond creating buildings and encompasses the idea of designing settings for human behavior and for human beings to live together with useful and pleasurable interactions. The design of spaces has an immense bearing on human interaction with others in the community – others sharing the place (Waxman, 2003). Territoriality. Gifford (2004) defined territoriality as " a pattern of behavior and attitudes held by an individual or group that is based on perceived, attempted, or actual control of a definable physical space, object, or idea that may involve habitual occupation, defense, personalization, and marking of it" (p. 150). It involves locating objects to define one's territory in a manner which indicates one's identity. Several personal as well as social factors influence territoriality. These factors include gender, personality, social setting, socio-economic status, prevalent competition for available resources and legal ownership. Gifford (2004) mentioned that dominance and control is the major social behavior with which territoriality has been associated. Control refers to the ability to influence ideas, space, and other resources in the territory. People's behavior is affected by the control they have or seek over their territories. Territoriality essentially has an effect on a variety of human behaviors. Personalization of spaces was found to encourage social interaction and improve the atmosphere (Holahan, 1976; Vinsel, Brown, Altman, & Foss, 1980). If designers incorporate knowledge about territoriality in the design of homes, offices and institutions, the spaces will allow occupants optimum amount of control over the space (Gifford, 2004). Such environments can improve the quality of life significantly by providing occupants with a greater sense of self-determination, identity, and safety. 27

Crowding. Crowding refers to a personally defined subjective feeling arising from an experience of other people in the space (Gifford, 2004). Several personal, situational and cultural factors affect the experience of crowding. Gender, personality, psychiatric status, preferences, experience, mood, and sociability are personal variables associated with crowding. Culture and community size are other factors related to crowding. Crowding usually evokes negative behavioral and emotional responses and adversely affects social interaction (Stokols, 1978; Sundtrom, 1978). Negatively toned attitudes that may be associated with crowding include less perceived control, safety, privacy, building satisfaction and lower quality of relationship with others in the space (McCarthy & Saegert, 1979). Gifford summarized that crowding has physiological, behavioral and cognitive effects, including health problems. Architectural design has a substantial influence on the experience of crowding. The scale, arrangement of rooms in buildings, organization of spaces, ceiling heights, and light conditions are some architectural characteristics that influence crowding and its behavioral or emotional implications (Gifford, 2004). Factors that augment the experience of crowding include lower ceilings, longer corridors, higher density, taller buildings, curved walls and less light. Evans, Lepore and Schroeder (1996) mentioned that increased architectural depth of high density residences results in less psychological distress and social withdrawal for the occupants. Architectural depth is related to the number of spaces one must pass to go from one room to another. Careful environmental design may help to ease the experience of crowding in a space.

Based on the review of literature it is clear that

there is a need for architecture and architecture pedagogy to respond to experiential connotations of design decisions. In that context, the guiding research question of this study was: What are the perceptions of students and faculty at two architecture programs accredited by the National Architecture Accreditation Board (NAAB) about experiential concerns related to architectural design?

METHODOLOGY

Qualitative research was adopted as the primary research method in this study in order to gain a clear and insightful understanding of participants' perceptions of the central focus of this study, namely experiential concerns in architectural design. Additionally, quantitative research and data analysis methods were employed to afford a thorough analysis of the data that was collected. A study of the list of NAAB accredited architectural schools (www.naab.org) led to the selection of two schools in the Southeastern United States. The selection was largely based on geographic proximity to the researcher's home town to facilitate multiple visits for data collection. To maintain anonymity, the two schools will be referred to as School A and School B and pseudo names will be used for all participants.

Data collection included observations, personal interviews, and focus group interviews. The protocol for semi-structured interviews was approved by the Institutional Review Board at Florida State University. Observations were conducted in the fourth-year design studio during student discussions with professors on ongoing design projects as well as during formal presentations and critiques of student work by a panel of jurors including the professor teaching the design studio and other invited faculty and practicing architects. Observations were conducted during class hours for approximately four hours for each of two visits. Attention was paid to how students explained their project and design decisions, comments and questions from the panel or jurors and students' responses to the questions. Observation notes were recorded in the form of field notes.

Personal interviews with faculty helped to identify the foci that drive the structuring of respective programs and design studio projects, as well as faculty expectations in terms of the incorporation of experiential concepts in architectural design. Faculty interviews were based on a semi-structured protocol and lasted approximately 30 minutes each. The interviews were conducted before the class session on the day of student critiques and were tape recorded.

On the second day of observations, the day of student presentations and critiques, the first six students to present their projects at each school were invited to participate in focus group interviews. While all six students participated from School A, five students participated from School B. The sixth student did not arrive at the designated location for the interview. Students at School A recommended the use of a conference room for the interviews while interviews at School B were held in a classroom not in use at that time. The interviews lasted approximately 90 minutes at each school and were geared towards understanding students' views of occupants' concerns in architectural design and the incorporation of the same in their design projects. The interviews were tape recorded and later transcribed.

Data analysis involved coding of data to identify occurrence of ideas related to occupants' experiences in architectural spaces. All comments from students and faculty as well as notes from observations were isolated for further analysis. The second round of coding of the data revealed categories associated with the central theme. Color coding was used to separate various categories of comments corresponding to a variety of design considerations related to experiences and behavior of occupants. These categories were further refined to identify individual definitions from the students' and faculty's perspectives, eventually providing definitions from each viewpoint for the central theme of the study, experiential concerns in architectural design.

RESULTS

Several scholars emphasized the need for architects to address occupants' experiences, emotions and behavioral responses to the built environment (Gifford, 2004; Jarrett, 2000; Pelli, 1999). In that context, data analysis for this study involved review of field notes and interview transcripts for references to various experiential

concerns in architectural design to understand the perceptions of faculty and students at the two selected schools. In-depth analysis of the data revealed five categories which contributed to this theme: (1) Interaction with building, (2) Image of the building, (3) Effects on occupant behavior, (4) Feeling within the space, and (5) Other related concerns. Following is a discussion of each of these concerns supporting the definitions with quotes from the data. A narrative format using direct quotes from participants was deemed the most appropriate to clearly communicate the essence of responses from students and faculty.

Interaction with Building

An important aspect of how spaces affect occupant is the result of the interaction between people and buildings. This interaction may be stated as the initial stage for all experiences within architectural spaces. This category, therefore, may be understood as the foundation for the other four categories that define experiential concerns in architectural design. In their projects, students at School A addressed the interaction of occupants of the building as well as pedestrians around the building and people approaching the building. Lauren felt that Professor Karen emphasized the understanding of how the spaces they design respond to people. At School B, during Allen's critique Professor Roger talked to him about the edge of the building and explained,

> *Something is better about the experience of the building inside and outside if there is a communication between the inside and outside. It is an unpleasant urban experience if there is a wall and you have no idea what is going on inside.*

During another critique at School B, Professor Graham suggested to a student designing a student activity center that relocating the column grid may create gathering spaces for people around the building. He said that the level of activity on the outside of the building will make the passers-by question "If there is so much going on outside, how much more can be going on inside."

Image of the Building

At School B, Allen described that experiences with a building are rooted in how the building portrays itself. He explained that, "when you approach a building, you automatically get a feeling of what the building is… maybe not the folks in it but how it presents itself." Students talked about the experience of walking up to a building and the information gathered about the building during the approach. Mike from School A said it was most essential to consider people in the space and ask if they have "a feel for what it was used for." He included cognition and ability to navigate toward and through a building as other important aspects related to how the building presents itself to its occupants. His major concern was whether people can find their way around the building when pointed in a certain direction.

While presenting his design Luther (School B) talked about the context in which the building was located and said, "If you did not know that it was a gym, you would not know from the outside." He was designing a multi-use community recreation center in a historic district and in that context his design concept was to follow the architectural style and proportions of the surrounding buildings. His concept was anchored in masking the true identity of the building such that it would archetypically imitate the contextual functions and architectural style.

Effects on Occupant Behavior

How spaces affect occupants will define how they behave and behavioral implications of architecture become an important component of addressing experiential concerns in the design process. Some student participants were sensitive to occupant behavior in their designs. Joey and Samuel (School A) talked about the effects of color on behavior. During the interview at School A, Lauren described a video the class saw about New Yorkers in plazas and noticed certain behavioral patterns based on design features that stir occupants' curiosity. She said, "So I think it is good to have an element of surprise in the architecture so that people will want to go in there and explore what is going on in there." Mike (School A) added that the selection of materials can influence "how (people) basically walk through a space." None of the students talked about the behavioral connotations of their design decisions when they presented their projects during critiques.

Professor Karen talked about her thesis which was based on understanding "archetypal actions, human actions, and the way the space helps to choreograph those actions or support those actions." During Lauren's critique, at School A, one of the visiting architects asked her how she would like people to move along or through the

courtyard in her building and explained that she should integrate those ideas in her design. The only references to behavioral concerns in architecture by faculty or critics were made at School A.

Feeling within the Space

Several students talked about comfortable occupation of the buildings they were designing, especially during the focus group interviews. Lauren (School A) summarized that the most important concern that architects ought to address lies in the details and "small things that happen in your building that make people experience something. The details, like, people will experience something what you want them to experience." She felt that the feelings that spaces evoke are related to people's memories of the past; "Maybe a door knob that reminds you of your old house or what you used to do when you were a little kid or something like that. So I think details can impact people."

Summer's (School A) design was based on the understanding that, in her design of the business school, it was essential to provide open spaces for the occupants to walk through when they left their classrooms or conference rooms after hours of being indoors. She explained that her main design concept was "relief from inside," and she had created a series of indoor and outdoor spaces to achieve that.

Professors and critics suggested the implications of students' designs on occupants' emotions and indicated elements that may provoke negative emotions like fear, rejection, and dullness. During Stanley's critique at School B, Professor Roger asked him to reconsider the location and design of the fitness rooms and said, "No one wants to be exercising or swimming in a dungeon area." Again, during Luther's critique Professor Roger talked about the feelings that some dull spaces may evoke as "not dingy dungeony kind of spaces where you wonder who might be around the corner." At School B one of the visiting architects commented on Summer's design of the parking lot that "it is unfriendly to park cars at the very end. Students and faculty expressed their concern about the feelings of occupants in the spaces they design an equal number of times. Students were concerned about the image that their buildings portrayed but professors and critics did not talk about this concern. During the focus group interviews students talked extensively about various concerns and showed empathy toward occupants' interactions with the spaces they design and also toward how spaces emotionally affect their occupants. Lauren (School A) talked about how the selection of finishes in a space and the proportions of the space can make people feel welcome or uncomfortable. All students felt that it is important to ensure a feeling of comfort in the space. Lisa, at School A, elaborated and said that it is essential to design "what it feels like, not what it necessarily looks like." At School A students continually talked about pedestrian interaction with the building and experiences at the street level. The design project was a community center in the downtown area for the town and they were encouraged by Professor Karen to consider the pedestrian activity.

It is nicer to have activities and functions at the edge of parking." He suggested that it is better not to make people park next to inanimate objects. The feelings that different design elements and spaces evoke in their occupants was a widely emphasized concern during critiques at both schools.

Other Related Concerns

Several comments from the participants referred to occupants' experiences in spaces but were not articulated clearly enough to be placed in one of the defined categories. General references to architects' responsibility toward occupants' behavior and emotions were counted toward this category. Students showed concern about the difficulty of empirically defining how people react in certain spaces. Samuel (School B) mentioned that "psychologically a lot of things you have to just use a rule of thumb because everybody is different, their psyches are different. You really can't help that." Anna's (School B) approach was to analyze how she would feel in a space and assume a similar response from other occupants.

Susan (School A) introduced the spiritual component which may be tangentially related to the experiential component. She said that architects are responsible for "the development of themselves whether it be, you know, a spiritual sort of connection with their surroundings or if it is just an area of comfort." Her definition of architecture was that "it is more than shelter. It is designing spaces that people are happy in."

The findings from the study led to several significant inferences that can be discussed with

reference to architecture pedagogy and applied to a variety of other fields in family and consumer sciences. A comparison of responses under each category is the first step in the analysis of findings to derive definitions of student and faculty perceptions about occupant responses to architectural design.

Discussion of Categories

Table 1 presents the frequency chart for each of the five categories as counted from observation field notes and interview transcripts.

Table1: Frequency Chart for Categories

Category	Students	Faculty	Total
Interaction with building	8	6	14
Image of the building	5	0	5
Effects on occupant behavior	3	3	6
Feeling within the space	9	9	18
Other psychological concerns	5	1	6
TOTAL	30	19	49

Professors and visiting architects presented insights to students about the emotional implications of their design decisions on the occupants of the space. They indicated specific design elements and especially emphasized the negative feelings that occupants may experience in response to those elements. Some critics made suggestions for students to enhance the experience of different spaces in their designs.

During the interview, Professor Karen described the school's major focus and said that, although it is not the primary focus, students are introduced to "the idea of experience, the personal experience of architecture, and of spaces that one person walks through or something like that." An important experiential aspect for her was the interaction of people with the designed spaces.

DISCUSSION

Based on the findings and frequency charts for the various categories discussed by students and faculty, several insights may be derived about their perceptions of the application of occupant responses to architectural spaces. This assessment also led to further questions from the perspective of both students and faculty.

Student Perceptions

Decision making in architectural design process that addresses occupants' experience may address concerns related to the way the environment affects occupants' psyches, emotional reactions, and behaviors in the designed space. These concepts are largely based on the apparent interaction of occupants with the environment/space. Before the focus group interviews at each school the researcher briefly explained this definition to the students but did not talk about the definition in detail to ensure accurate opinions and responses from them.

During the focus group interview at School A students were asked to discuss the most important experiential concerns in architectural design. Several students at both schools were hesitant to talk about important behavioral and psychological concerns that they should address in their designs. They attributed their hesitation to the difficulty in generalizing the psychological associations between buildings and occupants. Students said that, to overcome this hurdle, they rely on "common sense" to assess how spaces designed with certain elements would feel. Stanley explained, "We all know that, you know, that a five-foot roof in a 20-foot-long space does not feel good. And it is not just phenomenological but that's also in a sense common sense. You know, like dimensions of a space will dictate the psyche to do certain [things]." He gave further specific examples and said, "Red will tell the psyche to do one thing. Fluorescent light will tell the psyche to do one thing or artificial light or natural light. They all, you know, have different affects on the psyche, you know." Anna (School B) said that she relies on her own impressions and responses to spaces and uses that as an understanding of how projected occupants will feel in similar spaces. Others felt that history serves as a very useful subject by helping them understand previously designed spaces and people's responses to those spaces. In all the answers from students regarding their qualms about generalizing experiences with the built environment, reading what people write about other buildings was the only reference to getting information from literature. None of the students mentioned any research journals or books they

could reference to get answers, guidance, or clarification.

Students mentioned several interesting concerns which they considered important issues to address in their designs. As discussed earlier, participants' responses were divided in five categories; (1) Interaction with building, (2) Image of the building, (3) Effects on occupant behavior, (4) Feeling within the space, and (5) Other related concerns. Figure 1 presents the percentage distribution of student responses during observations and interviews divided among the five categories. Almost 17% of students' responses in this theme were categorized as *other related concerns*. This may be an indication of an unclear understanding of the concept. However, students talked about other concerns, especially the interaction between occupants and spaces and the feelings and emotions experienced in buildings. The *image of the building* was an aspect of which although not expected during the initial data coding, emerged as an important facet. Lastly participants made some references to influences of the built environment on occupants' behavior.

Despite concerns about students' understanding of the concept based on their certain responses, they showed sensitivity to the relationship between architectural design and various facets of the occupants' experiences in a building. To further clarify students' understanding of these concerns, a comparison of students' responses during the interviews was drawn against the concerns addressed during their design critiques. The observation data was based on students' presentations of their projects to faculty and critics, as well as their answers to questions posed by the panel. Figure 2 presents the comparison between data from observation field notes and interview transcripts for each of the five categories.

There is a large discrepancy between the two subsets of the data. The differences between percentage responses related to each category dropped dramatically for the observation data, except for one category – *image of the building*. Interestingly, this was the category which emerged during the data analysis and was no expected at the initial stages of data coding. There was no mention of occupant behavior or even general references to experiential concerns having been addressed in the designs. Some students talked about considering the feelings evoked by the spaces they designed. Samuel explained the glass wall around the swimming pool in his building and said that the play of light and water will create a pleasant atmosphere. Presenting her design of the community center on the riverside in Georgia, one student talked about the interaction between pedestrians and the activities in the building which would invite them into the community center. Other students made some comments while introducing their projects to the panel of faculty and critics but not for all the categories and the comments were very limited, as is evident from the percentages.

Based on these findings, one may postulate that students showed sensitivity toward the experience of spaces they design. Their broad understanding of these issues was clear from the different categories that emerged.

Faculty Perceptions

During interviews with the professors interview questions were geared toward understanding the schools' position on incorporating experiential studies in the curriculum as well as understanding their personal perspective on this issue. Although their answers indicated that the schools make a conscious decision to peripheralize this facet of architectural design several interesting relationships and categories emerged from further analysis of the observation data and interview transcripts. During the interview, Professor Roger (School B) made no references to the experiences in spaces, behavioral affects of design, or the interaction of occupants and the designed spaces. At School A, Professor Karen explained her own thesis work which was based on understanding how spaces help to choreograph different human actions and, therefore, understood how design affects human behavior.

Figure 3 presents the percentage distribution of faculty's comments on the five identified categories as calculated from analysis of observation and interview data.

Professors and critics showed immense sensitivity toward certain experiential aspects of architectural design. They addressed the interaction between occupants and spaces and how this interaction affects occupants' emotional state as well as the feelings that spaces generate in people. They made references to human

behavior and its importance in architectural design decisions. Neither professors nor the critics discussing student designs talked about the images that the buildings portray to people.

associated with this theme divided by critiques and interviews.

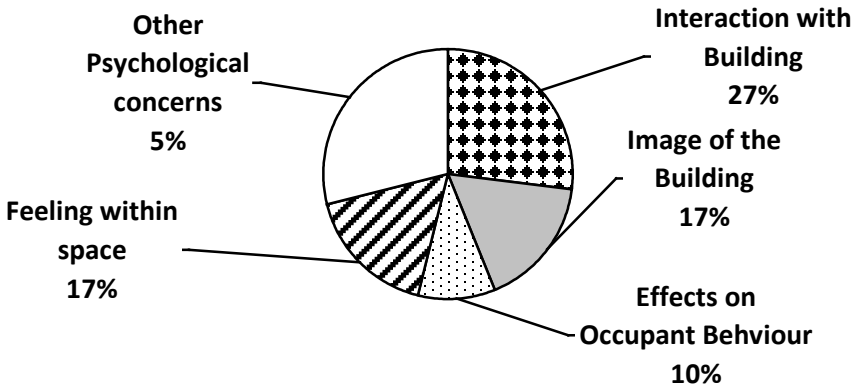

Figure 1 Percentage Distribution of Student Responses to Psychological Concerns

Note: The percentages are out of the total number of responses categorized under *psychological concerns* 30 for observation and interview data combined.

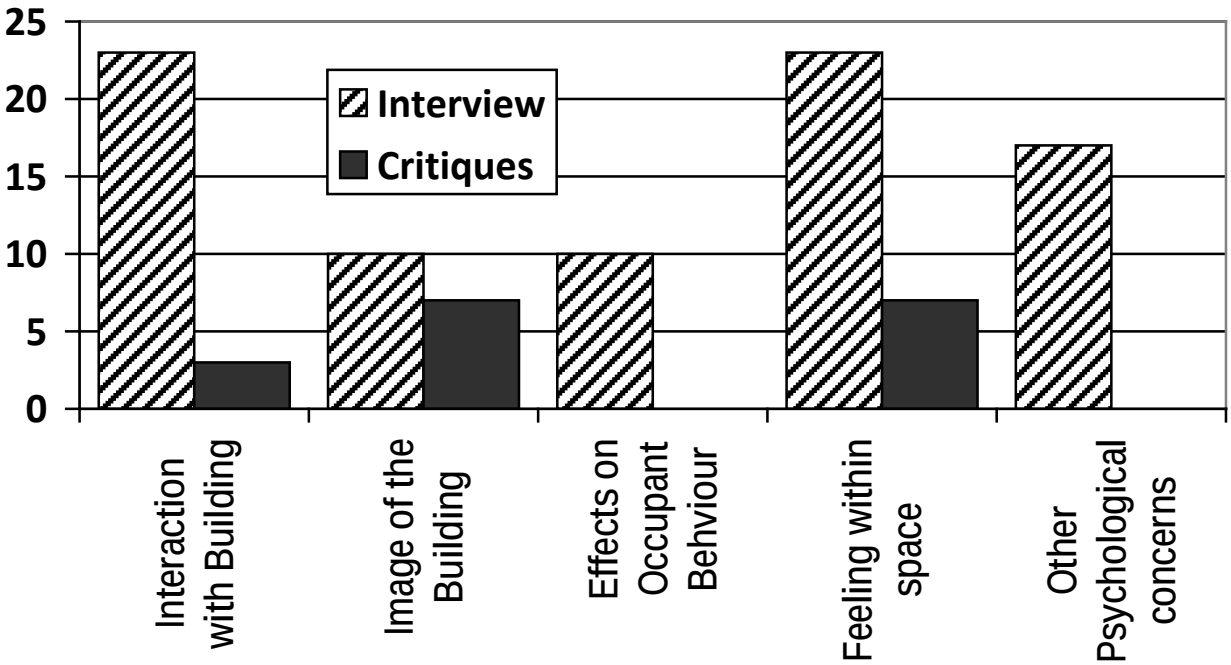

Figure 2 Percentage Distribution of Students' Responses in Focus Group Interviews and Critiques for Psychological Concerns

Note: The percentages are out of the total number of responses categorized under psychological concerns 30 for observation and interview data combined

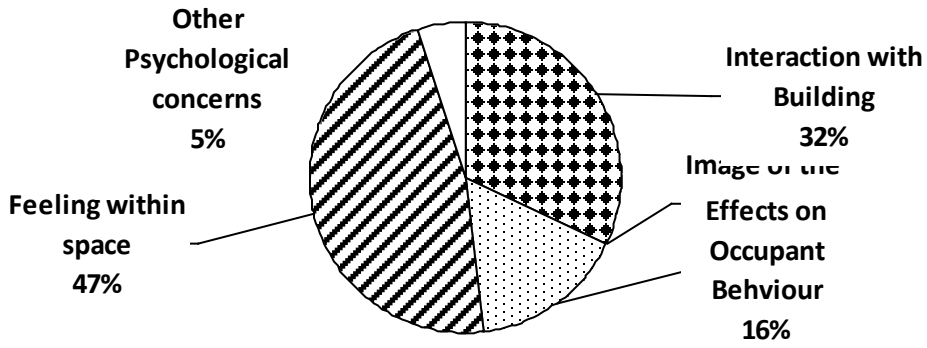

Figure 3 Percentage Distribution of Faculty Responses to Psychological Concerns
Note: The percentages are out of the total number of responses categorized under psychological concerns 19 for observation and interview data combined.

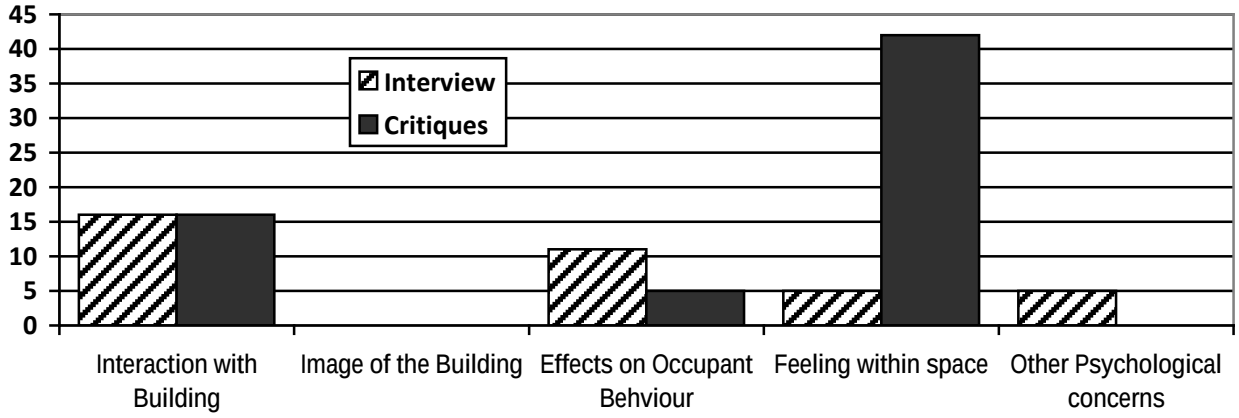

Figure 3 Percentage Distribution of Faculty Responses to Psychological Concerns
Note: The percentages are out of the total number of responses categorized under psychological concerns 19 for observation and interview data combined.

During the interview with the faculty members, they did not express such extensive concern about occupants' experiences and their influences on design decisions. How then did they show such sensitivity to multiple aspects of the experiential connotations of architectural design? To better evaluate the understanding among faculty and critics about psychological concerns the frequencies for observation and interview data were compared. Figure 4 presents the percentage distribution of different categories

Clearly, the important factor in consideration is the feelings that spaces generate in their occupants. This issue was extensively addressed during the critiques. Professors explained design suggestions to students by asking them to consider the feelings that their designs will generate. One of the critics at School A explained to Summer that she should design her parking such that people do not park near inanimate objects which might be intimidating. At School B critics indicated areas in students' designs which they thought might feel "dungeony." This term was repeated on multiple occasions at School B. They warned students against designing spaces which were dark, gloomy, and cornered, explaining that people are not inclined to go into

such areas. During Luther's critique Professor Roger mentioned, "not dingy, dungeony kind of spaces where you wonder who might be around the corner." Other concerns about how people would feel were brought up by other critics. At School B, Professor Chad pointed to Anna's design of an enclosed swimming pool and explained that the feelings that such areas generated are not pleasant and explained that it is because the "first thing you experience in an indoor pool is the smell." He suggested that Anna rethink that design and find solutions to avoid such feelings. Interestingly, most of the comments by professors during the critiques were about the negative feelings associated with different design elements. This may be attributed to the fact that the data is from critiques where professors and critics are commenting but also making suggestions to students for how the design may be improved. They were probably, therefore, indicating to students all the facets of their designs which were unsatisfactory, needed more thought, or were not substantially resolved. Professors' perceptions of experiential concepts in architectural design may be considered to include an understanding of the interaction between spaces and their occupants with respect to the feelings that these spaces generate and to some extent how they determine how people act in spaces.

Based on the findings of the study, the following definitions may be postulated for experiential concerns in architectural design as perceived by the students and faculty participants of this study.

Students' definitions of experiential concerns **may be articulated as the interactions that occur between the spaces and their occupants which generate certain emotional reactions from occupants, affect their behavioral patterns, and influence occupants' perceptions of the building.**

Faculty's perceptions of experiential concerns **in architectural design may be considered to include an understanding of the interaction between spaces and their occupants with respect to the feelings that these spaces generate and to some extent how they determine the way people act in spaces.**

Several questions were raised in analyzing the data, important among which were the reasons for the discrepancy between the results from the analysis of interview data and data from project critiques. One reason for this discrepancy may be the presence of visiting professors and architects during the critiques while only the professors teaching the studio were interviewed. The reason for differences in the concerns students emphasized during interview and during critiques may be due to the fact that students are essentially answering questions posed by the panel during the critiques while during interviews they may have been expressing their personal opinions more freely. One may question if the students' sensitivity to experiential aspects of their design decisions although encouraged by their professors still remains overshadowed by other concerns like creativity and technical aspects.

One may question if the increase in faculty and critics' responses to experiential concerns during critiques could be attributed not only to the presence of visiting architects but also to the fact that during interviews the two professors' answers were guided by the schools' objectives whereas during the critiques their questions and comments may be influenced more by their personal sensibilities as architects.

Implications for Architecture Education

The inferences derived from the analysis of the data and answers to the questions which drove this study implied certain consequences for architecture pedagogy. It appeared that, although professors and students showed sensitivity toward experiential concerns in architecture, they are probably restrained to some extent by the creative and technical facets. A reevaluation of the objectives set by the schools and clearer definitions of human issues in the goals they set for their students may be an important step in harnessing their intrinsic understanding of the impact of their designs on occupants.

Professor Karen mentioned that, according to her, the reason for the peripheralization of behavioral and experiential concerns in architectural design is because the literature on these topics is inaccessible and unfamiliar to students and architects. There is a need for architecture education to study the means of overcoming this handicap, which restricts students from expressing and incorporating the concerns they appear to consider intrinsic to the profession. Architecture education may incorporate a component in design studios which encourages

students to explore, understand, and reference the available literature on different facets of human issues and the built environment. Students may be encouraged to support their design decisions with concepts from different studies, reports, and discussions. Students mentioned that they derive ideas about how occupants may feel in a space they design by reflecting on the feelings similar spaces evoke in them. This concept may be further developed to encourage extensive reflective inquiry among students (Dewey, 1970; Livingston, 2000).

A greater understanding of aesthetics and the different senses, ideas, and concepts it can encompass will be an important step toward ensuring that student designs respond to the projected users and the community to which they will cater. Architectural theory courses normally revolve around different architectural styles and eras. It may be beneficial to include the philosophies associated with architectural design to introduce discussions such as the extended definition of aesthetics.

In sum, this study further reinforced the need projected by the literature review for an increased emphasis on understanding occupants' experiences in architectural spaces. There is a need is to introduce courses and exercises which will harness students' concepts related to these issues by encouraging professors to incorporate the concerns that they find inherently important to architectural design. Students and professors acknowledged various human issues and one may infer that the need is to provide clarity of definition and implementation to ensure that the designs they produce respond to the greater good of the people and society where their buildings are located.

The relevance of this study in other fields of family and consumer sciences can be explored. The reaction of occupants to architectural spaces can be further extrapolated into the reaction of consumers to apparel, food and other goods, thereby validating the exploration of occupant emotions and psychology in apparel design, nutrition, consumer affairs, family studies and other fields. It will be interesting to duplicate this study in other fields of family and consumer sciences to compare the responses of students from different fields about their ability to understand and apply ideas of aesthetics and behavioral sciences in their respective professions.

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