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Space Configuration and Identity of Urban Neighborhoods

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Abstract

The pattern of spatial configuration is one of the important and influencing factors on the density of uses in cities. Studying the spatial configuration of cities is potentially a suitable predictor for the level of user density and, as a result, increasing social interactions in urban spaces. In recent years, giving identity to the centers of old urban neighborhoods, especially in Iranian cities, has gained double importance for urban planners and designers. The method used in this research is the descriptive-analytical method and the context, while the literature and theories available in library references are used as the theoretical support of the research. After examining and reviewing the factors affecting the identity of urban areas, this article has compared these factors by referring to the relevant literature in the field of space layout theory. In this article, a model of the integration of both groups of components is presented, which is the basis of the analysis and planning of the neighborhood studied in this research.

Keywords: space layout, neighborhood identity, Imam Khomeini's fence neighborhood.

Introduction

Identity is derived from the essential features and characteristics of any object person or city, which acquires personality through aspects such as differentiation and similarity, continuity and transformation, unity and plurality (Aghazadeh et al., 2017). The crisis of identity or the feeling of lack of identity is seen as one of the crises of human life today in many of its territories and most societies (Zaker Haghighi et al., 2014). Therefore, the identification of places as an introduction to the issue of the physical divisions of the city and how its dimensions and hierarchy have become a major necessity in urban planning discussions (Gheitarani et al., 2024).

On the other hand, the neighborhood concept has a special place in urban planning and design, which can strengthen the sense of belonging to a place and the sense of place and identity of citizens by giving it an identity (Gheitarani et al., 2024). Every city and every neighborhood finds its own identity from the characteristics of the natural environment and socio-cultural environment, which distinguishes it from other cities and neighborhoods. Such components are an opportunity and a unique privilege to recognize and feel the place or space. Features that the citizens may have experienced over the years and shaped their lifestyles with them (ibid, 2024).

In the distant past, neighborhoods of cities had a special place in shaping and organizing urban affairs. Each neighborhood by providing the daily services it needs and by creating neighborhood symbols and special features would give its residents a sense of belonging and an identity (Norouzian, M. M., 2024). This is even though today, with a little attention to the situation of different neighborhoods, especially in Tehran, it is possible to realize that the neighborhoods have undergone such a transformation in the process of rapid expansion and without studying the cities that eventual-

ly they lose their identity and As a result of the reduction of cultural-social ties of the citizens, it has ended (Zaker Haghighi et al., 2014).

In such a situation, wise, informed, and well-planned management should strive to improve the identity of the places, and this identity and belonging should be reviewed and revived at all levels, and ways to improve the capacities of cultural identity and social belonging to improve the quality of human life. Be evaluated (Norouzian, M. M., 2024). Urban problems arose from the fact that after the uncontrolled growth of cities and the development of urbanization, the changes made by the city planners on the body of their city did not lead to the results they were looking for, and due to the lack of sufficient knowledge of the environment and Friday, architects, city planners, and city officials were not able to predict the behavior and changes of their city, for this reason, various sciences including environmental psychology, social sciences, economics, computer science, etc. Avoid problems.

Meanwhile, the theory of Space Syntax, which was expressed for the first time in the late 1970s and reached its peak during the 80s and 90s, is one of the important theories in the field of confrontation between computer science and urban planning. This theory was first developed by Bill Hillier (Gheitarani et al., 2013) and Julian Hansen (Norouzian, M. M., 2024), at the University of London. They used the term Syntax to analyze the basic rules of spatial structure. In the 1980s, Hillier and Hansen proposed syntaxes such as compound structures, which, while dealing with the freezing order of the whole, allowed the past meanings of the space to be dealt with in the part as well.

In this article, one of Hamedan's neighborhoods, which has a relatively old and new texture, named Imam Khomeini's Fence neighborhood, has been analyzed through spatial syntactic indicators. The challenge ahead in this neighborhood is the erosion of the identity and birth certificate of this neighborhood, while by identifying and understanding the nature of the spatial structures of the neighborhoods, this index can be promoted and improved by defining local centers and increasing local dynamics.

Theoretical

Urban social identity: New cities are the answer to Weber's clear desire for the rationalization of urban life in the 20th century and due to the material conditions that most people are struggling with, they became more accepting environments. A large number of scientists and social theorists who closely observed the events and developments of the 20th century provided the necessary raw materials for the formation of new urban environments by criticizing and proposing new ideas. Many of them lost their ability and awe in dealing with the physical golden symbol of cities. However, the social impact of the city remained as an issue for them as it is for many others (Ghadarjani et al., 2013).

Simmel (1995), under the title Metropolises and Mental Life, and in America, Lewis Worth (1939), and his article under the title Urbanism as a Way of Life are two outstanding examples in this field. Simmel's thought is more important because it shows the distinction between two major characteristics of urban life. First, the crowd and chaotic social environment of the city cause people to rethink their dealings with each other and ignore many issues that are happening around them. He discusses the need to increase the number of people who live in the city to increase their health. The second characteristic of the evolution of the urban environment has been the reduction of human motivations in asking for profit.

From Simmel's point of view, urban life is a set of exchanges in which each person may ask himself what causes hatred and calculation, which are ultimately the social characteristics of big ci-

ties. In any case, people in big cities cannot have a sense of responsibility and care towards each other. In 1939, Wirth integrated the views of Simmel as well as those of Tunis, Durkheim, and Weber to be able to present a comprehensive publication on urban life. His more critical essay on the interrelated sociological effects of urban population size, density, and heterogeneity is considered an outstanding effort to understand the growing consequences of the urban environment. Worthy's teacher Robert Park (1915-1929) describes the ecology of urban space as a mosaic of isolated social and moral worlds, each of which has its characteristics.

The principle of heterogeneity is based on the fact that cities carry with them a wide variety of class and cultural characteristics. In addition, cities increase social differences that are the product of increasing specialized occupations. People who live in cities can hardly know each other. They are more likely to be in a situation that allows them to remain with each other on an instrumental and artificial level (Aghazadeh et al., 2018).

Identity. Every city or any of the sub-system elements of the city unit has traits in their personality components that determine its identity. Identity attributes are the characteristics that, if used, form the basis of the constructive organization of the city unit or its sub-system elements. The most important problem in recognizing the identity of cities is the lack of recognition tools, which fundamentally starts from a misunderstanding of the concept of identity (Sadigh Sarabi M. et al., 2023- b). From the lexical point of view, it means existence, existence, identity, nature, and nature, and its root is taken from the word (ho), which refers to the end, end, and absolute perfection, and causes identification and differentiation of a person from another (Ghadarjani et al., 2013).

A certain Persian culture has defined the word identity as follows: that which causes identification of a person means that which differentiates one person from another (Ghadarjani et al., 2013). Since the recognition of the neighborhood identity in urban environments is related to the urban identity (Ghadarjani et al., 2013), therefore, it is important to recognize the urban identity from the perspective of different thinkers. For example, Gudrun presents the objective view, for Kevin Lynch, the analysis of the mental view is important, and Karl Kruff considers the morphology of the city to be the factor of recognition and identity of the city (Gheitarany et al., 2013).

Kaus defines urban identity as follows: place is related to identity in two ways. The adjective in pursuit of place identity is related to the determination of a person's identity by describing the place, which is part of social identity. The second mode is place identity, which as a special aspect of identity is comparable to social identity (Gheitarani et al., 2024). In another place, place identity is defined as a part of personal identity because it is human action and desire that gives meaning to space (Gheitarani et al., 2024). The identity of the place is derived from individual and collective values, which deepen, expand, and change with time (Ghadarjani et al., 2013). According to Proshansky, a part of the existential character of every human being that makes his identity is the place he identifies himself with and introduces himself to others (Gheitarany et al., 2013).

Behzadfar three natural environments (variables such as mountains, plains, rivers, hills, etc.), artificial environments (variables such as single buildings, urban blocks, neighborhoods, roads, etc.), and human including variables such as language, religion, customs and He mentions customs, local beliefs, etc. as the building blocks of the city's identity (Zaker Haghighi et al., 2014). In various fields of science, sociologists consider the social space and consider the social space as the spatial association of social institutions (Ghadarjani et al., 2013). For example, Rappaport considers the close relationship between the survival of identity on the one hand and the survival of the group, society, and culture on the other hand (Gheitarani et al., 2024).

In architecture, taking advantage of architects' imaginations and their mental dimensions has a special role in the formation and creation of urban spaces. Unlike geographical sciences, the attitude of architectural sciences towards space and identity crystallizes the independence of form from

function (ibid, 2024). From a psychological point of view, identity is based on individual and personal feelings and desires, and it consists of a sense of personal distinction, a sense of personal continuity, and a sense of independence. But geography, with a systematic and systematic approach, searches for the recovery and preservation of identity by paying attention to a set of spatial-spatial facts.

In fact, from this point of view, identity takes its true form when all the body elements about each other create a special functional space that is formed from the interaction of this set of identities in the space (Gheitarani et al., 2024). Since identity is a set of traits and characteristics that distinguish an individual or a society from other individuals and societies, the neighborhood becomes individualized and independent according to this criterion. In other words, a neighborhood with a neighborhood identity that can be distinguished from other places and neighborhoods (ibid, 2024).

Identity in the neighborhood by creating and associating public memories in the residents, providing them with belonging and dependence and turning them into each other (fellow neighbors), which has a more active scope than just settling down (Gheitarani et al., 2024). Lynch defines the neighborhood in the form of the five elements of road, sign, neighborhood, node, and neighborhood as follows: A neighborhood is a large area that can be identified due to having some common and special characteristics, in such a way that a person mentally avoids entering it. He believes that the neighborhood is a relatively large part that has uniform and similar characteristics (ibid, 2024). A neighborhood is also defined as the feeling of belonging to a residential neighborhood (Khanian et al., 2019).

Ghasemi defines the identity conditions of a neighborhood as the local belonging of the residents of the neighborhood to the living environment, collective memories of the neighborhood, and issues such as a sense of comfort, security, peace, intimacy, coziness, a sense of belonging to the place and the possibility of creating social interactions among the residents (Naghibi Iravani et al., 2024- a). In short, having an identity means being special and distinctive, remaining stable and stable, and belonging to a group .Cities or any of the sub-system elements in it, like all other beings and things, have an identity based on the distinguishing features that separate them from other beings and other things. These characteristics or personality components of cities, like human personality, have two objective or physical and mental or spiritual dimensions that can be separated from each other through three natural, artificial, and human environments .In other words, identity in cities can be recognized by considering all spatial and temporal dimensions.

The spatial dimension refers to environmental-ecological features and the time dimension refers to historical features from the beginning to the present on a social, economic, cultural, political, and physical scale, which together constitute the elements of the urban space in the form of four environmental, social and economic dimensions. In fact, from a geographical point of view, the identity of a city or a neighborhood is formed in the connection of all the physical and non-physical elements of the city, and an element can play an identity-building role for the neighborhood, which is firstly related to the needs of the residents, and in the next step, by the patterns and functions of the neighborhood.

Playing such a role in the context of the neighborhood leads to the differentiation of the neighborhood and ultimately finding its identity .Therefore, when we talk about neighborhood identity, we mean a structural and functional system in the neighborhood and a configuration in its architecture. It is obvious that this order or organization has its internal dimensions, which can be divided into physical elements or the appearance of neighborhoods and functional elements or content of neighborhoods, and in this way, the identity dimensions of neighborhoods can be recognized (Gheitarani et al., 2013).

Neighborhood: Robert Kuhn described the neighborhood in his city encyclopedia as follows:

Region or location 2- An area around a place or something 3- A separable part of an urban area A complex area of different uses that has become a unified state in the form of an urban structure (Gheitarani et al., 2013). The neighborhood is the life cell of urban life, the neighborhood is an institution through which people and subjects can exercise the ability for primary activity through effective individual and collective interaction within it or beyond it. The neighborhood may be defined by any of the following aspects or criteria:

- ***Administrative relations***: through borders and boundaries.
- ***Aesthetics***: due to its distinctive features and age of development.
- ***Social***: from the point of view of the residents in the area.
- ***Functional***: through the range of services.
- ***Environment***: through spaces with calm and smooth traffic and high environmental quality (Gheitarani et al., 2013).

Inglehard considers the neighborhood to include an elementary school, a small shopping center, and a playground. These facilities are built near the center of the neighborhood in such a way that the walking distance between them and the house does not exceed half a mile. The constituent parts of this society are integrated and also societies can fulfill everything they need in terms of communication and work (Gheitarani et al., 2013). A neighborhood can be defined as a social network and it may be considered as a base for social or even military activities. After all, a neighborhood is a local social identity, a territory that has specific limitations recognized by its inhabitants.

In such a territory, formal and informal conflict and neighborhood recognition occur, the daily use of neighborhood services by residents and their awareness of the image of the neighborhood as part of their social identity also points to the dependence between place and space. Localities also emphasize different social, economic, historical, and ecological conditions, the evidence for this point emphasizes that the local community selectively creates the organizational features of social issues and social reactions that are widespread in the society (Sadigh Sarabi, M., et al., 2023; Safaei-Mehr, 2024). Neighborhood identity: Neighborhood identity is defined as the feeling of belonging to a residential neighborhood. Since the invention of modern means of transportation and global communication, this sense of belonging to a place and neighborly relations (apart from family and kinship relations) which has provided the closest and most appropriate way to form a society has gradually lost its importance.

The role played by the neighborhood in this new era has changed and the case that a place with a solid neighborhood identity guarantees a strong society requires a review .In the past, neighborhoods were defined by central public places that were the center of traditional meetings such as the market or the city square, these places were meeting places for friends and peers, but today, communication technology is everywhere, creating challenges in the direction of recognition. Desirable, (public places) have created (neighborhood identity) and The sense of belonging is much less derived from bricks and materials used in buildings (Gheitarani et al., 2024- a; Gheitarani et al, 2024- b).

Pakzad is a part of the existential personality of every human being that makes his identity, a place where he identifies himself and identifies himself to others. He believes that when a person thinks about himself, he considers himself connected to the place where he lives and considers that place a part of himself. Ghasemi does not consider identity to be anything other than the characteristics of a phenomenon but defines it as the result of an agreement between the individual and the eva-

luated phenomenon. Based on this, identity is a relative concept, one end of which is related to the human being and the other end is defined in the environment (ibid, 2024).

Spatial Configuration: Spatial configuration means the way spaces are arranged next to each other and in their relationships with each other. This concept is important because it shows the importance of spatial communication in the whole system. Any change in the configuration of spaces will cause changes in the overall spatial configuration. In other words, at the city level, any change in the city map (adding or reducing space such as streets, open space, etc.) will create changes in the relationships of the spatial configuration of the whole city. In other words, a neighborhood with a neighborhood identity that can be distinguished from other places and neighborhoods (Gheitarani et al., 2024).

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Such changes can change the probability of occurrence of activities and accidents. Numerous types of research have shown that every change in the layout of the space has changed the amount and manner of activities in the space (Gheitarani et al., 2024).

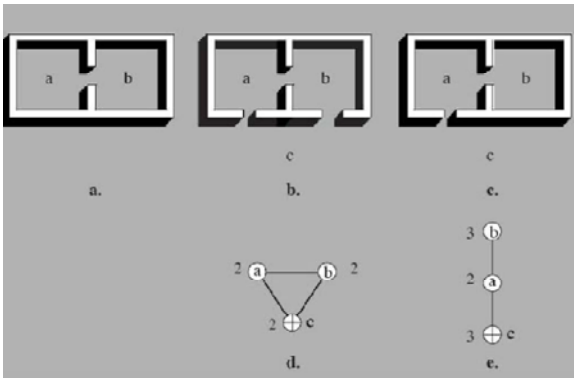

Figure 1. Demonstration of spatial configurations

Axial map: A simplified diagram of streets and urban open spaces can be the basis for analyzing the spatial configuration of a city (axial line) is the longest line of access and sight in an urban environment. So, the axial map includes a structure of a set of urban open spaces, which is created based on the longest line of sight and access. This collection includes all the public spaces of the city (Naghibi Iravani et al., 2024- b). Among the analytical methods, axis line analyses are widely accepted in urban system studies. Urban and architectural systems are obtained by extracting a network of axial lines from among all the convex spaces of the system.

Convex spaces are spaces in which all the points of that space can be seen from any other point in that space, in other words, it is called a space that has a line between two points of the space, which is the drawing of the space, C is a concave space and in form B is a convex space and we make A not go outside of it. In the concave form, it has been turned into two convex spaces.

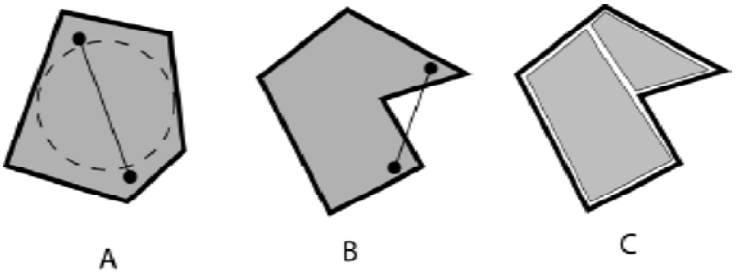

Figure 2. Convex, concave space, and conversion of concave to convex space

The degree of connection: to analyze urban morphology and space layout, it extracts a set of features of spatial parameters that are taken from the connection graph. The most obvious parameter for morphological analysis is the degree of connection. The degree of connection is defined as the number of intersections that are directly connected to a space. The following equation shows the amount of connection:

$C_i = k$

K is the number of nodes that are directly connected to a space and C i is the connection graph.

Control Value: Control value is a parameter that shows the degree of selection of each node for direct communication with another node. The control value of a node i is determined according to the following formula.

$$ctrl_i = \sum_{j=1}^{k} \frac{1}{C_j}$$

K is the number of nodes directly connected to i, and Ci is the connections of j.

Depth: The depth of the space indicates the number of spaces that we have to pass through to get from one space to all other spaces. Depth is an independent parameter of spatial configuration. It is an important variable to calculate the correlation. Depth has an inverse relationship with connectivity, in other words, in any space where there is a lot of connectivity, that space has less depth.

$$\sum_{j=1}^{n} d_{ij}$$

Dij is the shortest distance between two points i and j in graph G, the sum of the depth of node i is equal to the sum of its distances. As a result, the average depth is equal to the following expression:

$$MD_i = \frac{\sum_{j=1}^{n} d_{ij}}{n-1}$$

n is the total number of nodes in the graph.

Cohesion: Cohesion is the average depth of the space to all spaces of the system (Sadigh Sarabi M. et al., 2023- a). Connection is the main concept of space configuration. The value of the degree of connection of each line (space) is the average number of intermediate lines (spaces) from which it is possible to reach all the spaces of the city. Therefore, the connection in the method of space configuration has a topological concept and not a distance and metric concept (Sadigh Sarabi M. et al., 2023- b). Co-connection if it is mentioned in the whole urban system as comprehensive co-connection and if it is a part of the system it is called local co-connection and both types of co-connection are measured by relative asymmetry or real relative asymmetry.

$$RA_i = \frac{2(MD_i - 1)}{n-2} \quad \text{and} \quad RRA_i = \frac{RA_i}{D_n}$$

$$D_n = 2\left\{n\left(\lg_2^{((n+2)/3)-1)} + 1\right)\right\}[(n-1)(n-2)]$$

Standardization of value provides correlation for measurement. These parameters can be used to describe the local and comprehensive (macro) characteristics of spatial configurations in the sense of coherence or non-coherence In a space (for example, in a small-scale space) there is more connection if all other spaces can have access after passing a small number of spaces between them. Cohesion is less if the required number of interstitial spaces is increased. These principles are measured by universal connectivity, similarly, local connectivity and connectivity measure the degree of connectivity or non-connectivity at local levels.

Readability: based on the theory of space configuration, not only the comprehensive and local characteristics of urban systems are important, but also the interaction between them is desired. In other words, harmony between the comprehensive spatial order is important. This importance comes from the definition of structure in the literature on space configuration (Norouzian & Gheitarani, 2023). The concept of clarity of the city is directly related to the concept of city reconstruction in the mind, therefore the clarity of a city is a relationship between the local and comprehensive features of the urban space. The understanding of the whole urban system through its spaces (such as the street) depends on the connection of those spaces to other spaces (local feature) and also the degree of connection of those spaces (comprehensive feature) in the whole urban system.

In other words, the statistical correlation between the amount of connections of axial lines with the degree of interconnection is an indicator that determines the importance of those axial lines (space) in the entire urban system. The resolution index indicates the amount of spatial information that can be obtained visually from an axial line (space) (GHADARJANI & GHEITARANI, 2013). The problem of clarity of the city happens when there is an incompatibility between the spatial behavior of the urban system and the cultural and social habits, and participation of residents or visitors (Sadigh Sarabi, M. & Norouzian, M. M., 2023). It goes even higher than in political systems for intervention in society, the possibility of direct resolution, without the intermediary of local organizations, is necessary (Aghazadeh et al., 2019).

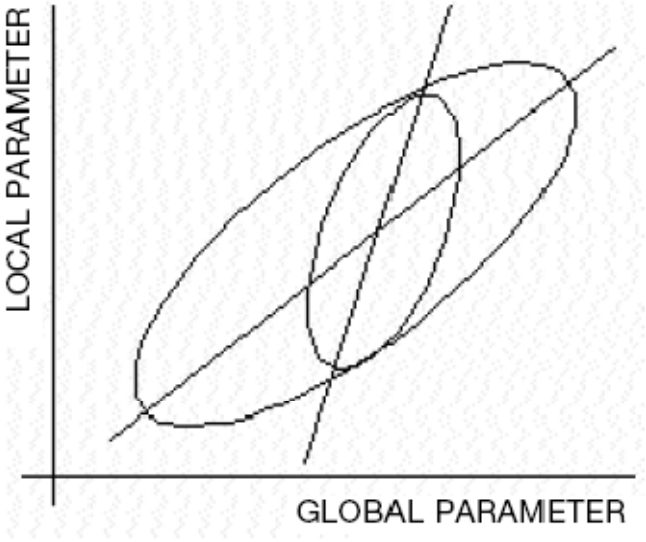

Figure 3. Readability parameter display

In the form of a large oval, it shows the areas of all the spaces of a city, and a small oval covers a part of the city. The identity components of neighborhoods in the theory of space configuration:

The landscape of cities and urban neighborhoods that are created by the way the buildings and textures are placed is affected by the way the spaces are configured. Perhaps, along with other factors that give identity to bodies and components that create collective memory, the body of spaces and the way they are placed and arranged together can also be considered as factors that give identity to tissues (Norouzian & Sarabi, 2023). Among these, the index of integration has the greatest role in creating and strengthening the social identity of neighborhoods (Karimimansoob et al., 2024- b). Spatial components, especially those affected by geographic factors, have a tremendous impact on the formation of public spaces or at least their dispersion, so with this perspective, we can recognize or predict the more social points of cities (Aghazadeh et al., 2018).

There is a two-way relationship between the index elements of localities and the formation of flows of dependence and attachment to their places, and in this, their physical characteristics and quality play a role more than any other variable. It should be taken into consideration that the general connections of these indicators with each other create a basic link in the mind of the residents so that removing any of them will harm this mental image (Dizaji et al., 2023). The quality level of the neighborhood environment is determined by the elements that make it up, but their stability and continuity are not only dependent on individual components, in the meantime, the way of arranging the axes of the neighborhoods that connect these elements should be modified. Commented because, like the veins of the body, these axes provide the cause of pedestrian flows that visit these places.

The social role of spaces and their intensity and quality is one of the most important factors in improving the communication level of the residents of the neighborhoods (Aghazadeh et al., 2017). The degree of remoteness of the spaces is the factor for distinguishing the residential spaces and in another point of view the backward contexts that require the attention of planners, designers, and urban managers. These spaces can be recognized through the depth index in the theory of space configuration (Gheitarani et al., 2024). The degree of predictability of accesses, although it may not

directly express characteristics such as dynamics, potentially predicts them (Naghibi Iravani et al., 2024- a).

Research Conceptual Model. Finally, after reviewing the subject literature and determining the direction of the research to integrate the sector's identity indicators into neighborhood centers and measure the indicators extracted from the central spaces, the following conceptual model is formulated as the foundation of the research.

Methodology

Since the current research seeks to measure the state of belonging and neighborhood identity of the residents of the neighborhood and the role of the layout of the central spaces in this regard, therefore, in terms of its purpose, it is an applied research and according to the nature of the descriptive-analytical research, it is a context finder (survey). To collect information, a combined method, that is, a combination of library methods and field methods, has been used. In this way, for theoretical studies regarding the extraction of neighborhood identity indicators from the library method and to measure its condition and the spatial configuration of axes to strengthen or weaken it, contextual methods such as the analysis of the correlation between the indicators have been used.

The technique used in this method will be the correlation technique to measure the relationships between the indicators, which ultimately causes the quality of another indicator, and the spatial analysis is the basis for presenting strategies and suggestions to improve the level of the identity of the center of Hesar Imam Khomeini neighborhood in Hamedan.

The sample studied. In the distant years, Hisar was a village called Hisar Khan and belonged to Abdul Hadi Khan. About 70 years ago, this village had 200 households, but today it has lost its previous size and has created a composite construction called Hesar with new units. Hissar neighborhood, which includes the areas of Islam Shahr, Hesar Piyazi Karan, and Ali Abad Road, is located in the northwest of Hamadan. From the north, it leads to Farhangian town, from the west to Elkhebal Boulevard and the surrounding areas of the air bridge, from the south to Asadabadi Boulevard (Kermanshah Road) and Sepah Square, and from the east to the areas surrounding Hesar Dizj, which in 2015 had a population of about 29,260 people.

What is the role of physical identity dimensions in giving identity to Imam Khomeini's Hesar neighborhood? The general purpose of this article is to try to preserve the identity by knowing the criteria for evaluating the physical identity and determining the criteria that influence the identity of the neighborhood and the partial goal, evaluating the characteristics of the configuration of the spaces, and determining their contribution to the identity of Hesar Imam Khomeini neighborhood by examining the components Influential in identity. The concept of identity from the point of view of urban planning and architecture is often presented in two complementary parts. First, creating memories and associations in the person; Second: differentiation and independence in a person. Therefore, identifying the identity is an analogical process between an existing object and Imam Khomeini's Hesar neighborhood.

There is some data from it in the mind (Zakerhaghighi et al., 2015), many studies have been conducted in the field of place identity, which relies on the role of the body of the place in this regard. This group of studies seeks to answer the question of which types of places are important for people and what is the reason for this feeling. Behzadfar believes that to know the identity of a city, the constituent components of the city's identity must be divided into two objective or physical and mental or spiritual dimensions. These two dimensions can be separated from three natural, artificial, and human environments (Kahvand et al., 2015).

In this research, in addition to emphasizing the physical aspects of the identity of places and localities, the social role of the central spaces of the localities is also emphasized, and according to

the conceptual model of this research, the improvement of the identity level of the localities through the improvement of the level and quality of syntactic-spatial indicators. To analyze the syntactic indicators and evaluate their quality at the level of the desired neighborhood (Imam Khomeini's Hesar neighborhood), first, the axial map of this neighborhood should be extracted using AutoCAD software, and then this axial map should be extracted We enter the evaluations of syntactic indicators into the specialized software of spatial syntax, namely Depth Map.

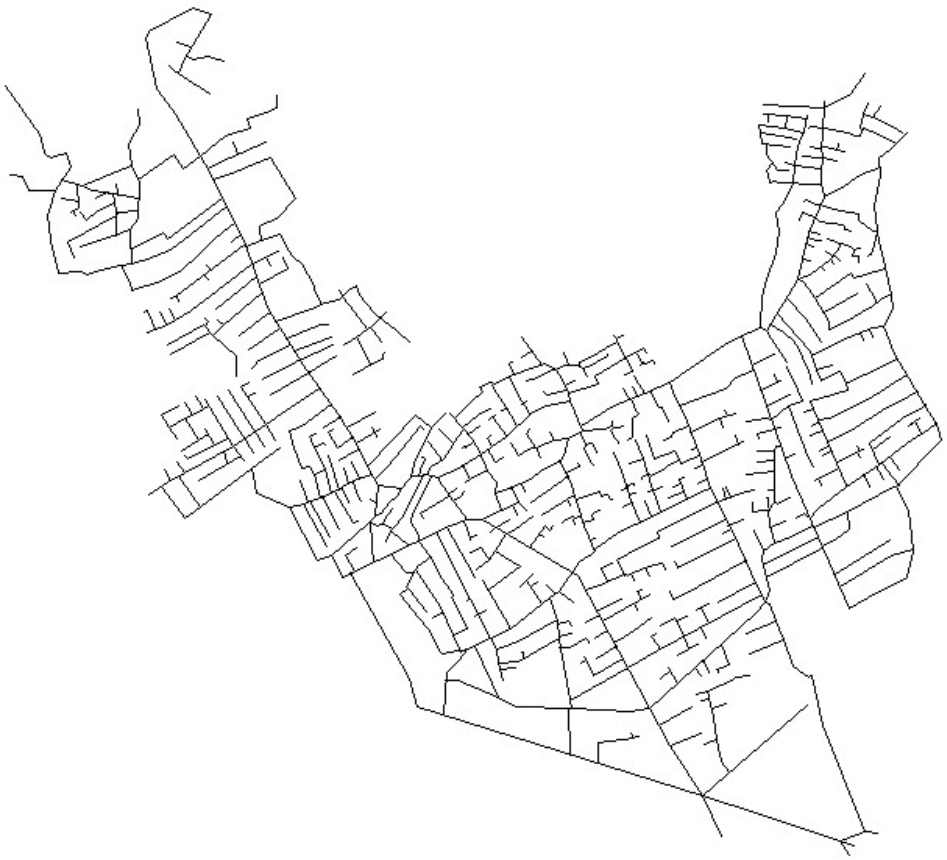

Figure 4. The map of the central area of Imam Khomeini's Hesar

Neighborhood. To identify the axes with potential dynamics from the point of view of the analysis of the behavior of the users of the spaces, the maps related to the syntactic-spatial indicators of the axes of Imam Khomeini's Hesar neighborhood were taken and with the analysis extracted from the specialized software of space syntax, all of them show the shortcomings or qualities. The spatial axes of this neighborhood are desirable.

Results and Discussion

Cohesion Index: Another value that is obtained in the method of space configuration is the degree of cohesion. It may not be an exaggeration if we say that this value is the most important value obtained from this method (Aghazadeh et al., 2018), the degree of connection is the average depth that is traveled to reach from one node to all the nodes in the system. In a linear map, it can be

said that the correlation value of a line or space is the average number of lines that can be reached from that one line to all other lines in the entire system.

Naturally, the lower this average is, it means that the desired node has a close relationship with other existing nodes, or in other words, that node is more accessible. And the higher the average depth is, the more isolated the desired space is. The degree of connection is the most used in the study of the accessibility of urban spaces, worn-out textures, immigrant textures, and the distribution pattern of uses, movement, and the like. Spaces that have a higher degree of integration in the system usually have more access and are more often proposed as destinations for intra-city travel. Considering that the correlation value usually calculates the relationships of one line with other lines, the obtained value or the concepts taken by it, such as the concept of access, have a relational and conceptual value and not a metric.

Of course, in new methods, by converting a linear map into a segmental map, metric factors can also be included in the calculations, which is beyond the scope of this article. Of all the indicators used in the theory of space configuration, the index of connection can play a positive and effective role in promoting the identity of personal neighborhoods, and the reason for this is the nature of this index. This is somehow related to the social role of neighborhood bodies, and increasing the quality level of this index means increasing the physical quality of neighborhoods, which will eventually lead to the improvement of residents' sense of attachment to the place and increase of neighborhood identity. The combination is closely related to natural elements and artificial elements made in the place (Gheitarani et al., 2020).

Figure 5. The map of connecting axes of Imam Khomeini's Hesar neighborhood in Hamadan city

As shown in Figure (4), it is clear that Imam Khomeini's Hesar neighborhood is mainly composed of one main axis with the highest degree of interconnection index (red color) and several axes connected to it (yellow color) and (green color). Such a structure, according to the analysis used in the research of Hillier and Johnson 1984, shows a spatial polar structure, such that one axis takes the pedestrian and horse traffic load as the main axis and the other axes have their desired relationship with this axis.

Therefore, this axis is the only axis at the level of Imam Khomeini's Hesar neighborhood, which can assume the role of centrality, and the location of the central uses of the neighborhood should be placed in the vicinity of this axis. From this point of view, an answer befitting the level of dynamism of this axis will be given, and with this action, he took a step towards strengthening the identity of Imam Khomeini's Hesar neighborhood. The relationship of the index of connection can be mainly considered with the physical elements or the appearance of the neighborhood that are effective in giving identity to the neighborhood (Dizaji, 2024).

Depth Index: Depth Here, depth is the smallest spatial step that is taken to get from one node to each of the nodes in the graph (Ghadarjani et al., 2013). In Figure 7, the red and yellow lines represent the axial spaces with the highest depth index, which somehow shows the separation and incoherence of these axes. The relationship of the depth index in the theory of space configuration with the identity components of the neighborhood is such that the social elements of the neighborhood such as public order and security, collective and ritual ceremonies, and participation will all be affected and also have an effect on the depth index because with the isolation of the context In some parts of the neighborhood, the dynamics and social role of the neighborhood will decrease and the depth of the spaces will increase (Karimimansoob et al., 2024- a). Therefore, by establishing a favorable relationship between spaces and improving the index of connection, we will witness the improvement of the features that are effective in the identity of the neighborhood (Farrokhirad & Gheitarani, 2024), features such as security and public order.

Figure 6. The average depth of the axial spaces of Imam Khomeini's Hesar neighborhood

In the picture above, the red axes represent the deepest spaces and alleys, and the green and blue axes represent the shallowest axes. To increase the dynamics of the neighborhood, the average depth of the entrances of the neighborhood, which are marked by drawing a circle, should be reduced, and instead, to increase the quality of the connection index in these entrances with the main axes of the neighborhood, it should be increased. The relationship of the depth index can be considered with the functional components of the identity of the neighborhood.

Readability Index. The readability index is obtained through the correlation between the local correlation and the overall correlation (Maleki et al., 2024). In this step, we calculate the correlation of the overall correlation index and correlation through the software.

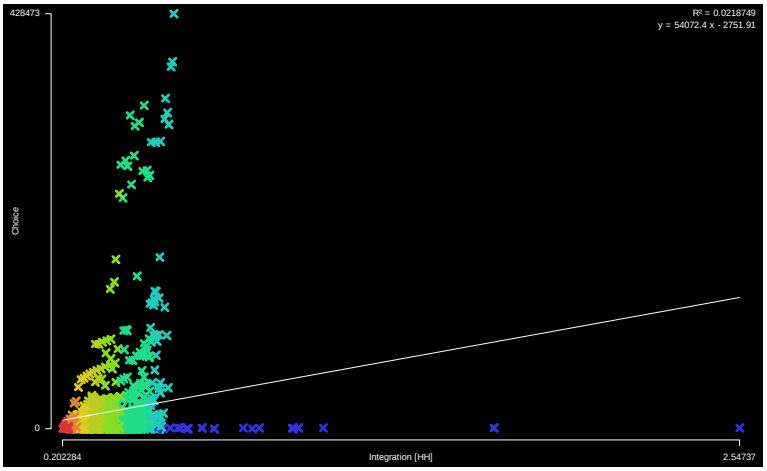

Figure 8. The level of readability index in Imam Khomeini's Hesar neighborhood

1. The value of correlation between correlation index and overall correlation R2=0.0218 was obtained, which indicates the low level of this index (0.5>x>0.1), this point in turn is a weak point for organizing and giving identity to Hesar Imam neighborhood. It is considered Khomeini. It is possible to take advantage of the unfavorable correlation between the overall and local cohesion of the fabric of this neighborhood in developing the identity level of this neighborhood because by establishing a favorable relationship between the main and secondary axes, the level of this index will be improved and the centrality of the neighborhood will be strengthened (Samami et al., 2024).

Conclusion

In this article, an attempt was made to identify the physical components of neighborhood identity and to explain the method of space configuration along with its supporting theory as well as the basic concepts and definitions used in it. Also, the most important values used in the space layout method were introduced and explained. In addition, the maps presented in this method and their reading were also briefly discussed. The maps obtained for Imam Khomeini's Hesar neighborhood were presented as examples so that the reader's mind will become familiar with the applications of this method and how to use it. In this article, we tried to emphasize the importance of the theory supporting this method. The above-mentioned topics shed light on the fact that the space configuration method is not limited to the use of software, and understanding the theories supporting this method plays a fundamental role in reading the maps and the values obtained from them.

This article highlighted the importance of the problem and the researched question in the way of dealing with the method of space configuration and its use and discussed the application of this method in the identification of localities. In addition, in this article, we tried to briefly mention the various applications of this method in the study of the spatial structure of neighborhoods and the access of roads. The main findings of this research are the introduction and categorization of some of the indicators proposed in the theory of space configuration in the conceptual model of recognizing the identity components of neighborhoods, which by reviewing the literature related to the theories of space configuration and the social role of spaces, finally three indicators of interconnectedness, depth and readability are introduced as the most effective components in giving identity to neighborhoods. Finally, after the analysis of the spatial syntactic indicators extracted from the specialized software of the spatial syntax, the weaknesses and strengths of the studied neighborhood were identified, and suggestions were made to improve the identity of the neighborhood by increasing the dynamics in the center of the neighborhood.

Suggestions

- To increase the level and quality of the interconnection index, the alleys and passages marked in blue on the interconnection map should be comprehensively considered with green axes and their connection with the main axis (red) should be strengthened.
- The main entrances to the neighborhood should have provisions to facilitate the entry and exit of vehicular and pedestrian traffic so that the centrality of the neighborhood is maintained through this passage, and it increases the dynamics of the neighborhood center and the identity index of the neighborhood.
- Emphasis on the dynamics of the central axis of the neighborhood through the establishment of population-friendly uses to increase the identity related to the body.
- Reducing the average depth of the axes by organizing the entrances to the main streets in the vicinity of the Hesar Imam Khomeini neighborhood.
- Optimum use of the average level of readability index, with the establishment of extra-neighborhood service users, it is possible to direct non-resident foot traffic to the center of the neighborhood and increase the dynamics.
- Emphasis as much as possible on the physical indicators affecting the identity of Imam Khomeini's Hesar neighborhood, so that there is a two-way relationship between the physical variables raised in the field of giving identity to the centers of the neighborhoods.
- Including the indicators related to the spatial configuration of the study area in the design plans of the neighborhood centers and combining them with the identity components of the neighborhoods.
- Reducing the extreme difference between the level and the quality of the local and general integration index, will cause more readability of the axes and increase the level of mental attachment of the residents to Imam Khomeini's Hesar neighborhood.
- The forecast before the implementation of the axis changes in terms of features that will be created in the configuration of spaces before applying these changes.

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