

Residential Architecture of Bushehr, Connector of Introversion and Extraversion in Architecture

¹Mohamad Reza Bemanian and ²Abdolbaghi Moradchelleh

¹Department of Architecture, Faculty of Art,
University of Tarbiat Modares Jalal Ale Ahmad St, Tehran, Iran

²Department of Architecture, Gonbad Kavoods Branch,
Islamic Azad University, Gonbad Kavoods, Iran

Abstract: Human beings have always utilized architecture to accommodate their own housing to the conditions of environment in order to prepare their own comfort and adapt to the climate of the region. Bushehr is one of the southern cities of Iran and is located around the northern coasts of Persian Gulf. Due to two kinds of architecture, Introspection and extraversion, in this city, a unique architecture, which is the main topic of this paper, has been created in this area. The present paper examines the residential architecture in the city of Bushehr. In this regard, the extrovert and introvert common features in architecture in the residential houses are considered separately and spaces and functions of current spaces like Entrance, Yard, rooms, porch (Tareme), Shenashil (a kind of balcony), Stairway and features of each case are described. For this purpose, five schematic types of housing at the field study of Bushehr have been scrutinized and finally the summary and conclusion of done studies have been presented.

Key words: Introversion • Extraversion • Architecture • Yard • Porch (tareme) • Shenashil

INTRODUCTION

In the Iranian architecture with four climates, as soon as we hear the words Introversion and extraversion, the name of northern cities and central plateau come to our mind unconsciously; however, it should be thought if the central yard (introversion) has been considered with the extraversion. The central yard is not always equal to introversion, Bushehr is one of the most unique cities which connects these two kinds of architecture (introversion and extraversion) and has these both architectures simultaneously consistent with the conditions of regional climate for its residents' comfort. Here, with a review in the architecture of housing in Bushehr and the elements and spaces located in the houses, we propose the combination of Introversion and extraversion and discuss Bushehr as an exceptional and unique example in the architecture of housing.

It should be noted that, in the compact structure of Bushehr, cities have been developed at the high altitude like other structures in the coast of Persian Gulf such as

Bandar Lengeh and Bandar Abbas, but they have different basis with Bushehr in terms of organizing different spaces in these areas. Some of important features of the residential architecture of Bushehr are central yard along with the surrounding spaces as well as direct visual communication with outdoors as elements called Porch (Tareme) and shenashil.

High compression between houses and narrow lanes, make the flow of air through the house impossible. Due to excessive heat and humidity of the weather in this city, there has been an appropriate route for the circulation of the wind flow with different holes in the outer shell and connecting these holes to the yard, that outer Shenashil and Tareme (Porch) do parts this task, also the direct visual communication with the beautiful landscape of Persian Gulf is provided by Shenashil. Also, the height of the room is high for better airflow and windows are facing the sea and materials have low thermal capacity [1].

The similar features of houses in Bushehr with the extroverted houses can be described as follows:

- Visual and physical communication with the outdoor space
- Increase the height and floor to take advantage of the possibility of natural ventilation
- Take advantage of a structural method, joists
- A direct Entrance to the yard in most houses
- A Shenashil (a kind of balcony) and in northern areas as a terrace or Hall
- Often open Stairway and wide open spaces
- Windows facing the wind and large openings

Some common features of Bushehr housing with introverted desert houses can also be noted; these include:

- A central yard with pool and garden
- The Taremeh or porch (the semi-open space)
- Summer and Winter rooms
- Water wells, as a water storage in the smaller sample [1-4].

Therefore, we have investigated the elements of residential houses of Bushehr and their performance and finally, the conclusions of this review have been presented.

Investigating the Elements of Residential Houses of Bushehr and Their Performance

Entrance: The Entrance of houses in Bushehr, like other regions of Iran, is formed with the invitation and guidance of facade. The facade of houses are built plain or Non-simple and in every kinds of facades tries to deliver the concept of invitation by vertical and horizontal elements such as frames and arches at the top of façade. Weights at the top of entrance are the differences which are seen in the entrance of houses in Bushehr and have the functional roles as Light barrier and ventilator. Another difference in the Entrance of Bushehr with desert regions is the way to enter the yard, In contrast with the desert regions in which Porch (Hashtei) prevents a direct view to the yard, the Entrance in Bushehr is directly after the yard and has the direct contact with the yard and it can be more than one Entrance. The path to the yard from outside the house to the yard, in the simplest form, is a straight line through the corridors and porch (Taremeh).

Other paths to reach the yard are in form of two cross or spiral paths through the corridors and Taremeh (Porch) [1].



Design of an Entrance – designed by Mohammed Ali Bigdelou [1]

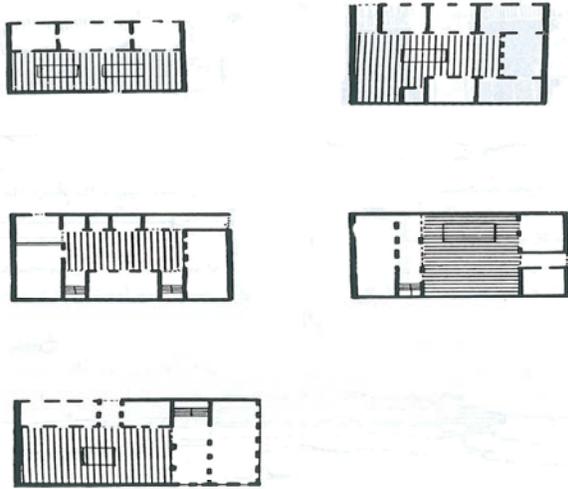
Yard: In Dehkhoda Dictionary, Yard means Enclosure, every closed places with walls, house and home. Also, other words such as Apron, cortile and courtyard have the similar meaning. The yard in the Iranian houses has been used in various forms. Some of these cases are a follows briefly:

- Yard, as the sign of privacy and ownership
- Yard, The unifier of several elements in house
- Yard, The connector of several spaces
- Yard, As an artificial ventilator to pass the appropriate wind
- Yard, As a quiet and secure privacy place for the comfort of family.

Various elements of yard are different based on the required performance and types of houses. In usual houses, Not very large, garden, Water wells, pool and small water storage are the main elements of a yard [1].

For the use of evaporative cooling, in order to cool the inner rooms, the garden in the houses of Bushehr is a small green space with an area of about one or two square meters in which various types of flowers and trees such as orange, palm, lemon and winter flowers such as nasturtium, parsley, etc. are planted.

Pools are made in different sizes and shapes, the most number of that is a long rectangle. In some kinds of small houses, the water wells is in the yard and in bigger houses is in one of the sides of house, in a space called Chahkhaneh (the place of water well). The inner yard is only for family members and the strangers enter the outer yard [1].



A design for the way yard is built in several houses [1]

The Way of Placement and Performance of Rooms in the Houses of Bushehr:

Based on organizing total spaces and dividing them to summer and winter rooms, the spaces and rooms are formed. Building the houses in high altitude in order to reach the path of appropriate winds, is the reason that most of the summer rooms are built in upper floors and the winter rooms in the Ground Floor are lower than the level of yard.

The attitude of summer rooms is high in order that the warm air rises and replace with the cooler air.

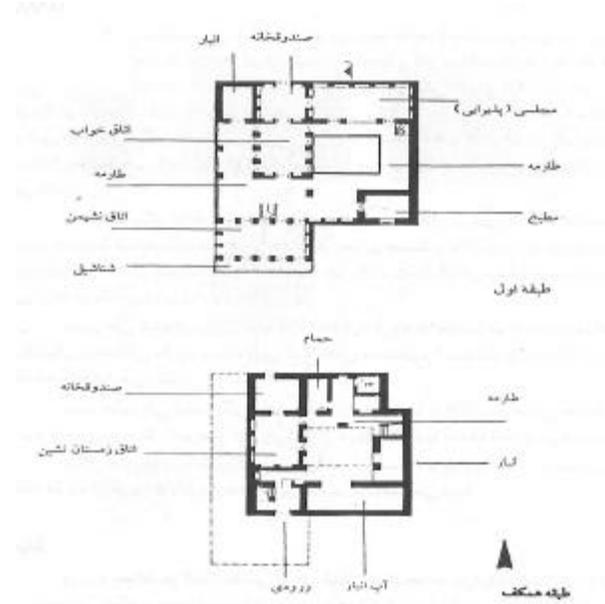
The winter room is a small room with few opening doors; in order to warm the room, it is built deeper by the different height with the yard as one or two stairs. But summer rooms have the complete or half-door openings in several sides. In a lot of houses this room acts as a wind deflector.

Summer rooms have been built in the types of entrance, four, five, six, seven, eight, up to sixteen doors. These rooms are the function as being the hall and living room. The Closet (Pastou) usually is next to the small room.

Various elements of a room include openings as the shape of doors or half-doors, Goljam, sash (Orsei), niche and matting. The important feature of some rooms is that they have double doors. Usually the outer doors are the shutters and the interior doors are double, similar to other areas. If you open the interior door, a pleasant wind flow moves in, without the severe light and direct view from outside. The floors of rooms are made in plaster and mats with various dimensions are on them. The several kinds of mat have been known as bouria¹ Cholan², Setteh³ and

Bahraini⁴. The rooms are connected to the other available spaces with several shapes. The Ground floor rooms are connected directly to the yard. And the most common way to access them is by Tareme (porch between several spaces).

An interesting mix of rooms is made by putting the rooms together, the most common mix is the combination of Tareme and room [1]⁵.



Introduce various spaces of a house in Bushehr [1]

Tareme, the Connection of Inner Roof: Tareme or Porch or Ivan is so common in the architecture of most parts of Iran. T areme is the space where is open at one end and sometimes is used without a roof and as a temporary seasonal living room, corridor and connector of several spaces. Although Ivan, hall and porches of central regions of Iran can have parts or all of the above functions, the most application for that is as the temporary seasonal living room.

The size of Tareme is different according to the need and the dimensions of the house and the minimum width of that equal to a two-way or round stairway.

¹Mat sizes are different. Dimensions of 1x6 and 2x6 and 2x1.5m are seen

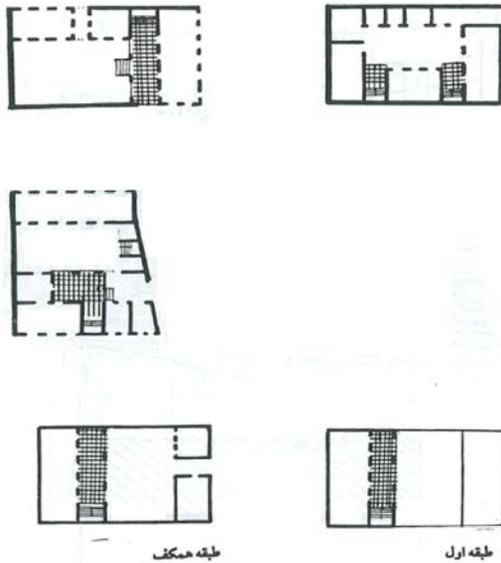
² Cholan is made of woods like straw

³ Setteh is made of the branches of palm

⁴Bahraini is made so slim and elegant

⁵The combined shapes (closet, seven- door, three-door) (corridor, five- door, closet) (closet, one-door, closet)

TaremeH is made in various forms and the simple shape of that is a rectangular, often very similar to the square and most of the time is a long rectangular. One of the most beautiful TaremeH with the complex form is the current municipality building in Bushehr, which is a combination of two trapezoidal TaremeH that binds a rectangular TaremeH together [1].



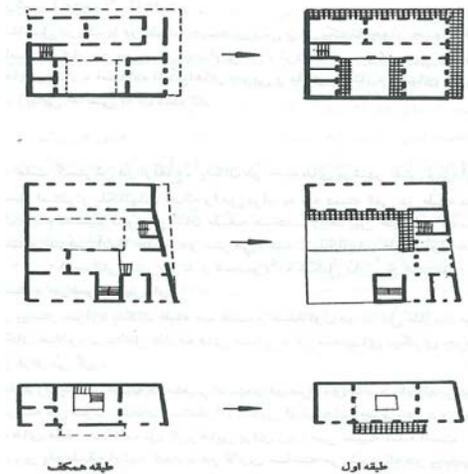
TaremeH and its position in several houses [1]

Shenashil, as a Hatch to the Inner and Outer Space:

Shenashil is an important element in the houses of Bushehr as a connection ring of Introversion and extraversion for us.

Shenashil Has Several Important Functions: First, it is a place with a pleasant breeze and pleasant winds. By Shenashil you can enjoy the beautiful landscapes of Persian Gulf coast. The inner Shenashil which is made in one or more sides of upper Stories, overlooking the yard, is also the interface of different spaces.

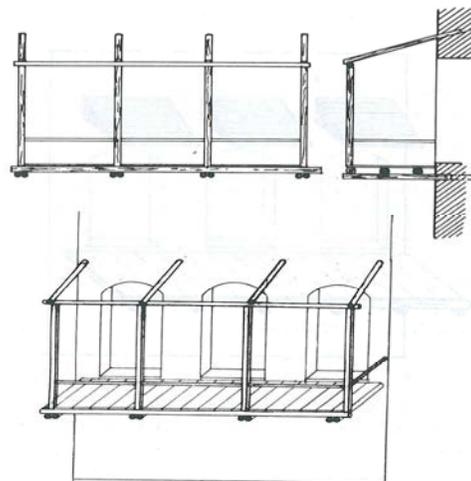
In upper Stories, the middle TaremeHs (porches) and other types of TaremeHs, make the local connection between several spaces possible, however to pass from one side you must pass the rooms, in this case we can use Shenashil as an opening without entering the rooms. Fixed wooden doors and openings, such as Drop-Down and Netted doors make the passing of breeze possible, without direct sunlight which hurt residents of house [1].



The position of Shenashil [1]

The Way of Implementation: The skeleton of Shenashil is made in several ways. A common sample is made by the emerging the joist of roof on onward outer space. Another method to utilize a short, wooden joist is where part of that is inside the wall. In order to keep these joists, a basic joist under them, Kalpa and wooden or metal picket are required [1].

Klpa is used for onward first floor of houses and in narrow lanes of city. Shenashil is usually wooden and made of the best kind of materials with low thermal capacity in order not to warm the space between room and Shenashil too much. Shenashil is made with ?? ceiling or without ceiling. Covering in the type with roof, is leaned to the small diameter columns with four sides. The wooden coverage is placed attached on the entire of that or unattached and only on the openings of room [1].



A design for the details of Shenashil [1]

The Staircase as the Connector Element of

Stories: Because of the increase in height, the staircase in the house of Bushehr has a special role. The places for house staircase can be divided into three general categories, in the ground floor, first floor and roof:

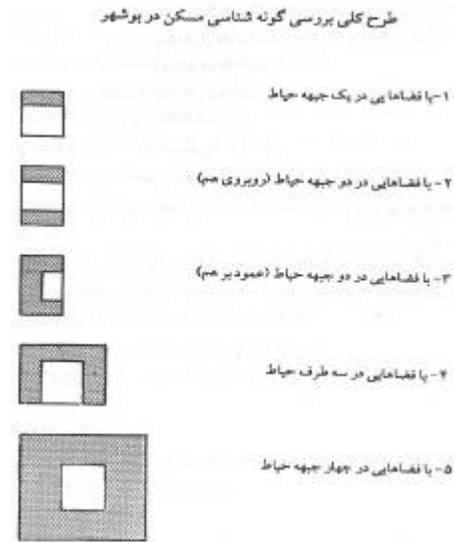
- The staircase of ground floor is the connector between yard and the space of this floor and its width is about two meters.
- The staircase of First floor has a width of about 80 - 100 cm which is usually in the form of a spiral.
- The staircase of roof is wooden and its width is various.

In most cases, the staircase of first and ground floor are inside of the middle Taremeh. The staircase can also be inside the other places such as corridors are Taremeh. The number of stairs in the houses is different and in some cases up to three staircases is considered for floors. The staircase has the wooden skeleton. Usually, there are spaces facing the light for basement at the top of the stairs of ground floor. Also a closet is made under the space of first floor staircase and in some houses the door of basement is in this place [1].

Roof and Attic: Roof (Boon) has been a suitable place for sleeping during the summer nights. For this purpose, it has a small room, called attic, to put equipment on it. Roof has two inner and outer covering called Majar. The external coverings are made in various forms:

- The quite closed stone coverings with plaster coating or with small nets for passing the air flow on the surface of roof
- The quite closed stone coverings with plaster coating and simple metal or wooden rail
- The quite closed stone coverings with plaster coating and drop-down spaces.

The slope of the roof surface is in such a way that rainwater can lead to water storage by Sheifeh (rectangular wooden gutters). Attic is the roof of spaces which has a lower height than other parts of the house and it is applied as a roof [1].



The positions of spaces towards the yard [1]

- Spaces which are organized on one side of the yard
- Spaces which are on two sides of the yard in the front of each other.
- Spaces which are on two sides of the yard and with cross form and in the shape of word (L)
- Spaces which are organized on three sides of the yard, in the shape of word (U)
- Spaces which are organized on four sides of the yard, such as the introverted house of central Plateau [1]

The Frontage of House in Bushehr: At any extent we consider the exterior frontage houses leading to the central courtyard in introverted desert houses and using the beautiful decorations, the same extent of consideration is in houses of Bushehr for the exterior frontage facing the passage, due to different architecture of the central yard and extroversion.

There is beautiful and long entrance with wooden designed doors and beautiful designs on the wooden doors, also latticed large spaces on the metal or wood entrance are designed incredibly beautiful. It has the functional role such as space ventilation and allows the light to enter the inner space of corridor.

In houses where there are not beautiful exterior Shenashil, the openings, according to the number of them, are placed in beautiful frames.

If there are four-side Goljams at the top of the openings or embowed shapes in the frames, the windows would be more beautiful, also wooden window shade has had the special features to the exterior view.

Protrusion of some parts or all of the first floor is possible by the wooden Kalpa are in some places and protective rails have been used [1].

CONCLUSION

- Compact structure of Bushehr has been developed at the high altitude like other houses in the coast of Persian Gulf
- There is a central yard as well as other spaces, such as the houses of Central Plateau, however in contrast with the houses in Central Plateau which have no direct visual communication to the outer space and the view is just of central yard, there is a visual direct communication with the outer spaces of the house by Taremeh (Porch) and Shenashil.
- The entrance with window and the openings such as Shenashil with drop-down fixed or movable gates make the movement of air flow possible, but in the Central Plateau it is possible just by evaporative cooling through the fountains and wind deflector (and the air flow is possible only by long windows in the northern regions).
- The entrance of house in Bushehr is directly through the corridor and there is no indirect path and porch, such as the entrance of house in the desert areas.
- There is semi-open space in the regions of Bushehr, called Taremeh (porch) and in the central areas is called Ivan. This is the similar feature in these two regions. Other similarities are the summer and winter rooms as well as the Water wells or small water storage.
- There are inner and exterior Shenashils in the house of Bushehr. The inner Shnashil which has the visual communication to the courtyard is a route for passing , however in the exterior Shenashil the drop down hatches are used for the Ventilation and air flow and the visual communication to the outer coast of the Persian Gulf is possible.
- Shenashil is placed in one or two sides of outer directions and in one to four inner directions.
- Staircase in house of Bushehr is an important element which connects the stories and is divided to three general categories, Ground floor, First floor and roof staircase which is wooden.

- The staircase of Ground floor and First floor is in the middle Taremeh. And there are places facing the sun light for the basement in order to catch the light of the ground floor.
- The roof in Bushehr has the inner and exterior covering, called Majar, the exterior coverings are the quite closed stone coverings with plaster coating with small nets and simple metal or wooden rail or drop-down spaces between them.
- The slope of the roof surface is in such a way that rainwater can lead to water storage by Sheifeh (rectangular wooden gutters).
- The space of houses have been in many forms including:
 - Spaces which are organized on one side of the yard
 - Spaces which are on two sides of the yard in the front of each other.
 - Spaces which are on two sides of the yard and with cross form and in the shape of word (L)
 - Spaces which are organized on three sides of the yard, in the shape of word (U)
 - Spaces which are organized on four sides of the yard, such as the introverted house of central Plateau
- Exterior Shenashil in the house of Bushehr, that is facing the outer space of house and the coast of Persian Gulf, has the same role as Terrace in the houses of northern areas that are in front of the sea.

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