

# Educating by Design

## Creating Campus Learning Environments That Work

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### Ch. 1, Physical Environments *The Role of Design and Space*

#### Scenario: The Campus Visit

The Carter family--Joe, Dorothy, and son Eric--picked up their rental car after landing at Mountain International Airport and started on the forty-mile trip to Mid-Rocky University (MRU). The occasion for their visit was twofold: to attend Dorothy's niece's graduation later in the day and to visit the admissions office for a campus tour as Eric is thinking about attending MRU.

They found the interstate to MRU without a problem. As they approached the community of Redville, the home of MRU, they began to look for signs directing them to the university campus. The first sign indicated that the next three exits would lead to the university stadium. While discussing the question of whether the university stadium exit would be the same as the university exit, they missed the first exit. The first exit went by so quickly, that when the second exit came up they decided to take it. At the top of the exit ramp the sign indicated that the stadium was to the left. After going several miles without any additional signage, they discovered that they were in an area that resembled a university. On further inspection at the next stoplight, they noticed a faint Mid-Rocky University sign embedded in a concrete pillar. They also saw a directional sign with the word Visitor on it. They appeared to be in luck and faithfully followed the next three visitor signs assuming that they would lead to the admissions office, a welcome or information center, or at least to a visitors' parking lot. But after obeying four directional signs they found themselves at a dead-end in front of the university's power plant.

After asking a few people for additional directions, they backtracked and eventually found a visitors' parking lot. After examining MRU's you-are-here map (located in a faculty parking lot), they discovered the admissions office was at least nearby. After being confused by the sign outside the admissions building, they finally entered to find the admission office located on the second floor of the building. At the top of the two flights of steps they were not at all sure they had found the correct admissions office because the signage seemed to suggest that it was admissions for the university's graduate school. They were correct, however, and so they acquired the needed information about MRU, a college catalogue, and the admissions application material.

Next on the Carter's agenda was a quick self-guided campus tour. They wandered through several buildings just to get a feel for the campus. They noted that the buildings, while showing some age, were well kept and that there was very little litter around the grounds or inside the buildings. Dorothy, a professor herself at a large land-grant university on the East Coast, peeked into several classrooms. She found what she had become all too familiar with--large classrooms with the seats bolted down in rows with an elevated lectern some distance from the first row of students. In the Education building she did notice a carpeted classroom with moveable chairs, tables, and several pieces of visual aid equipment. This was what she was hoping to find, since MRU was marketing

itself as "a learning university with a college feel." Finding only one such classroom, she remained a bit skeptical about the marketing slogan.

After a quick tour of the academic buildings, the Carters asked for directions to the student union. Finding the student union was relatively simple; it was in the center of campus and almost every sidewalk eventually led to the plaza in front of the building. The student union was busy with activity but looked well maintained with little trash or signs of abuse. In fact, it was obvious that a renovation project had just been completed. The decor was oak and mauve, and most of the "institutional" stainless steel and plastic had been removed. From a table in a quiet corner of the food court, a pleasant lagoon could be seen with geese swimming near the shore. Just west of the lagoon was a nice rolling landscape with a few pines and old elm trees marking the area in a rather stately manner.

On the way out of the building, Eric asked a passing student how far it was to walk to the stadium. The student responded with a polite laugh and indicated that the stadium was five or six miles from campus and there was no direct walking route. It now seemed to the Carters that it was a bit of luck on their part that they did not try to find the university by following highway signs to the stadium.

After checking into the local motel and grabbing a fast bite to eat, it was time to find the field house for the graduation ceremonies. The ceremonies went smoothly despite what seemed to be an unusual amount of rowdiness. But Dorothy and Joe just passed it off, lamenting the need to reintroduce civility as subject matter for university and college curricula. By evening's end, they had accomplished their goals. Their niece was pleased that they were able to attend her graduation, and the campus visit, though frustrating at times, did expose Eric to Mid-Rocky University.

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The Carter family's experiences in this scenario are common to all who visit, study, or work on a college or university campus. This scenario also illustrates just how complex and important the physical design and spaces of these institutions and their environs are in terms of how individuals interact with them. Two questions are implicated in this case and form the framework for discussion in this chapter: What is the general nature of the physical environment's influence on human behavior? and How do the physical dimensions of any campus environment specifically impact the behavior of participants?

### **The Physical Environment Influence**

From the view of prospective college students, the physical features are often among the most important factors in creating a critical first impression of an institution (Sturner, 1973; Thelin & Yankovich, 1987). The basic layout of the campus, open spaces and shaded lawns (Griffith, 1994), the accessibility and cleanliness of parking lots, interior color schemes, the shape and design of a residence hall or classroom building, a library or gallery, an impressive fitness center, and even the weather on the day of a campus visit all shape initial attitudes in subtle ways (Stern, 1986). In a firsthand study of campus life on twenty-nine different college campuses, Boyer (1987) observed:

Little wonder that when we asked students what influenced them most during their visit to a campus, about half mentioned "the friendliness of students we met." But it was the buildings, the trees, the walkways, and the well-kept lawns that overwhelmingly won out. The appearance of the campus is, by far, the most influential characteristic during campus visits, and we gained the distinct impression that when it comes to recruiting students, the director of buildings and grounds may be more important than the academic dean. [p. 17]

It is clear that the campus physical environment is an important feature that influences students' attraction to and satisfaction with a particular institution. What then is the nature of that influence, and how does the campus physical environment shape specific behavior?

Most introductions to the topic of how physical environments influence behavior begin by noting Winston Churchill's observation that "we shape our buildings and then they shape us." While the observation is a simplistic one, it does fit many of our everyday experiences with building designs and spaces. Once the shape of the traffic flow within a campus building is fixed by doors and hallways, walking behavior within the building is pretty well determined. But we know it has not been entirely determined. Despite many design efforts to direct pedestrian flow through campus or through buildings, it is also a common experience to see someone going the "wrong" way.

In the literature, the influence of the physical environment on behavior has been conceptualized in three distinct positions (Bell, Fisher, Baum, & Greene, 1990; Porteus, 1977). First is the position of architectural determinism, which suggests that there is a rather direct link between the built environment and behavior within it. Often referred to as "environmentalism," this philosophy suggests that behavior to a large extent is determined in a direct, causal, and mechanistic manner by the physical environment (Ellen, 1982). People move in a certain direction, sit at one end of a room, and exit a building in a predictable pattern presumably because the physical structure and design allows few other options.

Architectural determinism, however, is too simplistic and does not do justice to the complexities within an environment. For example, the series of "welcome to campus" signs in the introductory vignette did not really welcome the Carter family but instead communicated a "not welcome" message due to their poor design and placement. This position also does not easily account for the influence of people on the physical environment, as when people on campus often rearrange, change, or remove physical structures like bicycle racks, benches, and picnic tables to meet their own needs rather than allowing these features to determine their behavior.

In reaction to the shortcomings of architectural determinism, a second position, environmental or architectural possibilism has emerged (Ellen, 1982). Possibilism views the physical environment as a source of opportunities that may set limits on, but not restrict, behavior. The causal attribution of architectural determinism is replaced by a view of the environment as an influence of "passive limiting agency" (Wissler, 1929, p. 339). Again, there are many commonsense examples within any campus environment to support such a position. If the campus does not have a football stadium available, the development of a traditional intercollegiate football program will be difficult. Or, if the stadium is several miles away from the campus, its location may limit the extent of student support. Likewise, the presence of a large convocation hall on campus enhances the opportunity for large campus constituent groups to meet.

The assumptions of environmental passivity associated with possibilism, however, have also been questioned. For example, an attractively designed campus restaurant is much more than just an opportunity; it is an attraction that appears to draw patrons. The facility does not cause people to come, but yet it appears to be more than just there. If campus walkways eventually lead to the student union, as was the experience of the Carters in the opening scenario, then their design and layout increase the probability that campus visitors will find the union during a tour. In turn, the probability of the student union being used is increased by its location and the design of campus walkways. These physical features do not determine use, but they appear to do more than just make use of

the student union possible. This observation leads to a third way of viewing the nature of the influence of the physical environment on behavior, that is, environmental probabilism.

This third position, architectural or environmental probabilism, emerged to capture the probabilistic relationship between physical environments and behavior. As noted above, it assumes that certain behaviors have probabilistic links to the built environment. For example, an attractive, warm, and welcoming entrance to a campus building will increase the probability of it being entered more so than if it is cold and unwelcoming. The welcoming entrance does not cause entry, but the probability of entry can be increased with proper design. An admissions office hidden on the second floor of a building, away from typical traffic flow, has less probability of being found and used than one located at the main entrance on the ground floor. Although features of the physical environment lend themselves theoretically to all possibilities, the layout, location, and arrangement of space and facilities render some behaviors much more likely, and thus more probable, than others.

All three positions (determinism, possibilism, and probabilism) offer insight into the relationship between the campus physical environment and the behavior of those within. However, viewing the relationship in terms of possibilities and probabilities appears to be more in tune with everyday experiences on campus. These positions also support the intuitive notion that the campus physical environment, with its designs and spaces, can influence and make a difference in the lives of students, faculty, and visitors to the campus.

### **How the Physical Environment Communicates Nonverbally**

The complexity surrounding campus physical environments and the influence of their designs and spaces becomes clearer when the nature of that influence and how the features of various campus environments impact specific behaviors are considered. Whether natural or synthetic, the physical aspects of any campus environment offer many possibilities for human response, rendering some behaviors more probable than others. It is the nature of this influence to be both functional and symbolic. An admissions office located on a second floor is functional in that its design is capable of allowing the duties and activities of the admissions office to be carried out, but the location also sends out messages or symbolizes various possibilities. For example, the symbolic message of a second-floor location may communicate that the institution does not give serious consideration to the users of the service nor their needs for accessibility and convenience. Or the message may be that the institution does not see this function as an important aspect of its mission. Perhaps the second-floor location also indicates that the university is without the necessary funds to relocate the office. The symbolic view of campus environments suggests that they can potentially convey all of these messages, depending of course on the meaning people ascribe to them.

It is this link between the functional and symbolic aspects of campus physical environments that leads to an understanding of how campus physical environments impact behavior. Rapaport (1982) suggested that the important link between function and symbol in the physical environment is nonverbal communication. He noted, "Since environments apparently provide cues for behavior, but do not do it verbally, it follows that they must represent a form of nonverbal behavior" (p. 50). Nonverbal communication incorporates "those messages expressed by other than linguistic means" (Adler & Towne, 1987, p. 188). Cues from the physical environment naturally fall into this category. Rapaport (1982) states: "environments are more than just inhibiting, facilitating, or even catalytic; they not only remind, they also predict and describe"

(p.77). The environment "thus communicates, through a whole set of cues, the most appropriate choices to be made: the cues are meant to elicit appropriate emotions, interpretations, behaviors, and transactions by setting up the appropriate situations and contexts" (Rapaport, pp. 80-81).

The functional aspects of campus physical environments are designed and built, but the function of designing and building creates nonverbal messages that users of the campus environment then read. For example, if the campus decides to make a curb wheelchair accessible by molding some asphalt to the curb, instead of installing proper curb cuts, such an adaptation might be technically functional, but it may also encode messages of "not caring enough to do it correctly," "not valuing the user," or just "responding minimally to needs of the physically challenged." When the student in a wheelchair rolls up to the makeshift curb, the decoded message may reveal that "the institution doesn't care about me; I am not valued." On the other hand, if the curb cut is correctly designed and constructed, the encoded and decoded messages may strike a different tone, conveying a sense that "the institution cared enough to do it correctly." Consequently the person concludes: "I feel valued" and "You care about me." Again, both adaptations are functional, but they are quite different in their symbolic messages. The functionality of the campus physical environment not only affords and constrains certain activities, but it also communicates important nonverbal, symbolic messages.

The research supporting the nonverbal communications link between the physical environment and behavior is well established. For example, it has been shown that the attractiveness of a room influences positive affect and the energy level of those working in the room (Maslow & Mintz, 1956). Low lighting, soft music, and comfortable seats encourage people to spend more time in a restaurant or bar (Sommer, 1978); the artifacts on the walls of a student room can reflect messages about the student's adjustment to the university (Hansen & Altman, 1976).

Mehrabian's (1981) work adds another important element to the conceptual link between the physical environment and nonverbal communication, pointing out that nonverbal messages are often seen as more truthful than verbal or written messages. The nonverbal messages of the physical environment may sometimes contradict those given verbally. For example, the visitors' signs in the opening scenario, although intended to say "Welcome," in fact, communicated to the Carter family a nonverbal "Not Welcome!" message. While the campus president may speak about the open posture of the campus and welcome ethnic minorities, the presence of defamatory graffiti on buildings may suggest just the opposite. Double messages have strong impact, and when a person on campus perceives an inconsistency between the verbal and nonverbal, or between the language and the nonlanguage message, the nonverbal often becomes most believable (Eckman, 1985). For example, Dorothy Carter, in the opening scenario, had a difficult time believing the slogan "a learning university with a college feel" due to the restrictive physical designs of the classrooms she observed.

To paraphrase Anderson's (1971) quote attributed to Sir Kenneth Clark: "If one had to say which was telling the truth about the school, a speech by the principal or the actual school building, classrooms, and material he or she was responsible for providing, one should believe the building" (p. 291). Mehrabian and Wiener (1967), Mehrabian (1981), and Birdwhistell (1970) all suggest that the emotional impact of communication is primarily carried by the nonverbal component of communications. If a picture is worth a thousand words, viewing the campus physical environment not only leads to a more truthful picture but perhaps to a far more complete one as well.

## **Impact of Campus Physical Environments on Behavior**

Several important concepts increase the understanding of how campus physical environments' nonverbal communication impacts campus behavior:

- Campus physical environments as behavior settings and the role of proxemics
- The role of physical artifacts in campus physical environmental communications
- Behavioral traces as communication

### **Campus Physical Environments as Behavior Settings**

Behavior settings (Barker, 1968) are the social and physical situations in which human behavior occurs (Wicker, 1984). The college campus is a classic behavior setting, composed of essentially two parts: the human or social aspects of the setting and the nonhuman component or physical aspects. For example, on the college campus, as students, faculty, and staff interact, they do so within a physical environment including many nonhuman components such as pathways, parking lots, activity fields, statuary, artwork, and buildings, presenting a myriad of designs that vary in size, color, and arrangement. It is the transactional (or mutually influential) relationship between the human and nonhuman elements in the behavior setting that shapes behavior. The essence of this behavior setting impact was captured by Barker and Wright (1951) when they concluded from their observations that the behaviors of children could be predicted more accurately from knowing the situation (behavior setting) the children were in than from knowing individual characteristics of the children (Wicker, 1984). The behavior setting can function like a nonverbal mnemonic device (Rapaport, 1982) where encoded messages in the physical component of the behavioral setting serve to remind participants what behaviors are expected. For example, an athletic field house is a behavior setting. The seating, props, cheerleaders, and decor are all cues that loud and rowdy sports event behaviors are not only appropriate but expected in such a place. The rowdiness the Carter family observed during MRU's commencement ceremony might prompt consideration of a redesign of the behavior setting or a change to an alternative venue.

At more than a few campuses, the Carters' concern about rowdiness in the opening scenario is also shared by faculty and administrators. Many of the institutions experiencing rowdiness during graduation exercises often hold their ceremonies in an athletic field house. Students are sometimes seated in the same arrangement as when they attend a basketball game and are most often grouped into departments and colleges, which encourages a team identity. The cues related to sporting events are usually visible, including basketball backboards, hoops, scoreboards, and time clocks. In many cases the banners of previous victories and accomplishments are hanging from the rafters as well. With such reminders from the behavior setting, sporting behaviors, rather than commencement behaviors, are cued. It is the encoded messages of the behavior setting that remind students that yelling, cheering, and rowdy behavior are presumed appropriate for that particular setting. Improvement in student decorum can usually be made by removing as many of the sporting cues as possible and replacing them with cues associated with convocation. For example, the use of plants and flowers, seating arrangements on the floor of the field house rather than in the bleachers, use of classical music, and use of light, carpet, and other textured surfaces to soften the atmosphere can also send different messages about the importance of such events. These cues do not determine the behavior, but they may increase the probability of a more desirable outcome, in this case, a reduction of rowdy behavior.

Another important aspect of the behavior setting is the sometimes supportive or sometimes antagonistic relationship between human and nonhuman components. Physical features can set broad limits on the phenomena that can occur in a setting, making some behaviors more or less likely than others—a concept labeled "intersystems congruence" (Michelson, 1970, p. 25). For example, in a classroom it would be difficult to form small group discussions to increase communication skills if all the chairs were bolted to the floor in straight rows. On the other hand, by having moveable chairs or cushions, the physical aspects of the classroom setting would be supportive of the desired behavior. When the physical and behavioral aspects of a setting are compatible, a synomorphic relationship is said to exist (Wicker, 1984). In other words, the physical structures and designs of the setting allow participants to do what they desire, while participants in turn take full advantage of the possibilities of the setting. Apparent between the human and nonhuman components is a mutuality of support. Common sense and experience suggest that when the physical environment of a campus, building, or classroom supports the desired behavior, better outcomes result. From the behavior setting point of view, campus designs and spaces do not merely create a functional space, mood, or atmosphere, they facilitate certain behaviors (Wicker, 1984).

### *Proxemics*

Other concepts underscoring the importance of the nonverbal communications occurring within a behavior setting are found in the study of the social implications of use of physical space, or proxemics. Hall (1996) provided the pioneering work on how humans use space in their everyday life. Important to the understanding of proxemics is the concept of spatial zones, which refers to the distances people tend to establish between themselves and others when they engage in social interaction. Four distinct zones or distances have been described in the literature: intimate (0 to 1.5 feet), used for relationships like comforting; personal (1.5 to 4 feet), used for everyday conversations with friends; social (4 to 12 feet), used for impersonal and business-type conversations; and public (more than 12 feet), used for formal presentations to a group. The social and psychological aspects of physical space also communicate messages to the inhabitants of campus physical environments. If a student walks into a classroom and the teaching podium is 20 feet away from the first row of chairs, then a distinct message regarding the formal nature of the upcoming classroom experience is communicated very clearly. It was this same cue about the formality of the classroom in the opening scenario that raised questions in Dorothy Carter's mind about the promotion of a "college feel" to Mid-Rocky University. On the other hand, a simple couch located in a secluded space in the student union will signal the possibility for intimate social interaction.

### **Campus Physical Artifacts as Nonverbal Communication**

Physical artifacts on campus include synthetic objects made and often placed on a campus for intended purposes, for example, to give directions, to inspire, to warn, or to accommodate. These artifacts often send strong nonverbal messages about campus culture and are found most often in one of four forms: signs and symbols; art work or posters; graffiti; and specific physical structures (Banning & Bartels, 1993). The nature and pattern of campus physical artifacts structure the content of messages reflecting campus culture.

For example, the physical artifact of signage on a restroom door can give nonverbal messages. The restroom sign saying "Ladies" gives a different message than a similar sign saying "Women." An "Admissions Office" sign next to a "Graduate School" sign at the same entrance location gives a confusing message. The reader does not know whether there are two different offices or whether it is the entrance to the admissions

function of the graduate school. Many campuses continue to display "Men Working" signs at work sites, despite the fact that women are involved in the project. This message of the invisibility of women would not be supported verbally by any university official but is supported nonverbally through the communicative power of a campus artifact.

Campus art is more than aesthetics. It too gives nonverbal social messages. Many of the older campus buildings often have murals that were painted by artists whose fame now makes the murals very valuable both historically and monetarily. But often these older murals have social messages that are no longer supported by the campus. For example, murals depicting slavery can be found on some campuses. Murals depicting Mexican Americans only as farm laborers and Anglos as scientists continue to cause controversy at the University of New Mexico (Banning & Luna, 1992). Campus artworks, particularly statuary, often portray women in passive positions (sitting) and men in more active positions (standing or in motion) (Banning & Luna, 1992).

The issue of campus graffiti is a common one. While the content of campus graffiti can be seen as a message from its author only, the total of all campus graffiti begins to communicate campus culture. The institutional response (leaving it or removing it with due speed or considerable delay) can send important nonverbal messages about the presumed values of the campus administration. Racist messages that have been visible for months on the side of an academic building may communicate a lack of concern for creating a safe and comfortable environment for all inhabitants.

Physical structures themselves can be seen as artifacts that communicate nonverbally. The previous illustration regarding the design and placement of a curb cut is one example. Another example is a two-story admissions building with no elevator. The absence of an elevator may communicate nonverbally, but yet very directly, a lack of concern for students in wheelchairs or students with children in strollers. Buildings that are hidden or have poorly lit spaces may suggest that concerns for the safety of users have not been addressed. These examples underscore the point that campus physical environments are not just related to function and ambiance, but they also serve to communicate, through various physical artifacts, important campus values and expectations.

### **Behavioral Traces as Communication**

Students, faculty, staff, and visitors use campus environments in a variety of ways. It is impossible to observe all campus behaviors at the time they are occurring, but behaviors leave "traces" (Bechtel & Zeisel, 1987) that can be reconstructed to produce increased awareness of the person-environment interactions on campus. Such traces, much like artifacts, also send nonverbal communications to campus users.

Campus observers were not the first to infer behavior from traces; archaeology as a science is grounded in this methodology. As Bechtel and Zeisel (1987) stated: "Few give a thought . . . to the fact that the fossils of tomorrow are the garbage dumps of today" (p.32). Zeisel (1981) presented a number of ways to read traces that can be useful in gaining a more complete understanding of how people use campus environments. Zeisel's methods focus on by-products of use, adaptation of use, displays of self, and public messages.

By-products of behavior are produced by people interacting with the environment and can be defined further with reference to the concepts of erosion, leftovers, and missing traces (Bechtel & Zeisel, 1987). Examples of erosion on campus are the worn paths students make as they find the shortest distance from one campus building to the next.

These by-products (paths) can be useful in locating new sidewalks. In fact, on some campuses, sidewalks to new buildings are not constructed until student paths emerge, suggesting patterns of movement that are likely to persist.

Leftovers are traces represented by objects not consumed during behavior, trash and litter being the most common forms. Leftovers can also become associated with particular campus groups. For example, on one campus a "sitting wall" is used as a favorite lunch spot by "Greek" students. The resulting leftovers of pop cans and fast food sacks produce a negative image problem for the fraternity and sorority system on campus.

Bechtel and Zeisel (1987) used the concept of missing traces to indicate a lack of use in areas where erosion and leftovers are expected but do not appear. Some spaces, by virtue of their design, see very little use by campus constituents. Documentation of such missing traces is often helpful in gaining support for their redesign to better serve campus needs. Missing traces also show up as the results of theft or vandalism. For example, a prominent campus clock missing its hands suggests theft or vandalism, perhaps raising among campus members a concern for their safety.

Zeisel (1981) employed the concept of "adaptation for use" to encompass situations in the environment where a change has been made because of failure of the first design to serve its original intention. Many of the traces of adaptation include movement of objects in ways that separate elements once connected and connect elements of the environment once separated. For example the chaining down of campus outdoor furniture suggests concern for theft. The internal corridors of residence halls often are adapted as playgrounds because areas for outdoor activities on campus may be lacking.

A larger scale adaptation for use would include renovations, expansions, and other changes or improvements. The addition of a new lighting system on campus is an environmental adaptation to an increase in campus crime. Changing an open space area to a parking lot could signify an adaptation to an increase in commuter student enrollment. Often the attempt by students to adapt a space for an unintended purpose is the first clue that a redesign or renovation effort may be needed.

Zeisel (1981) used the concept of "display of self" to illustrate how the physical environment can be used to convey messages about individual and group ownership. The positioning of Greek letters on fraternity and sorority houses is one clear example of this. Such displays become important to the process of individualizing and personalizing spaces. Huge signs are often found in residence hall windows marking a floor or wing. No one can enter the campus environment without taking note of the use of t-shirts to display messages of self and group, from Greek affiliations to academic majors, from attendance at rock concerts to where one spent spring break. Again, these traces not only increase understanding of the social environment on campus, but an entire social environment is communicated to others. Many academic buildings also illustrate how props are used symbolically as "displays of self": a world globe on top of an international studies building, an oil derrick on the roof of a petroleum engineering building, and cannons in front of an ROTC building. These symbols give public messages concerning the values and interests of campus units and organizations.

The last category of behavioral traces for Zeisel (1981) incorporates public messages. Included in this concept are official signs, unofficial signs, and illegitimate signs. Common problems with signs include their design, location, and degree of clarity. The experiences of the Carter family in their campus visit to MRU in the opening scenario is a familiar testament to the confusion ambiguous signs can create when not carefully constructed. These problems often lead to the posting of additional signs or a redundancy

of messages (Rapaport, 1982), frequently a signal that the intended messages are not being communicated. In addition to the more formal signs, observers of the campus environment are quite familiar with campus graffiti, which can signal creativity, local issues, or give insight into prevailing attitudes on such complex issues as tolerance for diversity.

The concepts of behavior settings and proxemics, physical artifacts, and behavioral traces offer useful tools for the campus observer. Understanding their power as communication mechanisms can assist in the improvement of campus environments.

### **Improving the Overall Campus Image**

An understanding of the impact of a college or university campus can be facilitated by a careful examination from the viewpoint of a pedestrian (Banning, 1993). As pedestrians (visitors, students, faculty, and staff) walk around campus they encounter nonverbal messages embedded in buildings, pathways, signs, and symbols. Through the decoding of these nonverbal messages, they learn important cultural messages conveyed by planners, designers, builders, and even the users of the pedestrian space. Such an informative pedestrian experience can be viewed from a perspective of safety, functionality, pleasure, and learning.

Pedestrian safety is a major concern in campus planning. In addition to auto-pedestrian and bicycle-pedestrian accidents, there is an increasing concern for safety on campus from various health hazards associated with vehicle emissions, air pollution, noise, and the risks of robberies and personal assaults. (More specific attention is given to the topic of safety in Chapter Five.)

The functional features of a pedestrian trip through campus can sensitize participants to issues of pedestrian access and convenience. Untermann (1984) noted that convenience depends on the directness, continuity, and availability of the walk. Pushkarev and Zupan (1975) addressed the functional issues of the pedestrian experience in depth, including concerns such as pedestrian space requirements, sidewalk widths and standards, and other important aspects of functional design. Most planning efforts that include concern for the pedestrian focus on the design and development of convenient walkways that are efficient and barrier free (Smith, 1987).

Pleasure is a third category (Untermann, 1984) of campus pedestrian experiences, including factors of protection, coherence, security, and interest. Good campus physical space planning efforts do not stop at providing physical safety and convenience alone, but they also attempt to enhance the pleasurable aspects of the walking experience through a variety of design features such as sitting walls, benches, flowers, and weather protective features.

The importance of safety, functionality, and pleasure for the pedestrian is without question, but a fourth category, cultural learning, also adds to the walking experience. The campus physical environment teaches and, through decoded nonverbal messages, a sense of curriculum emerges. While the pedestrian's learning environment or curriculum is not intentionally programmed by any faculty committee, the informal curriculum may be the nonintentional, nonverbal communication of basic cultural values. Those values communicated by the campus physical environment have a direct relationship to the challenge of making any campus a place for all persons. (See Chapter Five for a more detailed discussion of inclusive environments.)

Banning and Bartels (1993) have pointed out that many of the nonverbal messages can

be seen as sending inadvertent multicultural messages. For example, campus posters that never include any race other than Caucasian would not send a message of belonging to other groups. Dark and bushy areas around major pathways might send messages of insecurity to some campus users. Likewise, many campuses have statuary and artwork that endorse outdated or limited roles for women (Banning, 1992). All campus environments could benefit from an assessment of potential messages being communicated about specific groups.

### **Developing Positive Physical Features**

It is clear from many people's experiences that some places simply feel more comfortable or better than others. A review of related literature (Miller & Banning, 1992) suggests several common denominators in the design of campus spaces that engender positive responses from participants. From surveying the work of Alexander (1977), Jackson (1984), Whyte (1988), and Hiss (1990), Miller and Banning (1992) identified voices that require attention for the design and creation of positive campus physical environments: the call for community, the call for territory, the call for landscape, and the call for wayfinding.

A sense of community is important to the inhabitants of any environment. (See Chapter Seven for a more detailed discussion of communal environments.) How can campus designs bring about and enhance a sense of community? What physical features lead to a feeling of community? Possible responses include gathering places, sitting walls, and green spaces. The need for territory or a place to call one's own is equally important. Selection of favorite niches on campus, private places in the library, or a favorite chair in the classroom are all examples of students seeking territory in various ways. Campus landscapes are important, too, and they can be defined around issues of safety and opportunity. Kaplan and Kaplan (1978) discussed these two counteracting components (safety and opportunity) in terms of "legibility" and "mystery."

Legible environments are those with open and distinctive landmarks, a landscape through which one could wander and feel safe but not become lost. Mysterious landscapes are those that invite participants with the promise of new information, tapping a natural yearning to know "what's beyond the bend." How do campus landscapes negotiate the balance between legibility and mystery? In addition to these elements of safety and opportunity in campus landscapes, there also appears to be a preference for landscapes that offer water features (Ulrich, 1983). Boyer (1987) noted that the presence of water in photographs of college campuses actually attracts prospective students.

Beyond the development of community, territory, and landscapes, campuses also need to address issues of "wayfinding" (Lynch, 1960). Wayfinding, sometimes referred to as spatial orientation, involves using past experience and immediate cues from the physical environment to plan and carry out movement in the environment. For example, from the opening scenario, when the Carters came to Mid-Rocky University they had had previous experience in locating towns, universities, and buildings. While visiting the campus they used their past experiences and cues from the immediate environment (in the form of campus signs) to find their way to the admissions office. However, in this case, wayfinding was inhibited by erroneous campus signs. As people move through campus environments, wayfinding questions abound. Where is the student center? Where is the entrance to this building? Is there an elevator? Where are the campus signs? Is there a you-are-here map? Is the information clear? The physical environment can be designed through signs, symbols, walkways, paths, and special features to be user friendly to campus inhabitants. If wayfinding is not addressed, campus environments often result in confusion and frustration on the part of users. Recalling feelings of being

lost in a new environment is all it takes to realize just how important it is for the campus physical environment to support easy wayfinding.

Arthur and Passini (1992) concluded from their work that wayfinding design impacts users of the environment emotionally and functionally. Users can develop a sense of "feeling lost" or "feeling stupid," which can lead to stress and anxiety (Hunt, 1984). Users can also develop ambiguous feelings about the setting, as if to say, "if they want me to visit the admissions office why do they make it so difficult?" In addition, Arthur and Passini (1992) point out that poor wayfinding cues have a functional impact "which is measurable in terms of efficiency and monetary value" (p. 11). As campuses attempt to make their environments more inviting and hospitable to all users, wayfinding must be given serious consideration.

Evaluation of campus physical environments for positive improvements would be incomplete without reference to the work of Dober (1992). Dober, through concepts of placemaking and placemarking, offers a comprehensive and useful analysis of campus design, the principal components of which are "buildings, landscapes, and circulation systems" (p. 4). Placemaking is Dober's concept for the structure of the overall campus design and includes the "positioning and arrangement of campus land uses and pedestrian and vehicular routes, the location of buildings and functional open spaces, . . . the definition of edges, and the interface between campus and environs" (p. 4). Through participation of campus constituents, placemaking yields an overall plan in the form of an "institutional metaphor," which guides what can or may be built. It is this institutional metaphor that represents the collective picture presented by the nonverbal communications of the total campus design. Placemarking, Dober's second concept, focuses on "certain physical attributes which give a campus a visual uniqueness appropriately its own" (p. 5), including landmarks, style, materials, and landscapes. The combination of these elements leads to a distinct sense of place on campus. As an activity, "placemaking resembles town planning, producing the larger picture of the future, while placemarking involves the specifics of campus architecture, landscape architecture, and site engineering" (Dober, pp. 229-231).

In summary, campus physical environments can be understood better and improved by greater sensitivity to their nonverbal communications, by increasing designs and spaces that give a sense of comfort and security, by giving closer attention to the campus' wayfinding features, and by increasing the focus on the placemaking and placemarking aspects of campus design.

### **Designing for Student Learning and Development**

College and university environments are places with a special purpose: student learning. Student learning and development embrace complex goals, requiring the input and coordination of all aspects of campus environments, including their physical design and space. Banning and Cunard (1986) noted that, among the many methods employed to foster student learning and development, the use of the physical environment is perhaps the least understood and the most neglected. The physical environment, however, can contribute to college student learning and development in two important ways. First, the actual features of the physical environment can encourage or discourage the processes of learning and development. Second, the process of designing campus physical environments can also promote the acquisition of skills important to the process of learning and developing.

Physical features of a campus environment can hinder or promote learning. For example, the entrance to a college library can communicate a warm welcome or not, depending on

its design. To not enter a library and not use its many resources would likely have a negative impact on the intellectual growth of students. So too might entering a library to discover that the wayfinding aspects of the building are so confusing that they contribute to unnecessary levels of frustration and stress. Under these conditions, students gain less information and knowledge. With a more inviting entrance design and less intimidating wayfinding, the probability of becoming engaged in intellectual activities is increased.

Once a student is encouraged to enter by the design of the campus building, then an array of influences is both possible and probable. For example, the proxemics associated with seating arrangements in a lounge area in a student center can either promote or inhibit social interaction. The physical artifact messages of support or nonsupport can take many forms, signaling a sense of belonging, a feeling of being welcomed, a sense of safety, and a sense of role, worth, and value (Banning & Bartels, 1993). Such messages enhance or detract from students' ability to cope with college stress. For example, consider the contrast between a poster in the campus union advertising an upcoming gay, lesbian, bisexual, and transgendered awareness week as compared to the unfortunate homophobic graffiti found in many campus restrooms. Consider also a student wheelchair user anticipating the excitement of an on-campus event but who cannot find an accessible entrance to the sponsoring facility. Processes of growth and development can be readily hindered by such undeserved stress.

In addition to the direct impact of symbols and designs, participant involvement in the processes of designing and building campus spaces might also contribute to significant learning opportunities. As noted in Banning and Cunard (1986), "students who participate meaningfully in a design or redesign effort become involved in complex analytical behavior, participate in leadership positions, engage in significant oral and written communications skills, and work within the give and take of group settings" (p. 3). Participation of all users in the design process increases the probability of eliminating negative and unintended nonverbal messages. In fact, the likelihood that a campus design will meet the needs of the community may be a direct function of the extent to which community members participate in the design process. It is clear that they can assist in illuminating these complex issues of function and meaning, the effects of behavior settings, proxemics, wayfinding, and the power of nonverbal communications in artifacts and traces.