Chahar Soffe; Ancient Originator Pattern of Iranian Native Architecture the method of its Occurrence and Evolution in the Central Plateau of Iran

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ABSTRACT

The ChaharSoffe is the oldest pattern of native residential architecture throughout Iran but there is nominal contents about it’s posture of evolutionary, functional and conceptual aspects. Regardless of the continental and structural topics, formation and evolution of this building pattern has been influenced by meanings and symbols. So it transforms the hidden design (pattern language) into spatial arrangement of more evolved types from pure expression in prime patterns and includes Chaharbagh, Chaharvans and Chahartaghi models ultimately. The ChaharSoffe at houses of Zavare, Meybod, Ardakan, Yazd, Tabas, and Boshrooye cities is the part of covered space. It is sometimes the main element in organizing process of roofed part. But never has been investigated as a complete house without Subsidiary organs in primary and secondary patterns. This paper with a Phenomenological study of Residential architecture in border of desert tries to represent the occurrence of this ancient pattern in evolution of Iranian houses and depicts the ChaharSoffe in every pattern the step by step.

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INTRODUCTION

The house has passed a long time before the Qajar and the Safavie kingdom era and has grown simultaneously with cities according to the size and needs of each family and have been transformed its shapes. Basically the evolutions of always life has affected on architecture of houses. The ChaharSoffe houses models have been studied as spaces of ancient residence that have been structured before Qajar kingdom era. Today its few examples have been remained in border of desert cities and a geometric and harmonic style has been presented for evolution and conversion to Chaharvans model in yards of houses, mosques and inns usually. This paper never seeks to draw all aspects of evolution. But we consider different patterns of house in border of desert cities to discovery what is the narration of ChaharSoffe space after ChaharSoffe petty houses. Is its geometric evolution toward Chaharvans as a traceable topic? Perhaps we should consider the matter from the others viewpoints. We know before advent the houses of the Qajar and Safavie with large yards and lots of spaces around, there were small houses by small spaces around a courtyard that involves smaller families who live there. So to perceive these old patterns we should study the cities that have acquired theirs prosperity before the Safavie and Qajar kingdom and this land is central plateau and Yazd city and it’s around isn’t the central part. The collected samples of this research have been gathered from Meybod, Ardakan, Zavare and Boshrooye as small cities and Esfahan, Yazd and kashan have been gathered as big cities.

The pattern of Architecture pattern (chaharsoffe):

The primary figure is about a square which every its side is three codified. This square has 9 section and can accept the shafts and in its outgoing part can put 3 windows. This square is the radical of change and variety of architecture area in Iran central plateau and all of other paternal areas creats of changing this 9 section area. Now we come back to a central yard which is square and 4 square areas which in 9 section and located in around of it. The 9 sectional squares which after now called 3 distributions and covers every 4 side of yard. Now
we reach to a 9 sectional bigger square which has 4 empty's square haven't way to yard and with this 4 area attach to yard. This 4 area of house only have usage when the 4 main areas be mid-open area. This mid-open area is soffe which are familiar (picture 1).

![Diagram of architecture patterns](image)

The mixture of 4 distribution of 3 parts in 4 Sides of yard and creating the pattern of chahar soffe

**Fig. 1:** Architecture pattern chaharsoffe - source: Authors

The Patterns of Zavare:

In the texture of Zavare, different houses are seen with various styles in Organization of Tahrang. But ChaharSofe and Springhouse is the main of them and compound of both is seen in somewhere. In style of ChaharSofe houses, the central and main space of house is ChaharSofe. The visible everything except house is result of expansion in building and various historical extensions. The Tahrang of houses in outside parts dosen’t present particular regulation despite the regulation of appearance and this matter accentuates expansion of house from ChaharSofe outward gradually. This expansion spans along approximate directions of the south and north and along the main building (figure 2,3).

<table>
<thead>
<tr>
<th>House Tipology</th>
<th>Interance area</th>
<th>Live area</th>
<th>Service area</th>
<th>General pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hashemnasab's house</td>
<td>Facts house</td>
<td>Ganji house</td>
<td>Healthy house</td>
<td>Hani house</td>
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</tbody>
</table>

**Fig. 2:** The Different Styles of Tahrang (Zavare).
The pattern of skeletal native zavare houses

The coverage of central space is organized in two categories: Groined Vault and Colombu Vault. In the Groined Vault class, its four piers are located on the corners of central space. This Groined Vaults are four big light assimilator actually. A Colombu Vault has lean on this Groined Vault. But in another class, the Colombu Vault has located on the central space of ChaharSoffe and it’s obvious that its light assimilator must have been constructed as a Pavilion Kiosk in the central part of the coverage (figure 4, 5).

The springhouses have rarely ChaharSoffe spaces and theirs courtyard is disciplinal axial member. We study the transformation of duty from ChaharSoffe to central yard as one controversial theme about stemming of functional and geometric tasks of ChaharSoffe pattern subsequently. Some houses of Zavare city show the compound of both patterns together and it means balanced growth in Organs of the house after ChaharSoffe construction (figure 6).

<table>
<thead>
<tr>
<th>Example</th>
<th>Symbolic form (design-section)</th>
<th>The pattern of designing pyre-space</th>
<th>The number of yard</th>
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</thead>
<tbody>
<tr>
<td>Baninhashem house</td>
<td><img src="image" alt="Symbolic form" /></td>
<td>Making 3 side</td>
<td>central yard</td>
</tr>
<tr>
<td>Miri house</td>
<td><img src="image" alt="Symbolic form" /></td>
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</table>
**Fig. 6:** Variety of Non ChaharSoffe Tahrang (Zavare).

*The Ancient Patterns of Yazd Province (Meybod and Ardakan Cities):*

The houses before Safavie kingdom have been Do Soffe. The width of courtyard has been defined similar to width of porch and in a few cases it is added with width of side piers. According to the accomplished studies in research center of Meybod city, the accurate performance of these houses has been revealed. The Located “Tanbi” room along the south porch is living room and it is considerable as throne room (figure 7).

The main spaces of the houses is formed at the around of northern and southern porch and some service spaces are located on both side of the yard. The northern or southern axis sets totality of houses in Meybod and Yazd cities. The ChaharSoffe houses of Yazd region are visible in Kalantar land that belongs to Zartoshtian religious minority.

The some evaluated small houses in Ardakan and Aqda cities have northern and southern axes and the spaces have been created in around of them (Figure 8).

<table>
<thead>
<tr>
<th>The pattern of chahar soffe</th>
<th>The pattern of 2 soffe</th>
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<tbody>
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<td><strong>pyre</strong></td>
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<td><img src="image1.png" alt="Pattern Image" /></td>
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<td><strong>section</strong></td>
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<tr>
<td><img src="image3.png" alt="Section Image" /></td>
<td><img src="image4.png" alt="Section Image" /></td>
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</tbody>
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- **cloze area**
- **mid-open area**
- **open area**

**Fig. 7:** ChaharSoffe Tahrang and DoSoffe Tahrang in Meybod City and Kalantar Land with Performance of Spaces.
The Ancient Pattern of Tabas and Boshrooye Cities:

The dreadful earthquake of 1357 destroyed Tabas city entirely and left few samples of the architectural heritage in its surrounding villages. In this research, we evaluated five samples completely. Among the studied samples, three of them have ChaharSoffe spaces absolutely and one of them uses ChaharSoffe style in arrangement and formation of Tahrang, even though its appearance is the different (figure 9).

The Zavare city in various manuscripts and documents is town of ChaharSoffe. But the visible condition of Zavare does not show this ancient model in its original state. The evolved form of the architecture and ad joint organs (does not fit with the initial state sometimes) indicates hasn’t been built the ChaharSoffe pattern in its initial and primary condition in this location. The region with ChaharSoffe pattern in ancient and primary status is Boshrooye city. This city with its compact and squeezed texture is pattern of small residential units with architectural styles before the Safavie kingdom era (figure 10,11).

Several patterns can be seen in homes of Boshrooye city that cover all of the discussed models already. For this reason, Boshrooye is a complete history of the evolution of the residential architecture in Iran before the Safavie Kingdom to end of the Qajar kingdom period. Because the evolution rate was slower in Boshrooye and its the established houses in the Pahlavi Kingdom (second period) followed architectural system of the Qajar kingdom era. The most houses of Boshrooye use small ChaharSoffe and Do Soffe styles. The ChaharSoffe houses of Boshrooye have purer expressions rather than the houses of Zavare city. The hole of central court yard, appears in satellite photo and trail of “Taghahang” is visible in its four sides. The little courtyards of houses represent small and brief families. The various performances of these spaces have been defined in the former researches (figure 12).

Fig. 8: The Houses with Do Soffe spaces (Ardakan and Aghda).

Fig. 9: ChaharSoffe Courtyards and little Houses of Tabas.

Fig. 10: Tahrang of the Houses with ChaharSoffe (Boshrooye).
Fig. 11: The pattern of skeletal native Boshrooye houses.

Advantages of ChaharSoffe:
Creating a Moderate Space in Dry Climate of Desert:
The small courtyards absorb little sunshine and pour a balanced mix of sun and shade into the house at different times of day and year (figure 12).

Fig. 12: The comparison of chahar soffe area in bashravie and zavare.
**Fig. 13:** Small size of the yard and the Temperate Pleasant Compound of Sun and Shadow as Advantages of ChaharSoffe.

**Opening Space in Little Area of Central Courtyard:**

The tiny yard has imperfect sight similar to small and deep hole carved on a large scale. The four sides of the porch raise the ultimate bound of visibility and eventuate general inaugurating of workspace (figure 14). This idea is practical in some houses of Meybod city. Because the tiny porches and some services spaces of the houses have been constructed in the eastern and western sides of the central courtyard.

![Perspective Vision into Soffe (Panahi House, Boshrooye)](image)

**Fig. 14:** Opening a View and Evolvement With the spatial Arrangement of ChaharSoffe.

**Creating a Geometric Pattern with Cross shaped Arrangement:**

What known as ChaharSoffe is a combination of nine spatial units that has been resulted from division of each side of square into three parts. The central unit is central space of ChaharSoffe. The Units in the middle of each side indicate one Soffe and the corner units represent four rooms that get intervals from the Soffe or porches. As the dimensions of the central courtyard assimilate with dimensions of its both porches, geometry setting process of the central space (courtyard) for architecture is easier. It strengthens the geometric aspects of an organic architecture (Figure 15). If we focus on this Cross shaped layout as an axis, we can take its track in a series of the houses in the desert.

![Increment of vision in Tahrang](image)

**Fig. 15:** Geometric Design of the Houses with ChaharSoffe.

Pattern of the Houses in Boshrooye (No 3 and 4), Pattern of the Houses in Zavare (No 5).

**The Performance of Chahar soffe:**

The ChaharSoffe and Do Soffe houses have been workhouse of residents and trails of weaving Barak and weaving Glim are visible in the porch of the most houses. So we can consider them specially Chahar Soffe as home workshops. Because, textile machines could be established in two axes (figure 16).
Fig. 16: The Tinges of Weaving Barak at Houses with ChaharSoffe in Boshrooye.

Indication of ChaharSoffe in Design of Massive Houses:

The mentioned phrase “ChaharSoffe by opening of central courtyard has creates Chaharivans pattern” is fallacious at least in the architecture of house. Because, the expansion of the courtyard in the houses with two porches is appreciable from Meybod city to Boshrooye city and subjoining spaces gradually and opening of view courtyard is the most important of steps that the ChaharSoffe pattern hasn’t any role for it. But after the courtyard expansion the ChaharSoffe idea appears in hall behind porch (Yazd) and in springhouse (Esfahan) (figures 17 to 22).

![Fig. 17: The Pattern of ChaharSoffe in Springhouse (Esfahan), the Opening of Space is Visible Obviously; The “Moshaerolmelki House”.](image)

Fig. 17: The Pattern of ChaharSoffe in Springhouse (Esfahan), the Opening of Space is Visible Obviously; The “Moshaerolmelki House”.

![Fig. 18: The Pattern of ChaharSoffe in Halls of Southern Porch (Yazd); “The Ardakanian House”.](image)

Fig. 18: The Pattern of ChaharSoffe in Halls of Southern Porch (Yazd); “The Ardakanian House”.

**Conclusion:**

The defined evolution for ChaharSoffe has been harmonic and geometric already that after opening has created Chaharivans pattern now. But the best Characteristic of Iranian architecture is Lyricism and poetic that embellishes main spaces. The petty ChaharSoffe house creates a pleasant space at home besides supplies the required spaces of a small family. This petty house during Qajar and Safavie kingdoms assimilated and created Do Soffe houses. But the bigger courtyards that emit more sunshine into the spaces of the house warm the overall space of the house. So a new requirement was emerged to create pleasant weather and to form the nostalgia of the previous spaces. The older residents call ChaharSoffe and we call springhouse (Figure 23).
Fig. 23: Evolution and Emergence of Chahar Soffe,pring house and its placement in several fronts, The Number 5 is a Zavare Pattern.

At the Houses of Yazd, the ChaharSoffe pattern appears in the southern porch and it's behind hill (Figure 24).

Fig. 24: Evolution of ChaharSoffe at summer, Porch and its Emergence in Multiple locations from House to Garden.

This pattern at the Houses of Esfahan appears in the springhouse and “Orsi” room located in the northern side (Figure 25).

Fig. 25: Evolution of ChaharSoffe at Winter Spaces and its Emergence in Multiple locations from house to Garden.
A common theme at the houses of Zavare and Boshrooye and it is existence of springhouse instead of ChaharSoffe in the houses with big courtyard. It means that space of springhouse represents the main aspect of ChaharSoffe. This springhouse places in the northern side in the corners of houses or in the southern side behind main porch. But the best aspect of ChaharSoffe is pavilion of Gardens that has an excellent vision and is dominant on all its surroundings (Figure 26).

![Evolution of ChaharSoffe as a Central Pavillion of Gardens](image)

**Fig. 26:** Evolution of ChaharSoffe as a Central Pavillion of Gardens.

**REFERENCES**