



## Facade Tectonics in Traditional Houses of Shiraz, Iran, Case Study: Zinat-al-Molk House\*

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**ABSTRACT:** Traditional Persian architects used to employ the facade ornaments to illustrate cultural values and heritage. Moreover, their approach for the adaptation of decorations to structural-constructional requirements of buildings, called tectonics, could be considered as a cultural-artistic character itself. Although these features were omitted when modernism and its independent facade principle prevailed, a great deal of research has always been conducted in order to redefine domestic styles and revive the lost identity of Persian facades. Along with these efforts, the present article intends to investigate the tectonic characteristics of traditional house facades in city of Shiraz, Iran. It mainly concerns the delineation of ornamental and structural layers of the facade which might contribute basic patterns and inspiring concepts to contemporary Persian architecture and lead to ideas for designing new residential facades with cultural identities. This research is an interpretive-historical case study which has a holistic attitude towards analysis of the qualitative data that consists of contextual evidence from a traditional house in Shiraz. The results indicate that the elements of traditional facades of Shiraz were basically shaped according to unavoidable structural necessities, while the designer has used distinctive ontological and representational methods to adorn these elements, and created a surface which mediates between the solid structural volumes and human cultural and artistic needs. It also confirms that the methods were chosen based on spatial qualities of a home.

**Keywords:** Facade Tectonics, Persian Traditional Architecture, Residential Buildings, Building Ornaments, Shiraz Architecture.

### INTRODUCTION

Facade design used to be a cultural issue in traditional Persian architecture, which unfortunately, was eliminated by globalized design process over the past century. Accordingly, Persian architecture suffered serious consequences after its eradication.

A building's facade connects and separates the inner space to and from the environment via its variable transparency. It can be seen as a spatial gate that opens to certain parts of the life going on inside. Therefore, the facade possesses cultural and artistic functions and should be considered as a media.

Traditional Persian architects were aware of this

media, but they needed to define a cultural system in order to be able to use it. They employed decorative textures, shapes, and patterns to present their perception of beauty and to express their culture and heritage. The facade was the most appropriate part of the building for doing so as it was the most noticeable place to illustrate beliefs. On the other hand, all the facade components as well as other elements of the building were basically dependent on the main load bearing structure and had to follow constructional necessities. Consequently, traditional architects created a language for the dialog between structural and artistic components of the building which was identical and unique.

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With the prevalence of modernism in Iran, housing like other categories of Persian architecture almost completely lost its cultural identity. As Ricoeur puts it; globalization not only destroyed the architecture of traditional cultures, but also their creative ethical and mythical [identity giving] nucleus (Ricoeur, 1961, p. 276). Modernism proposed 'freedom in facade design' with the utilization of lighter steel and concrete structure (Conrads, 1970, p. 99). It also omitted decoration and disapproved masking the constructional elements, as it is described in the Adolf Loos's famous 1908 manifesto, 'Ornament and Crime' (Conrads, 1970, p. 19). With the extinction of ornaments, the global culture of designing them also waned and Persian architecture was not an exception.

The loss of identity in Persian facades is generally attributed to the omission of the cultural approach in design. Contemporary architects have done a great deal of research and practice to recover the lost individuality of regional architectures, and to resume the cultural design styles. Some researchers, namely Bemanian and his colleagues, believe that repetition of the cultural patterns and elements of the past could revive the national heritage (Bemanian et al., 2010, p. 61), others, mostly internationals, have argued that such a direct approach would lead us to populism, or as Alain de Botton describes; 'pastiche architecture' (De Botton, 2006). Frampton writes that a cultural approach, or as he calls 'critical regionalism' should remove itself from the 'nostalgic historicism' and 'glibly decorative' elements, he strongly opposes the attempts to restore 'the hypothetical forms of lost vernaculars' and proposes the derivation of cultural identity from deeper characters such as 'tectonics' (Frampton, 1983, p. 20).

Accordingly, this article, in search of more profound cultural peculiarities in Persian facade design, intends to discover the tectonic relationships between different layers of traditional house facades in Shiraz, Iran. It also speculates about the situations that traditional architects might have faced and their probable attitude towards design.

Shiraz is selected since it is one of the significant cultural cities in contemporary Iran. The city is the center of Fars province which has been an important and strategic territory both before and after the prevalence of Islam (Memarian, 2006, p. 148). Shiraz possesses a great collection of traditional houses which Memarian has described it as one of the most comprehensive case in Persian architecture (Memarian, 2006, p. 156). This comprehensiveness could direct the study to more certain results about original Persian tectonic culture.

Studies on this subject might lead to ideas for establishing new methods for designing identical residential facades in Shiraz, as well as other parts of Iran.

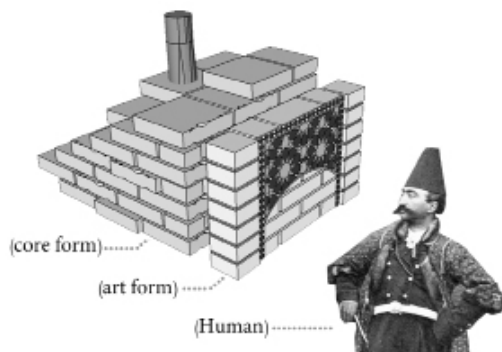
## METHODOLOGY

This research is a case study which uses an interpretive-historical method and qualitative analysis of the gathered data. In the book 'Architectural Research Methods', Grote and Wang defined the 'interpretive-historical' procedure as a way of studying historical phenomena such as buildings, events, and people. Although they mentioned the similarities between the interpretive and the qualitative researches in the holistic attitude towards analysis and qualitative character of data, they explained that the former is dedicated to past or historical phenomena, while the later studies current events (Grote & Wang, 2002, pp. 179-180).

The tactic used in an interpretive-historical research is the process of recognition, organization, and assessment of the gathered data, which here, consists of architectural documents such as pictures and drawings. These documents are referred to as 'contextual evidence' (Grote & Wang, 2002, p. 155) and are being analyzed in order to reveal the relationship between the ornaments and the structure of the facade. This relationship will be explained under the topic of "facade tectonics".

## FACADE TECTONICS

There have been various perceptions of the notion tectonics over history; however, it could generally be defined as the relationship between the structural and artistic forms of a building. Although different studies cite different theorists' opinions and judge relevant debates to scrutiny the evolution of tectonic concepts, they mainly focus on European architecture styles.



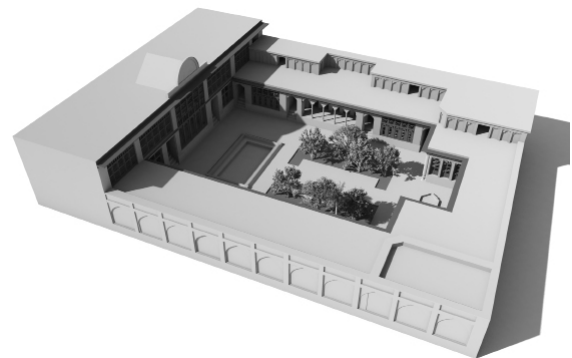
**Fig. 1. Art-Form as a Link between Core-Form and User  
(Based on Botticher's Definition of Tectonic)**

On the other hand, in resources about traditional Persian architecture, tectonic features of buildings are often described but not systematically analyzed.

In western resources however, tectonic specifically concerns the interaction of the structural-material forces and the cultural-artistic ones which form, as Botticher has described, 'core-form' and 'art-form'. In Botticher's view, art-form, which adorns the building, is a medium between the structure and human (Botticher, 1992, p. 163). Schwarzer explains this relationship as 'a harmony between building and human culture brought about by the mediation of artistic ornaments' (Schwarzer, 1993, pp. 267-280). Therefore, tectonics establishes the dialog between the structural-core form of a building and its audience (user), which is carried out through the finished-artistic form of the facade (Fig. 1).

Accordingly, a tectonic facade is a surface through which the spirit of the hidden structural form can be perceived. Frampton describes this surface as an interface 'between the pragmatic world of facts and the symbolic world of values' (Frampton, 2002, p. 151).

In Frampton's opinion, there are two different kinds of tectonic expressions: the 'Representational-Symbolic' and the 'Ontological-Technical'. In a symbolic expression, a decorative layer masks the rigid structural volume of the building, although it might reflect a trace of structure's presence. In technical presentation, however, the element (here the facade element) is itself designed based on its statistical shape (Frampton, 1995, pp. 16-19). Therefore, in the technical expression, 'core-form' and 'art-form' are coincident in place.



**Fig. 2. The Zinat-al-Molk House , Created by Author based on Plans in (Memarian, 2006, p. 214)**

Most of the time, Persian resources only concern the second part of a tectonic conversation which takes place between the art-form and human user. For example 'Analysis of architectural styles in Shiraz Qajari houses' (Zarei, 2010) is based on the concept that ornamental aspects along with climatic and spatial ones create a common identity in traditional houses of Shiraz. But, although the article describes their structure and materials, it fails to mention the adherence of ornaments to the structure. Further, articles such as 'the study of Orosis in Qajari palaces in Tehran' (Alipour, 2011) mainly focus on the figurative and meditative origins of the shapes and patterns in decorations. Nevertheless, other studies such as Memarian's, (Memarian, 2006) more deeply analyze materials, construction and statics of the houses. His book explains the impacts of structural and functional elements on the aesthetics of the facade in a brief section.

In conclusion, although tectonics has been discussed in comprehensive western resources, evaluation of its concepts in other nations' architecture is so rare. The extension of tectonic attitude to other traditional styles like Persian architecture could contribute to its enrichment.

## ZINAT-AL-MOLK HOUSE

Zinat-al-molk' house is a well-known traditional house in the city of Shiraz and one of the most appropriate cases for studying facade tectonics because of its comprehensiveness in form, space, and material application.

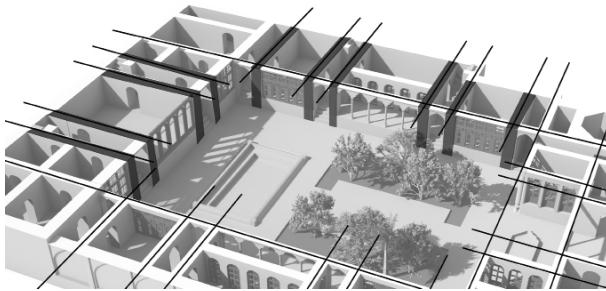
Built in the eighteenth century, Zinat-al-molk is located next to the 'Narenjistan' house which is also one of the city's most famous traditional buildings. In fact, the two houses used to form a grand housing edifice, and



were linked by an underground tunnel. (Memarian, 2006, p. 208) Both houses have courtyard morphologies and in Zinat's house the rooms are placed in four sides of a central court, and are designed in two stories on the west edge. It also has basement rooms under its three sides. (Fig. 2)

Load bearing walls and wooden beams constitute the structure. The thick bearing walls, perpendicular to the courtyard in plan, and separating the rooms, are made of stone and adobe, reinforced with timber. Huge wooden beams cover the span between the bearing walls. Further, on some wide openings of the facade such as 'Iwans'<sup>1</sup> and halls, an even number of supporting wooden columns are also added.

Since the alley facade is so simple, opaque, and monotonous in material, this article focuses on the inner facade of the house. Actually the alley facade is designed for no communication with the environment as the house has an introvert form and function. On the contrary, the inner facade which turns around the courtyard is so transparent and brings maximum connection between the courtyard and inner spaces in many parts.



**Fig. 3. Load Bearing Walls and Their Influence on the Façade (Created by Author Based on Plans in (Memarian, 2006, p. 214)**

The courtyard facade is mainly made of stone, brick, and wood. The synthesis of these three specific materials is so identical and noticeable; Memarian describes this harmonious combination as a unique character of Shiraz traditional houses (Memarian, 2006, p. 230).

'Orosi'<sup>2</sup>, 'Iwan', 'Hall', 'multi-opening windows', and 'corridors' are some of the spatial organs of a typical traditional Persian house, which most influence the facade, and the Zinat's house includes.

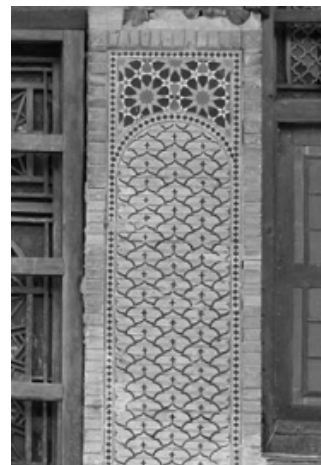
This spatial diversity, along with the artistic combination of different transparent surfaces and the harmonious use of material, make Zinat's house a suitable case for studying the characteristics of all Shiraz's traditional house facades.

## HOLISTIC STUDY OF THE FAÇADE

The facade is being studied in two steps; holistic and part by part. In this section, the facade tectonics is being assessed in general and its qualities such as shape, geometry, and outline are analyzed in order to investigate their reliance on the structure.

As seen in (Fig. 3), the load bearing walls define the structural axes of the building. These axes that manipulate the lines of the plan unavoidably continue to the courtyard facade and order its divisions and geometry. If the designer wished to hide the bearing walls and to prevent them from participating in the geometry, they had to build cantilever beams to support the whole facade. But at those times, making such cantilever beams was difficult or even impossible. Therefore the more logical strategy was to involve the walls and synchronize the facade outlines to them.

On the other hand, changing the shape of the bearing adobe walls, as well as the shape of other main structural elements such as columns and wooden beams because of technical restrictions was also impossible. Moreover, these elements had simple forms and huge scales, therefore the designer had no choice but to utilize more complex forms in smaller facade parts or decorative figures such as window frames and tiles. For example, if the architect wished to use curved forms on the facade, since they could not build a curved wall or beam, they had to employ the curve in ornamental parts such as the frames of windows.



**Fig. 4. Walls Covered with Tiles and Brick Margins**



Accordingly, in Zinat's house, the designer has used different passive methods to subtilize the presence of bearing walls. In some parts tile patterns or figures are added on the wall to reduce its visual weight, and in many others brick margins are designed to make it appear thinner. (Fig. 4)

Further, as illustrated in (Fig. 5) the edges of divisions and the underlying network of the facade are mainly vertical. Although the horizontal lines of floors, ground, and final ceiling enrich the final composition, major divisions on its surface follow the vertical load bearing forces and structural elements. Any additional horizontal divisions between the floor and the ceiling of any story would cost the architect to utilize extra huge wooden beams. Therefore, the complex wooden elements like 'shirsari's<sup>3</sup>, which extend through the skyline of the building, could be considered as a tactic to reinforce the visual impact of few existing horizontal lines on the surface.

Finally, simple beams and arches, covering the spans, are structural elements which transfer the load symmetrically. Consequently, all the surfaces and components of the facade are symmetrical. (Fig. 3) However, in spite of the restrictions in designing the components, the architect was able to design the whole scheme of the house asymmetrical (As seen in some cases in the city (Memarian, 2006, p. 169). Bemanian et al. indicate that the overall symmetry is rooted in 'structural' and 'reflective' factors (Bemanian, et al, 2010, p. 61). Since we argue the former, the overall symmetrical plan of Zinat's house could be attributed to architect's appeal and not to structural essentials.



Fig. 5. Vertical (light) VS Horizontal (dark) Lines of the Façade

## ANALYSIS OF THE FACADE COMPONENTS

The courtyard facade can be seen as a continuous surface which consists of three horizontal parts. Each part is made up of a variety of components and elements: (Memarian, 2006, p. 230)

- 1) The stone dado, basement lights, and stairs
- 2) The middle part that consists of brick walls, 'Orosi's, 'Iwan's, multi-opening windows, and corridors
- 3) The skyline that includes brick works, 'Shirsari's, and 'Khorshidi'<sup>4</sup>

### Stone Dado

The dado is made up of rectangular stone blocks. These blocks are designed in vertical and horizontal pieces based on their position. (Fig. 6)



Fig. 6. Vertical and Horizontal Blocks of the Stone dado

The vertical blocks are placed under the load bearing walls or wooden columns. Therefore, the axis of the structure is delicately continued on the surface of the dado. The stones used here, have more solid and opaque decorations comparing to others. There are even the figures of ornamental columns carved on them, since the architect has tried to depict the spirit of a load bearing element which is hidden behind the surface. (Fig. 7)



**Fig. 7. Representational Figures of Columns in Decoration- The Designer has Tried to Indirectly Show the Presence of a Structural Wall (Representational Tectonics)**

However, the horizontal pieces which fill the spaces between the axes are often porous, have diverse patterns, and are used as the lights of basement; these blocks constitute the softer and more transparent surfaces of the dado. Even stairs are parts of this surface and are designed porous for the same reasons.

The tectonic expression of the stone dado is thoroughly representational. It hides the structure but makes subtle references to its presence. It also represents the repeated opaque and transparent pattern of walls and spans.

### **Halls and Iwans**

In Shiraz traditional houses an even number of columns often divide the span of halls and Iwans. The odd resulting subsections create a central axis and increase the overall symmetry of the facade. (Bemanian et al., 2010, p. 62)

These columns are made of wood or stone and are sometimes covered with gypsum ornaments. Their capital is usually decorated; the Muqarnas<sup>5</sup> capital, which is locally called 'Tavangan', is the most popular type (Memarian, 2006, p. 236). Further, its shape is adapted to the appropriate structural form of capitals, since the thicker the top of the column is, the larger the support for covering beam would be. Larger area decreases the tension caused by the weight ( $\text{kg/m}^2$ ), thus the shearing force in the beam would decline.

In Zinat's house, a pair of columns is delicately placed in front of the east hall. The columns are rather tall and

have linear scales that make them look more elegant and sumptuous. Quite the contrary, there are more columns used in each of the small side Iwans (four in each one). They also have shorter scales, smaller openings in between, and appear more modest. This contrast in quality is a result of the difference in the function of their interior spaces; the tall columns illustrate the luxurious extrovert spaces for the guests, while the short ones represent the introvert personal rooms with small Iwans in front of them.

The tectonic expression performed in Halls and Iwans is technical, since the ornamental forms of their components are shaped due to statics, and unlike other parts of the facade the designer has exposed the structural elements.

Since this attitude can usually be seen in the facade of extrovert spaces, it could be concluded that technical methods are often employed to create more transparent surfaces. Probably, building such exposed wooden structure had been more difficult and expensive than constructing regular load bearing walls with ornamental layers on them; the expense that the designer has accepted in some situations.

### **Brick walls**

The adobe load bearing walls are covered with a layer of bricks since their surface is so rough, unpleasant, and vulnerable. Different types of tile decorations are added on the brick surface on some parts in order to add extra artistic character to the facade.

Tile decorations have different designs. Some of them are Persian Islamic 'Girih'<sup>6</sup> patterns created by the companion of small pieces of tile. Others illustrate more realistic figures such as the portraits of Islamic holy characters, the face of inhabitants of the house or their ancestors, and surprisingly, drawings of European nature and buildings.

Interpretation of these figures can lead to discoveries about the desires of the architect and inhabitants as well as the social culture of the era. For example the drawings of European scenery can be considered as proofs of early signs of western art influence and beginning of modernization on the last years of Qajar period.



**Fig. 8. Walls on Sides of the Main Hall are Covered with Tiles (Left) While others are not (Right)**

In fact, the architect has used the unavoidable sections that structural walls created on the facade, as a media; a surface that is employed to express meanings. These expressive walls are specially seen on the facade of more public and extrovert spaces of the house which perhaps were more noticeable to the guests. (Fig. 8)

For the above-mentioned reasons the tectonic expression of brick walls is completely figurative which represents meanings and culture.

### ***Orosi***

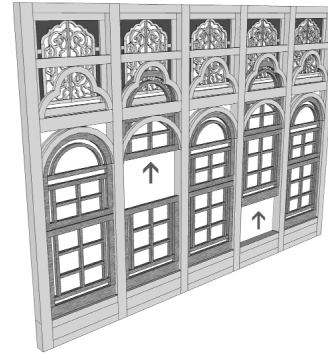
Orosi is a kind of wooden window-door which usually covers the whole side of a room. It has several openings which slide vertically (Pirnia, 2002, p. 192). Orosi can be considered as a semitransparent surface which has an ontological tectonic expression, the same as many other wooden elements of the facade.

Structural and covering elements constitute a typical Orosi. Glass pieces and wooden Girihs are detailing elements which statistically rely on wooden frames, made up of lumbers.

The horizontal and vertical lumbers are called 'Kala and Vadar'. (Memarian, 2006, p. 175) These lumbers along with other curved wooden components form the main structure of the Orosi. Although some of their carvings and shapes might appear decorative at first; a closer scrutiny reveals the synthesis of their art form and functional-statistical requirements. For example, the curved pieces seen in (Fig. 9) are in fact stiffeners for the above Kalas which support the upper porous parts of the window (Memarian, 2006, p. 175).

Moreover, the thickness of Kalas has been determined

by their load and span, and the middle ones are double so the sliding opening parts, which make different open and semi-open states possible, can climb up between them. (Fig. 9)



**Fig. 9. Components of Orosi are Core-Forms and Art-Forms Simultaneously (Created Based on Photographs by the Author (2010) and Memarian (2006, pp. 172-174))**

In conclusion, Orosis are technical-ontological components of the facade because of the amalgamation of their structure, function, and ornaments. The flexible and transparent character of these complex windows has demanded a more complicated carpentry compared to other technical components.

### ***Multi-Opening Windows***

Unlike Orosis, the opening parts of multi-door windows are not contiguous but designed in alcoves and are separated with structural adobe bulkheads.

The partitions are much thinner than main load bearing adobe walls; however they reduce the overall transparency of the windows, which is quite appropriate for the private-introvert rooms behind. Alcoves and partitions not only reduce the view and direct sunshine but also provide a space for the axial opening of the leaves of the doors.

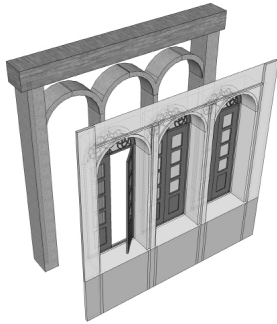
Furthermore, the arched lintels employed in multi-opening windows in Zinat's house are made of brick. These arches are supported by the bulkheads and both sides' adobe walls. The space left between the lintels and main beam of the ceiling is seen as a rectangular surface on the facade and is often covered with brick and tile ornaments.

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Other constructional parts of the surface are decorated or covered with bricks, tiles or gypsum, as well. Therefore, since a physically distinct representational mask covers the structural elements -although indirectly illustrates their shape- (Fig. 10) the tectonic expression of the multi-opening windows should be sorted as symbolic.



**Fig. 10. Cor-form and Art- Form in the Three Window opening, Memarian (2006, pp. 156-157) and drawings provided by fars ICHTO. 2009)**

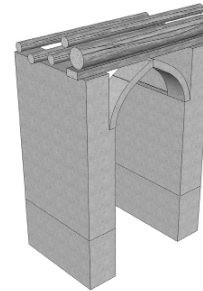
### *Corridor Openings*

Corridor openings are indeed the most transparent sections of the facade. They have representational decorations such as arches, Muqarnas, and brick works.

The openings provide maximum physical exchange and permit access to all interiors. They connect the courtyard to corridors with a number of stone stairs. Then, doors on both sides of the corridor open to rooms and halls.

In Zinat's house, wooden beams on the same level of other main beams of the ceiling span the corridor openings. But in some sections, a pointed arch is employed under the main beam. (Fig. 11)

This arch is fake and decorative, since the same beams are used for covering wider spans in halls and Orosi rooms without demanding supporting arches. However, as the facade of the arch is decorated with brick patterns, and complex gypsum Muqarnas is used beneath it, one can assume that defining an elegant entrance or decreasing the height of the opening could be the motive for using such a form. Consequently, the arch does not have a structural role and should be placed in symbolic elements category.



**Fig. 11. Core-Form of a Corridor Opening with Decorative Arch, and Drawings Provided by Fars ICHTO, 2009)**

Although the Muqarnas used in Zinat's house has a decorative character, it possesses a complicated structure itself which is formed by several horizontal levels and hundreds of small supporting arches. A detailed study of Muqarnas structural and decorative roles could be a complete research itself.

### *Shirsari*

Shirsari is a wooden cantilever with length up to 80 centimeters. The use of these elements was necessary because of heavy seasonal rains. Besides its important function (in protecting the facade) it beautifully finishes the skyline of the building (Memarian, 2006, p. 237). (Fig. 12)

These cantilevers are connected to the main beam of the ceiling, and the space between them is covered with wooden planks.



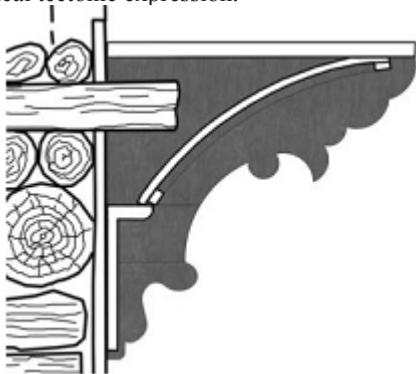
**Fig. 12. Wooden Shirsari**





**Fig. 13. A Longer Double Stepped Shirsari in the West Side of Zinat House**

In spite of various shapes of Shirsaris in Shiraz traditional houses, they are all designed according to their function and structure. For example, as the west side of Zinat's house is higher and needs longer rain shelter, its Shirsari is designed in a longer double-stepped shape. (Fig. 13) Moreover, the angled forms of Shirsaris fulfill the structural essentials of a cantilever beam as it functions as a stiffener. (Fig. 14) Therefore, Shirsari is a technical exposed component of the facade and since its ornaments are not in a separate covering layer, it has an ontological tectonic expression.



**Fig. 14. The Triangular Shape of a Shirsari is Like a Stiffener for the Cantilever (Section by the Author, based on the Drawings Provided by Fars ICHTO, 2009)**

***Khorshidi (Pediment)***

The large double height span of the main hall of the house is covered by a triangular wooden truss which is represented by a half circle pediment on the courtyard facade. The pediment is locally called Khorshidi and is made of galvanized iron. (Fig. 15)

Khorshidi is the only component that breaks the skyline of the facade and creates the main axis of the formal symmetry. It has no structural, protective, or climatic function. Further, its half circle shape is in least accordance to the triangular outline of the truss behind.

Moreover, the tympanum (surface) of Khorshidi is covered with decorative tiles. The same as other tile works of the house, they illustrate symbolic religious, social, and personal believes, but of course, in a much noticeable and distinctive position. In fact, Khorshidi is also a visual media presenting culture and values.



**Fig. 15. The Khorshidi**

Since the Khorshidi is positioned on top of the building structure and in a free space, the architect could design any shape to cover the truss. Therefore, its free shape should be traced in architects appeals rather than tectonic correlation.

However, its representational nature, ornamental character, and free shape make Khorshidi the most symbolic component of the facade.

**DISCUSSION AND RESULTS**

Analysis of the components, which is summarized as (Table 1), showed that the architect has employed diverse tectonic expressions on the facade. Because firstly, the finishing layers diversely adhere to the form of structural elements; and secondly, functional and spatial specifications of each surface or element require different levels of transparency and detailing. Based on these two factors, the designer has chosen various approaches from a spectrum of ontological and representational strategies.

The interpretations also indicated that ontological components were often used in more transparent parts of the facade. They were mostly made of wood and had detailed carpentry. Quite the contrary, representational elements were employed in more opaque sections. They had simpler details, and were made of solid masonry materials.

In conclusion, traditional designers used to have an adaptable attitude towards tectonics, they seldom exposed the rough and simple structural volumes and used ornamental forms and textures to blur its presence



or at least adorn its structural shape. These decorations are where the architect illustrates culture and mediates between the building and its residents.

Shiraz residential architecture used to possess a unique and specific tectonic expression which was based on the rich Persian culture. There is hope that it will revive again and flourish.

4. 'Khorshidi' is a pediment made of galvanized iron

used in most Qajari buildings.

5. 'Moqarnas' is a type of corbel employed as a decoration in traditional Persian Architecture.

6. 'Girih' patterns are decorations made up of small pieces (of tile, wood, etc.) in geometrical shapes which are used in Islamic architecture.

**Table 1. Tectonic Characters of the Facade Components**

Facade Components	Tectonic Characters	Facade Components	Tectonic Characters
Stone Dado (Symbolic)	-Prefabricated Blocks and Their Adherence to Structural Axes -Opaque Blocks on Structural Axes and Transparent Blocks on Spans -Figures of Structure in Decorations -Masking and Decorative Character	Columns of Halls and Iwans (Technical)	-Coincidence of Art form and Exposed Structure -Various Scales and Numbers Based on Spatial Needs -More Transparency -3d Ornaments on Column Capital
Surface of Load Bearing Walls (Symbolic)	-Tile Decorations Illustrating Culture -Masking, Protective, and Decorative Character	Corridor Openings (Symbolic)	-Masking and Decorative Character -3d Ornaments (Muqarnas) -Decorative Arch
Multi-Opening Windows (Symbolic)	-Masking and Decorative Character -The Least Transparency between Windows	Shirsari (Technical)	-Defines the Skyline of the Building -Coincidence of Art form and Core Form

## ENDNOTE

1. 'Iwan' or 'Veranda' is a space smaller than halls, walled on three sides, with one end open, which is usually located in front of a room. (Memarian, 2006, p. 162)

2. 'Orosi' is a large wooden window with vertical sliding openings, various carpentry decorations, and colored glasses. (Pirmia and Memarian, 2007, pp.141 & 580)

3. 'Shirsari's are wooden cantilevers on top the façade which are used as rain shelters.



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