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ORIGINAL ARTICLE

Interpretation of Ecological Design Principal in the Creation of a Persian Garden

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ABSTRACT
The Iranian garden as a perfect structure demonstrates a close relationship between the cultural and natural background and also indicates adoption and alignment between man and nature. In the Iranian culture and tradition of garden construction, there is a direct relationship with its natural and physical background as well as biological elements. Iranian architects use simple and available method for creating open architectural spaces. In addition, desirable conditions that took physical and spiritual factors into consideration were provided. Parks and landscapes in future cities can be designed and constructed based on the architectural techniques used in Iranian gardens which are typical examples of hot and arid regions. In this study, the attributes of Iranian garden as it affects the creation of green spaces were investigated through observation method. In addition, this study also assessed the characteristics of a Persian garden using a descriptive approach.
Keywords*: Persian garden, ecological design.*

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INTRODUCTION

Iranian's imagination of heaven, a place believed to have been prepared as reward for a person's good deeds while living on ear this likened to the very pleasant and beautiful green earthly gardens cultivated as parts of building in many places. These gardens are seen as representation of paradise on earth. Iranians are also quite interested in having earthly gardens and plantations around their buildings. However, with Iran's hot and dry climate, coupled with lack of sufficient water for supplementing and maintaining excellent environmental landscaping features or plantation coverage, it becomes necessary to evaluate the efforts aimed at sustaining the Iranian's art of making gardens. This current study incorporates the use of examples, documents and library studies into investigating the characteristics of Persian gardens, in addition, a descriptive approach was also used to investigate and evaluate the characteristics of typical Persian garden. The result shows that elements such as soil, water, plant and layout have been used in forming a unique style of Persian gardens. Bagh-e Shah Zadeh Mahan (Mahan prince garden) is a typical example of Persian garden which has been carefully studied by previous researchers. The Persian garden which constitutes one of the best patterns of landscaping with a glorious history is the result of the interaction between nature and humans (Iranians). This phenomenon is the core of several theories and discussions. Sense of place rescues spaces from general and identical states for everybody and changes it to special point for its addressees. Most of those who have experienced a specific place esteem such place and become upset when such scenes are lacking. Perceptible and meaningful places are suitable base which personal memories, emotions and values depend upon. Spatial identity has an intimate connection with personal identity. This paper classifies the principles of reaching a conceptual pattern. An applicable approach is presented for the recreation of these old valuable gardens, which are compatible with contemporary requirements and new facilities. This makes the focus of this paper to extend to accessing indicators that from sense of place in the Persian garden such that through this achievement a sustainable design pattern would be possible. Investigations carried out on successful samples of sense of place creation in Persian garden as identical evidence also assist in analyzing quality measurement at different climates.

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Background Information

The people of Iran have always desired to have a symbol of the heavens also referred to as paradise, represented in the way they structured their gardens. The gardens always remained green throughout the seasons despite the little water tapped from the melting snow on top of the mountains streaming down the valley. The most fascinating aspect of this is the art of creating the gardens in conceptual patterns and landscape. There are small gardens, mostly owned by individuals or a family and due to inadequate water supply, they are unable to transform into plantations [1].

The analysis of the characteristics of the Persian garden sin this study clearly showed that various studies of different backgrounds have been considered in the study. Elements such as soil and plants have been used to bring out spectacular patterns [2]. The critical study of Mahan was carried out using a descriptive approach. Fig 1

Fig 1. Main Entrance of Shah Zadeh garden, Mahan-Kerman
Source: http://ce.ssharif.edu

Plants, Water and land are the three elements guiding the thriving Mahan gardens, they are analyzed as follows:

i. Plants

The Koran narrates the importance of trees in our environment. The act of cutting down trees is highly condemned by the Holy Book. Iranians follow the teachings of the holy Koran which describes the green trees in paradise. Given the fact that adequate water supply is an issue in Iran, the need to use little out of the available water for gardening purposes is of great importance and has contributed largely to nature of a typical Persian garden [3]. In Mahan, one of the uses of trees is to serve as ornaments; in addition, since the area is characterized by harsh climates, trees are mostly planted along the streets for fruits, shade and many more. Furthermore, beautiful flowers with attractive scents which signify are of great use especially in palaces and other high profile places. Along the streams, trees are planted to capture the water from the melting snow on top of the mountains [4].

ii. Land

A variety of land levels are exhibited in the Mahan garden. The area is characterized by steep slopes that make it hard to allow water run down the gardens smoothly. A waterfall set on a steep slope can be used as a mechanism to channel water to the fields to grow crops and cool down the environment in the area.

iii. Water

Water that flows freely down the slopes draws a lot of interests from the Iranians. It is a significant element that makes gardens to thrive in an environment. Water can become conceptual, functional as well as aesthetic elements of the gardens. As described earlier, water flows through Qantas channels that pass underground. Though, a large section of the land does not have access to water supply, the little land that has access to water forms a spectacular view in the otherwise unappealing landscape [5].

The emphasis on geometry is to determine the axis using different forms. For example, the axis is formed by the paths that lead to the gardens as well as those that surround the gardens which are squared [6].

The Mahan land is characterized by soils that are fertile and this promotes gardening. Mild winds are also experienced in this area. Most of the water used in the Mahan is sourced from Tigaran which supplies water to this barren and arid land [6].

Streams of water flow from the mountains close to Tigaran with a qanat supplying water to the garden [7]. As stated earlier in this paper, a steep slope leads to easy flow of eater which is an advantage to the area since water flows from a higher level. The irrigation has made it possible to grow crops in the gardens [8].

Before embarking on this study, research question on Persian garden were circulated and the responses were obtained. The responses were then addressed in the study. Some of the question was comprehensive enough to involve all areas addressed by this study such that the aims and objective of the study can be understood by all irrespective of areas of specialization.

Definitions of Key Terms and Variables

i. Qanats

This is a term used by people in Iran to refer to underground channels that facilitates the flow of water to the garden [9].

ii. Pavilion

This is a garden building designed to cool naturally. Pavilions from intelligent passive voices [2].

Garden's Plant System

The plants and vegetation in Shahzadeh garden:

- Pine and cedar: Shady and wide-leaf trees such as wild wych-elm, rowan, and windbreak tress also, these trees are resistant to the region's Climate.
- Fruit trees, such as ash, salsify and pine with unique view when seen from the upper routes.
- Ornamental plants blossoms in winter.

The Impact of Humans

The ability of humans to alter desert and dry land environments is not new. Human actions in deserts and dry land are often viewed as detrimental. During the last century or so, the growth and changing distributions of dry land populations, and developments in technologies and land uses, have increased this ability; while desertification is by no means a new phenomenon, it has today attained a new significance. Many concerns about human-induced changes in dry lands relate to enhanced rates of soil degradation and total vegetation loss, but studies are now beginning to elucidate their impact on desert and dry land biodiversity on a global scale and the potential use of various plant species to humankind.

Several environmental factors contribute to the susceptibility of desert and dry lands to degradation by humans. These do not necessarily relate to the often supposed fragility of their ecosystem but to the nature of environmental dynamics and human activities. Firstly, the inherent natural variability of dry land climates and ecosystem tend to be overridden today when human activities employ technologies and methods imported from temperate environments that enjoy more consistent conditions. In addition, many geomorphologic processes in desert and dry lands are characterized by significant periods of quiescence, punctuated by abrupt episodes of activity. Areas cleared of natural vegetation by grazing, or bear in the period immediately following harvesting, are thus particularly susceptible to rapid erosion by high-intensity rainstorms or strong winds.

In the desert regions, lack of water for drinking and agricultural purposes in conjunction with incidences of desert storm which blows sand indiscriminately are some of the problems that prevent people from creating a desirable living environment. Besides these issues, because of shortage of trees and consequently, woods, the indigenous people are not able to create ceiling shelter, particularly those susceptible to rapid erosion by high-intensity rainstorms or strong winds.

Furthermore, the rapid growth of urban areas in deserts and dry lands since World War II has placed significant pressures on limited water resources and options for waste disposal. In dry land areas of the

developing world, rural depopulation resulting from migration to urban enters can lead to the failure of traditional soil-and vegetation-conservation techniques.

Methodology

This study adopted the case study methodology. To this end, a Persian garden was identified and the ecological design principles behind the creation of the garden were interpreted. The garden selected for this study is Mahan garden in Kerman region. One of the several reasons which informed the selection of case study as the preferred methodology is that the approach will allow more insight into the subject being studied. This focus on a single case will help in identifying the various attributes of this phenomenon. However, this case study is limited to one scenario despite the fact that there are various scenarios out there.

The total space inside the garden is divided into smaller spaces by perpendicular lines following its geometrical structure. Thus, two perpendicular axes divide all space of the garden to four sections, so the pavilion (Koushk) inside the garden is built proportionately into divided spaces in different points of the garden and the water stream inside the garden follows its regular geometry [10].

Another important feature of Persian garden is the opening of the main scenery in form of extended rectangle. In such gardens, there is an extended rectangle. In such gardens, there is an extended space in front of the building which is located exactly in the main scenery. In these gardens, plants usually don't grow to the extent of enclosing the garden's open landscape. The main building is sited in different parts of the garden, for example, often times, the main building (Koushk) use to be in the middle of garden and is visible from everywhere in the garden. This dates back to a thousand years ago. Even in agriculture, the square from planting on the ground has been divided into squares via water streams [10].

Recognition of the sense of place in the Persian Gardens

- Establishing garden mostly in steep land
- Surrounding garden with wall
- Dividing area of garden to four parts
- Using direct lines in garden designing
- A building at the center or at the highest level in the garden
- Using main water streams continuously (steady water)
- Flowing water to create water sound
- Using stones at the bottom of the stream to generate waves
- Having a close connection with nature and lach of space between main building and garden
- Existence of a pool for providing water and beautiful view in front of building (Koushk)
- Using a lot of shay trees
- Allocating the greatest part of garden to fruit trees
- Using different kinds of decorative and pharmaceutical flowers
- Using Rose (Rosaberberifolia) more than other flowers
- Paying attention to the geometrical figures
- The main landscape of garden is along the length of garden in most Persian gardens
- The main Koushk is usually located at a ratio of 1:3 along the lengthwise axis of the garden
- Using plants in Persian gardens for three reasons: shadow-harvest-decoration
- The most functional trees in main axis of Persian gardens are Cypress and Plane
- Presence of fountain in front of main building in most Persian gardens
- Do not planting high trees and plants in intersections to protect main building's landscape

Mahan Garden in Kerman region was adopted as the case study, and Persian garden was considered as the basis. As earlier observed, there are several examples of Persian gardens in existence today. However, Mahan garden was adopted in this study given the fact that it occupies a central role in the lives of people of the region. The gardens also have a unique architectural design that attracts the attention and curiosity of any architect [11].

DISCUSSION

The modern world is currently facing a great threat to its environment. This is partly due to the rapid industrialization which has been going on since the beginning of this century, this has subsequently led to environmental degradation, There are other places that are unfit for human survival and which can be improvised to support life. These areas perceived to be difficult to live in can be harnessed and developed into useful places to live in.

Huge expanse of lands is left unused given the fact that they cannot support life. This is despite the fact that there is overpopulation in other areas which are perceived to be habitable. Many people move away from unproductive land since they do not have the means and skills to improve it. This is where ecological architects come in since they can use their specialty in designing gardens in such "unproductive" areas

Cutting down of trees without replacing them is a threat to the universe, it invariably leads to increased rates of desertification. When the land becomes unproductive as a result of desertification, people will tend to move away [12]. Many people have abandoned their culture which provided ways for preserving the environment [13]. This study will assist in understanding the nature the more as to maximizing all opportunities offered by nature for the comfort of the residents of specific regions. This study provides basis for different views through which architectural designs can be made such that it will be seen as cutting across a wide audience especially on the design of Persian gardens.

The following are findings of Mahan garden:

The findings of this study will assist those with flair for architectural designs to appreciate architectural designs of ancient Persian gardens such as Mahan.

i. stakeholders will be able to identify the importance of ecological designs in meeting the needs of humanity in harsh climatic conditions

ii. stakeholders will be able to come up with designs that will improve the conditions of life of people living in harsh environments

iii. stakeholders will be able to duplicate the ecological principles of the Mahan garden to other parts of the world

iv. designers will be able come up with designs that conserve the environment while improving the life of people at the same time

v. The importance of the culture and religion of people as it relates to their environment are better understood with this study. In addition, how culture can promote the environment and revamp barren land to support life is better appreciated with a better understanding of this [14].

CONCLUSION

Considering the discussion above, Iranian garden construction features can be illustrated as follows: the importance of garden construction is a greenbelt and its pleasing effects against Iran's dry and desert climate have doubled. The roles of land and position in the function and type of the garden are very significant in Persian garden. Regular water flow is the main element in Persian garden. Garden irrigation and how to use water for ornamentation is important in Persian garden. In desert regions, there are many dry areas besides the many forests; therefore water comes as the principal element in the Persian garden. The underground water canals are built on slopes to facilitate either natural or artificial flow of water (waterfalls). It is assumed that this style of irrigation is about a thousand years old. This style works in the best way and is widely used even in modern gardening styles. The underground water tunnels, called Qanats are built to irrigate the garden and wells are then connected to Qanats for drawing out water. Trees are planted in a ditch called a jub, to prevent water evaporation and allow quick access of water to the tree roots. Finally, the Persian gardens basically serve for relaxation and recovery.

REFERENCE

1. Kiani, Malik, (2004). Iranian Architecture during the Islamic Period Tehran: Tehran Publishers.
2. Khansari, Mont, (2009). The Persian Garden: Cohoes of Paradise. Iran: Mage Publisher.
3. Hob, House, (2006). Garden of Persian. Nazar: Tehran Publishers.
4. Turner, Tom, (2005). Garden History, Philosophy and Design, 2000 BC-2000 AD. New York: Spon Press.
5. Carroll, Maureen, (2008). Earthly Paradises: Ancient Gardens in History and Archaeology. London: British Museum Press.
6. Mansoori, Ayah, (2005). An Introduction to the Aesthetic of Iranian Gardens. Nazar: Nazar Institute Publishers.
7. Barati, Newton, (2006). Gardens and Construction of the Gardens in the Iranian Culture. Nazar: Nazar Institute.
8. Tavakoli, Newton, (2007). Structures and Historical Recognition of Iranian Gardens. Iran: Islamic Azad University Publishers.
9. Donald, Wallace, (2009). Persian Garden and Garden Pavilions. Tehran: ElmiFarhangi Publishing.
10. Diba, D., Ansari, M., (1995). Essay of Persian Garden, collection of essays of Argeh Bam-Kerman Architecture and Urban Designing history congress, published by Civil Cultural Heritage Organization.
11. Ansari, Mohammad.,&Mahmood, Hassan. Persian Gardens as a Metaphor of Paradise. Honar-ha ye ziba: Mager, (2007). Print.
12. Pirnia, Mont, (2007). Islamic Architecture of Iran, Science and Industry. Tehran: University of Tehran.
13. Wilber, D., Ackeman, P., (2008). The Persian Garden. New York: Mage Publishers.
14. Pope, Assa, (2005). Persian Architecture. New York: Wisdom Publishers.