

# Recognition of Patterns of Climatic and Social Sustainability Patterns in Architecture of Persian Homes of Zanjan with Identity-based Approach to Today's Housing

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## ABSTRACT

Modern architecture car is constantly moving and changing. This kind of thinking has contributed in modern housing construction. It is therefore necessary to find Iranian desirable identity and attention to the principles and its application, to use in contemporary housing architecture. In this paper, theoretical study to achieve the desirable residential areas of the standards, such as the realization of Islamic identity and culture of the Iranian space responsiveness in the field of architecture has done. On the basis of the results of this investigation to access artworks residential ideal of a route to observe criteria space like the realization of the Islamic identity and culture of the Iranian thoroughbred racing association in the field of architecture, to respect, linking with the nature.

**Keywords:** Sustainable architecture, Islamic-Iranian architecture, cold climate, Zanjan, contemporary housing.

## INTRODUCTION

Architectural space and causes major has changed its organization, methods of transformation in the spatial organization. Historical backgrounds, cultural, social and environmental factors are very effective in shaping the architecture. At the beginning of the third millennium, people's lifestyle, needs and subsequent body and their environment has changed.

These developments during the time period that is effective and strained to various reasons such as developments in the field of economic, social and cultural sudden increase in population, migration to cities, mismanagement, lack of manufacturing facilities, lack of familiarity with the technology has involved in the project and technology and undesirable effects in architecture, especially in the housing.

According to the statistics of urbanization in all parts of the world, especially developing countries, as well as in Iran, it is clear that the next 20 years about 60 percent of the world's population will live in cities. The information in Iran have showed about 70 percent is predicted. Added to the collection of urban residents per household has different consequences, foremost of which is the provision of housing.

Housing is located at the beginning of a major transformation. Today, the consisting over the issue of quality of housing quantity has overcome the crisis because it should not adopt policies to solve the problem of housing, "as soon as possible to build", "The smaller building" and "The cheaper the" on the agenda have. Islamic architecture has different characteristics that separates it from the style of other buildings. These features include geometry notions of intellectual, scientific and creative arts person (traditional architecture) is<sup>1</sup>

Persian home in the traditional sense, relying on the extent and Rooney and exterior and a combination of different spaces, capable of conducting a range of activities were generally more spatial needs of your family members inside the house could provide<sup>2</sup>

Because the pace of structural changes of residence historical houses and villas in residential apartments and high-rise towers with rapidly changing ways of living and not live in, it changes so quickly given the opportunity to reflect on the actual needs, of users and the natural and innate it is not a way of life. On the other hand speculators ongoing effort to accelerate the process leading to a reduction in the quality of construction and disregard of the role of the users of residential spaces. That's why knowing the secrets, mystery and study in the spirit of traditional buildings, many precious experiences with us that contemporary architecture should be considered.

### Research literature

#### Research method

The method is based on objective, of applied based on the nature, cross-sectional study. In documentaries and library information and to obtain optimum results from research tools such as books and scientific papers have been.

### Background

On housing and housing construction processes and effective dimension in the development process of housing research and many studies have been done. In theory, design, environment normative statements about the impact of design on lots of people's social interactions<sup>3</sup>

Although research on the residential environment, a prominent element in western social science for more than a quarter century and much of the orientation theories, frameworks and models to assess and indexes are there, but especially in the research literature in the field of residential Eastern societies are not rich<sup>4</sup> The method-life studies; (Pourdeihimi 2010), deals with the role of culture and lifestyle in a residential area. (Bemys 2001), the effect of lifestyle on paying housing priorities, and factors affecting the way of life of families, social

status and invokes values. (Juing Lee 2005), to review its impact on the lifestyle and preferences of residents of multi-family homes. Housing satisfaction, housing and lifestyle priorities of pay. (Klafmn 2005), to evaluate the potential of identity and way of life in housing research studies focusing on the meaning of home-pays. Jensen 2012, to explore the importance to predict preferences (priority) and selected housing residents concerned, and socio-demographic factors the most influential factor. Influenced by economic constraints and spatial task, affect this election<sup>5</sup>

### The concept of housing

In the second session of the Human Settlements (1996), which was held in Istanbul Affordable housing is defined as "adequate shelter only means there is not a roof over everyone's head, adequate shelter that is adequate comfort, space, physical access and good security, security<sup>6</sup>

Evidence suggests that humans historically, from the beginning of history, the house was not only to provide shelter and appropriate biological needs and thoughts and feelings growth and fits in the proper sense of culture and civilization that created it, attempting to build their houses were worth. What makes this interesting house mixing it with the totality of human culture and civilization and the home of the "nest" distinguishes animals and "architecture" as a kind of "art" and yet "science" of organized efforts for housing and separate your house from the nest. If the angle of historical and anthropological history of housing and architecture we follow, we find historic houses in different stages depending on the type of family structures and economic, political, social and environmental take several different forms<sup>7</sup>

According to Mohammad Reza Haeri paper, among the most immediate space around the house related to human beings, who on a daily basis affect him. The space where the human sense of space and experiences across all five senses are constantly passing through the short-term it is accustomed to it.

Home Concept is vast and complex, with different dimensions and components in different cultures and societies cannot provide the detailed definition for it. Professor Pirnia believes home is

where the resident feeling upset, inside the house where women and children are living in it and should not feel tired.

### The relationship between beauty and perfection of human settlements:

Home is where the man took refuge after its daily activities and there is need to relax. So set out quantitative and qualitative characteristics of its spatial structure should be carried out.

Art is a kind of beauty and trends in the human soul, because man by nature, truth-loving, selfish and perfection and the nature of all human beings have been endowed by God is. Human beings seek a better life and achieve perfection and perfection is needed to model and particular way.

Islamic civilization and culture, like other cultures and civilizations, from its inception, being influenced by the art of the Islamic culture. Therefore all Islamic arts, such as calligraphy, architecture,



Fig. 1: Old Town with its six gates of fences, aerial photograph in 1335<sup>8</sup>

tiling, masonry, poetry and rhetoric have an origin and a goal to pursue. The impact of this kind of art that the human psyche and subconscious to raise the spiritual worlds, based on this belief, art in Islam is a kind of spiritual transcendence and especially of human, intellectual and philosophical foundations of the Islamic Sharia principles defined.

### Study range

Located within the northwestern Iranian city of Zanjan. The town has old and new neighborhoods at the heart of its own. Theory of exogenous socio-economic thinking in trading and urban, noted. [8] Despite the long history of Zanjan, due to numerous military attacks and subsequent destruction in the invasion of Arabs, Mongols, Tamerlane invasion and war intrigue Bob, your most valuable monuments are lost. The city has an old fence that was known to the castle town. The castle is the Seljuk period in the Mongolian intrigue and much of it was destroyed during the fence according to the previous wall has been rebuilt. As seen in the map, this castle has six entrance and historical elements and a number of old neighborhoods inside the fence and some outside it.

By studying the historical features of the local architecture and Zanjan compared to the current situation, it is observed in some areas, unfortunately many historical values neighborhoods, influenced by the contemporary urban development and disregard of the revival of the old city were destroyed, but some of the neighborhoods historically, they have greatly value and protect their identity in case of lack of attention and for them.

It's the neighborhoods that were independent of each character and identity, the urban system of continuous and close communication with the city

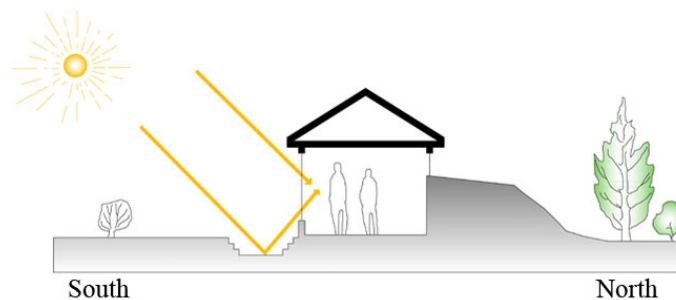
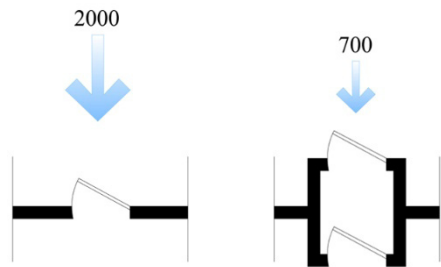


Fig. 2: Covering most of the building by the Land<sup>14</sup>

and its surrounding neighborhoods, and had formed an integrated whole. Communication structure within the city's old quarters, depending on the history and past practice with regard to human scale and organically shaped<sup>9</sup>

**Check the quality of traditional houses**  
**The desirable form of housing**

These factors throughout the organization achieve the desired form of housing and improving the quality improvement and superficial shell, only virtual cover that protects the truth and inner richness and sealed it determines the true essence and existence is not comparable to the funds and outer space<sup>1</sup>



**Fig. 3: The numbers represent the amount of cubic feet of air entering the building is the result once open doors<sup>14</sup>**

**Introversion**

Features of the environment change, he also suffered an identity crisis<sup>10</sup>. Territories led to the concept of identity in fact, the ownership and control of a range of geographical, objective definition of the person or group loses. Soft stabilizing function even in the most mundane realm of family activities is apparent. Thus, in this view, "Inside" means that what "I" is the domination and "out" anything other than that this 'I', is trying to increase its influence in it. In short, building interior introspection for lack of attention to the external environment, defined largely synonymous with organized around a central courtyard and separate spaces for men and women known. The tendency is to close the private space of the urban space and its opening to private open space) mainly central courtyard<sup>11</sup> introversion due to socio-cultural factors, as well as climate and not only is it the result of a weather and climate hot and dry regions know, because in some of these cities are also coming from thermal equilibrium, we see this combination introverted. The timing of this combination is not limited to Islam after, so that architectural works before Islam, this feature shows by combining courtyard.

**Housing strength**

Compliance with technical issues and principles of engineering in the design and

**Table 1: Climatic and mechanical system design appropriate measures to reduce energy consumption<sup>16</sup>**

Climatic and mechanical system design measures	The reduction of energy consumption
The use of plants in the exterior walls	25 percent of heating and cooling consumption by 50%
Put the building in the depths of the earth	Reduce heat loss by 35%
Using the vestibule at the entrance	15% reduction in heat loss through air infiltration
Semi-protected areas outside the building design	Reducing energy consumption by 20%
The use of double glass for windows	Energy loss reduction of 37% compared to single-walled glass
External wall insulation	29 percent reduction in energy consumption
Roof insulation	26% reduction in energy consumption
Green Roof System	An increase of 25 percent insulation
Designed to fit the openings	14% reduction in energy consumption
Domestic Shelters	20 to 25 percent reduction in thermal effects of sunlight and reduce heat transfer 4 to 8%
Floor heating system	30% reduction in energy consumption compared to other mechanical systems

construction of the structures should be considered as engineers and architects. Study of construction materials, faults available, retrofitting practices and the need to revise the Regulations and Rules, engineers familiar with the techniques of modern and up to date information retrofit design engineer's resistant patterns, cheap and convenient, very necessary are. In the past, Iran architecture, three main factors beauty, performance always been seen in buildings. Iranian architect is always the most attention to the positive aspects of architecture, such as logic, the principles of statics, technical issues and the scientific, human scale, using local materials, saving and more focused. In fact, consists of static building<sup>1</sup> In general we can say that the structure is not something that stagnation of Iran's traditional buildings, but the identity of the architecture has been effective. The beautiful design and implement the climate and function.

#### **Security, comfort and access**

In fact, housing security, protection against natural synthetic agents. Another issue that must be considered in safety, security, ownership of housing. For example, being familiar with all the people in the communities where traditional security makes is very high. Bushehr houses but lack full visibility into the yard (canals and fractures), homeowners can go through Rosen to have adequate knowledge of the neighborhood. There underground because of underground water, the height of the house, orientation and correct positioning and security solution architecture was considered. Taking appropriate facilities and services, thereby increasing the level of health promotion, housing and human health as a result of it.

#### **Contact with nature**

One could say that Garden of the most important tools to achieve sustainable development, it should be that population growth increases the need to provide public green space. In general should be reasonable and proportionate relationship between the built environment and the natural spaces in urban areas exist. Every green herb though small, its role in the stylized air, the dust, visual-mental relaxation, eliminating noise pollution, produce oxygen needed by citizens, shadows and plays. Use of garden and pond, trees and flowers,

skylights, sash windows, windswept ... all the traditional architectural techniques has been to the benefit of nature.

#### **Contemporary housing**

In the contemporary world problems such as population density and land use, economic factors such as the high price of land and building the economy and the economy of municipal services in the nature of housing is causing complex issues. Urbanization brings many new phenomena and urbanization have also sought to pursue economic problems, population growth and the urbanization of the product. The vertical life, unlike traditional residential architecture, instead of every family a home with multiple rooms for different needs, each family in a special unit and as a former living room. The fundamental difference between traditional housing and modern housing due to differences in appearance and essence. Inward and spiritual care in traditional houses are now giving way to carefully appearances and viewing data. If the housing is not merely a shell for shelter, a place to relax spirit and soul. Housing vacancies in the contemporary spirit of the place can be felt clearly.

In traditional features such as the significant architectural monuments, avoiding futility, self-sufficiency and introspection along with features like balance, perfection and unity, clarity, moderation and sobriety can be seen that in any case, obsolescence are not vectors . The religion of Islam is based on criteria comprehensiveness, depending on the circumstances of time and place. Islam has always supported the right of all-round development and renewal. Current society and way of life in the present, traditional extensive development of the society. Compared to traditional human spiritual needs of modern man is far deeper. The contemporary housing demand new answers. These responses must also respect the past and traditions, about the use of certain past patterns and human needs in the current situation are yet to follow.

#### **Principles and criteria for designing local housing of Zanjan**

The sum raised by climate information, we can say that in Zanjan avoid cold of winter, there is often a long-term frost resistance and high temperature difference between day and night is

very important. Therefore, heat transfer through the building wall and brought it to a minimum and the maximum use of sunlight.

### Building measures

a- Put the building in the middle ground: Extreme weather conditions or a discount stability in the basement significantly, and this advantage can be considered a positive thing for underground buildings. In fact, lower than the 1.5 to 2 feet (45 to 61 cm) does not sense a lot of daily temperature changes<sup>12</sup>. Building land covered by buildings can be airtight. The surface structures up to 35% of heat loss can often be due to air infiltration<sup>13</sup>

b- Half outside the protected areas: Enclosed porch and patio area outdoors to indoor comfort and performance of a private space as well. Roofing and front porch in the summer protrusions on the walls, the openings and the area around the shadow and this helps to keep down the temperature of the air outside the building. The external spaces in winter are also useful. Buildings can be designed to a solar box is on the side of the building. Plants, exterior walls or even greenhouses can be used in this direction<sup>12</sup>. The semi-protected areas outside the energy consumption for space heating is lowered to 20 percent<sup>15</sup>

c- Use the vestibule at the entrance of the building: Under normal conditions in winter, while doors and windows are closed air tight heat load will be increased by about 3/1. Heat dissipation through air penetration will reach 75 percent of the total building load. Plan vestibule in the front part of the building which is located north wind will be a great value. Although it should be tried in this part of the building is not far from the entrance<sup>12</sup>

The following table design sustainable patterns of housing in cold and dry climate and the impact of these patterns in the consumption of fossil fuels for heating buildings is provided:

### Suggestions

So in order to revise the design of residential buildings and more savings in the consumption of fossil fuels for heating buildings in the winter, in

addition to those mentioned in the above table, the following suggestions in the design of residential buildings in the city of Tabriz in cold climates offered:

1. Use local, accessible and environmentally
2. of elongated form along the east-west axis
3. Openings on the southern facade of the building is designed to use sunlight in winter
4. Block and insulation of cold winter on the windward side and use Softwood against the cold wind
5. Minimize openings in the eastern and western sides
6. Use as shade against the sun porch southern summer
7. Calculate the depth of shade according to the angle of the sun in winter and summer
8. Greenhouse space on the south side of the building
9. Position of the main spaces such as bedrooms, living and dining area on the south side

There are 10 corridors in the north side of the building as the main interface between inside and outside spaces<sup>16</sup>.

### CONCLUSION

In architectural harmony with the climate and the nature of the architecture.

According to material presented is clear that housing is a huge impact on public opinion in the city. So realistic approach in the planning, identify and match them with human needs is essential in today's society. Space is interwoven with the traditions of one's social housing represents Frog and how his life and have satisfactory physical, mental and social well meet him. Only in this case is habitable residential neighborhood will be accepted. The residential environment has always been closely linked with environmental issues and as a place for safe and beautiful environment for human comfort is raised.

So plan for it, to the sustainable development goals and improve their quality of life, social goals, targets the same physical-space efficiency, sustainability and beauty given major attention. Traditional architecture, taking into account all aspects of



design and sustainability and housing, which so far has maintained its beauty. He has all the features, power and knowledge has benefited in this way. The house where the atmosphere and spirit of the place prevailed and that a key factor in achieving inner peace in this house. Because he was able to correct and complete understanding of the needs and desires of people is accurate.

Sustainable living and urban life and shape are perfect for city and residential areas. In fact, the body of a residential setting must also supply the correct activity, meaning it is a good deal. So how to improve the architectural qualities of the house, the neighborhood and the city, in fact, is to improve the spirit body housed in the psychological characteristics of the farm house and the neighborhood and the city.

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