Analysis of the Role of In-Between Spaces in Increasing Social Interactions in the Sangelaj Neighborhood of Tehran City

Authors:
Fatemeh Taha Mohammadi[1], Sara Dashtgerd[2,*].

[1]BSc Student, Architecture Department, Islamic Azad University, Science and Research Branch, Iran.

[2]Assistant Professor, Architecture Department, Hashtgerd Branch, Islamic Azad University, Tehran, Iran.

Corresponding Author:
Sara Dashtgerd
Assistant Professor, Architecture Department, Hashtgerd Branch, Islamic Azad University, Tehran, Iran.

ABSTRACT:
Urban evolutions during the contemporary era of Iran's history have imposed the most damage and physical changes in the historical neighborhoods of Iran. The introduction of modernity to contemporary architecture which was the beginning of many fundamental changes in architecture and urban development resulted in the rising development of cities, and subsequently the isolation, worn-out, and inefficiency of important historical neighborhoods in Iran. The presence of in-between spaces in historical neighborhoods has led to a functional balance of spaces in the urban zones during their times meeting all mental, psychological, social, and economic needs of citizens based on their implicit and explicit layers. However, the in-between spaces were gradually deleted from the historical neighborhoods and residential buildings or were considerably ignored, which resulted in many consequences for individual of the society. Hence, this research investigates and compares the function of in-between spaces by selecting Sangelaj Neighborhood as one of the most important historical neighborhoods involved in this issue considering its present and past. This investigation is done based on a functional analytical viewpoint to provide a strategy for architectural design in contemporary urban spaces. Therefore, this is applied and qualitative research based on the library and documentary study by adopting a descriptive-analytical method that analyzes Sangelaj's Neighborhood by examining the basics of neighborhood and field observations. The results of this study and carried-out investigations indicate the need for reading the pattern of in-between spaces in the center of neighborhood and residential spaces. For this purpose, this study provides practical strategies in this field to improve and revive these functional spaces.

Keywords: Residential Spaces, In-Between Spaces, Social Interactions, Attendability, Sense of Belonging to Place, Sangelaj Neighborhood

INTRODUCTION:

In-between spaces have received great attention and situation as the distance between public and private spaces in the structure of historical residential architecture of Iran. However, the current problems and constraints of design in the housing area, including the reduced area of residential spaces due to higher construction costs and increasing population growth of the country have led to shortage and loss of in-between spaces in housing and urban development field (Nafiseh Nasr Isfahani, 2015).

Accordingly, in-between spaces are considered as a loop linking the indoor and outdoor spaces in terms of space function, while these spaces have been less considered in terms of other aspects of the biological and psychological needs of humans. The serious view towards the functionalism in design of architectural spaces design from the viewpoint of modern architecture has led to nonacceptable qualitative levels of in-between spaces. Such a view also has resulted in psychological and social abnormalities in the architecture of modern residential architecture (Bazrafkan, 2018). In-between spaces have been shaped in the center of neighborhoods that are the main place for social, economic, cultural, and religious interactions at the macro scale and also in residential buildings at the micro scale based on the architectural features of these spaces, unfortunately, they are now forgotten due to the modern design process (Balilan, 2011). Hence, in-between spaces have lost their key role as environmental controlling spaces due to the cultural components of today's society, their underlying role has been considerably alleviated in controlling the privacy of individuals in social life (Isfahani, 2015). Since in-between spaces have been responsible for organizing the elements and components of a building and are the proper field for various functions, the quality level of these spaces can be improved if it is possible to design the in-between spaces in the field of housing and urban development

based on a post-functionalism perspective and necessity of attention to five main needs of human: living, belonging, power, freedom, and free time. In this way, the design of these spaces can be directed towards increasing the attendance of individuals and eventful aspects of these spaces, and the qualitative level of human relationships results in enhanced social relationships by controlling the current individualistic values of the Iranian community (Bazrafkan, 2018).

Problem description

Sangelaj Neighborhood located in the historical center of Tehran is a neighborhood whose architectural and urban development issues have become one of the critical concerns in Tehran City. As one of five neighborhoods in Tehran, Sangelaj has an influential and enriching historical identity even before Tehran was selected as the capital. However, the structural evolutions that occurred in Thran led to change in all architectural, cultural, and social aspects of this neighborhood so that is not similar to its identity of the past. An important part of the concerns existing in this neighborhood is related to urban structure and architecture, and the elimination or reduction in in-between spaces in its basic structure.

This neighborhood Was made on a set of main roads that are known as passages. A passage was indeed an in-between space as a linking loop for traffic and also creating an intra-neighborhood connection to increase social interactions in the neighborhood. These passages and routes shaped indeed an interconnected network connecting neighborhood centers that met the demands and needs of the citizens of that time based on their latent functions and capabilities. According to the analytical comparison between the current status and the not-so-distant past of the Sangelaj Neighborhood, the lack of these passages and in-between spaces in the structure of this neighborhood has become the main concern of this study. Therefore, this study has been conducted to provide an innovative design and reading for the revival of these missing loops, connecting the urban structure, decreasing its problems, and increasing social interactions between individuals living in the neighborhood.

Research questions

1. Which one of the architectural spatial criteria can be useful for the design of in-between spaces at the micro and macro scale to improve social interactions and increase the sense of belonging to place among individuals living in the Sangelaj Neighborhood?
2. How can meet all mental and environmental needs of residents of a neighborhood by improving the quality of in-between spaces?
3. What spatial components exist for providing novelty and renovation in the design of in-between spaces in the Sangelaj Neighborhood regarding the post-functionalism view?

Theoretical foundations

The concept of in-between space

The objective experience of an architectural space means touching, seeing, hearing, and smelling the body of that space. The Discovery of these spatial qualities and the audience's conscious approach to it are the main concerns of architecture when creating an architectural space (Petrozomtor, 1943).
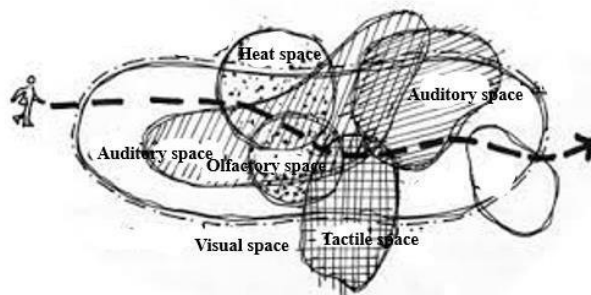

Fig 1. Conceptual model of architectural space perception

Like other spaces in architectural design, the physical, functional, and semantic features of in-between space are considered in its definition as a third space in architecture. It means that in-between space is confined based on the physical elements that determine its boundaries and limits (form-physical); the focal point becomes meaningful in the heart of this space (semantic), and it becomes the place for social interactions (communicational-functional) on the other hand (Balilan Asl, Etesam & Eslami, 2011).

Fig 2. Conceptual Model of in-between space perception

As the name of this space offers, it connects public and private spaces. The separation or connection between these two spaces always requires a third space to give it a structure and identity. The importance of this connection appears when the indoor space must be confined relative to the outdoor space having privacy while connecting to the outdoor space. the reason is that both spaces are where people pass through so both spaces are living requirements and needed for daily activities. Determination of this case can be done based on the in-between spaces, which can make an effective relation between components and elements of

the building by explaining spatial organization (Isfahani, 2015).

Explanation of in-between spaces helps to find their various capabilities in the surrounding environment considering different human needs. The potential capabilities of these spaces regarding the correlation with human desires and demands include the people's need to make physical relationships with their surrounding environment in different ways. The second capability is that people need such spaces for their social relationships and interactions, as well as interpersonal communications. The third category includes capabilities in which people expect their living space to meet their desires, and symbolic and secret interactions along cultural characteristics (Noghrekar et al., 2014).

The position of in-between spaces is determined by defining living spaces as follows:

- Public space
- Private space
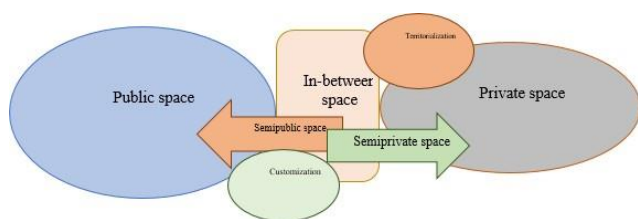- In-between space (semiprivate-semipublic)

Fig 3. Conceptual Model of determining spatial territories in architecture

Public space

In the case of defining public spaces, the theory provided by social philosophers is different for architects and urban planning researchers. From the viewpoint of social theorists, public spaces are areas considered as a social territory for different walks of society that are shaped for free discussion, sharing information and opinions, doing group and collective activities, and reaching a shared action. Hence, the definition presented by these theorists has not considered the physical features of public spaces only pointing to the formation of a social network. According to architects and urban researchers, public space is a place where some scenes of spatial living of society people are shown (Madanipour, 2000). Public spaces link the group activities, ceremonies, and festivals held by society members. These spaces embrace our relationship with people and tribes who are not our relatives, so the relationships between individuals are not just based on friendship, cooperation, and relativeness, they provide a space for a peaceful coexistence with strangers within impersonal interactions. In general, public spaces provide easy access for the public in at least some free hours of the day. These spaces can be streets, passages, open spaces, parks, neighborhoods, malls,

and all places where people can pass through (Rafeian, 2002).

Private space

As the title offers, private space determines the individuals' privacy and its spatial requirements. This space should be able to meet all physiological needs of people and also improve the interactions with the outdoor environment. The most important requirement of this space is to keep the family privacy of individuals and their communications while promoting the quality of such communications. The formation process of private spaces can result in territorial behaviors among individuals and create a sense of place. Although these spaces are smaller than other spaces, they are among the main and key components of settlement with their specific complexities and secrets in terms of settlement and dwelling concepts (Madani, 2008). Private spaces would create a sense of autonomy, freedom, and control in the person by providing personal independence and privacy in the living space of people (Lang, 2002). The reason is that people always feel the need for privacy and isolation to make decisions, control emotions, and achieve peace in their lives. Therefore, they will feel helpless if these spaces are not accessible to them (Madani, 2008). Private spaces may have specific definitions based on the various norms in different societies, so the rights and laws of this space may be out of formal or governmental control and even beyond public knowledge. Hence, violation of it may be just a behavior out of normality. Nevertheless, individuals allow others to enter the private spaces and share their emotions, affections, and intimacy based on their rules (Nafiseh Nasr Isfahani, 2015).

The distinction between public and private spaces is outlined by defining some terms such as privacy and crowd precisely. Norberg-Schulz defines private space as a personal and safe space within the closest distance from a person that provides privacy which is one of the main mechanisms of private space (Seyyed Sadr, 1998). The type and rate of required privacy fully depend on the behavioral model and mechanism of individual activities, cultural context, personality, and expectations of each person. If personal privacy is so desired, it will result in a sense of social isolation while its shortage induces a mental sense of being a crowded person (Altman, 2003). Finally, the importance of privacy orientation, territoriality, and the creation of self-esteem in the person can be mentioned in the privacy space (Lang, 2002).

In-between space

Separation and or connection between two spaces always need a third space to shape its structure. This link is created by the in-between spaces that connect two public and private spaces (Yaghoubi, 2014).

In his book titled "Review of Theoretical Foundations of Architecture," Memarian explains that in-between space depends on three factors: size, proportion, and form. Moreover, he expresses that the space would be

a space if these three factors do not affect the in-between space between two buildings. In terms of the connection between two spaces or two buildings created by in-between space, this space significantly affects the independence or dependence rate of these two spaces if this area is completely deleted from the design process. The smaller buildings and spaces seem to be attached to the larger space in this created unity, so their semantic or functional connections will be impaired. On the other hand, the long distance between two buildings may remove the spatial connection between them. Therefore, an explanation of the three concepts of contrast, understanding, and interaction in the definition of in-between space would outline its specific position in the spatial connection and the link between public and private spaces (Esfahani, 2015).

In terms of form, the in-between space can be divided into three different categories:

The first type included the formation of a joint space shared by two volumes while these two spaces have their spatial independence. In Other words, intersection or interference occurs. This interference may be shaped horizontally or vertically playing a key role in linking the indoor and outdoor spaces. The second type is shaped through the connection between two spaces located in the vicinity of each other but serve independently. These spaces, however, are connected spatially and visually. In this case, the space will have more independence when there is a longer distance between these two spaces. The third space is shaped based on the full independence between two adjacent spaces, so that the spatial connection between them is possible only through the in-between space, and these two spaces have no direct connection with each other. The spatial events and behaviors that occur in the in-between space are cultural originating from the various demands, traditions customs, styles, and frameworks in a society. All events and activities of individuals in a society rely on the culture of that society. In architecture and urban development, the mechanism of space design and activities done by individuals in such spaces depend on the cultural characteristics of that society. In this way, individuals recover their personal and social relations with the spaces and their constituent elements and components. In other words, behavioral patterns appear in the space, and then these patterns play a determinant role in forming some spaces such as in-between spaces (Fatehi Peykani, 2010).

Ultimately, it can be stated that in-between space plays an important role as a third space in determining the quality level of two public and private spaces and giving identity to these spaces (Nasr Isfahani, 2005).

Concept of in-between space in the residential environment at micro, medium, and macro scales
According to the assessment of spaces and boundaries of in-between spaces at the micro-scale, the boundary between private spaces in the vicinity of each residential apartment is defined as the distance between them and the private space inside each residential apartment at the level of residential blocks. This space is determined within a set of physical in-between spaces inside the indoor area of residential spaces (Mohammadzadeh et al., 2021).

In the case of determining in-between space at a medium scale, it can be stated that this space is determined with a set of in-between spaces physically within the indoor area of a residential space. In this way, this space finds an integrated and unified form by aggregating some residential units (Golkar, 2001). In the definition of in-between spaces in the residential environments at a macro level, the neighborhood plays an important role as a public space (Hesam, 2001). The public space is indeed a place where social interactions and daily experiences of urban life, as well as the highest level of connections and events, occur. For such human interactions, the need for making relationships between residents of a residential area is met by the public in-between spaces within groups, organizations, guilds, associations, etc., and these needs have been always met since the past in special physical spaces, including passage, bazar, square, and route. These spaces are defined based on the principles placed in the physical structure of neighborhood units as in-between spaces in the public space at the macro level (Akbari, 2001).

Concept of residential space
Residence means "accommodation," "stay," "dignity," and "peace" in the Persian Moeen and Dehkhoda Encyclopedia. Residence or settlement determines the position and authenticity of a person. "Residence" means "calm" and "settlement" which are the roots of this term. Residence implies a meaningful link between people and their surrounding living environment, this link originates from an attempt to find an identity and shows a sense of belonging to a place. According to the definition presented by the Statistical Center of Iran, housing or residential units include a place, space, or areas where one or several households reside, and have one or more entrances. On the other hand, the words that remind the most similar meaning to housing include Sara (hall), Bab (door), Kashaneh (house), Beyt, Otagh (room), Bana (building), Khan, Kadeh, and Khaneh (house), which the specialized notion of these terms helps to understand the meaning of settling, resting, and reaching peace and calm (Pouretesami, 2023).

To complete the concept of residence, one can refer to a relationship made by self-conscious and purposeful activities or persons between his/her necessary activities, including livelihood needs, social behaviors, and personal life and a certain place. In this case, some fundamental concepts, such as territory, privacy, and defensible space can be extracted, and many factors such as economic, religious, military, land location, surrounding vegetation, and climate factors affect the individuals' residence (Lang, 2002).

A suitable residential environment must be able to become the origin for the personal growth of all family

members from all age ranges. It means that all family members should be able to satisfy all of their mental psychological and physical needs and interests within a proper spatial platform while the essential privacy is kept for doing their daily activities. They also must be allowed to have mental and physical comfort and peace. Moreover, a residential space must be able to provide the field for making sound familial relationships and creating solidarity to protect family (Zabihi et al., 2011).

Position of in-between spaces in historical residential spaces of Iran

The in-between spaces appeared as threshold spaces in the historical residential spaces of Iran. As a boundary passage, these spaces could play their role in making people deal with various intellectual viewpoints and improving the level of social interactions. Hence, the qualitative level of in-between spaces in residential spaces served as a key and effective factor for spatial organization leading to mutual relationships between audiences, their living spaces, and surrounding open spaces (Pouretesami, 2023). The specific attention of Iranian architects to the effective creation of in-between spaces in the history of Iran's architecture is highly provoking. Suspending the audience in such spaces is the base forming relation between all elements of Iranian architecture. The hierarchy that a spectator had to pass through to reach a certain place was determined by creating an in-between space making the spectator watch a space that had to be seen emphasizing how it was supposed to be seen. In this way, the behavior of the spectator is influenced by the created space and illustrates the beauty of architectural art in the best possible form (Esfahani, 2015). In terms of functionality in spatial organization, moment of changing from one to another space or from one to another performance, a threshold space is highly required to explain these changes (Ramaswamy, 2005). On the other hand, the concept of spatial quality in a certain semantic field can be defined with three objective, subjective, and interactive approaches (Dadbeh, 1996) (Taghipour & Heydari, 2019: 183), and perception of these spatial concepts is completely tangible in Iran's architecture history. What can be seen in the design of the historical architectural space of Iran is that some volumes were created based on the required application, and then a collection of these volumes and elements created the whole body of the building. These volumes were not just collected to each other but the intermediary elements such as in-between spaces linked these volumes in a way to create a spatial hierarchy with a certain identity and meaning so that all elements and components were linked in an interaction and integration with each other (Lafafchi & Jahandar, 2010).
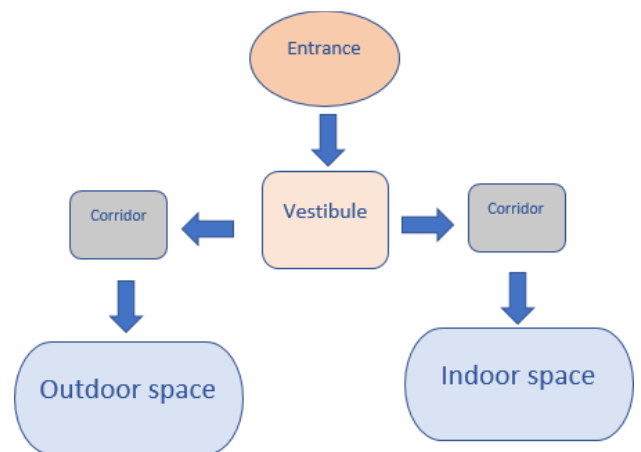

Fig 4. Spatial organization through in-between spaces such as corridor and vestibule in historical buildings of Iran
Source: Authors

Position of in-between spaces in contemporary residential spaces

The diversity of spaces' function is decreasing in modern residential buildings resulting in almost a lack of sense of territory and public space distinguished from the private space. Therefore, the connection between semiprivate open spaces and urban open spaces occurs in a sudden shape without any additional design, so the design of in-between spaces- as a linking loop between public and private spaces, based on a postmodern and post-functionalism approach can be a useful strategy (Montazer Hojat, 2008). Diminished open and semi-open spaces as in-between spaces in modern housing have minimized the possibility for natural ventilation and entry of the light and wind with the same quality of architectural spaces designed in the past. In this lieu, central cooling and heating systems are responsible for building ventilation but spatial organization of the building has no role in this case. Accordingly, the basic design of in-between spaces regarding the spatial organization of the building can provide natural ventilation for the building. The entrance space of the house has been diminished to a door in the design of modern residential complexes by using fewer in-between spaces so that no space is for waiting or shelter for the windy or rainy days in the entrance gates of these buildings. The shared space from the time entering the complex to the door of the residential apartment, between several neighborhood units, does not include a defined spatial hierarchy with pause and passing possibility. The spaces for passing from and entering the units are merged, so the privacy of neighborhood units is disrupted. There is not also private space between the indoor space of the apartment and its entrance, so the indoor space is seen from outside when the door is opened (Moarefi, 2011). The necessity of paying attention to the proper design of in-between spaces can highly increase the quality of private space in residential buildings.

After the individualistic values were highlighted in the modern society of Iran, neighbors have no familiarity with each other in residential buildings. Cultural

factors are among the reasons for reducing social interactions but the most important root is related to the organization of architectural spaces, including in-between spaces. One can increase attendability in the in-between spaces and improve social interactions in a residential building by promoting the quality level of these spaces and creating a sense of belonging to the place (Montazer Hojat, 2008).

Neighborhood concept

The term "neighborhood" is one of the highly important keywords in the field of urbanism background. It is an ancient concept with special sophistication in the literature of urban and urbanism. This concept is one of the main definitions in the urban development history of Iran merged with the public culture of people since the formation of central governments (Hosseini et al., 2018). A neighborhood is indeed an urban fabric that covers all spaces and constituent elements of the city structure and represents its identity and nature. The neighborhood is affected by various factors, such as geographical location, culture, the general structure of the city, traditions and customs, and public beliefs (Ramezan Jamaat et al., 2013). In general, it is not possible to provide a certain and similar definition for all people living in different areas because the effective variables in the neighborhood definition depend on the body and physical structure of buildings, as well as the type of accesses and existing topography status, and personal and social characteristics of residents have a considerable influence on social and cultural interactions and upcoming events in terms of content-meaning aspect (Hosseini et al., 2018). However, the perceptual, physical, and social aspects can be considered in the neighborhood definition (Abedini, 2020).
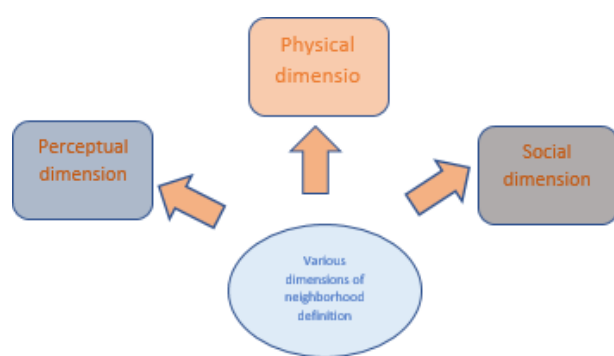

Fig 5. Factor affecting the neighborhood definition
Source: Authors

Concept of the Neighborhood Center

Neighborhood centers, main and side roads, pedestrian passages, service and commercial spaces, and residential spaces are some components of a neighborhood that are interconnected in the structure of a nationhood. The neighborhood center is one of the most important components of a neighborhood since it serves as a spatial organizer that links all elements existing in the neighborhood (Azizi et al., 2009).

Neighborhood centers in the urban space at the neighborhood scale had a higher value and importance than in the contemporary era, so it has lost their previous function becoming a place just for passing through due to their minor role in modern time. On the other hand, this substantial urban structure has been eliminated without introducing an alternative for this important urban element and meeting the various needs of individuals living in these neighborhoods. Many of these neighborhoods do not have this element to satisfy all social, activity, and functional needs of the residents. As an urban public space, a neighborhood center must be able to provide the field for social-cultural communications by presenting public services and meeting the essential needs of the residents (Abedini, 2020). In the structure of a neighborhood, a neighborhood center provides higher permeability due to its connectivity. Thus, the more the distance between passages and blocks from the routes in the neighborhood center, the less the connectivity will be. It indicates a high permeability in the neighborhood center and low permeability in the network of passages in the residential fabric. On the other hand, the neighborhood center serves as a turning point in a neighborhood that controls the daily activities of occupants and their social interactions, and the housing category serves as the vital heart of neighborhood architecture because it provides the space for the settlement of residents. Therefore, this space makes the social interactions and space eventfulness durable playing a significant role in the legibility, spatial organization, and arrangement of architectural elements and components of the neighborhood, especially the residential architecture.

Studies Area

Sangelaj neighborhood with an area of about 113 hectares is located in District 12 of Tehran and is one of 13 neighborhoods located in this area and District 3 of the 12 zone divisions. The current area reaches 15 Khordad Street from the north, Khayam Street from the east, Molavi Street from the south, and Vahdat-e-Islami from the west. However, the old maps of Tehran depict that the area of this neighborhood was larger than its current area because the Park-Shahr area north of the zone was a part of this neighborhood, but the area from 15 Khordad Streer to north of Park-e-Shahr has been excluded in new maps. Sangelaj neighborhood was among five main neighborhoods in Tehran during the Qajar period, and other four historical neighborhoods were located in the vicinity of this neighborhood, so it has a considerable identity and originality. Tehran was divided into four main neighborhoods (Sangelaj, Odlajan, Chale Meydan, Bazaar, and Arg) at that time (Najafi, 2007).

Fig 6. Five main neighborhoods of Tehran in old maps

Some references have explained the reason for the name of this neighborhood as a referral to the term "Sang Ranj" indicating the location for sharing water through divisions (Raj) using stones (Sang) in that zone (Kariman, 1976). The presence of religious places around this neighborhood and their role in forming human communities indicate one of the most important reasons for the residents' background in this old neighborhood. Some of these outstanding religious places include Imamzadeh Seyyed Nasr Al-Din located in the east part of the neighborhood, Imamzadeh Seyd, and Imamzadeh Seyyed Vali located in the western part of the bazaar which play a key role in the process of residence formation in this area from past to now. According to the old maps, Sangelaj had several important passages that served as in-between spaces at the macro scale. The northern passage of this neighborhood was Taghi Khan Passage and its southern passage was Sharid Al-Doleh reached Darkhongah. The eastern passage named Takiyeh in Sangelaj was directly connected to the Sangelaj Bazaar. This neighborhood had one or more old chiefs (Kad Khoda or Rish Sefid (white beard)) based on the old traditions. The most famous chief was Kad Khoda Haj Mirza Keykhan who was responsible for procurements and lighting expenses and management of mourning groups.

Fig 7. The present status of the current area of the Sangelaj Neighborhood compared to the old maps of Tehran

Concept of sense of belonging to place

Many studies have been done to identify the concept of a sense of belonging or a sense of place and its relationship with different human characteristics. According to the studies conducted by the scholars, this topic can be examined based on the viewpoints of phenomenologists and environmental psychologists. In the opinion of phenomenologists of human geography, a sense of belonging means a powerful relationship between people and place and its constituent components and elements. Sense of belonging is a highly influential factor for the relationship between people and a certain place that increases the depth of relationship and interaction between people and their surrounding environment. Moreover, this factor enhances the depth of the relationship through time (Relph,1976; Tuan,1974).

According to this approach, experience is the main element in understanding the concepts and meanings of an environment. Therefore, meaning in a place has a direct and close relationship with the perception way of individuals. The behavioral setting is a term used by environmental psychologists to describe the sense of belonging to a place. This term is a description of a place's behavior on a small social scale so that it can meet the necessary performances of an environment by integrating a place and an activity within a regular process. The three factors of perception, recognition, and emotion are the most important factors in this field that create a sense of belonging to place in the living territory of individuals (Motalebi, 2001). Ultimately, it can be stated that meaning gives identity to a space and its existence creating a sense of belonging to place in the person (Norberg-Schulz, 2005).

The concepts of attend ability and social interactions in urban spaces

As a third place, urban public spaces play a key role in making social interactions in the contemporary age, so these spaces have been at the center of attention of the urban design profession. The economic and social conditions of urban public places dramatically affect the formation of urban spaces. In the opinion of Kevin Lynch, urban public spaces are key elements for city legibility to understand the city and make regular city-citizen relationships. A balance must be created between three experimental, residential, occupational, and social arenas to improve the level of social interactions and increase the attendability of citizens in urban spaces. In this way, a sense of satisfaction and comfort is created in citizens to have more presence in society and enhance social interactions through their daily activities in urban environments. Thus, social interactions can be considerably increased emphasizing giving identity to public space territories based on the demands, needs, traditions, customs, and culture of society individuals (Habibi, 2000). Citizens would feel better about themselves and their society environment when they meet their friends in a community greet their neighbors, and make relationships or interact with strangers in the urban

public spaces. Such feelings appear because people are linked to their living space through such social interactions. Therefore, the more attractive and desired the public spaces, the easier the creation of dynamic urban spaces will be in line with the social, cultural, environmental, and economic needs of community members. This is an important point that the presence of other individuals in a space would attract other people to that space (Mahani, 2015).

The PPS research group carried out a wide range of studies and introduced four qualitative characteristics of the most successful and efficient urban public spaces:

1. Access and communication
2. Comfort and mental image
3. Activities and uses
4. Sociability
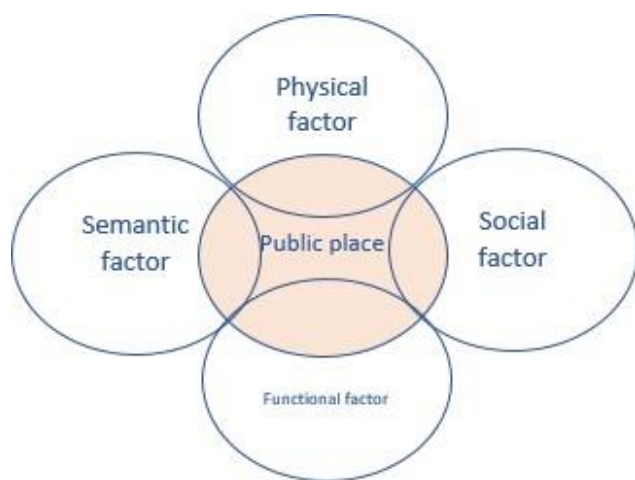
Fig 8. Conceptual model of determining effective factors in the sociability of urban spaces
Source: Authors

Background

Nafiseh Nasr Isfahani (2015) conducted a study titled "An analysis of in-between spaces position in residential architecture" in which, she highlighted the value and importance of in-between spaces for spatial organization of building after examining and analyzing the in-between spaces in the historical and contemporary housing of Iran. This author investigates the change in the position of the in-between space from the past to now. In this case, she explains that movement from public to private space was gradual in the in-between space of a historical building but it occurs instantly without any preamble. The in-between space played the guiding role in the opinion of the audience in the past while today it prevents the audience's vision. In a historical building, the in-between space separated the feeling of the previous space and made the audience ready to be present in the next space, and its role has been reduced to mere passage. On the other hand, these spaces have played a significant role in creating spatial hierarchy and connecting the spaces but they are now just the linking point in an entrance.

Karimi, Poortavani, and Delshad (2020) conducted a study titled "Comparison of in-between spaces in architectures of Iran and the world" and presented their recommended strategies for improving the qualitative level of these spaces. Pointing to the implicit and highly significant importance of in-between spaces, they present their suggestions for the crisis in the architecture and urban development field at micro and macro levels and spatial anomalies. The combination of three factors of form, performance, and meaning is highly important for shaping an in-between space. However, many architects only mix two factors or use one of them, which disrupts spatial organization. According to the strategies presented in this paper, height difference, duality (in terms of color, form, meaning, and performance), placing the building between two different textures, use of a porch as a linking element, deploying glass-made wall for spatial connection can be useful for improving quality of in-between spaces.

Ahmad Danaeenia and Arefi (2019) conducted a study titled "The Intermediator Role of Culture in the Durability of Historical Context Case Study: Historical Urban Fabric of Aran o Bidgol" and their results showed that in-between spaces play a significant role in developing and evolving spatial organization of a building due to their high flexibility and dynamism. According to the investigation of the historical context of Aran o Bidgol, economic and livelihood interactions, as well as the local trades were at a peak point in the past when there was a close connection between the architecture of bazaar spaces and economic transactions. The historical context of this city implies the significant role of in-between spaces in the architecture of that time. The organization of these spaces in the architecture of that time expanded social, cultural, and also economic interactions, so the dynamism of in-between spaces in all urban and residential spatial structures improved the quality of human communications and cultural interactions. According to the results of this study, the mentioned factors are the missing loops of modern architecture in developing the social relationships of society.

Leila Aram and Dr. Bazrafkan (2018) carried out a study titled "Behavior-Space System Explanation in Proportion of Program Necessity and Freedom" to investigate the in-between spaces in the National Library and Library of the University of Tehran. They emphasized the importance of in-between spaces because these spaces embrace the distance between necessity pleasure and freedom in space.

Pointing to the complexity and multiple functions of in-between spaces, they consider these spaces a challenge to human perception of power. In this lieu, human understands the surrounding space and environment based on the five needs of living, belonging, power, freedom, and leisure time, as well as its perceptual world. These five needs are of the same importance without any priority to each other. Hence, spatial behaviorism in the in-between spaces is required to meet these needs, so the design process of

these spaces is led towards a field beyond spatial use and performance, and the quality of these spaces is improved subsequently.

Samira Rahimi and Dr. Siamak Panahi (2016) conducted a study titled "Intertextual Reading of Bernard Tschumi's Works with an Emphasis on the Concept of In-between Space" and highlighted the importance of in-between spaces in the architecture from this viewpoint that play a vital role in the relation between all elements and components of a building. Because in-between spaces are the boundary between two different spaces, they provide shape and meaning features for connecting two different spaces. Since these spaces play the role of connector between indoor and outdoor spaces and humans need both spaces in daily interactions, it is not possible to separate indoor and outdoor spaces that require spatial organization through in-between spaces. According to the results of this study, in-between space is not a space but is an important and necessary space for knowing objects and understanding the environment. They point to Eisenman's theory which argues sphere of mediation means a space between place and nowhere. Although place has received great attention for architecture, the nowhere concept can create a new view towards the design of in-between spaces indicating the value and importance of these spaces in shaping the sense of belonging to place and attendability.

Method

This is applied research in terms of objective and is among descriptive-analytical studies in terms of method. The hybrid quantitative-qualitative method is used with the interactive strategy to examine the research variables. A qualitative study has a multi-method maturity and addresses the topic based on an interpretive approach. It means that qualitative researchers study the topic under natural circumstances and interpret the data from the viewpoint of people and their considered meanings, and then carry out the study with emphasis on the natural place, emphasis on interpretation and meaning, the necessity of paying attention to respondents' understanding of their conditions, and use of multiple measures. Data collection is done through library and field methods. Moreover, a comparative study on case studies is used in the field method. The independent variables of the study include residential complexes and in-between spaces, and the dependent variables are flexibility, attendability, and sense of belonging to place. These variables are examined and measured within various processes of building design based on the presented residential methods.

Introduction to Case Studies

Building's name	Establishment year	Style	Architect	Analysis of performance	Form analysis	Meaning analysis	Building's image
Culture House of Imamzadeh Yahya	Qajar period	Imitating European architecture	-	Spatial hierarchy principle by separating public spaces from private spaces	The pattern with the courtyard deployed in the center and residential spaces around the hall	Creating privacy and increasing social interactions	
Ardestan Jame Mosque	Seljuk era (1932)	First period: domed-shaped fire temple with Khorsani style Second period: converting Shabestan (underground space) mosque to Kushk Mosque Third period: 4-porch mosque with Razi style	Architect of the south-facing porch: Mahmood Ibn Mohammad Isfahani Architect of north-facing porch: Heydar Ali Ardestani Architect	Jame Mosque of Ardestan is the first mosque with two floors in Islam's history and the second mosque with four porches in the Islamic world One four-porch mosque designed based on the Isfahan Jame Mosque (Razi Style)	The mosque has a rectangular-shaped yard surrounded by porches	This mosque has several entrances that provide the field for connection between surrounding spaces and the mosque called Safa Plane.	

David House in Tabrizi Neighborhood of Jolfa in Isfahan	Safavid Period	-		-	Entrance route and type of access to various parts of this house are significant features of this building	The closed spaces of the house are placed on four fronts of the rectangular-shaped courtyard-the building's entrance is placed in the northeast corner and its vestibule space has a square-shaped section	By controlling the view from outside to the indoor space (courtyard), legibility, livability, and security are created in the courtyard.
Wexner Center for the Visual Arts	1982-1987	Deconstruction	enter Eisenman	in-between space for interaction between two different walks of society	Creating a gap between two buildings using a structure with a scaffolding shape to show the presence	The link between past and future	
Wall House	1972-1974	White postmodern	John Hejduk	Dividing indoor circulation into two private and public areas	-	-	
Glass House	1949	International	Philip Johnson	Using glass walls for the gap between indoor and outdoor space	Removal of stone wall and use of glass wall	Making a relationship between building and nature	

Fig 9. Analysis of historical buildings of Iram and foreign contemporary buildings based on the formation of in-between spaces
Source: (Kaimi et al., 2020)

Analysis of findings

According to the study on the historical neighborhood of Sangelaj based on the descriptive-analytical method and field-library reviews, the obtained results are presented in the framework of analyzing in-between spaces at micro and macro scales during contemporary time and before it. Assessments of deployment methods of residential areas in this area and their connection with communicational routes in the neighborhood center indicate a dramatic decline in these areas compared to the pre-contemporary period. In the network and skeleton of the historical architecture body of Sangelaj, the relationships between people started from a mani and public passage in the frame of in-between spaces through a multilayer hierarchy and reached the most internal and private parts of a house. However, privacy crisis and sense of security and fewer social interactions between residents of this neighborhood are seen in its current urban planning structure after in-between spaces were

diminished or removed at macro scales, such as gates, passages, bazaars, and at micro scales of small squares. Corridor and vestibule. Moreover, the reduction in the quality level of urban public space design in this neighborhood has led to less eventfulness, attendability, and sense of place among people living in the neighborhood, so they are less willing to be present in such spaces. Increased construction in this neighborhood, higher construction costs, more narrow alleys, and removal of in-between spaces in residential spaces have led to a dramatic decline in privacy control.
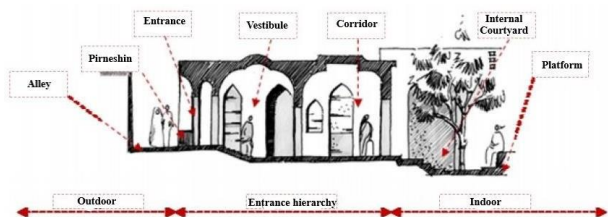

Fig 10. Entrance hierarchy of historical houses of Iran (Nayeri Fallah et al., 2013)

Fig 11. In-between space and hierarchy of rider and pedestrian access in contemporary residential complexes (Sasani et al., 2016)

Historical houses located in this neighborhood are mainly shaped to keep privacy, religious-cultural values, and hospitality which is a highly important factor in social interactions. Access to most houses was possible through narrow alleys in the past which prevented direct entry to the houses. However, the development of urbanization and change in life structure and use of personal cars eliminated the role

of narrow alleys as an in-between space at a medium scale regarding privacy control of individuals. These alleys now have become a problem for people passing and commuting in this neighborhood, which requires a novel approach to urban design. The first in-between space in traditional residential houses was Darband which kept several houses next to each other in a narrow alley, and it was where the house was linked to the neighborhood. Darband is followed by Pirneshin, entrance, and separate handles designed on the door for men and women. In-between space at the micro-scale always provided the field for making relationships with members living in the house without complete entrance to the house area, as well as social interactions at different levels without a direct presence in house privacy. Providing surface differences relative to urban zones, these in-between spaces created less view and domination over the indoor space of the house when entering it. However, this spatial hierarchy has been deleted in modern residential buildings located in Sangelaj, so that all indoor spaces of houses are seen when the door of the residential apartment is opened. According to the spatial hierarchy of traditional houses' entrances, occupants entered the vestibule after passing through the portal. This space and spiral corridors reaching the indoor and outdoor courtyards prevented direct view of indoor space for strangers. There were indeed some spaces for waiting, spatial division, and pause creation. However, there is no space for waiting, pausing, or protecting from wind and rain in today's housing structure due to the removal of such spaces.
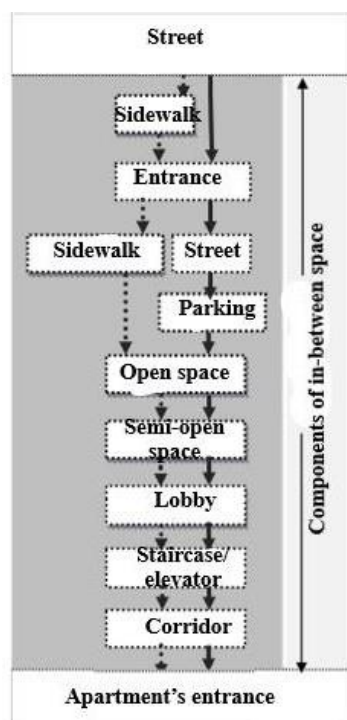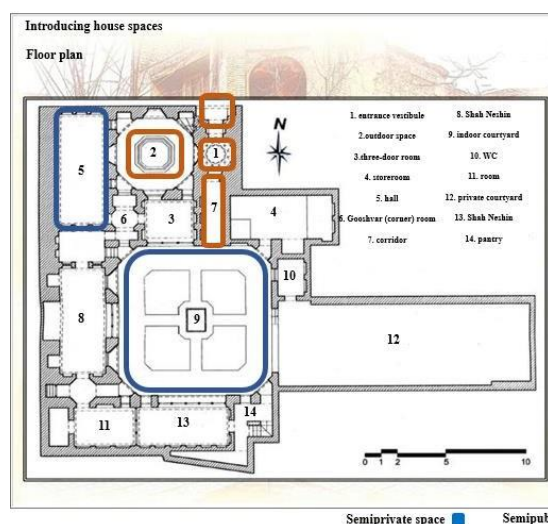

Fig 12. Analysis of in-between spaces in the plan of a historical house
Source: Authors

The structure network of the Sangelaj Neighborhood has highly changed through the urban development evolutions at the macro scale, and many passages and main arenas of this neighborhood have been destroyed. Thus, social interactions that were shaped in these spaces based on economic, cultural, political, and religious factors disappeared. As a case study, the

Darkhungah passage is one of the main roads of this neighborhood and its evolutions are addressed herein.
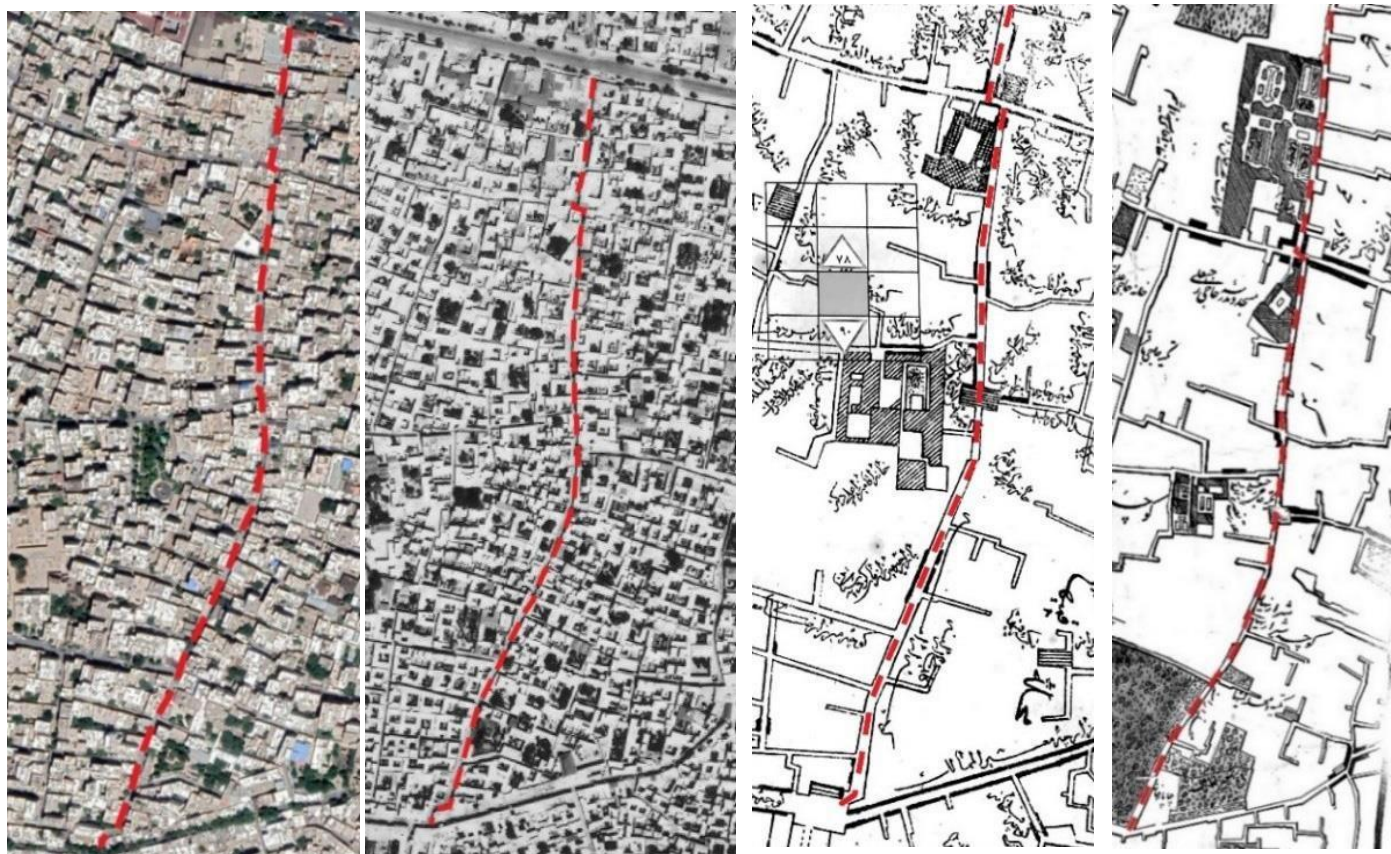
D   **C**   **B**   **A**

Fig 13. Evolutions in Darkhungah Passage since the formation until now; A: Darkhungah Passage, Krziž Map (1858); B: Darkhungah Passage, Abdolghafar Map (1930), source: Shirazian, 2020; C: Darkhungah Passage in aerial map in 1956. Source: Mapping Organization; D: current status of Darkhungah Passage. Source: www.earth.google.com/web
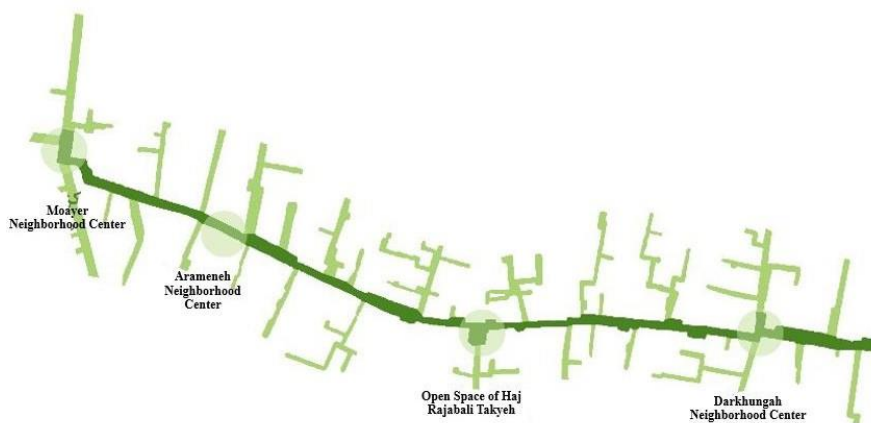

Fig 14. Simultaneous spatial connection and disconnection through passage and balancing the relation between residence, activity, and social relationships, Source: Abedini, 2022
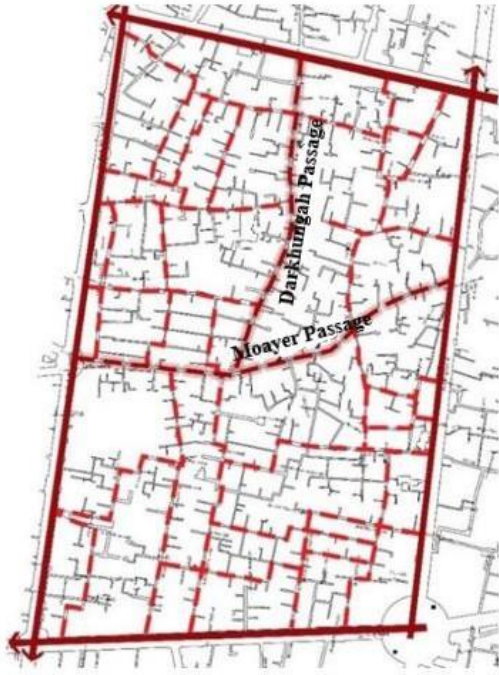
Fig 15. Connection routes and networks existing in the Neighborhood of Sangelaj and its structure based on the two main passages, Source: Abedini, 2022

Fig 16. The north area of Sangelaj Neighborhood and its important passages, routes, and neighborhood centers, Source: Abedini, 2020

Fig 17. Mohammadiyeh Gate in the neighborhood of Sangelaj as an in-between space at the macro scale; Source:

This gate is now known as No Gate and Mohammadiyeh Gate located in the south of the Bazaar Neighborhood with a golden lion motif on it. Urban spaces that expand social interactions around Mohammadiyeh Gate:

- Mostofi Passage
- Kadkhoda Bath
- Iran Insurance Sagha Khaneh
- Chal Caravanserai
- House of Iran's archeologists

CONCLUSION

Some quantity-base issues such as dimensions and standard of space, economic problems, population growth crisis, and lack of urban development space are more considered in the design and construction of residential complexes and urban public spaces in the neighborhood of Sangelaj with less attention to the issues related to improving quality of spaces. Hence, this study formulated the assumption of necessity for achieving urban residential and public space with higher quality. This study aims to find the strategies for promoting social interactions in the in-between spaces of Sangelaj that subsequently result in a considerable rise in eventfulness and social interactions. Regarding the data analysis of the study, the extreme functionalist view and modern architecture in the design of urban spaces and inattention to the mental and psych of humans who are the main use of these architectural spaces would lead to less social interactions between individuals of the society making them less willing to be present in such functional spaces. According to research findings, it is suggested to have a post-functionalism and postmodern approach to the design of in-between spaces paying more attention to the human soul and giving meaning and identity to functional spaces in addition to functional and physical needs. The type of architect' view towards humans indicates the success rate of such spaces in this historical neighborhood because such an approach embraces all aspects of a man, including culture, tradition and customs, habits,

and other spiritual needs of humans not just having a functionalist view towards human, which is the main outcome of modern architecture. Novelty and innovation are required in design with a new approach towards today's life of modern humans to achieve high-quality public spaces.

REFERENCES

- Aram Leila, Bazrafkan, Kaveh (2018). Behavior-Space System Explanation in Proportion of Program Necessity and Freedom (Case study: National Library and Library of the University of Tehran In Between Spaces), HoviatShahr, Issue 38.
- Danaeinia, Ahmad, Arefi, Mohammad Hasan (2019). The Intermediator Role of Culture in the Durability of Historical Context Case Study: Historical Urban Fabric of Aran o Bidgol, Kashan Shenasi Journal (Studies on Kashan), Issue 15.
- Groat, Linda, Wang, David (2007). Architectural research methods. Tehran: Tehran University Press.
- Hafeznia, Moghammadreza (1998). An introduction to the research method in humanities. Tehran: Organization of Study and Formulation of Humanities Books of Universities.
- Karimi, Poortavani, Hossein Poortavani, Niloofar, Delshad Siahkali, Mahsa (2020). Comparison of in-between spaces in architectures of Iran and the world, Memari Shenasi (Studies of Architecture), Issue 17.
- Nasr Isfahani, Nafiseh (2015). An analysis of in-between spaces position in residential architecture. Third Conference on Modern Studies in Civil Engineering, Architecture, and Urban Development, Germany, Berlin.
- Rahimi Atani, Samira, Panahi, Siamak (2016). Intertextual Reading of Bernard Tschumi's Works with an Emphasis on the Concept of In-between Space. Journal of Art Research. Issue 11.

- Abedini, Hamed (2020), Analysis of the Spatial Structure of Traditional Urban Neighborhoods Based on the Neighborhood Center System (Case Study of Sanglaj Neighborhood, Tehran). Architecture, 3(14),74-73.
- Allan, Graham (2001). Intertextuality. Translated by Payam Yazdanjou. Tehran: Markaz.
- Bani Masoud, Amir (2009). Postmodernity and Architecture (An Examination of Contemporary Western Architectural Thought Movements (1960-2000)). 2nd Edition, Tehran: Khak.
- Bellilian Asl, Lida; Etesam, Iraj; and Islami, Gholamreza (2011). The Role of Intermediate Space in Defining the Identity of Urban Space: Case Studies of Historical Contexts in Iran. Journal of Urban Identity.
- Bellilian, Lida (2008). The Impact of Intermediate Space on Spatial Cohesion of Architectural and Urban Elements in Iran. Ph.D. Dissertation in Architecture, Azad University of Science and Research, Tehran. Supervisor: Dr. Iraj Etesam, Advisor: Dr. Seyed Gholamreza Islami.
- Chumi, Bernard (1981), Architecture in the Interstice. Translated by Reza Rezaei. Magazine Memar 2, pp. 70-74.
- Fathi Pikani, Peyman (2010). Return to the House of Dezful. (Presentation of a Housing Model in Dezful). Master's Thesis. University of Art, Isfahan.
- Ghabadiyan, Vahid (2009), Foundations and Concepts in Western Architecture. Tehran: Office of Cultural Research.
- Grote, Jorg Kurt (2004). Aesthetics in Architecture. Translated by Jahanshah Pakzad. 2nd Edition, Tehran: Shahid Beheshti University.
- Haeri, Mohammad Reza (2009). The Role of Space in Iranian Architecture. Nashr Daftar-e Pajoheshe-ye Farhangi. Tehran.
- Hoseinzadeh Falahi Nejad, Samira, and Azargone Sima (2013). Factors Affecting Interstitial Space and the Impact of Interstitial Space on the Quality of Architectural and Urban Space. National Conference on Architecture, Culture and Urban Management.
- Lynch, Kevin (2009). The Theory of Architecture: The Role of Behavioral Sciences in Environmental Design. Original publication (1987). (Alireza Aini Far, translator). Tehran: University of Tehran, Publications Institute.
- Madani Pour, Ali (1980). Urban Space Design: A Perspective on Socio-Spatial Processes. Translated by Farhad Mortezaei. Nashr: Urban Planning and Programming Company. Tehran.
- Madani Pour, Ali (2008), Public and Private Spaces of the City. Translated by Farshad Nouriyan. Tehran: Urban Planning and Programming Company.
- Majidi, Betul, and Heidari, Sasan (2016), Evaluation of the Spatial Identity of Urban Neighborhoods: Sanglaj. Journal of Urban Ecology Studies. 8(2):13-22.
- Memarian, Gholamhossein (2007). A Journey Through the Theoretical Foundations of Architecture. Tehran: Soroosh Danesh.
- Mirmihran, Hadi (2001). The Building of the Tehran Bar Association. Quarterly Architect. Issue. 12.
- Montazar Hojjat, Shaghayegh (2008). Ayneh Khaneh Residential Complex in Isfahan. Master's Thesis. University of Art, Tehran.
- Najafizadeh, Nasser (2007), Old Tehran. Tehran: Janzadeh Publications.
- Norberg-Schulz, Christian (2002). The Concept of Dwelling: On the Way to a Symbolic Architecture. Translated by Mahmoud Amir Yar Ahmadi. Nashr: Agah.
- Pirnia, Mohammad Karim (2011), An Introduction to Iranian Islamic Architecture: Urban and Suburban Buildings. Compiled by Gholamhossein Memarian. Tehran: University of Science and Technology.
- Rafi'yan, Mojtaba (2002). Reproduction of Urban Spaces. Conference on Development and Developedness of Tehran.