

NATURE AS A SOURCE OF SUSTAINABLE DESIGN IN ARCHITECTURE OF ORIENTAL COUNTRIES (CASE STUDY: TRADITIONAL ARCHITECTURE OF IRAN)

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Abstract. Nature as one the most important architectures` guidelines continuously presenting in designing process, affects various aspect of architecture and buildings formation especially in oriental architecture emanating from Eastern philosophies. Following the review, in this field, the major questions are what is the impact of nature in traditional Iranian architecture as one of the subdirectories in Eastern architecture and on which factors, the variety of nature utilization in aforementioned subcategory depends?

To answer the questions, the used research method is logical argumentation with librarical searching and physical studies. Twenty survived ample samples of Iranian traditional architecture are selected to study on. As the result, the way nature utilized in case studies is classified in 8 categories and the frequency rate of each method is described in tables.

1. Introduction

The study on previous architecture as a reliable reference in contemporary designing is always considered the guidelines toward further architecture. In another word, Application of traditional architecture in contemporary age is an undeniable part of the journey in the direction of achieving admitted and sustainable architecture goals based on truly examined experiences; So that even modern architecture mostly intents to utilize earlier taught in a recent format; it means, he follows the light of past experience to illuminate future path toward prosperity.

According to the review, presence of pure or inspired nature in previous architecture, namely in oriental one, has always been an inspiration source for architecture namely eastern ones based on its ancient history and civilization in different ages to take lesson from which is representative of human attention to creation and temperament.

Nature and natural elements of the architecture mostly used in countries of Eastern Culture including Japan, Iran, India, China and so on shows that the traditional relation between oriental man and nature had been established based on an innate sense which is definitely appreciated through architecture.

Correspondingly, considering the Oriental culture and philosophy, the paper comparatively studies on Iran traditional architecture samples as a country lying on the Silk Road route displaying great variety, both structural and aesthetic, developing gradually and coherently out of earlier traditions and experience [1] and surveys nature role on Persian architecture formation.

2. Nature in Oriental Philosophies

Naturalism commonly refers to the viewpoint that laws of nature (as opposed to supernatural ones) operate in the universe, and that nothing exists beyond the natural universe or, if it does, it does not affect the natural universe. [2] The study of different schools of thought in historical periods is the typical of the claim that nature and naturalism play more important role in oriental minds including the various philosophies of Asia, namely Indian philosophy, Chinese philosophy, Iranian philosophy, Japanese philosophy, Korean philosophy, Arab philosophy, Jewish philosophy in comparison to other ideologies.

“Consequential Spiritual Ideals believe discovering how human beings should act is a matter of discovering how nature acts, so man’s actions can be in accord with nature....human life (physical, mental, moral, and spiritual) is an ordinary event--attributable in all respects to the ordinary operations of nature.” [3]

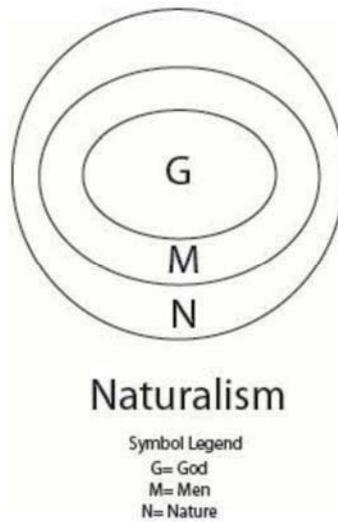


Fig. 1: Naturalism place in oriental Philosophies

Thus, in parallel with oriental beliefs, the concepts come to existence through the architecture. “Construction is established on encroachment on nature...there had always been a close relation between man and nature in most eastern cultures in past ...The oriental believes that he stems from nature; So that he makes a multiple relation facing nature in different eras”[4]

Table 1: Nature and Architecture Relation in Oriental Culture

Time	Human & Nature (Approach)	Architecture & Nature (Approach)	Theoretical schools	Discription
Pre-Modern	Unification	Sacredness of Nature	China Japan Ancient Iran	Nature Discription as “temperament” through Architecture
Post-Modern	Coordination	Conservation of Nature	Contemporary Era	To maintain natural ecosystems and improve modern thought crisis by Architecture

3. Research Questions and Methods

3.1. Questions

- What is the nature role in Iran traditional architecture?
- The variety of nature utilization in Iran traditional architecture depends on which factors?

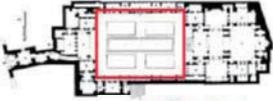
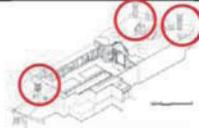
3.2. Research Method

Research approach is logical argumentation and applied techniques are descriptive analysis complemented with comparison between Samples recorded in the national heritage of Iran. Information gathering method is libratical searching. [5]

4. Case Studies

As previously mentioned, the following paper intents to present and interpret the decisive role of nature in traditional Iranian architecture and to explain the agents affecting the variety of nature utilization in the architecture. To achieve the purpose, twenty survived species of Iranian traditional architecture are selected to study on. Introduced in detail, each sample and the way the nature utilized are presented in following table format.

Table 2: Borujerdis' house and nature utilization, designed by authors

Construction Name	Borujerdis' House	
Place/Time	Kashan/1857	
Inspired by Nature	Natural Oriental Elements	
Pure Nature Presense	Central Courtyard (Water and plants axis)	
	Badgir to control wind energy	
	Skylight window to use natural light	
	Vernacular materials (adobe)	

To explain more light on the issue, according to further research, in some cases naming Qavam House (Shiraz), El-gölü palace (Tabriz), Fin Garden (Kashan) and Dolat-abad Garden (Yazd), there lie natural axes in architecture including water and plants which lead the complex to convert to a microclimatic region provide the user with pleasant climate to live in. Moreover, sometimes, the presence of nature in a monument come to appearance through abstract ornamental components inspired from natural forms like tiling on Sardar Mosque's dome (Urmia) and Kermanshah Jameh Mosque or carving in Persepolis complex (Shiraz), Alavian Dome (Hamadan), Taq-e Bostan rock relief (Kermānshāh) . Thus, there are architectural elements exposed to natural phenomenon namely wind, solar radiation and water to restrain energy and improve a sustainable design in survived samples like wind-tunnels utilized in Bani-Kazemi, Borujerdis' and Al-Isfahani houses in Kashan. As a result, it could be mentioned that nature presents in various forms to meet a necessity or obtain to sustainable goals.

5. Discussion and Conclusion

Evaluation of the Iranian historical samples in purpose of nature role perception, the way nature utilized in case studies is classified in 8 categories and the frequency rate of each method is described in table.

Table 3: Frequency rate of nature utilization in buildings, designed by authors

Construction Name	Prominent nature elements	Natural forms	Architecture in nature	Nature in Architecture	Conceptual naturalism	integrated architecture with nature	Energy Sodality	Vernacular materials
Qavam House (Persian garden)	✓	✓	✓		✓	✓		✓
Fin Garden (Persian garden)	✓	✓	✓		✓	✓	✓	✓
Shazdeh Garden (Persian garden)	✓	✓	✓		✓	✓	✓	✓
Dolat-abad Garden (Persian garden)	✓	✓	✓		✓	✓	✓	✓
El-gölü palace	✓		✓			✓	✓	✓
Sardar Mosque's dome		✓			✓			✓
Kermanshah Jameh Mosque dome		✓			✓			✓
Persepolis complex Carving		✓			✓			✓
Bani-Kazemi house	✓	✓		✓		✓	✓	✓
Borujerdis' house	✓	✓		✓		✓	✓	✓
Al-Isfahani house	✓	✓		✓		✓	✓	✓
Behnam house	✓	✓		✓		✓		✓
Alavi house	✓	✓		✓		✓		✓
Ghadaki house	✓	✓		✓		✓		✓
Salmasi house	✓	✓		✓		✓		✓
Fahraj Village Ab-anbar							✓	✓
Taq-e-Bostan		✓			✓			✓
Alavian Dome		✓			✓			✓
Khaju Bridge			✓					✓

The previous table is final assessment of nature use in architecture. As it can be derived from the table, following classification is more common among the prominent samples.

1. The application of prominent nature elements: The use is more common in residential types and gardens applying natural elements like water, plants and so on to provide microclimate and perform a regular geometry.
2. The application of natural forms: The ornamental elements inspired from nature present in Iranian monuments mostly associated with conceptual naturalism to saint the nature.
3. The presence of architecture in nature: Nature and green space in Persian garden encompassing a palace is an obvious example of the classification. The method effectively improved the harsh climatic condition especially in hot and dry region and positively affected irrigation.
4. The presence of nature in architecture: To serve an example, central courtyard in historical architecture usually created regular geometry which encircled natural elements naming trees, flowers and plants, water and so on not only aesthetically improved the architecture but also provide the user with pleasant climatic condition.
5. Conceptual naturalism.
6. Integrating architecture with nature.
7. Natural energy and energy sodality (The utilization of wind, sun and natural energies): application of traditional architecture elements, wind tunnel (Badgir), Skylight windows embedded on house roof and mosque domes is typical of the mentioned method to restrain natural energies to maintain a sustainable design.
8. The application of natural and vernacular materials: As a clear-cut characteristic of Iranian previous architecture, the traditional architect had always used compatible and natural materials not only to decrease construction cost but also to achieve a sustainable design.

According to assessment and studies in the essay, nature always appears for the purpose of design in traditional samples not only in formal aspect but also it lies on architecture semantic aspects .Concluded by the table, nature mostly forms the past architecture in terms of construction which leads the monument toward a sustainable and compatible one with natural environment.

7. References

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