

In-Between Space, Dialectic of Inside and Outside in Architecture

¹Alireza Shahlaei, ^{2*}Marzieh Mohajeri

¹Ph.D. Candidate, Department of Art and Architecture, Central Tehran Branch, Islamic Azad University, Tehran, Iran.

²M.S in Architecture, Department of Architecture and Urbanism, Science and Technology University of Iran, Tehran, Iran.

Received 02.02.2015; Accepted 07.20.2015

ABSTRACT: Defining space by dividing it to inside and outside is one of human's ways to recognize his position in environment. Architecture is created to response to this need for inside/outside spaces. Design of inside and outside Spaces and relation between them always has been one of necessities for definition and limitation of human living spaces, but little attention to relation of this two spatial realms and poor design of transitional spaces between them has caused to lack of quality in current Iranian architecture. This study aims to explore relation of inside and outside in architecture and focus on condition of transition, boundary and connection of those. For achieving this purpose concept of inside, outside and in-between has been investigated and by exploring cases of this kind of connection (especially in past and recent Iranian architecture), the aims, approaches, functions and physical forms of in-between spaces has been presented. This results and findings can enhance design considerations of in-between spaces especially in architecture of Iran's big cities. Literature reviewed has shown importance of in-between space design as another kind of space: either inside and outside, neither one of them.

Keywords: *Architectural Space, Outside; Inside, In-Between Space.*

INTRODUCTION

Fundamental act of architecture is define space by separating one space from another and basically requisite of this act is creating differentiation of inside and outside. In beginning of time, architecture had this tendency to enhance shelter and habitation by inside and give over movement and utilization of natural environment to outside; but inside and outside doesn't exist without each other. This essential relationship served by elements like openings and visual accesses and had been improved by the time. Functional approach to external walls, doors and windows is necessary but it is not enough for human desire space. Excellent architecture look at this threshold as a third kind of space that has opportunity to improve whole

quality of living spaces by converting it from a tension line to an "In-between Space". Iranian traditional architecture had excellent cases in responding to this issue and had improved quality of living spaces by consideration of climate, function and aesthetical aspects in design of in-between spaces like "Ivan". While some successful cases is seen in current Iranian architecture that has desirable in-between space but most of recent building neglected in-between spaces and damage quality of whole space. Another subject is the lack of available literature about this area of architectural study while researches about interior design and landscape design has been more popular. This paper aim to add some knowledge about design of this transitional spaces and suggests more studies for cases, technics and design considerations especially in urban architecture of big cities in Iran.

*Corresponding Author Email: m_mohajeri_1@yahoo.com

MATERIALS AND METHODS

This study is conceptually a qualitative one that its type is applied developmental. Research method is descriptive and statistical society is all of relevant documents and citations. Sample size is all of available documentations and comparative studies and therefore sample size and statistical society are equal. Method of data collection is librarian and its device is taking notes. Method of data analysis is application of descriptive statistical like frequency. Also some case study from past and recent Iranian architecture is applied to indicate this issue more clearly.

Space

Architecture takes place in space; this act can functionally responds to human physical needs or goes further by responding to his spiritual needs and therefore convert from producing of buildings to true architecture and makes human's living spaces desirable and qualitative. Anyway architecture is dependent and attached to the space; space embraces architecture and architecture embraces space.

Man changes his environment on the basis of his needs and aims and is himself affected directly by the environment in which he lives. In designing architectural spaces, few are the cases in which adequate attention is given to the psychological aspects related to the user of the space. Therefore, it deems a necessity to focus on the cognition and consideration of space. Heidegger, for the first time, proposed that "existence is spatial" and that "one cannot separate man from space". Space is neither a concrete object nor an abstract one; otherwise, there may exist neither man nor space. Therefore, the space and environment have special significance in architectural theories and invite extensive study and research (Tabaeian & Einifar, 2011).

Space is commonly defined as the possibility of extension. To this we can add that space is the possibility of being occupied. Space itself is abstract and empty. When space is occupied by an object; that object uses up or swallows a certain portion of space. Empty space, like a vacuum, is invisible. Only when space is occupied is anything visible. However, it is not space itself that becomes visible, only its absence. The object erects a barrier to further inquiry inwards, its surface reflects back our attempts to see further within. If an object is opaque, the only part that we can see of space is the boundary between the occupied and unoccupied portion. The object defines a shape in space by delimiting it. The sculptor makes a statement about the difference between unoccupied space and occupied space by showing us the boundary of inside and outside (Bloom, 2005).

Space is defined as an interval of distance or time between two points, objects or events (Collins, 2003). It is also known as a relation between objects (Arnheim, 1977). Space has the property of setting frontiers or limits to bodies within it and of preventing these bodies from becoming indefinitely large or small. Space is not some pure extension, lacking all qualities of

force, but is rather a kind of primordial atmosphere, endowed with pressure and tension and bounded by the infinite void (Brookes, 2012).

Arnheim at "The Dynamics of Architectural Form" has said: "Space is created by a specific set of natural and artificial things whose architecture is involved in its creation". Also Zevi has mentioned: "Everything which has no space is not architecture. Every building creates two spaces at the same time: interior space and exterior space. Interior space is the essence and basis of architecture". Grutter has said: "Architectural space can be perceived objectively and feel directly and it can identify by its defining elements" (Parsaee et al., 2014).

After reviewing some literature about architectural space and before getting started to define inside and outside, it is necessary to know why human's mind always tends to divide space into inside and outside and creates a controlled connection between them.

In order for one to understand and live within an environment, they must first be able to establish a sense of place and position. From here one is able to establish a mental if not physical boundary, which highlights the space in which they need to occupy in order to cater for their behavior and movement as they undertake their daily routine and activities. The concept of space results from human's need of orientation, outlook and perspective. We as humans inhabit the 'environment' which is large and very exposed, often referred to as the 'outside', which to some poses the threat of danger and exposure, which in turn leads us 'humans' to a need for protection, shelter and privacy, this space can be known as the 'inside' (Brookes, 2012).

Outside

Outside can be defined as "being outside a specified thing or place; out of doors or similarly the external side or surface of something". The outside is generally associated with the environment, the great outdoors. The environment can be defined as "the external conditions or surroundings in which people live" as well as "the natural world of land, sea, air, plants, and animals" (Collins, 2003).

Human always is attached to outdoors environment and cannot survive without touch with his surrounding natural environment; this dependence is both physical and psychological. Human's body has relation with natural cycle of day and night and also four seasons. This natural environment allow him to breath, eat, drink, sleep and in brief allow him to live. Human for his physical and social life needs to be in connection with this great outside while this outside is not always welcoming and has some threatens and undesired factors that can harm this living. This negative factors force human to create a space that can insure safety from this exposure.

The open world is changeable and un-responsive to our demands. It is characterized by wind, rain, heat, cold, and sometimes hostile animals. These are the things that define this space as uniquely outside. Outside we feel exposed and defenseless (Lo, 1986).

Inside

Inside, as the opposite to outside, can be defined as “being in or to the interior of something, the inner side, surface, or part of something” (Collins, 2003). This domain: that we carve out is a protective cocoon we call inside. Automatically, of course, we must also have an outside, because one cannot exist without the other. Both this inside and outside are self-contained spaces, just as we are individual elements in the environment. Reinstating the idea of how both inside and outside are mutually exclusive (Lo, 1986).

Though we have a certain measure of dependence on the environment and outside, we are not inextricably linked to its rhythms. We don't have to rigidly follow the seasons, or the cycle of day and night. We possess the means to live, work and relax practically when and where we choose. Because of this individual nature, we are continuously attempting to locate ourselves in space. To do this we must carve out a natural space, an area which we can dominate with our presence (Brookes, 2012). According to Moore (1974), if we aim to provide ourselves with a sense of identity, this is very important “... to give people the chance to know where they are in space, in time and the order of things.”

Inside/Outside Relationship

One way to understand concept of something is study on its components to understand how this component shape the whole. Classification of something's parts and relationships between them can help to perception of phenomena. Study on concept of space also can be done by look at inside and outside space and how they relate to each other. Understanding the essence of inside and outside space and differentiation between them can help architects to form proper “inside/outside relationship” and create high quality architectural space that meet user's satisfaction.

Understanding the nature of inside and outside space, and how the differentiation between the two affects their relationship, is very important if we are to appreciate how a building satisfies the innate human need for shelter (Lo, 1986). Architects and designers alike have found it necessary to interpret the combination of closed and open spaces as a dynamic interplay of barriers and passages. Quite in general, architectural space must be viewed as an activity of forces, not as a static arrangement of objects and interstices (Brookes, 2012).

Zevy says: “Everything which has no space is not architecture. Every building creates two spaces at the same time: interior space and exterior space. Interior space is the essence and basis of architecture”. Nurbeg-schulz says: “The relation between inside and outside, which is the first aspect of objective space, shows that spaces have various levels of extension and surrounding”. Mahmoodinejad says: “In the phenomenology approach, space has distinctly definable elements which include: dialectic of inside and outside, centrality, surrounding, territory and range” (Parsae et al., 2014).

A relationship is defined as a connection between two things, it

is the relationship of inside and outside that ultimately lead us to the idea of “space” (Collins, 2003). A relationship must have (Brookes, 2012):

A number of PARTS which are to be connected.

A CONNECTION which must be logical, placing the elements into a single image.

An image which forms a WHOLE, having greater meaning than the original elements.

A relationship can be defined as:

“Whole” = “Part” + “Connection” + “Part”

Space can be seen as the overall image, space is the “Whole”: which is a result of the relationship between inside and outside. Inside and outside supply the “parts”, while openings make the “connections”. The “whole”, is an appreciation of the duality of their complementary characters (Lo, 1986).

The differentiation between this ‘outside’ and ‘inside’ is defined by human's behavior and perception. A physical boundary is often implemented but is not essential. This space becomes the ‘in-between’ it could be known as a connection, a line of tension, a boundary, a transitory space (Brookes, 2012).

Venturi has mentioned importance of this issue and says: “... Contrast between the inside and the outside can be a major manifestation of contradiction in architecture ... The essential purpose of the interiors of buildings is to enclose rather than direct space, and to separate the inside from the outside. Kahn has said: “A building is a harboring thing.” The function of the house to protect and provide privacy, psychological as well as physical, is an ancient one... Contradiction between the inside and the outside may manifest itself in an unattached lining which produces an additional space between the lining and the exterior wall ... layers between the inside space and the outside space can be more or less contrasting in shape, position, pattern, and size.” (Venturi, 1977)

In different architectural types this connection is expressed by many methods and forms to give a proper response to human's demand based on specific context's conditions that architecture took place on that. This different approaches to this design issue will discuss in the following of this paper.

In-Between Space

The between can be defined as an intermediate point to two other points in time and space or indicating a linking relation or comparison. The in-between can be defined as “being in a space that is between one specified thing and another” (Collins, 2003).

If we are to fully comprehend the meanings of inside and outside, with their connotations of exposure, enclosure, protection or security, then a link between both worlds is vital. It is this link which alters the relationship between inside and outside (Lo, 1986). The words inside and outside reflect a dichotomy in direct experience. Inside and outside cannot be seen at the same time. This leads us to the space that is the in-between (Arnheim et al., 1966). In-between can also be known as a connection, transition, border, differentiation, threshold or

line of tension. The design of space which is neither internal nor external – may best be described as a third type of space: inside-outside space (Brookes, 2012).

By understanding the nature of inside and outside space, and how the connection being the in-between affects their relationship, we are able to appreciate how a building satisfies the innate human need for shelter. This need is what leads us to the space which is known as the inside, the outside is what causes the need for this space, and it is the connection – the in-between, which allows one to establish a relationship between the two. It is through the implementation of a boundary and a connection that ultimately has the ability to turn a space into a place (Lo, 1986).

To maintain the distinction between inside and outside there should be only limited means of communication between the two. If there is a house with no openings, then if we start on its outside we cannot get inside, while if we start on the inside we cannot get outside. The outer wall of the building needs to be a semi-permeable, so that if we choose the right location on its skin, and move in the right direction, we will find ourselves suddenly inside. Though the door is passive in space, it allows us to be an active agent to apply ourselves against its fulcrum to cause the inside to become outside, or the reverse. There is no discernable physical difference between walking through the door one way or the other, but the response in our experience of space is vastly different (Bloom, 2005).

Some researchers have focused on inside/ outside relationship as public/private dual and have defined this kind of space as: “intermediate area between the public area outside of a house and a private area on the inside” (Maliki et al., 2015). Ismail (2012) has mentioned: “A half-public, or half-private kind of space can be profoundly meaningful to users. The built environment is influenced by culture, belief and past experiences of its inhabitants”.

Some studies also have considered in-between space design as a cultural subject dependent to this context. Asadi et al. (2015) have said: “Transition space is a place that has control on privacy, movement, and covers spaces from foreign sight. In fact, all of these are included in the function of transition space in the housing plan according to Islamic culture in Iran ... The transition space with its function plays the role of symbol in Islamic culture and architecture in Iran, which as a bridge, joins the past and present by discovering new communities. On the other hand, progress in urbanization in Iran is leading dwellers to divide the house from a traditional multifamily house to the single house in an apartment. Joining each unit together, even connecting and the relationship of spaces inside each housing by the transition space, are practical experiences that Iranian Islamic architecture has had, and were being utilized in traditional housing plans”.

There is another approach to this spaces that looks through climate concerns and studies on role of in-between spaces design on thermal comfort of living spaces. Taleghani et al. (2012) have said: “Transitional spaces are potentially and

traditionally efficient ways to moderate indoor climate with the free sources available from nature. These kinds of spaces are recently being considered from the comfort point of view.” Maragno and Roura (2010) have mentioned: “These spaces can help to ensure environmental quality in buildings, while rationalizing the use of energy and materials”.

But it must be mentioned that beyond a simple preference for inside-outside spaces based on lifestyle patterns or climatic comfort, there is a growing argument for an aesthetic affinity for these ambiguous spaces that transcend the conventional dualistic architectural amalgam of internal space and external form (Skinner, 2013). The aesthetics of horticulture, or architecture, and of city planning begins only where man deliberately has created a distinction between inside and outside. This distinction enables the parts of the relationship to be defined and in turn the completeness of the relationship, the whole that is space to be recognized (Arnheim et al., 1966). The importance of inside/outside relationship and its impact on forming in-between spaces is been said and therefore demand for this kind of space as one of complicated elements of architecture must not be neglected; this element as a subsystem of architecture must respond to the needs that Lo (Lo, 1986) believes that architecture must serve (Brookes, 2012):

Physiological Demands for – light, air, sun, the filtering out of climatic extremes, and generally protection from the hazards of the outside: to ensure both the short and long term survival of the individual.

Psychological Demands for – privacy, contact with others and contact with the environment, a sense of security, identity, and orientation: to add meaning to the life of an individual. Here it is the presence of our emotions which separates a “building” from “architecture”.

The examples of elements that connect inside and outside is openings, visual accesses, balconies, and veranda and so on. Sometimes this connection goes further from being a mere element and creates an architectural spaces that cannot be defined as interior or exterior and stands somewhere between this two spatial realms. This kind of spaces are called with different names such as intermediate, transitional, liminal or in-between spaces and this kind of space has important role in past and recent architecture in many areas. At this paper, with the emphasis on dialectic between inside and outside, the “in-between space” is chosen to express this issue more clearly.

In-between Space in Iranian Traditional Architecture

Iranian Islamic architecture is more than just a spectacle of domes and minarets, perfumed pleasure palaces and exquisite turquoise tiles; it is a true expression of a rich culture and its belief in Islam that has unified countries as far apart as Spain and China, Central Asia and Sub-Saharan Africa, over some thousand years and more. Iranian buildings express the religious beliefs, social and economic structure, political motivation and visual sensibility of a pervasive and unified tradition (Mofidi

Shemirani, 2011).

Asadi and et al. has done a research on transition space in Iranian housing typology and they are said: "Transition space is a place that has control on privacy, movement, and covers spaces from foreign sight. In fact, all of these are included in the function of transition space in the housing plan according to Islamic culture in Iran. Unfortunately, like more of the third world countries, mimicry of mode and modernization in Iran influences culture too much, as well as social and physical metamorphosis as transition space in housing plans; whereas it is lost in the more contemporary dwelling plans" (Asadi et al., 2015).

The Islamic traditional housing plans follow Islamic culture and beliefs on the separation and control of relationships between the family members and the outsiders, and women and foreigners. The door of the house in this place had retreat, and it created a place (transition space) for waiting until the door was opened, or for discussion. Usually, this place had two platforms for the elderly to sit on and rest. Also, people could stay in that place without inconvenience to other passengers in the alley or street (Asadi et al., 2015).



Fig. 1: In-between space: Hashti, Tabatabaei house, Kashan, Iran.

Therefore it can be said, Iranian traditional architecture has been created an in-between space at the first point of intersection between private inside and public outside: The Entrance (Fig.1). Other space which connects inside to private outside (Courtyard) is Ivan. A place for Spending time at semi open- semi close space (Fig.2).

Ivan has been defined as an arch or high seating covered with roof and the open front, while in some books the semi-open needs has been focused on as making an intermediate feature of empty and full space. This space is considered to be intermediate in terms of light and temperature. In fact, Ivan, as the most important space in Iran architecture, has been displayed in a variety of forms such as balcony or spring-sleeping room. Ravagh, another variety of Iwan, is a three-

closed front space with a height the same as that of roof. These spaces performed their unique feature along with open and close spaces to personify the building an independent identity (Soleymani et al., 2011).



Fig. 2: In-between space: Ivan, Ameri house, Kashan, Iran.

In this model of traditional housing plan design, the transition space is an important factor in Iranian culture and in the design of housing plans. With attention to traditional plans, we can find the following important. Transition space is used to lead people to find their way and maintain the relationship between them. The quality of space and the spirituality of volume must be created by understanding the meaning of these values, and then utilizing technology and construction methods. It is not the exact copy of classical Iranian proportions or even of form, but the symmetry, unity, harmony, and continuity of space which should be the objective. It is in this spirit of the past that we must look to the future of Iranian architecture and urban form, which should be the mirror image of a united social life (Mofidi Shemirani, 2011).

RESULTS AND DISCUSSION

Physical or sensual links between inside and outside must be defined in some way that can characterize unique identity of each space and also establish proper interaction in whole architectural space. This proper interaction can create sense of consistency and integrity between this two spatial realms and furthermore express a link and boundary that if it is developed causes to creation another space that it is not inside or outside but it poses some character of each kind; this ambiguous moment of spatial experience, with focus as a connection between inside and outside, can be named "in-between".

If in-between convert from a surface to a space can prevent passing through a sudden transition and by creation a spatial pause can establish a proper continuation that allows to perceive differentiation between this two and also unique character of

their connection. This in-between space builds an opportunity for understanding the identity and special features of a place.

Architectural Approach to in-between

It can be identified three different approach to defining connection between inside and outside in all architectural types, this approaches include:

Connection is a two dimensional element in external divider that provide sensual or physical access, like a door or window. This line of separation is solid and there is intended emphasis on this separation. Therefor at this situation in-between is an object not a space.(Fig. 3)

Conflation of inside and outside is intended. The line between inside and outside is been faded so separation between inside and outside is defocused. Establishment of this approach is dependent to specific climate situation and also it must be considered functional and cultural issues. There is different design solution for achieving this purpose like slide away glass doors. In this approach instead of in-between object or space there is a faded line. (Fig. 4)

This connection can became an in-between space by focus on this line and converting it from a two dimensional element to a three dimensional space. This threshold can act as a space that provide dialectic between inside and outside and has some features of each kind. (Fig.5)

In first approach there is focus on solid separation between inside and outside. Yet this kind of connection has some profits but if only this approach is been employed to connect between inside and outside, there is limited opportunity to take advantage of outside environment and this issue can decrease qualities of living spaces. This kind of relationship is caused by very harsh climate or low quality architecture. This approach, that is caused to minimal openings and balconies, can be seen as common approach in recent Iranian architecture that decrease quality of living spaces cause of poor economic and cultural situations.

Second approach is suitable for specific situation and it is not compatible with contemporary Iranian architecture especially at big cities. This kind of connection between inside and outside requires specific climate that most parts of Iran doesn't compete with that. Also Iranian life style, cultural issues and emphasis on privacy and "see without being seen" make this approach not suitable as a common solution.

Third approach, creation of in-between spaces, can be a proper solution for achieving qualities of inside and outside at the same time and at a same place. Places for taking advantage of inside and outside, joy and mystery, surprise and diversity, prospect and refuge can add pleaser and quality to architectural space. This design approach can help to overcoming low-quality living spaces crisis in some architectural type that for many reasons has neglected proper connection between inside and outside. Most of residential buildings at Iranian big cities have this potential to be joined to this architectural type; focus on in-between spaces can be right solution to increase space quality and user's satisfaction.



Fig. 3: Poor connection between inside and outside, Maskan Mehr project, Iran.



Fig. 4: Conflation of inside and outside by a faded line, residence in New Zealand, by Daniel Marshal.

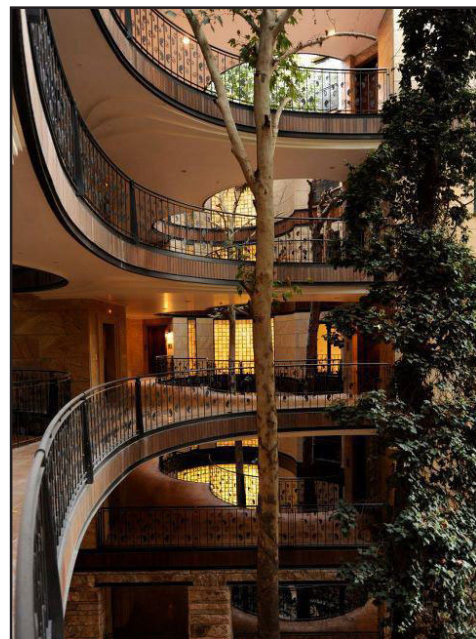


Fig 5: a high quality in-between space, Niavaran apartment, Tehran, by M.R.Nikbakht

Table 1: purposes of in-between

Outside means:	Inside means:	In-between must respond:	
Exposure	Enclosure	Safety from hazards	Physiological Demands
uncontrolled	Controlled	Climate Comfort	
Natural	manmade	Aesthetic and creativity	Psychological Demands
Publicity	Privacy	Life style	
Apparent	hidden	Culture	

Purposes of in-between

Now it is clear that definition of inside and outside can influence on the relationship between them and also changes the character of their connection. There is some aspects of this coexist worlds can lead to different tasks for in-between space. It must be mentioned that in-between spaces can fulfill all this aspects with different level of priority dependent on the architectural type that they belonged to it. Table 1 indicates this issue in brief.

Consequently purpose of creation an in-between space in simplest way can be building a penetration for allowing passage between inside and outside or it can be more and more by responding to all aspects that mentioned above; in spite all of this architecture is act of creativity and in-between space, in addition of responding to all of those demands, can go further and make a place for pleasure and surprise.



Fig. 6: Place to pass as an in-between space, Niavaran apartment, Tehran, by M.R.Nikbakht

In-between, Pass or Stay

Despite of proposes that an in-between space must respond, it can be employed in different zones of a place. Pitts (pitts, 2013) classifies transitional spaces in three categories: “entrance zones; circulation zones; and zones of longer residence time such as atria”, but along with the expression of an in-between space at this paper, it can be said in brief:

In-between space is a “place” for pleasant transition between inside and outside or enjoyable residing between them or a place for both of this intentions.

Examples of in-between space as a place for transition between inside and outside are entrance canopies or covered pathways, sometimes this spaces provide some facilities for short- time rest. Function of this places is providing a “pause moment” and their features like transparency or secrecy and their role in architectural hierarchy are dependent to the factors like life style and climate situation. An example of this kind of in-between space, in recent Iranian architecture, is shown in fig. 6. Examples of in-between space as a place to stay are bay windows, balconies and verandas; in Iranian traditional architecture “Ivan” is an example of this form of in-between space. One of human’s demands is taking advantage from nature (such as pleasuring perspective, fresh air and so on) while being safe from its undesirable factors (such as severe radiation, annoying temperature, intruder wind and so on). In- between spaces are architectural answer to this human’s demand and by providing places to stay between, it is possible to benefit from nice aspects of inside and outside simultaneously. This staying places can be more attached to inside or outside; more enclosure elements increase its dependence to inside and more openness and exposure closes it to outside. An example of this kind of in-between space, in recent Iranian architecture, is shown in fig. 7.

CONCLUSION

This paper aimed to understand nature of architectural space, its parts- inside and outside- and connection between them. Also by focus on methods of establishment this connection, explored the ways for improving whole architectural space quality and enhancing dialectic between inside space and outside environment. Architecture makes inside spaces as a



Fig. 7: Place to stay as an in-between space, Niavaran apartment, Tehran, by M.R.Nikbakht

shelter for providing physical and psychological comfort but outside environment has advantages that human's need to them is essential. In-between space is a design solution to human's demand to taking advantages of this coexist spatial realms simultaneously and at a same place, but this space is impacted by many factors and issues that consideration of all of them is important such as architectural functions, climate situations, cultural and life style issues, aesthetical concerns and so on. This spaces can act as places for pleasuring physical or visual access between inside and outside or can provide places for staying and take advantage from enjoyable aspects of outside environment such as pleasuring perspective, fresh air and so on, while being safe from its undesirable factors such as severe radiation, annoying temperature, intruder wind and so on. The physical form of the in-between space, their attachment and similarity to outside or inside and how it can establish interaction between spaces is dependent to factors that mentioned above and in addition to all of them it is an opportunity in architect's hands to form it creatively. Methods and design considerations of in-between design, especially in residential buildings in Iran's big cities, could be subject of further researches that may have some decent impacts in architectural space.

REFERENCES

- Arnheim, R. (1977). *The Dynamics of Architectural Form*. Berkley: United States of America: University of California.
- Arnheim, R., Zucker W.M, & Watterson J. (1966). Inside and Outside in Architecture: A Symposium. *The Journal of Aesthetics and Art Criticism*, 25 (1), 3-15
- Asadi M.,Tahir M.M., Shabani M.M., & Arjmandi H. (2015). INTRODUCTION TO TRANSITION SPACE IN CONTEMPORARY IRANIAN HOUSING TYPOLOGY. *Jouranal of social science and humanities*, 10(1), 184 - 194.
- Bloom, J. (2005). *The Spectrum Of Arts: Time And Space In Human Experience Of Art*. retrived 27 April 2015, from <http://ajourneythroughthearts.com>.
- Brookes, T. R. (2012). *INSIDE / OUTSIDE and the [inbetween]*. Wellington: Victoria University of Wellington, School of Architecture.
- Collins. (2003). *Collins English Dictionary*. Great Britain: HaperCollins Publishers.
- Ismail, W. H. (2012). Cultural Determinants in the Design of Bugis Houses. *Procedia - Social and Behavioral Sciences*, 50, 771–780.
- Lo, R. (1986). *Between Two Worlds: The window and the relationship of inside to outside*. Wellington, New Zealand: Victoria University of Wellington.
- Maliki, N.Z, Abdullah, A., & Bahauddin, A. (2015). Recalling the Transitional Space: City home and Kampung. *Procedia - Social and Behavioral Sciences (ISI)*, 170, 605 – 612.
- Maragno, G.M., & Roura, H.C. (2010). *IMPACTS OF FORM-DESIGN IN SHADING TRANSITIONAL SPACES: THE BRAZILIAN VERANDA*. The Prague CESB10 – Central Europe towards Sustainable building conference. prague: Czech Sustainable Building Society.
- Mofidi Shemirani, S.M. (2011). The Environmental and Social Manifestation of Islamic-Iranian Urban and Architectural Configuration. *International Journal Of Architecture and Urban Development*, 1(2) 35-38.
- Moore, C. (1974). *The Place of Houses*. New York: Holt Rhinehart and Winston.
- Parsaee, M., Parva, M., & Karimi, B. (2014). Space and place concepts analysis based on semiology approach in residential architecture. *HBRC Journal*. doi:10.1016/j.hbrcj.2014.07.001
- Pitts, A. (2013). Thermal Comfort in Transition Spaces. *Buildings*, 3, 122-142.
- Skinner, P. (2013). Reflections on Inside-Outside Space. *Design + Research; Project based research in architecture*, 2nd International Conference. Melbourne: University of Queensland.
- Soleymani, S., Nahanje Y.K., & Sadeghian E. (2011). Recognizing the concept and performance of Iwan in Iranian architecture with a focus on influence on contemporary architecture of Hamedan. *International Journal of Fundamental Physical Sciences*. 1(1), 1-3
- Tabaeian, S.M., & Einifar, A. (2011). A Study of the Perspectives of Architectural and Environmental Psychology. *International Journal Of Architecture and Urban Development*, 1(1), 27-32.
- Taleghani, M., Tenpierik, M., & Van Den Dobbelen, A. (2012). The Effect of Different Transitional Spaces on Thermal Comfort and Energy Consumption of Residential Buildings. *7th Windsor Conference: The changing context of comfort in an unpredictable world*. London: Network for Comfort and Energy Use in Buildings.
- Venturi, R. (1977). *Complexity and Contradiction in Architecture*. New York: The Museum of Modern Art.