VERNACULAR ARCHITECTURE OF OLD SAFFEIN VILLAGE: THE LAST CHANCE FOR SAVING THE ARCHITECTURAL VALUES OF HISTORICAL KISH ISLAND - IRAN

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Abstract

Vernacular architecture of Iran is a result of a long term process of social and cultural development which has expanded all over the country. The hot and humid region of Iran situates in a long and thin coastline of the north side of the Persian Gulf. Kish Island, with more than 1,000 years of history, is located in this region with the same social and climatic factors. Vernacular houses of Old Saffein village are the best examples of the harmony among human, construction and the natural environment on Kish Island. This article seeks to emphasize the architectural concepts and ideas, as well as materials and technology which are applied in the vernacular architecture of Old Saffein, the last remaining vernacular architecture of Kish Island. To find its unique features, the study overviews background of the island by archival and observation methods. In addition, a study on appearance of the vernacular houses by physical observation is used. The results are based on an analysis of vernacular houses in Old Saffein village, to establish specific features which can be applied for guiding the process of developing contemporary housing appropriate for Kish Island community.

Keywords: *Iranian Architecture, Kish Island, Vernacular Architecture, Old Saffein*

Introduction

Vernacular architecture of Iran is a result of a long time processing of social and cultural development. Vernacular houses have followed the same process and contributed to a specific environmental system which is compatible with economy of the community. Based on these, the Iranian vernacular architecture is a meaningful one which is expanded all over the country.

The hot and humid region of Iran situates in a long and thin coastline of the north side of the Persian Gulf. The vernacular architecture of the region follows Iranian vernacular architecture with all of its values. Kish Island is located in this region with the same social and climatic factors. Kish Island has more than 1,000 years of history. During 1970s, the island had around 10 small villages[1] . Due to its selection as the first Free Tourist Zone of Iran, the traditional lifestyle in Kish Island gave way to dramatic and modern changes (Monsef 1978). Old Saffein is located on the north-west cost of Kish Island. Vernacular houses of Old Saffein are the best examples of the harmony among human, construction and the natural environment on Kish Island. There are approximately 1,500 natives housed in Old Saffein. These Iranian-Arab Muslim people live in organic type of settlements which are relatively high density. However, the houses have undergone a level of degradation. The total area of the village, including homes, private gardens and network accessibility, is around 30,000 square meters[2] .

Vernacular architecture of Old Saffein, through its adaptation over a long time to local context has the potential to provide a more appropriate response than the meaningless styles that are currently undermining Kish Island's architectural cohesion. This article attempts to investigate vernacular architecture in Old Saffein village to find its specific features. It also seeks to emphasize the architectural concepts and ideas and also construction and technologies which are applied in the vernacular architecture of Old Saffein, as the last opportunity for saving the architectural heritage of Kish Island.

Iranian Architecture

The Iranian vernacular architecture is based on five fundamental characteristics (Pirnia and Memarian 1992): Compatibility with the needs of people (*Mardom-vari*), Inward-looking (*Daroon-geraei*), Avoiding un-necessities (*Parhiz az bihoodegi*), Self-efficiency (*Khod-basandegi*), and Structural rigidity (*Niaresh*). These codes concern building quality from two aspects: firstly, concepts and ideas and secondly, construction and technology (*Vakili-Ardebili* and *Boussabaine* 2006). *Mardom-vari*, *Daroon-geraei* and *Parhiz az bihoodegi* address quality of concept and idea (socio-economical aspects), and *Khod-basandegi* and *Niaresh* (*year*) point out the issues related to construction and technology (physical aspects).

In Iranian vernacular architecture compatibility with the needs of people is called *Mardom-vari*, which in simple words means 'architecture for people'. It clarifies the relationship between functionality of buildings and their user needs. Family and its privacy are fundamental factors in Persian culture. In the traditional custom

[1] *Sahab Institute, Department of Geographical Studies. Kish Island: Yesterday & Today (In Persian). Tehran: Sahab Geographic and Carographic Publication, 1998.*

[2] *Kish Free Zone Organization. Comparative Report of the first 11 Months of the Year 1386 (In Persian) . Kish Free Zone Organization, 2008.*

outsiders should not have direct view in to the house. Inward-looking, or *Daroon-Geraei*, refers to family and its privacy. Avoiding the un-necessities or in Persian, *arhiz-az-bihoodegi* explains about achieving the highest act for buildings' users in relation to issues such as waste control, cost, and avoiding construction loads. In addition, satisfying people's needs forms an essential part of Iranian vernacular architecture, based on a socio-economic system that meets daily needs and functions (Manzoor 1989).

Self-efficiency, or *Khod-basandegi*, is reflected by using local materials (*Boom-avard* in Persian) and natural resources that have provided fundamental characteristics for the Iranian architecture during the history. This architecture directly attempts to create an environment that responds to man's needs, of becoming attuned to the materials and processes available and using them in the most effective way (Manzoor 1989). Furthermore, Iranian vernacular construction techniques comprise the basic elements needed to build statically and dynamically to achieve the design construction in accordance with existing levels of knowledge and technology. Finally, structural rigidity, or *Niaresh* in Persian, explains necessary requirements in building technologies (static and dynamic dimensions of buildings).

Vernacular Architecture on the Northern Edge of the Persian Gulf Region

The hot and humid region of Iran situates in a long and thin coastline of north side of the Persian Gulf (Figure 1 & Figure 2). The long summers are hot and humid and the short winters are mild. Humidity in all season is more than 60% during the year. Annual precipitation is very low and most of which is in the fall and winter. The yearly average of raining is 145 mm. The mean temperature is between 30° - 34° C during spring and summer. Excellent examples of vernacular architecture of this region can be found in some coastal settlements like Bushehr, Bandar-e Lengeh, Bandar-e Kong and Laft. The most important feature of vernacular architecture in this area is adaptation to the environment and consideration to economic factors through energy saving (Babakrad 1985). In this region, the characteristics of vernacular architecture in general are reflected by one-storey dwelling units with courtyards, high surrounding walls, large windows (towards the courtyard), and high spaces used for increasing natural ventilation (Azari-Najafabadi, et al. 2006). Most of the rooms face east and small rooms are located on other sides. In addition, due to the high humidity,

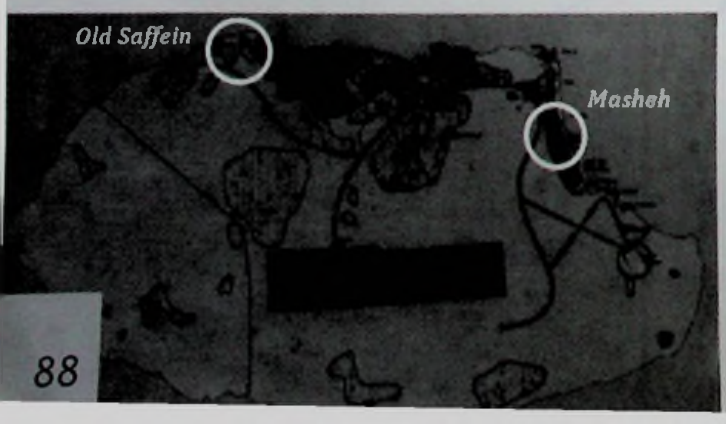
Figure 1: Map of Iran

Figure 2: Hot and Humid Region, North Side of Persian Gulf

there are no basements in the buildings. The roofs, which are usually flat, are used as sleeping area during summer nights. The houses usually do not have any windows on the external walls to prevent indoor activities from being viewed from the outside. Additionally, it creates a better thermal exchange. Adaptation to the environment and the use of natural energy are fundamental beliefs in this vernacular architecture (Babakrad 1985, Pourjafar 1996). Furthermore, the wind tower is the dominant feature in coastal cities. The size and height will be directly related to their distance from the gulf. Limestone and adobe are commonly used, with the former providing good solar reflection, due to its light colour (Azari-Najafabadi, et al. 2006). Kish Island has similar climatic factors to the above mentioned cities. All of them have similar Culture as well as traditional house construction methods.

Old Saffein Village on Kish Island

Kish Island gained prominence due to its natural and geographical features, between 1960 and 1970. During that time, the island had around 10 small villages and the most flourished were called *Masheh* and *Saffein* (Figure 3).



Due to its status as a Free Tourist Zone, the traditional lifestyle gave way to dramatic and modern changes on Kish Island. North-east coast of the Island was selected as the main tourist area in which Masheh village was located. It resulted in all residents of Masheh village to be moved to an area adjacent to Saffein, on the north-west cost, in 1975. Nowadays, Old Saffein village is the last settlement in which indigenous people are still living with all of the values of this the fishing tools and the crops (Mokhtarpour 1999). The *mozif* (a special room for guests) is located in this yard (Figure 7). If the land is too small for the guest yard, there is a direct door to the *mozif* from street. The indigenous people keep animals in the backyard. It is separated from the main yard by some short walls.

In addition, Islam encourages the maintenance of strong family ties throughistorical island (Mokhtarpour 1996).

The subject of interest in this article covers a broad spectrum of vernacular qualities. It is sensitive to human dimensions and needs, to materials, to techniques, to climates, to energy efficiency, and finally to nature.

Research Methodology

This study employs two stages for finding the characteristic features of vernacular architecture of Old Saffein in Kish Island. The first stage overviews background of the island in fields of vernacular architecture by archival and observation study. It identifies socio-cultural characteristics of Kish Island for understanding the occupants of these houses.

Figure 3: Location of Masheh village and Old Saffein Village on Kish Island (1975)

It also studies vernacular architecture in Iran and the northern edge of the Persian Gulf, and examines quality of that in Kish. Resources for review are the Iranian and international documents including books and internet, research articles from related media in the study area. It also includes review on government publications, studies which have been done specially by *Mokhtarpour* as an anthropologist, maps, photographs, petitions pertaining to subject from 1960 to the present, and statistics and information of Kish from 1960 until now. In the second stage, there is a study on appearance of the vernacular houses by physical observation using photographs and free-hand drawings. In addition, some spatial dimensions were measured in detail for more clarification.

Concepts and Ideas

As mentioned above, three fundamental characteristics of Iranian vernacular architecture concern concepts and ideas. This section addresses two aspects: site planning and specific building elements. Both are affected by concepts and ideas of people who are building the houses and are living there.

Site Planning

In this aspect of vernacular houses, threefactors are studied. The first is orientation valuable shades. which helps to minimize high temperatures inside the houses. In addition, the direction of Kiblah is an important issue in orientation of Muslim's dwellings. The second one is site organization, which is affected by social, economic and environmental values of the community. The third one is vegetation, which has very important role in creating valuable shades.

The vernacular houses of Old Saffein are created with summer and winter sections. The summer spaces are facing towards the gulf and the winter spaces are on the opposite side (Figure 4). The orientation of the houses is mostly on north-south direction but expansion of the rooms is in east-west direction. Moreover, the Kiblah plays an important role in orientation of these traditional dwellings as a Muslim community. Additionally, mosques are the heart of the villages and all buildings are built around it (Figure 5).

The region's vernacular architecture normally consists of a series of spaces grounded around a courtyard (Azari-Najafabadi, et al. 2006). In Old Saffein vernacular architecture generally

Figure 4: Vernacular house, Kish

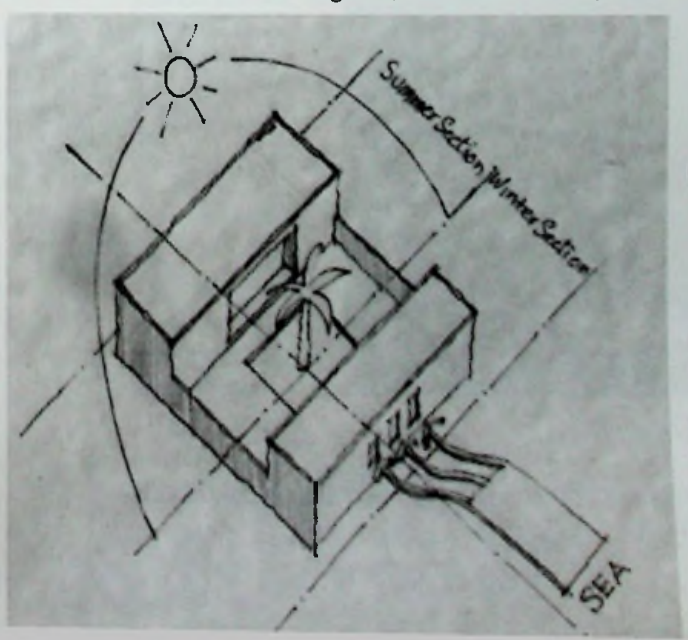


Figure 5: Jam'e Mosque in Centre of Old Saffein

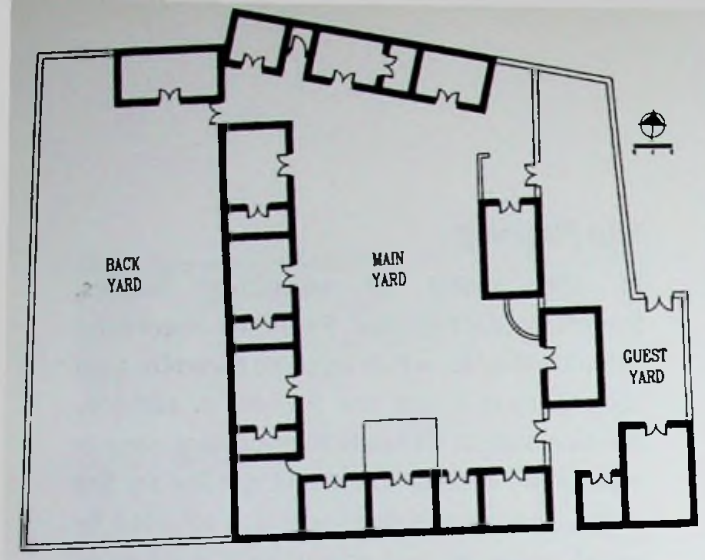


Figure6: A vernacular house plan, Old Saffein

Figure 7: A mozif in a vernacular house

is inward-looking. The old large houses include three different courtyards with different functions : *Hoy_al_beyt* (the main yard), *Hoy_al_majles* (the guest yard) and *zaribe_al_saghirah* (the back yard). There are two different entrances in the houses, the main entrance opens to the main yard and the guest entrance opens to the guest's yard. The living room (*moraba'eh*), bedrooms (*otagh*), kitchen (*matbakh*) and toilet surround the main yard. Nearby all of the bedrooms there is a place for bathing known as *qati'eh* (Figure 6). *Qati'eh* is separated from the *otagh* with a wall that increases in height until 70 cm to the ceiling. *Otaghs* is accessed through a corridor called *Sabat*. At a corner of the yard, there is a place forholding the fishing tools and the crops (Mokhtarpour 1999). The *mozif* (a special room for guests) is located in this yard (Figure 7). If the land is too small for the guest yard, there is a direct door to the *mozif* from street. The indigenous people keep animals in the backyard. It is separated from the main yard by some short walls.

In addition, Islam encourages the maintenance of strong family ties throug the extended family concept. The idea of taking appropriate measures to prevent the family splitting up by having a design preference for extended family living in a single house are important principles for Muslim communities (Mortada 2003). Due to this, the houses are flexible for expansion when family members increase in number. Because of their valuable shading properties

(a) (b) (c)

Figure8:
(a) Nakhl'e Khoram
(b) Kahoor (c) Loor

[3] *All of local (Arabic) words in this article are borrowed from the book: "Two Years with Indigenous People in Kish Island: The Anthropological Study"; written by Rajabali Mokhtarpour.*

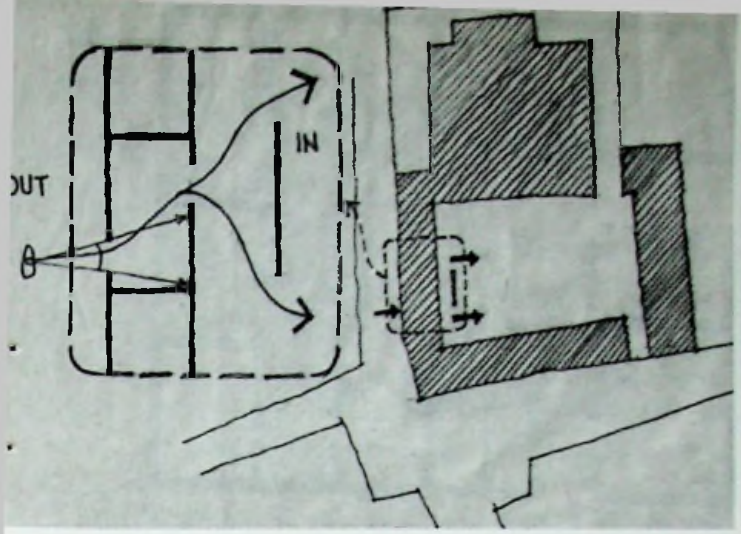


Figure 10: An Estar in Plan, Old Saffein

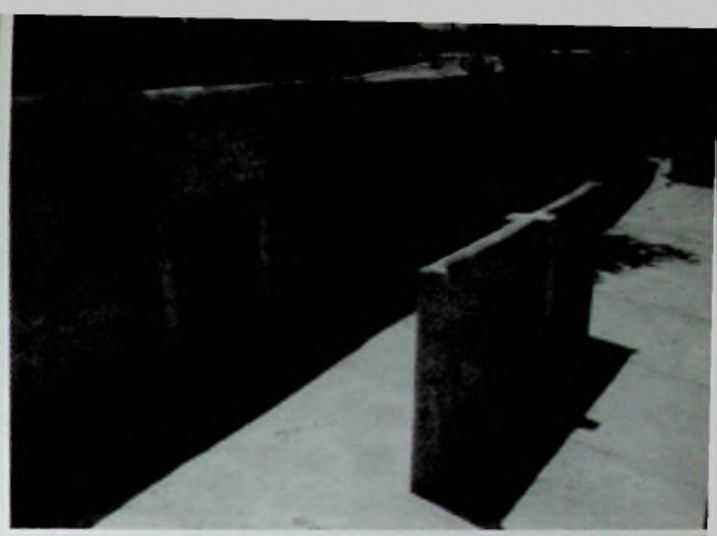


Figure 11: An Estar in Photo, Old Saffein

trees play an important role in vernacular architecture of the village. Considering that the wind is blowing for the duration of year, vegetation can mitigate the high temperature, and make the surrounding spaces more comfortable. In addition, summer crops are cultivated in the backyards. Furthermore, some regional trees such as *loor* (Ficus benghalensis), *kahoor* (Prosopis Cineraria) and *nakhl'e khorma* (Phoenia dactylifera) have been cultivated in main yards (Figures 8: a,b,c).

Specific Building Elements

Openings, transitional spaces, special shading devices and architectural elements are specific in vernacular architecture for each region of Iran. These elements have common function in hot and humid region based on the similar environment. Vernacular architecture of Old Saffein follows the same concepts and ideas but in different shape. The differences are presented in following section. The severe climate of the hot and humid region has determined that all of the windows and porticos are oriented towards the courtyards (Azari-Najafabadi, et al. 2006). In Old Saffein, windows or porticos are not seen from the streets. In other words, the building is solid from these views (Figure 9).

In most of the houses, a short divider is erected in front of the main entrance door, with a height of about 2 meters and is called estar (Figures 10 & 11). This is a principle idea in vernacular architecture of Kish Island that visitors should never view directly into the house (Mokhtarpour 1999). The length of the estar depends on the width of the door, to prevent the inside of the house being viewed

Figure 9: A House without Outside Opening, Old Saffein

Figure 12: Entrance to Houses, Old Saffein

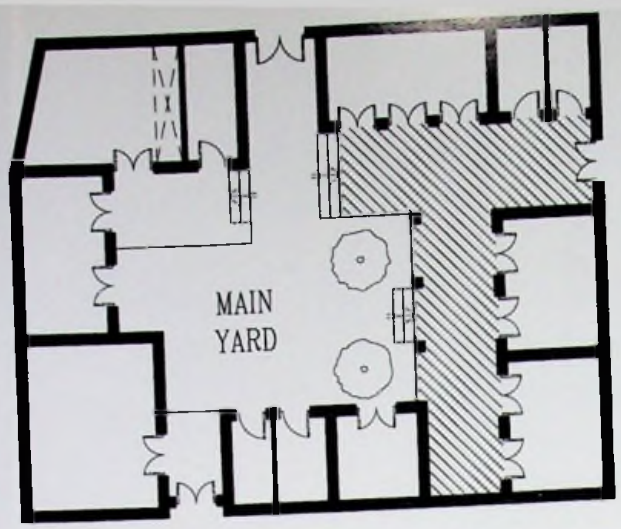


Figure 13: Sabat in Vernacular House, Old Saffein

from outside. In some cases, small halls are used for entering the residence.

Maximizing shading is one of the significant features in local architecture of the Island. In Old Saffein, most of the entrance doors have sunshade (Figure 12). This element prevents the penetration of solar radiation into the house. Furthermore, large numbers of the traditional houses have corridors that prevent solar radiation from entering into the rooms. Additionally, it is a connector between yards and rooms (Figure 13). These porticos, in the region, are another solution to protect the building against solar radiation. Moreover, many of the outdoor activities are carried out inside these porticos (Babakrad 1985). Wind-catcher or bad-gir is the most important monumental element in architecture of this part of Iran. This is the other strategy to bring the cool sea breezes inside the building (Azari-Najafabadi, et al. 2006). The shape and size of the wind-catchers in Old Saffein are different from the wind-catchers found in other places in South of Iran (Figures 14 & 15). In this place, bad-gir is a dent on the facades with a split on the floor. The wind streams through this split into the rooms.

Figures 14 & 15: Specific Wind-Catcher (Bad-gir), Old Saffein

Construction and Technology

There are two fundamental characteristics in Iranian vernacular architecture concerning construction and technology. These are building design and

local construction which are described below.

Building Design

Form, building height and climatic solutions are three subjects which are affected by available materials, resources and technology.

Compactness is the technique of minimizing the amount of building surface exposed to the direct radiation of the sun (Ardalan 1976). In the village, compactness can be specified in many ways, but it is most clearly evidenced by the ratio of exposed building surface to enclosed living volume (Figure 16). The shadow network is formed by a number of different techniques. The most common component of the shadow network is a path, or kucheh, with shade created by its narrow width and high building walls which form its edge.

Since the region is located near the gulf and the level of sub-ground water is near the surface, buildings are usually constructed without basement. Most of the houses in Old Saffein are one-storey high. The floor level of the rooms is mostly built between 70 cm to 150 cm higher than the yard's floor (Figure 17). This is to allow for natural ventilation

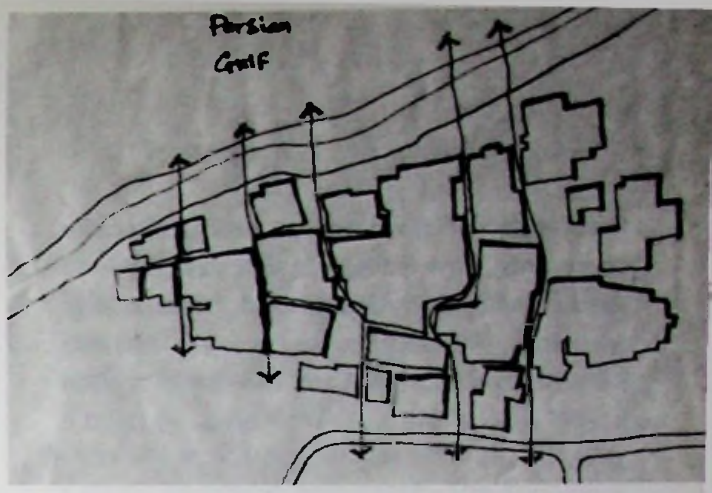


Figure 16: Compactness in Fabric, Old Saffein

which is the most important factor for increasing the high temperature. It is also as a precaution against the consequences of sudden rainfalls. There is however a few two-storey buildings in old settlements in Kish Island that are mostly owned by rich people. The name of second storey is Ghorfeh (Mokhtarpour 1999). It is usually used for summer residing. Also, the courtyard's wall are tall for casting shadows on floor of narrow streets and obstructing indoor of the house from outsiders.

To create cross ventilation inside spaces and to reduce the heat, the lane windows and the courtyard windows are often built opposite to each other. Moreover, the rooms usually have openings on sides with positive and negative pressure. The other difference refers to location of windows and porticos.

Figure17: A Section of A Houses, Old Saffein

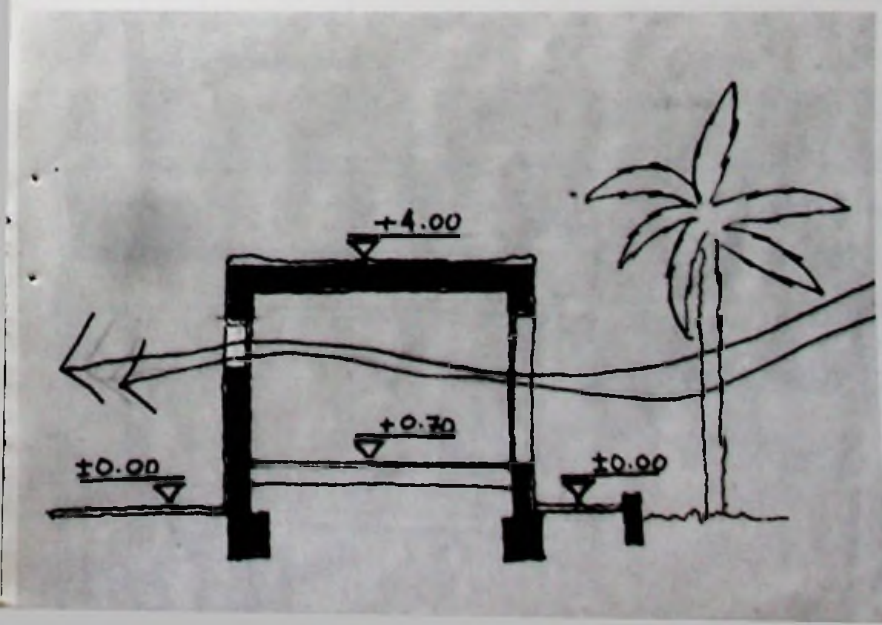


Figure 18: Natural Ventilation, Old Saffein

The height of buildings as well as smaller courtyards allow walls, and also, vegetation to shade the courtyards and cool the buildings and thus, support convective air currents between the courtyard and the spaces around it and reduce the high temperatures (Figure 18).

Local Construction

Use of local materials and natural resources has provided fundamental characteristics for the Iranian architecture all around the country. Local construction with local materials is one of the most important factors for making identity for all vernacular architecture.

Coral stones, coral mortar, wooden beam and mat are fundamental materials in vernacular buildings of Old Saffein. Wooden beam and mat are brought to the island from outside, but coral stone and sand which are basic local material for construction are found all around the island. Coral affects on the character of this architecture by its specific features especially the bright milky colour. The residents also reuse the materials of ruined building when they build new one.In vernacular houses of Old Saffein, the floors are covered by a special 2 cm thick mortar called saban (Mokhtarpour 1999). It is a mixture of coral pieces, broken cochlea and coral mortar. The mortar is spread on hardcore. Due to high moisture, the owners renew the flooring every 3 years. Coral stone is the principal material for building the walls. The wall does not have footing but there is just a row of stones for fixing the direction and place of them.

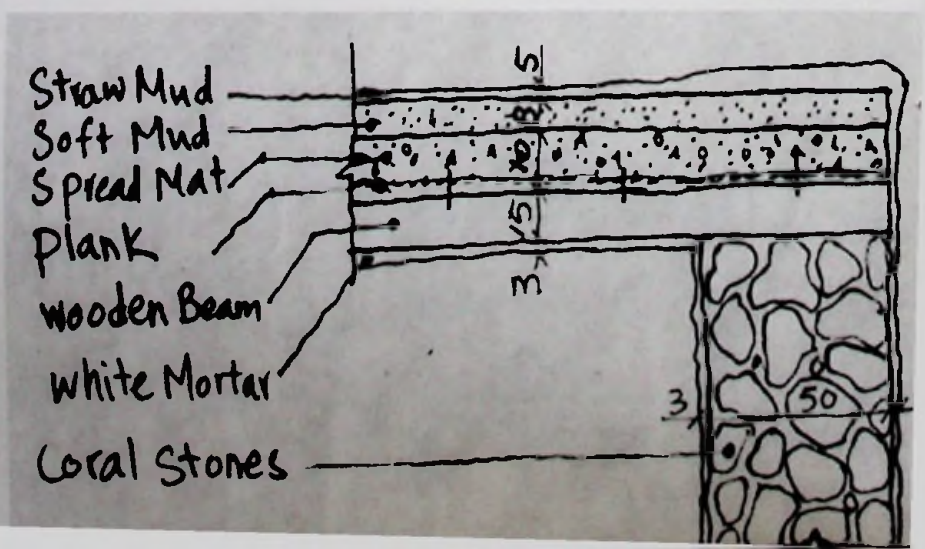
External walls with 50 cm width are built by coral stone and a local mud which are covered by coral mortar (Figure 19). The internal walls are covered by a special white mortar (a mixture of coastal sand, argil and water). In the village there are a few buildings made of bricks built for their rich owners. The main materials to build the roofs are wooden beam (Chandal), plank (Bas'cil) and spread mat (Mangur). The different layers of roof are built in-situ consisting of wooden beams, planks fixed on beams by nails, spread mat, soft mud with 8 to 10 cm thickness, and straw_mud as the final cover with 5 cm thickness (Figure 20).

Discussion and Conclusion

Iranian vernacular architecture is mostly defined for hot and dry region of the country

Figure 19: Wall Section

Figure 20: Roof's Layers



which is located on the edge of big central desert. In socio-cultural aspect vernacular architecture of the hot and humid region follows the Iranian architecture but in physical aspect, there are some differences. The reason of this is the higher level of humidity found in the area on the edge of the Persian Gulf. As an example, in the main yards of the vernacular houses in central Iran, shadow and water pool are commonly used for cooling the spaces by natural ventilation; however, in the southern side of Iran, only shadow is used for this purpose because of high humidity. Kish Island is located in a this region of the country. As a conclusion, Table 1 presents the characteristics of vernacular architecture of the region and Kish Island which refers to general and fundamental characteristics in Iranian vernacular architecture.

Vernacular architecture of Kish Island follows the concepts and ideas, as well as building technologies of the surrounding region. There are some specific aspects, mostly physical, in Kish vernacular architecture that cannot be found elsewhere. The following five features are specific for vernacular architecture of Kish Island (Old Saffein):

1. Orientation: Contrary to the regional orientation of houses which face southward, vernacular houses in Old Saffein face northward in order to catch the valuable breeze coming from that direction.

2. Vegetation: Kahoor and Loor are two types of trees which are less found in other places in the region except on Kish Island.

Table 1: Vernacular Architecture Characteristics in Iran, North Edge of Persian Gulf and Kish Island

	Iran		North Edge of Persian Gulf		Kish Island	
	Fundamental Characteristics	General Characteristics				
Resources	*Pirnia, Memarian (1992)*	*Vakili,Ardebili , Boussabaine (2006)*	*Azari-Najafabadi(2006) Pourjafar(1996), Babakrad(1985)*		*Self Observation by the article's authers Archival Study: Mokhtar-pour (1996, 2002), Monsef (1978)*	
Characteristics of Vernacular Architecture	Accordance with People Needs *(Mardomvari)*	Concept and Idea	Site Planning	1. The Kiblah role in orientation 2. the intense solar radiation 3. Inward-looking architecture 4. Traditional Privacy Model 5. Courtyard 6. Extended form of family 7. Vegetation valuable shading	Orientation	Mostly on north-south direction
					Organization	The main yard, the guest's yard and the back yard
					Lay Out	Separated spaces with specific door
	Inward-Looking *(Daroon-Garaei)*				Vegetation	*Loor, Kahoor, Nakhl-e khorma*
	Avoidance of Un-necessary *(Parhiz az bihoodegi)*		Building Elements	1. Windows open into courtyard 2. Some window in street to catch the wind 3. preventing inside of the houses from outsider 4. Maximize the shading 5. Wind-catcher	Openings	No windows to streets
					Transitional Spaces	*Estor*: a short divider is sat in opposite of the main entrance
					Shading Devices	*Sabat* is prevents for solar radiation into the rooms
					Architectural Elements	*Bad-gir taghche-ei*: *bad-gir* is a dent on the facades
	Self-Efficiency *(Khod-basandegi)*	Construction And Technology	Building Design	1. The compact setting 2. One storey dwellings 3. Large inside windows 4. Rooms behind corridors 5. Room's floor level upper than yard's floor	Form	Compact urban form
					Height	Mostly one-storey high
					Climatic Solution	Making shadow on main yards
	Rigidity *(Nioresh)*		Construction	1. covering by bright color 2.Flat roofs 3.Limestone is basic material	Materials	Coral stone is basic materials
					Floor	Coral stone + Soft local mud
					Wall	Coral stone are covered by straw-mud
					Roof	Wooden beam + Plank + Mat

3. Privacy: Estar is a specific architectural element in Vernacular architecture of Kish Island. It is a short divider of 2 meters high, placed in opposite of the main entrance door to provide privacy for the family from public view.

4. Wind-catcher: The shape and size of the wind-catchers in Old Saffein are different from other wind-catchers in Iran. The speed and direction of local wind on the island cause special *bad-gir* which is called *tagh'che* ei. In Old Saffein, *bad-gir* is a dent on the facades with a split on the floor. The wind streams through this split into the rooms.

5. Material: Kish Island is a coral island. Therefore, 'coral stone' is the main building material which gives a very special identity to the vernacular architecture of Old Saffein.

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