

## Cities, Images of

Community appearance matters to people. This article reviews scientific findings on the visual features of cities that convey a strong and desirable image to people who experience them. The article defines the concepts, reviews the research, and discusses methodological questions and future research and use of the findings.

### 1. *City Form: A Scientific Approach*

City form is shaped by and affects many people. Research shows that appearance is central in human responses to their surroundings (cf. Nasar 1994, 1997). City form 'should be guided by a "visual" plan: a set of recommendations and controls' for its appearance (Lynch 1960). US legislation and the courts grant governments the authority to control appearances (Mandelker 1996) and most American cities do so (Lightner 1993). To work, appearance controls must consider people's image of places. This article centers on the two key aspects of the image: imageability and linkability. Imageability refers to the probability that an environment will evoke a strong image from observers (Lynch 1960); and linkability refers to the probability that an environment will evoke a strong favorable response from observers (Nasar 1997).

For most of its history, urban design—the practice of shaping urban form—has followed a philosophical approach. Theorists speculated on what ought to be, but did not arrive at or test their speculations scientifically. Lynch (1960) suggested and tested a scientific approach. He assumed that people would more likely know, and so use, an environment that was easy to read or legible. This made legibility a valid purpose for research and design.

Lynch described the environmental image as having three parts: *identity*, *structure*, and *meaning*. This means humans recognize or identify objects (identity), they see a recognizable pattern of relationships between objects (structure), and they draw emotional value (or have feelings) about the objects and structure (meaning). The meaning of a place may take a denotative or a connotative form. Denotative meanings are the same as identity; they refer to judgments of what the place is. Connotative meanings refer to inferences about the quality and character of the place or its users. People often think of such connotative meanings as a question of aesthetics. This article avoids the term 'aesthetics,' because of its connection to art, where a statement may take priority over pleasure, and because many people view aesthetics as something one cannot quantify. Aesthetics also has its roots in philosophy and normative theory. Philosophers question the degree to which aesthetic experience arises from psychical distance or pheno-

menological involvement; and designers offer top-down speculations about the correct aesthetic for the design of places.

Fechner (1876) introduced the bottom-up approach to the study of aesthetics (meanings). He studied human evaluations of attributes of simple stimuli, such as rectangles and polygons. Almost a hundred years later, Berlyne (1971) revived this scientific approach, called empirical aesthetics; and at a time when psychologists sought real-world relevance, Wohlwill (1976) extended the ideas and approach of Berlyne to the study of real places. Although evaluative responses, such as preference, may vary across individuals (cf. Little 1987), the theories of Berlyne (1971) and Wohlwill (1976) held that certain kinds of physical features would likely have hedonic value. More recently, some theories suggest an evolutionary basis for certain shared environmental preferences (Kaplan and Kaplan 1989, Orians 1986, Ulrich 1993). Theories differ in their interpretation of the importance and interdependency of the individual and the environment in response. Research, however, confirms that beauty rests more in the features of the place evaluated than in the head of the evaluator (Stamps 1995).

Although Lynch recognized the importance of meaning, he felt one could not easily manipulate it through changes in urban form. He accepted the conventional wisdom that preference is highly variable across individuals. He judged meaning as impractical to study, and concentrated on form—identity and structure—separate from meaning.

### 2. *Components of City Imageability*

Lynch interviewed residents in three cities to see what they recalled about their cities; he found strong consensus across respondents. They converged on five elements that enhance a city's imageability: landmarks, paths, districts, edges, and nodes. *Landmarks* are visible reference points, such as towers or mountains. *Paths* are channels for movement, such as streets or walkways. *Districts* are large sections of a city that have some recognizable, common perceived identity distinguishing them from other areas. *Edges* are barriers, such as shorelines, rivers, or railroad cuts. *Nodes* are focal points of intensive human activity. Research confirms the stability of these elements for many populations and cities around the world (cf. Nasar 1997). Although the images and prominence of elements may vary across populations and places (Rapoport 1977), the correct arrangement of the elements can heighten the imageability of a city. Research that grew from Lynch's seminal work has yielded much information about mental maps, distance perception, and wayfinding (cf. Evans 1980).

To shape urban form, imageability is not enough. One must consider people's evaluation of the city, the meanings they see, or their evaluative image.

### 3. *Components of the Evaluative Image of the City*

Communities might not need a scientific understanding of the bases for evaluative responses if the designers, design review boards, and other experts who shape places produced designs that pleased people. Regrettably, research shows that they often do not (cf. Nasar 1994, 1997).

To find the evaluative image, one must consider both the evaluative responses important to people and the features of the environment that people notice and evaluate. Research has found three important aspects of human evaluative response to places (Russell and Snodgrass 1989). Preference is a purely evaluative dimension. Mixes of pleasure and arousal produce excitement and relaxation. Exciting places feel more pleasant and arousing than boring ones; and relaxing places feel more pleasant but less arousing than stressful ones.

Evaluative response to places may arise from two formal and symbolic variables (cf. Kaplan and Kaplan 1989, Nasar 1994). Formal variables have to do with the structure of form and include such things as shape, proportion, scale, complexity, incongruity, novelty, and order. Symbolic or content variables have to do with the connotative meanings associated with the forms. Several kinds of theories discuss the relationship between these variables and response. One set of theories view preference as dependent on arousal (Berlyne 1971, Mandler 1984, Wohlwill 1976). Of the many variables these theories cite as affecting arousal, complexity and novelty (atypicality) have garnered the most research attention. In theory, complexity and novelty increase arousal, interest, and excitement; but preference has an inverted U-shaped relationship to arousal. Preference would increase with increases in complexity or novelty up to a point, after which increases in complexity or novelty would produce a downturn in preference. Another theory offers an evolutionary model in which human survival depended on preference for involvement and making sense, and as a result, humans now prefer places that offer involvement and either make sense or promise to make sense (Kaplan and Kaplan 1989). This theory posits complexity and mystery (the promise of new information ahead, as in a deflected vista) as creating involvement; and it posits coherence and legibility as helping people make sense of things. People should like a mix of complexity, mystery, coherence, and legibility.

Research shows seven environmental features as prominent in human perception and evaluation of

places: naturalness, order, complexity, novelty (atypicality), upkeep, openness, and historical significance (cf. Nasar 1994, 1997). People recognize variation from natural (vegetation) to human-made. Research shows that humans prefer vegetation, that preference increases with the addition of vegetation, decreases with the increase in human-made elements, and that people dislike obtrusive signs, utility poles, overhead wires, and billboards, traffic, and intense land uses. Commuters drive out of their way to use a parkway rather than a less natural expressway; and research suggests that exposure to vegetation may have restorative or healing effects.

Research shows that people notice and prefer order. Preference for order has emerged for many kinds of urban settings and for various ordering variables, including legibility, coherence, identifiability, clarity, compatibility, and congruity. People also prefer well-kept to dilapidated areas. Dilapidation and disorder such as vandalism, boarded up buildings, and litter, which researchers refer to as physical incivilities, also contribute to a perception of the breakdown of social controls, fear of crime, and crime.

Complexity relates to the number of different elements and the distinctiveness between those elements in a scene. Research shows that people notice variations in complexity, and that interest, excitement, and viewing time increase with complexity, but that preference tends to be highest for moderate levels of complexity. Though some research points to contradictory findings, those findings suffer from method biases. Research shows that novelty and atypicality also increase excitement and interest. People prefer moderate to low levels of novelty or atypicality. Though some studies show contradictory results, the discrepancies arise from flaws in measuring novelty and familiarity.

People readily notice changes in spaciousness. Preference increases with openness, but people also like some spatial definition. People also like mystery (in the form of deflected vistas), but for uncertain conditions such as urban areas deflected vistas and uncertainty about information ahead heightens fear.

Places may have historical significance or just look historical. In either case, they evoke favorable response. People also prefer popular styles to the high-style designs. The preference for historical significance and certain popular styles over high styles may arise from connotative meanings associated with them or from the mix of complexity and order in them.

Naturalness, upkeep, and historical significance appear to be symbolic variables, while the others appear to be formal variables, but each one may work for formal or symbolic reasons. In addition, people may like some of these variables for their contribution to order or for their associations with status. Naturalness, upkeep, open views, order (compatibility), and historical significance enhance order, but these same features may look like feature that wealthier

persons can afford. People notice status, make accurate judgments of social status from environmental cues, and prefer high-status to low-status areas.

For integrative reviews on perception and preference of these features, see Kaplan and Kaplan (1989), Nasar (1988a, 1988b, 1989, 1994, 1997) and Wohlwill (1976); for vegetation see Kaplan (1995), Ulrich (1983, 1993), and Wohlwill (1983); for disorder incivilities, see Taylor (1989); for atypicality, see Mandler (1984), Purcell and Nasar (1992), and Whitfield (1993); for fear and mystery, see Nasar and Jones (1997).

#### 4. Methodological Issues

Visual quality research makes choices in selecting respondents, environmental stimuli, measures of environmental features, and measures of evaluative response. The choices involve trade-offs between what is practical, what allows experimental control, and what will generalize to the real situation. For a full review of the methodological issues see Nasar (1997, 1999). One thing that differentiates visual quality research from other social science inquiries is the need to get response to the appearance of places (Marans and Stokols 1993). For this, many studies use color photographs and slides. Research shows that responses to such stimuli, even though they lack movement and sound, accurately reflect on-site response (Stamps 1990).

#### 5. Future Directions

Future research needs to better define the linkage between the judged and actual physical attributes. It should examine movement through environments. It should apply scientific methods to historical data to examine longitudinal aspects of evaluative response. It should use meta analysis to integrate findings of previous studies statistically. It should supplement verbal responses with psychophysiological measures and observation of behavior.

To derive specific guidelines for special situations, one can also use visual quality programming. This involves applied research to develop information for a visual quality plan or guidelines. Nasar (1997, 1999) demonstrates examples of this for various applications. This can lead to improvements in the visual quality of communities for residents and visitors.

*See also:* Memory for Meaning and Surface Memory; Mental Imagery, Psychology of; Mental Representations, Psychology of; Multi-attribute Decision Making in Urban Studies; Space: Linguistic Expression; Spatial Analysis in Geography; Spatial Cognition

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## Cities, Internal Organization of

Economic activities, land uses, and socioeconomic status of population seldom distribute evenly or randomly in an urban area. They typically differentiate into internally homogeneous clusters. It is difficult not to conceive that this differentiation is governed by some underlying principles of spatial organization. And urban form affects the economic efficiency, social equity, environmental quality, and sense of place. Therefore, understanding theories of urban spatial organization helps advance knowledge and shape better futures for urban areas.

Contemporary urban development has long spread beyond the political boundaries of a city. A typical urban landscape in an advanced economy is a contiguous urbanized area that consists of multiple cities and their suburbs. Hence, urban spatial organization must be analyzed in the context of an urban region.

Most studies in urban spatial organization have been conducted in North America where an advanced capitalist market economy prevails. Their generalizations may not be completely applicable to cities that have evolved in different economic modes, such as those where the public sector dictates urban development or communal institutions control property rights. Furthermore, North American urban places are different from the rapidly growing mega-cities (having populations of more than 15 million people) in Asia and Latin America.

### 1. Urbanization and Suburbanization

During the nineteenth century, North America rapidly industrialized and urbanized. For example, between

1820 and 1920, the number of US cities with populations of 5,000 persons or more exploded from 39 to 1,467. During this period, these cities were also under transformation. Originally evolved from a focal point of employment, these cities were relatively small and compact because contemporary transportation systems limited their expansion. Technological advances led to successive transportation systems: streetcar, suburban rail, and subway. Each new system helped to push the urbanized area further.

Similarly, in the early twentieth century, the use of trucks, automobiles, and telephones vastly expanded the urban horizon and dispersed wholesale and manufacturing uses to the suburbs. Meanwhile, new building technologies such as elevators and skyscrapers helped rebuild city centers into central business districts (CBDs)—containing blocks having concentrations of high-rise buildings of offices and retail.

While the urban share of the US population first reached 50 percent in 1920, the most striking change that would sweep America, suburbanization, was delayed by the Great Depression and World War Two. In the postwar period, three interrelated processes restructured the urban landscape. High rates of family formation and the ‘baby boom’ (a surge of births between 1946 and 1964) created extreme housing shortages that the existing urban fabric could not accommodate. Concurrently, huge federal and state expressway-building programs opened up new residential suburbs while urban renewal efforts accelerated the outward movement of blacks from segregated ghettos into nearby predominantly white neighborhoods. Throughout the 1950s and the 1960s, these last two processes resulted in the so-called ‘white flight’ or ‘flight-from-bligh’ phenomena (Mieszkowski and Mills 1993). These processes accelerated an already existing decentralizing trend and led to further dispersal of economic activities. As suburban centers captured jobs, housing, and stores, the central cities lost their dominance in metropolitan population and employment. The result was the growth of sprawling urban regions. These trends continued through the late twentieth century as urbanized areas gradually become polycentric.

By 2000, the US demographic character was firmly established. For example, 80 percent of its population was classified as urban, up from 56 percent fifty years earlier. Furthermore, suburbanization gained momentum. In 2000, the share of the urban population living in the suburbs was 60 percent, a complete reversal from the 40 percent of 1950. Suburbanization is not unique to the US; other nations of advanced economies are undergoing similar changes (Ingram 1998).

### 2. Patterns of Spatial Organization

Evaluating urban spatial organization encompasses several patterns, including land use differentiation, population distribution, household characteristics,

1825