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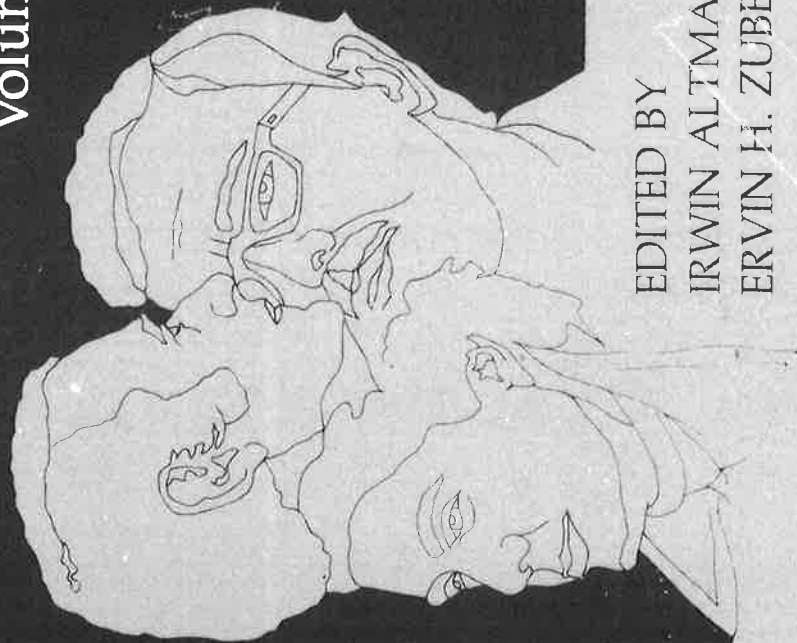
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# Public Places and Spaces

Human Behavior  
and Environment  
ADVANCES IN THEORY AND RESEARCH  
Volume 10



EDITED BY  
IRWIN ALTMAN AND  
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## Public Places and Spaces

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# Perception, Cognition, and Evaluation of Urban Places

JACK L. NASAR

## INTRODUCTION

Just walking through the vast main concourse of Grand Central Terminal in New York . . . almost always triggers in me a spontaneous and quiet change in perception. . . . The change—one that is reasonably well known to all of us . . . —lets me gently refocus my attention and allows a more general awareness of a great many things at once: sights, sounds, smells and sensations of touch and balance as well as thoughts and feelings. When this general kind of awareness occurs, I feel relaxed and alert at the same time. (Hiss, 1987, p. 45)

Clearly, our physical environment can evoke strong emotional responses, such as the esthetic experience described above—an awareness both relaxed and alert at the same time. It can also evoke less pronounced but nevertheless, important feelings and thoughts. This chapter discusses these reactions as they relate to urban outdoor public places. Rather than providing a comprehensive review, I intend to summarize important empirical findings and directions. First, however, let me describe the kinds of places and reactions to be discussed.

## URBAN PUBLIC PLACES

In common usage, the word "urban" may imply city concerns, but in practice it includes other public places. Urban designers deal with many different large-scale public environments—cities, neighborhood, suburbs, commercial strips—all of which fall among the concerns of architects, landscape

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architects, and city planners. In agreement with practice, this chapter considers not only the city but also these other kinds of large-scale urban places.

I choose an urban emphasis because most Americans live in urban areas. Occupying 16.2% of the U.S. land area in 1985, urban areas had 182.5 million residents or 76.5% of the population (Bureau of Census, 1987). The urban population has been increasing, up 10 million (5.9%) from 1980 and 29.7 million (16.3%) from 1970. The land occupied by metropolitan areas has also increased, up by almost 200,000 square miles (33%) from 1970.

Streets and the streetscape are particularly important in defining the character of urban areas (Nasar, 1979). Streets are public places. Most Americans live on streets and regularly pass through urban streets in their neighborhoods and on their way to work, shop, and recreation. In metropolitan areas alone, we drive over 4,000 billion daily vehicle miles per mile of road (Bureau of Census, 1987). Beyond that, we spend much time as pedestrians along the streets of central business districts, retail areas, and neighborhoods. So it is not surprising that the character of streets and their surroundings have been found to have major impacts on quality of life (Appleyard, 1981; Lansing, Marans, & Zehner, 1970). Accordingly, although this chapter discusses research at various scales in the urban environment, it emphasizes the street and the streetscape.

In the streetscape, buildings are prominent and costly objects, which have been rapidly changing the public face of urban areas. New construction in 1985 in the United States was valued in excess of 35 billion dollars (Bureau of Census, 1987), of which 19 billion dollars was spent on public buildings (often located in prominent locations) to produce 25 million square feet of space. Although much new construction is private (915 million square feet of commercial space, mostly office, and 2364 square feet of residential space), the exteriors of these buildings are public. Because of their public nature, the exteriors of public and private buildings should meet the visual needs of the public. This is "where issues of public policy meet questions of esthetics" (Goldberger, 1983, p. 3).

Homes and building along the road may occur as isolated objects in space, but they can be planned and designed to define and give character to space. With knowledge of empirical findings, decision makers can guide the design toward such desirable ends.

In summary, this chapter centers on urban places (the city, neighborhoods, suburbs, commercial districts). Particular emphasis is placed on the roadside environment, because of the impact of this environment on the public experience of urban areas.

#### COGNITIVE AND ESTHETIC QUALITY

Urban cognition and esthetics are crucial parts of that experience. By "urban cognition," I refer primarily to Lynch's (1960) concept of imageability. Among other things, imageability (clear identity and structure) gives us knowl-

edge of where we are—orientation—and how to get to desired destinations—wayfinding. The importance of such environmental knowledge is self-evident. Being lost—not knowing where you are or not knowing how to get to where you want to go—can be distressing, particularly for a newcomer. So an imageable or legible city can make one feel more secure by providing cues for orientation and wayfinding (Lynch, 1960). In addition, through understanding imageability, practitioners can better predict patterns of use.

By "esthetics," I refer to urban affect or the perceived quality of the urban surroundings. Esthetic quality has been identified as a major dimension in the public's perception of their surroundings (Carp, Zawadzky, & Shokrin, 1976); variables such as pleasure or beauty represent the most influential dimension of environmental assessments (Hershberger & Cass, 1974; Horayangkura, 1978; Oostendorp & Berlyne, 1978; Ward & Russell, 1981); and esthetic factors have major influences on judgments of community satisfaction (Lansing *et al.*, 1970).

Unfortunately, urban decision makers often gloss over these experiential factors as "subjective" and unquantifiable. They are neither. So, without overlooking the importance of other concerns in the design, planning, and management of urban areas, this chapter deals with the empirical findings on cognitive and esthetic quality. My intent is to inform those decisions where cognitive and esthetic considerations play a role.

Such a review might not be needed if design professionals and the public shared similar values, or if design professionals correctly gauged public needs. Unfortunately, this is not the case. Design professionals have been found consistently to differ from the public in their appraisals of the built environment (Devlin & Nasar, 1987; Groat, 1979; Purcell, 1986).

Two kinds of information are relevant to making user-sensitive decisions about urban environmental quality. On the one hand, solutions at an urban scale for many people should fit public images. For this purpose, information on shared values among large numbers of the populace is needed to achieve the requisite community acceptance (Lynch, 1960, p. 7). On the other hand, solutions for distinct populations and places should fit the particular requirements of the sociocultural and physical context. Here, information on differences in response across various groups and settings is relevant. In light of the need for these two kinds of information, this review discusses both commonalities in response and differences in response across various sociodemographic and physical contexts.

In the following sections, I first briefly discuss urban cognition—imageability and building recall. Next, I discuss the linkage between imageability and affect. Then, I discuss urban esthetics—including a framework, environmental simulation, salient dimensions of perception, salient dimensions of affect, and the relation of various attributes to urban affect. The chapter concludes with a discussion of five future directions of research. These include specifying the full model of esthetic experience, studying urban affect in relation to movement through the environment, studying changes (and development) of esthetic values, considering socioperceptually relevant categories of scenes, and integrating public policy questions into the research agenda.

## URBAN COGNITION

## URBAN IMAGEABILITY

What features of the urban surroundings contribute to orientation and wayfinding? This question has been dealt with extensively in edited texts and reviews of the research (cf. Evans, 1980; Moore, 1979). Briefly, the results support Lynch's (1960) contention that the identity and structure of a city is influenced by five physical elements: paths, edges, districts, nodes, and landmarks. The stability of these five elements has been confirmed in many studies employing diverse methodologies, populations, and locales including the United States, South America, the Netherlands, Italy, the Middle East, Paris, Mexico, and Spain.

Presumably, the use of these elements to reinforce one another can strengthen the urban image. For example, the identity of a district may be strengthened through internal unity, strong edges that also serve as major paths, and a hierarchy of landmarks (tied to nodes), which link to a related hierarchy of paths. Defining the ways in which these elements should be combined to best enhance imageability remains an interesting and relevant area for inquiry.

In a related matter, there is uncertainty about the relative importance of paths and landmarks in cognitive learning. What do people rely on when first learning their way around an unfamiliar place? Some studies find paths as more important (Appleyard, 1976; Devlin, 1976). Others find landmarks as more important (Evans, Marrero, & Butler, 1981; Heft, 1979). Aside from the effects of variations in the task and scale of environment, the differences probably result from differences in physical context. In areas lacking landmarks, paths take on greater importance, and in areas with poorly defined paths, landmarks take on greater importance. Because of real-estate speculation and the nature of development in big cities, landmarks may take on more importance to newcomers than paths in cities.

There is also evidence of individual differences in urban cognition (cf. Evans, 1980). Lower-income residents have been found to have less extensive maps than do higher-income people; children proceed through a developmental stages from route knowledge to a Euclidian coordinate system; and males have sometimes been found to have more developed mental maps than females. These differences probably result from differences in environmental experience. Interactive experience with the environment enhances the development and accuracy of internal representations of the environment.

## BUILDING RECALL

What factors enhance the imageability of landmarks, paths, edges, districts, and nodes? In one study that considered all of these elements, an individual's selection of imageable elements was found to depend on appearance, location, and meaning (Harrison & Howard, 1972). Most other research on

influences on imageability has centered on buildings, perhaps because of the importance of landmark buildings in urban orientation and wayfinding. Nevertheless, the results parallel those of Harrison and Howard (1972).

In a study of Ciudad, Venezuela, Appleyard (1969) found three factors related to building recall—form, visibility, and use. These factors are essentially the same as appearance, location, and meaning. Form included distinctive contour, height, shape complexity, maintenance quality, and movement around the building; visibility included visibility from roads, proximity to important decision points, and number of people passing a major viewpoint; and use included intensity, uniqueness of building function, and significance.

Furthermore, a study in Orange, California, confirmed the stability of these factors (Evans, Smith, & Pezdak, 1982). Building recall improved with movement around the base, clear contours, large relative size, shape complexity, maintenance quality, and use intensity. Building recall was also found to improve with building significance, accessibility from the street, uniqueness of architectural style, and naturalness. In a cross-cultural study between Japan and the United States, Nasar (1984a) confirmed the importance of form (clear contour) and visibility (time-in-view).

There is also evidence of individual differences in relation to building recall. Examination of these differences indicates that they probably result from variations in the sociophysical milieu. For example, Evans et al. (1982) found that the impact of symbolic significance was reduced in a city lacking historic buildings, the impact of singular function was reduced in a city lacking singular function buildings, the impact of signage was reduced for a less literate population, and the emphasis on *significance* and *building access* (important concerns to the elderly) was higher for elderly respondents than for others. Nasar (1984a) found memorability related to visibility more in U.S. scenes than in Japanese scenes (which had more vegetation and traffic).

In sum, building imageability is enhanced by exposure, use significance, and visual contrast, but the influence of these factors may vary with the sociophysical milieu. Although the research has not adequately addressed the factors that affect the imageability of paths, edges, nodes, and districts, it seems likely that their imageability may also depend on the same variables.

## RELATIONSHIP BETWEEN IMAGEABILITY AND PERCEIVED QUALITY

Although Lynch (1960) chose not to examine meaning, it is often assumed that imageability has favorable meanings. In theory, imageability, like coherence (Kaplan & Kaplan, 1982), should enhance perceived quality by helping people make sense of their surroundings. In practice, however, the quality of imageable elements can vary: a landmark might be an obtrusive water tower, a path might be surrounded by billboards, an edge might be a polluted river, and a district might be identified by its blight. Such a city would be imageable and ugly. Because of their prominence, imageable elements define the evaluative image of a city, but the direction of that evaluation—pleasant or unpleasant—depends on the perceived quality of the elements.

In agreement with this view, Nasar (1979) found that imageable elements influenced both favorable and unfavorable images of the city. When residents and visitors were asked what areas they liked visually in Knoxville, their responses centered on paths, districts, edges, nodes, and landmarks. When asked about dislikes, participants again cited paths, districts, edges, nodes, and landmarks. Similarly, in Chattanooga, the shared evaluative image depended on the perceived quality of the imageable elements (Nasar, 1980a). If this is so, improvements in the perceived quality of the imageable elements should have significant impacts on the perceived quality of the whole urban area. The following sections discuss the specific kinds of changes that may help achieve the desired esthetic quality. Although much of the research considers buildings and the view from the road, the findings should be relevant to the design of landmarks, paths, and districts for visual quality.

## URBAN ESTHETICS

### A FRAMEWORK

First, it may be useful to consider a framework for organizing the research on urban esthetics. My framework, an extension of Brunswik's lens model (discussed by Craik, 1983), is displayed in Figure 1. This framework includes five measures—physical, perceptual/cognitive, urban affect, well-being, and spatial behavior. According to Brunswik's model, these measures should have probabilistic relations to one another (Craik, 1983), and with experience humans adjust the probabilities to improve their functional accuracy. In light of the role of experience, the framework also includes two contextual variables: sociodemographic and environmental context. Correlates of esthetic value may vary with context.

Two of the measures in the framework refer primarily to the features of the physical surroundings. These are the physical and perceptual/cognitive measures. Features of the physical surroundings can be measured directly through *physical* measures (such as measurements of the size of an open space, the amount of vegetation in a scene, or the number of different colors in a scene). Such concrete physical measures, however, may lack relevance to perceived esthetic quality unless they are combined into a broader index (Wohlwill, 1976). Consensus judgments of attributes of a scene have been used as an alternative. These measures, called "perceptual/cognitive" measures (Ward & Russell, 1981), can often capture environmental dimensions of relevance to esthetic value that cannot be gleaned through direct physical measurement (Wohlwill, 1976). They might include ratings of such attributes as compatibility, complexity, order, and naturalness. According to the lens model (Craik, 1983), these measures should have probabilistic relations to the environmental cues. The evidence of high interobserver reliability (Craik, 1983; Nasar, 1983; Oostendorp & Berlyne, 1978; Ward & Russell, 1981) supports this view.

Next, consider esthetic response. Although esthetic response might be

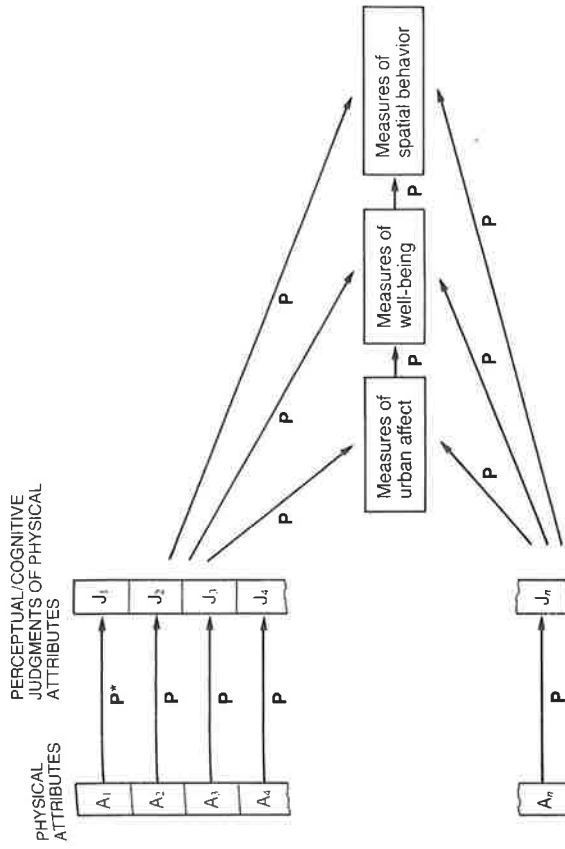


Figure 1. A framework for environmental esthetics. Probabilities ( $P$ ) might vary for different sociophysical categories of scene. Physical attributes may also have direct effects on urban affect, well-being, and spatial behavior.

viewed as a mix of high pleasure, excitement, and relaxation, most urban design neither seeks nor achieves this state. Of more relevance to urban design is how the physical surroundings influence affective response. Therefore, I use a looser definition (cf. Wohlwill, 1976) in which urban esthetics refers to positive feelings in relation to the urban surroundings. This *urban affect* might include judgments of the pleasantness, excitement, or safety of an urban area. According to the lens model, measures of urban affect should have probabilistic relations to perceptual/cognitive measures and urban features.

Improvements in visual quality may also affect two other kinds of variables: psychological *well-being* and *spatial behavior*. Psychological well-being refers to an individual's internal state, and this might be assessed through psychological measures or questions aimed at uncovering mood. Spatial behavior refers to how people use the environment, which places they visit, avoid, how long they stay. This can be observed directly, measured indirectly through its traces, or estimated from verbal report of behavioral intent or how individuals expect to use an environment.

In sum, the lens model applied to urban esthetics suggests probabilistic relations between five kinds of variables: urban physical features, perceptual/cognitive measures of those features, affective appraisals of the scene, psychological well-being, and spatial behavior. Only a handful of studies has ex-

examined the relationship between esthetic attributes and psychological well-being or spatial behavior (Locasso, 1988; Mintz, 1956; Ulrich, 1973; Ulrich, 1984). Most of the research has concentrated on relationship of environmental features or perceptual/cognitive measures to affective appraisals of the environment. And this review reflects that emphasis.

For the research to have practical value, the chosen perceptual/cognitive and affective measures must have ecological validity. They must be salient in people's regular experience in their urban surroundings. So, this chapter first discusses findings with regard to salient perceptual/cognitive dimensions and salient affective dimensions in response to urban scenes. Because much of this research uses photograph or slides, I first discuss the ecological validity of these simulations to on-site experience.

#### URBAN SIMULATION

Human responses to color slides or photos of urban or architectural scenes have been consistently shown to accurately reflect on-site response (Craig, 1983; Hershberger & Cass, 1974; Oostendorp, 1978). This view is also supported by the evidence that visual cues dominate auditory cues in judgments of the pleasantness of environments (Gifford & Ng, 1982) and by the evidence that ambient sound has little effect on scene judgments (Esposito, 1984). There are, however, some caveats.

Sound and familiarity have some effects on environmental appraisals. The relative influence of visual and auditory cues has been found to vary in relation to arousal (Gifford & Ng, 1982). Noise, especially from traffic, has been found to produce major decrements in judgments of environmental quality (Appleyard, 1981; Craig, 1983; Esposito, 1984). Familiarity has been found to influence cognitive and evaluative response (Craig, 1983; Zube, Vining, Law, & Bechtel, 1985). As a result, when seeking information for specific settings, on-site response by familiar observers is preferable. Nevertheless, for identifying salient dimensions of environment response, color slides and photos are acceptable. In fact, Oostendorp (1978) found that color photos of scenes in two distinct neighborhoods yielded the same dimensions of response that were found on-site with familiar observers.

#### SALIENT PERCEPTUAL/COGNITIVE DIMENSIONS<sup>1</sup>

What are the salient visual attributes of urban scenes and buildings? The research indicates four dimensions as stable across various populations and

<sup>1</sup> Early attempts at finding these salient dimensions used factor analysis of semantic-differential ratings of scenes (Hershberger & Cass, 1974; Lowenthal & Riel, 1972; Osgood, Suci, & Tannenbaum, 1957). This approach has been criticized because semantics and the investigator's choice of variables may bias the outcome and because a failure to separate affective and perceptual/cognitive measures yields dimensions that do not accurately reflect either domain of response. Although the Osgood *et al.* (1957) dimensions of meaning—evaluation, potency, and activity—have been confirmed across a variety of situations, their relevance to environmental response was uncertain. My review centers on that research that uses nonverbal (comparative) ratings of scenes and tries to derive dimensions of perception or affect from the structure of those judgments.

environments: naturalness (vs. man-made or urban), complexity, clarity/order, and openness.

Natural-man-made qualities (or related variables such as building prominence, urbanization, and greenery) have emerged as salient in the perception of a wide variety of molar environments (Ward & Russell, 1981), urban scenes (Geller, Cook, O'Connor, & Low, 1982), housing scenes (Nasar, 1988a; Horayangkura, 1978), and architecture (Oostendorp, 1978; Oostendorp & Berlyne, 1978). Complexity (or related variables such as visual richness, ornamentation, or information rate) has emerged as salient in the perception of a wide variety of molar environments (Ward & Russell, 1981), housing scenes (Nasar, 1988a), and architecture (Oostendorp, 1978; Oostendorp & Berlyne, 1978). Openness (or related variables such as density or spaciousness) has emerged as salient in the perception of a wide variety of molar environments (Ward & Russell, 1981), and housing scenes (Nasar, 1988a; Horayangkura, 1978). Openness may not have appeared in Oostendorp's studies because by emphasizing building exterior she eliminated variation in openness. Finally, clarity or order has emerged as salient in housing scenes (Horayangkura, 1978; Nasar, 1988a) and architecture (Oostendorp, 1978; Oostendorp & Berlyne, 1978).

For particular kinds of urban scenes or building types, however, other dimensions may emerge. For example, Oostendorp (1978) found some variance in the dimensions of perception of scenes in two physically distinct neighborhoods; Geller *et al.* (1982) found land use (commercial-residential) as a salient dimension of the urban scenes they examined; and Oostendorp and Berlyne (1978) found angularity/functional expression as a prominent dimension in the perception of architecture. Because design/planning decisions often deal with specific sociophysical contexts, additional research is needed on the dimensions of perception within and across various land uses, districts, and sociocultural groups. In addition, identifying probabilistic relations between perceptual/cognitive judgments and environmental cues has practical value. For example, judgments of the prominent dimensions of order, naturalness, or complexity may be influenced by nuisance factors, such as traffic, dilapidation, signs, wires, and poles.

#### SALIENT AFFECTIVE DIMENSIONS<sup>2</sup>

Now consider environmental affect. Along what affective dimensions does the public judge urban quality? Esthetic value has been treated as a mix of pleasure and interest (Wohlwill, 1976), but research suggests that emotional appraisals of the physical surroundings have some additional components.

In a major set of studies, Ward & Russell (1981) used a variety of methods and measures to derive the salient affective dimensions of response to a wide variety of molar environments. In contrast to many earlier studies, they also treated measures of affect as separate from other kinds of response. As can be seen in Figure 2, their results indicate that environmental affect consists of two

<sup>2</sup> See footnote 1.

AROUSING

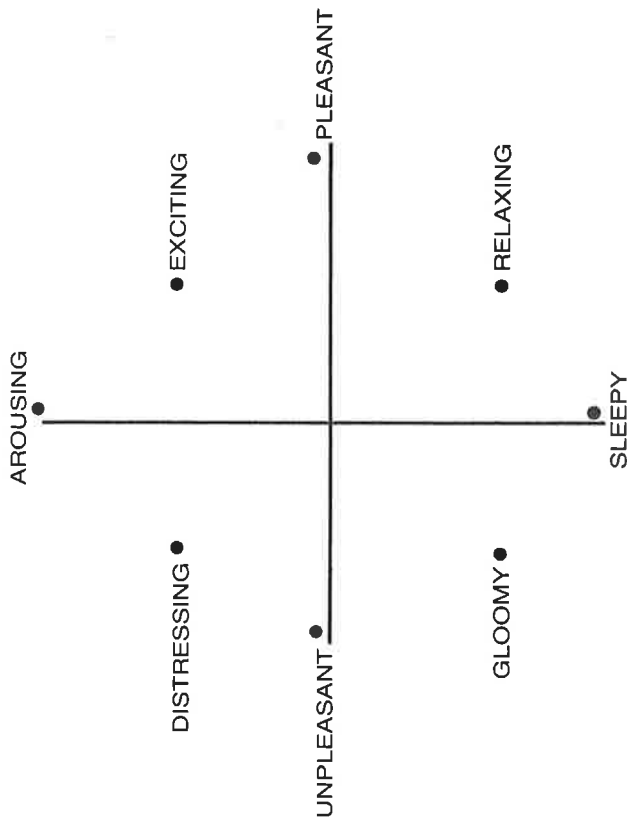


Figure 2. Dimensions of environmental affect (Ward & Russell, 1981).

primary orthogonal dimensions—pleasantness and arousal—and two combinations of these dimensions that yield the additional dimensions of excitingness and distress. A pleasant, arousing place feels exciting; an unpleasant, sleepy one feels gloomy. A pleasant, sleepy place feels relaxing; an unpleasant, arousing one feels distressing. Unlike arousal, which is orthogonal to evaluation, both excitingness and distress involve evaluation. Urban evaluation, then, has three interrelated parts—evaluation, excitingness, and distress.

The Ward and Russell (1981) dimensions show stability to urban and architectural scenes. Nasar (1988b, pp. 257–258) found that the adjectives selected by people as relevant to the assessment of urban scenes included descriptions along the dimensions of arousal, evaluation, excitement, and distress. Furthermore, factor analysis of responses to urban scenes on these selected adjectives yielded evaluation and arousal (tension and excitement) as the significant factors. In studies of urban buildings (Oostendorp, 1978) and of architecture from around the world (Oostendorp & Berlyne, 1978), the derived dimensions also involved evaluation and arousal. Interestingly, the two dimensions of evaluation and arousal are similar to two factors of Osgood *et al.* (1957)—evaluation and activity.

## ESTHETIC VALUE

At this point, we have seen that *naturalness*, *complexity*, *order*, and *openness* are salient features of urban scenes and that evaluation, excitement, and clamor are salient evaluative dimensions of response to urban scenes. What is the relationship between environmental attributes and the perceived quality of urban areas? The evidence suggests that the salient perceptual/cognitive variables may have important influences on affect.

The esthetic value of the environment has been described as related to four classes of physical variables: collative, organizing, psychophysical, ecological/content, and spatial (Berlyne, 1971; Kaplan & Kaplan, 1982; Wohlwill, 1976). Collative variables involve comparison between stimulus elements, and they create uncertainty. Included among collative variables are *complexity* (a comparison of information), *novelty* and *surprise* (comparisons between the object and expectations for the object), and *incongruity* and *ambiguity* (comparisons of meanings).

Organizing variables provide structure and reduce uncertainty. They include such attributes as *order*, *unity*, *coherence*, *clarity*, and *compatibility*. Psychophysical variables involve intensity, such as size, brightness, color, or contrast. Ecological/content variables "belong to the content rather than the formal aspect of the work" (Berlyne, 1971, p. 138). They might include such variables as *naturalness*, architectural style, and environmental nuisances, such as traffic, poles, wires, and signs and nonconforming uses. Spatial variables include *prospect* (the *openness* of the view), *refuge* (the protection of the observation point), and *mystery* (the promise of additional information).

I discuss the collative and organizing variables first (and that discussion also includes some psychophysical variables of relevance to collative and organizing attributes). Next, I discuss the spatial variables and then the ecological/content variables.

*Collative and Organizing Variables*

*Complexity and Order.* For centuries, writers have speculated on the esthetic value of the combination of variables such as complexity, variety, or ornament that provide visual richness with variables such as order, unity, or harmony that structure the richness (cf. Oostendorp, 1978). Of course, these two kinds of variables—complexity and order/clarity—are two of the salient dimensions in urban perception. Berlyne (1971) theorized that these two kinds of variables affect uncertainty and arousal. According to him, complexity increases arousal, order decreases it, and esthetic value is highest at a moderate (or optimal) level of arousal. (Similarly, the intensity of psychophysical variables might affect arousal, and a moderate level of intensity may be desirable.) Kaplan and Kaplan (1982) also adopt a two-process model in which esthetic value depends on our need for *involvement* and *comprehension*. The environment must be involving to attract our attention, and it must make sense for us to find our way around. Complexity creates involvement, and coherence (order)

aids comprehension. Again, moderate complexity and high order should be desired. What has the research found for complexity and order?

In agreement with theory, complexity has consistently been found to increase involvement or arousal (measured via interest, excitement, or looking time) (Berlyne, 1971; Wohlwill, 1976). With regard to evaluation, the results are inconsistent, but the inconsistencies may stem from methodological problems confounding the results (Kaplan & Kaplan, 1982; Wohlwill, 1976). For example, several studies failed to define complexity for the judges and overlooked nonlinear relationships (Wohlwill, 1976, p. 49). Studies of the environment have also been confounded by the uncontrolled covariance of complexity with such affect-loaded variables as upkeep, naturalness, visual nuisances, and land-use intensity and by the failure to include an adequate range of complexity for the expected decrement in evaluation to emerge. In the few studies that deal with these problems, the results have found the expected preference for moderate complexity over either low or high complexity (Nasar, 1987a; Wohlwill, 1976, pp. 47-48).

The findings for order have been consistent with theory. Increases in order (or related variables such as clarity, or unity) have been found to enhance the evaluative quality of cities (Nasar, 1979, 1980a), downtown scenes (Lowenthal & Riel, 1972; Nasar, 1984b, 1987b), housing scenes (Nasar, 1983), architecture (Oostendorp, 1978; Oostendorp & Berlyne, 1978), and buildings in natural settings (Wohlwill, 1982). In addition, compatibility has been found to influence perceived order (Nasar, 1987a); and preference has been found to increase with the compatibility of signs to their surroundings (Nasar, 1987a), the compatibility of buildings to nature (Wohlwill, 1982), and the compatibility of buildings to neighboring buildings (Groat, 1984). Furthermore, research has identified environmental cues for compatibility. For natural settings, judged compatibility has been found related inversely to contrast in color, texture, size, and shape of buildings relative to their natural surroundings (Wohlwill, 1982). For urban settings, judged compatibility of buildings resulted primarily from replication of surface features such as materials, style, rooflines, and overall shape (Groat, 1984).

Consider one set of studies on the combined effect of complexity and order (coherence) on evaluative response. A first study of photos of 30 retail scenes (Nasar, 1986) found complexity and coherence (low contrast) as salient dimensions of perception of retail scenes. A second study (Nasar, 1987a) tested the influence of these variables on evaluative response. The research used as stimuli color photographs (Figure 3) of a scale-model retail strip in nine different signscape configurations (three levels of complexity by three levels of contrast). First, the influence of physical contrast on judged coherence was examined. As expected, increases in contrast produced decreases in judged coherence. Then public ratings of each scene in terms of its pleasantness, excitement, relaxingness, and desirability as a place to visit, shop, linger, and spend time in were obtained.

The results support the two process model and suggest behavioral implications of environmental complexity and coherence. Complexity increased ex-

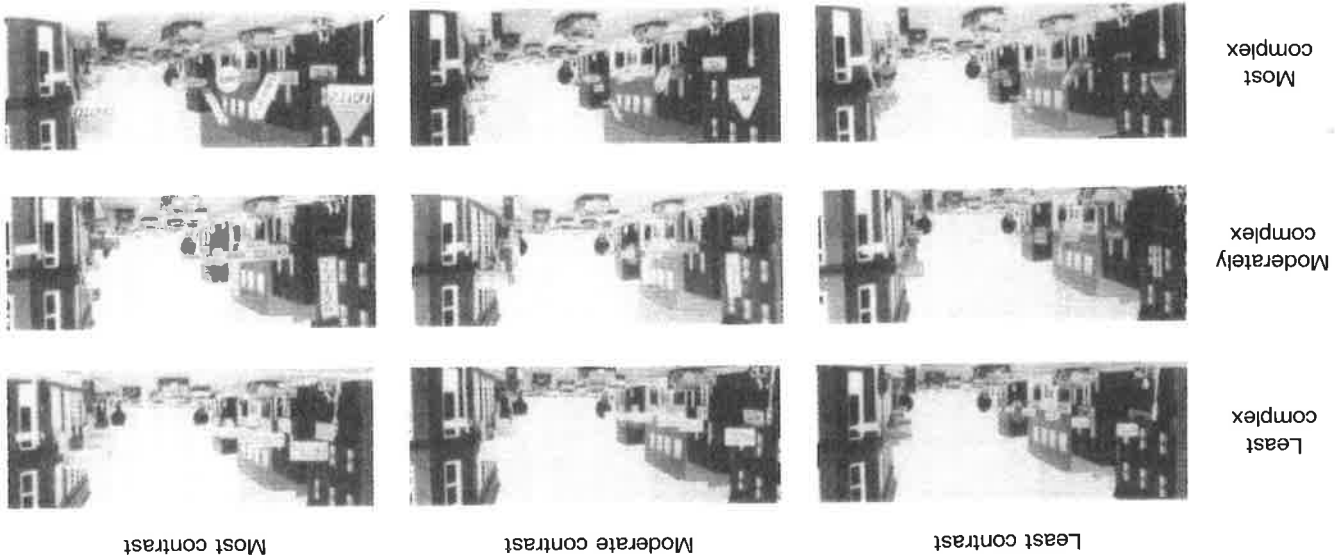


Figure 3. Black and white photographs of tested signscapes.



citement; and coherence decreased excitement. The moderately complex and most coherent signscape (i.e., the moderately exciting signscape) was rated as most pleasant and most desirable as a place to visit, shop, and spend time in. When merchants were asked which signscape they most wanted their strip to resemble, they most often selected the moderately complex and highly coherent signscape.

What about the other collative variables—ambiguity, incongruity, surprise, and novelty? We have already seen that people dislike environmental ambiguity and incongruity. They prefer environmental clarity, fittingness, and compatibility. Published research on environmental surprise is lacking, perhaps because of the difficulties in manipulating this variable because it requires movement through space. With regard to novelty, there has been extensive published research.

*Novelty and Familiarity.* Novelty can be defined as discrepancies from what is expected relative to an observer's previous experience. These discrepancies may include previously experienced elements organized in unique ways, unexperienced elements organized in familiar ways, or some mix of familiar elements. The findings on novelty seem contradictory.

On the one hand, some studies find that people prefer novelty. Studies of landscapes, churches, and homes (Purcell, 1986), central business scenes (Nasar, 1984b), and campus and temporary buildings (Herzog, Kaplan, & Kaplan, 1976) have identified preferences for novelty. On the other hand, some studies find that people prefer familiarity. Studies of landscapes (Sonnenfeld, 1966), various land uses seen from the road (Craik, 1983), commercial scenes (Nasar, 1980b), cultural buildings, entertainment buildings, and commercial buildings (Herzog *et al.*, 1976), and house types (Carter & Thorne, 1972) have identified preferences for the familiar. What is going on?

Purcell (1986) argues and demonstrates that affective response depends on the amount of discrepancy (novelty) between the object and a prototype for that kind of object. Interest increases with the discrepancy; and for the public, preference is highest for a moderate discrepancy. Does this sound familiar? It is an extension of the optimal-level-of-arousal theory (Berlyne, 1971; Wohlwill, 1976), and it may help explain inconsistencies in the results. If a moderate level of novelty is preferred, then studies examining "novel" or "familiar" scenes may get different results depending on the levels of novelty, familiarity, or typicality examined.

The inconsistencies may also result from other factors. Individuals differ in their preference for novelty. For example, young adults have been found to prefer novelty whereas older people favor familiarity (Sonnenfeld, 1966), and architects prefer interest and novelty more than the public does (Devlin & Nasar, 1987; Purcell, 1986). Expectations for novelty may also vary across settings. Furthermore, novelty has been shown to have interactive effects with complexity and initial affect. For complex stimuli, familiarity is preferred, but for less complex stimuli, novelty is preferred (Berlyne, 1971; Smith & Dorfman, 1975). When a stimuli is initially disliked, repeated exposure (familiarity) has been found to reduce pleasure (Mandler & Shebo, 1983).

Future study of familiarity/novelty is needed. This research might do well to consider separately the effects of different settings and populations and to use scenes that have been systematically scaled for various levels of familiarity/novelty, complexity, typicality, and first impressions. Now, let us consider the spatial dimensions of experience.

### *Spatial Variables*

Appleton's (1975) theory on prospect (openness) and refuge (protection) has relevance to spatial variables. According to this theory, prospect and refuge are preferred because of their survival value. Prospect affords the opportunity to see threats in advance; and refuge affords protection. An extension of this framework includes two kinds of prospect and refuge—primary, where the view has prospect or refuge, and secondary, where the view looks toward a place with prospect or refuge (Woodcock, 1982).

With regard to prospect, research in a variety of urban contexts has consistently demonstrated that people prefer openness/spaciousness (Gärling, 1976; Horayangkura, 1978; Lansing *et al.*, 1970; Nasar, 1983). For practical application, however, additional research should attempt to identify the desirable characteristics of openness and its enclosing elements.

With regard to urban refuge, the findings do not support the theory. Woodcock (1982) studied responses to three biomes and found primary prospect strongly related to preference, primary refuge inversely related to preference, and secondary prospect and refuge related to preference but only in the savanna biome. One study (Nasar, Julian, Buchman, Humphreys, & Mrohaly, 1983) had observers rate either an open or enclosed urban campus scene from either a protected or unprotected observation point. The open view was rated as safer than the enclosed one, but refuge had no main effects and reverse effects for males and females.

Another spatial variable is mystery, the anticipation of additional information through advancing into the scene (Kaplan & Kaplan, 1982). Scenes having a curving road have mystery. In theory, mystery should enhance esthetic value because it affords interest and progress toward coherence. Research has consistently found preference related to mystery in the expected direction (cf. Kaplan & Kaplan, 1982). Although much of that research is set in natural settings, Hesselgren (1976) found similar results for urban streets. Now, let us consider those features that are thought to influence affect through their content rather than form.

### *Ecological/Content Variables*

*Naturalness.* Kaplan and Kaplan (1982) describe nature as a content variable with restorative and esthetic value; and an extensive empirical record has consistently demonstrated preferences for nature and preferences for natural over man-made elements (Appleyard & Lintell, 1972; Kaplan, Kaplan, &

Wendt, 1972; Nasar, 1979, 1980a, 1983, 1984b; Wohlwill, 1976). Water has also been found to enhance scenic quality (Ulrich, 1981). A closer look at the evidence raises some questions about naturalness.

First, the research does not necessarily demonstrate a preference for "nature" or "trees." Research on "nature" has consistently obtained responses to vegetation. We cannot conclude that the findings apply to trees and bushes without leaves. In fact, the preliminary results of a pilot study I am conducting suggest that scenes without trees may be preferred to scenes with leafless trees.

Second, preference for vegetation may result from form rather than content. Vegetation correlates with order, unity, upkeep, and openness, all of which increase preference (Nasar, 1983, 1984b), and analyses reveal that vegetation enhances unity (Nasar, 1987b). Wohlwill (1983, pp. 14, 15, 17) has suggested other structural properties of nature that may account for the preference for natural over man-made scenes. Natural scenes may have smoother, less intense, and less predictable irregularities, movement, and sounds than man-made scenes. Consider also one class of man-made urban scene that elicits favorable responses: nighttime views of a city skyline or highway in the distance, where the sounds are too distant to be heard. As with nature, the scene (in this case the lights of the city or vehicles) changes in an irregular, continuous, and orderly fashion.

Third, the restorative value of vegetation has not yet been demonstrated. In a rare study that tied esthetic variables to well-being, Ulrich (1984) found faster recoveries for patients having a natural view than for patients having a view of a brick wall. However, because of the extremity of the manipulation and the lack of control, other factors (such as complexity or simply esthetic value) may explain the differences.

*Symbolic Meanings of Styles.* Symbolic meanings of styles are central to esthetic response to architecture (Rapoport, 1982). Thus, when architects rejected Greek Revival for Gothic Revival, Gothic Revival for Queen Anne, Queen Anne for Modern, they described each replacement as more *honest* (Lynes, 1954, p. 244). The styles had not changed, their connotations had. Not until recently have empirical researchers turned their attention to the symbolic meanings of architectural styles.

In one of the first of these studies, Groat (1979) found that architects differed from an educated lay group (accountants) in the meanings inferred from Post-Modern architecture. The public favored recognizable historic styles. Devlin and Nasar (1987) extended the Groat study in two ways. We examined two broad style categories, "high" and "popular" architecture, and we used a more representative group of lay respondents. Again, style influenced architect and public ratings of the buildings. Both groups rated "high" architecture as more complex and novel than "popular" architecture, and this difference was more pronounced for the architects. More to the point, architects judged "high" styles as more meaningful, coherent, clear, and pleasant than "popular" architecture, whereas lay people judged "popular" styles as more meaningful, coherent, clear, and pleasant than "high" styles.

Researchers have also looked at the meanings inferred from particular pop-

ular styles. Lansing *et al.* (1970) reported that most residents of several planned communities preferred the Colonial style. A minority preferred Modern styles. In a study of eight popular home styles (presented in mechanically drawn elevations), Kinzy found that Buffalo suburbanites preferred Tudor and Farm to Modern (Langdon, 1982). Unfortunately, the results were confounded by other variations in the homes (such as their size, number of stories, presence and size of garage, and amount of windows). In another study of stylistic preferences, Tuttle (1983) found that Wisconsin residents favored Colonial and Tudor to Mediterranean and Contemporary styles.

Unlike these earlier studies, we went beyond preferences to examine other dimensions of home-style meaning and we compared responses of various sociodemographic groups (Nasar, Zaff, Dunworth, Duran, & Rezoski, 1987). In one question (evaluation), we asked respondents which home they would select if they had won the "dream house lottery." In another question (perceived friendliness of assumed resident), we asked them which home they would approach for help if they had a flat tire. And in another question (perceived status of assumed resident), we asked which home would most likely house the individual who would "take charge" or "lead" the group if they worked together. The results confirmed systematic differences in symbolic meanings across styles and across sociodemographic groups. Participants made snap judgments about the desirability of the homes and about the character of the assumed residents. As did Kinzy, we found favorable responses to Tudor and Farm, but we found some variation in responses across the scales. For example, Colonial was judged as fourth in desirability, first in leadership, and fifth in friendliness.

Interestingly, I have also found a similar pattern of response from people in Los Angeles. The research also identified significant differences that related to education, occupation, age, and gender. For example, decreases in education, occupational class, and increases in age related to increases in preference for Colonial and decreases in preference for Contemporary. A follow-up study of architects indicates that they evaluate the styles differently from the public and they misgauge the public responses.

Taken together, these studies suggest that cues in broad stylistic categories and in specific styles may organize and give meaning to buildings and that training or exposure influences those meanings. Furthermore, the findings indicate limitations in the continued study of formal attributes as if they were independent from the style in which they are imbedded. Through study of other building types and respondent groups, we can find ways in which stylistic elements can be applied to specific contexts to achieve meaningful and pleasant public surroundings.

*Nuisances.* Certain nuisances—dilapidation, poles, wires and signs, industrial uses, and vehicles—have been found to depress perceived environmental quality (Appleyard, 1981; Lansing *et al.*, 1970; Nasar, 1979, 1980a; Winkel, Maiek, & Thiel, 1970). In particular, dilapidation and traffic (and its sound) have significant negative effects on the perceived quality of residential streets, neighborhoods, and quality of life (Anderson, Mulligan, Goodman, & Rezen,

1983; Appleyard, 1981; Craik, 1983; Lansing *et al.*, 1970). Interestingly, traffic sounds downtown have been found to be related to favorable responses (Anderson *et al.*, 1983; Southworth, 1969). Context may have importance. Additional research is needed on the sonic quality of our surroundings.

#### DESIGN/PLANNING RECOMMENDATIONS

Street right-of-ways represent valuable urban resources that need not be the empty spaces they are in many American cities. With proper planning, they can become meaningful public places. This means planning streets as more than just efficient passageways for movement. We must plan the placement and character of objects along the street—the streetscape.

The empirical evidence reviewed in this chapter points to several guidelines for improving the streetscape and perceived urban quality. These are listed below. Of course, implementation of any change should be monitored to determine effects.

With regard to cognitive quality, it may be desirable to

1. Guide development toward an organized system of landmarks, paths, edges, nodes, and districts
2. Strengthen imageable elements through visibility, contrast, and use significance
3. Consider specific requirements for sociocultural and physical context
4. Focus esthetic improvement efforts on the imageable elements (not to the exclusion of other elements)

Because urban areas consist of a hierarchy of elements (from individual sites, to street, to district, and the full urban area), one set of esthetic criteria may not apply everywhere. Esthetic requirements may vary with the character of the area and the character of user activities and purposes. Consider two motivational states that may influence perceived environmental quality: *specific* and *diverse* exploration (Wohlwill, 1976). In the former, individuals prefer a reduction in uncertainty: they would desire more coherence and less complexity. In the latter, they prefer increases in uncertainty: they would prefer the excitement of high environmental complexity and contrast (such as that in Times Square or Las Vegas). Speed of movement may also affect visual needs. As speed increases, concentration (specific exploration) increases, peripheral vision decreases, and the scale of environment noticed changes (Lozano, 1974). Within those limitations, design for various settings, scales of environment, and speed of movement might enhance esthetic value by providing:

1. Moderate levels of complexity
2. High coherence and compatibility and low contrast
3. Familiar (and historical) elements
4. Moderate levels of novelty (discrepancies from the expected)

5. Vegetation
6. More open space
7. Mystery through streets and walkways that curve out of sight
8. Building styles that are perceived to fit building purposes
9. Reductions in the prominence of traffic, traffic noise, dilapidation, litter, poles, wires, signs, and intense industrial uses

#### FUTURE DIRECTIONS OF RESEARCH

This chapter points to several topics that represent promising new directions for inquiry. In particular, we need research that specifies the full lens model, that considers esthetics in relation to movement through space, that considers change, that considers socioperceptually relevant categories of scenes, and that addresses public policy questions.

#### SPECIFYING THE FULL LENS MODEL

Recall that the lens model posits probabilistic relationships between urban cues, perceptual/cognitive measures, urban affect, well-being, and spatial behavior. The research has focused on the relationship between perceptual/cognitive measures and urban affect. The consistently high reliabilities for the perceptual/cognitive measures suggest some objective basis, but research has only occasionally examined the relationship between environmental cues and perceptual/cognitive judgments. Similarly, the influences of affective quality and esthetic attributes on spatial behavior or sense of well-being has not been adequately documented. Effects of esthetic surroundings have been found in response to extreme manipulations. Study of the effects of less dramatic and more realistic changes is needed.

#### MOVEMENT

Movement through space and sequence of scenes is central to urban perception and preference (Lozano, 1974). Certainly, the collative variable "surprise" in the environment cannot be studied without consideration of movement through space. Similarly, speed of movement affects what people notice and how they react to their surroundings. Although findings for urban cognition depend on assumed or actual movement, the empirical study of urban perception and evaluation, with its reliance on static stimuli or observers, has not adequately examined this process.

#### CHANGE

What is valued esthetically may change with time—with experience and lifespan development, from day to night, and over generations. The research

on cognition has addressed some relevant changes. For esthetics, the findings on familiarity/novelty, architect/lay differences and sociocultural differences indicate the importance of experience. But only one published study has examined developmental change: Zube, Pitt, and Evans (1983) applied a lifespan developmental perspective to the study of esthetic value. They demonstrated distinct lifespan developmental changes in preference. More work from a developmental perspective can illuminate the process through which people form esthetic values.

The empirical study of urban esthetics has also neglected the evening experience. Principles of esthetics that emerge in daylight may apply to evening experience, but the specific features for change may vary. Similarly, it may be useful to study esthetic needs as they relate to seasonal changes—such as changes in vegetation (leafless trees) or ground cover or extremes in temperature. Some of these conditions may affect motivational states, which in turn may alter esthetic preferences.

Finally, long-term (generational) changes are important to architectural meaning and change (Rapoport, 1982). For example, Lynes (1954) reported variations in architectural norms ("taste") over time in roughly 30-to-50-year periods. The continued study of esthetics as a static process (human responses to stimuli) cannot enhance our understanding of these dynamic processes. How can we empirically examine historical trends? Simonton's (1984) use of "historiometric" methods may be transferable to the analysis of long-term design trends. In a successful merging of the history of music with empirical observation, he quantified and compared melodic originality of 15,618 classical themes with thematic fame (measured relative to frequency of performance). In agreement with the optimal-level-of-arousal model, he found that the most famous themes tended to have a medium level of melodic originality. In addition, his findings support the concept of generational changes in esthetic norms. He found that melodic originality increased over the long term but it did so in cycles in which the most distinguished melodies of each generation departed from expectations of their era toward either more or less originality. Similar study of changes in design norms over time can uncover those principles of esthetics that are independent of location, period in time, or a particular designer. Such analysis can enhance our understanding of the nature of urban design masterpieces—those buildings and places that hold lasting appeal.

#### SOCIOPHYSICAL CONTEXT

As in language, where the same word takes on different meanings depending on context (how it is said, who is saying it, and what other words surround it), sociophysical context may influence the meanings of physical elements in the urban environment. Thus, for example, individuals from different-sized cities evaluate the same city differently (Wohlwill & Kohn, 1973).

Research has shown that sociodemographic factors such as life cycle, education, occupation, and gender influence environmental preferences (Carp &

Carp, 1982; Lyons, 1983; Nasar *et al.*, 1987; Zube *et al.*, 1983). At a minimum, these findings indicate major limitations in findings based on responses from the undergraduate subject pool. Beyond that, research on the specific needs of various sociodemographic groups has potential for application to environmental design. Planners/designers can easily find the sociodemographic characteristics of a city, neighborhood, or block in census data. It would be more difficult and time consuming for them to survey local populations for preferences. But, if research had already identified environmental preferences of the relevant sociodemographic groups, practitioners could apply those findings to the local situation.

With regard to the environment, building types have been found to influence public response to buildings (Groat, 1979). In fact, research has found that people use different criteria in evaluating different housing types (Michelson, 1976). So, although research considering mixtures of building types or land uses may have value for identifying broader patterns of preference, we also need to understand the preferred features within particular categories of scene. Existing planning classifications by land use or building type can suggest some tentative categories of settings for study, but such categories may not reflect the categories used by the public. Information on the perceptually relevant categories of scenes is needed.

Taken together, the evidence on sociodemographic and environmental category differences suggests a need to disaggregate populations into relevant sociodemographic groups, derive perceptually relevant categories of scenes for each group, and then identify the visual quality needs for each socioperceptually relevant entity. The concept here is similar to the ecological psychology concept of "behavior setting." Just as behavior settings consist of a population-environment mix and standing patterns of behavior, so particular categories of urban population-environments may have particular visual quality needs.

#### PUBLIC POLICY

Finally, research in urban esthetics can be informed by public policy concerns. At the national level, acts such as The National Environmental Policy Act (National Environmental Policy Act of 1969), require the federal government and its agencies to plan for esthetics and to give environmental amenities appropriate consideration in development. In addition, the Supreme Court has increasingly supported community efforts to control esthetics (Pearlman, 1988). The court has moved from accepting regulation of nuisances (for health and welfare), to agreeing that esthetics (as related to property) was a valid public purpose, to treating esthetics *per se* as a valid public purpose and arguing that communities have a right to regulate beauty. Many state courts have also moved to accepting esthetics as an adequate basis for decisions (Pearlman, 1988).

If challenged, however, the esthetic regulation must be based on a serious and comprehensive plan. Although the burden of proof rests with the plaintiff, the regulation is more likely to be upheld if it is based on solid applied research.

Presumably, such research should seek internal and ecological validity; it should consider both perceptually and policy-relevant attributes of the environment; it should consider the needs of various groups and places; it should identify limitations; and it should point to a comprehensive plan for control.

Through examination of the instruments of design control, one can identify relevant research questions. Consider the roadside environment. Its character results from public, private, and quasi-public actions. Public agencies own and control the design of public buildings and public rights-of-way. Of course, public development can be informed directly by research findings. Private individuals own and develop land adjacent to the rights-of-way, but that development must fit public controls. Cities and administrative bodies control the appearance of private development through such instruments as regulations (zoning, graphics, and building codes), incentives (revolving loans, tax credits, or other uses of city leverage), and design review. These all depend on guidelines, either formal (written standards and codes) or informal (judgments of experts) to control the design product. Research that considers the guidelines can have a substantial influence on urban form. By examining the breadth, depth, and enforcement procedures for local and national codes or design review, researchers may find questions of both practical and theoretical interest. For example, Wohlwill (1976) found fitfulness and congruence as variables having practical and theoretical relevance. I chose to study complexity and contrast, because they were controlled in an existing graphics code and because of their potential theoretical relevance (Nasar, 1987a).

A recurring issue in environmental design research has been the gap between research and application. Why don't architects use design research? The public, not the architects, will be the main beneficiary of the research. As a result, we should gear research to the public (a natural and potentially powerful constituency) and elected officials. Through the vote, the public selects officials who shape policy about the built environment (how much money is allocated for building, what kinds of things get built, and what kinds of controls are appropriate). Consumer research on public policy questions can bring together the necessary coalitions to advocate certain policies. It can identify politically safe actions for elected officials, who have some interest in making popular decisions. The resulting public policy can set the guidelines within which designers and developers must operate.

Research that connects to public policy has had demonstrated success in changing our surroundings. Whyte's (1980) livable space findings, for example, were integrated into incentive zoning in New York and affected development in New York. Similar efforts could be undertaken for urban visual quality. For example, my research on the retail signscape (Nasar, 1987a) was motivated by a public policy question. A neighborhood planning agency had asked for recommendations for an overlay (special) code to regulate signs. The revised graphics code that was derived from the research findings received the support of the merchants association, the residents, and ultimately by a neighborhoodwide task force that adopted the code and passed it on to the Columbus City Council for approval. Public policy questions can inform research, and research can change public policy.

## CONCLUSION

This chapter presented evidence of both systematic commonalities and sociodemographic differences in cognitive and evaluative response to attributes of the urban environment. For some attributes, clear policy directions are suggested. For others, additional research is needed.

In some ways, however, the research questions have been relatively safe. If we are concerned with improving the quality of our surroundings, and if our research is to guide planning decisions, then we may have to study some more risky questions, such as the symbolic meanings attributed to styles within various building types, the process through which esthetic norms change over generations, and esthetics in relation to the sequences of experiences when one moves through space. We may also need to consider the specifics of preference within relevant sociophysical contexts. Finally, we should look to public policy questions facing courts, administrative bodies, and decision makers. With the solid grounding that has been developed in formal esthetics, we are at a crossroad; that is, we can continue to reexamine the same old questions or we can step into a new, and perhaps less controllable and less certain, research environment. Such a step is fitting to practical concerns in the environment and behavior field.

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## Farmers' Markets as Community Events

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### INTRODUCTION

The design and management of many urban public spaces have been criticized for failing to serve the needs of residents (Hester, 1984; Jackson, 1981). Nonuse rather than overuse of parks and plazas is the problem (Gold, 1978). Francis (1987) traces the origins of open-space research to public awareness of the social failure of these settings. Some aspects of nonuse have been dealt with through redesign. Another approach to nonuse involves expanding the range of uses through innovative programs that attract larger numbers and broader categories of users. Special events such as concerts, exhibits, and festivals create secondary territories under the control of vendors, city agencies, etc., in contrast to anonymous public areas seemingly belonging to no one. One of the most successful means for bringing large numbers of people into urban open spaces on a regular and predictable basis is the farmers' market (FM).

This is an old institution being revived to fit new times. It is returning not out of nostalgia but because of the benefits it offers. All across the nation, FMs are springing up in city parks, plazas, pedestrian malls, parking lots, barricaded streets, county fairgrounds, and courthouse squares. Most are seasonal, conducted weekly throughout the summer months, but a few operate year-round selling stored, preserved, or nonseasonal items. Each takes its form from the community and region served.

Government has played an important role in encouraging the development of FMs. The Massachusetts Department of Food and Agriculture assisted in the establishment of more than 50 community markets around the state. West Virginia established seven permanent farmers' markets in different cities and

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