## Title

Space and Community - The Spatial Foundations of Urban Neighborhoods: An Evaluation of Three Theories of Urban Form and Social Structure and Their Relevance to the Issue of Neighborhoods

## Author

Rofe, Yodan

# SPACE AND COMMUNITY - THE SPATIAL FOUNDATIONS OF URBAN NEIGHBORHOODS

## An Evaluation of Three Theories of Urban Form and Social Structure and Their Relevance to the Issue of Neighborhoods

### Yodan Rofé

## Introduction

Neighborhoods have been centers of concern for city planning and urban theory since the late nineteenth century. According to scholars and activists such as Tönnies (1887) in Vienna, and Jane Adams (Trolander 1987) and later Robert Park and his associates in Chicago (Park 1925; Wirth 1938), the social problems of the large city stemmed from the deterioration of local community ties which had been based on frequent face-to-face meetings, and their replacement by casual businesslike interactions among strangers. They believed that a major part of the problem was the blurring of clear boundaries between settlements as they were engulfed in rapidly growing metropolitan areas. Units of settlement ceased to have an identifiable structure to which people could relate.

This line of reasoning culminated in Clarence Perry's "neighborhood unit" paradigm. His 1929 monograph begins with the assertion that the problem of neighborhoods is that they lack clear physical definition. Perry integrated this assertion with ideas that were emerging in two other disciplines. The first was the idea of the neighborhood as a unit of development for the real estate industry. A single large developer would lay out and build streets, subdivide the land, construct buildings, and package the completed product for sale (Weiss 1987). The second idea was developing in the field of traffic engineering, in response to rising motor vehicle ownership. It defined the city as an aggregate of local traffic cells, separated from each other by arterial routes that carried the through-traffic.

Through the neighborhood unit paradigm, Perry took what seemed to be technical solutions for traffic problems and for the challenges of large-scale real estate development, and he endowed them with social significance. In doing so, he also seemed to offer a technical solution for the problem of creating community in urban and suburban neighborhoods. The neighborhood unit concept was widely adopted as a model for post World War II residential development throughout

the world (Dahir 1947; APHA 1948). The design of residential areas under the precepts of the neighborhood unit paradigm was supposed to create spatial communities, not merely residential areas.

The assumptions underlying the neighborhood unit paradigm, however, have come under increasing scrutiny. The application of the neighborhood unit concept has consistently failed to create local spatial communities. Indeed, residents of a neighborhood unit may be unaware that the neighborhood exists; instead, they orient their lives around their routine paths of movement and a multitude of attractions (Banerjee and Baer 1984).[1] There is also reason to believe that the neighborhood unit concept has contributed to the fragmentation of cities.

Webber (1964 and 1970) and Fischer (et al. 1977 and 1982) show that the absence of close community ties within the spatial neighborhood does not necessarily mean that its residents are lonely or alienated or that the fabric of society is breaking down. In the modern metropolis, they argue, transportation and communication systems allow people to overcome distance and choose their friends and interests from a wider arena. People in larger urban areas develop extensive social networks based on common interests and kinship; and they are less dependent on their local area for companionship and assistance than people living in small towns and rural areas. So it was proclaimed that "community without propinquity" was possible, and spatial proximity was no longer important for social relations (Webber 1970).

Most people, however, continue to believe that the neighborhood area in which they live is important to the quality of their life – even if they are not dependent on that neighborhood for social contact or livelihood (Banerjee and Baer 1984). The wave of neighborhood organizing that started in the 1960s showed that people will sometimes fight to protect their neighborhoods from external threats. More recently, proponents of the New Urbanism are reviving the idea that local community may be enhanced by the spatial design of neighborhoods.[2] Large-scale residential development also continues to be guided by the concept of the neighborhood unit – stripped of its social intent, but reinforced by legally constituted homeowners associations and/or by the physical boundaries of walls and armed guards in gated communities.

To evaluate these divergent trains of thought, it is important to revisit the question of urban neighborhoods. Do they have a social meaning? How do neighborhoods relate to one another, and to the city as a whole? What function(s) do they fulfill in the lives of individuals and in the life of the city? Does the physical form of the

city – its street pattern and building fabric – affect the likelihood of neighborhood formation and the quality of neighborhood life?

## Three Approaches to Spatial and Morphological Theory

These questions will be examined in this essay by assessing three approaches to spatial and morphological analysis of urban space. The first two approaches, "imaging the environment" and "non-correspondence theory" describe the *arrangement of society in space.* They describe locational decisions regarding home and workplace, as well as the dynamic patterns of movement, encounter, and avoidance that recur in space. The third, "morphological or morphogenetic theory" explores the *arrangement of space by society.* It describes the processes by which land is transformed, built, and maintained to créate settlements.

### Imaging of the Environment

The first approach, "imaging the environment," considers the ways in which people structure their knowledge of the environment. It is based on Lynch's (1960) pioneering work, *The image of the city,* and its later applications. Lynch's basic hypothesis is that space influences social structure by its varying degree of imageability, i.e., its capacity to be perceived and remembered. Areas which are accessible, clear, and memorable become part of the mental structure of all or most people in the community, forming a part of community identity. Lynch describes five types of elements that people use to structure their environment cognitively: districts – areas that are perceived to be roughly homogeneous; paths – linear elements that people use regularly in their daily movement; edges – which are perceived to mark the transition from one area to another; nodes – points of concentration or point elements that serve as meeting places; and landmarks – notable point elements that are recognized by people, but that are external to their life.

Most empirical studies using Lynch's image-mapping approach have not focused on neighborhoods. Nevertheless, several insights about neighborhoods can be inferred from that literature. First, major streets, their organization, and their relationship to surrounding areas are the primary elements that people use to structure their knowledge of the environment. Rather than being perceived as boundaries between neighborhoods (as they are viewed within the neighborhood unit paradigm), they are seen as the integrators and spines of neighborhood areas (Appleyard 1970; Banerjee and Baer 1984; Lynch 1960 and 1977; Milgram 1977).

Second, individual image maps often indicate knowledge of the subject's neighborhood of residence, of the city center and the more

notable areas and landmarks (the same places that often are the main tourist attractions of the city), and of specific locations in the city that are known because of the individual's occupation (Appleyard 1970; Milgram 1977). Several studies, however, found that the ability to image the city environment extensively and accurately varied with social and economic class (Appleyard 1970; Banerjee and Baer 1984; and Milgram 1977). The implication of this finding is that people of lower social and economic status are more dependent on their local area for information, companionship, and services. The relatively educated and well-off can function adequately, both economically and socially, in "non-place urban realms" (Webber 1964). In contrast, the absence of a good neighborhood environment means that the less advantaged might become cut off from the economic and social life of the city. This has equity implications that have not been considered by the advocates of the city as a non-place realm (see, e.g., Webber 1964).

Third, people's images of their city reflect their neighborhood's ability to function as a point of entry into the larger physical, social, and economic networks of the city. Warren and Warren (1977), studying the social networks of neighborhoods, observe the operation of this phenomenon. They point out that a referral to a job opening, information about the availability of needed services, or access to city officials for resolving a local problem may often become known through casual conversation with neighbors.

Lynch (1977) showed that youths living in older central neighborhoods of Cracow and Warsaw exhibited a better sense of their neighborhood and its connection to the city as a whole and had· a larger and more diverse set of acquaintances than youths with similar class and educational backgrounds living in postwar developments of the same cities. The medieval urban pattern of the older city center neighborhoods somehow facilitated the integration of their young residents into the life of the city as a whole.

Gür and Enön (1990) made a similar finding in their comparative study of three neighborhoods with different spatial configurations in Trabzon, Turkey. Their study shows that an area with traditional spatial structure in the center of the city induces better neighborhood relationships:

> The traditional settlement examined in this research is only traditional in the physical sense. The years of experience of its inhabitants in the city and in the neighborhood are not significantly different from those in other neighborhoods considered in this study. There is no interdependency, kinship or friendship among families living there. Yet in this traditional neighborhood the number of "neighbors per

> family" is the highest; the frequency of contacts is the
> highest; *activities are sporadic, informal, smooth and in
> depth.* (Gür and Enön 1990, 144, emphasis added).

Together, these findings – particularly the prominence of major
streets in people's perceptions of their environment – indicate that
neighborhood identity has more to do with shared movement paths
and the potential encounters that they generate than with group
identification with a clearly defined territory. They also suggest that
traditional non-grid urban patterns are somehow better at inducing
these more casual and informal encounters.

In spite of these important findings, neither Lynch (1981) nor
Banerjee and Baer (1984) devise a concept of neighborhood based on
the role of major streets as generators of social encounters. Instead,
Lynch sees the problem of neighborhoods as one of territorial
definition: i.e., finding a balance between very small socially
homogeneous clusters of houses; and larger and more diverse
neighborhoods that will allow access and participation in
government.[3] The role of physical form in establishing this balance is
unclear. After discussing several paradigms for urban neighborhoods,
Banerjee and Baer almost seem to dispense with the idea of
neighborhoods altogether, preferring to call them "environmental
areas." They propose a grid-based organization of the city that will
ensure free access and will be more in tune with the dominance of
paths in people's perceptions of their local areas. They hope that
differentiation of subcenters through unique land uses and architecture
will create local identity within the larger grid system.

## A Structured Non-Correspondence Model of
## Society and Space

The second approach, a non-correspondence model, is based on
Jane Jacobs' (1961) ideas about neighborhoods interpreted within the
context of the "space syntax" theory developed by Hillier and Hanson
(1984; Hanson and Hillier 1987). It suggests that urban space can
bind together an otherwise socially fragmented society by structuring
movement to increase the probability of encounters between
individuals from different social categories.

Jane Jacobs (1961) develops a theory of space in cities that is based
on the idea of non-correspondence between territory and human
groups, but is also mindful of the functional importance of
neighborhoods. She begins with a claim that the unique feature of
large cities is *the omnipresence of strangers:*

> Great cities... differ from towns and suburbs in basic ways,
> and one of these is that cities are, by definition, full of
> strangers. To any one person, strangers are far more

**111**

> common in big cities than acquaintances. More common
> not just in places of public assembly, *but more common at*
> *a man's own doorstep.* (Jacobs 1961, 41-42, emphasis
> added).

According to Jacobs, this feature is necessary for the economic and cultural vitality of cities, and it is the main reason why cities are great incubators of innovation. It is also a source of potential danger and social breakdown. The life of the city depends on the degree to which its streets are perceived to be safe. Moreover, safety must be achieved without restricting access and creating turfs – the creation of turfs would be counterproductive, because it would limit the number of possibilities for new and potentially innovative encounters.

In her analysis, Jacobs emphasizes the importance of street neighborhoods as social spaces. She sees them as fulfilling three essential purposes: maintaining safety through mutual policing and the watchful eyes of people; assimilating children into the intricate social world of the city by being constantly seen and supervised by adults passing on the street; and allowing people the freedom to determine their degree of contact and encounter with other people.

Streets perform these functions not as a result of social homogeneity, but because of the mutual interest that most people have in keeping the street safe and habitable.[4] The safety is borne out of daily and frequent (even if swift and superficial) meetings. These encounters are made more probable by spatial proximity and by sharing of routes on daily comings and goings.

Jacobs postulates that three types of spatial communities are necessary in the city. The street neighborhood performs the functions of basic safety and socialization at the street level. The city as a whole provides the "communities of interest" or social networks in which ideas and goods are created and exchanged; it is also the locus of political power. Finally, there is an intermediate level (an area with·a population of 30,000 to 100,000, which she calls district), that is small enough to be responsive to the street level neighborhood, but has enough political power to influence city hall, if necessary.[5]

Jacobs provides a convincing description of how street neighborhoods work. This is arguably the most memorable aspect of her work. Unfortunately, her explanations for how these street neighborhoods arise, how they are connected to the city as a whole, and how intermediate districts are formed from streets are less successful. Jacobs explains the pivotal role of the street, but she is not clear about the circumstances that make some streets busy and full of life, and others deserted. Her descriptions are rich in physical detail, but her four prescriptions for urban diversity are very general.[6]

Moreover, her taxonomy of spatial communities leaps directly from the street-scale to the much larger district-scale. She never discusses the role or importance of the urban street pattern as a bridge between those two scales.

To tackle these issues, we need a more rigorous way of describing and analyzing urban form. Hanson and Hillier provide the tools necessary to do that. In their 1987 article, they start by reviewing the neighborhood theory and territoriality debate; and they show that both sides assume space can be significant to social life only if there is a correspondence between human groups and defined territories. Advocates of the "neighborhood unit" paradigm claim that the absence of such a pattern is pathological and should be remedied by design. On the other side, the opponents of neighborhood theory conclude that, since people do not seem to have meaningful social relations within spatially proximate areas, spatial proximity is of no significance in modern cities.

Hanson and Hillier try to move beyond the territorial model for space-society relationships. They observe that all people belong to two kinds of social groupings: spatial by virtue of proximity, and trans-spatial by belonging to a certain social category.[7] They argue, however, that space and society can be structured to maximize the probability of encounters between people from different categories:

> Space may not be structured to correspond to social groups, and by implication to separate them, but on the contrary to create *encounters among those whom the structures of social categories divide from each other.* In other words... *Space* can reassemble what *society* divides. (Hanson and Hillier 1987, 265).

Based on their studies, this structured non-correspondence does not occur in urban areas that are arranged hierarchically. Instead, it is found in cities with traditional urban patterns that are not strictly hierarchical. While there may be a difference between major and minor streets in traditional urban patterns, access from adjacent properties is universal, and the gradient of streets is not layered (e.g., a minor alley could open directly onto a major thoroughfare). In contrast, modern hierarchical street patterns are arranged so that access to major roads is limited and intermediate-level roads are layered between local streets and major roads. Street categories in hierarchical systems also differ from one another in terms of their degree of access from adjacent properties.

Hillier and his colleagues explore the relationship between street configuration and the probability of encounters. Using a method of settlement layout analysis called "space syntax," they develop a measure for the level of integration of any particular street into the

global street network (Hillier and Hanson 1984).[8] Their research program (which was performed primarily on European and Mediterranean cities characterized by "deformed grids" – non-grid urban patterns of piecemeal growth) has uncovered significant negative correlation between this measure and the incidence of crime (Hillier 1988) and a positive correlation between integration and street encounters (Hillier, Penn, Grajewski, and Xu 1993).

Their analysis also shows that the "deformed grids" of traditional settlement patterns can simultaneously achieve global integration and local identification. In deformed grids, the most integrated streets – what Hillier calls the "integrative core" of the settlement – are not localized at the center, but reach throughout the city. Moreover, highly segregated streets – which create a "backwaters" feeling – can be found in the center of city as well as on the outskirts.[9]

These investigations lead Hillier to a conjecture regarding the social role of the urban street pattern:

> cities are not so much mechanisms for generating contact as mechanisms for generating a *potential field of probabilistic co-presence and encounter....* In other words, the pattern of co-presence has both a describable pattern and a known cause. Such a well-defined entity deserves a name. We suggest it should be called the *virtual community*: community because it *is* a form of group awareness in a collectivity; virtual because it has not been realized through interaction among its members. The virtual community is the product of spatial design. (Hillier, et al. 1987, 248)

Hanson and Hillier point out that at present we seem to lack design strategies which will orient a project into the global street system to achieve local identification and global integration simultaneously. Instead, we rely on hierarchical systems of ordering, such as the functional classification of streets and the neighborhood unit, which result in the break-up of the potential field of encounters.[10]

### Morphogenetic Theory

The third set of ideas, summarized under the heading "morphogenetic theory," concentrates on the evolutionary process of city building as it affects street layout, plot lines, and structures. Morphogenetic theory attempts to describe the historical process of the development of urban form and its spatial consequences. It explains the social and institutional forces that shape the environment. This historical perspective is necessary to explain the homogenization and differentiation of areas in the urban pattern – processes that allow for the emergence of neighborhoods.

The roots of the morphological analysis of city plans are found in the detailed geographical studies undertaken by German and French

geographers in the late nineteenth and early twentieth centuries (Whitehand 1981). The German geographer M. R. G. Conzen developed and refined the concepts of his theory in a series of studies of various British towns (Conzen 1981a and 1981b).

In his town plan analysis, Conzen examines the way in which streets, plots, and buildings change over time. He uses an array of concepts to describe the processes of change in urban form. The most fruitful is the concept of "fringe belts." These are areas that lie beyond some man-made or natural limit which hinders the continuous development of the town.[11] Fringe belts go through three phases of development. *Fixation* occurs when development is determined by a fixation line. *Expansion* occurs when fringe belt uses expand into nearby areas that are not yet desired for residential uses, as a result of the internal dynamics of the institutions that locate there. *Consolidation* occurs as the fringe belt is hemmed in by surrounding residential growth or by the expansion of central city uses.

As a city grows, its "burgage pattern" (its block and plot pattern) changes in several ways: by building repletion (the increase of land coverage and/or height of buildings); by building recession (the destruction of some buildings that become obsolete); and by metamorphosis of the lot pattern (subdivision or consolidation of plots) (Conzen 1981b). Change in plan areas can be "adaptive" (changing the lot pattern without changing the street pattern) or "augmentative" (changing the lot and street pattern simultaneously) (id.).

By studying historical city maps, the existing urban form can be deconstructed into the complex results of these dynamics and their interactions. The analysis breaks down the city plan into morphogenetic plan units, each characterized by a different combination and phase of the processes described above.[12] This approach allows the researcher to describe how global dynamics (e.g., population growth, the introduction of new technologies, cycles of expansion and recession, changes in professional culture, or government policies) affect the type and the rate of change in different morphological areas. In particular, it shows the significant influence of institutions on land use patterns. Because institutions are less dependent on accessibility, many of them tend to locate in fringe belts. Later, they may be pushed to expand their holdings as a result of internal dynamics. As the city expands to engulf them, their relative insensitivity to the operations of the land market often results in their continued presence on central and valuable land, a distortion of the street pattern, and an anomaly in the land market.

Conzen does not focus on neighborhoods. However, his work provides a framework for understanding how the varied landscape of

the city – including neighborhoods – comes into existence. Recently, other authors have approached the problem of neighborhoods using morphological thinking and adding an urban design perspective. Although they do not rely on Conzen's work for their concepts or terminology, they share the same goals: to learn about the production of space through time, and to try to infer from this process the social forces that are at work.

Moudon (1986) investigates different processes of development and their effect on private and public space and on the flexibility of development.[13] Specifically, she relates form to patterns of ownership, implicit and explicit rules of design and layout, and the processes of production. She shows that space is structured at myriad scales, ranging from the room to the settlement. These scales are partially linked, but have a degree of autonomy. For example, a change in building technology and style may occur while lot sizes, setbacks, building height, and street orientation remain the same. In that case, the internal configuration and the external appearance of buildings may change dramatically, but the neighborhood structure will remain intact.

Moudon uses this framework to analyze the effect of 1950s urban renewal on San Francisco's urban form. During that period, the traditional system of limited lot sizes and informal controls was replaced by a system in which larger lots were developed under formal controls. Moudon concludes that this change resulted in a less predictable and less consistent urban form. It caused a loss of order and continuity in the structure of space from the room to the neighborhood scale. According to Moudon, the traditional pattern also proved much more flexible and adaptable to changing needs than the more modern pattern of development. Moudon is not explicit about why the traditional mode of development proved to be more adaptable, except to comment that the rules of lot size and house combination common in San Francisco until redevelopment in the 1950s "responded to general and seemingly timeless requirements in the use of space" (Moudon 1986, 132) better than the separation of uses and compositional freedom allowed in the sixties and seventies.

Southworth and Owens (1993) study the morphology of the suburban settings that make up such a large part of the built environment of the United States. They analyze several locations in the San Francisco Bay Area at three different scales: community, neighborhood, and street form.

At the community level, they distinguish several different kinds of *street patterns* (speculative gridiron, interrupted parallels, incremental infill, various cul-de-sacs, and loop patterns); three forms of *growth*

*processes* (concentric, scattered, and instant growth); and two types of *land use patterns* (strip commercial/continuous residential and contained commercial/fragmented residential). Particular configurations and processes are associated with different time periods when the cities were developed, the stages of suburbanization, and the form of the initial settlement. In general, recent development tends to be: (1) more fragmented at the community scale, (2) produced by scattered or instant growth processes, and (3) characterized by cul-de-sac and loop street patterns.

At the neighborhood scale, they show a change between five street pattern types, depending on the period of development. The change is characterized by a decreased ratio of street length to neighborhood area and a decrease in the number of intersections per unit area. They suggest that this may imply a decrease in choice and interaction probabilities, but an increase in the sense of control of one's immediate surroundings.

At the street scale, they note a shift from narrow street frontages to wide frontages in the 1950s. Recently, there has been a return to narrow lot frontages, perhaps for economic reasons. They also note the replacement of the front porch by multiple car garages, reflecting the decline in local neighborhood life and the dominant role of driving in suburban communities.

Both Moudon and Southworth and Owens analyze space at more than one scale; and they observe that although there is some logical connection between the scales, there is also a great deal of independence. The authors hesitate to draw social conclusions, shying away from physical determinism. Instead, their investigations center on documenting the historic changes in the physical environment and on understanding and describing that environment as an autonomous phenomenon.

## The Spatial Foundations of Neighborhood

Together, these theoretical approaches give us the tools with which to build a new neighborhood theory. Urban neighborhoods emerge from patterns of interaction created by shared use of paths and facilities. The "imaging the environment" literature shows that urban patterns and physical form are important elements in structuring interaction because they structure movement. It also demonstrates that different urban patterns are not equal in their ability to facilitate interactions. The structured non-correspondence model of space and society explains the importance of neighborhoods and places them in the larger context of a theory of urban form. The morphogenetic theory gives us insights about the emergence and decline of neighborhoods.

Some generalizations about neighborhoods can be made, based on this review of theoretical approaches and empirical studies. First, it appears from Banerjee's and Baer's studies that the neighborhood environment is still important to most people – even those who are well-off and well-connected and do not need to rely on the neighborhood for their livelihood·or their primary social contacts. We learned from other studies that neighborhood is even more important to the less well-off, the less powerful, children and adolescents, and the elderly – all of whom depend on it for essential services and for human contact.

The neighborhood cannot be understood as a clearly defined territorial entity corresponding to a group of people with close social ties. Instead, it has a much looser structure, based on shared images of the area that are born out of repeated movements along its streets. As such, it is created out of elements that exist at several overlapping and interrelated scales: a building cluster, a street face block, an intersection, a city square, a neighborhood park, a main street, a local institution. While these shared elements exist at different levels of scale, they are not organized hierarchically. Instead, they overlap to create a continuous fabric.

Each person living in a neighborhood has a unique sense of it, in part determined by his/her routine movements. The·spatial pattern, however, creates a probability that certain routes will be favored over others for common use; so personal images of the neighborhood are shared to some degree. The overlap among these images creates a system of mutual recognition and awareness over space that can extend beyond each individual's personal experience. The system may be reinforced by local institutions: a church, a public library, a favorite coffee shop, a grocery, a playground, a stretch of shopping street. All have the ability to unify the realms of several smaller areas, because they become prominent in many individual image maps.    .

Finally, the unique social role of the urban neighborhood is to create local identity while simultaneously integrating its residents into the city as a whole (Warren and Warren 1977). This is achieved through the urban pattern's ability to create a *virtual community* – a potential field of probabilistic co-presence and encounter, generated by predisposing people's movement to certain paths (Hillier, et al. 1987). Urban patterns that have developed piecemeal over time seem to do a better job at creating this field.

## Neighborhood Theory as a Response to Changing Needs

What prompted scholars to look for new ways to make sense of the city and to come up with the concept of "neighborhood"?

One answer is that the changing size of metropolitan areas prompted this work. As cities become larger, their global order becomes more difficult to understand. Hillier, et al. (1993) demonstrate that as an urban system becomes larger, its "intelligibility" (a measure that gauges our ability to infer how well-integrated a street is from the number of locally visible junctions with other streets) becomes lower.[14] As cities burgeoned, both local identity and global integration declined. Professionals and scholars, struggling to understand the city as a whole, as a basis for action, found it necessary to "impose" some order on the urban system. The grid structure was meant to ensure that global integration of the city was maintained. Perry's work reflects a search for an ordering principle that would preserve local identity as well. His search led to the neighborhood unit paradigm, which imposed a simplistic cellular order on the city.[15] As much of the literature reviewed here shows, most people's knowledge of the city is fragmented. They know their own residential neighborhood, the commercial and symbolic centers of their metropolitan area, and some particular areas connected to their professional role. But they may be completely ignorant of nearby areas that are off of their normal daily paths.

Alternatively, scholars working to devise a concept of neighborhood may have been responding to two events of the 1920s which mark a turning point in city building practices. The confluence of the advent of the automobile and the attendant birth of the profession of traffic engineering, with the appearance of large real estate developers gave rise to professional activity that tried to tie together the regional network of major roads and the design of neighborhoods as complete communities. Control over the street was progressively removed from the owners of abutting property and transferred to professionals employed by city governments (McShane 1979).

Many of the professionals, however, did not understand the street as a complex social space. Instead, civil engineers redefined it as movement space and infrastructure conduit. That narrow definition led to a hierarchical categorization of streets that segregated local and through-traffic and undermined the social role of major urban streets. The most integrated streets in the city fabric – major urban streets – were transformed into the most segregated, so that local and non-local movement did not mix. Streets assume social functions precisely because they *concentrate and channel movement, and because they integrate local and non-local movement in the same space.* Therefore, arterials that are planned for movement only and restrict access to abutting property cannot fulfill their function as social integrators. Meanwhile, local streets – supposedly places of local social

**119**

interaction – tend to be unpopulated because they are not on useful routes to anyone's destination.[16] Fragmentation of the city was an inevitable side-effect, because segregating the movement function of streets necessarily segregates their social functions.

The beginning of large-scale production of planned communities after World War I, both in the United States under private auspices and in Europe under social housing programs, made the design of neighborhoods a professional "problem." Previously, land subdivision and homebuilding proceeded separately. Land was subdivided and sold to individuals who developed it in small increments. As developers, local governments, and housing associations developed the resources to buy large areas of land and to finance large-scale residential development, they needed new guidelines. The neighborhood unit paradigm provided the solution to the problem. While the social failure of the paradigm has been acknowledged, it remains entrenched both in professional practice and standards and in banking and development practices.[17] Even the arguments of the New Urbanists fail to address the issue, because they also think in terms of separated and identifiable communities, not in terms of the structure of the urban whole, out of which neighborhoods arise based on local differences between more and less integrated streets. The full effects of these changes were not felt until after World War II; and they are only now beginning to be documented by the studies of Moudon, Southworth and Owens, and others working in the morphogenetic tradition.

Neighborhoods are important because they provide one of the gateways to the social life of cities. The neighborhood is a gateway in time, as a child slowly expands his or her knowledge of the neighborhood to the city as a whole. And it is a gateway to place, as local connections provide a key to larger social and economic networks, or as a neighborhood becomes unique enough to attract visitors from other areas.

Neighborhoods are not all equal in their ability to function in these ways, or in their ability to respond to challenges that originate in the outside world. Part of the difference stems from differences in their spatial organization. The spatial foundation of neighborhoods may be increasingly important in a world where people move often and thus have less time to develop local attachments, and in a pluralistic world where the integrative force of religious or other central institutions is in decline. Spatial proximity and civilized, shared use of public space can help weave the fabric of an otherwise fragmented society.

## NOTES

[1] "Whereas the neighborhood concept looked inward to a single core of interest, our respondents showed multiple nodes on their maps. Whereas the neighborhood concept used major streets as a boundary to exclude others,· our respondents drew non-bounded, open street systems that connected with adjacent parts of the city..." (Banerjee and Baer 1984, 162).

[2] Peter Calthorpe's (1993) Transit Oriented Development (TOD) units, in particular, seem almost identical to Perry's Neighborhood Unit, except that they are centered around a transit stop instead of a primary school.

[3] In an effort to avoid the insularity, prejudice, and political weakness that often typifies real ethnic neighborhoods, theorists searched for the optimal size for a homogeneous neighborhood and the best way to relate it to similar nearby neighborhoods (Gans 1961; Lynch 1981; Rapoport 1980; see also Warren and Warren 1977; Alexander, et al. 1977).

[4] Banerjee and Baer find that for a core number of services and settings, there is a complete consensus across racial and economic lines. Moreover, there is no function or setting that is important to some groups but is objectionable to other groups. On the basis of these findings, it is difficult to see the need for homogeneity in neighborhoods.

[5] The community boards in New York City (established in 1975) are an example of such an intermediate level political organization. Marcuse's (1990) examination of them shows that their effectiveness depends to a great degree on the social and economic level of their participants and the political power that they can wield. Moreover, they are dependent upon the economic fortunes of the region as a whole to provide opportunities in which they can exercise leverage.

[6] These are: mixed primary uses, density, short blocks, and a mixed building stock that includes many older buildings.

[7] They call categorical groupings "trans-spatial" rather than "non-spatial," precisely because their nature is to transcend space and create social solidarity across distances.

[8] This measure is the mean number of turns one has to make in order to reach a particular street from all other streets in the system.

[9] Despite their different approaches and conclusions, Hillier's work seems to rely on and confirm Lynch's initial insight on the importance of orientation for pedestrian movement in cities. Spatial configuration structures movement by making some streets seem more accessible than others by virtue of their degree of connectivity (which is the measure of the number of streets directly accessible from one particular street) and "intelligibility" (the ability to learn about the global structure from the local surroundings,

**121**

expressed by the correlation between connectivity and integration measures).

[10] Two other noted design theoreticians have reached similar conclusions, although following very different theoretical routes. Alexander, et al. (1987) frame one overriding rule for urban design: Always make sure that every project is making a contribution to the larger whole (the global structure in Hillier's terms). John Habraken (1994) also points out that contribution to the global whole (the "field" in his terminology), is the prime responsibility of the designer.

[11] These lines are called "fixation lines" by Conzen. In many ways they are similar to Lynch's "edges." Examples include a city wall, a railway line, a freeway, a deep ravine, a river - any line that creates a marked discontinuity in the land that must be overcome in order for the development of the city to continue beyond it.

[12] Conzenian morphological analysis and factorial urban ecology (Berry and Kasarda 1977) employ similar logic and analytic processes. The key difference is that the units of morphogenetic analysis are built up through their development history, rather than imposed arbitrarily by census tract boundaries. One wonders about the potential for combining the two in a study which starts with morphogenetic analysis of the plan, and then investigates the social makeup of those morphological areas through time. It is possible that the morphogenetic input can explain the historic forces that caused social groups to distribute themselves and modify their surroundings, adding a time dimension to the social analysis as well.

[13] As defined by Moudon, "flexibility," is the ability of urban form to accommodate different uses and to adapt to social changes over time.

[14] "Intelligibility" is a second order measure that Hillier defines as the correlation between the measure of global integration of each street (i.e., its connection to all other streets in the system) and the local property of connectivity (the number of streets that are connected directly to it).

[15] Unfortunately, most of the ordering principles used to date as a basis of intervention in the city were based on hierarchical ideas and are not well suited to describe the complex order of the city (Alexander 1966).

[16] Hillier has also demonstrated this phenomenon in high density housing estates, so it cannot be attributed solely to the low densities and automobile reliance typical of American post-war suburban development.

[17] Southworth and Owens note continuing and even increasing fragmentation of suburban development in recent years.

## REFERENCES

Alexander, Christopher. 1966. The city is not a tree. *Design* 206: 46-55.

Alexander, Christopher, Sara Ishikawa, and Murray Silverstein, with Max Jacobson, Ingrid Fiksdahl-King, and Shlomo Angel. 1977. *A pattern language: Towns, buildings, construction.* New York City, NY: Oxford University Press.

Alexander, Christopher, Hajo Neis, Artemis Anninou, and Ingrid King. 1987. *A new theory of urban design.* New York City, NY: Oxford University Press.

American Public Health Association, Committee on the Hygiene of Housing (APHA). 1948. *Planning the neighborhood.* Chicago IL: Public 'Administration Service.

Appleyard, Donald. 1970. Styles and methods of structuring a city. *Environment and Behavior* 2(1): 100-17.

Banerjee, Tridib, and Baer William C. 1984. *Beyond the neighborhood unit: Residential environments and public policy.* New York City, NY; London, UK: Plenum Press.

Berry, Brian J. L., and John D. Kasarda. 1977. *Contemporary urban ecology.* New York City, NY: Macmillan.

Calthorpe, Peter. 1993. *The next American metropolis - Ecology, community and the American Dream.* New York City, NY: Princeton Architectural Press.

Conzen, M. R. G. 1981a. The plan analysis of an English city center. *The urban landscape: Historical development and management.* Edited by J. W. R. Whitehand. London, UK; New York City, NY: Academic Press.

–––. 1981b. The morphology of towns in Britain during the industrial era. *The urban landscape: Historical development and management.* Edited by J. W. R. Whitehand. London, UK; New York City, NY: Academic Press.

Dahir, James. 1947. *The neighborhood unit plan, Its spread and acceptance.* New York City, NY: Russell Sage Foundation.

Fischer, Claude S. 1982. *To dwell among friends: Personal networks in town and city.* Chicago, IL: University of Chicago Press.

Fischer, Claude S., Robert Max Jackson, C. Ann Stueve C., Kathleen Gerson, and Lynne McCallister Jones, with Mark Baldassare. 1977. *Networks and places: Social relations in the urban setting.* New York City, NY: The Free Press.

Gans, Herbert J. 1961. The balanced community: Homogeneity and heterogeneity in residential areas. *Journal of the American Institute of Planners* 27(3): 176-184.

Gür, Sengul Öymen, and Zerrin Enön. 1990. Changing socio-spatial aspects of neighborhood: Design, implications. *EKISTICS: The problems and science of human settlements* 57(342-43): 138-146.

Habraken, N. John. 1994. Cultivating the field: About an attitude when making architecture. *Places* 9(1): 8-21.

Hanson, Julienne, and Bill Hillier. 1987. The architecture of community: Some new proposals on the social consequences of architectural and planning decisions. *Architecture et comportement / Architecture and Behavior* 3(3): 251-73.

Hillier, Bill, A. Penn, J. Hanson, T. Grajewski, and J. Xu. 1993. Natural movement: Or, configuration and attraction in urban pedestrian movement. *Environment and Planning B* 20: 29-66.

Hillier, Bill. 1988. Against enclosure. In *Rehumanizing housing*. Edited by Necdet Teymur, Thomas A. Markus, and Tom Woolley. London, UK; Boston, MA: Butterworths.

Hillier, Bill, Richard Burdett, John Peponis, and Alan Penn. 1987. Creating life: Or, does architecture determine anything? *Architecture et comportement / Architecture and Behavior* 3(3): 233-250.

Hillier, Bill, and Julienne Hanson. 1984. *The social logic of space*. Cambridge, UK: Cambridge University Press.

Jacobs, Jane. 1961. *The death and life of great American cities: The failure of town planning*. Harmondsworth, England: Penguin.

Lynch, Kevin. 1960. *The image of the city*. Cambridge, MA: MIT Press.

———. 1981. *Good city form*. Cambridge, MA: MIT Press.

Lynch, Kevin, editor. 1977. *Growing up in cities*. Cambridge, MA; Paris, France: MIT Press and UNESCO.

Marcuse, Peter. 1990. New York City Community Boards: Neighborhood policy and its results. In *Neighborhood policy and programmes*, 145-163. New York City, NY: St. Martin's Press.

McShane, Clay. 1979. Transforming the use of urban space: A look at the revolution in street pavements, 1880-1924 *Journal of Urban History* 5 (3): 279-307.

Milgram, Stanley. 1977. Psychological maps of Paris. In *The individual in a social world*, 68-90. Reading, MA; Menlo Park, CA: Addison-Wesley Publishing Co.

Moudon, Anne Vernez. 1986. *Built for change: Neighborhood architecture in San Francisco*. Cambridge, MA: MIT Press.

Park, Robert E. 1925. Human behavior in the urban environment. In *The city*. Edited by Robert E. Park, Ernest W. Burgess, and Roderick D. McKenzie. Chicago, IL; London, UK: University of Chicago Press.

Perry, Clarence Arthur. 1929. The neighborhood unit. In *Neighborhood and community planning*. New York City, NY: Regional Plan of New York and Its Environs.

Rapoport, Amos. 1980. Neighborhood heterogeneity or homogeneity. *Architecture et comportement / Architecture and Behavior* 1(1): 65-77.

Southworth, Michael, and Peter M. Owens. 1993. The evolving metropolis: Studies of community, neighborhood, and street form at the urban edge. *Journal of the American Planning Association* 59(3): 271-287.

Tönnies, Ferdinand. 1887. Gemeinschaft und Gessellschaft. In *Fundamental Concepts of Sociology*. Edited and translated by E. P. Loomis. East Lansing, MI: Michigan State University Press.

Trolander, Judith Ann. 1987. *Professionalism and social change: From the settlement house movement to neighborhood centers, 1886 to the present.* New York City, NY: Columbia University Press.

Warren, Rachelle B., and Donald I. Warren. 1977. *The neighborhood organizer's handbook.* Notre Dame, IN: University of Notre Dame Press.

Webber, Melvin M. 1964. The urban place and the non-place urban realm. In *Exploration into urban structure*, 79-153. Philadelphia, PA: University of Pennsylvania Press.

———. 1970. Order in diversity: Community without propinquity. In *Neighborhood, city, and metropolis*, 791-810. New York City, NY: Random House.

Weiss, Marc A. 1987. *The rise of the community builders: The American real estate industry and urban land planning.* New York City, NY: Columbia University Press.

Whitehand, J. W. R. 1981. Background to the urban morphogenetic tradition. In *The urban landscape: Historical development and management*. Edited by J. W. R. Whitehand. London, UK; New York City, NY: Academic Press.

Wirth, Louis. 1938. Urbanism as a way of life. *American Journal of Sociology* 44: 1-24.