

# 9

## FUNDAMENTAL PROCESSES OF HUMAN BEHAVIOR

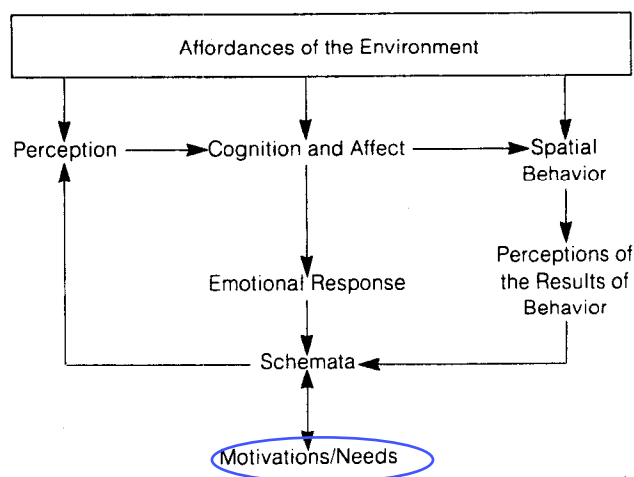
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The work of environmental designers is very much influenced by their concepts of human nature. These have varied during history. At one time people are perceived as being free-willed, at another as controlled by their environments. The latter view was central to the thinking of the Modernists in architecture and remains so in much architectural theory today. During one period people are believed to be rational, at another irrational (Neisser 1977). This difference is reflected in the differences between first- and second-generation models of the design process. Anthropological, sociological, and psychological research has reduced some of the mysteriousness of human behavior but much remains unknown. Our present understanding does, however, clarify much about the person-environment interface and thus about environmental design.

The environment is potentially rich in affordances for human experiences and behavior. The basic processes involved in the interaction between people and their environment are shown in figure 9-1. Information about the environment is obtained through perceptual processes that are guided by schemata motivated by needs. These schemata are partially innate and partially learned. They form the linkage between *perception* and *cognition*. They guide not only the perceptual processes but also emotional responses (*affect*) and actions (*spatial behavior*), which in turn affect the schemata as the outcomes of behavior are discerned. Human feel-

ings and actions are limited by the affordances of the natural and built environments, the cultural environment, and the intrapsychic states of the people concerned.

The explanation of these processes of behavior is inevitably guided by an overall concept or schema. That given here has been called the “environmental perception and behavior approach” (Patricios 1975). It is a model that focuses on individuals and groups of individuals. This can be contrasted with models that deal with aggregates of people as individuals. The approach used here deals with the fac-



9-1. The Fundamental Processes of Human Behavior.

much learning to discern the differences among wines, perhaps even more to understand the different aesthetic philosophies in architecture. A schema directs exploration; experience modifies the schema. This involves learning, a basic cognitive process.

## Conclusions on Perception

The coexistence of contradictory theories of perception shows the conjectural nature of our understanding of the perceptual processes. There are, however, a number of matters on which there is agreement. Perception is multimodal; movement plays a major part in environmental perception; we learn to differentiate finer details and broader classes of environmental phenomena with experience; the Gestalt “laws” of visual organization may not be the basis of perception, but they may well be ways in which we order the environment; the Gestalt concepts of “field forces” and “isomorphism” and thus the architectural concepts of the universality of “expressiveness” of lines and planes are open to serious question, and the way in which we look at the environment depends on our purposes and experience. Above all, the assumption that perception is largely or completely determined by the characteristics of external stimuli is a dubious one. These factors all need to be recognized in the development of positive theories of the person–environment interface and positive theories of aesthetics.

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## COGNITION AND AFFECT

Cognitive psychology deals with the acquisition, organization, and storage of knowledge. It focuses on issues of thinking, learning, remembering, feeling, and mental development. Affect deals with emotion and is concerned with likes and dislikes. It involves an understanding of values and attitude-formation. An understanding of the processes of cognition and affect can make a major contribution to the understanding of environmental aesthetics and the choices people make in the use of the environment.

Since World War I, the study of cognition has been dominated by the psychoanalytical and behaviorist schools of psychology. The former focuses on the subconscious mind, while the latter focuses on the impact of reinforcement patterns on learning. More recently information-processing models of cognition have become prominent. None of them fully accounts for how people act and interact in the

world. The answers to the questions that an environmental designer would ask are thus speculative. How do people look at the environment? How are environmental meanings and their importances learned? How are likes and dislikes developed? Why are some places better remembered than others? These are all questions involving the basic cognitive processes of learning and remembering.

## Learning and Memory

Human behavior is highly plastic. So much so that sometimes urban designers and architects, among others, seem to have forgotten that there are limits to human adaptability. People do have, and show, a large capacity to adapt their activities to the affordances of new built environments, to adapt the built environment to their needs, and to learn new aesthetic values. The processes central to this adaptive ability are learning, remembering, and generalizing.

According to behaviorists (for example, Skinner 1938, 1953), learning takes place when an individual associates a new response to a given stimulus, resulting in a permanent change in behavior. This occurs when the event following the response is a positive one such as the reception of parental approval. Punishment, on the other hand, would help to extinguish the response. Other psychologists believe that people learn for subjective satisfaction as well.

What has been learned may not be reflected in overt behavior (Manis 1964). Thus, the behaviorist principle of reinforcement seems to be primarily concerned with performance, not with learning. What we learn, however, does seem to involve some knowledge of the outcomes of behavior and some sort of reinforcement, either internal or external. This applies to environmental attitudes as well as to activity patterns. These attitudes also affect future behavior. Some things are forgotten, however, while others endure in memory.

Remembering and forgetting are serious practical concerns in almost every sphere of human endeavor. The way we use buildings and cities depends partially on how well their structures are remembered from past visits (Lynch 1960, Appleyard 1969, Passini 1984). People tend to forget things over time, but time, itself, does not cause forgetting. Some things are easier to remember than others. The rate at which we forget things depends on their importance to us, how well categorized or organized they are (the Gestalt laws of organization apply here for the built environment), and how deviant they are from the norm. Landmarks tend to be visual

phenomena that are deviant from their surroundings (Lynch 1960).

### Categorization and Generalization

Studies (such as Carmichael, Hogan, and Walter 1932) have clearly shown that the way in which we categorize and label things can either aid or distort memory. This is particularly true if there is some ambiguity in the original item. For instance, we develop categories of environmental designers (architects, landscape architects, urban designers) and subcategories (Modernists, Post-Modernists) based on certain commonalities in their work. A designer may be classified on one dimension of his or her work but this may be a misrepresentation of the whole body of that designer's work. Future perceptions of that work are then biased by the classification.

The ability to learn how things are related in categories and how to use categories is central to human existence. It depends on the cognitive processes of generalization. Without the ability to generalize from past experience, people would not be able to function as they do. Sometimes premature and erroneous generalizations lead to errors in behavior.

There are two basic types of generalization: stimulus generalization in which the same responses are given to a variety of objects or environments or behaviors, and response generalization in which different responses are given to the same situation. People respond warmly to many different environments—natural scenes or buildings or room layouts. This is an example of stimulus generalization. At the same time, people learn to respond in different ways to the same affordances of the environment. The response may be due to contextual variables, the mood of the person or the person having different motivations at different times. Environmental design theory must recognize that human behavior—overt or emotional—cannot be explained simply in terms of the phenomenal environment, although many design assumptions, including the naive belief in architectural determinism, are based on this view. How people respond to patterns of the environment depends on how they have categorized the environment and its elements, on the associations they have built up over time, and on the reinforcements they have received.

Much of our behavior is culture-bound. It depends on how we have been socialized to like and dislike patterns of the environment and the successes that we have had in the past in dealing with them. Environmental design education socializes

designers to hold certain values. Often these values deviate from those the person held prior to the education. This change involves the development of new schemata for exploring and dealing with the world.

### Schemata

Schemata provide us with algorithms for perceiving, learning, and behaving. We do not know what a schema is like in biological terms. We assume its existence to explain much about learning and behavior. The conjectural nature of a schema is clear from Ulrich Neisser's definition:

A schema . . . is internal to the perceiver, modifiable by experience, and somehow specific to what is perceived. The schema accepts information . . . and is changed by this information, it directs movement and exploratory activities that make information available, by which it is further modified. (Neisser 1977)

Schemata can be considered to act like templates for action. Extensive schemata have lesser ones buried in them. This explains how we can act, make plans about where we are going and what we are doing, and appreciate the world around us all at the same time. If the schemata are compatible they reinforce each other; if not, one rules. The schemata we have at any given moment offer possibilities for developing along certain lines, but the precise nature of the development is determined by interactions with the environment. People's whole experience influences what they have learned and what they have forgotten and the meanings that elements in the environment have for them. Thus, any theory of aesthetics has to recognize the relativity of environmental quality.

The images that people have of the environment around them are a type of schema. These images can be iconic images (cognitive maps), as discussed by Kevin Lynch in *The Image of the City* (1960), or associational images (more properly, symbolic meanings), as discussed by Anselm Strauss in *Images of The American City* (1961).

### Meaning

The subject of meaning is a fundamental one in aesthetic theory. The confused state of the design literature on the subject reflects the confused state of the psychological literature. There are many levels of meaning and many theoretical approaches to the topic. *Empiricist* theories state that meaning has to be supplied to events after the perceiver has reg-

istered their structure. Transactionalists believe that meaning is given as a perception takes place and past experience interrupts perception to give a new meaning. Introspective analysis suggests that meanings are given first. Gestalt theorists believe that expressive meanings, at one level, are a function of the geometric character of the environment. *Psychoanalysts* postulate an unconscious component of the mind in which memories are deposited to be awakened by the psyche. Freud postulated an individual unconscious to which Jung added a collective unconscious in which timeless “nodes of energy,” called archetypes, evoke images, ideas, and behaviors. Symbols, including the symbolic meanings of the designed environment, provide the medium whereby archetypes are manifested. The most basic of archetypes is the “self,” the inner heart of our being, our soul, our uniqueness. One’s home is a symbol of the self, for instance (Cooper 1974). The *ecological approach* to perception assumes that all the potential uses and, presumably, meanings of an object are directly visually perceivable in the optic array and/or the structure of nonvisual information obtainable by the other perceptual systems. One just has to know—to have learned, in most cases—what to look for. Certainly, the perception of meaning depends on some schema or other.

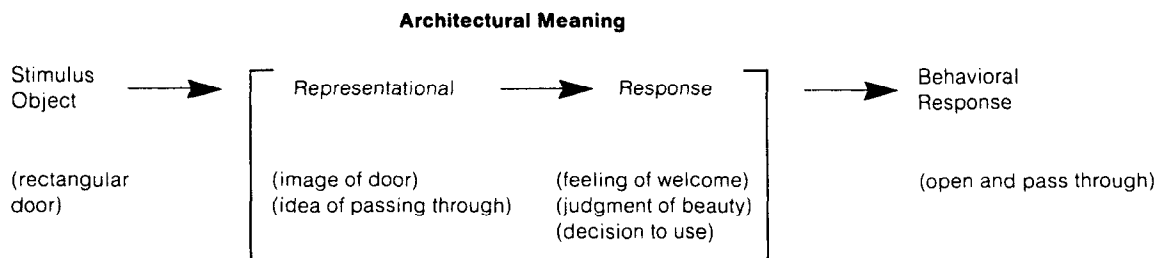
A number of classifications of types of meaning exist. Gibson (1950) differentiated polemically among six levels of meaning: first, the primitive concrete; second, use meanings; third, the meanings of instruments and machines; fourth, the value and emotional meaning of things; fifth, the level of signs; sixth, the level of symbols. Architect Robert Hershberger (1974) has a different listing based on a *mediational* theory of cognition akin to that of Ulrich Neisser. This is shown diagrammatically in figure 9-5. The development of meaning in this view is a two-step process.

Hershberger identifies five levels of meaning, some of which correspond to Gibson’s levels. The

first is the presentational meaning, which involves the perception of shape and form (roughly akin to Gibson’s first level); the second is referential meaning (akin to Gibson’s sixth level); the third is the affective meaning; the fourth is the evaluative meaning—whether something is good or bad (somewhat akin to Gibson’s fourth level); the fifth level is prescriptive meaning. The difference between the concept of affordance and the concept of prescriptive meaning is that the latter implies a degree of coercion to behave in a particular way because of the structure of the environment; the affordance of the environment refers to the behavioral possibilities of the structure of that environment.

The built environment, thus, can be perceived to communicate a variety of meanings, from its utility to its **symbolism**. The symbolism of the built environment is a major concern of environmental designers for it is a major factor in people’s liking or disliking their surroundings. The study of symbolism has been approached in a number of ways by different fields. It is a major concern of linguists, for example, de Saussure (1915), whose work has recently very much influenced the thinking of architects, in particular many of the Post-Modernists (Broadbent 1975, Jencks 1977). Within psychology there are a number of approaches, including the Gestalt, psychoanalytical, and behaviorist, each of which has its adherents in the design professions.

There is much conjecturing on why and how these symbolic meanings are developed. The role of learning and thus of cultural differences is particularly important in dealing with symbolic meanings and the development of likes or dislikes of artifacts and patterns of the world. Any artifact or environment carries a number of meanings simultaneously. They are not independent. One level of meaning—the value of things or the affective meaning of things—is central to aesthetic theory.



Source: Hershberger (1974)

**9-5. Hershberger’s Mediational Theory of Environmental Meaning.**



## Emotional and Affective Meanings

Empirical and experimental research suggests that there are three primary emotional responses: pleasure, arousal, and dominance (Mehrabian and Russell 1974). Pleasure has to do with feelings of liking and disliking; arousal has to do with the interest-evoking qualities of the environment; dominance has to do with the individual's feelings of freedom of action. The concern here is with the interestingness and pleasurable of environments—their affective meanings.

Different theories of perception and cognition have different postulations about how likes and dislikes develop. According to Gestalt theory, a liking for patterns of the environment would occur because of a resonance between the neurological processes and environmental forms. Psychoanalytical theories would explain preference in terms of the values of the associations between forms and memories in the individual unconscious and/or collective unconscious. Behaviorist theories would explain them in terms of the socialization process and the patterns of the environment that people have been positively reinforced to like. Basic to an understanding of what people find “delightful” in the environment is, however, an understanding of the attitudes they possess and how these develop.

An *attitude* results from combining a *belief* about something with a *value* premise about it. There are several definitions of belief. Most social psychologists consider a belief to be an assertion about an associative characteristic rather than a defining characteristic of a thing. Thus, pointed arches may be a defining characteristic of Gothic buildings; “such windows go well in ecclesiastical architecture” is an associative characteristic. Many such beliefs are verbalized in writings on architecture and interior design, but others can only be inferred from what a designer designs.

Values are related to motivations for they define the attractive and repulsive elements of the world. Patterns of the built environment that people find pleasing have a positive value for them; anything that is disdained has a negative value. Values represent a linkage between a person's motivations, emotional feelings, and behavior. Attitudes toward specific environments and environmental patterns arise from the attribution of a value to a belief.

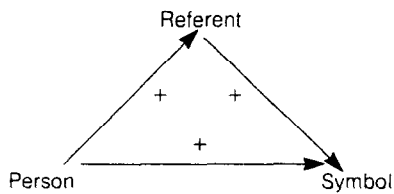
People strive for cognitive consistency in the attitudes they hold about themselves and their social and physical environments (Festinger 1957, Brehm and Cohen 1962). A number of models of cognitive consistency help environmental designers understand the vagaries of aesthetic analysis. They enhance understanding of how likes and dislikes

develop and are maintained.

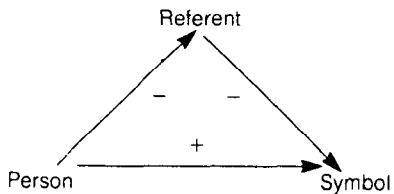
The simplest model is that of balance theory (Heider 1946). If one person has a positive attitude (likes, promotes, seeks) toward another person or set of ideas (the referent), then the first person's attitude would be positive also toward an inanimate thing that is related positively to the referent. Otherwise the system would not be in balance. This indicates the importance of attitudes toward the referent in understanding people's attitudes toward the symbolic meanings of the built environment. Figure 9-6 portrays the relationship between a person and his or her attitudes toward a referent and an environmental pattern. Figure 9-6a, b, and c show consistent relationships, while 9-6d shows an inconsistent relationship. The basic thesis is that we attempt to eliminate incongruent relationships. The strength with which we hold attitudes indicates which attitude is likely to change to eliminate the incongruity (Osgood and Tannebaum 1955), although sometimes we isolate attitudes that are inconsistent with each other and refuse to recognize the discrepancy (Rosenberg and Abelson 1960). For instance, a person may admire a particular set of design principles but not admire a design according to those principles. This is an inconsistent relationship. The person may deny the inconsistency or strive for consistency by changing his or her attitude toward the principles or the design.

## Conclusions on the Processes of Cognition and Affect

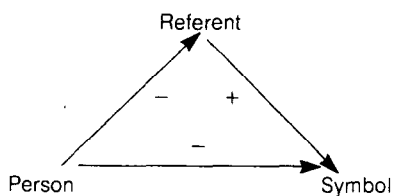
It is difficult to separate the processes of perception and cognition; both are guided by schemata. We know much about the processes and how they are linked, but our understanding is by no means fully developed; there are alternative, largely untested, theories that explain them. As a result, designers' theories about human responses to the built environment have to be recognized as conjectural. There are some very important insights about the person–environment relationship that have been yielded by the theories and models of the behavioral sciences. Learning is of fundamental importance because humans are highly adaptive creatures who develop new knowledge, new values, new symbols, and new activity patterns. Social pressures and cultural norms exert a stabilizing force on the patterns of behavior and attitudes that form the basis for an environmental designer's work. This is not a static framework, however. It evolves over time. The work of environmental designers reflects these changes and contributes to them.



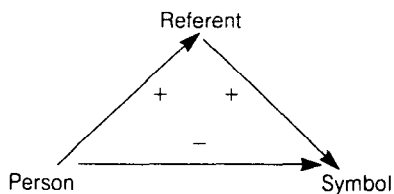
a.



b.



c.



d.

### 9-6. Balance Theory.

## SPATIAL BEHAVIOR

How and why people use the layout of the environment in the way they do as they go about their activities is of central concern to environmental design theory because of the linkages between this spatial behavior and normative theories of functionalism in architecture and the other design fields. The overt spatial behavior of people is something that is directly observable, thus at a descriptive level it is not subject to the controversies that accompany attempts to describe and explain the processes of perception and cognition. Economists, sociologists, anthropologists, and ethologists do, however, focus

on different aspects of behavior and offer different explanations for it. There have been two scales of research in these endeavors (Patricios 1975). The first deals with aggregates of people and the location of activities at a metropolitan and regional scale. An understanding of the distribution of activities and the reasons for this distribution is of concern to city and regional planners. Architects, landscape architects, and urban designers are more concerned with understanding behavior at a micro-scale—from rooms to neighborhoods and other districts of cities.

## Micromodels of Spatial Behavior

The environmental perception and behavioral approach to the study of human behavior suggests that an individual's behavior is a function of his or her motivations, the affordances of the environment, and the images of the world outside direct perception and the meanings those images have for the individual. Within this approach to the study of human behavior and the built environment there are a number of different theoretical orientations.

An *ethological* approach suggests that some of the behaviors we regard as characteristically human are the same as those of other animals. These behaviors are said to be innate although they may be molded by culture. This is the explanation for territorial behavior (see Hall 1966). A number of people (for instance, Newman 1972, 1973, Greenbie 1976) have developed these into design principles. The *behaviorist* tradition stands in strong contrast to this, with its emphasis on the learning of patterns of behavior as the result of reinforcement patterns.

In recent years there have been a great many studies on the built environment, its furnishings, and spatial behavior which do not seem to have a clear theoretical orientation. They seem to be influenced by ethological and behaviorist as well as by psychoanalytic theories. These include much of the work of Edward T. Hall (1966) and Robert Sommer (1969, 1974a), which has strong ethological overtones but is much more eclectic theoretically. Often subsumed under the rubric of *proxemic theory*, their studies of how people relate to each other spatially in each other's presence and how people control space through territorial behavior have influenced the thinking of designers about the layout of rooms, buildings, building complexes, and neighborhoods.

Most environmental design theorists have taken a pragmatic view of the description of spatial behavior. Two concepts have become embedded in environmental design theory. One, the concept of *activity systems* (Chapin 1965), is concerned primarily

with the organization of the sequences of activities taking place in buildings, neighborhoods, and cities; the other, the concept of *behavior settings* (Barker 1968, Bechtel 1977, Wicker 1979), is concerned with the relationship between the built environment—the milieu—and the standing, or recurrent, pattern of behavior that takes place within it.

The concept of behavior setting was developed by a group of behavioral scientists who call themselves “ecological psychologists” because they are concerned with human behavior in the everyday environment. Their approach to the study of behavior is similar to that of those who are developing the ecological theory of perception, with one important exception. Ecological psychologists believe that the physical environment exerts a degree of coercion over the behavior of individuals. In this they were influenced, as noted earlier, by the assertion of Kurt Lewin (1936) that the physical environment possesses an “invitational quality.” Gibson (1979) does not believe that the physical environment, itself, is coercive in this way. It affords some behaviors and not others. It depends on a person’s predispositions whether or not an affordance or set of affordances is or is not used.

## INDIVIDUAL DIFFERENCES IN BEHAVIOR

People are socialized differently, growing up as they do in different geographical and social environments. They differ also in their motivations. They look at the environment and use it differently. There is some regularity in these differences. How best can they be classified?

*Functional theory* in sociology—not to be confused with functional theory in environmental design—provides an approach that has attracted a number of analysts of the built environment and human behavior (such as Michelson 1970, Cranz 1974, Moleski 1978, Sobal 1978). The theory is most comprehensively exemplified by the work of Talcott Parsons (1937, 1959, 1966). It focuses on systems—cultural, social, personality, organismic (or physiological), and environmental—as the basis for examining social behavior. It has attracted the attention of designers because it has a more general application to the development of environmental design theory.

Each of four subsystems—*cultural, social, personality, and organismic*—has a primary function in terms of maintaining the internal-external relationships and the mean-ends purposes of a social system. The purpose of the cultural subsystem is to maintain specific action patterns and to manage internal and external tensions for the whole system of action. Integration is the primary purpose of the

social subsystem; goal attainment is that of the personality subsystem; and adaptation is that of the organismic subsystem.

At different times in history the functional relationship of an individual to society varies. There are specific patterns which, nevertheless, seem to be invariant. Parsons identifies a number of these. He draws on *cybernetic theory* to suggest that those subsystems that are high in information and low in energy are the ones that control those that are high in energy and low in information. Culture is at the top of the control hierarchy followed by social group, personality, and organismic subsystems. The subsystems that are low in the hierarchy of control are those that place greater limitations on behavior. Thus, our physiological character is more controlling than the others and so on.

According to this model, culture—the shared system of beliefs, values, symbols, and styles that characterizes a group of people—controls much human behavior. Each culture is unique because it has its own peculiar history. A culture evolves over time as a people develop approaches to dealing with the problems of survival and growth in a particular terrestrial setting. The built environment always exists within a culture and is part of it. Every generation deals with a social and built environment shaped by earlier generations.

People are largely unaware of the constraints imposed on them by their own cultures in their everyday behavior. The impact of a culture on an individual is mediated by norms—“the patterns of commonly held expectations” (Bates 1956). An important consequence of the socialization process for individuals is that they develop the ability to intuit the attitudes and behaviors of others and the meanings of the environment within their own culture. The design professions, as a whole, however, are constantly dealing with different cultures and subcultures, and the intuition of an individual designer alone cannot provide the basic knowledge required for designing habitats congruent with people’s lives and values.

Environmental designers, like other professionals, are members of two cultures embedded in each other. Each has its own socialization process. One is the broader society and the other is the professional culture which has its own norms of behavior, values, and expectations. These professional norms and peer-group pressures to conform are extremely coercive in environmental design and in architecture in particular (Montgomery 1966). The result is that the professions have been extremely slow in changing, even when faced with major repudiations of their beliefs. This behavior is true of most professions (Larson 1979).

All the subsystems of human action identified by Parsons occur within a geographic and a built environment that has little influence on what people actually do but has the major influence on what they can do. The limitations of the terrestrial environmental system must be met before people can function at all. As Maslow would also suggest, most basic is the role of the built environment as shelter.

All individuals have organismic and personality traits that make them unique, but they also operate within social and cultural as well as terrestrial contexts. The nature of the built environment to an individual or a group is very much governed by the impact of these subsystems on the processes of perception, cognition and affect, and spatial behavior. Thus they provide us with a useful classification system for considering individual and group differences in the use and appreciation of the built environment. This system helps us ask serious questions about how people might use the environment and the aesthetic experiences they might have. It helps us, too, to take a stand on what activities should be afforded and what aesthetic experiences should be the goals of design.

### Individual and Group Competence

The behavior of a person or a group is dependent on its competence in dealing with the world. *Environmental competence* is a term coined by Powell Lawton (1977) to aid in understanding the environmental needs of various segments of the elderly population, but it has general applicability. Everybody has some level of competence in dealing with the social and the built environment. *Competence* is a term that covers a broad set of attributes "such as physical or mental health, intellectual capacity and ego strength" (Lawton 1977). Many of the qualities that contribute to a person's ability to deal with the world are difficult to measure. While it is relatively easy to understand the concept when dealing with physical capabilities such as motor abilities, it is much more difficult to comprehend what it actually means when dealing with cultures and cultural behavior. It is also more controversial. The key point is that the greater the competence of an individual, the greater the behavioral freedom that person has and the less his or her behavior is constrained by the social and physical environments. In environmental design, the question of what competence level should be taken into consideration is a key issue, as shall be explained fully later in this book.

Should people be challenged by their environments or should the environment be made as comfortable as possible physically and psychologically? The answer depends on one's world view.

### UNDERSTANDING HUMAN BEHAVIOR FOR ENVIRONMENTAL DESIGN

To understand the role of the built environment in people's lives one has to understand the nature of human behavior. This is the research concern of behavioral scientists. They have developed only a partial understanding of human behavior, however. While there may be general agreement on the basic processes, there is considerable disagreement on how the processes work. Some of these theoretical disagreements have little to do with environmental design theory, but others are central. Different ideas about the nature of interior design, architecture, landscape architecture, and urban design are based on different concepts of human nature and purposes. If designers do not recognize the conjectural nature of their own theories they are fooling themselves. Knowledge of the basic principles and controversies in descriptions and explanations of human behavior helps us clarify our understanding of the relationship between environment and behavior. This, in turn, helps the architect consider how the environment affords people of different backgrounds different aesthetic experiences and activity patterns. As shall be argued throughout, it also enables us to understand what we can predict with confidence and when we are really going out on a limb.

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