International Journal of Management and Sustainability
2013 Vol. 2, No. 1, pp. 1-13
ISSN(e): 2306-0662
ISSN(p): 2306-9856
DOI: 10.18488/journal.11/2013.2.1/11.2.1.13

THE ROLE OF THE GESTALT THEORY IN UNDERSTANDING PERSIAN ARCHITECTURAL MASTERPIECES, CASE STUDY: FIN-GARDEN OF KASHAN

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ABSTRACT

Gestalt theory is one of the most effecting theories. This theory has been used in different fields but until now it is not used about Iranian architecture. Absence of researches about Iranian architecture according to gestalt theory, making analysis shows more up. So present research meantime of explaining gestalt theory and it's connection with landscape architect means proceed to gestalt theory in this field. The fundamental research questions are: What concepts can be explained according to gestalt? does we able to analyze the historical gardens via this theory? What dimensions will be emphasized more based on gestalt theory about analysis of historical garden? What are the advantages and disadvantages of this theory? To answer these questions, in field theory the research methodology: "logical reasoning" and in field analysis samples; the research methodology "the diffusion of using combination strategies" are used. After reviewing gestalt theory and expressing the theoretical concepts, concepts related to this theory, in a sample like "Fin-Garden" in Kashan is putting to the analysis. Studies show that, although many years have passed from gestalt theory, they are useful and can be used for landscape architecture and it can unclear aspects of Iranian landscape architecture and putting on recognition.

Key Words: Garden making, Fin-garden of kashan, Iranian historical gardens, Irrigation system, Vegetative cover.

Received: 13 June 2012/ **Revised:** 1 March 2013/ **Accepted:** 5 March 2013/ **Published:** 8 March 2013

INTRODUCTION

Design process has been subject to studies in the Europe from the late 1950s and early 1960s. Research-based design has been from early times based on this belief that the process of design is to a great extent independent from its subject and design has an identical process in all fields. Therefore, the typological model of design theories in architecture can be studied in different fields; and for this purpose, as there is coherence in behavioral science in design, positive theories and content theories can be mentioned. The word "theory" comes from the Latin theoria, in turn

adopted from the Greek theoros, which means "spectator, envoy". Its base, theasthai, means to "look upon, contemplate". The English meaning of theory is a conception or mental scheme of something to be done, or a method of doing it, or a systematic statement of rules or principles to be followed. A basic assumption by architects is that theory is a "thing that guides" action... Theory also develops ideas and terminology for the discussion of architecture, both among professionals and the public. What we can build depends on the nature of the ideas and words we can use to discuss our work. It is therefore a vital task of theory to discover, present and gain acceptance for new ideas. (Miller, 2011) The theory of architecture considers the whole sphere of architecture as a study matter and has applications in fields belonging both to the practice and to the knowledge. These are: architectural experience and architectural output (designing), to which we must add the architectural research, pointing out its problems and putting its results in order; without a coherent theoretical basis, both architectural research and history of architecture lead only to knowledge without profoundness. Each of these application fields goes through its own dynamic process, and in its turn, the theory of architecture, having multiple interconnections with them, is a complex subject, in a continuous evolution. It is important to emphasize on community-oriented design for sustainability in architecture and planning (Mahdavinejad and Abedi, 2011). It is in need of architectural design criteria of socio-behavioral approach (Mahdavinejad and Mansoori, 2012). Community-led method in art education and learning (Mahdavinejad and Moradchelleh, 2011a) as well as community and social class (Mahdavinejad and Moradchelleh, 2012) has a lot to do with Traditional architecture of developing countries especially in Iran (Mahdavinejad and Moradchelleh, 2011b). It is vital to find the past as source of inspiration for contemporary architecture and planning (Mahdavinejad *et al*., 2012a) especially in design and detailing (Mahdavinejad *et al*., 2012b). Yet, the architecture achievement can't occur only as a logical combination of elements pointed out by theoretical analysis of the program and of the available means. Being materialization, the architecture achievement depends on a unifying creation process in which every component usually undergoes transformations under the influence of the general context.

The creation (design) process can't be learned exclusively through logical mechanisms although it is obvious that analytical methods are necessary, but it is assimilated through practice. The creation process cannot develop without existence of an analytically defined matter, on theoretical basis, but as it has in view both achievements of an ordered physical environment and of a significant framework of symbols, of significant expensive forms, it also cannot be achieved without contribution of the intuition, imagination and sensibility. At the same time, in order to create a visual order by architecture we need a method based on a general theory of architecture. On the one hand, theory of architecture helps us to define the architectural functions (tasks) in a certain period and to identify the means to accomplish them, and on the other hand it helps us to indicate the existing reports between these two categories. That is why the working method in

creation must integrate theory and practice by coordinating different factors of the two categories. (Onofrei, 2005)

Research Problem and Process of Analysis

Among important theories of architecture, gestalt theory has been studied vastly; "Place experience, gestalt, and the human–nature relationship" by Herbert W. Schroeder about some ways in which differing views about the human–nature relationship reflect and are reflected in people's experiences of the places and environments they encounter in their lives. The paper titled "Languages for gestalts of line patterns," authored by Mehdi Dastania and Remko Schawhich discusses about an existing model of visual gestalt perception that is based on structural information theory. In the field of Iranian historical architecture especially on the monuments registered as world heritages, no important research has been conducted. The question is that if the theory of gestalt can be used to analyze historical gardens.

Research Objectives

As mentioned above, no applied research has been carried out to analyze the traditional architecture and method of garden construction in Iran. Therefore, this research aims to study gestalt theory, understand its relation with the concepts of landscape architecture, and finally use the capacities of gestalt theory for the analysis of Iranian gardens and their strength and weakness.

Research Question

To meet the objectives of this research, the following questions are to be answered. Which concepts are explained by gestalt theory? Which criteria are provided by these concepts for the analysis of historical gardens? Which aspects are more focused when historical gardens are analyzed based on gestalt theory? What are the strength and weakness of this theory?

Origins

The concept of Gestalt was first introduced in contemporary philosophy and psychology by Christian von Ehrenfels (a member of the School of Brentano). The idea of Gestalt has its roots in theories by Johann Wolfgang von Goethe, Immanuel Kant, David Hartley, and Ernst Mach. Max Wertheimer's unique contribution was to insist that the "Gestalt" is perceptually primary, defining the parts of which it was composed, rather than being a secondary quality that emerges from those parts, as von Ehrenfels's earlier Gestalt-Qualität had been. Early 20th century theorists, such as Kurt Koffka, Max Wertheimer, and Wolfgang Köhler (students of Carl Stumpf) saw objects as perceived within an environment according to all of their elements taken together as a global construct. This 'gestalt' or 'whole form' approach sought to define principles of perception -- seemingly innate mental laws which determined the way in which objects were perceived (Henle, 1975)

The Concept of Gestalt

As the concept of gestalt is a vast concept, no direct translation has been provided in any language. This term has its root in German and it means form and shape, and in other words organized entirety, image, or configuration. It must be noted that no one of these words can explain the concept of gestalt. Gestalt refers to a type of configuration used to put objects together in such a form that they form a unit. Gyorgy Kepes introduces gestalt in his book "the Language of Vision" as a material, psychological, or institutional whole having characteristics, which are not present in its constituents individually. Max Wertheimer and other early gestalt psychologists conducted studies in which they observed the way in which people assemble bits of sensory stimulation into meaningful wholes. On this basis they formulated laws of perceptual organization (Nevid, 2009) The main idea of gestalt theory is that the general motifs prevail over their constituents. They have characteristics, which are not present in the constituents forming them. In other words, the whole is something greater than the sum of the parts are.

Gestalt principles

Pragnanz: Psychological organization will always as good as the prevailing conditions allow" what is meant by "good" it's not entirely clear. No doubt what wertheimer is suggesting is resolution in terms of regularity, symmetry and simplicity (Donis, 1974) he word pragnanz is a German term meaning "good figure." The law of Pragnanz is sometimes referred to as the law of good figure or the law of simplicity. This law holds that objects in the environment are seen in a way that makes them appear as simple as possible. (Cherry, 2012)

Figure-ground: We perceive objects as figures when they have shapes or other characteristics, such as distinctive coloring which are set against a background of the ground in which they appear. (Nevid, 2009)

- **Grouping:** This principle is composed of Similarity and Proximity.

- **Similarity:** Likeness between form and color also lead to the tendency to construct units, in other words, to establish groupings of similar parts. If conditions are equal, the stimuli most similar to each other, either by form, color, size, weight, direction etc., will often tend to be grouped, to constitute parts or units.(Carvalho and Moura, 2012)

- **Proximity:** Ifindividual elements are very close together, there is an increased probability that these elements will be perceived as a group (Prinz and Bridgeman, 1995) this law can be subsumed as Integration (The use of an external element for grouping different elements of a structure together,) Overlapping (The elements of a visual structure overlap each other without losing their independent nature,) Contact (The constituents of a structure approach each other so closely that they contact with each other, provided that they can be distinguished,) and Edge Proximity (The components that are closer to each other are seen more as a unified group, and this happens when the adjoining edges of a structure are laid out close to each other.)

Good Continuation: Is the visual impression of how the parts follow each other through perceptive organization of form in a coherent manner, with no breaks or interruptions of trajectory or in visual fluidity. (Carvalho and Moura, 2012)

Closure: Humans have a natural tendency to visually close gaps in a form, especially in familiar forms. We seek to close forms to make them stable. (Graham, 2005)

Segregation: Means the perceptive ability to separate, identify, make evident or bring out formal units in the whole or in parts of this whole. (Carvalho and Mourão)

Symmetry: Elements are likely to group if they are arrayed symmetrically, and symmetrical regions of the field tend to be perceived as figure.

Focal Point: Every visual presentation needs a focal point that catches the viewer's attention and persuades the viewer to follow the visual message further.(Chang *et al*., 2012)

Convexity: The convexity law intervenes in our decision on the figure-ground background dilemma. Any convex curve (even if not closed) suggests itself as the boundary of a convex body. (Desolneux *et al*., 2008)

Overlapping: In a visual structure, small gestalts are affected by larger gestalts.

The History of Fin-Garden

It is said that the garden and royal building in Fin has been constructed by the order of Buyid dynasty during the Islamic era, and renovated during the rule of Il-khanate dynasty. In Haft Eqlim, a bibliographical dictionary of poets, it has been said about the customs and traditions of the people of Kashan, has been explained: "in Fin, there is a wide river, whose source is a stone, and no one of the tourists visited this river can claim that there is another river identical to this one. The most parts of the farmlands and gardens of Kashan are irrigated by this river" (Na'ima, 2006). This river is located in the south side of Fin-Garden, and it is called Cheshmeh Soleimanieh (Soleimanieh Spring) with the water discharge rate of twelve Sangs (Sang is the traditional unit for measuring the outflow of water in Iran.) In the course of history, the garden and royal palaces of Fin have been used for holding national feasts and important public ceremonies; for example, biggest royal celebrations were held in Fin when Shah Ismail of the Safavid dynasty arrived at Kashan in 909 AH (1504 AD.) In 982 AH (1577 AD,) during the last years of the rule of Shah Tahmasb I, a severe earthquake happened in Kashan, and it destroyed the village of Fin. This destruction continued successively for 12 years due to the attacks of Mohammad Khan and Valijan Beig Turkman, who ruined this region. At last, during the rule of Shah Abbas the Great and after the suppression of Turkmans' rebellion, it was ordered by the

King to renovate Kashan, and therefore the garden was renovated and a new building was constructed in this era. The debouchure of the spring was located 500 meters higher than the place where the old royal garden was and the new source of the river is located. The new royal garden was constructed in a parcel of land measuring 157 meters in east-west length, and 142 meters in north-south width. Rounded high towers were built in the four corners of the land, which was leveled and prepared for the construction of two old and new gardens, as well as streets, and a big field for playing polo and other sports. Inside the grounds of new garden, a charming palace called Shotor Galouy-e Shah Abbasi was built. The civil plans of Shah Abbas I was completed by his successor, Shah Safi. He ordered the building of a marvelous two-story palace on Shotor Galouy-e Shah Abbasi known as Kolah Farangi building. After Afghan's rebellion in 1135 AH (1723 AD,) the garden of Fin was ruined, until Karim Khan of Zand dynasty ordered that a private building is constructed in the south side of the garden of Fin and it was called Khalvat Karim Khani (the private palace of Karim Khan). In 1192 AH (1778 AD,) an earthquake destructed all buildings of Kashan, and Fin-Garden lost its prosperity and its buildings were destroyed due to successive military campaigns and wars. However, during the rule of Qajar dynasty, Fathali Shah ordered Haji Hossein Khan Sadr Isfahani, his future grand vizier and for the time being the governor of Kashan to renovate the garden in addition to the construction of Madreseh Soltani (royal school) simultaneously. The renovation and repair works of the buildings of Fin-Garden was completed in 1226 AH (1811 AD.) In the grounds of the garden, a new building called Shotor Galouy-e Fathali Shahi was built in the southeast side of the garden. This building had a poolroom with a pool, whose overflowed water flowed through a tile watercourse in the middle of the streets of the garden. In 1242 AH (1827 AD,) Ali Mohammad Khan Nezam al-Doleh Sadri Esfahani, governor of Kashan ordered the construction of a new building in the northern side of the garden as his inner house (women's quarters) later called Khalvat-e Nezam al-Doleh (private house of Nezam al-Doleh.) At present, a new museum has been built on the destructions of this building located in the west side of Fin-Garden. During the rule of Nasser al-Din shah, on Dec. 02, 1851, Mirza Taghi Khan Amir Kabir and his family were jailed in the yard of Khalvat-e Nezam al-Doleh in Fin, and executed after forty days on Jan. 10, 1852. In 1934, Ali Asghar Hekmat, minister of culture, ordered after a travel to Kashan that necessary measures were taken to transfer the responsibility of Fin-Garden due to its importance to the ministry of culture and this garden was registered legally as a historical monument. Thereafter, Andre Godard, the director general of the department of archeology, prepared a comprehensive plan for the repair of this garden based on its old drawing extracted from the historical references and travelogues of tourists. In 1948, this garden was selected by Seyyed Mohammad Taghi Mostafavi, director general of the state department of archeology of Iran, for the establishment of a museum for demonstrating the historical relics of Kashan. For this purpose, an appropriate building was constructed on the ruins of Khalvat-e Nezam al-Doleh. (Na'ima, 2006) In 1935, the collection of Fin-Garden was registered in the List of National Heritages of Iran. The global registration of this heritage begun in 2007 lasted several years, and finally the

first phase of its registration was carried out in 2010 and it was recorded in the UNESCO's List of World Heritage Sites.

Gestalt in Fin-garden of Kashan

The study of mansion and fences of Fin-garden

Fin-Garden has several mansions built during the different eras as mentioned above, including Kolah Farangi, Shotor Galouy-e Fathali Shahi, and Fin bathhouse. In the following, these mansions are studied in terms of gestalt theory. Analyzing the garden facades reflects a considerably strong divergence. (Image 1) The vaults of the ceilings reflect the use of good continuation principle (the curved form of vaults directs visual line to the main plate of domical design,) and convexity principle (the vault are observable more than any other forms.) (Image 2) They demonstrate the gestalt principle of good continuation (curved lines direct the visual line to the space under the vaults,) and convexity principle (the vaults are observable more than any other forms are.) (Image 3)

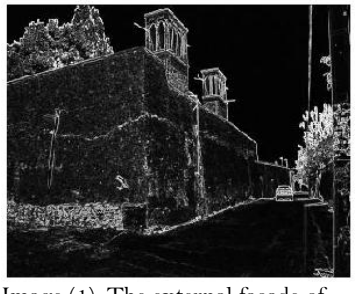

Image (1): The external facade of the garden. (Authors)

Image (2): vault–type ceiling of the mansion- (Authors)

Image (3): The vaults in Shotor Galouy-e Fathali Shahi (Authors)

In some mansions we can find grouping of the decorations based on similarity and proximity like in Shotor Galouy-e Fathali Shahi (Image 4) plus a sample of grouping based on color used in the decorations of the windows in the garden. (Image 5) In Shotor Galouy-e Shah Abbas there is a very good sample of the symmetry applied in the garden and based on gestalt principle of symmetry, and this directs visual line to itself rather than anything else. The symmetry existing in the main axis of Iranian garden is applied to plant coverage, mansion, fountains, etc. (Image 6)

Image (4): The decorations of Shotor Galouy-e Fathali Shahi- (Authors)

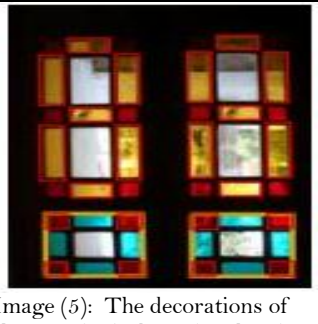

Image (5): The decorations of the mansion's door- (Authors)

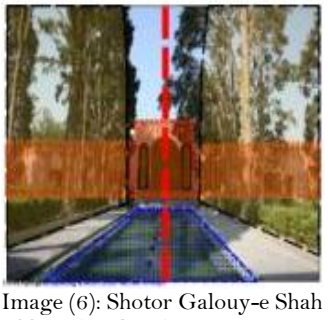

Image (6): Shotor Galouy-e Shah Abbas- (Authors)

In the next page, table (1) represents conclusions of analyzing the gestalt laws in mansions of the fin garden in brief.

Irrigation System

In the design of Fin-Garden, water is the most important element. In this garden, water is reserved in stagnant form (in the pond opposite the mansion and pool of Safavi House,) in running form (in watercourses,) and in jetting form (fountains) and ebullient forms (water emerged from the regular holes in the pond and pool house of Safavi House and Shotor Galouy-e Fathali Shahi.) Therefore, we study in the following gestalt principles in the irrigation system of Fin-Garden.

Table-1. Gestalt principles observed in the mansions of Fin-garden in Kashan

Gestalt principles																		studied space	
							grouping								Pragnanz				
							proximity				similarity								
Focal Point	Overlapping	convexity	Symmetry	Segregation	Closure	Good Continuation	Integration	Overlapping	Contact	Edge Proximity	Form	Color	dimension	Figure-ground	simplicity	symmetry	regularity		
*	*	*	*	*	*	*			*	*	*		*	*				facade	mansion
		*	*			*	*	*	*	*	*	*	*		*			ornament	
		*				*												vault	
	*				*		*	*	*	*	*	*	*	*				opening	

In some cases which were analyzed, most of the time ponds were the representation of closure principle, since the channels through the surrounding small gardens are ignored by vision and the square-form space is observed. (Image7, 8 and 9)

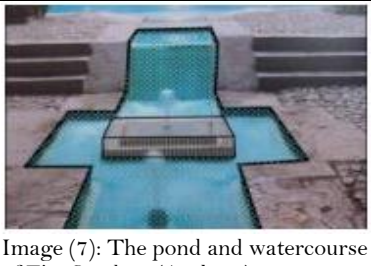

Image (7): The pond and watercourse of Fin-Garden- (Authors)

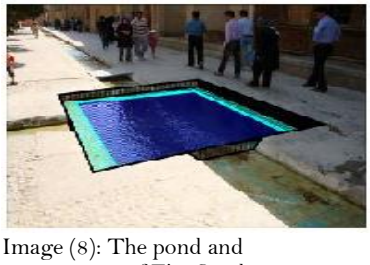

Image (8): The pond and watercourse of Fin-Garden- (Authors)

Image (9): The pond opposite the mansion- (Authors)

Gestalt principle of proximity is seen in grouping of the surrounding and central fountains (Image 10) and the principle of good continuity (the considerable application of one-point

perspective causes that the visual line of the visitors is directed to the mansion, and the vaulted area inside the building and acts as a focal point) moreover, the application of symmetry principle can be observed in the design of the mansion and watercourse in proportion to the common axis. (Image 11)

Image (10): The pond opposite the mansion- (Authors)

Image (11): The composition of the watercourse and the building of the mansion- (Authors)

Table-2. Gestalt principles applied in the irrigation system of Fin-Garden of Kashan

Gestalt principles																	studied space	
							grouping								Pragnanz				
							proximity				similarity								
Focal Point	Overlapping	convexity	Symmetry	Segregation	Closure	Good Continuation	Integration	Overlapping	Contact	Edge Proximity	Form	Color	dimension	Figure-ground	simplicity	symmetry	regularity		
	*					*		*										Water-course	Irrigation system
					*			*						*				pond	
			*							*	*		*					Fountain	
					*													Footbath	

Vegetative Cover

The historical Fin-Garden in Kashan with its high trees, which are comparable with Shiraz' cypress, has been constructed to reflect the beauties of spring and the sound of water in this garden is the most beautifulsong heard from this garden. That is why it is called the most beautiful Iranian garden. The principle of figure-ground can be seen in the areal photo of the garden. The mansion as the figure located in the green ground of the garden and the garden acts as the figure situated inside the desert surrounding the garden. (Image 12)

Image 13 is a sample of the symmetry existing among trees and the shrubs planted in both sides of the building according to the gestalt principle of symmetry which attracts the attention of the visitors to itself and as a result to the building more than anything else. Moreover, the principle of good continuity can be seen in the planted trees.

The small gardens of flowered planted around the pond built in a continued form is perceived based on closure principle. (Image 14)

Image (12): Bird view of the Garden- (Authors)

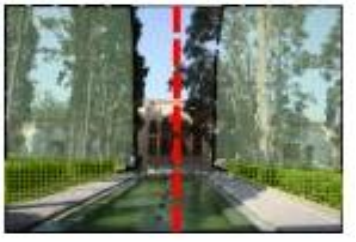

Image (13): The area opposite Shotor Galouy-e Shah Abbas- (Authors)

Image (14): The area opposite Shotor Galouy-e Shah Abbas- (Authors)

Grouping by the application of the principle of similarity in terms of color, figure and proximity of flowers is obvious in image 15. It is important to know that in the linear form of the edges of rigs we can find gestalt principles like image 16 which reflects simplicity based on Pragnanz principle, and grouping based on proximity and similarity principles.

Image (15): The design of the flowers in the flowerbeds of Fin-Garden- (Authors)

Image (16): The edges of rigs (Authors)

Table-3. Gestalt principles applied in the vegetative cover of Fin-Garden of Kashan

Gestalt principles																		studied space	
							grouping								Pragnanz				
							proximity				similarity								
Focal Point	Overlapping	convexity	Symmetry	Segregation	Closure	Good Continuation	Integration	Overlapping	Contact	Edge Proximity	Form	Color	dimension	Figure-ground	simplicity	symmetry	regularity		
			*		*	*				*			*	*				tree	Irrigation system
*					*				*	*	*	*		*				flowering	
		*	*			*	*	*	*	*	*	*	*		*			shrubs	
														*				Green cover	
									*		*	*	*		*			margin	

CONCLUSION

Gestalt theory belongs is one of the schools of environmental psychology, in which the perception method of human being from his environment. This psychological school has several principles, some of which have been mentioned and studied in this paper and in the design of Fin-Garden in Kashan. The important fact is that gestalt principles can be seen in the design of Fin-Garden of Kashan, whose construction is based on the Iranian traditions of garden construction, and these traditions have been transferred from the ancestor generations to their descendants. The following results are achieved from the study of the different parts of Fin-Garden (including the mansion, vegetative cover, and irrigation system.)

- The study of the mansions show that the principles of good continuity and similarity are observable more than other principles and pragnanz principles are on less importance.
- The study of the irrigation system of Fin-Garden show that closure principle is more observed than other principles and the principles of similarity and proximity are of less significance. Moreover, the irrigation system of this garden lacks principles of pragnanz, divergence, convexity and focal point.
- In vegetative plant, the principle of figure and ground, as well as closure principles are observed more than other principles are, and the principle of proximity and focal point are less considered. Furthermore, the principles of pragnanz, divergence, convexity, and overlapping are not seen in this part (The above mentioned results are summarized in following table.)

Table-4. A comparative study of gestalt principles in the different studied parts of Fin-Garden in Kashan

Gestalt principles											Studied space
Focal Point	Overlapping	convexity	Symmetry	Segregation	Closure	Good Continuation	Grouping: proximity	Grouping: Similarity	Figure-ground	Pragnanz	
%3	%7	%7	%8	%3	%7	%25	%13	%18	%8	%1	mansion
-	%14	-	%12	-	%38	%13	%7	%5	%1	-	Irrigation system
%2	-	-	%8	-	%32	%7	%2	%16	%33	-	vegetative cover

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Contributors/Acknowledgement: All authors contributed equally to the conception and design of the study.

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