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SPATIAL BEHAVIROAL ASPECTS OF THE ARAB BUILT ENVIRONMENT

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Abstract: *People play crucial roles in the adaptation of their environment to satisfy their needs for creative expression, security, safety, societal identity, and spatial tendency. The manifold and ever-changing human needs accentuate the dynamics of spatial behaviors that alternate in respect to loss and gain of information. This article emphasizes the idea that spatial pattern is the manifestation of spatial behavior that goes through a continuous process of feedback. The process occurs when the user decides to maintain or modify the physical appearance of the surroundings and decides to create, accept, reject, or avoid any particular event. As an example of Arab cities, this article mainly examines the Damascene built environment as a reflection of users' spatial behavior. The study associates Damascene built environment to the "Behavior as a Spatial Search" model presented by Bjorklund; including the symbolic presentations, relationship among different functional spaces, constituent architectural details, and streetscapes.*

Keywords: Spatial behavior, spatial pattern, cultural context, personal experiences, feedback, sensory system

1.0 Introduction

The urban-scape of a society as a final product is the result of mental activities of individuals. The mental activities are divided into inner and outer parts. The former is subjective as it expresses the view of the individual of the environment while the latter is objective as it reflects the group or the cultural view. (Bjorklund and Philbrick, 1975) As Powers expressed it, the mental activity is the living nervous system. It is reflected in both the perception and the cognation. (Powers, 1998) The perception is the personal evaluation of the physical environment that surrounds a human being and uncovers his understanding and interest of constituent elements of the environment. On the other hand, the cognation is the case of the real understanding of how the environment works. (Johnston, et al, 2000)

This introduction is the summary of several researches that experiment human roles in the formation of the built environment. The early theories identify environment as the determinant of the spatial behavior of a human being who has a negative role in the modification of his living environment. That view is demonstrated by environmental determinists like Even E.C. Semple. However, human geographers, like Williams Powers, believe that humans have an active and effective role in the environment. (Powers 1998) Powers rejected the 'Cause and Effect' theory or the Open Loop model that Semple adopted. He believed that the model must consider behavior as a result of stimuli and not the other way around. He introduced the closed model that is justified by the addition of feedback and its role in the formation of the spatial behavior. The closed model is called 'Behavior Control Perception'; it illustrates what we see and how we see our environment. This model is more appropriate to express human behaviors. It was supported by environmentalists and idealists. The idealists believe that the reality of the world exists in our minds. For them the real world is not separable from the thought or the individual knowledge. Phenomenologists believe that the outer world is understood from personal knowledge; therefore, it is the way to interpret or explain the act of someone. (Edwing, 1986)

Bjorklund confirmed the suitability of the closed model to understand the urban formation. In her view, feedback was misunderstood or neglected in old models despite its clear impact on the conversion of

human behavior. The addition of 'feedback' to the model makes the source and force behind human behavior clear. The effect of humans' on their surrounding environment, and vice versa, leads to either negative or positive interactive roles. Figure 1 illustrates these roles through the sensory system preceding the spatial perception. The perceived information is then evaluated through several interactions ranging from the personal experiences to cultural experiences. The result is the spatial behavior. The feedback illustrates that human behavior is responsible for the alteration of places and the creation of different physical forms. These differences occur from time to time and vary from one place to another. Spatial behavior is the decision making that relies either on the individual or the group action. In the case of the group, decision making is a slow response since it is related to policies that determine the allowable changes of space. On the light of that understanding, Bjorklund (Cited in Ferwati, 2010) developed her own model, calling it 'Behavior as a Spatial Search'.

Bjorklund emphasizes the idea that the sequence of environmental attributes influences the observation of elements and events, leading to the decision to interact with or modify the built environment. This decision is a result of mental activities that are exemplified by human behavior and decision making. The decision making itself is reliant on spatial needs in order to ensure nearness, connectedness and separateness from people, places or a certain environment. Closeness is the tendency to follow, join, and draw nearer to others; this is exemplified in the living room, the inner courtyard, and the dead-end street. Connectivity is the tendency to reduce social and physical distance and to increase the interaction and completeness that is expressed in the house attachment and commercial areas. Segregation is the affinity for distinctiveness and protection from others; it is exemplified in the application of the lattice window, bedroom, and house entrance that separate the house from the outside in addition to the main street that acts as a boundary among neighborhoods.

On the light of personal and cultural experiences, an individual may work on self-adaptation to fit a certain spatial pattern or may attempt to do some modification to the physical environment to meet his needs and desires. Bjorklund's model shows that mental activities go through a cycle of feedback that stands as the generator of the continuation of mental activities. Mental activities reflect changes in the perceptional process and, through time, cause changes in one's or a group's preferences for some elements and environmental events. The outcome demonstrates the existence of various spatial patterns. The change in cultural heritage or personal experience contributes to the loss or gain of information through time. (Bjorklund 1983) The entire process is basic for the understanding of the action and the interaction among individuals within the built environment throughout time. On the light of 'Behavior as a Spatial Search' model, the following sections will illustrate the relationship between both spatial behavior and spatial pattern with examples from Old Damascus.

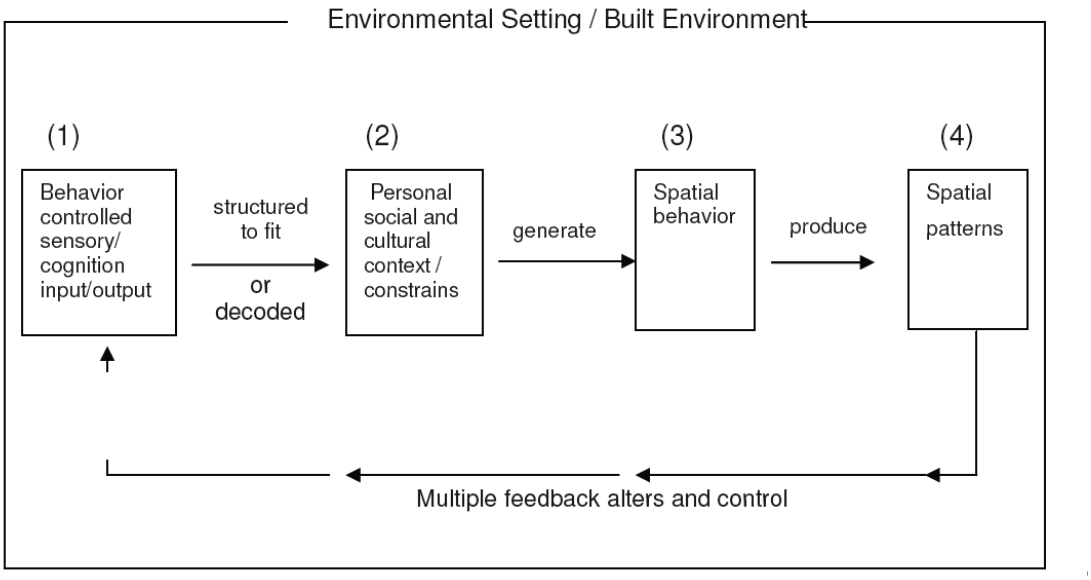


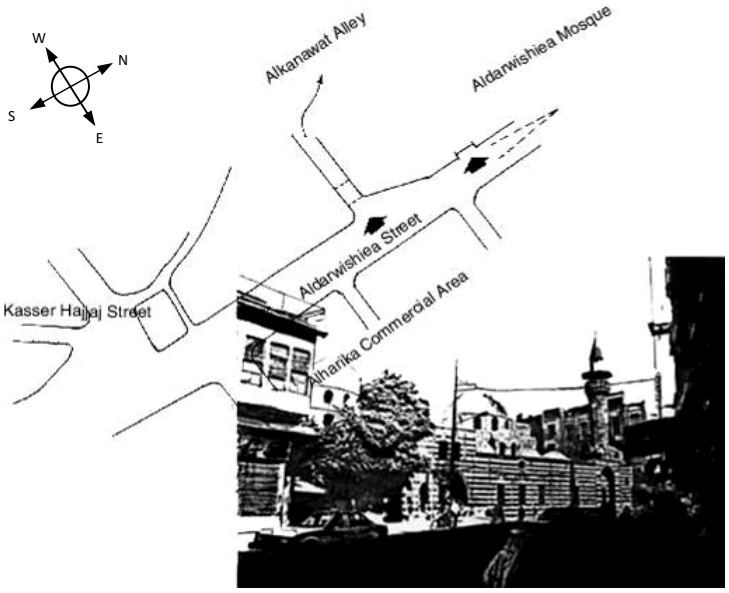
Figure 1: Bjorklund's model illustrates the 'Behavior as a Spatial Search'.

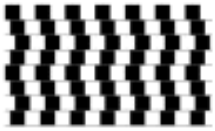
2.0 The Sensory System as a Research Mechanism

The first step to notice our surrounding environment occurs through our sensory system, the receptor or the part that senses the surrounding. The human surrounding environment is loaded with built and natural stimuli such as people, trees, noise vs. noiseless surroundings, fresh or stale air, shadows, places of light, rough vs. smooth fabrics, various colors, endless numbers of different forms and volumes, etc. Through our sensory system we receive some of these elements as a result of several factors such as the relationship between the stimulus and the receptors, and between personal experience and cultural context. There are three considerations that help to illustrate the way we interact through our sensory system with the environment.

- The individual has the ability to remember or communicate with the symbolic elements presented in the built environment.
- People select how and when they interact with their surrounding environment.
- The density and the power of the presence of an event or an element is another reason for people paying attention to other events or elements.

In a different study, the author studied Aldarwishiea Street that forms the western border to Old Damascus as follows: Aldarwishiea Street, as an integrated street with many accesses, is highly commercial attraction to people from all over the region. Figure 2 shows the beholder moving from north to south. Aldarwishiea mosque's façade is highly noticeable with its black and white stripes - common in Ottoman Architecture. These stripes illusively hide the uneven width of the street caused by the uneven recess of the mosque's façade. The stripes also amalgamated the façade parts, the most importance of all are the two gates: the mosque's main entrance and the alley's entrance to the south of the first gate - in the centre of the picture. The latter gives the impression of another main entrance to the mosque. The scene dominates this setting, since the beholder unexpectedly can not figure out the real width of the street or the use of the alley entrance unless he/she is very close to the building. It is a form of illusion as the alternation of the black and white stone course bonds the elevation as a whole, reducing the importance of the details. In fact the ambiguous presentation of the configurative pattern of the alley entrance is deepened by the joined architectural elements of the vault and the *sibat*, a room nesting above the alley. (Ferwati, 2007, p. 32)





Distortion of reality, as the black squares shift in positions, one may or may not be able to tell if the lines are parallel. ('Can You trust Your Visual Perceptions?', cited in Ferwati, 2007: 32)

Figure 2: Aldarwishiea Street and the unexpected alley's entrance, Damascus, 1986.

3.0 Cultural Inheritance

Societal ideals have been central in determining the spatial behavior about the nature of the built environment in relation to individual and different cultural levels. When a society follows certain social and religious principles, as the case of Damascus, the interaction area carries spatial understanding. That is because the built environment is developed in congruent with the needs of the individual and the group (Mortada 2005) while the feedback process works on the alteration of the built environment.

How is this socio-religious aspect reflected on the built environment? The possible interaction between men and women illustrates the concept of privacy through the layout of the inner-spaces layout found in the traditional house as well as modern residence. Mortada determines the role of social principles in controlling the spatial interaction between family members and others. These rules are embodied in the resident design, the neighborhood layout, and the central commercial area.

3.1. Resident Design: Generally, the resident functional plan is distributed into three zones: the first is called '*salamlak'*, the men's section; it is used mainly by male guests. Since it follows the entrance, it is called the outer room. The second section is the '*haramlak'*, the women's section. It is used only by family members (men and women); so it is highly private. When there is a big gathering for relatives - men and women - there is another guest room called *alqa'a*, the biggest room in the traditional house. With double the height as other rooms, this room is located on the ground floor with access from the inner-courtyard. There is a third zone called *kadamlak*, the servant zone. It was mostly found in houses of affluent families. This section includes the kitchen, the storage, and servant's room. It is attached to the *salamlak* zone. Alazam Palace, located on the south of Umayyad Mosque, is a good example of these three zones.

3.2. Neighborhood Layout: All traditional houses have two stories without balconies. Instead, windows are open towards the inner courtyard this acts as a solution for the prevention of visual penetration from the adjacent buildings. Regarding the relationship between the residence and the street alley - *zokak* - it is typically known that women of both opposite door neighbors chat together through the upper floor windows. From these windows they can also communicate with street venders and see their incoming visitors. To maintain the place privacy, a wooden lattice screen is attached. It helps women to see the outside, but not the other way around. It is worth mentioning that the use of the wooden lattice window plays an important role in the reduction of the strong day light and the prevention of the hot sun rays to penetrate the inner atmosphere; as a result, the inside is cool. Furthermore, this element becomes one of the symbols that distinguish Islamic architecture.

3.3. Commercial areas or souks - pl. aswak: Is an area crowded with shops, caravansaries and mosques. It demonstrates a form of spatial behavior. This area is a combination of several specialized strips *aswak*, such as the woman *souk* that is designated for selling only women's items. Mosques in these areas have two doors; one connected to the neighborhood and the other to the commercial. Such a solution helps to control the resident–stranger interaction zone. Al-Medan commercial area on the southern part of Damascus is a good example of this design.

4.0 Feedback Process

The change in the built environment gives another example of the impact of human behavior as the feedback causes gain and loss of information which leads to alteration in the spatial form. The self-proposed question is that, in contrary to traditional architecture, if the change in the built environment takes place in a short time period, will the product be compatible with people's needs? Two lessons from history give insight about the continuous transformation of architecture that occurs in order to meet the users' ever changing needs:

4.1. During the Roman Empire, monumental structures were built with spiritual and symbolic meanings stamping Roman cities all over the empire. Romans seemed to be guided by the desire to transmit their view most directly to the viewer. Some of these distinctive structures were found in Damascus, most importantly the open theater, the Straight Street, and the Temple of Jupiter. When the empire converted to Christianity, it caused a revolutionary cultural transfer. As a result, the Christian Roman Empire - occupied

part of the Roman buildings but with smaller scale than that of the Roman Empire. (Akili 2010) Here, the feedback related to spatial aspects; the central part of the temple of Jupiter, for example, rehabilitated to accommodate Saint John's Church. The rest of the temple became a covered commercial area. Other churches sprung out after that all over the city especially in the eastern side. (Al-Rihawi 1999)

4.2. The several modern architectural styles represent a dramatic social-cultural and technological shift from traditional architecture and urban form since the beginning of the twentieth century. This happened in a short period, despite the fact that people still held on to their religious and social activities. The absence of the transitional style that would mitigate this significant jump in building style is noticeable. (Ferwati, 2010) Mortada (2005, 127) says that 'Islam has become a spiritual entity rather than a reference to daily life and an aid to solving its problems.' The modern solution is prominently functional, it is not as enjoyable of a lifestyle as that in the traditional neighborhood where direct interactions between residents and solicitors infuses street life with lively action.

5.0 Spatial Pattern of Human Activities

In Old Damascus, people live in dense residences and crowded commercial areas. An overcrowded area causes social and psychological problems. (Lawrence 1974) Stokols (1972) defined crowdedness as the form of self-tension occurring when the need of the individual for space surpasses the existing dimension. For Stokols crowdedness is a result of the individual's feeling caused by several factors that are related to the physical condition, such as high density, the acceptable distance among individuals - interpersonal proximity - limitation of the movement, interference in an individual's private space, and other personal factors. In a similar view. Freedman (1975, 11) said crowdedness must be understood as a sign of the physical condition of the high density, and not as an inner feeling. In 1975, Altman (Cited in Gifford, 2007) analyzed crowdedness as the understanding the relationship between privacy, personal space and territoriality. According to him, the feeling of crowdedness results when the individual cannot insure the desired level of privacy. As Altman expressed it, density occurs when the required space for the individual to perform his activities within the desired level of privacy is insufficient.

Density demonstrates the space that is occupied by the individual. When this density is too high, the space becomes insufficient for an individual to carry on his activities while maintaining the desired level of privacy. As a result, he or she feels crowded. Therefore, personal distance helps in understanding the feeling of crowdedness. As Altman stated, the feeling of crowdedness occurs when the person becomes unable to obtain the desired level of privacy. In some cases, crowded places become desirable or even demandable. Here, the concept of high density is not coordinated with the feeling of crowdedness; an example of this case is the attendance of sports games. In other cases people feel crowded despite the very low density as in the case of the bedroom. The discussion in this section refers to the feeling of crowdedness without the focus on the cases of density that are supported by Stokols and Freedman. The feeling of crowdedness is one of the urban phenomena that requires adaptation or urban solution. In Old Damascus - as the case of other Muslim cities - people developed their city and living places to reduce the feeling of crowdedness.

Compact residence is a natural result of architectural and urban design principles applied in traditional buildings. Residences are attached to each other from the sides and backs leaving the front elevation overlooking the street. In some cases, the main entrance is the only exposed part to outside. Therefore, the necessary openings of rooms are insured toward the inner courtyard creating the idea of the central function.

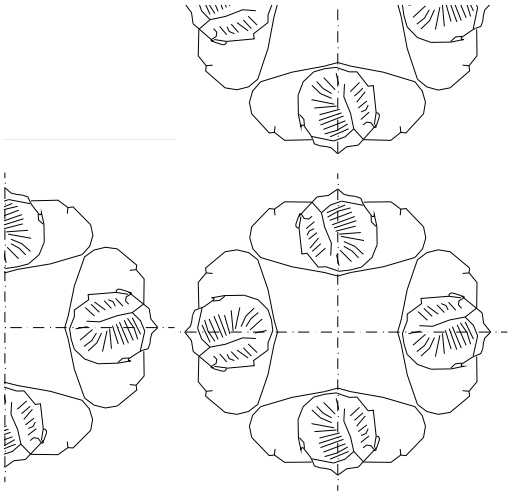


Figure 3: In the traditional settlement, the idea of the front, side and back elevation assimilate the human body. Every person in this figure represents a house and all of them form a layout that is similar to attachment of traditional houses in Old Damascus. (Author)

The single house protects the neighboring houses, and its front is the only part that is exposed to the street. This has led to the absence of the side and back concept. Figure 3 simplifies the house cluster in four attached units presented in human figures. Every person is centered around him/herself - self-actualization - and the group of them is centralized around all of them - group-self-actualization.

The movement among the urban fabric occurs through a streets to insure the existence of different levels of street control or privacy. In his book 'Earth Architecture in Islam', Jamil Akbar (1992) used the term 'control'. His view of control of spaces underlines the idea of group ownership of a place where the public role is limited to prevent any resident from causing harm to street users. According to Hillary and Hanson (1988), the word 'control' has different meaning. They define it as a space with a high level of controllability through the likes of dead-end streets or fewer exits. Both definitions work together in the case of the traditional urban layout. The streets demonstrate the communication pattern among the users themselves and between users - and outsiders. Streets with the same level of controllability form a zone. All zones represent the organization of the spatial pattern of the settlement. (Lawson 2005)

Feeling of crowdedness results in many problems that can be classified into three points: the loss of freedom, the overload of stimuli and the environmental threat.

5.1Loss of Freedom

In a society with high density, people grow up unaware of being deprived from some personal, physical, and psychological needs. This happens at different degrees for different people because of the existence of several levels of noise and privacy. The deprivation of the desired quietness becomes noticeable especially when someone is unable to ignore the case. The result is the feeling of anxiety and psychological pressure. (Aiello and Baum, 1979)

5.2The Overload of Stimuli

In public areas, people exchange talks, resulting in street noise; look at each other, resulting in visual connection; and shake hands or hug each other, causing physical touch. These activities are the street stimuli featuring the commercial and public places. There are other important stimuli in these places such as the cry of the street venders, the exposure of items in shop windows, and colorful - electric signs. The increase of users in these public spaces also adds to the number of stimuli. When the reception of such surrounding stimuli is unpredictable and perceived as uncontrollable (Evans and Cohen, 1987, cited in Nasar, 2011, 164), one becomes saturated with information. Gergen K. and Gergen M. (1986) called this case the stimulus overload that causes mental and physical anxiety.

Through a closer look at the crowded commercial areas in Old Damascus, we notice that the urban distribution of mosques offers optional solutions to the state of overload of stimuli. During the working hours, besides being worshipping places, mosques are occupied as a means of rest and retreat from the hot summer, and from the crowded street and its teeming stimulations. The inner atmosphere of mosques is well designed. They have inner courtyards with center water fountains, shaded areas, trees, engraved patterns on the wall, blue iznik tiles, and stone walls with white and black strips as in the Ottoman Architecture. All these elements create a calm beautiful and comfortable atmosphere, replacing tiredness with a relaxed mood (Figure 4). The built environment in this example gives people what Nasar (2011, 164) called it 'perceived control of and potential escape from everyday stress'.

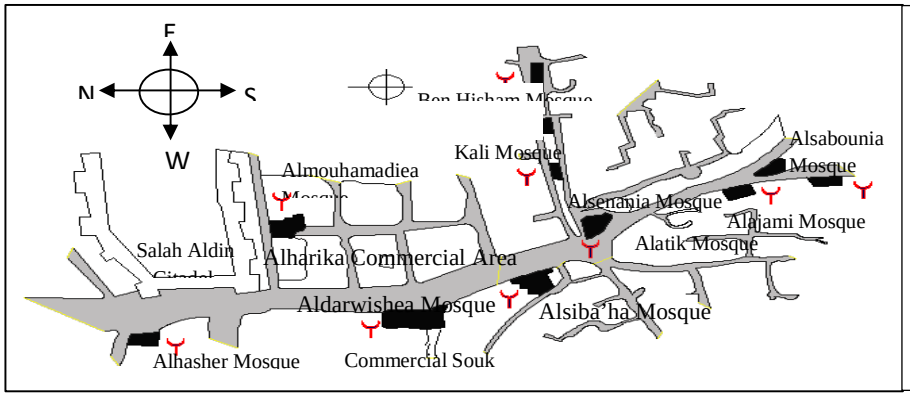


Figure 4: People can escape to Aldarwishea mosque or Syba'ea or any other mosque when the degree of stimuli of the commercial streets reaches overloaded levels. Notice the density of mosques. The average walking distance from one

5.3 The Feeling of Environmental Threat

People usually feel threatened when their personal space that separates them from others is violated. They simply tend to ignore many of such incidences by escaping from the situation in any possible way. Rapoport (1977) said that the common defense approach against the environmental threat is to ignore the physical and social environment.

In different places, people seek different distances for their personal spaces. But how do people decide on these distances? Edward Hall (1990) indicated that people gain unspoken proximate rules related to the American society and differ from Middle Eastern society. (Figure 5) The distance placed when engaging in a conversation in the Middle East is less than that known in American society. Such differences usually lead to a misunderstanding between both societies. In business meetings, for example, Middle Eastern people try to maintain their usual personal talk distance, while Americans tend to move one step backward; this causes confusion between both parties about the space desired by the other. (Adler and Towne, 1999)

Figure 5: People carry with them rules determining the physical distances that are suitable among them. In the case of the limited space and significant numbers of people, the distance from the stranger is 12 feet (Souk Al-Hamedieh, Damascus 2003).

6.0 Contribution and Shortcoming

The research focuses on the examination of spatial patterns that undergo various changes as a result of continuous gain and loss of information, as well as continuous feedback, in order to collectively satisfy the users' spatial behavior. The study does not focus on applying an empirical approach but rather a phenomenological one. The paper explores the field of environment psychology and human geography in a way which will offer space makers and developers, such as architects and urban designers, insight into the complexity of the built environment, and crucial understanding of human-environment interaction. The overall methods of his research and its findings offer valuable additional aspects to consider while evaluating developed complex built environments or designing new ones.

7.0 Conclusion

Spatial behavior is constantly influenced by a dynamic set of elements including cultural context, personal experinces, feedback, and the gain and loss of informtion; these influences create a need for a process of continuous re-evaluation. Therefore, the reuslt is different from one society to another and varies within the same society from time to time. When people's spatial behavior changes, urban and architectural forms are more likely to undertake new alterations or additions. With illustration from Old Damascus, Bjorklund's model helps understand the process of decision making; showing the importance of understanding the user's mentality to have the decision cogregant with their needs, mental images, and desires. Othewise, any possible controversy among individuals and groups and their surrounding environment will leave marks on the social logic of the built enviornment.

References

Adler, Ronald B. & Proctor II, Russell F. (2011) *Looking Out Looking In: Interpersonal Communication*, (13th Ed.). USA. Publisher: Wadsworth.

Aiello, J.R. & Baum, A. (1979) *Residential Crowding and Design*. NY: Pleum.

Akbar, Jamel (1992) *Earth Architecture in Islam*. Damascus: Publisher: The Science of Quran Institute.

Altman, T. (1975) *The Environment and Social Behavior: Privacy, Territorially, Crowding and Personal Space*. CA: Brook / Cole.

Bjorklund, E.M. (1983) Behavior as a spatial search. *Ontario Geography*. No. 21, pp. 85-100. Canada: Department of Geography, The University of Western Ontario.

Bjorklund, E.M., and Philbrick, A.K. (1975) Spatial Configurations of Mental Process. *La Reuue de Geographie de Montreal*. University of Montral, Notes et Documents de Recherche. Dept. de Geographie, Universite de Laval, Qubec.

Edwing in R.J. Johnston (1986) *Philosophy and Human Geography*, (2nd ed). London: Edward Arnold.

Ferwati, M. S. (2010) *Urban Semiotic Analysis: spatial Design and Behaioural Relations*. USA & UK: Publisher VDM the Verlag Dr. Muller.

---------- (2007) Head-Turning Situations, Street Walk in the City of Old Damascus. *International Journal of Architecture Research*, Archnet-IJAR Vol. 1, Issue 3, November 2007, pp. 19-36 . http://archnet.org/gws/IJAR.

Freedman, J.L. (1975) *Crowding and Behavior*. NY: Viking.

Gergen K. & Gergen M. (1986) *Social Psychology*. (2nd Ed.), U.S.A.

Gifford, Robert (2007) *Environmental Psychology: Principles and Practice*, (4th ed.). Colville, WA: Optimal Books. ISBN 0-9688543-1-1.

Hall, E.T. (1990) *The Hidden Dimension*. Garden City, NY: Doubleday.

Johnston, Ron J., et al, (ed.) (2000) *The Dictionary of Human Geography*, (4th ed.). Oxford, Great Britain: Blackwell Publishers.

Lawrence, John E. (1974) Science and Sentiment: Overview of research on crowding and human behavior. *Psychological Bulletin*. Vol. 81(10), Oct 1974: 712-720.

Lawson, Bryan (2005) *The Language of Space*, (4th ed.). Oxford, Great Britain: Architecture Press, Linacre House.

Mortada, Hisham (2005) *Traditional Islamic Principles of Built Environment*. London / New York: Routledge Curzon. Digital Edition.

Nasar, Jack L. (2011) Environmental psychology and Urban Design. Banerjee, Tridib, and Anastasia Loukaitou-Sideris (eds.) (2011). *Companion to Urban Design.* London and New York: publisher Routledge, pp. 162-174.

Powers, W. T. (1998) *Making Sense of Behavior: The Meaning of Control*. New Caanan: Benchmark Publications.

---------- (1989) *Living Control Systems: Selected Papers of William T. Powers*. Control Systems Group: Gravel Switch.

Rapoport, A. (1977) *Human Aspect of Urban Form*. New York: Pergamon Press.

Rihawi, Abudl Al-Kader (1999) *دمشق: تراثها ومعالمها التاريخية / Damascus: its Culture and Historical Landmarks*. Damascus: Dar Al-Bash'r Press.

Stokols, D. (1972). A Social Psychological Model of Human Crowding Phenomena. *Journal of American Institute of Planners*. Vol. 38, pp. 72-94.

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