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Architect and traditional construction case study: Kishdareh village

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ABSTRACT

Geographical conditions of Iran cause to provide four climatic regions including mountainous temperate, moist-warm, warm-dry and cold-moist. These four climates can be effective on providing types of village buildings and different shapes of construction in each area. This climatic condition during the several centuries cause to create Local architecture and Iranian people produced the traditional architecture structure in this regions based on the recognizing the type of existence materials. It seems that the texture of the Local architecture in country have different structures. The materials changes with lapse, but it can be possible to conserve native texture of villages similar to previous using new operational methods and structure of Local materials. Moreover, we can introduce this method to other societies. Kishdareh village is located in Guilan province. The architecture of this village is in accordance with the special climate of region. This study attempts to recognize the architect of traditional buildings and introduce the architecture of settlement space and introduce suitable method to basal usage for mentioned village. Thus, required data was collected from mentioned village through observation, control and field survey method with considering the properties of traditional architecture of Kishdareh village

and operational methods and recognizing native materials.

1. Introduction

It is only by understanding human activities in his surrounding world that knowledge of environment and architecture will be possible, and creating a humane idea within a frame might be considered as the objective of architecture. So if you accept that architecture is a corporal representation of human life with all of its dimensions (the needs, beliefs, ideologies, and in general values) we ought to realized that the present day architecture and its future could not be irrelevant with the past time architecture. The issue local architecture and construction, was published for the first time forty years ago and under various names in southern and Central Europe.

Architecture is one of the greatest cultural achievements of humankind among different ethnic groups and different climates, which has a variety of forms, colors and applications. Man-made buildings are some manifestations of his attitude towards the world which reflects his intellectual faculty and socio-cultural structure of that community. The interpretation that architecture might have natural or supernatural point of view is not in any way out of the influence of its surrounding and geographical climate, so in studying the architecture of a building, first we must investigate the world and worldview of its creator so as to be able to observe his thoughts and ideas in a volume of spatial arrangement. Iranian local architecture is a symbolic manifestation of an eternal and everlasting world that is considered as a transient place and a medium to achieve a higher status with inmost peace and tranquility; Iranian Architecture which has manifested in diverse forms in various buildings, has a special status in which ideas and traditions and rituals find a prominent representation in geographic and climatic conditions.

2. Methodology

The methodology being used in this paper is a survey method. So the technique being used was visiting and observation and gathering information about the intended village.In four overall climates of Iran, the traditional architecture of warm and humid climates, dry and hot, temperate and humid and cold climate will be discussed from construction point of view and in relation to climate and sustainability conditions, since the typology of building or in other words housing in different regions, represents its adaptability with environmental factors and even cultural factors.Taking into account the characteristics of local architecture in Kish-Darreh village and familiarity with executive procedures of construction and knowledge of local materials, the objective of the present study is to gain some insight about local architecture and to introduce residential architecture spaces.

2.1. The understudied area

2.1.1. Gillan - Foman

Gilan Province is located in 36˚34′ N to 38˚27′ N latitude, and 48˚53′ E to 50˚34′ E d longitude. Alborz mountains with average height of 3000 meters is spread like a wall in the West and South of Gillan and apart from Manjil valley, the area has no road way to Iranian plateau. Foman County is one of Guilan's counties with Foman as its capital enclosed in a plain by orchards and farmlands. Kish-Darreh Village is one of the villages located in Foman County.

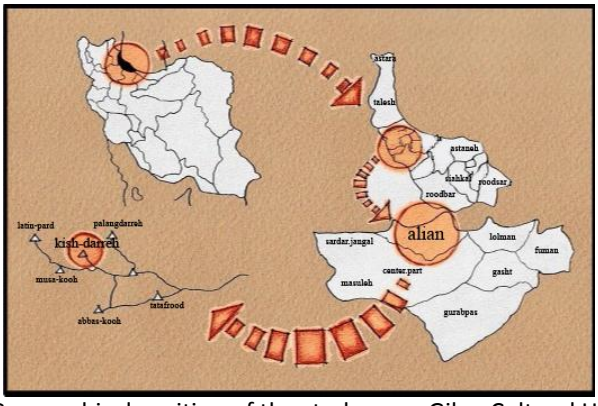

Fig. 1. Geographical position of the study area, Gilan Cultural Heritage.

2.1.2. Definition of local architecture

Vernacular architecture, means the set of urban architectural units that have come together in a certain land and having the following features: Coordination based on difference, distinction based on principles and traditions and tastes with origin in cultural climate, unity with the origin in mutual respect and enjoying from social behaviors based on conditional freedoms implicit in social contract - unwritten but still vivid contracts. (Falamaki, 2005: 17) Today, if you talk to anyone about local architecture, involuntarily turns the pages of a book that has collected some old speeches and figures. Today, local architecture – no matter belongs to what part of which land- is regarded as a legacy of the past; and do not even start to doubt that they could generate architectures of their own time that contains a range of beauty and attractiveness and singing that this word recalls. Local Architecture, interpreted in any language and in any culture, according to the architectural tradition have its root in the distant and near past, but does not consider cutting this root as a condition for this naming. In other words, local architecture is not something that we cannot create it in our own times, and is not something that once was created in the past by others no one else can create it again. (Falamaki, 2005: 11) Local architecture, in spite of the fact that has experienced transformative events throughout the history, managed to maintain its own identity, and since is considered as a valid identity for the people of a country, reflects the customs and attitudes, morale and feelings, thought and ideas, and their art and taste. Understanding local architecture can be seen as recognition of the community, a community that from the beginning of its establishment still struggles for survival against nature. (Dadkhah, 98 and 99)

2.1.3. Definition of climate design

The word climate was derived from the Greek word (clime) which in general refers to atmospheric conditions of the Earth. (Moradi, 1389: 11) Climate is an important geographic factor that has decisive impact on design, shape and type of materials being used in construction and rural buildings. In a vast country like Iran with a variety of climatic zones and varied climatic conditions in different seasons of the year, the traditional architecture of this country has offered some reasonable and appropriate solutions and practices to provide conditions for human comfort. A general principle which is the case nearly for all the traditional structures of Iran is the adaptation of these structures and residential environment with climate factors. (Ghobadiyan, 2008: 2) Perhaps at the present, developing local architecture is not meet current requirements of residents in terms of strength and durability, but by proper use of architecture principles and its constituent elements, local materials, such as wood, [prefabricated ones] and implementing them exactly in the building and better fitting, the lifetime of these buildings might be extended, so as to have an easier and faster implementation, and less expenditure will be needed for construction and maintenance operations. On the other hand, in case of coverage of buildings, using vegetable stalks instead of pottery leads to more durability and strength of these houses. All of these factors can contribute to the sustainability of environment and also sustainable construction. (Ghobadiyan, 1981: 21) Iran is divided into four main areas, which in relation to the impact of climate on

urban context and buildings' forms, and materials, some common characteristics might be seen in each of these four regions.

These four climatic regions are:

1 - The southern coast of Caspian Sea.

2 - Northern coast of Persian Gulf and Oman Sea

3 - Highlands and mountainous region of the Plateau

4 - Plains of the Plateau

Each of these four zones has its own peculiar climatic conditions, so that the inhabitants of coastal region of Caspian sea are faced with very high humidity and rainfall and in the southern coasts with annoying heat and humidity and in mountainous areas with under-zero temperatures and long winters, and finally in the plains of the plateau with heat, dry desert air and winds. Generally, our traditional buildings, in contrast to most modern buildings, are not in opposition with natural conditions, rather with a proper use of these conditions, are in a rational coexistence and enjoyment, locate at the heart of nature. (Ghobadiyan, 2008: 34 and 35) Throughout the history of architecture and construction, designers have always sought to respond to climatic conditions. Even in so-called primitive architecture, climatic design had detailed and elaborated speech, whether in rural buildings located in Swiss Alps Mountain which are protected against winds and are faced to south, or in the plans of traditional court-center houses which are designed for hot and dry climate to keep the cold air of nights. Climatic Design is a way to reduce overall energy costs of a building. Design of a building is the front line of defense against the external climatic agents. Climatic designing causes buildings to have more comfortable conditions. (Ghobadiyan - Mahdavi, 2001: 3 & 4)

2.1.4. Definition of local material

Making use of local materials to give form to environment and build a shelter, represents the decisive role of nature in shaping to villages and their physical identity. Using local materials in rural architecture shows harmony with natural geography of the location and enjoying from its natural facilities (Sartipipour, 1388, 49 and 50) Because of the soil fertility and presence of vast farmlands in the plains of this region and dense woodlands in foothills and mountain areas, building materials of this zone are often are of botanic origin. Using this type of material is very affordable because it might be found in abundance in the region and access to them is easy. Furthermore, due to long term exploitation of these materials during centuries, proper ways to perform construction or plant materials have been developed. Interestingly, such traditional buildings are still being built in the villages of this area and the majority of villagers are still acquainted with executive procedures. (Ghobadiyan, 2008: 43 & 44)

2.1.5. Natural Geography of Kish-Darreh Village

Kish-Darreh village is confined to mountain from North, South and West. Among the surrounding villages we can refer to Siahrood, and Palang-Darre which is located on the other side of eastern highlands of the village. In General, the village is confined to jungle from three sides, which in their highlands Musa-Kooh and Latin-Pard villages are located, and from the southern side, which is also the village's entrance way leads to desert.

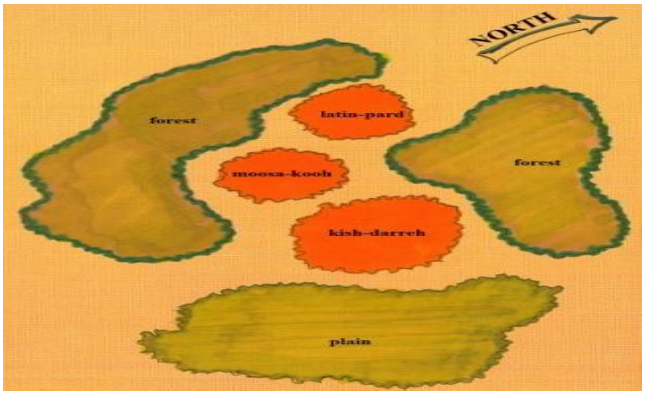

Fig. 3. Natural geography of Kishdarreh village.

Table 1
Introducing of native materials.

Number	Materials	Description
1	Wood	The existing trees in region which are used in construction programs are Alnus subcordata, Ulmus glabra Huds., Gleditschia caspica Desf., Acer campestre L., Pistacia atlantica.
2	Stone	The required stones are provided from river
3	Soil	-
4	Slosh straw	There are the mixture of river cobblestone in building floor which are smoothed by slosh straw
5	Stubble cover	Is the stem of rice which was traditionally using as final cover of roof; The required wood to do this operation is the wood of Alder trees.
6	Shingle cover	Is the sheet lumbers of Alder trees which are similar to stubble cover but the stability of shingle cover is more than that of stubble cover.
7	Rope	Is used to tighten of stubble stems
8	Spike	Is used to junction of pile
9	The skin of Pterocarya fraxinifolia	Is used to make lock and outrigger

(Ghobadiyan, Iran Traditional Buildings).

3. Structural analysis

Given the fact that Kish-Darreh village is located in foothills and is near to forest and also the existence of rich resources of wood, a method of construction was used in the past and also in these days for building rural house in this village which is known as Zghmeh house or Darvrchyn. Moreover, straw covering is used for roofing (Galli cover) cover sheet (coverage by natural fibers). In Persian, Zaghmeh structures are called Darvrchyn which is formed by lying timbers or the trees' trunk on each other. Dar means tree, Var means adjacent, and Chin means assembling, which on whole means arranging the trunks on each other.

Stages of soil removal in steep terrain

In every land that they are going to build a house, first the floor is smooth roughly and bushes and shrubs are cut. Especially in parts below the columns and beams which have to be paved, and the location of beam must be filled by Khoshke-Chin method.

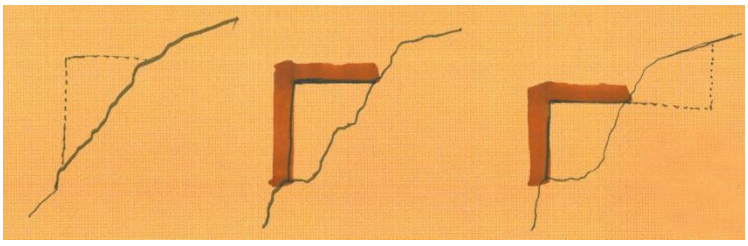

Fig. 4. Excavation for the Construction of housing on steep terrain.

After this step, the building structure and length and width of it are marked on the ground. The location of foundation is usually the four corners of the structure plus the beginning and end parts of the wall between the two rooms, moreover the middle part of the pouch where the beam is placed in it. Then

they sought to determine the exact location and outer dimensions of it and begin to dig some holes with a shovel. The depth of these holes or the building foundation depends on the soil type, the harder the soil is, the less we need to dig deeper hole and with more width and length and vice versa. The holes are dug with shovel and don't have to be dug necessarily smooth and accurately, because the rocks are only fastened by Koshke-chin method. The depth of these holes ranges from 80 to 120 cm depending on the soil type.

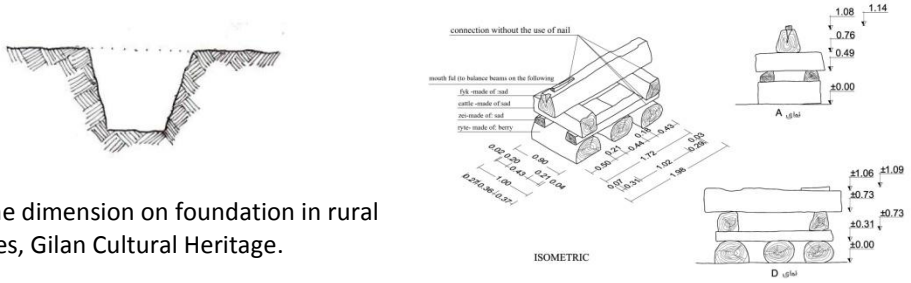

Fig. 5. The dimension on foundation in rural houses, Gilan Cultural Heritage.

3.1. Foundation – jirnal

Kish-Darreh houses are of Zaghmeh type and its constituent elements are lumber, mud and stone. Lumbers needed for these houses supplied from forest tress, which are Sagh, Simet and Llky and especially Krf (Keraf) and Vzm(Vezam). In the area predicted for columns some holes with approximate dimensions of 30 x 30 and a depth of 60-70 cm was excavated, and inside of it was filled with stones that were brought from the river. Rocks put up a 30 to 40 cm above the ground.

Fig. 6. Foundation – Jirnal, Gilan Cultural Heritage.

Rocks were firmly fastened (today reinforced concrete is used) so as not to slide. The distance between foundations is 1 m to 2.5 m, and considering the type of wood it is possible to increase openings.

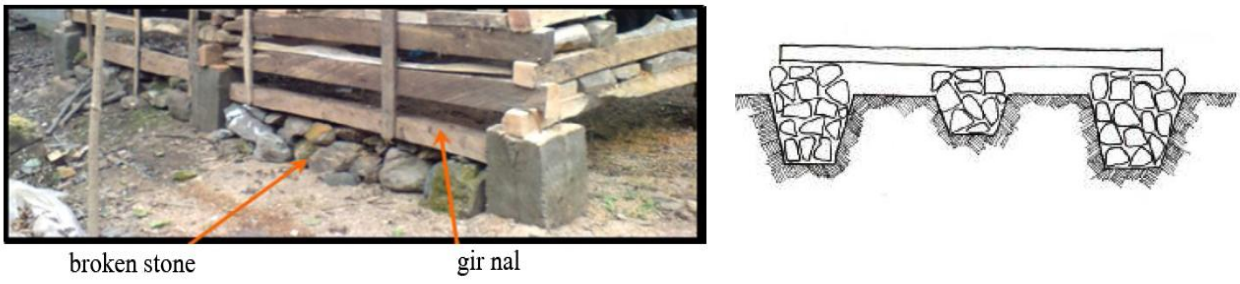

Fig. 7. Application of the stone in Jirnal foundation, Gilan Cultural Heritage.

In the past, the foundation was made of stone and the channel was just put on the stone without any anchor. But in these days the foundation is made of concrete and the channel is engaged using bars.

Fig. 8. Old Method, Gilan Cultural Heritage.

Fig. 9. New Method, Gilan Cultural Heritage.

Then they began to put beams on each other. These lumbers are nailed on either side.

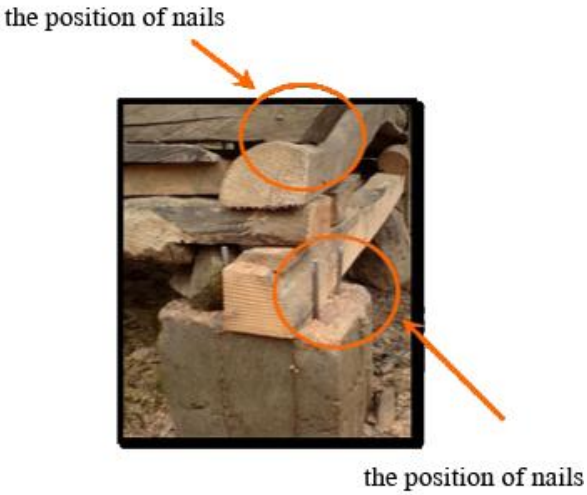

Fig. 10. Application of spike for junction of woods, Gilan Cultural Heritage.

In traditional structures no connection exists between the channel and the foundation and it was only the gravitation force that was kept the building on its foundation and prevented the structure to move on it.

An example of the stages of foundation excavation in Kish-Darre village houses

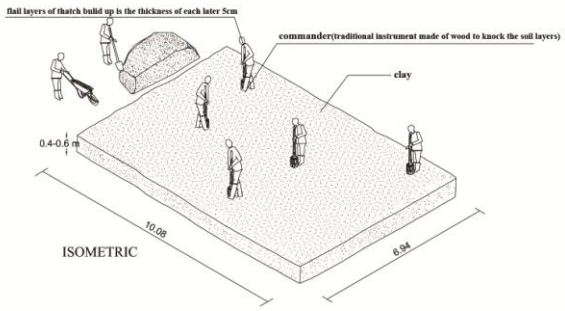

Fig. 11. The method you wake of Kish-Darreh houses, Gilan Cultural Heritage.

3.2. Joor nal-jir

The old building was a wood tongue and groove that would fit in two shots. The last beam is called "Joor Nal" or "Upper Nal" which is ready for placing on the roof. A couple of straight 15 * 15 squared-section beams are place in parallel. These lumbers are called "Jyrgand".

Fig. 12. Junctions of wood in Chinese wall, Gilan Cultural Heritage.

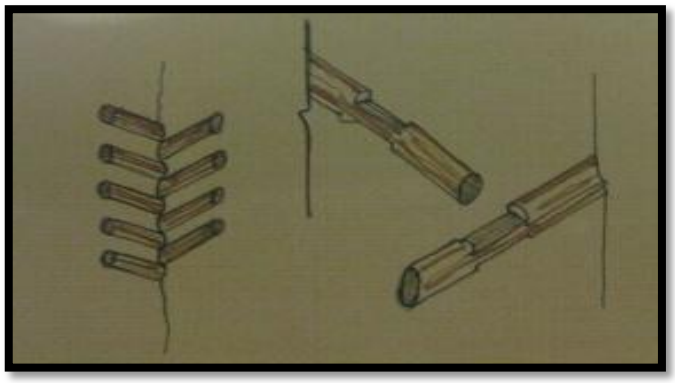

Fig. 13. Tongue and groove of connection, Gilan Cultural Heritage.

Vertical cross-section of the wall:

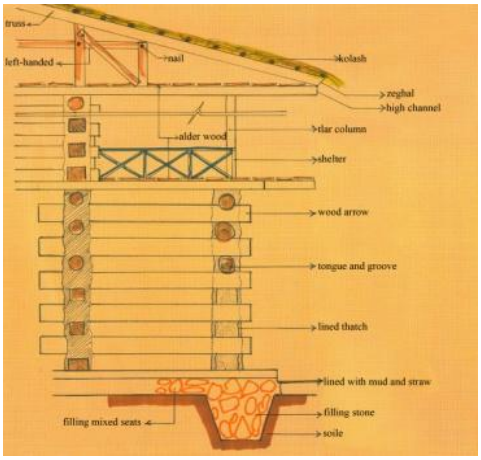

Fig. 14. Vertical cross-section of the wall, Gilan Cultural Heritage.

General profile of Kish-Darreh houses:

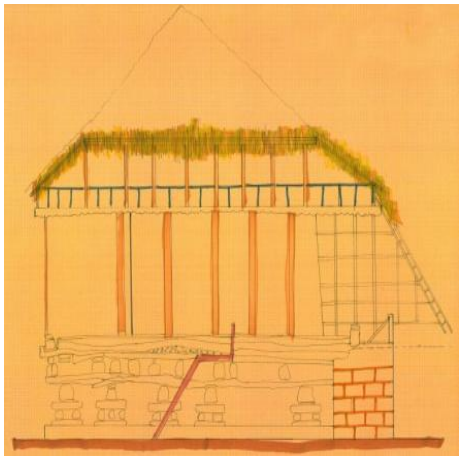

Fig. 15. General profile of Kish-Darreh houses, Gilan Cultural Heritage.

3.3. Stairs

Communication passage between the first and second storeys is the staircase with approximate width of 80 cm which is made with short length as much as possible so as to cut less from ceiling, hence the height and width of the foot and the floor stair steps and offers is very different from the standards set for staircases, and moreover the staircase is very steep. To build these staircases, a very thick beam is placed diagonally and the staircase is assembled on it.

Fig. 16. An example of the stairs of Kish-Darreh houses.

3.4. Roof covering

To build the roof, some pillars are placed over channel, which in the center of building there two columns.

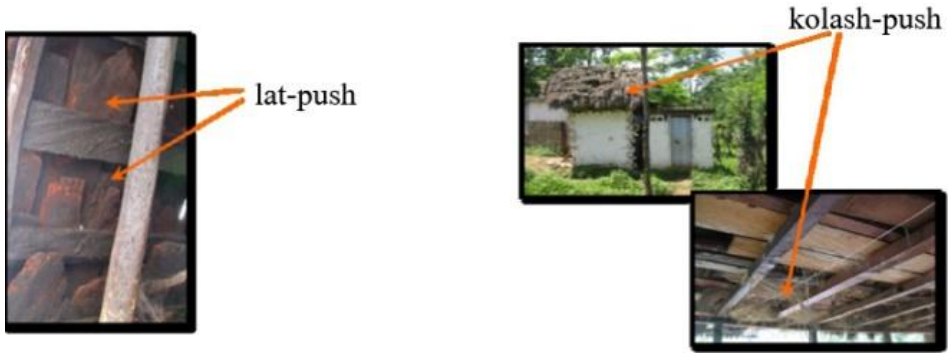

Fig.17. Roof.Detail, Gilan Cultural Heritage.

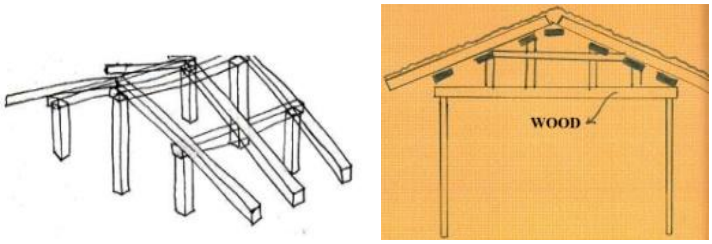

Fig. 18. Roof.Detail, Gilan Cultural Heritage.

3.5. Bazsho

The structure of bazsho in Kish-Darreh village is mostly wooden.

Building wooden doors with four coils are connected with hinges and snap back with a steel locking ring are. Door leaf frame mode shape of thin wooden planks have been prepared.

Fig. 19. Door.Old, Gilan Cultural Heritage.

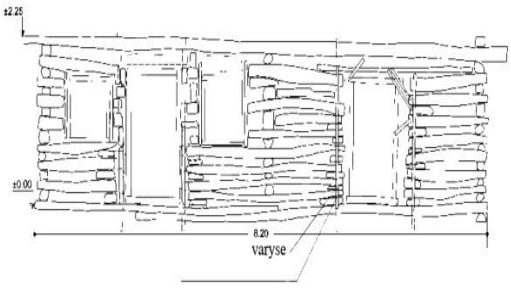

Fig. 20. Door.Detail, Gilan Cultural Heritage.

Windows also has a four-sided wooden hank and are a combination of wood and glass, which its Bazsho are attached to the frame with a finer hinges.

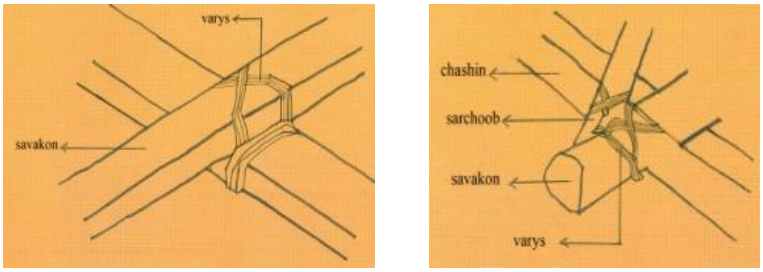

Fig. 21. Window.Detail, Gilan Cultural Heritage.

Location of windows is in way that has efficiency to transfer wind and blind. Porch (Tlar) is located normally in the southern side of the building, and doors and windows have passage way to this zone.

Fig. 22. Window Old.Detail, Gilan Cultural Heritage.

4. Architectural analysis of kish-darreh village

In Kish-Darreh Village, dwelling-house is composed of various elements which their functions are in relation with the needs of its inhabitants.

Fig. 23. An example of the general view of rural houses in Kishdareh.

4.1. In this village, texture or arsene of house is consists of the following elements

Dwelling-house with a combination of several rooms, Ivan, Tlar, sometimes warehouse and stable might be seen depending on the inhabitant needs and existing local conditions for all or part of the following elements:

Water wells, toilets, stable, bathroom, piled, Krklan, pool

Organizing the elements in the understudied Arsene, is different with respect to entrance, position of entering to house and the relation of house with other elements. The set of elements making the arsene and their connection with each other, create a passage way that may be considered in relation to the entering axis. In the understudied houses, all the elements are arranged around the house.

Dwelling-house, the main element of this Arsen, has some properties that will be discussed in brief here.

Fig. 24. Introducing of the architecture elements of rural houses in Kishdareh.

5. Analyzing the constituent components of rural house

Room or in other words closet, have some points in common with other parts of Iran in association with life style of Gillan inhabitants. This common feature may be considered the multi-functionality of rooms. In a room, sleeping, living, dining, entertainment, and occasionally, cooking is done. The point is seasonal usage of the room. In cold season the room is the place for sleeping and dining and in hot season is replaced by other elements. And the same actions are performed in porch (or otherwise in Talar). In some dwelling houses a room is designated for guests. At least two taghche is built in these rooms, and in some of the understudied houses 1 and 2 Taghchh has been added depending on the requirements to these elements.

Ivan is another important space of dwelling house. This space has numerous functions and takes various forms relative to the orientation of rooms. Of course in three understudied houses (the houses studied by Mr's. Nosrati, Gholami and asgari) Ivan is enclosed by a wall. In these houses Ivan is formed with a little projection in the roof (upper Talar). It turns out that the roof beams to remain static, Weston Mercury, and this case is to use several rows in front of their column. In addition to being an intermediate space between the open space outside and the closed space inside, Ivan is used as a place sitting, sleeping, eating and working (Hsyrbafy) in the warm season. Another important function of the porch in the understudied houses is to link rooms together. Rooms are located in a row and in front of them Ivan are drawn as a rectangle. In the three houses of the understudied houses, the house of Mr. Nosrati home, and Gholami Askari, Ivan is enclosed by the wall with a height of 2 meters and a door is built for interring into the porch.

Fig. 25. An example of the internal spaces of rural houses in Kishdareh.

6. Conclusions

This study attempts to describe the design and architecture spaces of Iranian native buildings (Kishdareh village-temperate and moist climate-North of Iran). Besides we can recognize the operational methods of native architecture using the native materials such as wood and stone. The mentioned materials have high stability and can be considered as cost-effective impediment against cold and heat. Moreover, through structure analysis which some people know about their traditional operational methods (as valuable document), we can emphasize on the stability of native materials and their correlation with environment. We always observe different native architecture because of the four climate zone in Iran (for example: Kishdareh village) which indicates the innovation in architecture field and home construction. It can be possible to improve the value and foundation of native architecture in construction of native homes through accurate recognizing of nature, environment and native materials. There are settlements with native design and architecture spaces are Kishdareh village and native materials can be seen in its structure.

References

Dadkhah, M., 1999. pass in a range of vernacular architecture - look at the images and events, pp. 98 – 99.
Diba, D., 1993. certain prince, Analysis of Vernacular Architecture of Gilan)). Arch. Urban Plann., 24(4), 3.
Falamak, M., 2005. spoken in the introduction of vernacular architecture, space, unknown., p11.
Generalship, M.M., 2009. pathology rural architecture, the optimal habitat. first edition., pages 49 and 50.
Generalship, M.M., 2009. Pathology rural architecture, the optimal habitat, first edition., pages 3 and 4.
Ghobadiyan, V., 1996. Matching housing climate. Arch. Urban Plann., No. 248, page 21, 1993.
Ghobadiyan, V., 2007. Iranian Traditional Buildings., 5, 2.
Ghobadiyan, V., 2008. Iran. Tradit. Build., 5, page 34 and 35.
Ghobadiyan, V., 2008. Of climate, traditional buildings of Iran)), Fifth Edition., page 43 and 44.
Ghobadiyan, V., Mahdavi, M.F., 2001. Design. Climate., 3(3).
Khakpour, M., 2010. architectural Gillan Housing and Urban Development Foundation of The Valley's desert island village Dehdar and sincere thanks from the village of Kishdarreh.
Memarian, G.H., 1993. Introductory Persian residential architecture typology introverted. Sci. Technol. Univ. Press, first edition, 239 pages.
Moradi, S., 2010. set of conditions., 5(11), 12.