Architecture and Problems of Urbanism
Dr. Wagih Fawzi Youssef

Abstract

Physical environment constitutes everything surrounding man: the built environment and the natural environment. Human behavior is influenced by its physical environment, yet the relationship between the two has received little concern. Behavioral and other psychologists have talked about the role of the environment in shaping behavior. Architects and urban planners need to be conscientious of the built environment they are designing if they are to contribute to the well-being of residents in public housing or multi-family dwellings, the well-being of users and staff personnel in offices, patients in mental institutions, or inmates in penal institutions.

Introduction

Environmental psychologists divide the physical environment into two types, the man-built and the natural. Man-built features of the environment has also resulted in pollution, and overcrowding. The effect of these conditions on behavior has been studied by environmental psychologists. It is difficult to isolate one feature of the environment and study its effects on behavior without having the behavior modified by other features of the environment such as climatic conditions, buildings, the complex part of a neighborhood, and so forth, all interacting and influencing behavior. The most influential of these on behavior is the relative contribution of man-designed and man-built structures of a particular physical setting; structures and settings that are usually designed by an architect or urban planner.

For sociologists, the typical city dweller is often thought of as a person who does not appear to care about others. Factors associated with living in the city cause a variety of effects. For example, the relationship between certain characteristics of the urban environment and the recurrence of mental illness, hypertension and heart disease. Overcrowding, for instance, which causes several types of physical pathology, such as crime in urban areas, which in turn leads to more overt behavioral changes such as buying watchdogs, installing new locks and burglar alarms, and carrying tear gas pens and other weapons besides heightened police reinforcement.

Investigators grouped these effects in three categories on the basis of the types of undesirable effects attributed to overcrowding: 1) *Physical effects*. Starvation, pollution, slums, physical malfunctions; 2) *Social effects*. Poor education, poor physical and mental health facilities, crime, riots, war. 3) *Interpersonal and psychological effects*. Drug addiction, alcoholism, family disorganization, withdrawal, aggression, decreased quality of life.

Kevin Lynch points out there are influences on the development of an image of an area, such as its social meaning, its history, its functions, and even its name. Lynch found that the physical elements of the city images could be classified into five types; paths, edges, districts, nodes, and

landmarks. Paths are streets, walk ways, rail roads and so forth. Edges are the linear elements not used as paths. They may be shores, borders of developments and so forth. Districts are the medium to large sections of the city. Nodes are important areas that a person can enter, places of a break in transportation and so on. Landmarks are points of reference. However these single elements do not yield much information about element interrelations, patterns, sequences, and wholes. Other methods must be developed to study the image of cities. It maybe characteristics of certain buildings, parks and city squares, Mosques, or maybe overcrowding slums, as tools for visual awareness. These and similar studies have implications for urban design but, I wonder if there is use in following them as a design methodology?

Urban Slums

A great deal of attention has been focused on urban slums and the problems associated with them. This has resulted in a number of government action programs, such as urban renewal and urban acupuncture. Residents in these areas lived years of satisfaction because the physical area has considerable meaning as an extension of home, and various parts of the area are delineated and structured on the basis of a sense of belonging. The local area around the dwelling unit is viewed as an integral part of the home.

The strength of feeling of belonging in an area was an important factor in determining whether the residents liked or disliked living in the area. Another factor is that the residential area provides a framework for a vast and interlocking set of social ties, which serve as an important source of satisfaction. In the slum a great deal of activity occurs outside the dwelling. Children play in the streets; women go out and talk with their female friends, street corners serve as meeting places for social exchanges, and so forth. The external environment becomes an extension of the dwelling. The home is not only an apartment to live in but the local area also has meaningful aspects of life experiences.

Programs that dislocate people and destroy social relationships may have deleterious effects that outweigh the expected benefits. For instance, slum residents who are highly satisfied with their neighborhood because of the extensive social relationships they have formed there, when been forcibly relocated by urban renewal programs, become deeply attacked by a grief syndrome / 'root shock' (Fullilove, 2004) which can result in crying spells and psychosomatic illness, such as intestinal disorders, vomiting and nausea.

On the other hand, Zehner found that his respondents felt it more important to have neighbors they felt were compatible than neighbors with whom they frequently interacted. The factors least related to neighborhood satisfactions were those involving accessibility of various community facilities. Social compatibility was a source of neighborhood satisfaction.

There are of course, many other aspects of the built and natural environments that some people perceive as threatening. Our society is based on an increasingly complex technology which tends to pollute the environment.

Noise Pollution and Health

Most types of air pollution such as Noise pollution have become a chronic problem in many cities. However many people are not even annoyed and appear quickly to adapt psychologically and biologically to a polluted environment. Man's reaction to pollution is a complex psychological phenomenon that is not easily explained.

As more people move into urban regions, increases in population density significantly increase the number of people exposed to noise pollution. There is some evidence that complaints about noise come disproportionately from neurotic people and that the individuals who are most annoyed by noise may have difficulties in personal adjustment attitudes, which are based on the past experience of the individual play an important role in perceived nosiness.

Some investigations have attempted to correlate exposure to noise with hearing impairment, psychological disturbances and various other health problems. Noise interferes with their talking, sleep, and so forth. If the noise level reaches 90 decibels, most people will react vigorously with complaints and threats of action. Long exposure to high intensity noise more than 90 decibels, does result in hearing loss. For example, in discotheques and at a rock concerts, music is often played for long period at levels of sound 110 db, and sometimes as high as 120 db. Several studies have shown that persons who spend a good deal of time listening to music in these settings suffer temporary or permanent hearing damage.

Noise has a detrimental effect on performance which depends upon the characteristic of the noise, of the talk, and of the individual. Personal variables include both transient and relatively permanent factors. A person's mood or motivation at a particular time is an important determinant of noise effects, as are personality, age, sex, and attitudes. The predictability of the noise and whether a person can control its termination influence the annoyance level of the noise and its effect on behavior (Reim, Glass, and Singer 1972). However, all the variables associated with the noise, the task, and the person interact in unpredictable ways and make it difficult to state accurately the effects of noise on performance.

A European study reports correlations between cardiovascular irregularities and intense occupational noise exposure and a study in Russia found that adults living near airports had a higher morbidity rate than did persons living some distance away. High noise level increased the likelihood of diseases associated with tension, such as duodenal ulcers.

Pollution and Behavioral Effects

Pollution affects behavior and most people say they are willing to do a great deal to help curb pollution problems and are fairly emotional about it. It is apparent that the behavior – pollution interaction is extremely complex and influenced by many variables. The physical characteristics of the pollutant and the characteristics of the person himself all interact in a complex way to determine just what behavioral effects occur. If pollution does affect health, then it is obvious that behavioral effects will also occur. Thus a person whose hearing has been permanently impaired by exposure to loud noise will have somewhat differently from the way he did before the impairment occurred. However, aside from the demonstration noise induced hearing loss; there is

still a question in the minds of many investigators about the health effects of air and noise pollution.

Housing

Housing units are considered to be important factors in the investigations of environment-behavior relationships for reasons ranging from commercial to the social. Interest in the effects of housing on behavior has grown with the recognition of the tremendous need for new housing to allay current and projected shortages. New dwellings of all types will be required for suburban developments to satisfy the demands of the growing middle class, additional public housing projects for the economically deprived, and an increased numbers of structures aimed at enticing people to remain in the cities. However, lack knowledge about the behavioral correlates of present design and construction methods, not to mention the possible influences of new housing concepts on behavior. Some questions may be asked as; will this home's looking virtually identical to every other house in the complex have any behavioral effects? This and other questions need answers before any type of housing is implemented in large scale. Moreover, the increasing urban renewal programs involve moving many persons to large housing complexes, which their occupants may dislike and which appear to cause antisocial behavior.

Multi-Family Dwellings

Multifamily dwellings are almost certain to be closer to their neighbors than are people living in single family dwellings. Another feature of multiple family dwellings is the sharing of walls, ceilings, and floors. Clearly, as the number of common partitions increases, privacy decreases which becomes one of the major sources of dissatisfaction on the part of the residents. The common walls between units mean constant annoyance of each family by the other. Much of the activity of one family in their living room will be heard by the other family and vice versa. This also exists at a more personal level, because the units share bedroom walls as well. Since the residents are aware of the problem, will be expected to keep noise at a minimum, curtailing the normal play of their children, keeping radios, televisions very low. Kuper expresses concern about the possible long-term effect of such enforced behavior on the development of healthy interfamily relations.

Invasion of privacy is not only restricted to auditory dimension but the arrangements of the doors between the buildings provoke considerable annoyance in a number of residents. Even more detrimental to privacy is the arrangement of the buildings in the culls-de-sac. Anyone entering or leaving any dwelling could be seen by others. However, we assume that these features are conductive to friendship formation and health social interactions. The placement of those, the culls-de-sac increase visual contact between families and thus increase social interactions among residents instead of mutual avoidance.

A critical question is whether the public housing projects provide more satisfaction to the residents than did the slum neighborhoods? Lewis (1970) provides an account of an interview with a woman who had moved from a slum neighborhood to public housing at the suggestion of her social worker. Although the subject indicated overall satisfaction with her apartment, she expressed distaste for other people living in the project, fear for her children's safety, desire for the informal interaction of the old slum and general regret at having moved. I asked my fellow

citizen who was forced to move to the public housing in Helwan city after his house collapsed in Cairo, his response for that new residence was by reinforcing the security of his apartment and a complete avoidance of any contacts with the neighbors.

The reasons for dissatisfaction in the public housing complex are inability to survey children's activities, mistrust of others in the building, and fear of being assaulted or robbed outside the apartment. And because the arrangements and designs of the similar shapes of blocks one finds himself in the same place whatever he walks away. Hollingshead and Rogler's findings were that the proportion of public housing residents expressing overall satisfaction with their situation was approximately 25 percent, in contrast to over 60 percent of the slum residents. These are typical findings of research on resident satisfaction with public housing.

Designers of public housing units are forced to use the space as economically as possible. This emphasis often results in the double loaded corridor, a straight hallway with apartments on both sides. This corridor is considered by residents and administrators alike to be public space, since many persons must use it to reach their apartments. Thus, because of the traffic in the rather limited space and the implied function of the hallway, informal social interaction is unlikely to occur there. Another disadvantage of this type of corridor is the lack of symbolic or physical boundaries to act as territorial makers for individual or small groups of apartments. The second feature is that the building has large open spaces between them. The frequent lack of fences or walls there serves to discourage residents from engaging in activities within the boundaries of their building's territory.

A more serious behavioral result of the physical features mentioned above is crime. In discussing this problem, Newman (1973) presents the concept of defensible space, defined as:

> "a term for the range of mechanisms – real symbolic barriers, strongly defined areas of influence, and improved opportunities for surveillance – that combine to bring an environment under the control of residents. A defensible space is a living residential environment that can enhance the inhabitants lives while providing security for their families, neighbors and friends. [1973b, p57]"

Function determines the characteristic of built structures as well as the behavior that occurs in them. Structures usually contain people interacting to accomplish objectives. Large numbers of persons get together to achieve a common purpose in environmental systems in public buildings, where the variety of persons involved in these large systems and their varying needs are housed in a particular structure.

In an office building, for example, functional factors are important for maximum efficiency. The relationships between the physical features of office environments, and job performance suggests further research and design emphasis. Because the employee spends most of his time there, it is reasonable to study the effect of equipment design and arrangement on comfort and efficiency. Investigators in the field of ergonomics studied the human performance in work situations and put standards based on measurements. These standards intended to prevent unnecessary bodily movements and positioning resulting in fatigue, inconvenience or injury in order to improve worker efficiency.

Fucigna (1967) evaluated the effectiveness of the Action office to induce maximum performance. He suggests identifying the information necessary for an effective decision, the retrieval of the information from various sources and by various means and temporarily storage of some of it until all the pertinent facts have been collected. The information is then processed, which may include discussions, then modifying the information, comparing it, and so forth. Finally, the information is put into suitable form for making a decision and taking appropriate action.

Other factors affecting behavior in offices are ambient environmental conditions. Temperature, humidity, illumination, and noise can produce comfort or annoyance, thus affecting the performance. Some discomforts are from the great difference between indoor and outdoor temperature in summer and the necessity of keeping windows closed during the warmer months.

The Landscape Office

A large office with an open plan design typically consists of one entire floor. This kind of physical layout has the economic advantages of flexibility, low maintenance, and low initial cost. This open plan claimed to have social and psychological advantages. The landscape office design is said to provide greater opportunity for an aesthetically pleasing environment because the designer can use planters as dividers and has greater latitude in color schemes. Thus, besides being economical, the large open plan office implies behavioral advantages in both job-related activities and feelings of well-being.

Hospitals

Hospitals are still of interest to an environmental psychologist because they offer numerous opportunities to study man environment interactions. Many persons must be coordinated with a high degree of precision.   Thus reliability and efficiency are of prime importance in this institution. Each subcategory of patient or staff has environmental needs in the stages of diagnosis, treatment, and convalescence different from those of the other subcategories. For the moment we will consider some of the research on medical staff behavior in different types of hospital layouts and their effect on efficiency.

Lippert (1971) used nurses' movement about the wards as the dependent variable. Travel was assumed to be an important factor in the evaluation of ward design because a substantial amount of a nurse's time is taken up by travel which is considered as a source of dissatisfaction of ward nurses. In this respect Lippert constructed a "tour model" which is considered one trip by a nurse from her station to the patient and return to the station. Various stops in her tour for fresh linen or other supplies were considered "utility stops" and were included as part of the tour. Lippert suggests that the most efficient ward design is one that allows for the most patients visited per tour.

Ronco (1972) points out that psychological considerations involving the patients are frequently rejected in favor of enhancing staff efficiency. The result of one such decision is the physical and psychological confinement of the patient. Because of the crowded conditions of hospitals, patients are often discouraged from moving about in rooms or wards, even though the illness or injury is such that they are able to do that. Ronco also notes that corridors are unappealing that the patients avoid travelling in them. Ronco cites a study by Jaco (1967) who investigated

psychological reactions to a radical nursing unit. Many patients recorded a lack of privacy, presumably due to the ability of the nurse at her station to look directly into their rooms. The lack of privacy is especially evident during visiting hours, with no private visiting areas. Thus, any behavioral effects of hospital design for function without regard to patient needs will likely be deleterious.

Social Institutions

On mental and penal institutions where a primary purpose is to change behavior deemed by society to be deviant. Both mental and penal institutions offer a unique opportunity for the effects of the physical environment on the people in it. The patients or inmates are captives in a single physical and behavioral environment.   This isolation allows the formation of stable man-environment relationships and makes their observation easier. However, due to the nature of the institutions, any links established between physical features of the institutional environment and occupant behavior can prove extremely valuable in designing for maximum rehabilitation.

Mental Institutions

Although social behavior is a function of many variables, such as therapeutic technique, administrative policy, and patient characteristics, features of the ward environment can be isolated as possible determinants of social activity. Typically, psychiatric wards contain all the features necessary to support patient activity; room for eating, sleeping, recreation and socializing, treatment, and personal hygiene.

Comparison by the overall activities for some wards dealt by Ittelson, Proshasky, and Rivilin (1972); Gump and James (1970) and Barton, Mishkin, and Spivack (1971) showed that more active or social behavior occurred in the private hospital than passive behavior. In the state city wards, isolated – passive behavior predominated. In the public places of the wards, behavior in the private hospital was again much more active or social than isolated – passive. However the researchers felt that these differences were more the result of the differences in patient populations and administrative policies than differences in physical environment.   The researchers discovered that the percentage of isolated passive behavior in bedrooms increased in all wards with the number of beds per room and, consequently, with bedroom size, the larger the bedroom, the more people occupying it and engaging in isolated – passive behavior at any one time. The authors interpret this finding as follows:

-- The patient in the smaller room experiences the entire range of possible behaviors as open to him, he feels free to choose from the whole range of options, and he does in fact, choose more or less equally from among all possibilities. This is [most] dramatically shown in the single rooms of the private hospital where behavior is equally distributed over all categories.

Thus, if social interaction in psychiatric wards is desirable and does hasten rehabilitation, one implication of this study for designers is that small bedrooms may be preferable.

Patient Needs

The emotional state of patients in mental institutions leads them to behave in a way considered abnormal in our society. Osmond (1970) cites the abnormalities in a schizophrenic's perceptions

– visual auditory, time and self, offer suggestions for institutional design that might help to alleviate, these distortions. Sensory deprivation experiments have shown that a lack of changing visual stimulations may cause even normal people to experience visual hallucinations. Osmond states that small groups who can form understanding relationships are more resistant to mood swings.

Penal Institutions

The physical features of penal institutions are somewhat similar to those of mental health facilities. However, there are major differences between the two types of institutions that may affect the manipulation of physical features to help achieve institution objective. However, providing a physical environment meeting the individual's personal needs may be as important in a prison as in a psychiatric ward. One technique useful in controlling social interactions is the provision for physical separation of inmates. The provision of independent mini-prisons for individual inmates is probably far beyond economic limitations. The provision for inmate privacy is instrumental in rehabilitation.

In a study of the use of separate cells as a deterrent to criminogenic influences, Glaser (1972) attributes the increased eating time to the single inmates need to socialize or to be away from the isolation of his cell. The result of this survey suggests that although occupants of single cells do have more opportunity for privacy, they do not take advantage of it as much as they might. Glaser also obtained the same types of information for separate housing units in one prison setting. The housing units were organized according to the different stages in the rehabilitative process and thus varied in physical features as well as administrative policies on inmate supervision. Basically, the units at the bottom of this system consisted of dormitories. Each with a supervisory officer. Glaser concludes that these units contributed more to the comfort of both the inmates and staff than to the reformation of the inmates.