ROLE OF NATURE IN INCREASING LIVELINESS OF TRADITIONAL HOUSES OF IRAN (CASE STUDY: BOROUJERDI HOUSE)

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Abstract: This article shapes based on investigating role of the nature on the activities part of the house and its influence on increasing the liveliness of houses. Therefore, it has been tried to deal with investigating role of nature in increasing the liveliness of houses and how nature would influence in increasing the liveliness of traditional houses. In this regard, first, studies by theorists would be reviewed and with the benefits presented by them, it has been shown that nature and natural elements has a potential of answering activities, has a respond to climate conditions, sensory activation and sensory perception which are important factors of environment quality and also liveliness of a place. To this end, documentary and library data were collected then analyzed through the descriptive and analytical method.
researches shows that by 1. Using yard as a symbolic selection of nature 2. Believes and religious beliefs in the view of nature are the ones increasing sensory interactions and residence activities and finally increasing liveliness.

**Keywords:** Liveliness, Environment quality, Central courtyards, Traditional houses.

1. **Introduction**

In today's world, rise of urbanization and industrialization has evolved dwelling. In Iran also, the process of urbanization and industrialization is not happening slowly and by territory samples or any urban planning program, actually it is based on imitating western world and a tiny focus on dwelling, shaped without any attention to comfort and human health and exposed the society to the crisis. In the past, architect's view of human, life and society was in a way that dwelling is a place of comfort, relaxation for human, which has been disappeared today. On the other hand, attention to the nature, natural factors specially the one shaped in yards next to residential areas can increase life quality and make houses better spaces for human (Zare et al, 2013). Courtyards in traditional houses of Iran have increases quality of life and made better conditions for residences by using natural factors such as water, wind, light and plants (Afsharinasir et al, 2017).

This research seeks to take a step in a relation between cognition and design of live houses with desirable quality and revive liveliness in today's dwelling. In this regard, interaction between three subjects of nature, liveliness and traditional houses and affected factors of increasing liveliness of this houses would be investigated.

2. **Research questions, hypotheses and objectives**

Main questions of this study listed below:

1. How would nature effected on creating and increasing liveliness of residential areas?
2. What were the increasing factors in traditional houses?

To respond to this, first factors related to quality and liveliness would be discussed, then theoretical study talks about nature in architectural literature and religious beliefs, and at the end situations of liveliness in this spaces would be shown based on visual and empirical observations of quality of the nature in traditional houses.
Hypothesis of research is listed below:
Nature in traditional Iranian houses is a factor of liveliness of this houses and the courtyard plays the main role of this factor.
Objective of the research is to find the answer of mentioned questions to increase usage of liveliness in design process of today's residential areas.

3. Liveliness
Liveliness of a space versus nauseous is a reflection of activities and events happening in that place. So to recognize liveliness, activities and relations happened in the space should be addressed (Pakzad, 2007). According to Jan Gehl, these activities divided into two groups: "all the activities of human in order to gain what he need, whether it is necessary (compulsory) or selective (recreational)"(Gehl, 1987).

John Rus (chairman of the UK Architectural and Artificial Environment Commission) used the word "quality of life" instead of "livability" and define it as:" quality of life that would be experience and understand by people in space" (Golkar, 2006).

Kevin Lynch in the book "a theory of good city form" reviewed the liveliness on a macro scale and believes that liveliness with five other factors of meaning, access, monitoring and discretion, efficiency and justice would make a good form of a city. He divided liveliness into parts which are: survival, adequacy of the amount of water, air, food, energy and waste services, the absence of environmental contaminants and hazards, adaptation, the coordination between the environment and human needs, the human health and genetic diversity of the human being and, finally, biological confirmation (Lynch, 1981). According to theorists mentioned it can be said that most of the urban theorists mentioned that nature, environmental and ecological issues as urban liveliness factors.

In the table below, factors of urban quality and liveliness, related to nature and nature factors and environmental issues have been collected.
### Table 1: Factors of liveliness related to nature

<table>
<thead>
<tr>
<th>Theorist</th>
<th>Urban Quality Factors</th>
<th>Liveliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ian Bentley, 1985, 1990</td>
<td>Responsive environment</td>
<td>Diversity, sensation richness, ability of personalization, energy efficiency, cleanliness (make the air pollution and less). Supporting nature and wildlife (maintaining ecosystems)</td>
</tr>
<tr>
<td>Roger Franck, 1986</td>
<td>Positive and meaningful areas</td>
<td>Make a relation, mixing outdoor and indoor spaces</td>
</tr>
<tr>
<td>Allan Jacobs, Donald Appleyard, 1987</td>
<td>Live space</td>
<td>Confidentiality, cleanliness (avoiding sound pollution and...). Comfort</td>
</tr>
<tr>
<td>Michael Southworth, 1989</td>
<td>Liveliness</td>
<td>Charm, movement, sense, interaction</td>
</tr>
<tr>
<td>Francis Violich, 1983</td>
<td>Desirable environment</td>
<td>Social life, native local linkage</td>
</tr>
</tbody>
</table>

According to the table above, it can be said that nature and environmental issues are the main factors of urban liveliness and nature presence in the environment leads to vitality, interaction, and liveliness.

### 4. Nature and Liveliness

Nature is everywhere, nature effects and it could be find in any creative research, nature is the source of emotion, passion, charm, and aroma of space and time (Antoniades, 1990).

"In traditional Iranian houses, the house is not separated from nature and the presence of nature representative inside the house is a must." (Haeri, 2009).

Nature in traditional houses is presented by three ways of 1. Primary nature. 2. Secondary nature. 3. Abstraction nature. To define nature in primary and second way, Spirn says: "from the writer's point of view from Ciscro to Marx, primary nature is the one human haven't transformed and not make to the second nature" (Spirn, 1998). In traditional houses, sky, soil, water, wind, pets, and plants are all primary natures.

**Figure 1: Primary nature in traditional houses**
Human would change the primary nature to the second one in order to meet their needs of material (food, dwelling, comfort) and mental needs (beauty, helping others), without making any damages to the nature. Nature abstraction is the third way of nature presence in traditional houses. In this way, by simplifying, geometry shapes, nature would be defined in a human shape. Abstraction can be seen in traditional houses in many ways: for example, walls molding, and arches and domes (symbol of sky), carpet patterns (symbol of flower), patterns on cups (symbol of sun) (Daei Pour, 2014).

Figure 2: The extent of nature presence in traditional Iranian houses

5. Case study
Boroujerdi house is a beautiful and glorious building located at east south of Kashan city, and is one of the most famous historical houses of the city. It has been built in an area of 1700 square meter, including two outdoor and indoor yards. It consists of two main entrances, oasis, corridor, summer and winter settled, kitchen, wide underground. Like othersimultaneous houses, nature presence is sensible in this house. In the following, various ways of nature presence in this house would be reviewed.

6. Primary nature
Water
In native culture, the concept of life proposed in the yard and this life would be achieving by water presence. The importance of this issue shown by existence of a pool in center of the yard. The courtyard is a manifestation of the centralized form of the underlying world. The house is surrounded by space located at "hidden crests". A mediator of shape and surface should be a clean, drowned calm and free from any tension and a thinking space, making a traditional pool in this calm space, make a center of positive which leads to creative thinking. Thus, human transversal creation joins the longitudinal, and rebuilding a heaven would be complete (Toofan, 2006).
In general, the reasons to use pool in the yard is for air stroke, a place for ablution, and also washing and saving water for garden irrigation (Toofan, 2006).

Water sound is always a pleasure and enjoyable sound for Iranian. Magic of water shows its power by it sound a perspective. For this reason, inside a rectangle shape of a pool, there was a fountain, which due to its surface difference with water naturally drank water form it, and make a magnificent perspective and a source of joy and expansion. Water drank and the collapse of its droplets continued to mention the angels who looks play with each other (Nayebi, 2002).

The fountain, the sink of the water chambers with excessive radius, is the initiator of the re-rotation of the expansion and conscious (Ardalan and Bakhtiar, 1973).

Figure 3: View of the pool and green area of Boroujerdi house (www.persiatour.ir)

Green Space

One of the factors of traditional yards, is green areas. In addition of setting a warm and dry climate condition of space, plants make a yard more beautiful and gives symbolic concept to it. Gardens with dehydrated trees, while providing shade and product and creates beauty, compensate for the poor humidity of the environment. These green surfaces attract sun light and prevent it to reflect, avoiding increasing temperature. Sometimes trees make a role as a wind breaker (zare et al, 2013).

In Boroujerdi house, planting trees specially pomegranate tree, makes a comfort condition for residence to use yards continuously. In this house, it has been tried to use leaflet trees, which helps not to get sunlight directly and avoiding increasing temperature, on the hard in autumn and winter seasons light
comes to the yard and house with an angle and give a slight temperature to it.

**Figure 4: Presence of water (pool) and green space in ground floor plan of Boroujerdi house**

![Diagram of Boroujerdi house with water and green space indicated]

**Table 2:** The ratio of the water (pool) and the green space to the area of the central courtyard

<table>
<thead>
<tr>
<th>Case study</th>
<th>Pool (water) Area</th>
<th>Central Courtyard Area</th>
<th>Green Space Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boroujerdi house</td>
<td>644.7</td>
<td>103.5</td>
<td>152</td>
</tr>
</tbody>
</table>

**Light**

Radiation is the most important factor controlling weather, because it's the reason of climate changing. The climate of any place consists of the acquisition or dissipation of heat form radiation. Light besides shadows of yard and rooms (because of trees and flowers usage) gives a meaning and beauty to the space (zare et al, 2013). Sunlight on waterfront surface, not only gives a visual beauty to it, but also controls the environment moisture and make to smooth. Light is so important in Iranian-Islamic culture. In the spiritual perspective, light and shadows made by leafs movement, creates spiritual space and increases urban quality and attracts human.

**Figure 5:** View of Goljam used in Boroujerdi house

![View of Goljam in Boroujerdi house]
7. Secondary nature

Central courtyard

Open internal space or central courtyard—which is an essential element in combining the traditional structures on the Iranian plateau—make a slight of nature (light, water, wind, greenery) inside the building, created by spacing through the deep walls of that space of life and is separated from nature around it. In this gap, the free nature of the old form is embodied in a pattern. This distance between the home and the traditional city is from the macro to the wisdom scale. Traditional architecture is always symbolic and meaningful, as a result of the mystical thinking of this land, a kind of parable of the universe is an example and indeed the same world of season or connection between sky and land. Central courtyard - as an essential factor of these buildings- with four surrounded rows and four garden and central waterfront- usually, has a regular geometry based on four directions, has land functional and creates comfort in natural compatible environment and includes symbolic and cosmic concepts. Hence, it can be said that the yard is a connection between earthly and heavenly phenomena or their connection location. As a result of these issues central yard keeps its activity role and creates life at all times of the year, including hard time of desert summer (Ahmadi, 2012).

Yards in Iranian houses is a symbolic selection of nature which placed water, soil, plant, wind and light in itself that has a relation to respecting of nature by Iranians. Yard also has a role to organize house spaces. In such a way that openings would open to this element and it is always a complete geometry. Yard surface of Boroujerdi house is a natural earth and lower alley, like other similar traditional houses.

Figure 6: The ratio of opening area (yard) to the closed one in Boroujerdi house
8. Abstraction nature
Ornaments

The imaginative and glorious which presence as wall molding art in history of Iranian architecture and revealed variety of patterns, color and technique, shows a different ways of nature appearance in this house. A simple, white element which combines extract of life and comes in different form by human creativity, forms that drives away uniformity and darkness of surrounding and welcomes him to colors and patterns. Using this material in Iran goes back to thousand years. In Boroujerdi houses these ornaments start from doors to even private rooms. As an example in lateral spaces of Panjdari (main room) these patterns looks like mudflowers similar to cornflowers and Calla lily which is a reminder of the decoration of the Achaemenid period in Iran. In the south elevation of the building simple bricks and brick lattice lighters has been used. In the room in which welcomes the guests painting with nature themes is used. The art of using mirrors is also one of the decorations used in this house, brings about the beauty of reflection of light through glass and the cutting of spatial forms, as well as the symbolic place of water and mirror in Iranian culture, emphasize clarity and relation to nature.

Figure 7: Application of Natural Elements in Ornament of Boroujerdi House
9. Conclusion

The deduction of this research is a necessity of a relation to nature and nature elements. One the main reason of comfort, good quality and liveliness of dwelling, is availability of this relation which is emphasized by Islam and is one of the traditional rituals of Iran. The conclusion of this research shows the place and main role of determining nature presence in increasing liveliness of residential areas, due to the ability to activate the perceptions of human sensory, activity, subjective and semantic. In this research, by studying and thinking about the structure of traditional residential areas and cultures of used in this spaces as well as research on human perspectives, shown that human, nature and house have close relation and special features of any of them, increases their relation and finally leads to liveliness. These features include the followings.

1. Dependence of vitality component on nature and natural elements and environment. 2. Existence of beliefs in human point of view to the nature. 3. Presence of nature elements in traditional houses spaces in three ways (primary, secondary, abstraction). 4. Role of the central yard in traditional houses which is a symbol of nature.

**Figure 8:** Effective factors related to human, nature and traditional house in order to increase liveliness.

**REFERENCES**
