

In-between Neighboring Settings (INS), toward Mixed Methods for Architecture

Ali Emami, Hashem Hashemnejad Shirazi*, Seïied Ataollah Tahaei, Vahid Shali Amini

Department of Architecture, College of Art & Architecture, Central Tehran Branch,
Islamic Azad University, Tehran, Iran

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ABSTRACT

The purpose of this paper is to achieve the analysis of in-between spaces in the design of residential spaces. The different attitudes regarding spaces between buildings are raised in this approach and it will be discussed. Then the rate of weakness (gap) was determined in the analysis that led to help the architects (not sociologists and psychologists). Then by using ecological/sociological theories, the Barker theory (Behavior settings) in environmental psychology and Moreno theory (sociogram) in sociology, and the combination of both qualitative approaches based on the observation will be presented for architects. The attitude of this research on spaces between building are rose as In-between Neighboring Settings (INS) and analysis of quantitative data have been proposed with qualitative methods and also will be discussed to achieve and use explanatory mixed methods research. Finally, the design of residential complexes will be suggested by architects through design guidelines created by the analysis of In-between Neighboring Settings.

KEYWORDS: Neighboring; architecture; in-between spaces; behavior setting; mixed methods

INTRODUCTION

Today the social ties have lost some of its functions. The lifestyle of many people has been changed with the rapid increase in urbanization and industrialization. In fact, the social support of neighbors of each other to improve their lives in the past are not exist today and or some of the functions to be performed at some of the social institutions. In the past, people in the neighborhoods knew each other, homogeneity in ethnic, linguistic, religious and cultural factors worked together and social trust factor resulting in behavioral interactions between neighbors and the neighborhood was at the highest range.

The basic problem is that today people who are living in residential complexes don't have ethnic and cultural etc homogeneity and the role of spaces between building and design of the physical characteristics seem more prominent between the houses. Another point is that it is very hard perhaps unsolved with separation area in an area of small size and the design of each of its residential owners, the remaining negative space (open space), and how to organize it is so difficult. Another point of discussion is essentially a complex issue, the presence of vehicles in these areas and to replace the social interaction. These changes led to unwanted behavior settings and the separation of open spaces to inefficient and useless spaces and sometimes get into lost space.

These spaces do not create any interaction among neighbors/neighborliness and are not met any hierarchy of human needs. Now, the main question is that how should be analyzed the spaces between building and the physical features of the environment to promote interaction among neighbors? Or how the behavioral sciences researches in housing will be led to the architectural and physical design?

Spaces between buildings

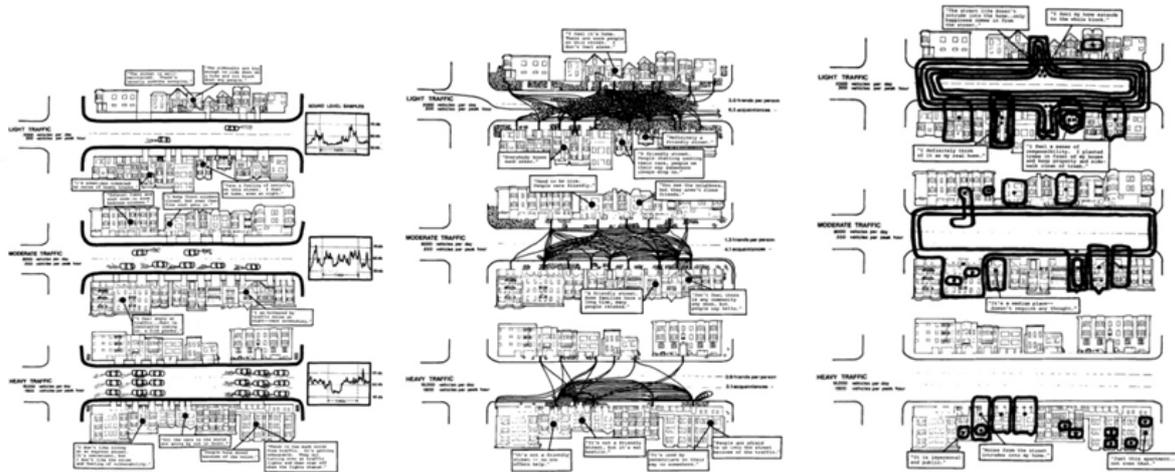
The architects have always considered residential buildings and architecture of positive space but have never been considered the negative space in same amount. This spaces between building is in secondary consideration and while this space is the basis for social interaction and the neighboring. In fact, these spaces are the outer spaces of our homes and ignoring them cause to mere public spaces and reduce the people attendances in them. Spaces between buildings exist in various scales. Urban designers are in the search of squares and streets and architects are investigated regarding small spaces between houses.

Criticism of the modern legacy of in-between spaces

Half of the twentieth century coincided with the rise of criticism and attacks on modern architecture and urbanism were also raised the criticism and research about urban open spaces. Robert Venturi, William White, Jane Jacobs, Louis Kahn, Donald Appleyard and other architects and urban planners were among those critics and scholars.

Jacobs suggests that overcoming riding on walking in these spaces is endangered the security and pedestrianism in society (Jacobs, 1961). The main difference between traditional urbanism and modern urbanism is the presence of vehicles in today's spaces. On one hand, presence of vehicles is an integral feature of today's modern lifestyle and on the other hand this vehicles leads to the decreasing the social interactions.

Donald Appleyard tested this subject as an organized research whether the vehicles is affecting social interactions or not? He address to these issue in his book "Livable Streets" which the vehicles in the same day and time is inversely related to the social interactions of people in the streets (Appleyard et al, 1982) (Figure 1).



(Figure 1: the impact of vehicles on social interactions, ref: Appleyard, 1982)

Other researchers have also discussed about this issue that what is the function of these large spaces in the city? Roger Trancik calls them as lost spaces. The spaces that located in-between and their users are not clear and they may be lost spaces (Trancik, 1986). Venturi and Brolin's books in the next decades are entries as a result of these criticisms (Venturi, 1977) (Brolin, 1976). Behavioral sciences developments led to the next criticisms. Edward T. Hall's research is about spatial relations, Oscar Newman about concepts of territory and security in residential complexes, Amos Rappaport on culture and environmental psychology are such that all have engaged the criticism of the modern architecture and urbanism (Lang, 1987).

Look at the comments, concerns, sketches and researches of Le Corbusier characterize this debate. His work that is out of the metric system, is modular and it acquires a golden proportions. If look at the axes distance in residential apartment of Marseille, we see decimal numbers due to the choice this ratio and his radiant city is on the same basis (Corbusier, 1967). If we look at the sketch(Figure 2), a man are in different floors of apartments and is considered to the things like expanding nature and green spaces, view and air flow. But it is interesting that there is no design for space between buildings and primarily there is not social interaction, or even a simple human figure (Figure 2).

In the design of the town Chandigarh, houses are also back to the street and this city is known as the silent city and because of European design for Hindi residents, they take action to change the environment and even brought animals into the houses.

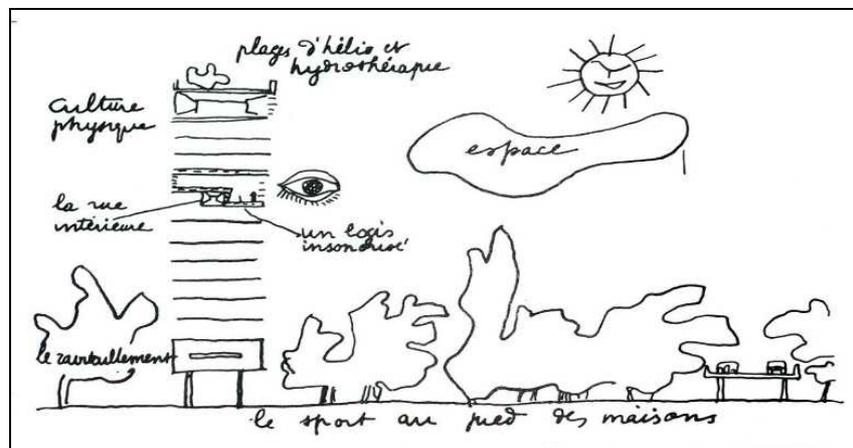


Figure 2: Le Corbusier sketch of an apartment building

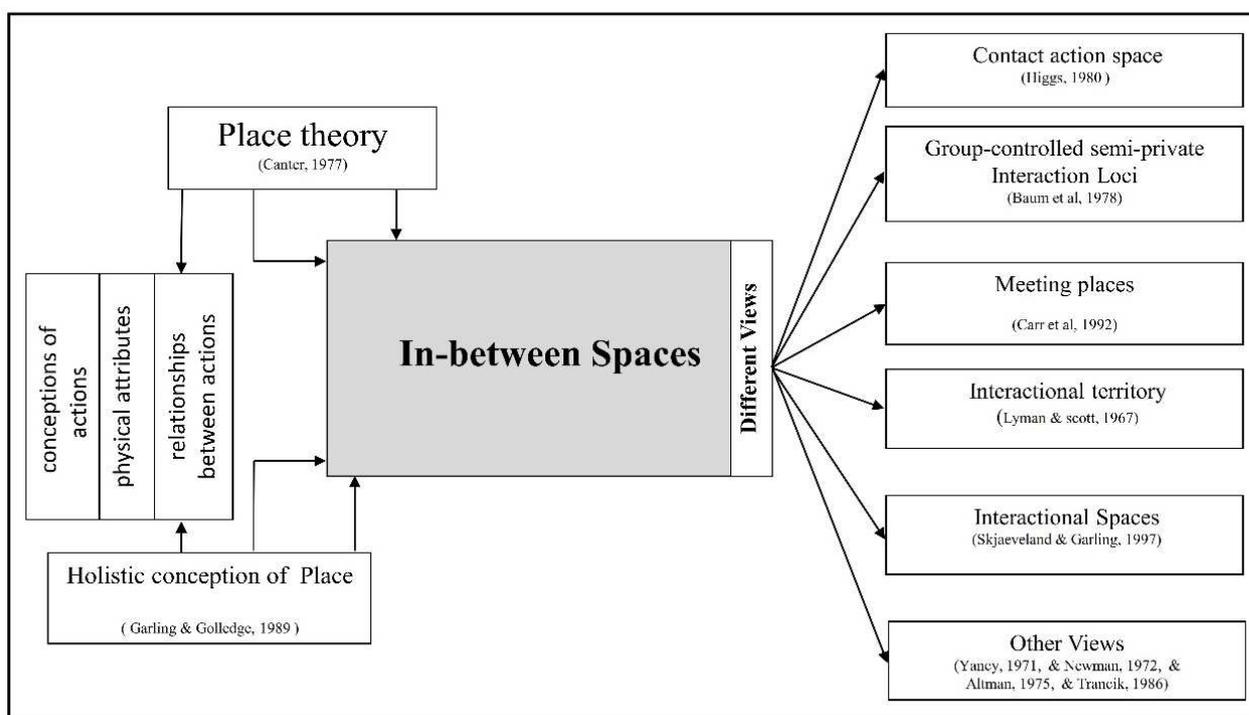
In modern architecture, as the reviews were not provided comprehensive definition for man and the main reason of failure was this issue (Brolin, 1976).

Attitudes to the in-between spaces

In the last three decades of detailed research about the open spaces of various researchers in the fields of urban design, environmental and community psychology, human geography, urban sociology etc has been made as a field for address the complex features of the spaces between building of the aspects of personal, social, spatial, etc.

According to these researches, spaces between buildings of the residential units have taken different names. Some researchers in the sciences related to the urbanism have been used the term "spaces between buildings" and in other sciences, they used other terms according to research. Lyman and Scott called it the "interactional territory", Baum and others believe that it is group-controlled semi-private interaction loci, Higgs calls this space as contact action space (CAS) (Higgs, 1975) and finally the researchers at the University of Cambridge in a Public Space called it as meeting places (Carr et al, 1992) (quoted from Skjaeveland & Garling, 1997).

Then Skjaeveland & Garling called this space as "interactional spaces" according to place theories and analyze its role on neighboring. (Skjaeveland & Garling, 1997) in following, each of these approaches will be explored and examined (Figure3).

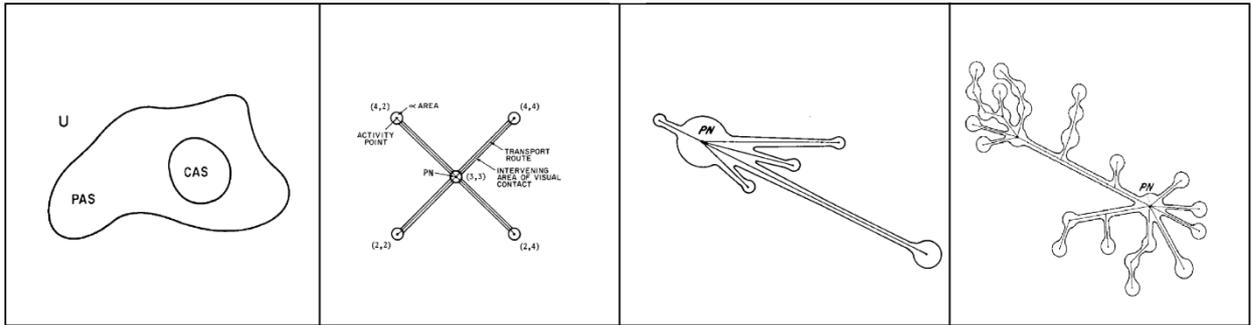


(Figure 3: Different views regarding In-between Spaces, ref: authors)

Higgs attitude (contact action space)

Gary Higgs has done research into the in-between space. He finds it difficult to engage that these spaces have perceptual, cognitive and behavioral aspects at different scales. Higgs emphasized that investigation on spatial behavior needs an operational definition and knows it "contact action space". The four aspects for contact action space (CAS) were considered before Higgs that includes potential areas of activities, perception, personality, preferences and the action (Higgs, 1975, p 36).

Higgs defines the contact action space as this form: an area in which regularly occur the activities of an individual or family. Contact is important because of it is a start for other activities. In addition to the contact action, there are potential actions that don't occur but there is probability of occurrence and Higgs knows their space as potential action spaces (PAS). The main element of (CAS) is activities order and the main element of (PAS) is probability of activities in the future. (Higgs, 1975)(figure 4)



(Figure 4: analysis of CAS & PAS, ref: Higgs, 1975)

In fact, Higgs will actually develop a definition of the physical/visual aspects of contact action space in relation to an individual and clearly explains a method and measurement technique based on the identifiable and manifest nature of this space.

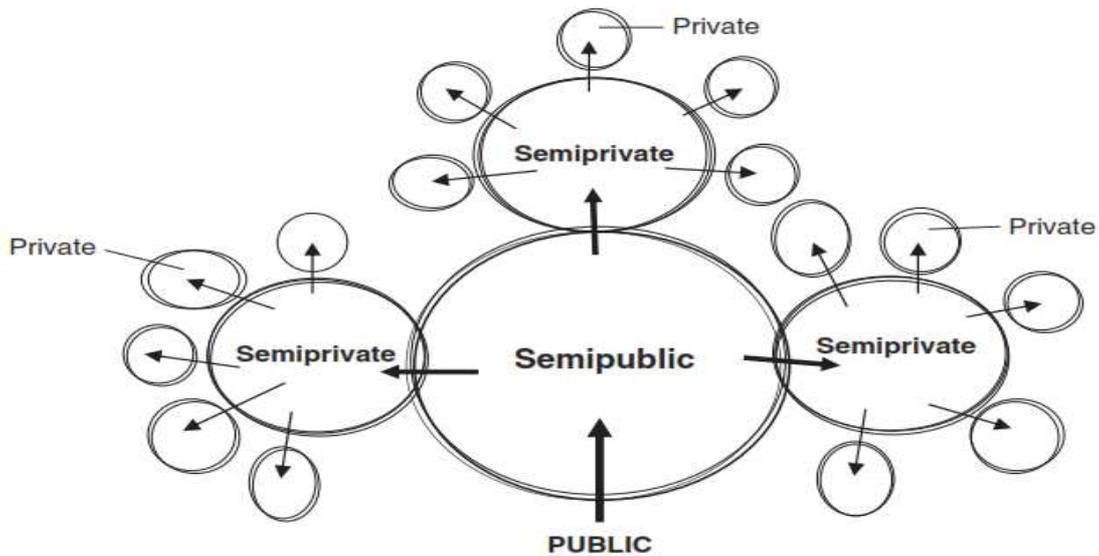
Group-controlled semi-private interaction loci

Baum & et al is considered the significant role of architectural design variables in shaping to the social groups. The importance of this work is that: first, reduced the impact of social factors as much as possible by research on homogeneous communities especially student dormitories and will be highlighted the role of the physical/architectural variables.

Another important is that collect the previous researchers approach like Altman, Newman, Yancy etc and creates a more complete approach to the in-between spaces. They insisted on using a combination of personal interviews and observation instrument and field studies in the area. Baum et al suggest that Modern urban density increases have the following consequences: (A) increase of manifest spatial domain (B) providing multiple behavioral options (C) provide variety and visual complexity (Baum et al., 1978) and focus on crowded spaces in dormitories. This issue can provide the evaluation of the role of design (length and width of the spaces between rooms etc). Their research shows that this is impossible to the in-between space become semi-private when the number of occupants goes further in spaces. They also stated that the small groups are trying to control external spaces and the casual neighboring take positive aspects in small ways and this group-controlled spaces are called semi-private (Baum et al., 1978).

This is a semi-private group-controlled external space in a private place happens in exterior life and architecture that determine the geometry of these spaces is vital in this regard.

Altman called external spaces as "secondary territories" and separated it from primary territories and public territories and searches it in middle-scale (Altman, 1975). Newman called these spaces as "Defensible spaces" and focus on the role of territoriality in the ownership of these spaces that increased security (Newman, 1972). He knows the hierarchical of defensible space as the Yancy from public- semi- public, semi- private and private (Newman, 1973) (Yancey, 1972) (Figure 5).



(Figure 5: defensible space hierarchy, source (Newman, 1973)

Compared Altman's theories, Newman and Yancey with attitude of Baum et al, it seems that the group-controlled semi-private loci to be included both environmental psychological aspects of these spaces such as the control, territoriality, privatization etc and sociological aspects related to the theories regarding social groups.

Lyman and Scott attitudes (interactional territory)

Lyman and Scott staring into the in-between spaces from the perspective of sociology and the concept of territory in this field. They have defined territoriality as an attempt to control public spaces and categories into four types: public territory, home territory, interactional territory and body territory.

In-between spaces of this research in classification are close with the interactional territory but they define interactional territory both in open and close spaces. For example, attendance in a festive and the space at this festive is an interactional territory (Lyman & Scott, 1967). Their definition of home territory (which includes local authorities) and interactional territory are in Altman classification in secondary territory (Altman, 1975). They define the invisible borders for the interactional territory that occurs within a social gathering and are attributed the main characteristics of mobility and fragility for the interactional territory. Mobility means settings are displaced and are not stay. The degree of fragility is in each setting and as time passed, they are usually more stable (Lyman& Scott, 1967). They believe that encroachment and invasion of territory are including violation, invasion and contamination, and responses to the encroachment include in turf defense, insulation and linguistic collusion categories (p 236).

The work's importance of Lyman& Scott is that explained interactional in-between spaces from combination environmental aspects and sociological aspects of two words, both the scope and interaction of biological and give more integrity and covering to definition.

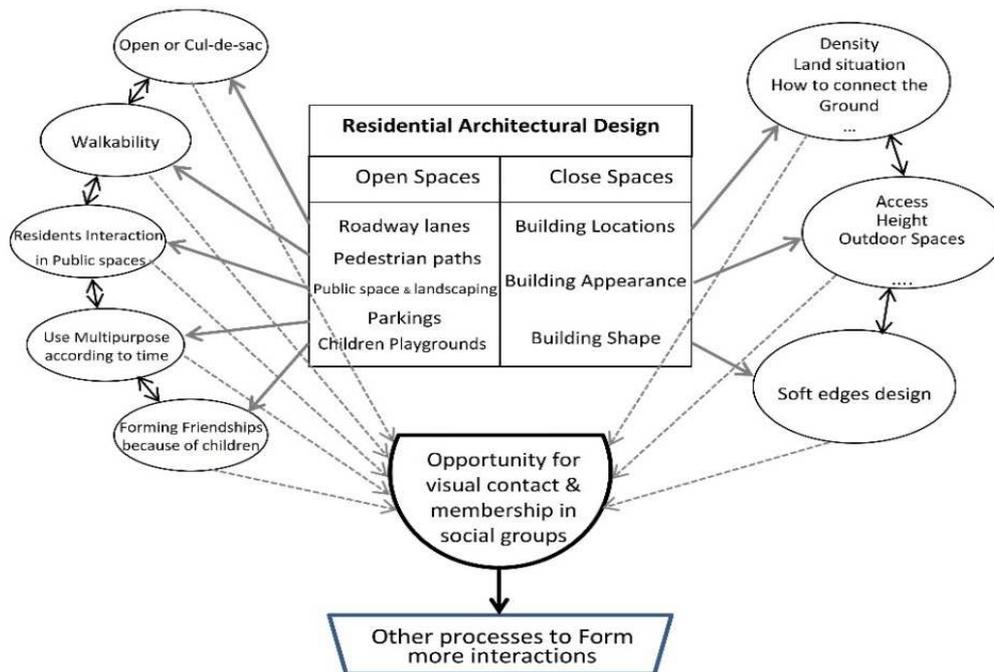
Skjaeveland & Garling perspective (interactional spaces)

Skjaeveland & Garling take the term interaction from defined Lyman and Scott and offer phrases interactional spaces. Space in his extensively can also mention limiting factors and the functional factors and events. In fact phrase interactional spaces can includes the physical, aesthetic, functional, and social aspects. Their views and fundamentally some other raised views are rooted in the place theory in the writings of David Canter and others that are described and explained the physical form as well as its functional aspects. In view of those, definition of interactional spaces should not only include the functional aspects and physical aspects, but it includes social activities of residents as well as social cognition. So interactional spaces may consider as a particular type of an area. They demonstrated that the space become as an original context for interaction experience. Place defined as a result of the relationships between actions, attitudes and concepts in the physical area. In addition, place is as a construct that can be related environment to the social (Skjaeveland& Garling, 1997).

Physical environment

Physical environment is enclosed in-between spaces and combined with them at the same time. Physical environment is resulting from location of buildings, the overall shape of the buildings, the external appearance of buildings and urban elements and so on. The phrase "physical environment" is used by various scholars but some investigators were used terms of physical environmental factors (Pals et al, 2014) and physical features (Van Cauwenberg et al, 2014). Amos Rapoport to be the difference among the fixed features, variable and semi-fixed. He called all of constructions, installations, windows and other components as fixed features and humans, animals, and other called as variable feature and furniture etc called semi-fixed/variable features (Rapoport, 2005). However, in view of the Rappoport classification of natural and built environments was separated before (Rapoport, 1982).

In several studies, researchers have used the term in-between spaces and it took advantage from characteristics of physical environment in time of measure and the reverse is also true, and it appears that overlapping and interlinking of these two concepts is inevitable. We can distinct between physical features of close space and open space. The location, shape and building appearance make up the characteristics of the physical environment in close spaces. These physical features and in-between spaces are context for the occurrence of interactions among neighbors and their good design led to formation and enhances the neighborliness (Figure 6).



(Figure 6: Architectural variables and social interaction)

Behavior settings

To analyze the relationship between human and the environment, Roger Barker proposed behavior theory. He is considered an ecological psychologist and defined smaller scale within the space. In fact, behavior setting is an area that behavior is located within (Barcker, 1968). This range consists of three main components. Standing pattern of behavior, milieu, synomorphy. Indeed, in this area standing behavior repeated over time and arise synomorphy by their physicals around and make boundary for it. Barker address eleven features about behavior setting for facilitate research. In Table (1) these attributes have been identified and their definitions are there.

(Table 1: Barker attributes of behavior setting)

Nu	Attributes	Definitions
1	Occurrence (O)	the number of days in a year the behavior setting is capable of occurring
2	Duration (D)	the number of hours the behavior setting functions during a year
3	Population (P)	the number of different persons who inhabit the behavior setting during the year
4	Occupancy Time (OT)	the number of person-hours spent in the behavior setting
5	Penetration (Pe)	the degree to which an inhabitant is involved in the setting
6	Action Patterns (AP)	the functional attributes of the patterns of behavior
7	Behavior Mechanisms (BM)	the modalities through which behavior is implemented in the setting
8	Richness	a composite measure of the variety of behavior within the setting: $(\sum Pe + \sum AP + \sum BM)OT/100$
9	Pressure	the degree to which external forces act upon a person
10	Welfare	the relevance of the setting to a particular group of inhabitants
11	Local Autonomy	the geographic level at which the setting's operations are determined

The current study approach to the in-between spaces

It is obvious that neighboring ties in behavioral social form have to occur in a behavior setting. These settings are formed in in-between spaces (spaces between buildings) and often are close to physical edges (soft edges) (Gehl, 1986). Neighboring that occurs as a social behavior and has social, cognitive and affective aspects (Unger & Wandersman, 1985) that their combinations in these settings generated the interactions. Physical aspects of this issue depend on the external wall of the building design and the in-between spaces and many social aspects that play a role in facilitating. In-between space which is context for many social aspects also plays a role in facilitating it. Three concerns are raised here:

First, human relations in developing countries and especially Muslims can be discussed, not only from the perspective of sociology, psychology but also in terms of cultural/religious, so the term "neighboring" that covers all the aspects is seemed essential for in-between spaces.

Second, the term neighboring is covering the interactions among residents and other terms are included in this concept such as contacts, relationships, etc.

Third, the concept of setting would seem appropriate for addressing the space and physical environment and other elements, because this concept can encompass a set of settings in one hand and on the other hand it includes the environmental/social attributes.

Given these considerations, and given the fact that interactions can occur anywhere except in-between spaces, so the word in-between is essential for addressing directly to these spaces and authors recommend the resulting expression as *In-between Neighboring Settings* (INS). In this way, one can measure the significant element (neighboring) that directly or indirectly affects the independent physical design factor and establish balance between the physical environment and in-between spaces. The concept of neighboring which is a process of visual contact to social support, involves the concepts of semi-private space, defensible space, establishment of contacts and different concepts of other researchers regarding such spaces.

DISCUSSION AND CONCLUSIONS

Inefficiency of sociological measures for architects

Concern of sociologists related to city is human communications and issues related to social groups. They have been less attentive to the physical characteristics of the environment (Lang, 1987). When sociologists are concerned with the study of urban problems and in particular the residential area, they use social network analysis methods, sociograms and different software for network analysis etc. Assuming even the results of the researches are valid, if these results are in social consequences or architectural consequences should be investigated. The effect of physical attributes of environment is not raised in time of analyzing of social aspects and this issue basically is not the problem for most sociologists. Moreno was leading mainly discusses the sociology through statistical and mathematical methods (Moreno, 1934, 1946, 1954) but considered the social consequences of actions within a group was proposed in his research and other researchers, not effect of physical attributes. It is true that architects create spaces for human life but finally the instrument of creating living space is physical environment and it appears that only use sociological methods will not be resulted in the formulation of housing design guidelines for architects.

Mixed methods of ecological observations and sociograms

For the measure of role of in-between spaces and physical attributes should also use in both ecological and sociological methods. In this regard, architects should record behavior settings through periodically and systematically observations and then identify the physical characteristics that have created the opportunity of establishing these settings (Figure 7).

After that, social interaction in various settings with each other draw and produce sociograms and in-between neighboring settings will be registered in residential area. In fact, this phase of research is qualitative method based on observations and semi-structured interviews with residents of a residential complex. Before or at the same time, researchers can be rated the amount of a positive relationship among each of the residential area by using instruments on neighboring. The important point is control variables which must be considered in the statistical analysis. These control variables can be the duration of residence, age of building, gender and other variables. After both qualitative and quantitative data collected and the amount of neighboring of each residential complex identified, researcher can use the qualitative data to explain the reason for the increase or decrease of the neighboring in different complexes and the impact of the physical environmental attributes on the interactions among neighbors (Figure 7).

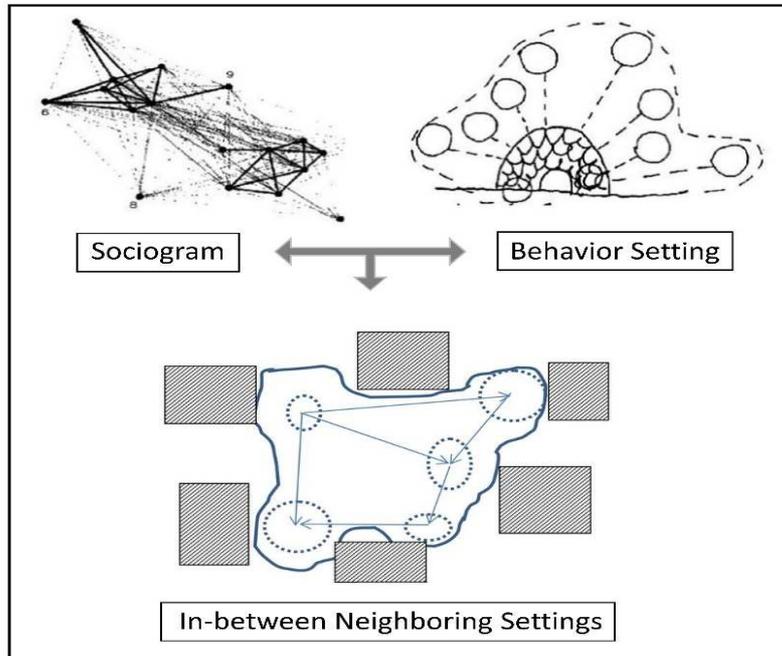


Figure 7: using simultaneously sociological & ecological methods

In current literature of the research methodology, the method which collects the quantitative data and then qualitative data explain them, is known as *explanatory mixed methods research* (Creswell, 1999, 2007, 2009). In fact, the explanatory mixed methods research proposed here, because it can create design guidelines for architects.

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