

# Knowledge Management of Rural Vernacular Architecture

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## Abstract:

*There is a Russian proverb: The best is which existed in far past but is forgotten at present .Endemic Knowledge makes the same sense .This Knowledge is used for configuration of synthetic environment and is based on nature , culture ,society and rural life earning method, and interaction between the man and environment. It includes collection of the most useful and stable ways of revenue and living in special and laborious places, transferable to the offspring. So it's reasonable to use some terminology for description of rural vernacular knowledge, indigenous technical knowledge, and people's science.*

*The knowledge of rural vernacular architecture consists of configurating environment, construction of buildings and habitats under people supervision and participation. Now a day, new view point in sustainable development and many correlation between this knowledge and natural environment, has led to more recognition and attention to it.*

*There are two forms of living, including immigration type in temporary habitats versus permanent habitats in traditional Iranian societies. Besides, through changing present paradigm in environmental synthetic planning, this knowledge and its concepts can influence on environmental planning methods. Furthermore, designing light housing units for temporary living and using materials easily transported, having enough strength and fast fixing is the best policy so adapt with place and time changes in this temporary residential area such as black tents , alachighs (yurt) and chappars .*

*In rural areas, permanent housing materials and designing techniques are typically correlated with stable living in natural environment. Low cost and accessible materials such as earth, stone, bamboo are used mainly in these areas. This essay is based on vernacular architecture and documents in the field of Iranian historical rural housing.*

**Keywords:** Vernacular Knowledge, Environment, Architecture, Temporary housing, Permanent housing

# Knowledge Management of Rural Vernacular Architecture

History is as like as a book in which man's life experiences is mentioned. The man who writes the next pages best, is the one knows more about the previous item and concepts and understands more about living rules However, architecture and various methods in planning and execution ,are not exceptional .

Desirable architecture will not be existed unless be based on the past experiences. Thus ignoring the experiments and planning without accommodation to historical advices is useless and not coordinating to environment .So learning the historical experience is the most effective way in configuration desired thought and improvement of performances.

There is a 68'803 rural and urban settlement in Iran from which only 1000 is urban states. Approximately 23 million people of 68 million Iranians population live in rural areas. Knowledge of vernacular rural Architecture, in it's historical process has gained access to values, that can produce suitable context for architecture compatible with nature and environment. This vernacular knowledge has originated from nature, culture, society, rural life earning method and interaction between man

and environment. This traditional knowledge has also been used configuring living areas and environment. Although it contains various areas such as language, literature, art, medicine, agriculture, handicrafts, construction and architecture.

The knowledge consists of a variety of collections of the best, most useful and harmonious and stable methods of living and revenue in specific and strict natural environment. Thus it will be transformed to offspring verbally and thorough experiments. Although the compiled collections are a few in recent decades.

At present, traditional arts have been ignored due to changes in traditional societies and negative outlook toward the past and its remnants. But the new concepts in sustainable development and close relationship between the knowledge and natural living environment have created more attention to the planning method.

### **Man /Nature/ Architecture**

There is no doubt that living in each society is based on activity and therefore, people demand space facilities and properties for their activity and living process. Architectural spaces seen in various types are related to these efforts. In the most part of the world architecture of settlements are considered as a social, cultural and economic phenomenon.

However better recognition of the characters of a desirable architecture would not be achieved unless learning more about the living methods of people continuously connect to nature and live in coordination and compatibility with nature. Regarding to researches done about rural people and tribes living in various countries, there are various solutions about how to overcome the difficulties. The special geographical conditions, climate, earning method and dependence to earth, “have created two types of social living methods”, permanent settlements and temporary settlements” since first residential area configured in Iran. Therefore, these social states have formed two basic types of housing including portable light house, and permanent houses with masonry materials.

However these housing units containing compacted and none compacted texture, are seen throughout of Iran and neighbor countries, organized with geometric plan or with irregular geometric shapes. The raw materials used in these constructions have originated from accessible environmental resources. The people live in these houses in aggregative immigrant pattern; move to another location two times yearly. Although some of them are rural residents who live in stable and permanent houses. These people usually do breeding herbs. All of these houses are dependant to natural environment furthermore; living room and production spaces are next to each other. It’s inevitable for man to use earth resources for his needs; on the other hand, it was the fact when the first civilizations appeared.

### **Temporary Residence and Housing:**

In the past, man had to immigrate to suitable lands finding food resources in different seasonal conditions. In these circumstances, there was enough time for nature to revitalize itself. However, immigration and changing habitats has been related to environmental seasonal changes. Thus, this type of living needs a special form of housing and settlement, easily performed and gathered. (picture.1)

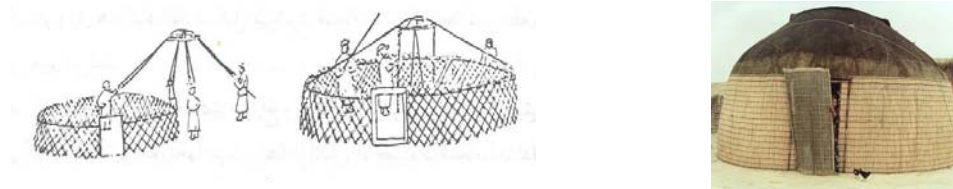
Seasonal moving cycle of tribes is difficult and is strongly correlated to sheep cattle. The zone of tribes, moving is in the area they have legal right of possession. The tribes usually earn their living through breeding shapes, goats, camels and selling their domestic prouducts, when the tribes are moving. They should carry their tent and allachigh with it's contents. Therefore designing these light housing units for this moving type of living demands light, portable and resistant raw

materials. So it seems inevitable using wool, goat’s hair and skin for this reason. In this so called covering structures tension character of wool, skin and hair is used to build allachigh tent and chapar.



## Allachighes:

Turkmen tribes live in eastern north and shahsavan tribes are settled in west and western north. However, the various geographic and natural states of their settlements, cause formation of various technique and designs in their house construction. For example in western north of Iran with cold climate, shahsavan tribe usually uses felt and skin of domestic animals in their covering structure. But due to warm climate, turkman tribes use tents by felt, wool and hair. The arrangement of the houses is related to the familial and tribe relationship and is usually in circular form. Allachigh are stronger and heavier than tents. In spite of their heaviness, their parts are designed in such a manner to be easily separated and gathered, while also easily transported. Wooden frames are used for fixing felt covering. So the covering is easily pulled up when the weather is warm. Contrary to black tents, these Allachighs are more applicable in rainy and snowy weather. (picture.2&3)



Allachighs are arranged in circular pattern with a 4.5 – 5 meters diameter and 2.5 meter height. The frames are covered with natural resins to be supported against erosion and insects. These types of allachigh may persist more than 50 years. The wool and hair of 15-20 goats or sheep is required to build ceiling covering. Although 30-35 sheep's skin is needed for covering made of skin. These skins are fastened to each other by leather band. First, the skins should be pressed and rubbed with earth and then oil is rubbed on the surface to make it waterproof in cold seasons. (picture.4&5)



Internals allachigh space with its divisions, supplies minimum closed area needed for supporting family from outer weather condition. Cylindrical form of allachigh and its spherical ceiling make the structure more resistant to wind power. The most part of family routine activity is done in outer (open) space of allachigh. Although each family lives in a common territory but they have relatively private area.

## Black Tents:

Tents are simple and light houses that are built in various shape and texture. The weaved woolen tents frequently are in black color however some of them are brown and gray. Although the outer appearance of these tents is simple, their inner space is decorated with on sculptors and hangers on their columns.

Most of the tents are weaved with goat hairs. For an usual tent 25-30 goat's hairs are needed. These textures remain nearly unchanged for about 4 years, so these clothes are repaired yearly by new strings. These tents are usually separated in two parts for men and women. The end restricted area is private area and forward region is gusting area. (picture.6)

The position and situation of the tents are so arranged not to be in direction of wind. In order to controlling and warmth and coldness and wind power, some parts of the tents can be moved up and

down. When it's raining, the goat's hair is expanded and so prevents water penetration. Also for better isolation, animal fat is used to make goat's hair greasy in order to make tent water proof. Cooking equipment and oven, food storing sack, clothes and beds all are located in internal area of tents. In another side of tent there is a space for guests which is decorated with carpet and decorative hangers. Women usually participate in establishing and gathering the tents and allachigh.



In warm seasons oven is placed outside in front of tent but in cold seasons it is placed inside the tent. Water-skin and some of properties are placed near the trees or they are hanging from bushes. In areas with profound sun rays, the tents are established in the shadows of trees.

### **Chapar:**

In south of Iran "Khuzestan state" at the edge of Azadegan plain and Also in east of Iran "sistan baluchestan state", at the coast of Hirmand lake, with greatly warm weather, simple houses named chapar, have been built.

Most of these houses are built by rush and other plants grown at sides of the lake and river. The ceilings of the houses have semi cylindrical or parabolic shape and they are tall and made up of cane (a kind of bamboo) and mat. The canes should be as tall as 3-5 meters and gathered in bouquets with 35-70 cm diameter. The bouquets are fasten to each other and are fixed in the earth as curved frame in a distance of 1-2 meter. (picture.7)



These frames are covered with rush or mat. In order to air conditioning, these mats can be elevated up and pulled down. Length of these houses is usually 8-10 meters and width of them is 3-5 meter and if the construction is built exactly, it survives as long as 15 years.

### **Permanent Residence and Housing:**

In rural areas where the people's life is dependant on agriculture, the construction of permanent settlement is necessary. Therefore, the houses are built by masonry materials. Since there are a wide variety types of tribes and climate in Iran, various pattern of houses are seen.

However, in planning of these houses natural properties and restrictive factors should be considered. In some of these villages there are big houses in which several families live together. The families usually contain father and his sons. Although each family has it's own private room, the kitchen, bath and dinning room are common. There are four types of rural housing pattern including mountainous, margin of the Khazar Sea in north, desert area, and margin of the Persian Gulf and oman Sea.

#### **Mountainous Rural Housing:**

In Iran, most of cities and villages are placed in mountain slope. The houses in these areas usually are built in two floors. In the first floor, a space is allocated for keeping animals, a space for kitchen and storey. Living room usually is in second floor. There is a special space for guests. The situation of this room is better than the other rooms where the light is more and outlook is more beautiful.

The materials used in constructing the houses contain mud brick, stone and wood. Foundation and footing wall are made up of stone. (picture.8)

The rooms' ceilings are built by timbers. These timbers are used for spans with a diameter of 3-3.5 meters and for wider spans, thicker timbers and additional columns are used. The origin of most of timbers used in the building is from willow and aspen tree. Doors and windows are from wood of tamarisk and willow trees.



## Margin area of The Khazar Sea:

Due to abundance of water resources in this geographic region, contrary to other areas, houses are not concentrated near water resources. They are scattered in the farms. Most of people in this area earn their living through cultivating rice, fishing and agriculture. The houses are wooden with walls made up of wood with plasters of mud straw. This technique is called zegally or lardehy. (picture.9 &10)



The ceilings are made up of wooden truss with external layer of ceramic and stem of rice plant and rush. Woods needed for construction of buildings are supplied from jungles. In areas where the earth is wet, the first floors are made about 2 meters above surface. In this condition, the foundation completely is made up of wood or masonry materials. The construction of structure and ceiling is under supervising of skilled carpenters.

In mountainous area where the earth's slope is high and there is no flat area for drying fruits, roof of lower houses is the yard of upper houses.

## South of Iran and Margin area of Persian Gulf and Oman sea

Most of this parts' people are fish man and businessman and some of them are doing transportation of goods to margin countries of the Persian Gulf. The climate of theses areas is warm and humid and due to insufficient water resources, settlements differ from other areas. It means that rural houses are detached with a wide distance in order to produce sufficient air current. So rural areas are scattered and rural houses are designed differently in a manner in which the windows built opposite to each other.

For using sea to beach air current and vice versa winds, most of houses contain two-sided wind catcher in the direction of wind. The color of houses is white and their volume composition is so that the surface part not facings to sun radiation. (Picture 11)



## Central Part of Iran

There is a kavir "desert" in Central Part of Iran which had a rough nature. The average of rain fall in these areas is 200 mm yearly so the settlements are near the springs and ghanats "subterranean canals". Ghanats are stable systems of water underground resources in these dry and warm areas. If water is insufficient, first it is gathered in pools and then conducted to lands and farms. The Population rate, the rural areas development and extent, are related to water accessibility. Mud brick is the basic component in rural architecture in deserts, because it is the best material confronting to warm weather. The houses are attached to each other. Rooms are separated units with doors open separately to yard.

So the rooms are arranged around a central yard. These yards contain a pool and a little garden. Therefore this pattern supports the residents against warmth and wind and dust. Each housing unit acts as a small ecosystem and routine activities are done in central yard. People usually sleep on flat roofs in summer. According to seasonal change, some replacements are done between sunny spaces and shaded spaces. Therefore residents move to first and second floor and northern and southern veranda when season changes. (picture12&13)



Another type of house contains two or more adjacent rooms with a veranda located in front of them. The roof is dome shape or cylindrical. The walls are made up of mud brick and usually attached to the earth's surface. But in some circumstances stony foundation is applied under the walls. On the wall, doors and cavities are applied as shelf and mantel, meanwhile making the building lighter. They are used for placement of properties. The doors and windows usually are made up of wood.

In the past, the villages had a wall around; some villages had two walls around. The outer wall supported village from sand flowing and inner wall was built for more security against invasion of offenders.

### **Conclusion:**

Rural and tribal housing is a sample of valuable architecture coordinated with natural environment, meanwhile considering respect to environment. Although, social and cultural changes influenced by modernization, have vigorously changed native architectural designs in recent decades. Up to now transient living type of tribes has decreased dramatically and most of them prefer living in permanent habitats. Nevertheless, their technical plan used in construction of temporary settlements can be applied after critical disaster such as earthquake, flood and storm.

Also low cost energy in Iran and using new materials such as steel and concrete, all have aggravated these changes. This problem has caused regression of vernacular architecture and space management. Inattention to knowledge of vernacular technology has led to ignoring architectural rural values. At present construction of houses in all parts although has its own cultural and environmental characteristics, are being built similar without no difference. These patterns are neither like as modern patterns nor compatible with historical milieu. However in these patterns, there is no harmony with environment.

### **References:**

1. Sartipour Mohsen, "Rural housing indicators in Iran", Honarha-ye- ziba, 22, summer Journal of faculty of fine arts – university of Tehran, ISSN 1025 – 9270, Tehran, Iran, 2005
2. Sartipour Mohsen, "Housing problems in Iran: A pathological review", Soffeh, Nr.39, Shahid Beheshti University, ISSN:1683-870X, Tehran, Iran, 2005
3. Sartipour Mohsen, "Roots of physical problems of small Human settlements", A Dissertation submitted for Degree of PhD in Architecture, Shahid Beheshti University, School of Architecture and Urban Planning, Tehran, Iran, 2002
4. Sartipour Mohsen, Research about "Material in Architecture," School of Architecture and Urban Planning, Shahid Beheshti University, Tehran, Iran, 2005
5. Zargar Akbar, "An introduction to the Iranian rural architecture", Shahid Beheshti University press, Tehran, Iran, 1999
6. Zargar Akbar, "The Common characteristics of the Iranian Village architecture", Sofeh Nr. 25 , Shahid Beheshti University, Tehran, Iran, 1997.