Communicating Behavioral Research to Campus Design: Factors Affecting the Perception and Use of Outdoor Spaces at the University of Jordan

Tawfiq M. Abu-Ghazzeh

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COMMUNICATING BEHAVIORAL RESEARCH TO CAMPUS DESIGN
Factors Affecting the Perception and Use of Outdoor Spaces at the University of Jordan

TAWFIQ M. ABU-GHAZZEH is an associate professor of architecture at the University of Jordan in Amman. He formerly taught at the College of Architecture and Planning at King Saud University in Riyadh, Saudi Arabia. He holds a master’s in architecture from the University of Michigan–Ann Arbor and a Ph.D. in architecture from The Catholic University of America, Washington, DC. His recent work focuses on environmental design and environmental behavior.

ABSTRACT: This article focuses on the study of outdoor spaces at the University of Jordan located in Amman, the capital of Jordan. The objective is to assess user perceptions and patterns of outdoor space use. This researcher used a qualitative approach to gain insights into aspects of human-environment intersections. The present study analyzed a qualitative data set on decision choices to visit an outdoor campus area. The aim was to determine whether meanings and significance existed. A total of 140 participants including students, faculty, and administrative staff made a series of choices concerning outdoor spaces that they would visit. Following the interviews, this researcher inspected the most frequented 10 open spaces, as mentioned by the participants, and recorded the physical features that were noted to be related to use of the space. Findings of this study revealed that outdoor spaces between university buildings are focal points in student everyday behavior. Designers of outdoor spaces need to keep abreast of current research in the area of environmental behavior and environmental perception, and many design principles need to be formulated in terms of current knowledge in these fields.

Knowledge of how one perceives the outdoor physical setting in which one spends his or her time may help us understand such things as one’s choices about where to go and what to do there. The perception of a place, or place meaning, can be conveniently thought of as involving at least three distinct sorts of knowledge: knowledge about the place’s objective attributes, knowledge about its affective quality, and knowledge about the behaviors that occur
Environmental psychologists have investigated the knowledge of objective attributes and affective quality of spaces in more detail than knowledge of behavior-space associations (Russell & Ward, 1982). Behaviors are likely to be a significant component of space meaning (Canter, 1977; Canter & Tagg, 1980); for example, deciding to go somewhere typically presupposes some idea of what one can do there.

In environmental behavior research, exterior spaces are sometimes described as “rooms.” The type, frequency, and duration of activities that may occur in these rooms is contingent on their physical characteristics. In recent years, a substantial amount of literature has developed focusing on the study of outdoor spaces and how people use them (e.g., see Cooper-Marcus & Wischemann, 1984, 1990; Gottdiener, 1985; Lefebvre, 1991; Lozano, 1990; Sutro, 1990). Analytic techniques have been widely used in many studies of such spaces as a means of obtaining responses from the public regarding design preferences for the site under study.

Many studies have described a behavioral approach to environmental design (e.g., Abu-Ghazzeh, 1994; Appleyard & Lintell, 1972; Balling & Falk, 1982; Craik & Appleyard, 1980). A search for published literature on how campus open spaces are used has revealed that such literature either is devoted to technical innovations and issues of form (e.g., Association of University Architects, 1972; Schemertz, 1972) or concentrates on the explanation of fiscal issues, education policy, and large-scale planning. There is a paucity of research about how individuals use the outdoor environment in campus settings.

The purpose of this article is to study how individuals perceive the campus outdoor spaces at the University of Jordan (hereafter referred to as the University) and how such spaces support students’ outdoor activities. Although the results of this study are based on the context used, they are expected to contribute to developing methods to study how people perceive and use outdoor spaces in a variety of contexts.

**THE UNIVERSITY OF JORDAN: GENERAL BACKGROUND**

The University (Figures 1 and 2) was established in 1962. About 22,000 students (51% female; 49% male) are enrolled at 14 colleges that include 65 departments. There are nine research centers on campus. The majority of students (87%) are undergraduates. There are about 900 faculty members and around 2,000 administrative employees serving the university population. There are two dormitories on campus, which house about 500 female students.
The University is situated on an area that was originally developed as a botanical field in the early 1950s. During the past four decades, the campus has developed based on a mix of formal planning and ad hoc construction. Figure 2 shows that the campus plan is an arrangement of buildings with spaces created between them. The use of outdoor spaces at the University for circulation, study, relaxation, and aesthetic pleasure deserves attention. The University site, which is about 850 m above sea level, is characterized by a moderate climate with an average daily temperature of about 30°C during the summer months (June to August), 12°C during the winter months (December to February), and 20°C during the spring (March to May) and autumn (September to November) months.

The campus approach. Because of the location of the University in a suburban context about 20 km away from the center of Amman, the majority of students travel to the campus using public transit. Roughly 6% of the students use private cars. Although faculty members can drive onto the campus, students must park outside the campus domain in one of the peripheral parking areas located near the entrances.

The campus can be approached through a number of main and secondary entrances (see Figure 2). There is one main pedestrian gateway—a grand entry (Figure 3) located on the western side of the campus—and two
Figure 2: Site Plan for the University of Jordan
Figure 3: Views of the Main Pedestrian Gateway and the Space Located Between the Gateway and the Forum-Like Place

NOTE: The lack of vehicular entry makes for a highly used and highly imaginative gateway to the campus.
pedestrian and vehicular gateways, one located on the northern side and the other on the southern side.

The formally designated main entrance is the principal entry point to the campus. The lack of vehicular entry here helps to create a highly used and imaginable gateway to the campus (Figure 3). This approach leads to a forum-like space that is connected to a main pedestrian street called Milk Bar Street (see Figure 2). This street serves as the main circulation axis to college buildings and pathways leading to a number of departments. Its axial design, extending north-south, is reinforced by rows of pine trees, creating a boulevard-like setting (Figure 4).

THE ASSUMPTION AND SCOPE OF THIS STUDY

The basic assumption of this article is that user needs regarding campus outdoor spaces should be critical in deciding how such spaces are designed. An important criterion for evaluating the campus design is to ask whether the plan encourages the maximum number of impromptu encounters with other students, faculty members, visitors, books, recreational activities, and activities in which one would not regularly participate.

The scope of the present study aims to explore dynamics of the use of campus outdoor spaces at the University by content analysis of qualitative decision-making transcripts. The following questions were posed to explore experiential dynamics of one’s intentions to visit outdoor sites:

- What are the meanings and values associated with preferred outdoor sites?
- What qualities of landscape and physical attributes infuse an outdoor setting with a sense of place for the user?
- How important are the perceptual characteristics of the outdoor spaces in the context of one’s daily experience on campus?

TOWARD A PHENOMENOLOGY OF OUTDOOR SPACES: REVIEW OF LITERATURE

To answer questions concerning the meaning of outdoor spaces to an individual, this researcher turned to phenomenological analysis of human-environment interaction. Such analyses have begun to redress the prior neglect of qualitative approaches to studying environmental experiences (Wilson & Slack, 1989).
For the purpose of this research, the literature reviewed focused on understanding how individuals experience outdoor spaces and the significance of landscaped spaces in one’s life. As such, this researcher was led to a phenomenological approach to highlight subjective meanings and intuitive descriptions of environmental experiences. Phenomenology explores the things and events of daily experience and emphasizes subjective meanings and intuitive descriptions of the world experiences. Phenomenology explores the things and events of daily experience and emphasizes subjective meanings and intuitive descriptions of the world (Heidigger, 1927/1962; Husserl, 1911/1965; Seamon, 1982).

Studies range from documenting the meaning and significance of architecture (Norberg-Schultz, 1985), place (Tuan, 1971, 1977; Violich, 1985), landscape (Chenoweth & Gobster, 1988), and space (Relph, 1981) to discussing the geography of the life-world (Seamon, 1987). Some of the basic tenets of this work include the notion of being immersed in their world through a multifaceted net of intentions. The studies focus on a “feeling subject” and outline emotional links between person and place.

Seamon (1982, 1987) described dimensions of the person-space relationship by analyzing day-to-day experiences of places, spaces, and environments. He outlined that an insideness-outsideness dichotomy marks the
essential core of space experience. In his analysis, the concept of “at-homeless” captured the sense of possession and the freedom to be, as well as the atmosphere of friendliness and warmth generated by a successful home. Similarly, Norberg-Schultz (1985) captures the concept of dwelling in terms of a sense of belonging and feelings of orientation and identification. He suggested the essence of a place is its “atmosphere” and described the structure of a place in terms of landscape, settlement, space, and character. By anchoring dimensions of the person-space relationship in concepts of meaning and structure, Norberg-Schultz (1980) outlined formal properties of a system of relationships that underlined the genius loci, or spirit of place.

In these phenomenological approaches, the feeling subject reveals a sense of attachment to spaces; they are significant and have meaning to individuals. Concepts such as “at-homeless” (Seamon, 1982), sense of belonging, and identification or genius loci (Norberg-Schultz, 1980) represent dimensions of the person-space interaction. It follows that the meaning of outdoor spaces varies according to the design and landscape of the spaces and the individual. These dynamics highlight the complex nature of environmental perceptions. The relationship of spaces to individuals has often been neglected in the study of outdoor areas. As a result, we have a meager understanding of the constitution of spaces and the ways in which we experience them (Pickles, 1985; Relph, 1976; Schroeder, 1991; Seamon, 1982; Zube, 1984).

To contribute toward bridging the gap between the underlying principles of the phenomenology of space and the real experience of outdoor settings, we turned to studying the factors affecting the perception and use of outdoor spaces at the campus of the University. It was necessary to know what behavior was associated with or anticipated at a given locus, what the physical parameters of that setting were, and the description or preconception that people held of the behavior in that physical setting. To accomplish this, the present study analyzed a qualitative data set on decision choices to visit an outdoor area at the University. The aim was to determine whether meaning and significance existed.

**METHOD**

Participants were recruited by placing notices around campus asking for individuals interested in outdoor space use. A total of 140 participants (including a sample group of 10 participants from each college) were selected. Each sample group included 1 graduate and 6 undergraduate students, 2 faculty members, and 1 employee from the administrative staff. Age,
gender, and place of residence were the criterion for choosing the sample population, and participation in the study was entirely voluntary. The participants ranged in age from 18 to 62.

Participants were about equally divided between males and females. This researcher attempted to balance the gender of participants across all conditions within the study. It was also important to consider the past experience of the participants, including their use of outdoor open spaces and place of residence. A questionnaire was used to collect participant information on age, gender, and place of residence before joining the University. Seventy percent ($n = 98$) of the selected participants lived in urban areas. Generally, urban areas in Jordan are characterized with a limited number of small open spaces containing little vegetation. The majority of 65% of urban dwellers in Jordan live in apartment buildings. They have no access to private outdoor spaces. Thirty percent ($n = 42$) of the participants lived in rural areas prior to their enrollment at the University. Rural areas in Jordan are characterized by residential units that are often surrounded by private outdoor spaces, stretches of farmland, and privately owned fields. In this way, the sample participants differed in their exposure to outdoor spaces and vegetation.

To obtain detailed transcripts concerning outdoor campus settings, this researcher devised a problem-solving activity. Participants made a series of choices concerning outdoor spaces that they would visit. The choices focused on decisions between pairs of site descriptions. This researcher developed a set of 10 site descriptions from a field survey of the University campus. Each description included a sketch map, two color photographs of the area, and text describing the activities and the physical and cultural characteristics of the site. It was preferable to use photographs that included people in order to trigger the responses of participants to the spaces shown in the pictures. Subjects were familiar with the spaces shown in the pictures, and they referred to what they knew about the real places.

The use of photographs as surrogates for field observations is common in studies of perception and judgment of the visual environment. Several studies (Anderson, Zube, & MacConnell, 1976; Coughlin & Goldstein, 1970; Zube, 1974b) have demonstrated that people judge open spaces that they have visited in much the same way that they rate surrogate photographs of those settings. Photographic representations of views have been used, for example, in studies of natural landscape preferences (e.g., Balling & Falk, 1982; Buhyoff, Wellman, Koch, Gauthier, & Hultman, 1983; Propst & Buhyoff, 1980), urban landscape preferences (e.g., Peterson, 1967; Peterson & Newmann, 1969), and inferences based on urban scenes (Craik & Appleyard, 1980). Daniel (1976) observed that the validity and generalizability of studies that use
photographs as surrogates for field observations depend on the ability of photographs to represent the environmental properties of interest (see also Brower, 1988).

Subjects were provided with descriptions of the use of the photographed outdoor spaces. This was determined based on direct observation during a 4-week period in the summer of 1995. Campus spaces were checked at random intervals between 10 a.m. and 3 p.m. During each of these checks, this researcher photographed the people and their activities in each space. This was supported by writing notes about the people and their behavior. Both picture-taking and note-writing were done briefly and unobtrusively so as not to disturb or change the behavior of the outdoor space users. Notes from repeated observations of a space were synchronized to provide a single account of typical use.

A substantial portion of the information that was provided to participants concerning the physical characteristics and landscape of outdoor areas was based on photographs of the environment (cf. Collier, 1967; Davis & Ayers, 1975). The content and quality of the photographs was important. Every effort was made to take photographs that best represented environmental properties of the campus outdoor spaces. The majority of photographs, about 90%, were taken at eye level to show the views and landscapes that people encountered during their normal experiences with the environment (see, e.g., Figures 4 through 6 and 8 through 12).

As shown in Table 1, the site descriptions offered various combinations of design characteristics such as location in relation to nearby buildings, landscape, views of surrounding areas, and sun and shade.

For a paired comparison, all possible pairs of the photographs of the 10 sites were pasted on hard boards. The participants were asked to select one site from each pair that they would visit and which they preferred with respect to physical appearance and space in the photographs. They were asked to give reasons for that choice. They could not, for example, say that they liked both but for different reasons. It was possible that participants recognized two kinds of places, one for meeting and one for privacy, with different criteria for each, and in order to make logical choices they were encouraged to go with one consistent set of criteria.

Participants were also asked to mention which outdoor campus spaces they visited often. All participants were asked to list components or characteristics of the spaces shown in the photographs that they liked. They were instructed to “think aloud” into a desktop tape recorder (for later transcription), expressing all thoughts and feelings that occurred during the decision-making process. Subjects attended five sessions, which each lasted a maximum of 1 hour. Tape recordings of the verbal reports (i.e., protocols)
Figure 5a: Views and Site Plans of Spaces Perceived by Their Users as Front Yards to Their Departments—Home-Based Territories: The Space Adjacent to the Geology Department and in Front of the Chemistry Department

NOTE: See also Figure 15(a).
Figure 5b: Views and Site Plans of Spaces Perceived by Their Users as Front Yards to Their Departments—Home-Based Territories: In Front of the Main Entrance to the College of Administrative Sciences

NOTE: See also Figure 2.
provided a record of the information, contingencies, feelings, and perceptions that the participants experienced during the decision-making process. Transcripts from two decision-making activities and a brief interview were combined to form the data set for this study. In one activity, participants evaluated and made choices between all possible pairs of the 10 site descriptions. This method produced the database information (e.g., Vining & Fishwick, 1988) for this study. The second activity involved a set of hierarchical choices in which participants were given pairs of site descriptions of increasing similarity. This created increased levels of choice difficulty and yielded 30 hours of tape-recorded data (e.g., Vining, Walker, Meistrell, & Fishwick, 1989). Finally, 28 participants (20% of the total participants, n = 140) were interviewed by this researcher at the completion of the sessions. The debriefing interview consisted of open-ended questions focusing on decision-making strategy and what factors influenced choices. Each interviewee was also asked how often he or she engaged in the activities listed in Table 2 at each of the four spaces most visited on campus.

(text continues on p. 782)
NOTE: This space is perceived by the students as the backyard of their college building (see also Figure 2).

Figure 7: View and Site of the U-Shaped Courtyard Space at the College of Engineering
Figure 8:  Tree-Lined Milk Bar Street Is the Social Hub of the University of Jordan

NOTE: Milk Bar Street is exemplified by these views of students congregating. The success of this space is due largely to its location and function as a main pedestrian axis connecting buildings on campus and the presence of high-use student services bordering the street (see also Figures 2 and 10b).
Figure 9: Examples of Eddy Spaces Along the Sides of Milk Bar Street
NOTE: These spaces provide campus users with places to stop and chat with a friend or watch the passing crowd.
NOTE: The Commercial Center Building houses a cafeteria, a post office, a bookstore, and a small supermarket. Male students prefer this place for sitting and watching the passersby. Generally, male students are the predominant users of exposed positions for obvious people-watching (see also Figure 15[b]).

Figure 10b: Site Plan of the Stretch of Milk Bar Street That Passes in Front of the Commercial Center and Adjacent to the Main Restaurant

Figure 10a: Students Sitting on the Steps of the Commercial Center Building
Figure 11: Students Sitting Along the Stretch of Milk Bar Street That Is Located Adjacent to the Main Restaurant and in Front of the Commercial Center

NOTE: This place provides students willing to sit in a highly visible location an opportunity to congregate, socialize, and watch other people.

Figure 12: Milk Bar Street Is Important for Psychosociological and Perceptual Orientation. Left: The Pathway Connecting Milk Bar Street to the College of Liberal Arts. Right: The Pathway Connecting Milk Bar Street to the Geology Department and the College of Science

NOTE: See also Figure 2.
Each interviewee was also asked to list five activities that he or she would most like to do in the space, where he or she came from to arrive at the space, and what he or she liked most and least about the space.

Following the interviews, this researcher inspected the reported 10 most frequented open spaces and recorded the physical features that were noticed to be related to one’s use of the space including location with respect to buildings on campus and/or major pedestrian traffic ways, landscaping, comfortable seating, presence of shade, visual access, and privacy (cf. Altman, 1973; Appleyard, 1973; Hesselgren, 1975; Parks & Thrift, 1980; Zube, 1974b).

### TABLE 1
Features of Outdoor Spaces at the Campus of the University

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Environment a</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Forum</td>
<td>Water, sitting places, green lawns, trees, circulation node, views of surrounding areas (see Figure 2)</td>
<td></td>
</tr>
<tr>
<td>2. Front area to college/department building</td>
<td>Trees, steps for sitting, views of circulation routes (see Figures 2 and 6)</td>
<td></td>
</tr>
<tr>
<td>3. Milk Bar Street</td>
<td>Sitting places, dense rows of trees that provide shade, eddy spaces for social gathering (see Figures 2, 4, and 9)</td>
<td></td>
</tr>
<tr>
<td>4. Communal gathering place in front of the Commercial Center</td>
<td>Sitting places, dense rows of trees that provide shade, views of pedestrian circulation between the northwest and southeast areas of the campus (see Figures 2, 10, and 11)</td>
<td></td>
</tr>
<tr>
<td>5. Wooded area</td>
<td>Dense trees, shade, places appropriate for studying (see Figures 2 and 14)</td>
<td></td>
</tr>
<tr>
<td>6. Areas located in the back of college/department buildings</td>
<td>Quiet landscaped areas, trees and shade, views of other campus outdoor places and/or buildings (see Figures 2 and 7)</td>
<td></td>
</tr>
<tr>
<td>7. Courtyard space in some college buildings</td>
<td>Green lawn, trees and shade, sitting places, places appropriate for social gathering (see Figures 2 and 7)</td>
<td></td>
</tr>
<tr>
<td>8. Front steps to college/department buildings</td>
<td>Sitting areas, trees and shade, views of pedestrian circulation route(s) to watch incoming and outgoing activities to buildings (see Figures 2 and 6)</td>
<td></td>
</tr>
<tr>
<td>9. Eddy spaces along circulation routes</td>
<td>Sitting places, trees and shade, people watching activities (see Figures 5 and 15a)</td>
<td></td>
</tr>
<tr>
<td>10. Green lawns</td>
<td>Sitting places, studying opportunity, views of surrounding areas (see Figure 16)</td>
<td></td>
</tr>
</tbody>
</table>

a. See Figure 2.
The first step of the data analysis was to transcribe the tape recordings into verbatim descriptive accounts of participants making outdoor space decisions. These accounts were reviewed by this researcher with the intention of “seeing through the particulars to discover what were essential” (e.g., ideal typical) elements of the campus outdoor spaces. The transcripts were then reviewed to derive the general experimental structures and patterns. These analyses were facilitated by transferring all of the transcripts into a text database and labeling segments of the text according to the sites, choice pairs, and number of participants. The database allowed this researcher to manipulate the transcripts to analyze numerous sets or views of the text, highlighting specific patterns, and revealed dimensions of the person-space relationship. For example, participants making the choice between Site No. 1 and Site No. 4 (see Table 1) were analyzed within the same view. In this way, this researcher ascertained the essential elements of specific sites as identified by the participants. Similarly, all choices involving each participant were placed together in the same view to identify the essential elements (e.g., attraction to landscape) that occurred throughout their decisions.

### TABLE 2
Activities That Interviewee Engaged in at Each of the Spaces Most Visited on Campus

<table>
<thead>
<tr>
<th>Space location and/or name</th>
<th>Number of Times (please specify: daily, weekly, monthly, or per semester)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Arrange to meet someone there</td>
<td>folio</td>
</tr>
<tr>
<td>(b) Eat lunch there</td>
<td></td>
</tr>
<tr>
<td>(c) Walk through it</td>
<td></td>
</tr>
<tr>
<td>(d) Stop there to talk with someone</td>
<td></td>
</tr>
<tr>
<td>(e) Study or read there</td>
<td></td>
</tr>
<tr>
<td>(f) Receive a notice or a pamphlet there</td>
<td></td>
</tr>
<tr>
<td>(g) Show the space to a visitor as being a symbol of the campus</td>
<td></td>
</tr>
<tr>
<td>(h) Go there to “hang out”</td>
<td></td>
</tr>
<tr>
<td>(i) Play games there</td>
<td></td>
</tr>
<tr>
<td>(j) Purchase something from a vendor</td>
<td></td>
</tr>
<tr>
<td>(k) Other (please explain)</td>
<td></td>
</tr>
</tbody>
</table>

DATA ANALYSIS

The first step of the data analysis was to transcribe the tape recordings into verbatim descriptive accounts of participants making outdoor space decisions. These accounts were reviewed by this researcher with the intention of “seeing through the particulars to discover what were essential” (e.g., ideal typical) elements of the campus outdoor spaces. The transcripts were then reviewed to derive the general experimental structures and patterns. These analyses were facilitated by transferring all of the transcripts into a text database and labeling segments of the text according to the sites, choice pairs, and number of participants. The database allowed this researcher to manipulate the transcripts to analyze numerous sets or views of the text, highlighting specific patterns, and revealed dimensions of the person-space relationship. For example, participants making the choice between Site No. 1 and Site No. 4 (see Table 1) were analyzed within the same view. In this way, this researcher ascertained the essential elements of specific sites as identified by the participants. Similarly, all choices involving each participant were placed together in the same view to identify the essential elements (e.g., attraction to landscape) that occurred throughout their decisions.
In the next phase of analysis, this researcher attempted to recognize the participants’ intention toward outdoor campus spaces by examining how each described and gave meaning to their unfolding decisions. Reconstructing the “world” of each participant was done in an attempt to disclose the phenomenon of outdoor campus spaces, their meanings and interpretations, as well as to explore the underlying behavioral and experimental structures of spaces that influenced each participant’s choice.

To discuss the results of this study and their implications for campus design and research, the following questions were posed: To what extent were the uses of outdoor spaces related to the campus design? What did the findings reveal? To what extent do the observations and findings conform with findings of established research in environmental-behavior and environmental perception?

RESULTS

In making decisions concerning which site to visit, the participants described their feeling toward different types of environments. Initially, they described the campus outdoor spaces in terms of activities that they would pursue and their decisions were relatively abrupt. They probed aspects of recreation choices that they had previously taken for granted by outlining the various factors that influenced their decisions in detail. All of the participants were able to articulate their feelings and had a sense of place in the outdoor settings.

This researcher asked participants exactly what attracted them to specific places. An overriding pattern was an attraction to outdoor social interaction and/or landscape. In many instances, participants associated activities such as socializing, sitting, people-watching, and studying to the presence of landscape. The choice was justified in terms of the greater variety of activities and scenery available at the various sites.

There are a greater number of people, along Milk Bar street which may be the reason that I go to group gathering places.
I prefer site number 5 [the wooded area, see Table 1] because it has dense trees; I feel as if I am in the woods.

Each interviewee was asked, “What three words would you use to describe Milk Bar Street?” (the most active place on campus). Responses to this question shed light on the different images of Milk Bar Street held among the participants; 80% of the students saw it as an attractive, exciting, and
entertaining place, whereas only 37.5% of faculty and administrative staff shared this view. Although the majority of students (85%) were attracted to crowded pedestrian spaces on campus, a small minority (20%) of faculty and staff members liked such spaces. For example, 80% of faculty and staff mentioned that the limited number of properly located sitting places along Milk Bar Street (see Figure 2) and in front of the Commercial Center, along with the desire of some students to sit on the steps of buildings and along the curb stones of the sidewalks in exposed positions for people-watching (see, e.g., Figures 8, 10, 11, and 15[b]), hindered the circulation of pedestrians using such areas as a pass-through space.

Considerable numbers of students (90%) and staff (87.5%) perceived the natural qualities of the campus to be green with a park image. For all participants, the campus was a social setting and they were positive about its arrangement, however, on further reflection, participants suggested that there was more to the presence of trees and the surrounding atmosphere. Often, the participants realized that they took the attractive and soothing effect of greenery for granted when they chose to visit an outdoor space even though they could not partake in some of the activities.

Figure 13: View of the Cafeteria Located Opposite the Main Restaurant Building
NOTE: The location of this cafeteria along Milk Bar Street, with its outdoor seating, gives many people, particularly women, an excuse to be in this public place while at the same time reading, studying, or watching the crowd go by.
It is beautiful that there are trees in the area located at the back of my college building, because when it is sunny I guess, in my mind, the greenery and shade is a very natural soothing thing, an escape, a retreat.
I want to say because it’s nice to look at to; however, I think it is something more than that and I don’t know what it is . . . probably just the beauty.

The attraction to landscape and social interaction were the clearest patterns during the content analysis. The majority of individuals searched for relatively congregational environments. Accordingly, the presence of facilities such as the Student Affairs Building, the Main Restaurant, and the Commercial Center pleased them and provoked positive feelings.
The next pattern divided the participants into two distinct groups: those that preferred natural features and those that preferred the urban aspects of some parts of the campus. For example, the presence of sitting areas reminded participants in the latter group of the types of places that they were
Figure 15: Observations on the University of Jordan Campus Indicate That Women (15a) Are Much More Likely to Seek Out Edges, Corners, Physical Props, and Less Prominent Positions for Sitting Than Men (15b)
trying to find. In reality, all participants would choose both kinds of spaces: urban areas and remote natural places (maybe at different times, certainly for different purposes). These thoughts were echoed when participants noticed other outdoor furnished areas (provided with sitting benches, shade devices, and the like) near college buildings.

Consistently, participants in the latter group chose spaces that offered them a chance to get together. In turn, factors such as the size of the space, the presence of sitting opportunities, and the type of landscape became important in their decisions as this influenced their opportunity to socialize with other people.

What I like best about site number 3 (Milk Bar Street) is that it has the option of walking into a recreational site. . . . You are going to separate the people who are out there with the intention of bringing all the conveniences of the city into the woods and people that want to get away from it all.

Some graduate students mentioned that they would do their utmost to find remote areas (e.g., natural environment) on the campus in an attempt to be surrounded by a quiet atmosphere for study.
Site number 5 looks more attractive. . . . You can easily find quiet places. . . . It gets you away from the classroom environment.

For several individuals, the possibility of being able to get away from people and be alone was appreciated.

I know if I am going to a quiet place with dense trees I will feel relaxed . . . even if it ends up being an hour walk by myself. . . . I’ve found lots of neat things . . . I’ll go there and find a secluded spot where I can lay down in peace.

As previously mentioned, however, this desire to get away from crowded outdoor areas was not the same for all of the participants. The majority of participants (about 77%) searched for the urban aspects of the campus—outdoor spaces that were located between buildings and along circulation routes. These quotes indicate how the same attributes of the environment produce very different reactions from participants. The differing reactions were explained by the set of criteria participants chose to use and, in part, by the participants’ past experience of outdoor space use. In reviewing the transcripts of the participants who preferred the urban aspects of some campus sites, such as the areas that were located in front of the college and department buildings, it became clear that they had limited previous experience with urban outdoor recreation settings. Throughout their decisions, the only reference to similar environments was in the context of picnics. They often evaluated the campus, especially the spaces between buildings, in terms of how it suited all groups or in terms of what they themselves may do. Furthermore, they read the text verbatim, rarely requesting additional information and made few, if any, inferences from the text.

In stark contrast, participants who were raised in rural areas made many inferences from the text and site descriptions and requested more information on specific aspects. In addition, they continually referred to previous outings in similar environments. These experienced participants indicated that they felt “comfortable” in the outdoors. In these transcripts, the voice of the “wood lovers” came through often linked to “the change of mind” that this environment evoked and the feeling of “escape.”

For me going to the wooded area is getting away from everything . . . . It’s just like retreating. . . . When I go walking through the campus wooded area I like to think of things in my mind. I usually go by myself, it’s a romantic sort of thing. I like to go by myself to just get away from things and have basic thoughts.
For the majority of 80% (n = 112) of the participants, a unifying theme in their decision was the sense that a campus outdoor recreation space meant doing something different from the “academic life-as-usual.” In deciding which space to visit, they searched for uniqueness combined with activities that they liked to pursue.

In summary, at first glance, participants assessed outdoor campus spaces in terms of activities and/or landscapes, however, a more in-depth analysis revealed that campus outdoor spaces were sensed as a combination of settings, landscape, people, personal experiences, and in the context of other spaces. An important dimension was past experience with certain types of environments that might in turn lead to a sense of belonging to that type of space. Participants who expressed “feeling at home” in the wooded environment strived to escape elements of the city and searched for areas where they could get away from all development.

Results of this study support the findings of previous research pertaining to variations in one’s preferences to the environmental characteristics of outdoor spaces. For example, Lyons (1983) explained, based on her study of demographic correlation of landscape preference, that participant differences in age, gender, and residential experience were found to contribute significantly to differences in landscape preference rating. Zube (1974a) found that the factors that most consistently explained variations in landscape preference were landscape exposure as a child, occupation, and place of residence (cf. Daniel & Boster, 1976). Duncan (1973) showed that patterns of landscape taste correlated with social class (Burch, 1977; Cheek, 1972). Lukashok and Lynch (1973), Moore (1979), and Tuan (1974) explained the influence of one’s unique set of experiences on his or her preference to landscaped outdoor environments. One’s perception of the design and landscape of outdoor spaces must be examined in part as a function of one’s attributes and background.

With a large adult sample size and detailed information about participant attributes and backgrounds, research could trace the effect of early human exposure on the development of individual preferences and attitudes toward the environmental characteristics and use of outdoor spaces. This is expected to have vast implications on the planning and design of outdoor environments in societies of various cultures.

Individual use of campus outdoor spaces at the University, typified by interaction with landscapes, showed clear patterns of different behaviors by specific age and gender groups, occupations, and social classes. Chemers and Altman (1977) argued that a wide range of variables are connected in a complex interacting system including the physical environment, cultural and
social processes, environmental perception and cognition, behavior, and products of behavior. To design urban and recreational outdoor spaces, there is a need to introduce models for the integrated study of culture and environment. The need for more research along this line is clear.

**IMAGES AND THE CAMPUS OUTDOOR SPACES: A CONCEPTUAL FRAMEWORK**

Cooper-Marcus and Wischemann (1990) studied the design of outdoor spaces in a number of campuses in the United States and made observations about how people use such spaces. Their observations were related to the location and design of some areas that were present adjacent to specific buildings and how this affected one’s use of campus outdoor spaces. To explore the images participants had of the campus outdoor spaces at the University, a test was completed to determine whether the observations made by Cooper-Marcus and Wischemann also applied to its outdoor environment.

To study how students perceived the campus spaces that were located adjacent to college buildings, we started with the notion suggested by Cooper-Marcus and Wischemann (1990) that all members of the university population had a work area or “home base” around which their daily campus activities rotated. Each participant was asked to indicate on the campus map which building or other space(s) he or she would consider a home building or base; about 85% (n = 119) felt that they had a home base.

The feeling that one belonged to one spot was compelling. Most students adopted a place to which they returned daily. The home base was usually the participant’s major department. Given this psychological need to have a “home away from home,” it may be useful in planning the spaces around campus buildings to look on such buildings as “houses” and the adjacent outdoor spaces as having some element of “front porches” (see Figures 5 and 6), as well as front and back “yards.” The true common areas of the campus are in between these home-related spaces.

*The front porch.* The front porch of a campus building at the University offered an important physical and psychological transition from the campus as a whole to a specific department or college. Great concentration of use was noted outside the main entrances of many buildings (see Figure 6). Based on interviews with students, it was found that what they most needed, which was lacking in the outdoor spaces located adjacent to or in front of many college and department buildings, were more casual places with comfortable seats.
and tables where they could study and eat. This would be an excellent concept to emulate on campuses in Jordan and perhaps in other regions where weather conditions are conducive to outdoor use during much of the academic year. However, in regions with cooler weather throughout much of the year, it is comforting to users when a sun trap is fashioned by the arrangement of a building’s walls, doorways, planting, seating, and so forth to create as sheltered a spot as possible.

The front yard. The pedestrian orientation of the University campus suggested the notion of a front yard. Most campus users walked between buildings. The weather is conducive to outdoor studying, relaxing, and socializing during much of the year, therefore students were able to develop a gradual daily familiarity with the campus outdoor spaces and a sense of home territory, as evidenced by this researcher’s finding of a great majority of campus users feeling comfortable with a particular “home turf” (Cooper-Marcus & Wischemann, 1990). The size of the home turf ranged from just the immediate surroundings of their home base building to a large adjacent segment of the campus (see Figures 5 and 6). It was noted that users of the campus outdoor environment became attracted to an area because they used it as a resting place, as well as a pass-through space; that is, they became familiar with its sights, sensations, and visual images while sitting, relaxing, eating, or conversing.

The back yard. The U-shaped courtyard space (see Figure 7) in the College of Engineering (enclosed on three sides by the building it serves) was used as one would use the back yard of a house. It was the place where the students at the College of Engineering (housing the departments of architecture and civil, electrical, mechanical, chemical, and industrial engineering) felt at home and returned each day to meet friends or just relax. People came out singly and in pairs to sit on the peripheral benches. Although not the most attractive spot on campus, it was at least quiet. Clearly, this semiprivate courtyard space was important to the sense of community in the College of Engineering. Consideration of comfort (e.g., warm spots and shade) and function (e.g., seating, study, and conversation) in such spaces certainly needs to be carefully addressed.

Based on the results of the test pertaining to the images people had of outdoor spaces located adjacent to specific buildings at the University, it could be concluded that, with respect to some specific differences in gender attitudes toward the use of campus outdoor spaces, the observations of Cooper-Marcus and Wischemann (1990) applied to the University.
**Major uses and users: Milk Bar Street.** With the exception of the main grand pedestrian approach (see Figure 3), entries to the University campus did not provide the desired subspaces for such activities as waiting, eating, casual studying, and perusing notices. In comparison, the tree-lined Milk Bar Street provided for such opportunities. It attracted many users including undergraduate and graduate students and faculty members from all corners of the campus. Milk Bar Street was the social hub of the University campus (see Figure 8).

This space served a multiplicity of users and activities and seemed to serve them all well. Its design created a promenade for thousands of students who used this street each day (see Figure 4), particularly those who traveled from college buildings located at the southern portion of the campus and headed for the Central Library and college buildings located toward the northern zone. If this axial route was envisaged as a river, then the trees, steps, and benches on either side created eddy spaces just out of the mainstream, where it was comfortable to stop and chat with a friend or watch the passing crowd (see Figure 9). The availability of a number of service buildings and the main restaurant along this street enhanced its popularity.

The area of Milk Bar Street that stretched in front of the Commercial Center (housing the post office, a small supermarket, a bookstore, a cafeteria, and adjacent to the main restaurant) (see Figures 2 and 10) was considered by all interviewed users as common turf. It was the space where the denizens of all buildings or precincts could feel equally comfortable. One reason for the popularity of this space was its central location on campus and because it was bounded by spaces that generated a high degree of use throughout the day. This stretch of Milk Bar Street was the “core setting” of the campus. It was the behavioral focal point from which one could observe the greatest variety and number of campus users. It was also the place where most of the University news could be heard. People were attracted to this core setting because it was where most of the action was. Campus designers and planners might follow this plan in deliberate efforts to create behavioral focal points.

Looked at more closely, Milk Bar Street encouraged use by people with subtly different needs. Both male and female students watching the passersby often sat on the steps of the Commercial Center (see Figures 2 and 10). Male students often clustered at lunchtime in highly visible locations near the main restaurant building (see Figures 8 and 11).

Major pedestrian flows passed through Milk Bar Street during the day, therefore people became familiar with it, saw it in its different seasonal moods, and gradually appropriated this space cognitively (cf., Kaplan & Kaplan, 1982). The “parade” of passersby was also important; those who came to people watch or wait for a friend had plenty to observe. Milk Bar
Street was an important sociopsychological and perceptual orienting device (cf. Korobkin, 1976; Montgomery, 1971; Zeisel, 1973), hence pathways of the University campus naturally focused on it (see Figure 2), bringing many people to this space (see Figure 12).

The location of the cafeteria with outdoor seating along Milk Bar Street and across from the main restaurant (see Figure 2), within view of the pedestrian flow, gave many people a needed excuse to be in this public space while at the same time reading, studying, or watching the crowd go by (see Figure 13). Women seemed to need such an excuse more than men did. When asked what additions on the University campus would enhance outdoor study, three quarters of those questioned cited “benches or tables.” It was noted that outdoor tables were rarely provided. It seems that tables are rarely specified by designers as useful furniture for outdoor study.

Milk Bar Street functioned as a stage where some came to “perform” (e.g., walk by, give speeches, hand out literature) and others came to watch and perhaps to be watched (see Figure 11). Thus, it accommodated two basic activities—passing through and stationary behavior (e.g., sitting, studying, waiting, eating, watching). Its design allowed these two activities to proceed without impeding each other.

Vegetation. Graduate students tended to sit on the wooden benches beneath the trees that are spread around this area and extend onto the hillside (Figures 2 and 14) located across from the main restaurant. This wooded area was characterized by a dense growth of mature pine trees that were very old, gnarled, and added a sense of history. There were several pathways that passed through this area and made it accessible to students seeking a quiet place to sit and study or contemplate. This natural, park-like setting was cited by most of the senior and graduate participants as their favorite space on campus. It was a convenient, visible, and shady place.

A large number of studies have dealt with individual preferences for vegetation in landscaping. Almost unanimously, these studies have shown that vegetation was one of the most powerful elements in enhancing personal preferences and that trees and vegetation played a special role for people (De Groot, 1992; Francis, 1982; Kaplan, 1983; Naveh & Lieberman, 1993; Ulrich, 1981; Vining, Daniel, & Schroeder, 1984).

Although there were some sitting places provided along the Milk Bar Street, eddies for less prominent seating seemed to be insufficient. Observations indicated that Arab women were much more likely to seek out edges, corners, physical props, and less prominent positions for sitting than were Arab men (see Figure 15[a]), with Arab men being the more predominant users of exposed positions (see Figures 6, 8, 9, 10, and 15[b]), such as a set of
steps, for obvious people-watching. This supports Macia’s (1979) finding that there are differences between males and females in their use of outdoor spaces, therefore there is a need to provide a variety of locations for sitting.

Communal gathering places. Each campus community seems to need a place where friends meet, displays are placed, and people come to watch other people or just to relax between classes (cf., Cooper-Marcus & Wische-mann, 1990). The nature of these spaces at the University campus varied greatly from the grand linear space of Milk Bar Street to the open space with grass and trees in front of the building that housed the Biology Department and a number of smaller spaces that were contained between buildings and in front of many departments (see Figures 2, 5, 6, 9, and 15[a]).

One’s perception of the University campus depended on the landscape of open spaces. They laced the campus voids: walkways, pathways, plazas, lawns, sitting areas, hillsides, front yards, back yards, courtyards, entries, and stairways. In the mental maps of users, it was these open spaces, rather than the buildings scattered between the spaces, that were most remembered. They were the places where people congregated to walk, talk, study, and relax. It was these places that people used and in which they encountered each other: where students, faculty, and employees met, enjoyed, and participated in that communal life we call “university.”

Favorite outdoor spaces. The University campus was a good example of an urban area in Amman where pedestrians predominate and usually have the right-of-way, and it was a unique milieu in which the rural and the urban were pleasantly juxtaposed (see Figure 1). Most participants interviewed enjoyed having easy access to both types of environments, although the majority voted for the protection of open spaces. Judging the campus to be pleasantly balanced, they feared the encroachment of the continuous expansion of university buildings, parking lots, and urban sprawl.

The fact that virtually every respondent was able to indicate a favorite outdoor space pointed to the importance of diversity in the design of outdoor places. What seemed to be common to all of these favorite spaces was that the natural elements (e.g., trees, shrubs, grass) formed their boundaries, sometimes largely or totally blocking out the presence of nearby buildings and roads.

It was clear that the activities engaged in at the campus outdoor spaces were essential to alleviate stress among students and university employees, rendering the intensity or boredom of classes and office work more tolerable. This suggested that, in a setting such as a university campus with a fairly wide range of users from young freshmen to professors and staff close to retire-
ment, favorite spaces may need to span a range from active/urban to passive/natural and large open lawns or hillsides to secluded spaces.

**DISCUSSION**

The results of this study indicated that the decision-making activity induced the participants to reveal feelings and intentions concerning specific environments. The setting, landscape, and personal experiences linked together to produce a solid environmental image as suggested by Lynch (1960). For example, participants who were raised in rural areas were able to give vivid descriptions of the landscaped areas that they would visit such as the types of trees and shapes of flower beds and then make inferences from the text as to what they would be able to do at specific sites. The responses of participants who mentioned that they would feel totally surrounded by nature reflected Heidigger’s (1971) notion that dwelling means to be at peace in a protected place, as to be at peace and relax were the most often cited reasons for choosing quiet areas. This encompasses Norberg-Schultz’s (1985) notion of specific places as retreats and concurs with Wilson and Slack’s (1989) findings of tranquility and protection from external pressures as basic qualities identified by users.

The lack of personal experience and routine at campus sites by freshmen combined to make environmental image-making difficult during the decision-making process of visiting outdoor places. These individuals (particularly the female participants) expressed concern and a feeling of being strangers away from the department buildings in which they attended the required freshmen courses. To overcome this feeling, they often chose to use outdoor spaces that were located adjacent to these buildings, for example, the front porch/yard, back yard, and courtyard. Relph (1976) noted a similar phenomenon with individuals going camping who had little sense of places that they visited and who preferred to take part of their “home” with them, which insulated them against the strangeness of new and different spaces.

Qualities of landscape that infuse the University outdoor settings with a sense of space differed across individuals. Accordingly, the notion of campus outdoor space for recreation may be misleading. The sense of space was not always in terms of recreation; it varied from a place of solitude and retreat to a place to meet other people and/or watch the crowd. The sense of space, in turn, influenced the expectations that the participants held regarding the sites. Some searched for natural aspects, whereas others searched for urban aspects. This has implications for designers who are attempting to respond to
the needs and wishes of users of urban outdoor spaces. In larger communities, it is possible to set aside areas that could please both individuals seeking solitude and pristine nature and those who prefer social interaction in outdoor areas, however, it may not be possible to provide both areas in a small neighborhood. Designers may then decide to compromise between the two extremes (thereby pleasing no one) or decide which type of urban space to create. Additional research should address the plausibility of these policy options.

The differences in perceptions of freshman students, graduate students, and other user groups (i.e., junior and senior students, staff and faculty members) to the campus outdoor spaces has implications for future research. A fruitful avenue of future research could be to investigate the qualitative dimensions of the influence of past experience of outdoor space use on environmental perception. This study gathered responses of one group of individuals—the users of the campus outdoor spaces at the University. The decision-making activity could incorporate more contexts and settings, as well as include in-depth assessment of their past experience.

TOWARD PUBLIC PARTICIPATION IN ENVIRONMENTAL DESIGN

Decisions pertaining to the design of the physical environment in Jordan are centralized with responsibility lying with government planning authorities. The concept of “people participation” in environmental design does not exist in Jordan.

For example, when developing and designing public outdoor spaces in institutional contexts (such as the University) decisions that are related to the planning and design of the outdoor environment are made by a professional authority, that is, the engineering office at the University, and the users do not participate in this process. Thus, decisions that are related to physical-ecological, functional-behavioral, and aesthetic-visual factors are often left to the designer. In dealing with such considerations, designers of outdoor spaces tend to impose their own judgment instead of considering the preferences of the expected users; in other words, they base their decisions on an a priori export-judgment basis (e.g., Appleyard & Lintell, 1972; Carson, 1972; Lansing & Marans, 1969; Peterson, 1967; Sanoff & Sawhney, 1972) and sometimes make naïve assumptions about user preferences with questionable relevance (Abu-Ghazze, 1996a; Carp, Zawadski, & Shokrkon, 1976).
Armstrong (1993) observed that the individual has a natural right to take part in decision making regarding his or her own situation with both psychological and social needs to feel that he or she has influenced his or her own life-conditions. He explained that decisions become better when the persons who are affected become a part of the decision-making process. Kjaersdam (1988) explained that, based on the Danish experience of involving the ordinary citizens in making decisions that are related to planning the physical environment, the inclusion of the public has had a considerable effect on identifying issues and needs, as well as on the solutions and choices that were included in the plans. This was obtained and affected by arguments that were expressed in public debates, therefore a collective awareness of and expectations from the plans were created, which made plans more stable and effective.

There is a need to introduce environmental design processes that will allow ordinary people to participate in making such decisions in Jordan, as well as in other countries that do not currently involve the users in such decisions. Moreover, it is important to mention that findings of this study (and other studies in the area of environmental behavior research) are expected to make designers better able to “predict” what works and what does not—in other words, to anticipate needs and so reduce the need for consultation. If designers are not familiar with studies in environmental psychology, they are anticipated to miss important information about user behavior and user preference. Such information is expected to be important in supporting designers’ knowledge about what works and what does not in their own field of study.

DESIGN IMPLICATIONS AND RESEARCH RECOMMENDATIONS

Findings of this study illuminate that the environmental quality of the campus outdoor spaces at the University consist of three major components that have implications and need to be considered in the design of outdoor spaces in the campus environment, in particular, and in the design of urban outdoor places, in general. These include the following:

- Physical and ecological quality—the natural environment characteristics.
- Behavioral and functional quality—interactions between human behavior and physical setting. This component comprises the density or comfortableness of a sitting space, the availability of amenities such as food and drinks, and the degree of interaction with adjacent buildings and/or spaces.
• Aesthetic and visual quality—visual preference based on visual sensation. This is the most important aspect of aesthetic-visual quality of outdoor spaces (see, e.g., Lefebvre, 1991).

Our knowledge of the way people perceive the outdoor environment can be applied to environmental planning. Lang, Burnett, Mole Ki, & Vaihon (1974) (see also Moore, 1979; Parks & Thrift, 1980) pointed out that many design objectives are visual and many basic design principles have been influenced by psychological theories of environmental perception. Therefore, designers need to keep abreast of current research in the area of environmental perception, and many design principles need to be reformulated in terms of current knowledge in this field. A greater understanding of the process through which one perceives the physical environment would help to improve the quality and effectiveness of outdoor space design.

Recent psychological knowledge of the way one perceives the physical environment suggests that different people perceive settings in different ways (Russell & Pratt, 1980) and that people prefer environmental settings that both offer them the opportunity to acquire additional information and help them to make sense of the environment (cf., Abu-Ghazzeh, 1996b; Garling, Book, & Lindberg, 1986). Environmental perception provides the basis for human knowledge about the world, and this knowledge is essential to the student’s ability to function effectively in the campus environment. Environmental perception helps campus users manage their communication and social interaction with each other, identify important features of their everyday environment, and enjoy the aesthetic experiences.

Environmental perception of the campus outdoor spaces is closely tied to human activities (Deasy, 1974; Duvon, 1966; Manning & Coleman-Boatwright, 1991). The way users perceive the campus environment will, over time, become tailored to the unique characteristics of the particular environmental setting where they habitually function, therefore designers of the campus environment need to be equipped with knowledge of the way that users perceive it. Such knowledge can be applied to the design and development of the campus environment and make it clearly and efficiently perceived by its users; thus, an optimal balance between visual simplicity and visual complexity can be achieved.

When planning changes or additions to an existing campus, it is important to conduct some form of post-occupancy evaluation (e.g., Yin, 1984) so that student and employee views can be gathered and analyzed and details of outdoor use can be documented.

Campus outdoor areas ought not be treated as leftover spaces. Careful consideration should be given to the overall placement of buildings,
protection of special spaces, location of entrances and main plazas, and detailing of building entries and outdoor study spaces.

In campus planning, as in any other form of site planning, it is important to include the expected users in the decision-making process pertaining to the environments under consideration. Also, professionals whose focus is the outdoors, that is, landscape designers, need to be involved from the start, pressing for front porches, aware of the need for common turf, sensitive to the protection of special spaces, and skilled in the use of vegetation and design and the placement of site furniture to enhance the full use of the outdoors for study, relaxation, contemplation, socialization, and recreation.

Findings of this research become useful when one looks at their relevance to environmental design disciplines in general and to campus design in particular, and how they can contribute to a better understanding of human behavior in the designed environment. One design application relates to the arrangement of elements in space.

Behavior is an important part of the meaning that people attribute to outdoor spaces. Subjects distinguished outdoor spaces at the University, at least in part, on the basis of related behavior, however, their perception of spaces was substantially related to their global cognition of the campus arrangement.

There were distinct aspects involved in the behavioral component of outdoor space meaning at the University. Subject perception of spaces differed depending on whether the participant considered the various behaviors expected to occur in the space, its suitability for these behaviors, their reasons for going there, or their activities while there. An intriguing implication is that, although designers often do not expect a certain behavior actually to occur in a particular place (e.g., Figures. 8, 10, 11, and 15), suitability for that behavior may carry certain undertones that make the place either more or less alluring. The findings of this study regarding outdoor space specificity of behaviors versus behavioral specificity of spaces are worth emphasizing. Some behaviors, such as sitting, were associated with almost any outdoor campus space, whereas others, such as studying, were associated with specific quiet areas. Using the concept of space specificity of behavior can aid the designers of outdoor spaces to predict the sets of everyday behaviors that may occur in a particular outdoor environment. Another point concerning behavioral specificity of outdoor space is that it may strongly influence space selection by users. All other things being equal, a person may prefer to choose an outdoor space with many behavioral associations rather than one with few (one reason being that if execution of the individual’s “action plan” is thwarted, there are more alternatives in the former than in the latter).
More research concerning factors that affect the perception and use of outdoor spaces in a variety of campus design examples is needed before one can suggest guidelines that can be generalized and applied in the design and/or development of university campus sites.

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