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Original article

Analyzing the fluidity of iwan's space in traditional houses of Bushehr

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ARTICLE INFO

Article history:

Received 21 June 2014

Accepted 19 July 2014

Available online 25 July 2014

Keywords:

Boushehr

Traditional houses

Fluidity

Iwan

ABSTRACT

The reason to choose this issue is paying attention to the spatial fluidity of Iwan and communicational and functional values of various kinds of Iwan in traditional houses of Boushehr. The traditional architecture provides the material and spiritual spaces in a way that has sincerity, intimacy, balance and peace. Iwan has the conceptual and functional richness and in terms of form it has a great role in raising the spatial value and besides of an open space it leads to create a valuable structure. To achieve the spatial fluidity on Iwan, we must have a special look to basic designing elements (shape, scale, pattern and balance). We should look at the fluidity of spaces as a contiguous whole and a united collection and avoid the one-dimensional and discrete look at space. Fluidity gives the audience a sense of physical movement and moves their eyes not their body. The visual motion means when we stand fixed at a point in space, our eyes have motion and move from one point to another. This raises a question that how the fluidity of space affects on Iwan's forms of traditional houses of Bushehr which is one of the important factors influencing the form of the building. In this research first of all the concept and meaning of Iwan is defined and then the spatial fluidity and various kinds of spatial fluidity of Iwan and Iwan fluidity of traditional houses of Bushehr has been discussed. The research method of this study is objective, descriptive-visual observation, review of documents, analysis of cases and library studies relied on theoretical concepts. The major findings and

conclusions of this study shows that Iwan as a seasonal place for sitting has different orientation in the building and because of its climatic reasons, it is a semi-open space with different functions such as: it acts as a link between the open and closed space, a passage and a link space also it has relation to the nature and causes cohesion of inside and outside and has spatial fluidity.

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1. Introduction

Diversity and multifunctional applications of houses is considered as internal characteristic of traditional houses and each of these spaces give identity to the architecture of these buildings.

The patterns used in designing of traditional houses of Iran are influenced by several factors. The climate has a significant impact on designing of Boushehr houses and creating the different areas to make it comfortable for users.

One these spaces is Iwan which in Iranian houses it's used as a semi-open space and it's along with varied an valuable experiences such as: spatial fluidity, spatial comprehension, nature comprehension and etc. and as an architectural and sustainable elements and in terms of performance and form it is very successful in enhancing the spatial quality and structure of houses (Ghobadian, 1389: 83). With the name of Iwan, the experience of sleeping under the porch and unmediated relationship with trees and flowers comes to mind. Iwan as a semi-opened area has a special nature and characteristics and is considered as an arena for one of ways of living and answering to some of human needs (Zarkesh, 1390: 95). The essence of architecture is space and the main concern of architectures in new information centers has been creation of a dynamic and fluid spatial structure. Since in the issue of explosion of information it is desirable to achieve the shortest time intervals, thus in the issue of fluid spatial structures, the time dimension cannot be ignored. The concept of fluidity is creation of nearest relationship and shortest connection among constituent elements of space and such a short path is formed through randomizing the circulation in time and place. This fluidity is movement in space by eye not through physical relationship. Through Iwan it's possible to watch without need to move physical and it provides the displacement in space (Kajal, 1384: 74). So its necessary to declare the concept of Iwan as a semi-open space thus we can better realize its function and by receiving the rich and sustainable concept of this element, we can take advantages of it in contemporary architecture more correctly and consider that as a principle in creation of diversity in today residential architecture structure.

The definition and concept of Iwan

In Dekhoda dictionary, the Iwan means forehead, arch, doorway, porch and a roofed high place for sitting. In Amid dictionary it means room doorway, a part of building which is opened in front and without window. About the meaning of Iwan, in the book of "sense of unification" it is stated that: The concept of Iwan and porch in all history of Islam has entailed deep implications. Iwan is indicator of facilities to determine the limitation of space and indeed it's a path or transitional space between earthly and temporal factors. From the metaphysical point of view, the Iwan can be considered as ego which is travelling between garden (as a soul) and room (as a body) (Ardalan&Bakhtiar, 1382: 23). With above introduction, the Iwan can be considered as a space which in terms of both conceptual and visual point is a transition point from the earth to the sky and this is evident through its high arch more than before. Iwan in terms of shape is a mediator and this mediation has been fully manifested from its dual form (closed in one hand and open in other hand). From the outside perspective, Iwan can be considered as represented and forehead of building which the worth of inside perspective of yard is depended to its worth because its height is usually higher than other building parts and comes to eye further. In a look

from outside to inside, Iwan is an open surrender space of house and its eyes toward a small garden (of yard) which is paradise in concept by form of quadrangle and its center (Howz and water) is a symbol of perfection. So a yard with four Iwan is the most perfect yards and is a symbol of universe which is static and without orientation. But four Iwan from four sides is symbol of four worlds which are looking at the center of this small world. Therefore a complete universe mapping is forming in the heart of the smallest unit of traditional urbanization (Mahmudi, 1384:55). Iwan refers to a semi-opened and partially roofed which is located in front of the living spaces and is a relation between open space of yard and inside closed space. Iwan is a stretched and rectangular space built against one of the building edges in which the most openings are usually located. The Iwan space usually is open from one or two sides. The Iwan is deep enough to prevent the radiation of sunlight to interior walls (Aminian, Khodadadi, 1387:44).

In the outside of rooms there are big Iwans with high canopies, which by using cool sea wind, in the time of sunset provide a favorable environment to rest. Windward in Bushehr is rarely found and use of sea breeze is more common. This is done using a window embedded in the two sides of room and by using Iwan (Ghobadian, 1385: 82). Like Shenashir¹, Iwan is made to connect spaces to each other. In CheharMahal, the old district of Bushehr, the Iwans are visible from two, three or fourth directions of internal side. Besides of creating shadow and preventing from direct radiation of sunlight to other parts of building such as rooms, the Iwan had a significant role to conduct the proper temperature to the inside of building. The mid Iwan in addition to the spatial connection of building to each other, have had an important role in leading the wind (Gholamzadeh, 1392: 23).

Literature review

Volfram Glays (1367), Iwan in Iranian architecture is built by two methods: the Persian and Parthian methods. These two methods are originated from old methods of Iranian architecture. The oldest Iwans in is in the style of Parsi, in this style, Iwan was building in the form of columned loggia with a flat roof. This way of building Iwan is rooted from Orto architecture, which extremely affected the architecture of the era of Mad and Achaemenian (Hakhamaneshi)(Persian method)(Gladis, 1367: 86, Silicus 1376). According to Divdore Silicus, the Greek historian, Iranian houses were building around the yard and Iwan was also one of life elements (Saremi&Radmehr, 1376: 93).

History of Iwan

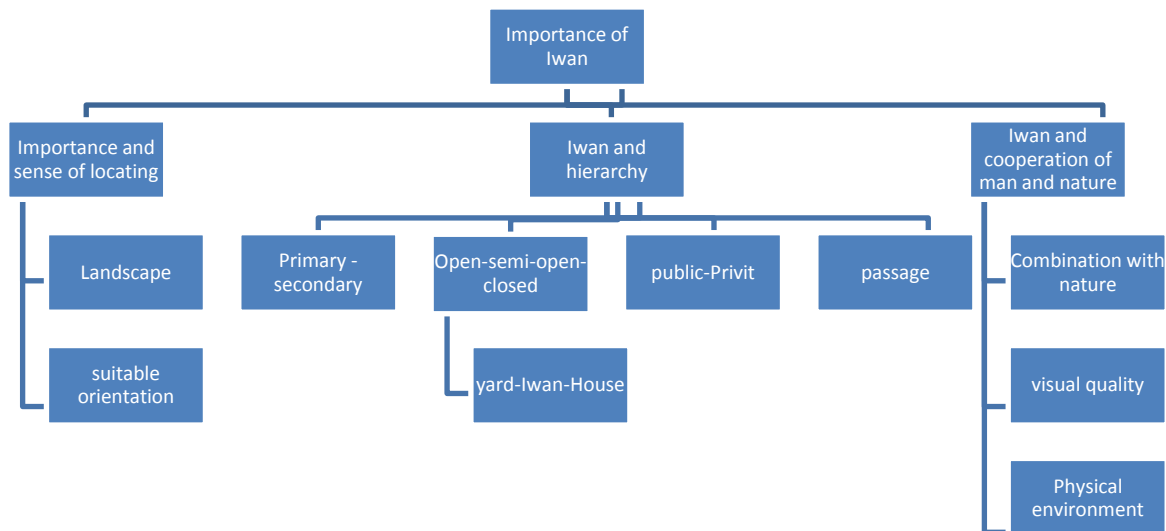
The invention of Iwan was rooted from Hakhamaneshi Apadana, was continued in Ashkanian palaces (Ashur&Ahazazar) and mainly is associated to Sasanian era and the Iwan got common in palaces. The Taghe Kasra and Firouzabad palace is a main sample of this kind of architecture which is a symbol of kingdom or divine power (Ardalan, Bakhtiar, 1390: 101-102).

Among the mentioned hypothesis, the conception of some people who consider the Iwan as a rock tent is considerable. From the view point of this group, people who used to live in the deserts and now have chosen living in the village wanted to keep their contact with nature and made it common to use room with triple walls. The scientists who have studied the history of Iran despite of ambiguity in the emergence of Iwan, consider it as a special phenomenon of Iranian architecture. However according to Malcom Collge, Iwan was formed at the era of Parthia (Taghavi, 1363: 91-92). Trace of Iwan in Iranian houses and palaces can be follow up in era of Hakhamaneshi from Apadana palace, south Barzan houses of TakhteJamshid, the Bar palace with quadric Iwan in Pasargad and remains of Parsumash houses in Masjed Soleyman (Javadi, 1363: 18). In Arsacidera, the Nesa houses of Turkmenistan, Arsacid city of Hetra, mountain of Khajeh and Arsacid palace of Ashoor can be noted. The climax of art of Arsacid in building Arch and Iwan is in Ashoor palace (Javadi and Taghavi, 1363: 19).

The importance of Iwan

In the past, the semi-open spaces in general and Iwan in particular, have been an important element of Iranian houses. These spaces have played a role in general organizing of building besides of two open and closed spaces and also have been used as an independent space with various functions. In the

meantime, Iwan maybe is the most important one because in terms of form, function and structure it has its special architecture. This is why an action like transition which today is less noticed in architecture, has considerable formic and spatial values in traditional architecture so in traditional architecture, the semi-open spaces act as transitional space and connector between open and closed spaces and closed spaces through the semi-open spaces are connected to open spaces. These spaces particularly Iwan, have characteristics of both groups of open and closed spaces and also has formic and functional usage. In traditional houses architecture three spatial groups (open, closed and semi-open) are not built separately and rather they meant along with each other so that the spaces are gradually lose the degree of their openness and closeness as if one converts to another. This cohesion in the combination of spaces causes the consecutive spaces are used as each other expansion. For example the Iwan is expansion of the five-door and the five-door is expansion of Iwan (Hayeri. 1&2 vol: 1374). In addition to above mentioned the Iwan leads to creation of spatial variety, biological particular experience, readability, the detection of house, distinction and meanwhile the cohesion between inside and outside. As well as the Iwan in terms of decoration is an important space and it is the connection point of Shahneshtin4 and Talar5 and room with yard (Saremi and Radmehr, 1376: 109). Iwan is smaller than hall and usually is located in front of the room (Memarian, 1378: 162). In Iranian houses, the Iwan in summer nights is resting place of household and they find comfort by watching the sky and stars. Harmony with nature and respecting it is one of goals of building the Iwan. The order and arrangement and sequence In Iranian architecture, indicates that entering to the any new space is along with the preparation which is proportional to that space and Iwan is an intermediate between open and close space. This spirit of Iwan is rooted in the ancient culture of this country. Iwan also in terms of space causes variety, readability and coherence of outside and inside. Aside from this, the Iwans have many climatic value which affects on its size, form and even decoration. In general, the Iwan causes deficit of heat in day and cold in night. Iwans prevent the direct radiation and the back space behind them remains cool. In cool seasons the heat will be saved during the day and during the sunset this heat come back to the environment and balances the temperature. This means that residents are using a special space in any season and any time of day and night (Saremi&Radmehr, 1376: 109). Iwan can act as ventilation and by offering a sun shadow can reduce the consumption of electricity. Balcony changes the wind pressure distribution on the windward but doesn't change it the side of leeward. The open design and balcony was useful in increasing the air motion of inside of building while the effect of internal difference is not considerable. Using the balcony for reducing the external noise in high buildings where high barriers can not be made is effective (1. Chan* Chow.2010). Iwan has been used as a shadow device to protect from sunshine and a motion like scoop of wind for donating the air into a building (Prianto* Depecker, 2002. 2004).



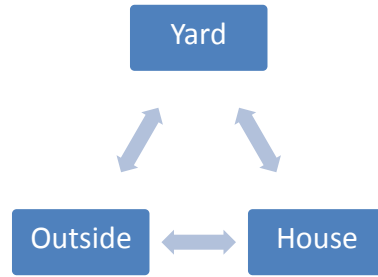


Diagram No. 2

Iwan and spatial fluidity

Iwan creates the spatial fluidity. The motion is a tool for understanding the space and the fluidity of motion in space is by means of eyes not by physical relation. Through Iwan it possible to watch without need to physical motion and spatial transportation. Spatial fluidity in traditional houses causes the makes this architecture understandable and fluent. The traditional houses have cohesion, dynamism and continuity. The spaces have flotation and fluency and this flotation is provided through unique joint spaces such as Iwan and makes this simple house desirable and attractive while modern houses residents suffer from its absence. In traditional Iranian architecture and particularly the architecture of traditional houses, the open, close, public, private, outside, inside, element and background spaces and so are not build separately and rather they meant along with each other (Ahmadi, 1388: 5, 4) (Diagram1,2)

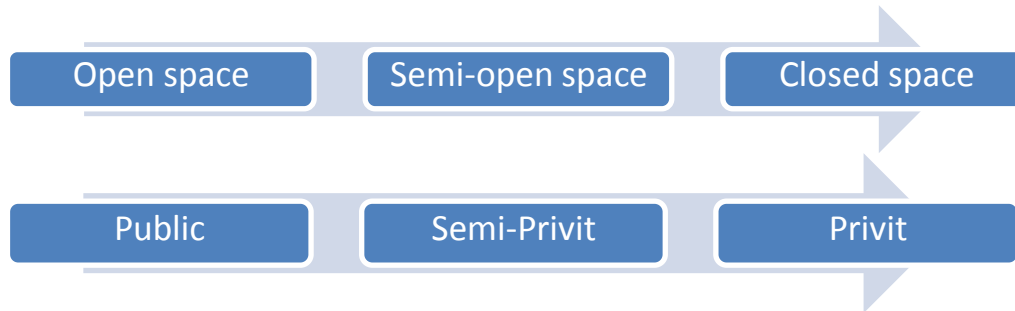


Diagram No. 1

So that the spaces are gradually lose the degree of their openness and closeness as if one converts to another. This gradual passage from one state to another is happened through elements like Iwan and this cohesion in the combination of spaces causes the consecutive spaces to be used as each other expansion and spatial blockage disappears and flotation will be creat in the house (Mahmoudi, 1384: 56).

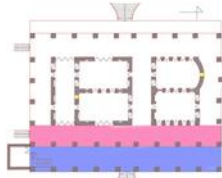
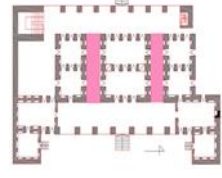
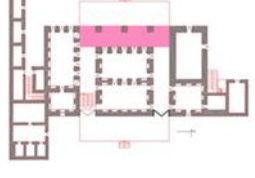
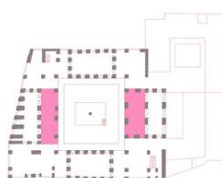
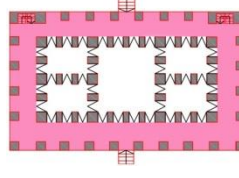
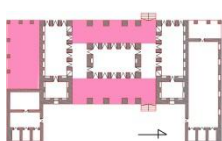
Iwan in traditional houses of bushehr

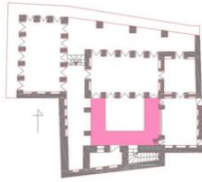
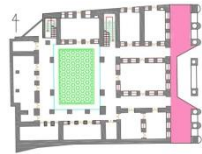
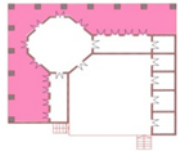
Almost all houses have Iwan but most of the have been destroyed due to inattention and now we can realize their status through some maps, photos and asking. The Iwan has an important role in their life and various activities has taken place there. Also this space in terms of view, connection with the yard and creation of flow have had a large important in Bushehr houses. Iwan not only is a passage space but also it is a functional space. The deeper Iwans with higher height are located in north and south sides which one of them are for using in summer and another for winter. Like Shenashir, Iwan6 is made to connect spaces to each other. In CheharMahal, the old district of Bushehr, thelwans are visible from two, three or fourth directions of internal side.

However the various kinds of iwan in bushehr include the followings

1. L-shaped Iwans, which is located around the building as an L.
2. U-shaped Iwans, which are considered as one the most beautiful kind of Iwan.
3. Compound Iwan which is combination of trapezoid-shape and square-shape Iwans
4. One-sided Iwans
5. Two-sided Iwans
6. Three-sided Iwans
7. Four-sided Iwans
8. The middle Iwans which in addition to use as a connection between building spaces, it has an important role in guiding the flow of wind.
9. Iwan with two consecutive row which has been prevented the entering of sunlight to other parts of the building.
- 10.

Introduction of Buildings of Bushehr

number	The function of Iwan and fluidity access and created space	Aesthetics of Iwan	Behind of Iwan	Typing of Iwan	Plan	Name of buildings
1	Climate function, hierarchy, give grandeur to the space, cooperation with nature	It leads to grandeur of building and fluidity of eye from outside to the building No change in buildings form	5-doors rooms	2 consecutive Iwan		Zeytoon
2	Connector of space, guiding the flow of wind, function of corridor		Shahneshin Rooms	Middle Iwan		Kalb building
3	Being invited, connection with nature, mediator between inside and outside, it has created the outside space	it has given the state of being invited to the space, leads to fill and empty of view	5-doors room	Iwan in one side		Golzad building
4	Climate function, connection of inside and outside, connection with nature	It leads to fill and empty of view from outside	3-doors and 5-doors rooms	Iwan in two sides		Haj Raees building
5	Climate function, connection with nature, between inside and outside intermediate	It leads to grandeur of building and fluidity of eye from outside to the building	3-doors and 4-doors rooms	Iwan in 4 sides		Heidar Dashti building
6	Climate function, connection with nature	It made the form of building empty and full	5-doors rooms	Iwan in 3 sides		Haratoo building

7	Ceremonial, connection of inside with the yard, connector of space	It creates formic and functional beauty inside the building	Shahneshin room	U-shape		Hamalbashi Zade building
8	Being invited, connection with nature, connection of internal and external space, giving the grandeur to the space	It leads to grandeur of building and it has given the state of being invited to the entry	13-doors rooms	Compound Iwan		Amirie building
9	State of Being invited, spatial connection, connection with nature	It makes the building stylish and gives grandeur to the facade	5-doors rooms and Hashti rooms	L-shape Iwan		Hashti building

regarding to the introduction of houses and reviewing their fluidity and function, these results can be obtained that which Iwan have had stronger function and which have had the most influence in form and etc. the strongest performance of Iwan can be belong to Iwans such as (two consecutive Iwans, middle Iwan, four-sides Iwan) because in terms of function, climate and spatial relation have higher potential than others.

In other dimension the Iwans are important in terms of beauty and function (compound, U-shape, L-shape) because they give grandeur to the building and evolve the form of building and also are connected to other important spaces of house such as Shahneshin, three-doors and five-doors rooms. Other Iwans have climatic function in building.

Number	Form and dimensions of Iwans		
	Size & dimension (meter)	General forms	Buildings
1	7.50*32.50	Rectangular	Zytoon
2	2.40*10	Rectangular	Kalb
3	2.10*7.50	Rectangular	Golzad
4	2.50*10.50 & 3*8	Rectangular	Haj Raees
5	2*16	Rectangular	Heidar Dashti
6	2*16	Rectangular	Haratoon
7	3*3	U-shape	Hamalbashi
8	3.80*26	Rectangular & trapezoid	Amirie
9	5*23	Rectangular	Hashti
Conclusion	All Iwans are rectangular, which can be considered as the most complete and the best pattern for the Iwan and they have different sizes proportional to the area of buildings and their orientation .		

(source: Author).

Conclusion

Iwans have various spaces in traditional houses which are used from different aspects such as beauty, performance and etc. The significant role of Iwan in connection of architecture and nature, creation of fluidity and spatial openness, hierarchy, sense of location, balance of artificial architecture and natural environment can be a pattern for designing the new houses. If the houses be designed without the correct and logical connection and the hierarchy and continuity among three groups: open space, closed space and semi-open space doesn't respect, people will be deprived of spatial perception.

With regard to the important role of Iwan in Bushehr and its identity-making role and its historical continuity in Iranian architecture as an architectural reference pattern, it must be considered as one of the necessities in buildings of Bushehr.

Some recommendations, principles and strategies to enhance the spatial value of the house:

1. In design of new houses we must be careful that Iwan is not replaced with a low value terrace.
2. The modern Iranian architecture especially apartments are suffering from occlusion and lack of fluidity and flotation. So elements like Iwan and joints shouldn't be eliminated because they help to fluidity of space.
3. With respecting the proportions and logic motion in the height, the logical communication and continuation between the yard, Iwan and closed space must be established
4. The south side of the Iwan is roofed and has a little depth due to be used as shadow in summer and in winter it doesn't prevents from entering the sunlight to the depth of Iwan.
5. The fundamental role belongs to the north Iwan (for using in summer).

According to the research the question can be answered as follows:

In traditional houses of Bushehr, there are various kinds of Iwan which causes the eyes to move in space of Iwans. Eye contact is an important and effective principle on the forms of Iwans. The fluidity of space has been effective in the form of Iwans and gives a special form to the building. However other influences such as regional climate have impact on the form of Iwans.

Footnotes

3) Shenashir in Arabic means "the wooden balcony located in front of the windows of the upper floors of the house", it belongs to south regions of Iran particularly Bushehr. This kind of balcony is towards the outsides of house and on the public passage and its periphery is coated with a mesh fence so air can easily flow.

6) Its a room with a fairly high altitude which its height is twice the other rooms of old houses.

7) Generally it was a useful space with beautiful decoration which was quite evident in the traditional houses.

8) Another name for Iwan (TaremeH or Taremi)

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