

UC Berkeley

Places

Title

New Design Parameters for Healthy Places

Permalink

<https://escholarship.org/uc/item/3mz7z8pn>

Journal

Places, 2(4)

ISSN

0731-0455

Author

Lindheim, Roslyn

Publication Date

1985-04-01

Peer reviewed

New Design Parameters for Healthy Places

Roslyn Lindheim

Introduction

Ideas about health and disease have influenced the design and location of cities, communities, and buildings since early times. The Greek physician Hippocrates described in "Air Water and Places" the appropriate locations for a healthy city based on the terrain and the winds. It was only in the mid-nineteenth century, however, that ideas about health and the environment took legislative form and achieved major importance in the policies elaborated by city planning, housing, and health departments. Conditions in the new industrialized towns of the nineteenth century were deplorable. Masses of people lived in savagely deteriorated and debased environments. Diseases such as typhus, cholera, yellow fever, and tuberculosis all took heavy tolls.

The prime objective of early nineteenth-century reformers and sanitarians was to bring into the city fresh air, pure water, adequate disposal for waste, green open space, and sunlight. City planning was greatly influenced by this sanitary movement, which was seen as an antidote to the evils of industrialization.

While these issues are still very important, there are new factors relating health and disease in the twentieth century that must be given serious consideration.

First, the infectious diseases that previously decimated populations are no longer the main causes of morbidity and mortality in the industrialized nations of the world.

The main causes of death today are coronary heart disease, strokes, cancer, mental illness, accidents, and suicide.

Second, a number of epidemiological studies indicate that the new diseases occur most frequently among those with few social contacts, lower hierarchical positions, and those disconnected from their biological and cultural heritage. The primary factors affecting these diseases seem social rather than sanitary. Leonard Syme, an epidemiologist, and I have been looking at this new evidence over the past ten years in a class called "Health, Stress, and the Environment."¹ With each successive class, it has become more evident that the health issues impacting the environment in the late twentieth century can no longer be governed by nineteenth-century standards. This article explores some of the implications for environmental design based on these new findings.

The Built Environment, Health, and Disease

It is generally believed that diseases are caused by a disease agent (for example, a bacterium, a virus, a carcinogen) and the breakdown of a person's—that is, the host's—ability to resist disease. The key role of resistance is only now being understood, and one theory suggests that some disease agents may be present all the time in one's system or in the environment and one "gets" the disease when the resistance of the host breaks down. This breakdown can occur when a

person is under emotional or physical stress, which can derive from reactions to the social and physical environment.

Not everyone gets sick, and some groups of people get sicker than others. Stated another way, certain groups of people are "high risk"; that is, they belong to groups that have a high risk of getting sicknesses of all kinds. Some will get rheumatism, some heart disease, some cancer, some ulcers, some asthma.

Studies of people who get sick most often and most seriously indicate that the people in these groups are in some way "out of connection" and lack meaningful social and natural connectedness. These are the lonely ones, people disconnected from family, friends, society, and other types of social supports. These are the people at the lowest ends of hierarchies, disconnected from a sense of pride and control over their lives. These are the people disconnected from their natural environment and the rhythms and cycles of life. While none of these studies are conclusive, the cumulative evidence is impressive and based on the work of a wide variety of investigators using both quantitative and qualitative methods. The evidence is certainly strong enough to warrant serious study of the implications for environmental design.

The environment is a way of enabling connections to occur. The location and proximity between buildings and spaces enhance or impede the interaction of people.



The availability of spaces both inside and outside buildings provides the opportunities for various activities to occur easily. The connections between inside and outside also permit an awareness of and contact to the natural environment. The symbolic interpretation given to buildings and places affects the emotional response of groups as well as individuals. The size of organizations and their corresponding space have an effect on the level of participation.

Because the same environment means different things to different people depending on background, age, culture, and conditions of life, there can be no easy environmental recipes. The relationship between the environment and health is certainly not simple or linear, and a “healthy environment” may not necessarily be one that fits an idealized architectural or planners’ image but, rather, one that provides a range of opportunities for its inhabitants to shape the conditions that affect their lives.

Focusing on the factors in the environment that engender emotional or physical stress in no way implies that disease agents are not important. The first premise of any healthy environment is that it must “do no harm.” It must not contain agents detrimental to one’s health, agents that can cause diseases, such as carcinogenic building materials and air conditioning systems that have caused Legionnaire’s Disease. Nor should buildings do harm by destroying the natural environment.

I The environment is a way of enabling connections to occur. Playing chess, Stockholm. Photograph by Richard Lindheim.

Actions that disturb the water table or raze mountains that affect the ability of the ecosystem to regenerate and renew itself must be curbed. Destroying nature in the building of places jeopardizes the very basis of human sustenance.

A Word About the "Environment"

The third edition of the *Oxford Universal Dictionary* refers to an 1827 definition of the environment as "the condition or influences under which any person or thing lives or is developed." This broad concept has been used to describe everything from the air we breathe, to the skyline, social relationships, temperature, and disease-carrying organisms.

In writing this paper I first tried to define the environment by distinguishing between the man-made environment, the social environment, the natural environment, and the symbolic environment. I was forced to recognize that the environment is none of these things independently. Rather, the environment is a result of the constant interaction between natural and man-made spatial forms, social processes, and relationships between individuals and groups.

Social Connectedness

Numerous studies now indicate that people with social supports get less sick than those without. Married people get less sick than single people; people who belong to groups and organizations get less sick than loners. It is not just the connections to people that are

important, however, but the connection to what is social in one's culture and in one's past.

The social epidemiologist John Cassel noted that lack of "meaningful social contacts" resulted in higher rates of tuberculosis, schizophrenia, alcoholism, accidents, and suicide. Additional evidence supporting this view has been accumulated since Cassel's paper.² In a study done in Alameda County, California, Lisa Berkman observed increased mortality among a large group of persons identified as having fewer friends and social relationships. In that study, social ties were assessed in terms of marital status, contact with friends and relatives, church membership, and affiliations with organizations. Those with few social ties had mortality rates two to five times higher than those with more ties.³ Similar statistics have been observed repeatedly in studies of bereaved persons.

Several years ago, a study was made of the increase in coronary heart disease. In the San Francisco Bay Area, it was found that the Japanese who had become "Westernized" had fewer friends and social relationships than those who retained traditional Japanese cultural patterns and that they correspondingly had coronary heart disease rates two to five times higher.⁴ Other research findings are consistent with this theme. In studies of complications during pregnancy and delivery, 90 percent of women who had both fewer supportive social relationships and many life changes before and

during pregnancy, had one or more complications during pregnancy and delivery.⁵

There also exists a substantial body of literature showing that people who have experienced changes in job, place of residence, social status, and marital status have higher rates of many diseases, including heart disease, lung cancer, sarcoidosis, and schizophrenia. These life changes may be seen as additional examples of the effect on disease rates of the interruption of interpersonal ties.

Given this evidence, it is very difficult to justify the urban renewal and slum clearance policies that have destroyed and are continuing to destroy the social connectedness of people. A number of studies document the effect on people of the destruction of their communities. A classic study was made by the urban sociologist Herb Gans in the West End of Boston, Massachusetts. This community of 20,000 comprised persons largely of Italian ancestry. In 1953 the West End was declared a slum, and by that label it was implied that the physical condition of the neighborhood was so bad that it could adversely affect the health of the residents as well as contribute to crime, vice, and other evils.⁶

A later study of the reactions of families moved from the West End yielded an explicit comparison between feelings of bereavement and feelings of residents about the destruction of their neighborhood. This study concluded that



2

for the majority it seems quite precise to speak of their reactions as expressions of grief. These are manifested in feelings of painful loss, continued longing, general depressive tone, frequent symptoms of psychological, social or somatic distress, active work required to adapt to the alternate situation, sense of helplessness, occasional expressions of both direct and displaced anger, and tendencies to idealize the lost place. At the most extreme, these reactions of grief are intense, deeply felt, and, at times, overwhelming—similar in many ways to the grief experienced at the death of a loved one.

The result of these massive dislocations has been extensively described and documented by other investigators, including Jacobs, Marris, and Young & Willmott.

Although there are no in-depth studies of the increase in mortality or morbidity of those who have undergone massive dislocations, it seems reasonable to identify this group as high risk because of the obvious break in social ties.

Today the same dislocation is taking

place in San Francisco's Tenderloin and in the downtown areas of other major U.S. cities where people who have managed (in spite of loneliness, poverty, and stigmatization) to fashion lives for themselves suddenly are losing their neighborhoods and hotels as part of a nationwide gentrification and urban renewal policy. In the process old buildings are bought either to be renovated and turned into private homes or condominiums or they are bought to be torn down and replaced by office buildings or hotels requiring prime downtown locations. In some cases old neighborhoods were replaced by public housing. The demolition of housing is justified on the grounds that it is substandard and therefore detrimental to health, yet the destruction may lead to greater ill health through the severance of social ties, homelessness, grief, and despair. What is ironic in all of these instances is that measures intended to better the health situation of people and their places have in fact ignored the basic human need for connectedness. In the name of health and sanitation, we are in fact breaking connectedness, thus rendering places less healthful than before.

A very positive example of using the environment as a means of sustaining social connectedness is On Lok, located in San Francisco, California. On Lok operates congregate housing and day health centers for the frail elderly. They very consciously placed their three centers in the heart of the urban community they served so that elderly people would be in an environment where they had spent most of their lives. A busy central location enables greater contact with friends and relatives from the neighborhood.

Hierarchy, Self-Esteem, and Meaning

Those lowest in the pecking order always get sickest in any hierarchy. A recent study by Michael Marmot shows that people in the lowest echelon in the Civil Service in Britain get more of all diseases—heart disease, lung cancer, arthritis, and mental illness—than those higher in the system. “Throughout history the poor have gotten more of all illnesses. We have attributed the higher disease rates of the poor to their unsanitary living conditions, inadequate food, increased exposure to hazards of all



3

kinds. But this does not explain the higher disease rates in the lower ranks of other hierarchies that include people earning relatively substantial incomes. Why do junior executives have higher rates of disease than senior executives; workers get sicker than managers; managers get sicker than bosses? We are beginning to understand that there seems to be something else about being at the lower rung of any ladder that erodes our resistance to disease, that there are, as termed by Sennett and Cobb, "hidden injuries of class." One hypothesis given to explain the above suggests that being at the lowest rung of any hierarchy is perceived in this culture as failure, and it is failure and low self-esteem that is personalized and internalized and somehow compromises a person's resistance to disease.

The design of the built environment constantly reminds us of our position in every hierarchy. The size and quality of space have always been indicators of social status, whether it is the size of a house, the exclusiveness of a neighborhood, or the proximity to a window in an office building. Housing projects in the United States for the very poor

cry out with every status symbol available in the architectural language of our culture that those living there are not worth much. Offices and factories carry their own system for identifying status through allocation of parking, availability of lunch facilities, the location of desks. The location of the secretarial office is routinely predictable: the boss occupies the outer office with the windows and views; the support staff is clustered in the interior.

Culturally we give people few mechanisms for gaining satisfaction and self-esteem outside of climbing up the hierarchial ladder. Yet a sense of meaning can be achieved with so little. In a study of residents in a nursing home it was found that residents who had a plant to take care of lived much longer than those who did not. People gain satisfaction and self-esteem from many diverse activities: gardening, caring for others, participating in the community, building and altering homes.

The San Francisco, California, Tenderloin offers an example of how people, in what is apparently the most minimal living circumstances,

2, 3 A busy central location enables greater contact with friends and relatives from the neighborhood. Photographs courtesy of On Lok.

have found meaning in their ability to collectively change the environment. In one of the old single resident occupancy hotels, the tenants cooperated in the renovation. Every floor now has a shared, beautifully equipped kitchen and living room. The toilet and shower areas were redone. The natural wood of the hallways was sanded and refinished by the residents until it gleamed. The roof was transformed by two tenants into a beautiful garden.

An elderly resident of the Alexander Hotel, Freda de Costa, decorated the wall of the laundryroom with a mural depicting what life was like when she was a child. In another hotel several blocks away she recruited other residents to help paint another mural.

Groups of people working with The Tenderloin Senior Outreach Program are planning roof gardens, operating minimarkets within the hotels so that elderly residents can get fresh vegetables, and campaigning for safer streets. It is in this process of working together and changing the environment that people find meaning in their lives and achieve greater well-being.

Participation and Control

Control means that one has options and choices. People are diverse and complex; thus not everyone wants to control things in the same way and for the same reasons. Yet we live in a culture that tends to standardize everything, and the architecture follows suit with its own norms about standardization.

The trend today is toward more and more technically complex environments with fewer and fewer options for individual control. The operation and control of large mechanized office buildings and factories are out of the ken of most people. The same is true of high-rise apartments and housing projects. The larger any building or institution, the less it fosters democratic participation or provides a sense of control to people who work and reside in it, and the more dangerous it is to people's health.

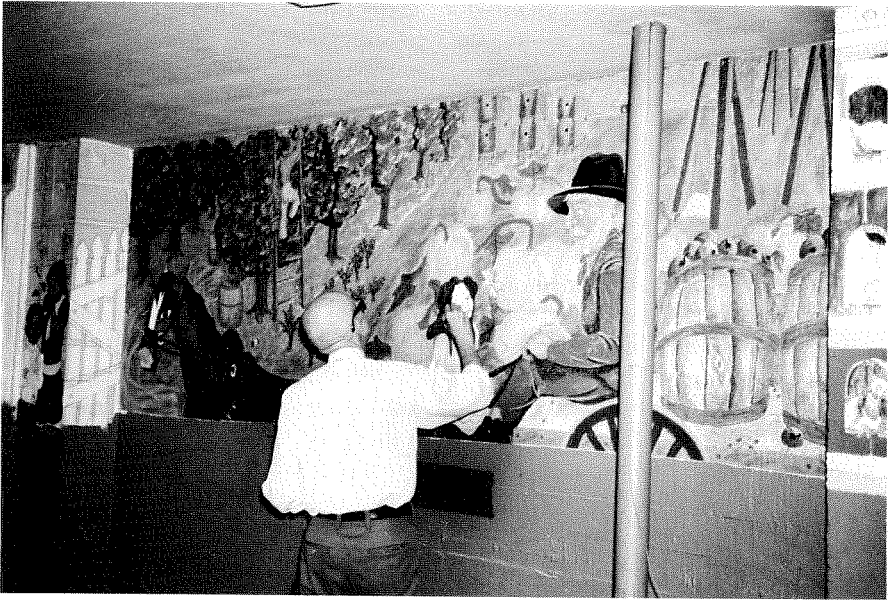
When people are able to participate in the design and management of their lives, they exhibit lower rates of disease. Four major studies in Sweden show higher rates of coronary heart disease in workers not only when their job demands are high but when they do not have the freedom or autonomy to deal with these demands.⁹ In Sweden the relationship between participation and health is regarded as so important that new legislation has been instituted. In the past, prudent owners and architects have consulted their employees about their design requirements, but today Swedish employees have the right under law and under the labor agreements to have a legal voice in the decisions affecting their own working environments. Already social epidemiologist Bertil Gardell and architect Jan Herikssons are participating with the workers on the design of a new factory to see if it can be designed in such a way that the work will include more human content and become more meaningful for the workers. Instead

of building shells around existing work processes, every aspect about the quality of the work environment is being re-examined.

At the Volvo plant in Sweden the workers and managers reorganized the production form using teams instead of assembly lines. The change in the nature of the production process drastically affects the physical form of the building.

This shift in approach to the design of factories has an economic foundation. Many of the firms in Sweden are worried about the cost of absenteeism from sickness. They realize that those who participate and are involved in the design, building, and management of the workplace perceive their status more positively than those excluded from the participatory process.

Another example demonstrating that when people feel they are in control they are less likely to get sick and if sick they are more likely to get better is the case of Norman Cousins. In *The Anatomy of an Illness* he describes how he conquered a life-threatening illness by researching his disease, prescribing his own regimen of treatments, which included what he termed laughter therapy. For several hours a day, he showed himself Marx Brothers and other slapstick movies, which took his mind off his illness. Cousins was able to control his physical environment by leaving the hospital and taking a room in a hotel; and he controlled his social environment by only allowing people in who were supportive of



4



5

4 **Hotel residents** were recruited to help work on a mural. Photograph courtesy of Tenderloin Neighborhood Outreach Program.

5 **Other residents** work on gardens.

his activities, including his doctor. Through his ability to exercise this control, he was able to heal himself. This is an important story about the role of the sense of control in both resisting and succumbing to disease.

At Pacific Medical Center in San Francisco an important new experiment is taking place influenced by the experience of Norman Cousins. Planetree, an organization dedicated to humanize health care, is restructuring a hospital nursing unit physically, socially, and organizationally to increase the control patients have over their own health and to reduce the traditional hierarchical attitudes of staff. To reinforce these changes the physical form of the nursing station was altered. The nurses are no longer separated from patients and families by a high counter. Instead the workspace is opened up, making charts available to patients and families as well as to physicians and nurses. To motivate patients to greater mobility and personal control, a lounge has been located directly adjacent to patients' beds. To personalize and deinstitutionalize the environment and create a more familiar and relaxed atmosphere, careful attention has been given to the quality of light, the use of natural woods, and the selection of paintings, plants, and fabrics. Families will be encouraged to participate in patient care. There is a place for them to stay overnight, and even a small kitchen has been constructed so that patients can have their own favorite foods on their own schedules.

Our participation in and control of the significant events that shape our lives may be even more important than the circumstances in which we find ourselves. For years, many people have looked askance at residents of inner city housing projects who vandalize and tear out flowers planted around their buildings. What is not understood is that even flowers, no matter how beautiful and valuable, when imposed are viewed neither as beautiful nor welcome. Architect John Turner has written, "when dwellers control the major decisions and are free to raise their contribution to the design, construction and management of their housing, both the process and the environment produced stimulate individual and social well being."¹⁰

Connection to the Natural Order

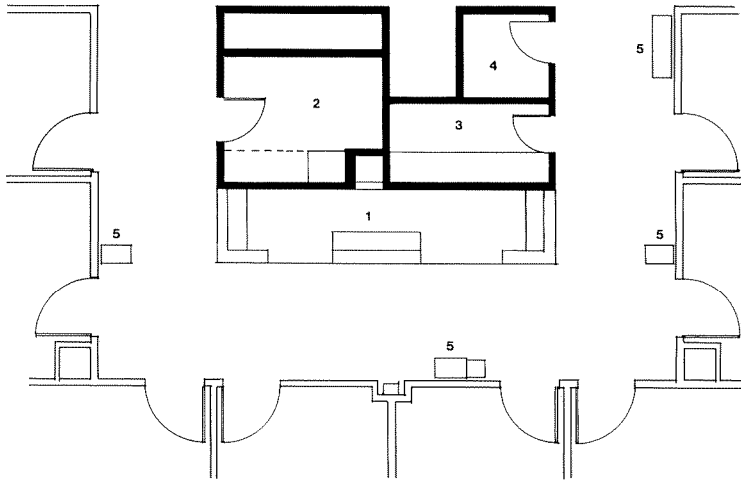
Human beings are part of nature. The human animal has been conditioned by a millennium of development, which has determined the ways we act, think, and respond. The environment that we have created in the past hundred years is at odds with the physical and psychological nature of people. Human beings developed in conjunction with the moon and the stars and the sea and the rhythms and cycles of nature. Now with the technological ability to turn night into day and otherwise artificially control and distort environments, we are finding that we have built places that are bad for our health. For example, lack of adequate exposure to ultraviolet radiation impairs the body's utilization of

calcium even when there is an adequate supply in the diet, and the type of light source can drastically alter at least one plasma level (bilirubin). Recent evidence also indicates that exposure to fluorescent light at work may be associated with a doubling of risk to melanoma.

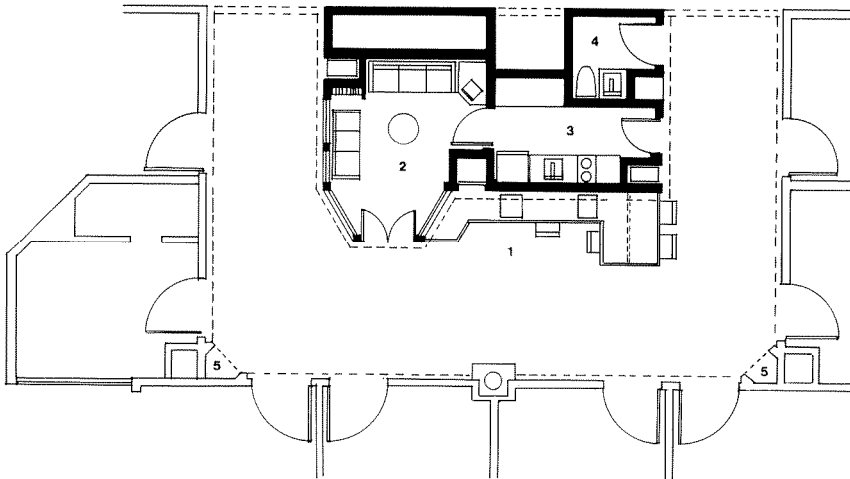
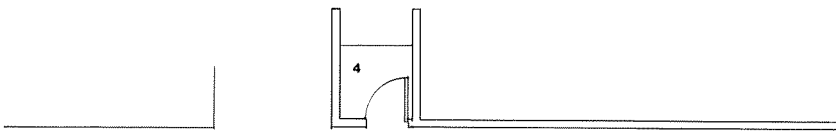
Despite this evidence, children have been placed in windowless schools, workers in windowless factories, and secretaries in windowless offices. By so doing, people have been subjected to possibly harmful exposures and have been deprived of awareness of the time of day, the weather, the seasons of the year, and colors and motion of the natural landscape.

Further studies have shown that surgical patients in postoperative units with no windows to the outside developed twice as many cases of postoperative delirium during a 72-hour period as those with windows, and patients in units without windows developed more symptoms of depression.

Artificial ventilation also causes health problems. Since World War II, more and more buildings have been cooled and heated mechanically. These mechanical systems require controlled air intakes, necessitating the provision of windows that are sealed to prevent them from being opened and "unbalancing" the system. In the past few years, buildings have been sealed even tighter in order to save energy; new chemicals and synthetics also have been used for building materials, finishes,



6



7

6, 7 The conversion of a medical-surgical nursing unit at Pacific Medical Center, San Francisco, California. Architect, Roslyn Lindheim. Line drawings by Carol Silverman.

- 1 Nursing unit opened to patient and families.
- 2 Clean utility converted to a lounge.
- 3 Dirty utility changed to kitchen.
- 4 Wheelchair showers relocated, space converted to dirty utility.
- 5 Dirty linen carts and medication units reconverted out of sight.

carpets, and furniture. This recent combination has resulted in a new condition known as “indoor pollution,” which is causing respiratory and other forms of illness.

Contact with Nature

People make continuing efforts to “connect” to a natural environment. Thus, within cities, parks with fountains are built, trees are planted along the streets, flowers and plants are brought into houses, pets are cared for, and, on weekends, people drive to the country or beach. Workers located in windowless spaces try to achieve a sense of the outside by hanging pictures or murals of mountains or trees. In the natural world no two things are alike. Every blade of grass, every tree, has responded in a slightly different way to sun, light, and wind. A failing in our recent design endeavors, however, has been to ignore variety as a key characteristic of systems. Complexity within order characterizes all natural systems, and its denial may lead to the impoverishment of life in our man-made environment.

The tall, glass-faced, sealed commercial building found in cities in the United States and in many parts of the world, avoids rather than exploits individualization of the building’s use, site, and orientation. Virtually identical buildings of this type can be found in New York and Chicago, San Francisco and Boston, Tel Aviv, and the outskirts of Paris, Manila, and Beirut.

The issue is not to imitate nature. As J. B. Jackson points out, a well designed city can give “. . . us archways and pools of daylight, and flights of steps and views; the splash of water in fountains, echoes and music; the breath of damp cool air, the harmony of colors and the unpolluted sun. . . .”¹¹

Connection to the Life Cycle

It is not only contact with the natural elements that affects one’s inner equilibrium, however, but the understanding that we are part of nature, that we are born, grow old, and die. Humans have a deep need to be connected to, to live in natural ways with, the cycles of life and nature. Nature’s cycles are incorporated into and celebrated by all cultures, in feasts of harvest, rites of spring, the winter solstice, the birth of a child, coming of age, marriage, and death.

The cycles of life have been hidden from us in contemporary culture, and so we find ourselves unable to understand who we are. We have produced and live in age-segregated environments—nursing homes for the frail elderly, senior residences for the healthy elderly, “Yuppie” neighborhoods for young adults, suburbs for middle-aged couples with children. Even families who want aged parents to live with them find it socially, economically, and spatially difficult. Government lending agencies such as the FHA give no mortgages for dwellings that include “in-law” or “parent” facilities.

We have so institutionalized the process of birth and death that most of us never see a baby born or an old person die. The life cycle itself has become something “abnormal,” requiring medical treatments and institutional solutions. One could postulate that the high rate of mental illness in highly technological societies such as the United States (one out of three Americans suffers some form of mental illness) is one manifestation of living divorced from the barnyard realities of life.

Connection to Place

We seem to have a need to make connections to places of our past. According to the architectural historian Joseph Rykwert, “The return to origins is a constant of human development. . . . the return to origins always implies rethinking of what you do customarily, an attempt to renew the validity of your everyday actions or simply a recall of the natural. . . .”¹²

People travel the world to see the sights of early civilizations, to visit birth places and scenes of battles, to walk in medieval streets and through ancient ruins. Time takes on a new dimension with the realization that a man or woman some forty thousand years before Christ painted pictures on rock, which can be seen today in the Lascaux Cave of France.

The architectural preservation movement reflects an increased concern to maintain the records of our historical past. The old parts of

cities often are the most coveted, whether in Copenhagen, Paris, Athens, or Belgrade. Cities such as Warsaw, destroyed during World War II, have been rebuilt using traditional building and city forms in an effort to maintain a link to their heritage.

We referred before to the sense of grief akin to the loss of a loved one that occurs when people are forced to move from their neighborhood.

Attachment to place is so strong that when we move to a foreign territory we take our “places” with us. We build structures in new territories much like those in “the old country.” Spatial identity is fundamental to human functioning, and many people have emphasized this in writings on the importance of spatial memories, images, and ideas.¹³

A Call for Discussion

As a conclusion, I would like to propose the following policies as topics for discussing the design of healthy places:

The environment should “do no harm” either by using materials detrimental to health or by mutilating the ecosystem.

In the design and redesign of neighborhoods and communities supportive social networks should be maintained.

Places should be designed so that people can exercise greater

personal control at all levels of the environment, macro and micro.

Places should be designed to enhance the awareness of and connection to the natural order.

Methods should be developed whereby people can participate in the design and construction and management of the environment.

The environment must be designed to accommodate the needs of all stages of the life cycle, from infancy to old age.

NOTES

- 1 Full references available from Roslyn Lindheim and S. Leonard Syme, “Environments, People, and Health,” *Annual Review of Public Health* (1983), pp. 335–359.
- 2 J. Cassel, “The Contribution of the Social Environment to Host Resistance,” *American Journal of Epidemiology* 104 (1976), pp. 107–123.
- 3 L. F. Berkman and S. L. Syme, “Social Networks, Host Resistance, and Mortality: A Nine-Year Follow-up Study of Alameda County Residents,” *American Journal of Epidemiology* 109 (1979), pp. 186–204.
- 4 M. G. Marmot and S. L. Syme, “Acculturation and Coronary Heart Disease in Japanese Americans,” *American Journal of Epidemiology* 104 (1976), pp. 225–247.
- 5 K. B. Nuckolls, J. Cassel, and B. H. Kaplan, “Psychosocial Assets, Life Crises, and the Prognosis of Pregnancy,” *American Journal of Epidemiology* 95 (1972), pp. 431–441.
- 6 H. J. Gans, *The Urban Villagers: Group and Class in the Life of Italian-Americans* (New York: Free Press, 1962).
- 7 M. Fried, “Grieving for a Lost Home,” in *The Urban Condition*, L. Duhl, ed. (New York: Basic Books, 1963), pp. 151–171.
- 8 M. G. Marmot, “Affluence, Urbanization and Coronary Heart Disease,” in *Disease and Urbanization*, E. J. Clegg and J. P. Garlick, eds. (London: Taylor and Francis, 1980), pp. 127–143.
- 9 R. Karasek, D. Baker, F. Marxer, A. Ahlbom, and T. Theorell, “Job Decision Latitude, Job Demands, and Cardiovascular Disease: A Prospective Study of Swedish Men,” *American Journal of Public Health* 71 (1981), pp. 694–705.
- 10 J. F. C. Turner, *Housing by People: Toward Autonomy in Building Environments* (New York: Pantheon, 1976), p. xxxiii.
- 11 E. H. Zube, ed. *Landscapes: Selected Writings of J. B. Jackson* (Amherst, MA: University of Massachusetts Press), p. 87.
- 12 J. Rykwert, *On Adam’s House in Paradise: The Idea of the Primitive Hut in Architectural History* (New York: Museum of Modern Art, 1972), p. 192.
- 13 M. Fried, *op. cit.*, p. 156.