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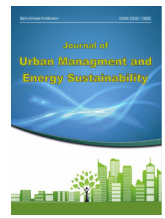


CASE STUDY RESEARCH PAPER

Evaluation of confidentiality in the architecture of historic houses according to the concept of transparency in spatial structure (Case study: Historical houses of Tabriz Qajar era)

Maryam Hasani[1], Mohammad Parva*[2], Aliakbar Heidari[3]

1 Ph.D. Student, Department of architecture, Shiraz Branch, Islamic Azad University, Shiraz, Iran
2 Assistant Professor, Department of architecture, Shiraz Branch, Islamic Azad University, Shiraz, Iran*
3 Department of Technical and Engineering, Yasouj University, Yasouj, Iran

ARTICLE INFO

Article History:
Received 2024-03-08
Revised 2024-05-31
Accepted 2024-06-23

Keywords:
Traditional Residential Architecture, Transparency, Qajar Era, Privacy, Geometric Relations Of Space, Tabriz city

ABSTRACT

Traditional residential architecture of Iran has always been the basis for the formation of identity and civilizational culture due to its architectural qualities. The principle of transparency is one of the principles that have always been present in Iranian art and architecture, and along with it, the factor of culture and religion has always been challenging with a kind of transformation in the spatial structure of architecture that is evident in the Qajar period and its three periods of early, mid and late. The method of collecting information is documents and library. At first, according to the triple introspection introspection, spatial hierarchy and locating the type of spatial qualities and initial graphical analytics, and using A-graph software, the justification graph of case samples was drawn, then based on the geometric relations of space syntax, these variables were calculated in nine Qajar houses of Tabriz that were used to validate the calculations obtained from geometric relations Samples were analyzed in Depthmap software. The findings indicate that Ghadaki House with a score of 4 had the highest and Hariri and Salmasi houses had the lowest respect. The general result indicates that in the studied samples in the mid-Qajar period have the highest and the lowest degree of confidentiality due to the concept of transparency in the spatial structure. In Research The future can include the number of samples as well as climatic diversity in the research.

DOI: 110.22034/IJUMES.2024.711844

Running Title: Confidentiality in the Architecture of Historic Houses According to the Concept of Transparency in Space Structure

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
39	10	06

*Corresponding Author:
Email: *Mo.parva@iau.ac.ir*
Phone: +987136259075
ORCID: https://orcid.org/0000-0002-1272-0684

INTRODUCTION

Traditional Iranian residential architecture is full of value, usable examples of housing, identity of historical monuments in different periods in different cities of Iran is evidence of this claim (Hajian et al., 2020). Increasing tendency to recognize architectural environment design practices in the past, among art and architecture theorists can be considered as the result of the change in the construction process from the past to the present. One of the methods that Reading and understanding of traditional and contemporary architecture helps to understand spatial configuration (Chegini et al., 2020). The survey of the space organization of historic houses in relation to the way of life in which they have been conducted, reveals that the architecture of historical houses has responded to the diversity and dynamics of the lifestyle in the home and expresses the domination of Iranian architectural and architectural culture on the diversity of life, to a more serious extent behaviors and needs, therefore, the spatial organization of the historic house has provided a wide variety of space for its residents and encouraged the experiences. And activities have been varied and increased the dimensions of each seemingly simple activity by providing spatial diversity (Haeri, 2009) One of Iranians' interests in building houses is the visual connection between the room and its outer space. Openness, vastness and free vision are among Iranian nature (Pirnia, 2007) is a transparency of principles that have been constantly flowing in Iranian art and architecture. The meaning of this principle in Islamic architecture is the constant movement and evolution from material to spiritual quality, and qualities such as confidentiality can have a similar structure according to its cultural type. A space can be considered as a Mahram that physically has a safe and secure space for the user and its spatial qualities in such a way that it provides peace and comfort (Seifian & Mahmoudi 2007). Therefore, the house, which is the most private place for the individual, is one of the main places where privacy and privacy is necessary (Jabaran et al., 1397). The meaning of privacy in the architectural space is to dissect the space in such a way that it has physical and semantic aspects. Occultation in the sphere of space body is more focused on the principles that will shape confidentiality and in the semantic domain has features that bring dignity and value to the architectural space in such a way that one can relax in it. Traditional Iranian architecture can be Filled with concepts he knew. The basis of Iranian-Islamic culture, beliefs, and thought means that one of the most important concepts that has emerged from this culture and religious beliefs has entered the arena of traditional Iranian architecture is the subject of privacy (Mahdavinejad et al., 2013).

Social behavior is directly related to environmental behavior and environmental culture. Human behavior can determine the amount of privacy required in daily life. Unfortunately, today, cultural principles, especially the principle of privacy, which is one of the most fundamental principles in the construction of housing, have been ignored (Rastjoo and Bemanian, 2019). Based on this definition, confidentiality creates security in substance and peace in meaning for us. In other words, in the present era, privacy has fallen victim to economic and social factors, and the priority for establishing spaces that protect privacy has gradually been reduced, and houses that are foreign to the native culture have been built (Babazadeh Oskouie et al., 2020). In spite of the fact that people live in modern homes and struggle to adapt to modern architecture, they are still a They know the house of righteousness (1 Corinthians 3:15). Tabriz is one of the main centers of Constitutional Movement. The society of that day, which was willing to change and update its cultural structure, considered architecture as one of the first tools of this change, since building a house is a cultural phenomenon, the shape of the house (its physical form and spatial organization) is strongly influenced by the cultural environment to which the house belongs. Accordingly, houses Traditional that until then, along with the climatic issues of the city of Tabriz, were required to be introverted and

this introversion was effective not only in the general form, but also in locating architectural components (Tehrani et al., 2018). Changes in the pattern of the house in Tabriz, unlike many cities in Iran, have a clear and verifiable trend and analysis and the reason for this is coinciding with the arrival of thoughts and thoughts Western architecture is concerned with the importance of urbanization and construction in this period. Due to the important location of the city of Tabriz and the movement of businessmen and important government persons from other countries, cultural concepts and approaches also penetrated the city more rapidly. Changes in ideas and consequently common architectural patterns in Tabriz can be well tracked in the Qajar period. In this paper, the case study of historical houses belonging to the early, mid and late Qajar era in Tabriz city can be studied and generalized results due to diversity and structural and organizational characteristics in the space.

MATERIALS AND METHODS

Literature Review

Privacy

Confidentiality in Iranian architecture and privacy in Western architecture is equivalent to privacy (privasi) and security (srkjoriti), the historical root of this concept is defined in the Stanford Philosophical Digest (2014) in Aristotle's philosophical debates, from the distinction between the public realm of political activity or the objectivity of appearance, and the private realm associated with the household and family life or the hidden world. The definition of confidentialityin Oxford culture (2009) is the state or condition of being alone, undisturbed, or free from any public attention or view within the context of right and choice. The Merriam and the Bed Dictionary (2009) also posits confidentiality as a quality or mode of avoiding companionship with the addition or observation. Privacy as defined by Gifford (1997) stems from our tendency to control the environment, and privacy is a place to express secrets and seek opinions from others, thinking about oneself and determining the type of relationship with others that increases decision-making power and the place where emotions are released. According to Kaminsky (2003) Confidentiality for some people becomes a barrier to contact or Neighborliness by other people has been unsatisfactory. John Lang (1987) Privacy and ownership affect our perception of the comfort and quality of space, and all definitions of privacy have one thing in common: the ability of a person or group of individuals to control social, visual, auditory and sensory relations with others. Rapaport (1968) Confidentiality as The ability to control social relationships and the power to choose the desired amount of these relationships defines them. Confidentiality in Newell's view (1998) is the temporary and voluntary conditions of separation from the public domain (Georgiou, 2006). The primary orientation of the concept of confidentiality in order to distinguish between the two main spheres of life (public and private) associates confidentiality not only with the concept of intimacy, but also with the way in which individuals control personal relationships with others, especially with the world outside the private realm (Madanipour, 2003). Confidentiality is generally the process of regulating interaction with others, i.e., the process of reducing or increasing relationships in both verbal and nonverbal aspects (Witte, 2003), and this includes both limiting and demanding interaction (Altman, 1975). For Bell (2000), realm and personal space are two ways of regulating interaction with others, in which individuals employ different kinds of thresholds of boundaries in the environment. Altman (1975) also describes these two mechanisms as setting the action threshold for the expected level of personal and group privacy. But in today's life, the diminution of the duality of public and private space has changed this cultural context (Parker, 2004). Due to privacy in architecture, the passage of spaces and permission to enter any space is done according to a hierarchy that offers a kind of peace to the occupants

of the house (Mahdavinejad and Mashayekhi, 2010). In Western architecture, especially before the modern era, privacy is more important in the form of security and private rights. The meaning of privacy and privacy are used simultaneously in this architecture and discuss the same meaning. Privacy, about the individual, the extent of his or her relationship with others, and confidentiality about a group of people who have a private relationship with each other, with other people. The behavior in question is very similar to the behavior of humans in Eastern culture in preserving privacy and creating privacy. In contemporary Western architecture and with the emergence of new styles such as deconstructor or folding, etc., with the elimination of hierarchy and with the aim of shaping spatial fluidity, this category has been largely diminished (S. Yafian and Mahmoudi, 2007).

Confidentiality in the space structure of the house

Various factors such as climate, environment, culture, economy, social conditions, conditions and location and many other factors play a role in the formation of Iranian traditional houses like all types of housing (Soltanzadeh, 2010). The relationship between the semi-public and private realms, while preserving the origin and importance of each of them, shapes the spatial structures of these houses (Gruther, 2009). Creation of different patterns of spatial structure is also possible by how these fields are placed in relation to each other and influenced by these factors. Considering the importance of the psychological needs of residents, visual privacy, audio, and aesthetic privacy is important. According to Cheg (2013), by limiting others' view of the person, visual confidentiality is by internal veneers, ceilings, furniture, equipment and ground, Sonic privacy and defining beauty based on the time of the target location and context and responding to needs and desires determines aesthetic criteria of confidentiality (Cheng, 2013). The elements of architecture that create privacy in the traditional Iranian house are as follows;

nterance

The entrance is part of the sequence of interconnected spaces of the whole house. The privacy of the house must be maintained. Allow entry through a gradual process. The front door of the house is considered both a barrier to entering the house and a place to welcome the half-familiar guests. The process of entry indicates modesty to control the indirect entrance and the façade of the house in the neighborhood is distinct (Kateb, 2005).

Yard

According to Burkhardt, Muslim homes get light and air from their inner walls, not from the street. The traditional house should protect the privacy of his family, which in this regard, the most important effect on the structure of a traditional house is its introversion . In such a house, spaces are designed in a way that does not interfere with the private life of the house even with strangers entering the house (Buchardt, 1990). The cracking of courtyards in traditional houses was essentially consistent with the diversity of physical and spiritual necessities. This. The necessity also explains the relationship between private and public sectors, and it was based on these necessities that several types of courtyards such as inner and outer courtyards emerged. Here he comes.

Hashti

The vestibule or Keryas is a space that is designed and built in many types of entrance spaces. This space is often located immediately after the entrance space, and one of its functions is to divide the entrance route into two or more directions. In some public buildings with houses, two or more roads were split from inside the vestibule, each of which was divided into a specific space, including to the The interior of the building is the courtyard. In fact, the architect at this stage by reducing the lighting of the space compared to the passage and increasing the light step by step on the way to the courtyard will make the person curious to see a new space and prepare (Bemanian, 2010).

Window

The use of windows in Iranian architecture is full of elegance of work that can be mentioned in Arsi examples. Arsi application in Iranian architecture has a very ancient history of one of the functions of the grid of sash windows is to provide light inside and also create a safe space from an annoying outside look. Of course. Aesthetic climatic approaches and many other things have also contributed to the formation of this pattern (Mahdavinejad et al., 2011).

Dalan

The corridor is the simplest part of the entrance space that provides connection and access between the two places is the main function of it. In some types of buildings such as houses, bathrooms, and in some cases mosques and schools change the direction and direction of the passage in the corridor is done, so the issue of confidentiality by a corridor that leads indirectly to the courtyard has been solved. Physically, the space is narrow and narrow. Of course. The width of the corridors was determined according to the function of the building and its users. The width of the corridors of mosques and large schools is on average between 2 and 5 small on average about one meter (Mahdavinejad et al., 2011).

Architectural qualities Creating confidentiality

Hierarchy

In many of the examples available in residential units, historical urban textures of Iran can be seen. Creating a spatial hierarchy in order to keep confidentiality has long been considered by many designers around the world, especially in Islamic lands such as Iran. Hierarchy is one of the principles that has the greatest impact on the formation of privacy in the body of traditional Iranian architecture. In fact, this principle is one of the principles used in traditional arts. These arts are not only based on hierarchical principles in their formation structure, but they also coincide with harmonious and current harmony in the world and the hierarchy of existence that is above its material order (Nasr, 2001). In the lexicon of geography, hierarchy is any order of complications and phenomena that are mentioned as a classification or ranking (Mayhew, 2003). The hierarchy of privacy in the house is known by the interpretation of the hierarchy of presence and confidentiality (Vasiq, 2009). Therefore, this principle defines and explains different domains in the living environment, from public to semi-public, semi-private and private (Naghizadeh, 2000). The hierarchy principle in traditional architecture separated private spaces from other spaces by causing fractures in the axes of movement (Ayvazan, 1997). The existence of a hierarchy of access to spaces, in addition to limiting and preventing direct vision, controls the sound in the space, and separates different realms including the public realm, the confines of the confines and the private realm. Depending on the social religious and cultural status of the homeowner, the hierarchy of access to the interior of the house is defined as in traditional architecture in the houses of the aristocracy and merchants of this hierarchy very much He is stronger and more powerful. The nature of the dwelling demands its own solitude and tranquility, which is completely different from the privacy and tranquility of public buildings, hence the spatial hierarchy for connecting to the interior of the building and the private space, which is referred to as the spatial hierarchy (Tabibian, 2011). In architecture, the different steps that must be taken to reach a space to reach the desired location is called Space Hierarchy (2018) This principle has woven the fabric of traditional Iranian houses so that it will not be possible to pass from one space to another without observing it (Mazaheri et al. 2018). In general, with the increase of spatial hierarchy, various spatial domains and domains from public to private in traditional houses are formed, resulting in an increase in spatial privacy (Peistogar et al., 2017). In addition, increasing the depth and subsequent lack of distribution of spaces in the structure, spatial structure creates a linear structure in the structure of the struc-

ture and helps to increase the spatial hierarchy in that complex (Heidari & Taghipour , 2017). This is done in our traditional architecture. The demarcation of spaces with defined bodies and clear boundaries between spaces and using spaces intermediary spaces called “middle” Among the main spaces; Avoiding the integration of spaces or removing borders; having qualitative and quantitative characteristics and distinctions of each space to distinguish and differentiate among other spaces (Noghrekar, 2008).

Introversion

Introversion is another factor controlling visual and auditory privacy. Introversion is a form of thinking in the world of meaning and cultural and social factors are the creator of it (Noghrekar, 2008). Introverts are seeking to preserve environmental privacy. This has been formed according to internal issues based on culture, lifestyle, and customs (Seifian & Mahmoudi, 2007). It is necessary to mention that in some cases, including the climate of northern Iran, different according to the type of climate of the houses and extroverts were designed (Shams, 2009). A number of internal spaces have different values from the functional perspective, while having the same syntactic analysis (Kiaei et al., 2020). Introversion in architecture has meant that the private space is closed to the urban space and opens it to a private open space (mainly the middle yard) and has been very interested in organizing different parts of the building (Nari Qomi, 2010) so that Iranian architects by organizing the building organs around the central courtyard separated the building from the outside world, and with only one vestibule this The two were joined together (Pirnia, 2004, 35) So introversion in historical houses on the one hand is not connected with the inside with the exterior, which, in addition to creating the vestibule at the entrance, is also observed by the absence of windows in the external wall of the building, and on the other hand, the arrangement of spaces around the central courtyard is created Hashemi Zarjabadi et al. (2015). If we look for introversion in the house, we find two main features: lack of direct visual connection between the interior and the outside, and the other is the principle of creating spaces organized by the courtyard (Memarian, 1994). In fact, the outer fence creates a safe inner space. The thickness of the exterior walls compared to the interior walls also indicates a safe listening space for the home. The thick outer walls prevent the passage of sound inside to neighboring houses and alleys (Momeni and Naseri, 2015). andparallel to the introverted issue, Centralism is in the architectural space. The evolution of diffuse elements (pluralities) into central unity is evident in most architectural spaces. Courtyards are the nuclei of this thinking and bringing functional elements or details of middle and far to the center of diversity and diversity. This central inner space, which can sometimes be something other than the central courtyard, is the regulator of all activities and places the principle and center of space in the part where the turning point occurs (Momeni and Naseri, 2015). It can be said that the courtyard is one of the key spaces that is considered as a means of reviving the identity of traditional architecture (Hajian et al., 2020).

Location

Locating is one of the most important factors in creating privacy and maintaining proper privacy of spaces, openingsand openings on the walls; so that private spaces of the house where the presence of incest are placed in parts of the plan that are protected from the direct view of strangers and guests who enter the house. The entrance to the house is built in places where there is no direct visual connection with the interior of the house (Farrokhyar, 2011). In locating the interior spaces of traditional houses, it is important that the guest space with private space be in the least integration and in other words, be completely separated and separated from each other in the plan (Momeni and Naseri, 2015) Also, the location of public spaces in traditional houses is that these spaces have the highest amount of access to the courtyard and on the other hand,

private spaces are located in a place where The lowest access to the courtyard and the vestibule (Pourmand and Tabataba'i Molazi, 2015). Therefore, observing the principle of locating has also increased confidentiality in the spatial structure of traditional houses.The entrance point is that the doors do not open facing or close to each other, the private spaces of these houses are located in blind spots or corners of the plan, or their entrance is within corridors or divided spaces that separate these spaces from other spaces (Murtazo, 2008). Therefore, in locating the interior spaces of the house, it is considered that the guests' space should be separated from the private space of the house (Mansouri, 2010)

Although it can be acknowledged at the beginning that confidentiality or transparency in the Kallabdi component has practically an indirect relationship, but with what quality they affect the introspection in the space organization of the house, it is an issue of discussion and evaluation. Therefore, the confidentiality structure in the concept of transparency in the architecture of historic houses can be explained in a mass and space type structure, as well as spatial qualities.

Research Background

Kazemzadeh Ra'ef and Mir Ririkvandi (2020) in recognition of the privacy in the Iranian traditional house by emphasizing the privacy manifestations in architectural elements (Case study: House of the Apostles of Yazd), in order to achieve the privacy manifestation in the architectural elements of the Iranian traditional house, has attempted to evaluate this traditional house. Babazadeh Oskouie et al. (2020) In a research titled "Spatial Perception Analysis of Contemporary Residential Complexes with Space Syntax Approach", we analyzed the interrelationship between configuration, spatial depth of space and architectural space relations to perceive privacy in one of the contemporary residential complexes in Tabriz, and states that there is a direct relationship between architectural space configuration of the architectural body and spatial depth in defining the privacy of spaces. Rastjoo and Bemanian (2019) In the typology research of the spatial structure of contemporary Iranian house, relying on confidentiality and hierarchy, two indices of confidentiality and hierarchy from the 1950s to the 80s in contemporary houses of Iran based on the spatial syntax method, and have concluded that in the 50s and 60s, the spatial hierarchy and confidentiality in the houses have not been provided due to cluster structure. However, since the 1990s, by creating nodes in the entrance space, the dominant pattern of houses has more privacy and hierarchy. Heidari and Taghipour (2018) In the privacy analysis of traditional houses based on mass to space ratio (Case study: single-yard houses in hot and dry climate), In three cities of Kerman, Isfahan and Kashan, using mathematical relations and syntactic indices software, they analyzed confidentiality defining indices in relation to mass to space ratio in the homes in question.

Ali Tajjar and Molavi Nojomi (2018) Measurement of behavioral patterns in modern and traditional housing, Hamedan, from the perspective of spatial configuration, has analyzed the interrelationship between configuration, spatial depth of space and architectural space relations for the perception of privacy. Heidari et al. (2018) In a study titled "Evaluation of Confidentiality Practices in Three Small and Minor Peymon Systems" in Configuration of Islamic Iranian Housing Using Space Syntax Technique, they have compared the degree of confidentiality in traditional houses in Kashan and Isfahan in three large scales medium and small using spatial syntax technique and have concluded that in small Peymon houses more confidentiality It is of large Peymon houses, but in the houses of the Great Peymon, there is also privacy based on the different depths of the spaces. TabatabaYi Mollazi and Saber Nejad (2016) Analytical approach of spatial syntax (layout) in spatial configuration perception of Qeshm native housing (Case study of Loft village) has used the Spatial

Syntax Solution (spatial layout) method to investigate the relationships of native housing spaces. Eulogy and Architectures (2016)Analysis of the spatial configuration of vernacular houses with spatial syntax approach (Case study: Boshrooyeh), assuming that the spatial configuration of the house that had continuity and continuity until the beginning of Pahlavi has undergone dramatic changes since the end of this period. It has been concluded that the configuration and space organization of houses had continuity and continuity in the Safavid to early Pahlavi periods, and the culture of indigenous settlement had an important role in the formation of space types and how it was organized. Pourmand and TabatabaYei Molazi (2015) in their article entitled "The Hidden Pattern of Spatial Establishment System in the Islamic Iranian Housing Desirable Establishment Model for Islamic Housing and Indicators Affecting the Establishment of Islamic Housing It has introduced the system, some of which are more effective in controlling privacy. Momeni and Naseri (2015) in his article titled "Examining the Means and Methods of Establishing Confidentiality in Zinatol-Molk's House in Shiraz in accordance with Islamic Verses and Traditions" examines the factors of the making of privacy in the historical house of Zeinat-ol-Molk as one of the prominent buildings in Shiraz and has adapted them to Islamic verses and traditions.

Hamzeh Nejad and Sadrian (2014) also in their article entitled Principles of House Design from Islamic Perspective and Contemporary Practical Models, have introduced principles to improve the conditions of settlement using sources of religion and also evaluate residential buildings based on these principles, which also refer to the category of privacy. Also, in a paper titled Contemporary Pattern of Tehran's Vernacular Housing Using Some Methods of Matrix and Graph to Measure Criteria such as Accessibility Ali Al-Hesabi Hosseini and Relative (2012) Analysis of Visual Quality and Visibility Using Different Isvest Dimensions in Spaces of 6 Houses from Old Texture of BushehrConsidering the relationship between space and home performance with visual quality and its size, the residential spaces and their quality of view in the old city of Bushehr has been evaluated. Kamalipour and others (2012) Combination of shape and spatial configuration in Kerman native housing, The difference in the shape classification of houses does not mean a difference in how the guest space is classified in all classifications; also the analyzed courtyards in the classification of houses 1. The introverted courtyard with volume on the four sides of the courtyard has a higher degree of connectivity than other types, so rooms that act as private arena in the home have the highest depth and the least amount of interconnection. In this relationship, Kamalipour and colleagues (2012) in their paper titled Shape Composition and Spatial Configuration in Housing, Comparative Comparison of Guest Space Classification in Traditional Houses have used this technique to investigate social characteristics such as control selection and other samples. The study of religious identity patterns in traditional housing and their regeneration in contemporary housing has been used in which the BDSR analytical model is used. He has considered some characteristics to measure confidentiality and analyzed them in traditional and contemporary housing. Also, Okhovat (2013) In the paper, a comparative study of the dimensions of privacy in traditional and contemporary housing based on BDSR model Using this model, spatial space has been evaluated based on four definitions, barrier, order distance and loop. Haeri Mazandarani (2009) In the book of Farhang, nature describes the house since 1300 AH and considers the criteria for shaping the spaces of the house confidential. It can be concluded that: 1- In previous researches, most of the researchers' focus is on the structure of architecture and syntax of space and confidentiality index in functional dimension 2- Research vacuum has not been investigated in principle of transparency in substantive attitude 3- Compli-

ance principle of confidentiality and transparency as a challenge in the process The architectural evolution of historic homes has not been evaluated. Therefore, this research aims to first investigate the concept of confidentiality and its consistency in the transparency of historical houses to some extent of recognition of Caldeb according to the mass form and quantitatively and qualitatively to conclude the preservation of, expansion or reduction of confidentiality principle in Qajar architecture.

Methodology

The present research is descriptive-analytical, which is applied and developed for the purpose. The purpose of this study is to investigate the role of spatial structures in spatial privacy in Qajar houses in Tabriz. Therefore, the method of this research is qualitative quantitative. First, in the qualitative section, using library studies and historical documents, the concept of confidentiality and transparency in the context of the historical house was studied theoretically and then four types of construction patterns were selected for the concept of spatial structure. For the concept of privacy, three variables including introversion, hierarchy and locating were determined. Then, in the quantitative section, the justification graph of case samples was drawn using A-graph software, and then based on geometric relations of space syntax, these variables were calculated in a variety of spatial structures. To validate the calculations obtained from geometric relations, the samples were analyzed in Depthmap software Finally, the findings of the research were analyzed using logical reasoning method. In general, according to what was expressed. Finally, according to calibrating the existing indicators in the software environment, the need to adapt to the proposed indicators of the research is applied as an evaluation criterion in the rule of the research framework.

DISCUSSION AND FINDINGS

At first, according to the type of houses selected, the specified division was done in the following order in Tabriz city, which according to typology of the model can be presented plan, picture and document. (Figure)

1. Early Qajar Period: Salmasi House, Hariri House, Kouzeh Khanani House
2. Mid Qajar Period : Ghadaki House, Alavi House, Amir Nezam Garoosi House
3. Late Qajar Period: House of Sharbat Owali, House of Treasure, House of Mojtahedi

The first step is to introduce and classify the case of the introverted historical houses of Iran in terms of spatial structure, or in other words, the system of mass and space are divided into four types, one side, two sides, three sides construction and four sides of construction, architects 2008, 164. Accordingly, according to the purpose of the research which examines and compares the concept of confidentiality in different spatial structures in Qajar houses of Tabriz, among these four models, the most aspects of construction in Qajar houses in Tabriz are in three two-way three-way and four-way patterns. Therefore, in this study nine Qajar houses whose spatial structure follows these three patterns have been selected. It is worth noting that the two sides of

Table 1: Preparing the Preliminary Indicators with the Proposed Research Indicators

Analytical Software Indicator	Confidentiality Index	Metric	Score Range
Visibility graph	Visual continuity	Color tone from blue to red	Red=5, Orange=4, Yellow=3, Green=2, Blue=1
Deep Space	Permeability	Ratio of space depth to entrance door to space	Limit of failure (the limit of the highest to the lowest 1-5)
Access Hierarchy	Connection and Integration	Quantity of access structure	Breakdown range of access number 1-5

the Qajar houses in Shiraz are composed of two opposite masses and two vertical masses, so in this study the total of these nine Qajar houses, the two sides of the construction pattern of the second (opposite mass), the L-shaped two-side construction pattern (vertical mass), and the three-sided U-shaped construction pattern were selected. Step 2: Extraction of justification graphs using igraph software. In this step, the graph of the justification graph of each sample was extracted using E-software, and the results were collected in the table. In the last graphs, the numbers on the left side of the graphs indicate the depth of each space relative to the input, so that the depth of the input that is considered as the root and starting point is zero and other spaces are located in the next depths. The third step of confidentiality analysis in the structure of transparency principle using mathematical relationships of space syntax in this section to measure confidentiality in samples is calculating three variables visual continuity, communication and permeability, based on mathematical relations of space syntax. For this purpose, first three semi-public and private public spaces in each one should be considered. Choose from case samples. Therefore, three spaces of the guest room courtyard and bedroom that are considered as the main spaces of the house and play an important role in the spatial structure of traditional houses were considered. Based on the justification graphs of the previous stage, the calculation of these three spaces with syntactic tools of the association is discussed, the relationship between the mean relative depth, relative asymmetry, relative merging and accessibility. (Figure 1 to 7)

Figure 1: Exterior image of selected houses in Tabriz related to three periods of early, mid and late Qajar

Figure 2 to 4: Right Figure: Plan 9 Qajar houses in Tabriz related to three periods; Middle Figure: Mass and Space Pattern; Left Shape: How to Communicate Between Open and Closed Space

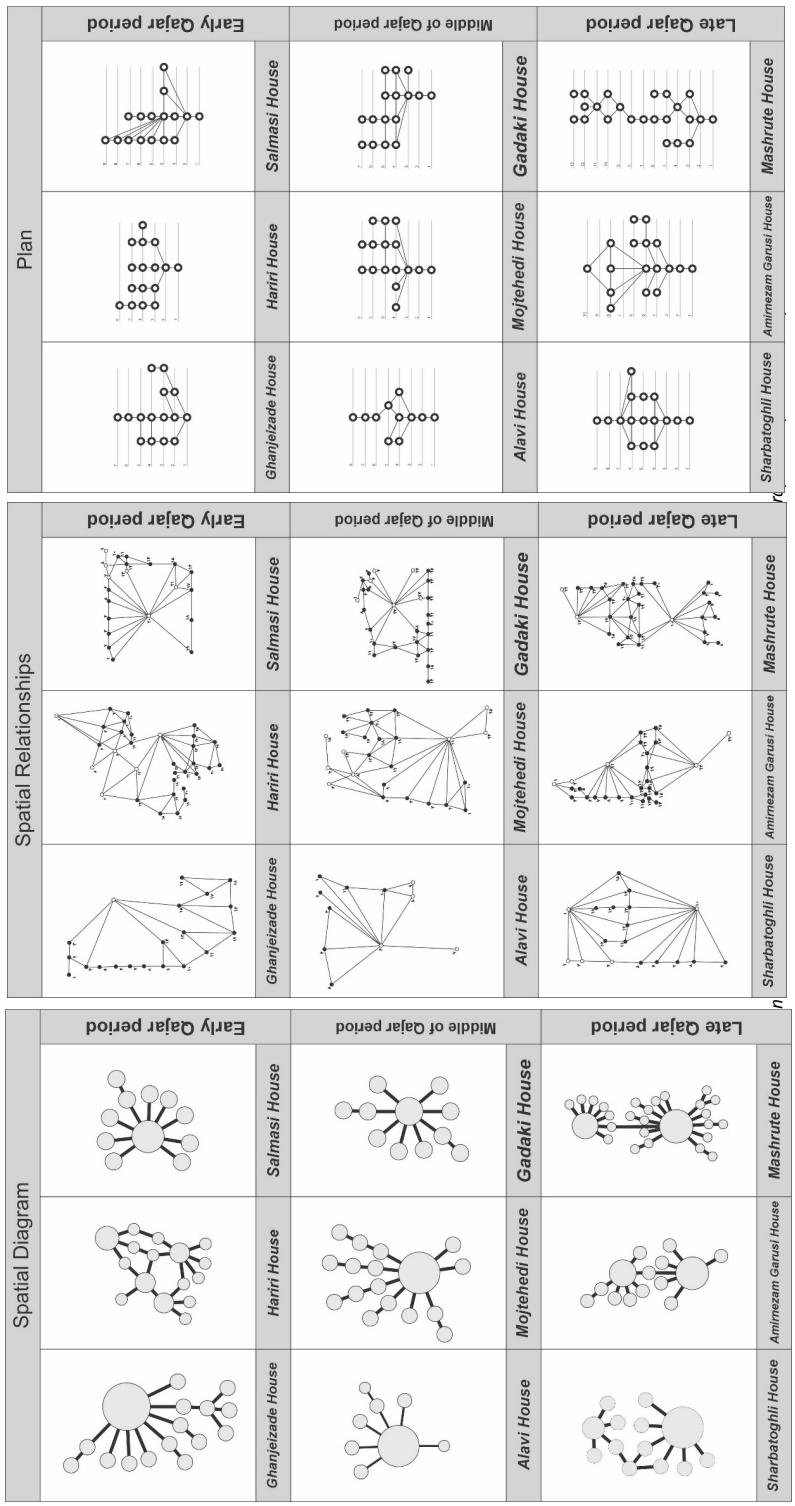


Figure 5 to 7: Diagram of the space agency of the Qajar houses in Tabriz related to three periods; middle figure: spatial communication; left-hand shape: spatial diagram

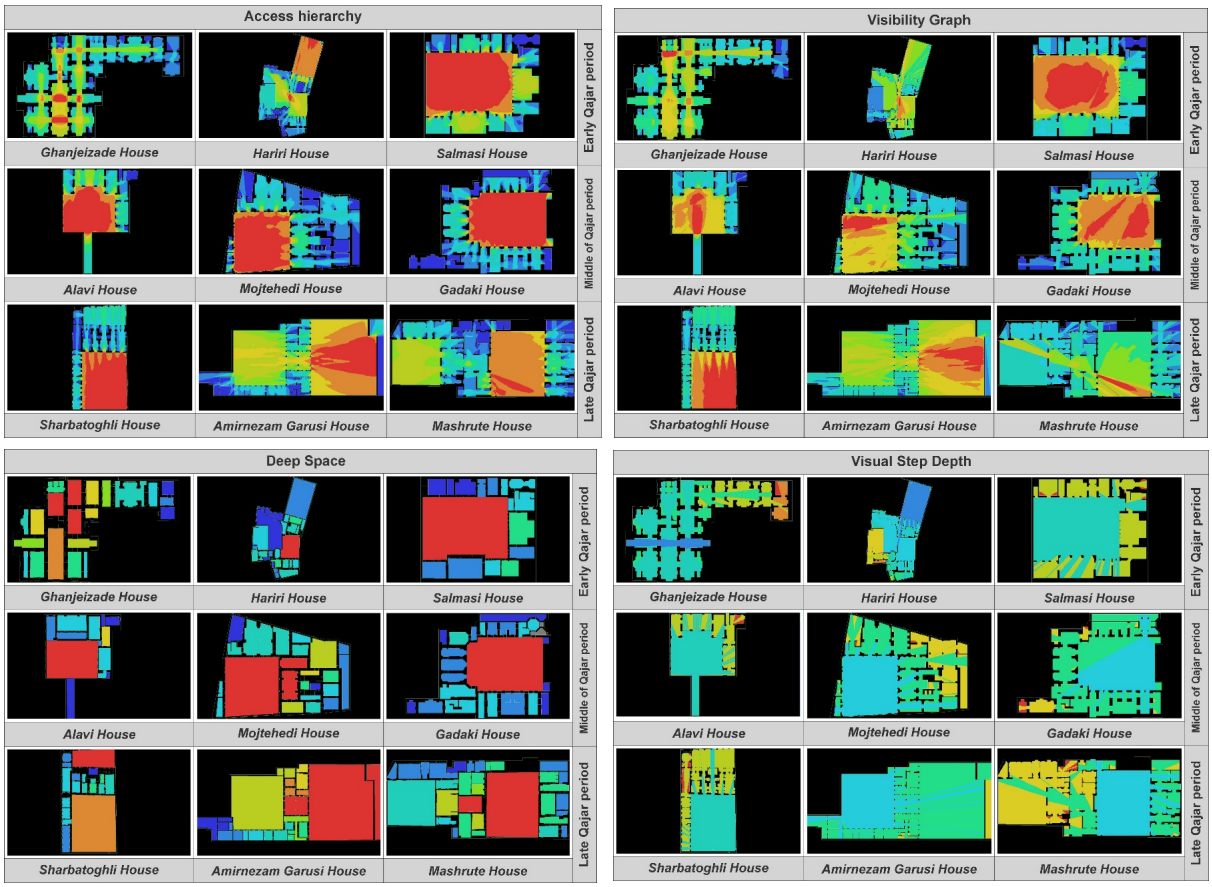


Figure 8: Analysing space syntax; visibility indicato rs from a point, depth of space, visibility graph and space hierarchy

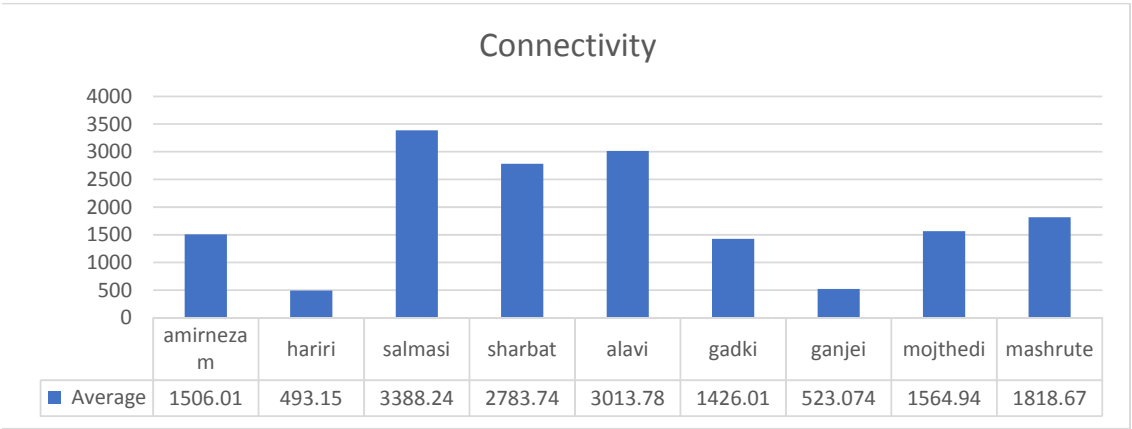
In the findings related to software analysis, it is well possible to observe the behavior of each plan towards the type of space organization it has. (Tab 2)

		Ave	Min	Max	Std Dev	Count
Amirnezam Garusi	Connectivity	1506.01	5	2405	674.761	3946
	Visual Integration [HH]	14.9947	2.27063	23.0176	4.2202	3946
	Visual Step Depth	1.65484	0	5	0.547281	3946
Hariri	Connectivity	493.15	2	959	288.096	3038
	Visual Integration [HH]	4.59266	1.60147	7.77917	1.25227	3038
	Visual Step Depth	2.8337	0	8	1.6869	3038
Salmasi	Connectivity	3388.24	14	5014	1582068	6778
	Visual Integration [HH]	23.2725	3.65156	36.2766	9.47794	6778
	Visual Step Depth	1.34273	0	4	0.527056	6778
Sharbatoghli	Connectivity	2783.74	16	4539	1580.81	7463
	Visual Integration [HH]	17.0689	3.90532	25.0417	6.06258	7463
	Visual Step Depth	1.43079	0	4	0.538234	7463

		Ave	Min	Max	Std Dev	Count
Alavi	Connectivity	3013.78	34	4607	1364.1	6344
	Visual Integration [HH]	21.5248	5.55588	34.8862	8.22719	6344
	Visual Step Depth	1.29697	0	3	0.482431	6344
Gadaki	Connectivity	1426.01	13	2632	1003.18	4779
	Visual Integration [HH]	12.4226	3.47425	1901684	4.53635	4779
	Visual Step Depth	1.60452	0	4	0.68837	4779
Ganjeizade	Connectivity	523.074	14	1154	256.64	4869
	Visual Integration [HH]	6.14963	2.44875	10.2327	1.56603	4869
	Visual Step Depth	2.61245	0	6	1.0562	4869
Mojtehedi	Connectivity	1564.94	20	3108	912.508	7516
	Visual Integration [HH]	8.82985	3.60822	16.5383	2.22071	7516
	Visual Step Depth	2.2335	0	4	0.91038	7516
Mashrute	Connectivity	1818.67	18	3862	1370.95	8241
	Visual Integration [HH]	10.23	3.41056	17.2743	3.45789	8241
	Visual Step Depth	1.76423	0	4	0.763893	8241

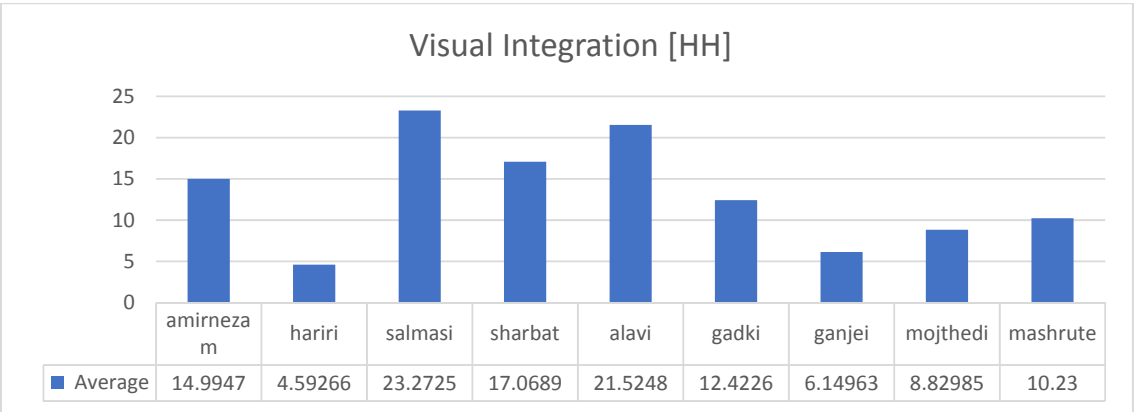
Table 2: Statistical analysis results of quantitative findings from software evaluation output

Connectivity					
	Average	min	max	Std Dev	Count
Amirnezam Garusi	1506.01	5	2405	674.761	3946
Hariri	493.15	2	959	288.096	3038
Salmasi	3388.24	14	5014	1582068	6778
Sharbatoghli	2783.74	16	4539	1580.81	7463
Alavi	3013.78	34	4607	1364.1	6344
Gadaki	1426.01	13	2632	1003.18	4779
Ganjeizade	523.074	14	1154	256.64	4869
Mojtehedi	1564.94	20	3108	912.508	7516
Mashrute	1818.67	18	3862	1370.95	8241



Visual Integration [HH]						
	Average	min	max	Std Dev	Count	
Amirnezam Garusi	14.9947	2.27063	23.0176	4.2202	3946	
Hariri	4.59266	1.60147	7.77917	1.25227	3038	
Salmasi	23.2725	3.65156	36.2766	9.47794	6778	
Sharbatoghli	17.0689	3.90532	25.0417	6.06258	7463	
Alavi	21.5248	5.55588	34.8862	8.22719	6344	
Gadaki	12.4226	3.47425	1901684	4.53635	4779	
Ganjeizade	6.14963	2.44875	10.2327	1.56603	4869	
Mojtehedi	8.82985	3.60822	16.5383	2.22071	7516	
Mashrute	10.23	3.41056	17.2743	3.45789	8241	

Figure 9 and Table 3: Analysis and Results of Correlation Index in Qajar Houses



Visual Step Depth					
	Average	min	max	Std Dev	Count
Amirnezam Garusi	1.65484	0	5	0.547281	3946
Hariri	2.8337	0	8	1.6869	3038
Salmasi	1.34273	0	4	0.527056	6778
Sharbatoghli	1.43079	0	4	0.538234	7463
Alavi	1.29697	0	3	0.482431	6344
Gadaki	1.60452	0	4	0.68837	4779
Ganjeizade	2.61245	0	6	1.0562	4869
Mojtehedi	2.2335	0	4	0.91038	7516
Mashrute	1.76423	0	4	0.763893	8241

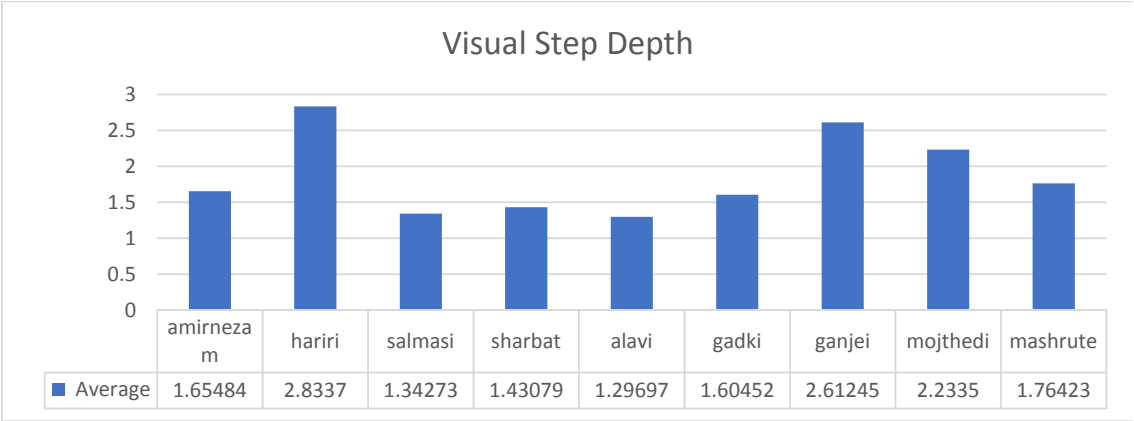


Figure 10 and Table 4: Analysis and Results of Depth of Space Index in Qajar Houses

RESULTS AND CONCLUSION

According to the results of software environment analysis for each of the mentioned historical houses in three important periods of Qajar era, the space organization can be explained by using justification diagrams. Therefore, analyzing each of the indicators in the software environment needs to be adapted to the proposed research indicators that can be coordinated in a calibration process to enter the evaluation phase Finally the following can be presented as a conclusion:

The results and scores obtained from the evaluation of the proposed indicators in the concept of confidentiality based on the principle of transparency in the architecture of the selected houses have the highest score in the relationship index in the concept of spatial hierarchy of Salmasi and Alavi, which is clearly the degree of repetition and continuity of the spaces of the house according to the viewer's view. In the visual continuity index, the visual graph is also the highest score related to the house. Salmasi has subsequently taken more steps in the transition from public to specific spaces, which include 4 public spaces (exterior), semi-public spaces (ropes, alcoves, earrings, etc.), semi-private space (indoor and adjacent rooms, kitchens, etc.) and private space (Bahar Band, family members' room, moonlight, etc.), while the lowest level of this index belongs to Hariri House. In the depth of space index and the concept of permeability, Hariri House and Ganjeizadeh had the highest score. Therefore, based on the obtained results, a certain ranking (without considering the weight of the indices, which in this study is considered to be scaleless and identical).

Table 5: Scoring the selected indicators of historical houses based on the concept of confidentiality in the principle of transparency in three periods of early, mid and late Qajar

House name	Visual Continuity Index Score	Metyaz Permeability Index	Relevance Index Score
Gadaki	5	3	4
Salmasi	3	2	3
Amirnezam Garusi	4	4	2
Hariri	3	2	3
Mojtehedi	4	4	3
Ganjeizade	2	3	5
Mashrute	4	3	3
Alavi	4	1	4
Sharbatoghli	5	3	3

As a summing up, a table corresponding to the privileges of each of the houses can be explained by the separation and aggregation of the three periods, which can be clearly acknowledged by assuming generalization to the whole behavior of transparency in the architecture of buildings:

Table 3: Ranking of Historical Houses Based on the Concept of Privacy in the Principle of Transparency in Three Periods of Early, Mid and Late Qajar

Home Name	Historical period	Mass pattern type	The average score of the set of studied indicators " Confidentiality according to the concept of transparency in the architecture of historic houses in Tabriz"	Rating
Salmasi	Early Qajar Period	U shape	2.66	5
Gadaki	Mid Qajar Period	U shape	4	1
Garusi	Early Qajar Period	L Shape	3.33	3
Hariri	Early Qajar Period	L Shape II Shape	2.66	5
Mojtehedi	Late Qajar Period	L Shape	3.66	2
Ganjeizade	Late Qajar Period	L Shape	3.33	3
Mashrute	Late Qajar Period	L Shape U shape	3.33	3
Alavi	Mid Qajar Period	L Shape	3	4
Sharbatoghli	Mid Qajar Period	L Shape	3.66	2

Table 6: Ranking of Historical Periods Based on the Concept of Confidentiality in the Principle of Transparency in Three Periods of Early, Mid and Late Qajar

Historical period	Average Score of Qajar Triple Periods according to " Confidentiality Regarding the Concept of Transparency in the Architecture of Historic Houses in Tabriz"	Rank based on transparency
Early Qajar Period	2.88	3
Mid Qajar Period	3.55	1
Late Qajar Period	3.44	1

Consequently, according to the results of the mid-Qajar period, according to the studied samples, the highest degree of confidentiality in the evolution of transparency in the architecture of Qajar houses and this trend was present in the early Qajar period. Of course, it should be acknowledged that this research can have different results if it includes the number of samples as well as diverse climate and culture, but the scope of the research is in culture. The climate of the Tabriz area and the number of nine houses is selective. In the future research, the number of samples and climatic diversity can be considered in the research.

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