Different Ways of Organizing Space Based on the Architectural Models of Traditional Houses: A New Approach to Designing Modern Houses: (Case Study: Qazvin's Traditional Houses)

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Abstract

The architecture of houses, design and management are a collection of behaviors that are realized in space. The recognition of traditional houses requires having space in possession; that is to say, seeing the building and seeking the key to appreciating it. On the one hand, it refers to the different dimensions and features of the building and on the other, it represents the main objectives of life and the respective spiritual content in the builders' lifestyles. Employing the typological method, this article has attempted to arrive at an applied appreciation of criteria for organizing space in traditional houses in Qazvin. In the theoretical section, this study made use of a qualitative and library-based approach and an analytical-descriptive method for the theoretical framework. In the applied section, however, this research employed a library-based approach as well as an experimental-descriptive method to observe and assess the documents attributed to these old houses. The results of the present study indicate that with respect to spatial patterns, there are three types of space: open, closed and covered. They are shaped when combined with the three components of roof, ceiling and wall depending on the location, weather, temperature and the area of the yard.

Keywords: Organizing Space, Qazvin Traditional Houses, Spatial Pattern, Spatial Model, Typology

1. Introduction

One of the most important issues in Iranian Architecture is the house which has not been duly addressed in accordance with the current requirements of society. One solution is the recognition of the past architecture and comparing it with the contemporary one. In addition, considering the developments which have taken place in the urban texture, the historical houses are seriously vulnerable to destruction. However, if the concepts of entities and the existence of traditional houses are comprehensively recognized on the basis of all needs of an Iranian individual as well as the area of construction, these houses can set an example to achieve a proper model for descent Iranian housing. This is because the identification of the concept of each phenomenon relies upon the recognition of the general fundamental principles based on philosophical dimensions and understanding of the nature of that phenomenon irrespective of time and place. Besides, the recognition of the concept of the existence of a phenomenon is related to the specific principles formed in the process of historical development. A proper understanding of the general and specific principles by means of senses, imagination, and intuition will affect the true cognition of the nature and form of the phenomenon. As Habibi (2001, p. 5) commented if a new system is based on principles and concepts arising from the recognition of entities as well as the existence of the building, it will bear regularity and coordination; otherwise, the system will collapse.

Historical research can be challenging requiring a heightened sense of self-awareness, and astute judgement. (Jacobs, 2001, p. 134). If the true status of the architecture, design and management of houses are taken into consideration for the sake of managing the behavior which is conducted in that space, it will be required to regard space as the main factor in the architecture of the house. This will be referred to as the possession of space which suggests the ability to see the building and reach a comprehensive understanding of it. Memarian (2008, p. 243) discusses different aspects of space and its features and how it affects people. From the Islamic perspective, the concept of space has a theoretical relationship with humans which encompasses the quantitative features in different levels of existence and space, establishing a connection between man and space. In addition, there is one more important and fundamental aspect in the relationship with humans which is known as "visible space". It is the source of life and spiritual growth. Therefore, one aspect of space is the physical one with mathematical attributes. This is just an introduction and a means to building and achieving the content and value feature of space (Noghrekar, 2012, p. 100).

What can be stressed in the content and value content of space is paying attention to the main objective of life. One of the ways for understanding space is through the identification of social and cultural issues in architecture. The established space is a very important source for understanding cultural and social relationships which can be linked to historical origins. Thus, this article studies the pattern of organizing space for understanding the relationship between the designed space and its consequent cultural dimensions (Nopadon, 2001).

In organizing space, there is one principle which is always taken into consideration and that is the principle of initial center which plays a significant role in the occurrence of social and cultural events. Space is formed by itself in the process of social, cultural and economic processes (Rismanchian& Bell, 2010, p. 50).
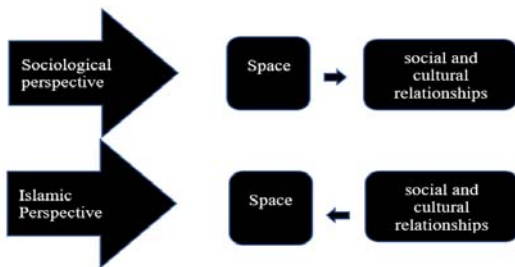

Fig. 1. Scholars' views on social and cultural relationships with space.

In identifying the content of the past architectureit is, however, possible to see that they are interrelated and affect each other. Nevertheless, the Islamic notion regards the organization and regulation of space as channeling all daily life activities to achieve the aim,which is the special meaning of life. It also involves arranging all activities in the right order (Noghrekar, 2011, p. 174).

For this cause, the recognition of space is of great importance in the process of the identification of the social, cultural and economic principles of the past and this helps to determine the main criteria for the formation of space through different models and methods of space strengthening (Figure 1).

Accordingly, this research project aims to investigate the spatial organization of Iranian houses in order to compile certain design criteria for organizing space based on Iranian culture, derived in the course of some thousand years from a sophisticated combination of features such as land, society, and culture. As a result, using the methods and patterns of the organization of space, this article introduces the architectural model of historical houses in Qazvin, Iran. Qazvin City is one of the most paramount centers of Iranian architecture and due to the number of historically valuable houses which survived, it is essential to conduct an investigation into the spatial models employed there.

To identify the methods and spatial patterns, this article made use of topology. It is the basis of thinking for classifying, processing and thinking about a variety of phenomena which can stand together. This makes it possible to identify similarities and differences in different territories and times and when combined with human science, it will lead to spatial mixtures appropriate

for cultures and lifestyles which in turn compounded with architectural semantics, will be easy to discover spatial instances (Haeri-Mazandarani et al., 2014, p.134).

In this research, in order to consciously organize Iranian space on the basis of lifestyle (i.e. living) and semantic order (i.e. culture) and following typological knowledge,the study focuses on 18 historical houses in Qazvin in terms of 15 attributes which are as follows:
1. Types of spatial patterns; 2. Types of territories and interval spaces; 3. Types of methods for the extension of space; 4. Types of sky lines; 5. Types of multi-side spaces; 6. Types of exposure to light; 7. Types of height; 8. Types of walls; 9. Types of wall models; 10. Types of interior and exterior walls; 11. Types of Sharmi 12. Types of entrance spaces; 13. Types of porches; 14. Types of closed spaces; and 15. Types of proximity to closed spaces.

In accordance to the 15 typological attributes, the inside of the historical houses can be categorized in two respects: method and pattern. Methods include definition, combination, display of space. And the spatial patterns or models are in open, closed and covered contexts. This is illustrated in table1.and discussed in the Section of Analysis.

The current research makes an investigation into the architecture of houses as one of the most important representations of human lifestyle. It is assumed that what makes a house is the design and management of space and even the behavior of the people living in it,which is controlled by space. The formation of space is rooted in different factors the main core of which are organizing and channeling all daily activities to achieve the aim which is the special meaning of life. For this cause, the typological method of studying Qazvin's historical houses is to identify different lifestyles in order to detect the main criteria for organizing space as an introduction to the cognition of the objectives and meanings of space formation. This research aims to answer the following questions:
1. What are the spatial and physical elements in the space organization of traditional houses?
2. How is space organized in Qazvin's traditional houses?
3. What kind of lifestyle is represented by the organization of space in Qazvin's traditional houses?
4. To which main criteria and meaning of space formation does lifestyle in traditional houses refer?

2. Methodology

For the present case study, this research employs a combinational method (Groat& Wang, 2009, p. 375). In the theoretical section, a qualitative approach is employed by using documents and an analytic-descriptive design is used to present the theoretical framework. In the practical section, an approach is used based on library research, observations, documents and maps, and classification of Qazvin's traditional houses. Therefore, an experimental-descriptive method (comparative study) has been used for evaluation. Finally, by means of logical reasoning, the findings of the study were analyzed and presented in tables with respect to the framework and purpose in this research.

Based on the subject and purpose, the study first presents the research background and gives a formal classification of Qazvin's traditional houses and then analyzes and interprets the results following the framework of the research from a typological perspective.

3. Background of the Sudy

Qazvin Province comprises less than one percent of Iran. Being the center of the province, the historical City of Qazvin has a dense texture with an organic shape. The buildings are founded southwards. Based on the census of 1910/11, there were 16 quarters in the city formed at the time of the dynasty of Seljuks. HamdollahMostoofi is quoted as saying that this city had seven entrance gates which protected the city (Mojabi, 2009, p. 122). Unfortunately, the ancient city faced a vast destruction twice: The first time was when the capital was moved to Isfahan at the time of the Safavid dynasty and lasted there until NaserdinShah Qajar and the second time was from the beginning of Pahlavi dynasty until the Islamic Revolution in 1979. The consequences were the disruption of the cultural-social order in the quarters and districts. The destruction of residential areas and inappropriate constructions around the old city devalued the concepts of neighborhood, quarters and finally the main texture of the old city. Likewise, single residential buildings which survived in the old city are in immediate need for repair.

3.1. Classification of the Pattern of Qazvin's Houses

To conduct this case study, eighteen houses in Qazvin were classified. Considering the fact that both types of Iranian classification of houses i.e. interior (i.e. with a yard) and exterior (i.e. with a garden) are available in Qazvin, the houses were categorized accordingly. As the yard played a significant role in the formation of the interior houses, the buildings were classified as having one or two yards.

Depending on how the volume of the house is located in relation to the yard, the single-yard houses fall in five categories: 3-sided like a U, two sided like an L, parallel two-sided, one-sided and four-sided (See table 1). After the houses were classified, the interior format was considered for thorough examination.

4. The Concept of House and Spatial Organization

The Iranian Dehkhoda Dictionary (2015) defines khaneh (i.e. house in Persian) as a place where a person lives; dwelling; and rest place. What is referred to in this source is not a person as an individual with a physical entity but one with all individual, social and human characteristics of life.

Researchers and scholars have offered different definitions for the concept of the house and they each have clarified one aspect. In defining the house, Memarian (2013, 154) quoted Pirniaas viewing it as a place where the dwellers do not feel any discomfort and the inner part of the house is a place where the family lives and so it should be full of variety so that the members will not feel bored. According to Moore et al. (1974, p. 50) a house is the center of the world for its inhabitants and the most distinctive building for the district where it is located.

Norberg-Shulz(2013) believes that immediate acquaintance with the world takes place in the house. It is a place where there is no need to select a road and seek one's goal. The world is available in and around a house. It can be claimed that a house is a place where daily routines start and last as long as we do. Humans have not found their roles in a house. Rather, a house is part of a collection of interactive actions which happen in the world and are based on mutual values.

Any cooperation requires choosing a goal and leaving home; and when the mission is completed, there is a return to one's home to restore one's identity. As a result, individual identity is intertwined with private dwelling (Norberg-Shulz, 2013, p. 141).

Confirming Norberg-Shulz's definition, Rapoport views the house firstly as an institution which has been formed in line with a set of complicated aims. It is not merely a building. To him, building a house is a cultural phenomenon and its shape, organization and spatial regularity are extremely affected by cultural environment. For this reason, in the prehistoric time, a house was more than a shelter for the primitive human. From the very beginning, the function of the house was by far more than a material concept for consumption or application. Thus, the foundation and building of the house as well as residence in it were accompanied by religious rituals. If the passive role of the house is to provide shelter, then its active function will be to create a setting which can best match with the lifestyle of a certain group of people. In other words, the aim and function of the house is to create a social unit (Rapoport, 2013, p. 82). As long as it represents the general state of humans, the principles of organizing space affect the relationships between people (Kamalipoor et al., 2012, p. 60).
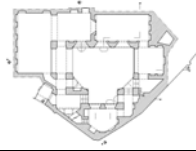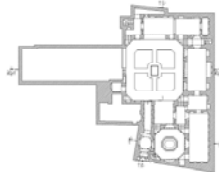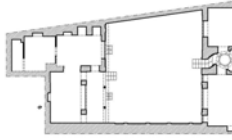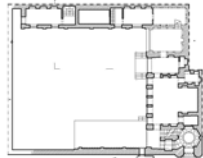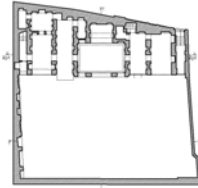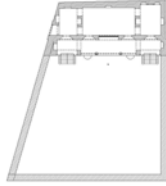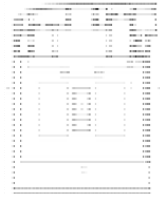
Consequently, it can be said that the house or any habitat represents the material lifestyle. It means that the style and type of life produce their symbolic essence (Rapoport, 2013, p. 84). Hence, by analyzing the organization of house space, it will be possible to detect the lifestyles that serve as the organizing factor for the style of life. In fact, they reveal cultural, ethical, ideological and personal characteristics of a nation.
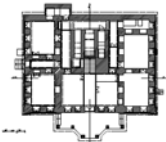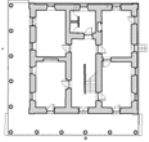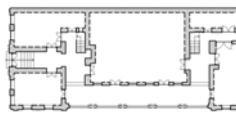
In the traditional society of Iran, the family is one of the most fundamental units and the house is the center of solidarity for the family. For this reason, the house was designed in such a way that it would stand away from the outside setting. For the construction of the house, the basic values were taken into account and in such a society that was strictly reliant on the family, the concept of the house is by far more extensive than other private places. As sacred integrity, the house dwellers hide themselves from any strangers and unexpected interferences. For this reason, the yard is always interior and is, in fact, the heart of the house. The yard provides light and air for the rooms and it is the interior space of the house. The traditional house yard was surrounded by tall walls, encompassing the whole house and leaving the house with one entrance. Therefore, any one that entered the house had to go through passages each of which had offered physical and

spiritual experience. Hence, this structure preserved one's personal integrity from the outside area (Kateb, 2005, 161).

Table 1
Classification and the formal features of Qazvin's houses.

Classification of interior houses	One-yard houses	four-sided	Bazazha	Sadeghi	Zanjanchi
		three sided	MahmoodBeheshti	Mirianzadeh	Rezai
		parallel two sided	Azizi	JalilArazi	KarbalaiValiha
		L two-sided	Ghaemi	Moloodi	Valiha
		one-sided	Imamjomeh (Shahidi)	Raoofi	Zarnegar
	Houses with yards or more		Assadi	Behroozi	Mortazaviha
Exterior Classification	House with a garden		Amir Kabir	Daie	Hosseiniyeh Beheshti

The study of Iranian houses can represent a close relation with lifestyle and organization of space. The most important feature of space is related to different spaces assigned to personal integrity. These spaces range from totally private to public spaces which were allocated in the house and resulted in the formation of different spaces.In detecting the spatial organization of the traditional house, it is necessary to typologically look at different methods and patterns of space formation. By methods, it is meant the ways that the community chose, at a certain time and place, to enable the space to interact with land, history, capabilities, setting and lifestyle. The spatial pattern, however, includes forms, implications and approaches which have already been tested and passed on to the next generations (Haeri-Mazandarani, 2009, p. 98).

5. Procedures for the Formation of Space

The methods for the formation of space are as follows: spatial types such as definition of space, combination of space and the method of distinguishing types of space and architectural elements (wall, roof and floor).

5.1.Procedures for the definition of space

The methods for the definition of space can determine the role of architectural elements in the presentation of space (Haeri-Mazandarani, 2009, p. 98). The spatial organization in Iranian architecture can be realized in three aspects: half-covered, open and covered (Memarian, 2008, p. 245). In combination with each other, these three spaces are realized in the spatial organization of the house at a certain degree of covering, size and position in such a way that it leaves no room vacant.

The open space type includes walls, and the ground (of the yard); the half-covered space involves the floor and the walls, or the walls and the ceiling (of the porch); and the covered space includes the floor, the ceiling, and the walls (of the room). These can provide spatial variety leading to the perfection of the space. Each of these spaces is complemented by two other spaces: the open space is firstly complemented by the half-covered space and then by the covered space. On the other hand, the half-covered space is completed by the open and closed spaces while the closed space is supplemented by the open and covered spaces (See table 2, Column 1).

5.2. Procedures for the Combination of Space

The combination of spaces is referred to as the arrangement of spaces beside each other. In addition to having a definition of its own, each space earns a new definition when combined with others and produces a spatial extension. The spaces (such as the door and the windows) that lie between other spaces establish a spatial link (See table 2, Column 2).
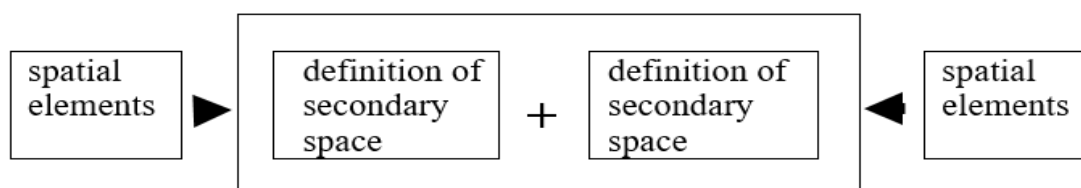

Fig. 2. Flexibility of traditional houses: making a tertiary space; a new space in combination with two independent spaces.

The spatial extension with unlimited space is created by light, and view extensions and the spatial extension is part of the spaces. The open space enables the combination with the above space; the half-covered space facilitates the combination with the area of the roof of the closed space and this is designed in such a way that it can combine with the above area and so the closed space is connected to the other space via the windows (Figure2). By establishing spatial extension and combining all of the three spaces with each other, a spatial whole is created to allow movement from the lowest level of the house to the highest one: from the basement to the yard, from the yard to the patio, from the patio to the upstairs and from the upstairs to the Mahtabi (i.e. uncovered area) and from the Mahtabi to the roof and from there to the sky (See table 2, Column 3).

5.3. Differentiation Criteria

The distinction of space is made by architectural elements such as color, light, materials, height variation, filled or empty bodies and the patterns used on these elements. This method helps the architect to design and execute any space on one's desires (See table 3, Column 1,2).

5.4. Architectural Elements (wall, ceiling and floor) and Method of Strengthening the Space

5.4.1. The wall

In the Iranian architecture, the wall is used not only to separate spaces and provide shelter and security, but it is also used to define levels of spaces and areas in the house. The wall is also used to give a view to the house, extending space and providing light to the closed space. It controls the view of the open space and meets the general needs of lifestyle (See table 3, Column 3). Variety is added to the space by building a shelf and a "Raf" (i.e. a shelf about two meters high) in the wall, and by building a platform as well as Fakhr walls (i.e sieve-like walls) between the doorway and the yard, and between the empty and filled spaces (See table 3, Column 4).

5.4.2. The floor

In the Iranian house, the floor reminds of nature and gardens (Ardalan&Bakhtiar, 2011, 65). By creating a difference in the level, the open space can lead to new definitions for different spaces and becomes more complicated through different styles in brick-laying,

attendance to the garden and planting flowers. Through a difference between the height and the ground of the yard and how the ground is paved in the half-covered and covered spaces, a distinction stands out (Haeri-Mazandarani et al., 2009, p.110).

5.4.3. The Ceiling

The ceiling is the sky in miniature. The cradle-like dome can move in a 3-D space (Ardalan&Bakhtiar, 2011, 69). and different images of the sun, moon, stars and mirror work add to its attractions. In the covered areas, it is the job of the ceiling to provide light and ventilation, adding to the variety of the space.

6. Patterns for the Formation of Space

The identification of traditional architecture is done on the basis of three patterns of open space, closed space and covered space.

Except for the yard which is the most important open space in the house, other open spaces include Soffe (i.e. a raised platform made of stone), Sharmi, Mahtabi and a roofall of which create the lowest to the highest levels, respectively.

6.1.1. The Yard

As defined in Dehkhoda Dictionary, the yard is referred to as any place that is surrounded by a wall. In the Iranian house, the yard has many applications some of which are given below:

Sign of possession; 2. Coordination between different parts of the house; 3. Connection between different spaces; 4. Creation of a green area; 5. Artificial channel for the passage of air; 6. Important element in organizing the plot of the house; and 7. Safe place for relaxation and entertainment of the family members. Houses with a yard enjoy at least one of these applications (Memarian, 2002, p. 15)
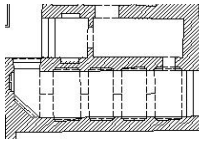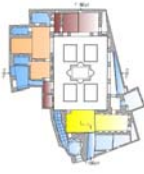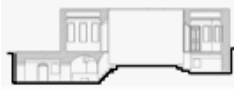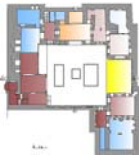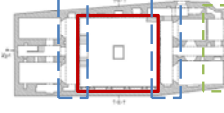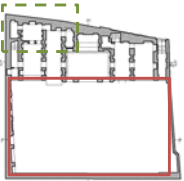
6.1. Patterns of Open Spaces

Table 2

Typology of different spatial patterns in Qazvin's traditional houses(1)

Classification		Typological components			
		Light and height and different types of interior and exterior bodies	Spatial extension, light and view	Different territories and visual spaces	Definition of different spatial models: open, closed and covered
Classification of interior houses	One-yard houses · four-sided	Zanjanchi	Zanjanchi	Zanjanchi	Bazazha
	One-yard houses · three sided	Mirianzadeh	MahmoodBeheshti	Mirianzadeh	Mirianzadeh
	One-yard houses · two-sided	Azizi	JalilArazi	JalilArazi	KarbalaiValiha

L two sided			
Ghaemi	Moloodi	Valiha	Valiha
one-sided			
Imamjomeh (Shahidi)	Raoofi	Imamjomeh (Shahidi)	Zarnegar
Houses with yards or more			
Assadi	Behroozi	Mortazaviha	Mortazaviha

Legends			
	privacy and visual spaces	privacy area for a short rest	covered spaces
	open spaces: yard	open spaces: yard	
	waiting space for a long rest	waiting space for a long rest	open spaces
		light andview extension	
	Combinatin style and extension	Combinatin style and extension	closed spaces

Table 3
Typology of different spatial patterns in Qazvin's traditional houses(2)

Classification		Typological components			
		Role of bodies in the definition of spatial types	Different walls	Different multi-passage spaces	Different sky lines
Classification of interior houses	One-yard houses	**four-sided** Sadeghi	Sadeghi	Bazazha	Zanjanchi
		three sided Mirianzadeh	Mirianzadeh	Rezai	Mirianzadeh
		two-sided JalilArazi	JalilArazi	Azizi	Azizi
		L two sided Valiha	Valiha	Valiha	Ghaemi
		one-sided Imamjomeh (Shahidi)	Zarnegar	Zarnegar	Zarnegar
	Houses with yards or more				

Legends		Mortazaviha	Behroozi		Behroozi	Mortazaviha
	□ (red)	reaction to open space		(blue)		without exterior side
	⌐ ⌐ (green dashed)	reaction to closed space		(dark green)		one-sided spaces
	⌐ ⌐ (blue dashed)	reaction to covered space		(yellow)		two-sided spaces
				(light green)		three-sided spaces

The plant-covered yards usually have a small pool and provide a unique gorgeous view from the inside of the rooms and from other places such as the hall or the porch. The yard is the most valuable space in organizing the plot of the house and its design is based on the decisions of the family members and the importance that they place in allocating different places. The yard is a place for holding different ceremonies such as religious rituals, wedding ceremonies, and congregation of ethnic groups. It is usually four-sided with a small pool in the center. Along the yard lie two glorifying symmetric rows of flowers. The organization of the spaces surrounded by the yard was in such a way that it was suitable for different functions of the rooms with the changes in seasons.

Depending on the movement of the sun and light directions, the architect chooses different places for certain applications. The place which receives the highest amount of sunlight in winter will be in shadow in summer. The west part of the yard is mostly chosen for winter cold days (Memarian, 2002, p. 16).

The arrangement of the yard in the traditional houses was in harmony with the physical and spiritual necessities. This need determined the connection between the private and general sections of the house, leading to the formation of different yards such as Narenjestan, exterior yard (for the males) and interior yard (for the females).

6.1.2. The Soffe Model

The Soffe or spring bed is an open area which is surrounded on three sides and is located among several covered rooms and passages. If the doors are opened, windows would join the room space and create spatial extension. The dimension of the space was designed to the size of a family who could sleep there in spring and summer and watch the sky. The Soffe stood some steps above the yard.

6.1.3. The Sharmi Model

The Sharmi is an open space which is 6 meters (as high as a floor) above the yard and was used as a passage to enter other parts of the house. Therefore, entrance to the house was made one floor above the yard and to reach other parts of the house, it would be necessary to go through an open corridor from which all parts of the house could be viewed (Haeri-Mazandarani, 2009, p.124). (See table 4, Column 1).

6.1.4 The Mahtabi Model

The Mahtabi is an open space surrounded on three sides not by rooms, but by walls. On the fourth side lies a wall. It is higher than Soffe and lower than the roof. It is a space which can be reached by means of a connecting staircase from the yard to the roof. The Mahtabi is used by the family members in summer nights for sleep and privacy.

6.1.5. The Roof Model

The roof is an independent open space which is made up of different interrelated levels and its surrounding sides are preserved by a dome or short walls. Like the Mahtabi, the roof is used for privacy and sleep in summer nights. In the old texture of cities, the roofs of several houses were connected to each other, which created a route for the people to socialize with the neighbors and the residents of the area.

6.2. The Half-covered Spatial Model

The half-covered space is the space which is between the open and closed spaces and allows light, views and socialization between the members of the houses. These spaces include the entrance and threshold of the house, the porch, the covered space, the pool, Karabsi and the doorway.

6.2.1. Models for Entrance and Threshold

The house entrance employs its own type of architecture to meet the goals and it preserves the traditions of the house. The entrance space is one part of the consecutive spaces connected to each other, Upon entering the building, the door and the front of the door are considered both as barriers to the houses and a venue to welcome less familiar guests. For the new comers, this space serves as an anteroom where the house dwellers exchange some of their common greetings and passersby occasionally stop for a while.

The entrance is a connection between the house and the street as well as the quarter. It is a place which is decorated by the house dwellers who would like to show

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off their taste and social status. In designing the entrance, there are some principles which should be taken into consideration:

The territory of the house should be preserved and permission should be granted in a gradual process. The arrival procedure should be indicative of humbleness and entry should be indirectly monitored. The contact point of the house in the quarter should be distinctive (Kateb, 2005, p. 165).

The entrance encompasses the counter space, the threshold, the doorway, and the passage. At the beginning of the house there are two platforms (known as Pakhoreh) under the threshold. This is a sitting place especially for those who want to meet the landlord and wish not to enter the house entrance. What is outstanding about all houses is the threshold, because the walls around the house are plain and look similar. The top of the threshold of the house is called Koneh (3). The ratio of the width of the threshold to the indented counter is usually 2:1. After this indented part, there are the door and the threshold through which one should pass to enter the yard (Memarian, 2013, p. 143) (See table 4, Column 2).

6.2.2. The Tattern of the Porch

The most well-known half-covered space of the house is the porch which casts shadows and makes a connection with the green views imparting various visual experiences. One side of the porch is open and overlooks the yard, and the other two sides are half-closed while the fourth side is closed. The closed side is usually connected to the Shahneshin room (i.e. the most important room where the elders and guests sit) and when the doors and windows are opened, this connection is fully established. The other two sides are connected to the other spaces by means of passages and arches (See table 4, Column 3).

6.3. The pattern of the covered space

In some houses, the covered structure is built on the basis of extension and the variety of the porch including different types of Pishani (i.e. the first-floor window), porches, domes, and small half-roofed yards. The presence of different lights and the movements of the lights add to the spatial attractions.

6.3.1. The Pattern of House Ppools

A house pool is a small place which keeps water in the top house, the yard and the basement. By being placed under the dome, it provides coolness, humidity, and reflection of pictures

6.3.2. The Pattern of Karyas

Karyas is a covered space which looks over the yard and the open spaces. It is the space at beginning of the counter, the ante entrance, the rooms and the halls.

6.3.3. The Doorway

Just after the entrance, there lies the doorway which is often octagonal or half of or more than an octagon and most of the time four sided. The doorway has a low ceiling and there is a light hole (sun roof) in the dome. This place allows access to the interior corridors of the house. The size of the door depends on the wealth of the owner. In big houses, the interior rooms and the servant rooms had access to the doorway and was often divided into two parts to separate the male and female passages. The doorway is the first space of the house where one first enters and rests. This space and its winding passages leading to the interior and exterior yards blocks strangers' sight to the sacred territory of the family. The spaces were divided to create a space for waiting and silence. Inside the doorway were different elements such as a platform, a lamp stand at the doorway and a staircase by which to go to the Fervar (i.e. a room above the doorway) (Pirnia, 2008, as cited in Memarian (2013, 154).

6.4. The Patterns of the Closed Space

The closed space includes different elements such as the basement and some different rooms. What makes the closed space includes all spatial elements such as the floor, the ceiling and the wall (See table 4, Column 4,5).

6.4.1. The Basement Model

The basement is located under the house and gets it light and fresh air from the yard. For the construction of the basement, the following are taken into consideration:

- Size of the ground; steepness of land; productivity in terms of the shape of the soil of the yard; the type of the soil for the provision of different and pleasant temperatures; proximity to the underground and aqueductwater; connection with the yard (light and ventilation); top floor pressure; connection with the neighbors; the 3-D quantity and quality of the space of the basement; the direction of the sunlight; spaciousness and accommodation with regard to the family size; and provision of more private and more public areas for visual access.

Like the main rooms, the basement was higher than the half-public and half-private rooms. Basements in large houses had decorations such as wall paintings with a variety of delightful colors, ceramic and wood works and small doors. The construction of the basement made it possible to gain awareness about the properties of the soil and about when the basement was originally built. It became possible to measure the distance of the underground running water (e.g. aqueduct).

The basement was cool without the irreplaceable energy, and there was a direct relationship between the size of the basement (in cubic meter) and the area of the land, slope and needs of the landlord. Therefore, efficient space was available in the basement for storage (Haeri-Mazandarani, 2009, PP. 132, 134).

6.4.2. The Patterns of the Room

One of the interests of Iranians in constructing houses lies in designing a house which can establish visual connection between the rooms and the outside. In the past, the rooms opened to the hall and the rooms were named after the number of doors that opened to the hall; for example, three-door, five-door, and seven-door. No passage was allowed through these doors, though. One of these doors was always a tall window reaching the floor. The rooms were designed on the basis of golden ratio. The rooms that received light from across, had half of the

golden ratio and hence creating a shape similar to the area of the house. The light windows of the rooms were different depending on the type of the room. The rooms that received little sky light were equipped with a lantern at a height. The floor of the room was higher than the middle hall (yard). And going to the middle hall was facilitated by some adjacent corridors.

There was sometimes a windowless room (or a closet) at the end of some rooms. It was like the modern wardrobe. All rooms had a wall shelf to be reached by any one and a higher shelf (or Raf) to be reached only by the elders. Inside the wall was a hole where lamps were placed. Besides the three-door, five-door and seven-door rooms, there were other rooms like a big hall, a Tonbi (i.e. a hall not opening to the middle hall, but located in other rooms), aTezer or Techar (i.e. the summer sitting area in the house), a Shekamdarideh (i.e. a cross-shaped room for winter residence), and aTehrani room (located in the north side of the south for winter residence). It had two small rooms with a kitchen and a Barbandi (i.e. a barn for animals) and service areas such the kitchen and complementary areas like Takhtgah (i.e. a wide corridor on both ends of the big hall for relaxation in summer), aGooshvareh (i.e. a bedroom or a study room) and an Orssi (i.e. a room for entertainment).

Table 4
Typology of different spatial Patterns in Qazvin's traditional houses(3)

		Typological components				
Classification		Different proximities of closed spaces	Different closed spaces	Different multi-passage spaces	Different entrances	Different passing spaces around the yard (Sharmi)
Classification of interior houses	One-yard houses four-sided					
		Sadeghi	Sadeghi	Bazazha	Bazazha	Bazazha
	three sided					
		Rezai	Rezai	Mirianzadeh	Mirianzadeh	Mirianzadeh
	two-sided					
		JalilArazi	Azizi	JalilArazi	KarbalaiValiha	Azizi
	L two sided					

	Valiha	Valiha	Ghaemi	Ghaemi	Moloodi
one-sided					
	Shahidi	Shahidi	Zarnegar	Zarnegar	Zarnegar
Houses with yards or more					
	Mortazaviha	Behroozi	Behroozi	Behroozi	Behroozi

Legends

- open space
- closed space
- covered space
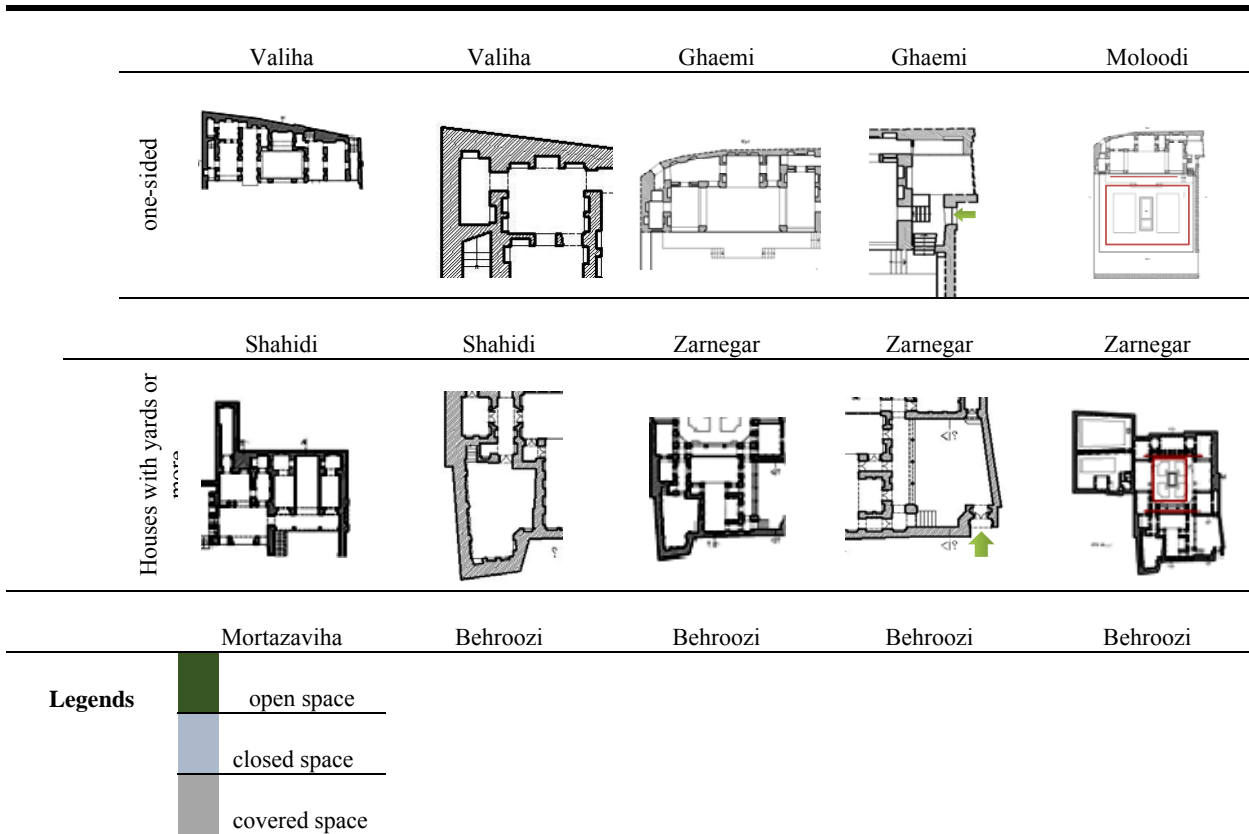
7. Results and Discussion

Based on the typological identification of 15 features and following the analysis conducted by means of the maps and documents of the traditional houses of Qazvin, theoretically speaking, the border of the traditional houses starts from the outside of the house. This territory gradually transforms from a public area to a private one. Passing through paths and roads insides the town, one can notice the only thing which is noteworthy: a lofty threshold with indented and bulging parts and its distinctive Amood (i.e. decorations) beside the relatively tall, plain walls. After passing through the threshold,the visitors are directed to different spaces of the house depending on their intimacy (friends, acquaintances, companions or relatives with the family members).

The traditional houses are founded on the basis of honor and privacy. For this reason, the spatial organization does not allow for immediate revelation of the house. It is necessary to enter the house first, move around and then go and access different spaces. Having gone through the threshold and the doorway, and having chosen the right path, one should go through a passage to get to the heart of the house, which is the yard.

The yard is like a roofless room in a house. It is surrounded on four sides. It occupies the most space in the house and is a place where the family mostly spends their daily, weekly, monthly and yearly activities.

As the distance from the yard increases, more spatial levels are found in Qazvin's traditional houses. The basis of its formation is human lifestyle which includes a variety of activities such as watching views and holding celebrations for public or private events.

The public territories include spaces such as Shahneshin, five-door room and a big hall with different facilities for parties and ceremonies. The nearest space to the yard is Jelosara (i.e. front room). After that is the space for the family which includes the interior yard, the access room, and the house pool. Here the family get together, or friends and close relatives do their personal activities. Finally, the private territory consists of the back room, the two-door room and the basement. They are located at the farthest parts for such activities as privacy, relaxation, sleep, study, and chat.

Depending on the spatial variety and in proportion to the yard, these three levelsare placed on the ground of the yard, around or below the basement and as far as up to the roof so that, in addition to the definition of the spatial organization of the house, it could increase variety and spatial conception of the house for more dynamism. (Figure 3)
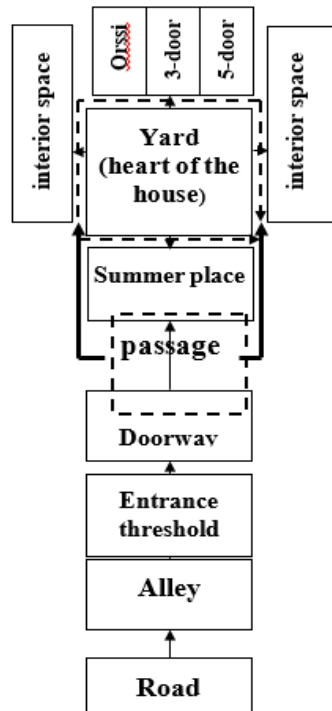
Fig. 3. Spatial and kinetic hierarchy in an Iranian house.

In addition to the spatial patterns, spatial methods play a significant role in organizing Qazvin's traditional houses. Their formation is based on open, closed and covered spaces with three constituent parts: wall, floor and ceiling. Depending on the position, the absence or presence of open spaces or the yard (the wall and the floor), the closed space or the room (the wall, the floor and the ceiling) and the half covered space or the porch (the floor, and the ceiling), these three elements make the oldest pattern for the organization of space (that is, a combination of the room, the porch and the yard). All these spaces can be inhabited separately or in combination and can provide comfort, air, and view, depending on public, private and in-between territories. Thus, the spatial organization of the traditional house makes one or two roofless rooms (the yard) and some roofed rooms and some rooms without walls (the porch). All these three spaces are defined,connected to and combined with each other to provide a living place for people. Being flexible, these spaces fulfill human needs with respect to lifestyle. Flexibility is the capability of the spaces to merge with the surrounding areas to create a larger space.

The private areas are connected to the public spaces via the middle spaces or by means of such elements as the windows, Orssi or curtains. New areas are created through connection between the three-door room and the back room, the two-door room and the Shahneshin and Gooshvareh and the house pool and the room, and the yard and the Shahneshin. The realization of these spaces is not possible without simultaneously considering both the interior and exterior territories and the degree of overlooking. This is the main criterion for the formation of space in the back house. Flexibility leads to variety and innovation and light absorbing features. These changes and developments are made possible on the basis of a connection between man and God, himself, others and nature.

8. Conclusion

The house members' needs, lifestyle, culture, materials, and technical skills all contribute to the final formation of traditional houses. The characteristics of the community and especially the behavior of the members play a significant role in the design and employment of spaces in the traditional houses. Man constantly establishes a practical and spiritual relationship with his surroundings. With his skillful craft, he creates such spatial qualities that possess meaning and essence beyond the routine use. This feature is realized in the organization of space and on the basis of the framework for the formation of spaces.

What is accountable for a society's lifestyle, culture and insight is that every organization of space is represented through different methods and patterns. Based on what was said, therefore, it will be possible to formulate the following main criteria for the formation of Qazvin's traditional houses as achieved in this research:

Table 5
The main criteria for the formation of Qazvin's traditional houses (case study).

Spatial components	Spatial organization	Findings
Methods	**Definition of space**	Three types of distinctive spaces (open, closed and covered) when combined with the three elements of roof, floor and wall form the spatial organization of the house. These three elements also make three main common patterns for the traditional houses including the open space: the yard (wall and roof), the closed space: room (floor, ceiling and wall), and the half-covered space: porch (floor and ceiling). All these three basic spaces contribute to the definition of space. In the design of the traditional houses, the open space is connected to the closed space by means of the middle space. These three spaces complement each other. The covered space is preserved by open and closed spaces, the open space by the covered and closed spaces and the closed space by the open and covered spaces. The whole space finds meaning on the basis of visibility of the space, orientation, and interior and exterior spatial distinctions. Th whole space is a result of the realization of several applications. These spaces also create public, private and middle spaces depending on the degree of privacy and view. Whether small or big, all spaces have a center which is the open space called the yard. All spaces whether closed, open or covered follow a single spatial organization which is again the yard. In the definition of space, several criteria were taken into consideration: climate, thermal variations, completely dry spaces, warm rooms, and rooms with draught and ventilation. There was also a significant contribution of such elements as the wall, the ceiling and the floor to the formation of different spatial qualities.
	Combination of spaces	The combination of open, closed and covered spaces leads to the spatial connectedness and allows for spatial extension, view and light. Spatial extension makes it possible for different levels to join each other. The open spaces help to join the sky, and the closed space joins the outside by means of the doors and windows. On the other hand, the ceiling represents the sky and the covered space makes it possible to connect with the surroundings _ the yard which is the heart of the house. All of these help the horizontal and vertical levels to combine with the space to define the private and public areas depending on lifestyles. The spatial extension results in changes in space in terms of scales, content, connections between spaces and flexibility and increased dynamism. As part of the complementary spaces,the main spaces connect other spaces and establish changes as height, and size change
	Space display	Different features of spatial elements (floor, ceiling and wall) and the three spaces (covered, open and closed) and differences in their combinations lead to variety including variety in levels (basement, yard, lower house, upper house, and roof), variety in height (ceilings, the house pools, Shahneshin, the three-door, the closet, and the porch), variety in absorbing light (holes, lattice windows, doors, Orssi, and lantern places), variety in scales of spaces, variety in rooms (three-door, five-door, and Gooshvareh), variety in ground covering (water, tree, flower, grass, bricks, straw clay, and materials), variety in light (to differentiate closed, open and covered spaces and create fully dark, light and half-light spaces) and variety in spaces and their roles in socialization and interaction of people.
Patterns	**Open**	The open spaces include the yard (public space), Soffe and Taremi (a half-public space) and Mahtabi (a private space). This pattern allows the dwellers to connect with nature by means of the yard. This gives a sense of engagement and encompassment via the levels of the open space. The open spaces become a private area due to their high amount of variety which is for their connection with the surrounding areas such as the roof as an independent space and the possibility for the neighbors to connect with each other and find a place for relaxation.

closed	The closed spaces include different areas such as the Shahneshin (public), the five-door room (half public), the three-door room (half private), and the back room (a private and closed space). This provides the possibility to combine the closed spaces in order to increase the amount of flexibility of the space. The scale of the closed spaces changes in commensurate with the lifestyle.
Half-covered	The half-covered space includes the covered space (floor and ceiling), and the half-covered space (floor, ceiling and three walls). This is the most enduring Iranian spaces between the open and covered spacein order to establish indirect connection.

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