

Original Research Article

Analysis of the Role of Landscape in the Positioning and Spatial Structure of the Main Pavilion in Persian Garden (Case Study: Safavid Gardens in the Northern Part of Iran)*

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Abstract | Despite the uniqueness of the Persian garden, there are variations in it. Such changes have been created according to different conditions of the natural surroundings of the garden. One of the problems one encounters when studies the Persian garden is the change in the shape and location of the main building in some gardens in northern Iran, which, although they have a similar structure to the gardens of the Central Plateau, differ from that general image. This article examines the gardens of northern Iran to answer the question of how the perceived landscape of the surrounding environment from the lookout, affects the architectural system and the spatial structure of the main building of the gardens of northern Iran? The research hypothesis is that in addition to the geometric structure of the garden and the topographic features of the land, the landscape around the garden also plays a role in determining the location of architectural elements and the spatial structure of the main mansions of gardens in northern Iran. The present study aims to identify the gardens of northern Iran, through a combination of historical methods and interdisciplinary studies by investigating written documents, historical texts, travelogues and visual documents such as historical photographs, current maps, aerial photographs, the latest findings of archaeological excavations and field observations. After examining and categorizing 15 gardens in northern Iran and studying and analyzing changes in the locating rationale and spatial structure of the main building in four of them which have more complete documents, it was concluded that along with functional and semantic systems, natural features of the surrounding landscape of gardens are the organizing elements of the physical systems of the gardens of northern Iran, and the Persian garden, in the prone surrounding, is oriented to maximize the maximum capacities of the natural landscapes around the garden. In other words, in such contexts, the natural landscape that can be understood from the lookout, along with the artificial landscape of the garden, determines the direction of the view and the architectural system, and the spatial structure of the main building.

Keywords | *Persian Garden, Gardens of Northern Iran, Main Pavilion, Lookout, Landscape.*

Introduction | Garden building is one of the deep-rooted

arts among the ancient civilizations where Iranian had a significant prestige and position and introduced one of

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the garden building methods as “Persian Garden”. In the simplest physical description, the geometric structure of the “Persian Garden” follows a rectangular system with straight lines and orthogonal lines that are terraced in proportion to the features and slope of the ground. All the historical gardens are formed based on three systems of planting, water, and building (architectural placement) in a way that the main pavilion achieves the best view by being placed in the most proper situation (Shahcheraghi, 2019, 43).

Problem statement

The Persian garden is a multilayered phenomenon, and studying each layer can broaden the knowledge of the various aspects of the Persian garden. The diversity of Persian gardens -due to the different conditions of the environmental context- has caused some experts -who consider the climate factor in the hot and arid land of Iran as the main justification for the existence of the Persian garden- to exclude the gardens of the northern part of Iran in their studies. However, the gardens of the north of Iran with a different natural context can be proper samples to recognize the other aspects of the Persian garden. The relationship between the placement rationale and the spatial structure of the main pavilion and the landscape of the surrounding environment has not been explained in the studies on the Persian garden so far. One of the issues in the study of the Persian garden is the change in the spatial structure and placement of the main pavilion in some of the gardens of the north of Iran that have a similar structure with the gardens of the central plateau. Thus, it is necessary to analyze the pavilion, not as a single structure but as an integrated unit with the Persian garden and its natural context of the surrounding environment. By analyzing the landscape elements and the maps of the gardens of the north of Iran, it seems that in addition to the geometrical structure of the garden and topographical features of the land, the landscape of the environment surrounding the garden plays an effective role in the placement of the architectural elements and spatial structure of the main pavilion of the gardens of the north of Iran, and determines the structure and position of the main pavilion to the maximum use of the landscape capacities of the surrounding nature.

The current research aimed to explain the effectiveness of the landscape perceived from the main lookout of the garden on the architectural placement and the spatial structure of the main pavilion in the northern gardens of Iran.

Literature review

Some studies investigated the relationship between the structure of the Persian garden and its main architectural

elements. Pirnia (1994) in a paper entitled (Persian gardens) investigated the different situations of locating the main pavilion in the Persian garden. Motedayen (2020) also in a book called “Pavilion-Gardens of Iran” analyzed the Iranian pavilion-gardens and the influential concepts in their designs assuming the precedence of architecture to the garden building and classified them in several groups of nine-parts pavilions, Chehel Sotoun pavilions (forty columns), three-parts pavilions, and pergola-pavilions. In a research plan entitled “Investigating the role of the Soffeh¹ in the Iranian architecture”, Mansouri (2005a), and Teimouri Gorde and Heidar Nattaj (2014) in a paper entitled “Nazargah, the main element of Persian garden in the illustration of the gardens in Persian paintings” studied the originality of the observation deck in the Persian garden. Mostafazadeh (2016) studied the view and landscape and their impact on the diversity of Persian gardens in Shiraz in his Ph.D. thesis. Apart from some cases where brief references have been made to the gardens of northern Iran, in his doctoral thesis, Heidar Nattaj (2010a)- discussed the norm of formation of gardens in Mazandaran and compared it with the gardens of the Central Plateau of Iran- landscape elements that are present in the surroundings of the garden have not been considered in any of these studies. In these studies, features of the main axis, the main building, the lookout, and the interior view, each in an independent perspective, have been partially pointed out. However, how the environment interacts with the architecture to provide the viewer with a vast and infinitive perspective from the lookout has not been studied.

In this regard, the current research aimed to answer the question: How does the perceived landscape from the lookout overlooking the environment affect the architectural placement and the spatial structure of the main pavilions of the gardens of northern Iran?

Research method

The qualitative paradigms were more compatible with this research based on the nature of the research questions that were holistic, divergent, and were in a direct relationship with the landscape concepts and features of the Persian garden. Among the various qualitative approaches, the historical approach and cross-case were the research methods of the current study (Grout & Wang, 2013, 179). First, the gardens of the north of Iran were comprehensively studied to identify, classify, and specify and analyze their general situation. Then, the prominent samples compatible with the research questions were selected based on the available documents of each garden.

After selecting the prominent samples of the research, the data regarding these gardens were collected, using written resources (travelogues, books, historic letter, inscription,

etc.), oral resources (people's memories, conversations, interviews, etc.), historical paintings (paintings of the tourists, historical photos, aerial photos since 1956, etc.), reports and results of the archaeological excavations and building and construction resources remained from the gardens will be compared and finalized through accurate observation and mapping. Then, due to the qualitative research methods and historical nature of the Persian garden, the research tried to codify a fixed model of cognition and a framework of the multiple analyses. The analysis and study steps of each selected sample were conducted in the framework of the fixed model. Thus, first, the nature of the landscape, the way it is observed by viewers, and its effects on the architecture of each garden were investigated until the research purposes were achieved. Also, the positive or negative aspects of the various factors, including the features of the natural context in the formation of the Persian garden were explained.

Theoretical foundations

Examining the basic values of Iranian aesthetics and understanding the aesthetic systems of the Persian garden can lead to understanding the principles of Iranian gardening and why they are formed. Mansouri (2020, 3) believed that water, plant, and Chahar Taqi form the basis of the aesthetics of the space in Iran. According to the theories of experts, aesthetics in the Persian garden includes various parameters. Mansouri (2005b, 58-63) considered the infinite landscape and interaction with nature as the beautifying elements of the Iranian garden, on the other hand, Alemi (2012) recognized factors such as the extension of view to pristine nature, local symmetry and designating pavilion and main axis as principles that have been repeated and lasted in the Persian garden. This part explained the parameters that have a direct effect on the landscape perceived by the viewer.

• Infinite landscape

In this study, landscape can be considered as part of a cultural system. In ancient Persian literary texts, landscape is a view of the selected nature that is in front of the observer (Mansouri & Mokhles, 2018, 23). In the studies of the historical gardens, the act of seeing in the garden can be studied from different aspects including, control of the lookout and landscape, defining landscape, and managing movement in the garden to understand the landscape. The multiple landscapes in the gardens can be studied on many scales, including background, middle ground, and foreground (Kryder-reid, 1994; Ruggles, 1994). The Persian garden has all three scales and considers them. However, the current study focuses on foreground landscapes.

Defining a landscape selected from foreground nature has

provided a specific aesthetic for Persian gardening. Thus, a type of landscaping can be seen in the Persian garden that is considered a proper space for human reflection and intuition (Mansouri, 2005a, 62). Pausing in the lookout, Soffeh, or the porch of the garden and the wide view to the original foreground nature make the human reflect. The infinite landscape in the Persian garden directs the human to comfort, peace and being lost in his/her thoughts, leading to the physical rupture from the surrounding environment and connecting to the semantic system (Masnavi, Mohseni Moghadam & Mansouri, 2018, 9).

• The thought of interaction with the pristine nature

Respecting the natural elements of water and tree has been institutionalized in many ancient civilizations due to the various customs, values, and cultural beliefs. Studying the ancient civilizations, such as Iran, China, India, and Egypt, reveals a respectful perspective on the natural elements (Ansari, Taghvaei & Nejad, 2008, 101). However, nature in the Persian garden plays a different role than other cultures of the world. According to Wilber (2001), the aesthetics of the Persian garden is naturalistic, and the essence of the Iranian space is associated with nature (Mansouri, 2005b, 61). Also, the pristine nature in which the human has not been intervened is beautiful which can be interpreted as a sign of the power of the creator. As in many Iranian paintings, the order and geometry defined today are not comprehensible from the Iranian garden, and in return, we find a feeling such as excursion and recreation, independent of the geometric order (Beheshti, 2008, 10), these motifs indicate the integration between the garden, as an enclosed place, and the natural, distant, and pristine landscapes. The structure used within them was taken from the pattern of respecting the pristine nature in the Persian garden (Mohammadzadeh & Noori, 2018, 35). As in the pristine nature of Lenjan, there was a protected space in nature where The king was able to meet the selected people and observe the natural and pristine landscape organized according to his opinion, these gardens located in the pristine nature were more private than the government gardens (Alemi, 2008, 62).

• The physical systems of a Persian garden in the interaction with the landscape

The architecture of all historical gardens is formed by three systems of planting (plant), water, and building (architectural placement) where the geometrical structure is recognized as a system of integrating the natural and artificial elements of the garden (Shahcheraghi, 2019, 65). The architectural placement in the Persian garden -in interaction with the geometrical structure system of the garden and all the artificial elements - is the organizing factor of the buildings and manifests the physical systems of the garden in interaction with the planting system and water system; hence, the main pavilion of the Persian

garden was generally located in the main axis. Overall, the features of the architectural placement and the spatial structure of the main pavilion in the Persian garden can be as follows:

- The architectural arrangement, such as the planting system and water system, is compatible with the geometrical structure system of the garden (ibid., 2019, 79).
- The main axis in the terraced gardens is formed perpendicular to the topographical lines, and subsequently, the locating of the main pavilion is determined in the highest point of the garden (Alai, 2010, 19).
- The main pavilion in open gardens is located in the middle of the garden and the intersection of the axes which results in a four-sided view by elevating (Pirnia, 1994, 5).
- In the axial gardens, the pavilion is located in the area of one-third of the end along the longitudinal axis. The inner buildings are located on the secluded side of the garden, and the main landscape is organized in the opposite direction of the interior (ibid.), (Fig. 1).
- The pavilion or the main mansion of the garden is the main architectural element.
- The pavilion built in higher elevations or two stories has the best view, and the lookout and the main porch were predicted on the higher floor (Ansari & Nami, 2017).
- The semi-open porches and lookouts were the key space of the pavilion (Belali Oskoui & Mahmoodi, 2020, 31).
- The architecture of the pavilion of the Persian garden was designed to serve as a lookout to nature more than being rooted in the artistic thought and a specific architectural style, and to obtain the most visual pleasure from the landscape (Mansouri, 2019, 34), (Table 1).

Studying the gardens of the north of Iran

Northern Iran, from the Sassanid period to the Safavid period, was rarely under the control of the central government of Iran. However, due to the Shiite religious commonalities with the Safavid and the temperate and lush climate, it has always been of special interest to the Safavid rulers. Therefore, some gardens were built in Amol, Babol, Sari, and Behshahr³ that were used by the Safavid kings as a resort and symbol of the power of the government. Unfortunately, most of these gardens (all of these gardens were founded in the Safavid period) have been destroyed due to various reasons, such as fast erosion caused by the climate of the north of Iran and human intrusions, and not much has remained from them. However, by using the historical evidence and archeological excavations that remained from some of these gardens some examples of the gardens of this region can be reimagined, and their landscape features can be analyzed (Heidar Nattaj, 2010a). The historical gardens of the Safavid period in the north of Iran are 15 cases based on the historical documents and contemporary studies that were classified based on the physical indicators and typology by codifying the reference pattern of 15 gardens. The landform, dimensions, proportions, topography, and geometrical structure were considered in these indicators. As Table 2 presents, the types of the gardens of the north of Iran can be classified into four groups of the short rectangle, long rectangle, square, and circular based on the form of the land, the extent of which are on two large scales (more than 6 ha), and limited scale (less than 2 ha). They are also classified into four patterns, including flat, one-sided slope, two-sided slope, and four-sided slope based on the topography. The geometrical structure of

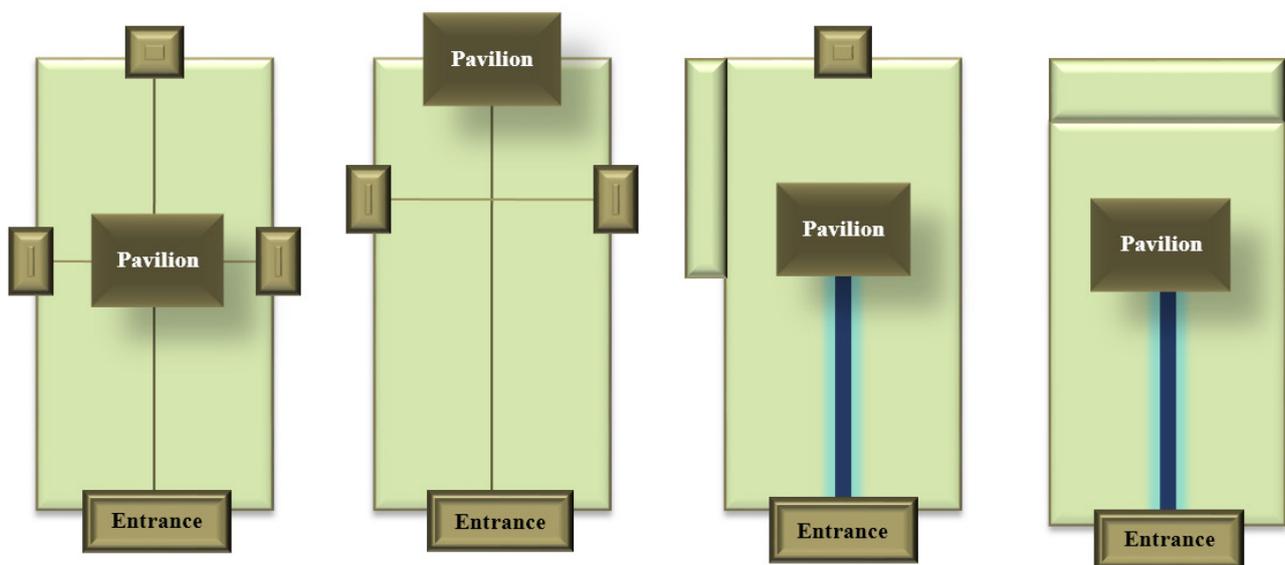
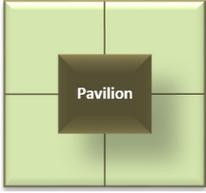
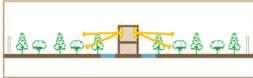


Fig. 1. The location of the pavilion in the garden according to Pirnia. Source: Authors.

Table 1. The location and spatial structure of the main pavilion in the open gardens and Bagh-e Takht². Source: Authors.

		Flatlands (open garden)	Steep slope lands (Bagh-e Takht)
	Description	The intersection of the main axes as two-story	At the highest point of the garden (the one-third of the farthest end) as a single floor
The location of the main pavilion	Plan		
	Cross-section		
	Description	- Four-Soffeh plan - Four-sided view - Using the porch on the higher floor	- One-sided plan - Using the porch in the main direction to the slope and portal
Spatial structure of the main pavilion	Plan		
	Cross-section		

these gardens includes a two-axial layout and a fourfold layout. The main and common buildings can be traced in the one-third of the farthest end of the axis of the garden and the intersection of the main axes, regarding the architectural placement system. However, different placement systems can be seen in some of the cases that were analyzed rigorously. There are two main issues in explaining the diversity of the structure of the main pavilion; first, the lack of the possibility for the accurate detection of the buildings due to their extreme erosion, and second, their diversity and variety. In general, the main pavilion in the gardens of the north of Iran follows two patterns of nine-part pavilions (Char-Soffeh) and three-part pavilions (one-sided) to organize the lookout (Nazargah). However, in some cases, the columned and semi-open space that broadens the range of vision in the main pavilions becomes a matter of significance, and, sometimes, the pergola and observation pavilions become the main edifice of the garden. Also, apart from the main edifice, other pavilions which overlook the water surface complete the natural landscape of the garden. The function of these gardens is the court or governmental, private, and recreational functions, and gardens with a combination of the governmental and recreational

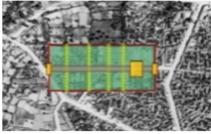
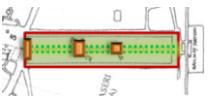
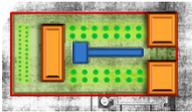
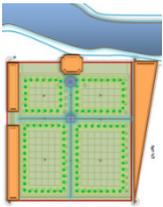
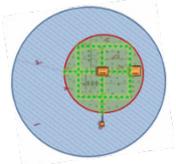
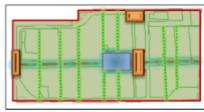
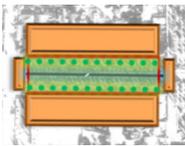
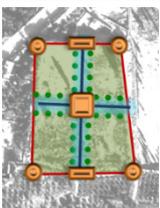
functions simultaneously, and the service gardens (See Table 2).

By studying these 15 gardens, it can be concluded that the relationship with the natural elements of the surrounding environment was influential to the arrangement of the architectural elements of the garden. Also, the reference pattern and the geometrical-formal system of the garden were influenced by the topography of the land of the garden. It is not possible to accurately analyze 15 cases to explain the role of the landscape of the surrounding environment of the garden because some of the cases could not be recovered due to various reasons, such as destruction (Khalvat Garden), lack of access (Safi Abad-occupied by Police); so they were excluded from the analysis. Selecting the gardens was based on the condition of the available documents of each one of them so that the selected samples could be recovered based on the documents, evidence, and historical photos. Also, they must be dated back to the Safavid period. Therefore, the current analysis required prominent samples to study the role of the natural landscape on the gardens of the north of Iran so that the research questions could be answered by studying them.

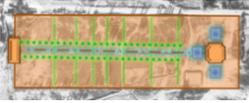
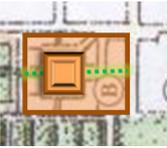
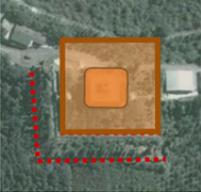
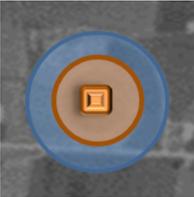
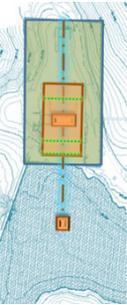
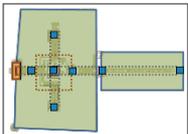
After analyzing the feasibility of identifying the gardens,

Analysis of the Role of Landscape in the Positioning and Spatial Structure of the Main Pavilion in Persian Garden

Table 2. Typology and physical analysis of the gardens of the north of Iran. Source: Authors.

Garden's name	The reference pattern of garden	The physical classification						Landscape elements of the natural context
		The features of the land of the garden	Topography	Geometrical structure	The location of the main pavilion	The lookout point of the lookout of the main pavilion	Functional classification	
Old Shah Garden (Sari)		200*400 8 hectare Panoramic rectangle	Flat	Axial	The farthest one-third of the main axis	Unknown	Private garden	-
Malek Ara (Sari)		700*150 10 hectare Long rectangle	Flat	Axial	The farthest one-third of the main axis	The two-sided mansion, and an observation pavilion	Governmental-private garden	-
Divankhaneh (Sari)		100*50 0.5 hectare Confined rectangle	Flat	Axial	The farthest one-third of the main axis	One-sided pavilion	Governmental garden	-
Jahan Nama Garden (Farahabad) (Sari)		100*100 (interior) 100*100 (exterior) 1 hectare (interior) 1 hectare (exterior) Square	Flat	Four-sided (interior and exterior)	The farthest end of the secondary axis	Four-sided mansion	Private garden	River
Bahrol Eram Garden (Babol)		Two circles with the diameters of 400 and 800 meter 12 hectare 50 hectare circular lake	Flat	Four-sided	The intersection of the main axes	Four-sided mansion and an observation pavilion	Private-governmental garden	Lake
Chehel Sotoun (Behshahr)		380*200 8 hectare Panoramic rectangle	Slope	Axial	The farthest one-third of the main axis	Two-sided mansion	Governmental garden	Infinite landscape
Bagh-e Shomal (Behshahr)		160*40 0.5 hectare Confined rectangle	Flat	Axial	-	Unknown	Service	-
Bagh Tappeh (Behshahr)		120*120 1.5 hectare Square	Flat	Four-sided	The intersection of the main axes	The four-sided mansion	Private garden	-

Rest of Table 2.

Garden's name	The reference pattern of garden	The physical classification					Functional classification	Landscape elements of the natural context
		The features of the land of the garden	Topography	Geometrical structure	The location of the main pavilion	The lookout point of the lookout of the main pavilion		
Cheshmeh Garden (Behshahr)		450*130 6 hectare Long rectangle	Slope	Axial	The farthest one-third of the main axis	Four-sided mansion	Private garden	Infinite landscape
Saheb Al-Zaman Garden (Behshahr)		140*120 1.5 hectare Confined rectangle	Flat	Axial	The farthest one-third of the main axis	Unknown	Private garden	-
Khalvat Garden (Behshahr)		140*120 1.5 hectare Confined rectangle	Flat	Axial	The intersection of the main axes	Unknown	Private garden	-
Safi Abad Garden (Behshahr)		120*100 1.2 hectare Square	Four-sided slope	Four-parts	Intersection of the main axes	Four-sided mansion	Private garden	Infinite landscape
Homayoun Tappeh Garden (Behshahr)		Two circles with diameters of 150 and 320 meters 1.7 hectare 8-hectare lake Circular	Four-sided slope	Unknown	The intersection of the main axes	Unknown	Private garden	Lake
Abbas Abad garden (Behshahr)		100*150 5 hectare 12-hectare lake Panoramic rectangle	Two-sided slope	Axial	The farthest one-third of the main axis	Two-sided mansion and an observation pavilion	Private garden	The infinite view of the lake
Gol Bagh (Behshahr)		100*100 1 hectare Square	Flat	Four-sided	Intersection of the main axes	Pergola pavilion	Service	-

four gardens, including Chehel Sotoun, Cheshmeh Garden of Behshahr, Abbas Abad Garden, and Jahan Nama of Farahabad, were selected among the gardens due to the following reasons:

1. Shah Garden or Chehel Sotoun Garden of Behshahr is located in the center of the garden complex and most ideal place for having a deep view. Due to the location of the garden on the hillside, the existence of a deep axis in this garden integrated the garden mansion with a two-sided porch and a wide view with the surrounding environment and has created a special and privileged position for the garden (Motedayen, 2020, 44).

2. Cheshmeh garden, which was expected to have the main pavilion of the garden with a porch along the main axis and follow the one-view structure -due to the layout of the flat gardens and their one-sided mansion-, but the design of the main garden mansion, like open gardens, has a four-view pattern and thus can benefit from the deep view and perspective of the interior of the garden as well as the view of the environment around the garden (Heidar Nattaj, 2010a).

3. Abbasabad unique garden with a two-way slope and the location of the main building at the highest point, as well as a lake and a Chahar Taqi in the middle, indicates the important role of components of the natural context in Iranian gardening. The two-way slope has led to the construction of a semi-open space, with a two-sided view, to make the garden benefit from a two-sided view and landscape, i.e., in the north, wide view of Behshahr plain and Miankaleh bay and the Caspian Sea, and in the south, view of lake and Chahar Taqi (ibid.).

4. Jahan Nama garden of Farahabad located in Sari: due to the extensive and flat structure of the garden, it was expected that the main building would be located in the center of the garden or along its main axis. However, research shows that the garden has a four-part pattern in the geometric structure, and due to the existence of the

Tajan River and the importance of using its landscape, the main building has been moved along the east-west sub-axis to the river so that it can benefit from the sub-axis landscape and the natural view of the river and the sea (Rezazadeh & Heidar Nattaj, 2017).

Given that the qualitative approach of the research and historical nature of the Persian garden is associated with the historical description and interpretation approach, the fixed model of cognition and the framework of the multiple embedded analysis were codified and the analysis steps and studying each one of the selected samples were conducted based on the following framework:

First step: In the first step, by reviewing the history of the garden based on the available historical documents, a simple reference model of each garden was prepared so that the analysis of the physical and spatial elements of the garden could be done based on the historical reality of the gardens.

Second step: the structure, physical and spatial systems of each garden based on the reference model were analyzed.

Third step: the nature of the landscape, its representation from the main lookout, and its effect on the whole and components of each garden were investigated.

• **Chehel Sotoun Garden, Behshahr**

Shah Garden or Chehel Sotoun, is the center of the complex of the gardens of Behshahr and is located at a most ideal place in terms of having a deep landscape. Considering the placement of the garden on the hillside, and the deep axis in this garden, as one of the features of the Persian garden, this garden has been integrated with the surrounding environment with a broad landscape which in turn provided a specific and privileged situation for the garden (Figs 2 & 3).

The construction pattern of the main pavilion of Chehel Sotoun is a combination of columns, a wooden hall, and a closed space. The location of the mansion in the garden is in the middle of the path and has divided the garden

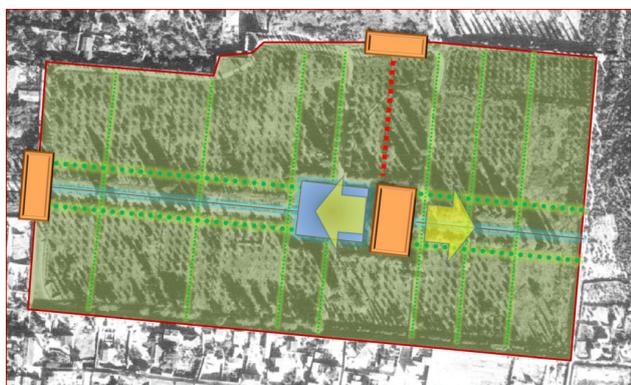


Fig. 2. Analysis of the Chehel Sotoun Garden plan. The placement of the main mansion with the semi-open columned porch and two-sided view. Source: Authors.



Fig. 3. Shah Abbasi mansion of Chehel Sotoun. Sourc: Sotudeh, 1987, 1163.

into two parts despite many flat single axial gardens. The other point regarding the main axis of this garden is that the axis continues its path to the hillside with the same combination and plan and Sineh-Kaftari. This feature has been observed less in the two-part gardens (Heidar Nattaj, 2010a, 202; Dehghan & Forghani, 2020).

The nature and manner of observation of the landscape from the lookout of the Chehel Sotoun Garden as follows:

- A deep view and long perspective by constructing the building in height place and constructing a Soffeh;
- The deep and limited inner landscape by providing a river in the middle of the axis and ornamental trees in the margin;
- The broad vision of the field due to the location of the site;
- Constructing buildings in a proper location to have a broad view;
- The use of the columned porch in two open sides as the interface between the interior and exterior spaces and the lookout of the mansion.

The effect of the landscape on the architectural placement and the spatial structure of the main pavilion is as follows:

- Placement of the main pavilion in the middle of the garden (in contrast to the flat gardens in which the main pavilion is located in the one-third farthest end of the garden);
- The main pavilion is located in the middle of a columned and open two-sided lookout space by the linear organization.

• Jahan Nama Garden of Farahabad

The significant point in the construction place of Jahan Nama garden of Farahabad is the harmony and cooperation between the human and nature, indicating finding and selecting a place which is like a paradise and is suitable for constructing a garden. One of the prominent differences between these gardens and desert gardens is the difference between their surrounding environment (Figs 4 & 5).

This garden is classified as an open garden, and the main pavilion of the garden is considered the extrovert four-porches buildings. In recent excavations of this garden (Nourani, 2007; Sharifi, 2009), some parts of this garden were identified. According to the field observations and archeological reports, and the spatial compatibility with the written documents and historical texts, the private garden of the First Shah Abbas was recovered which had an excellent location and observing the landscape principles and the domination of the garden on the Tajan Lake.

The nature and manner of observation of the landscape from the lookout of the Jahan Nama Garden are as follows:

- The limited and deep inner landscape by providing a

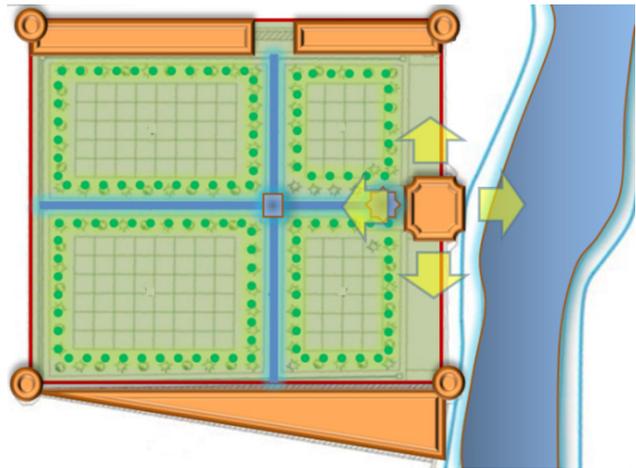


Fig. 4. Analysis of the plan of Jahan Nama garden; the main pavilion with a four-sided view and its location beside Tajan Lake. Source: Authors.



Fig. 5. The mansion of Jahan Nama garden of Farahabad. Drawn by Jules Laurens. Source: Hommaire, 1860, 263.

pool in front of the building and the intersection of the main axis and the ornamental trees in the margin;

- The broad landscape and view to the Tajan River in the east, the sea in the north, and Farahabad square in the south of the garden;
- A close view to the water using wharf;
- Referring to the pristine surrounding nature and creating an order beside it;
- A view of the landscapes from different directions; river, sea, square, and interior of the garden by constructing the four-porch mansion on two floors and proper location.

The effect of the landscape on the architectural placement and the spatial structure of the main pavilion is as follows:

- The placement of the main pavilion at the farthest end of the garden and the margin of the river (in contrast to the open gardens where the main mansion is located at the center of the garden and intersection of the axes);
- The main pavilion is a four-porch extrovert type in two floors with a four-sided view from the columned porches along the water and progressing to the river.

• **Cheshmeh Garden of Behshahr**

Cheshmeh Garden, which is also known as Cheshmeh Mansion for its construction on the spring above the garden, is located in the southeast of Behshahr Gardens. The garden is structurally a flat garden, which due to the special topography, the axis of this garden has an angle of 35 degrees compared to other gardens. The garden has seven terraces and a large mansion at the farthest southeastern end. The water supply system and water circulation in different levels of the mansion and especially on the upper floor is one of the special features of Cheshmeh Garden. The main building, with a plan of crossover plan, four Soffehs, or four porches on two floors to provide the best view and wide view of the surrounding environment, is located at the southeastern end of the garden (Heidar Nattaj, 2010a).

Due to the structure of the flat gardens and their one-sided mansions, it was expected that in the mansion of the Cheshmeh Garden, the main pavilion would have a porch along the main axis and follow the one-view structure, but the priority of the view and the privileged position of the landscape context caused the design of the main building of the garden to defy the common pattern in flat gardens and have a four-faceted pattern like the open gardens, and thus it can benefit from the deep inner view and landscape of the garden and the view of the environment around the garden (ibid.), (Figs 6 & 7).

The nature and manner of observation of the landscape from the lookout of the Cheshmeh Garden as follows:

- Deep inner landscape using the regular rectangular geometry and long axis;
- The broad view to the pristine surrounding nature; green mountains, the plain of Behshahr, and the complex of the gardens of Behshahr;
- The view to surrounding landscapes from the four-porch pavilion with a four-sided view at the highest part of the garden;
- The close view to the water and the combination of the building and water in the first and second floor as the spring of the mansion.

The effect of the landscape on the architectural placement and the spatial structure of the main pavilion is as follows:

- The placement of the main pavilion at the farthest end of the garden and the highest point like flat gardens.;
- The four-porch pavilion with a four-sided view (in contrast to the flat gardens that have a one-sided mansion and view to the garden).

• **Abbasabad Garden of Behshahr**

Abbasabad Garden is a unique garden in the Behshahr Gardens complex due to its two-way slope and the location of the main building at the highest point, the existence of huge Soffehs, a lake, and a Chahar Taqi in the middle. Despite enjoying the beauties of the lake and the

natural forest together, Abbasabad Garden adheres to the principles of the Iranian garden, and even with the climatic incompatibility of the large water area, water has a strong presence as the most important landscape element in this garden (Heirdar Nattaj, 2010a, 217-218).

On the northern side, the Soffeh was constructed on a hill 30 meters high from the pool and in a stepped form that shapes the central Soffeh at the highest point. Most likely, according to the basic artifacts of the stone columns discovered in the archaeological excavations, the substructure of the building was made of light wooden structure, which has been destroyed. The rivers created novel and spectacular landscapes by moving on the Soffehs and forming various waterfalls and pools. Water supply to the central Soffeh was made from the surrounding springs



Fig. 6. Analysis of the plan of Cheshmeh Garden; The rectangular geometry, deep axis, and terracing the garden, the placement of the four-porch mansion at the highest point of the garden, the deep interior and broad exterior view from the mansion. Source: Authors.



Fig. 7. The building of Cheshmeh Garden Mansion. Source: Sotudeh, 1987, 1167.

that were mounted on this surface and then moved from the central basin throughout the garden. In the southern part of the garden, regular archeological excavations have not been carried out yet, but from the remains of the water basins and their flooring, one can guess the similarity with the northern Soffeh (*ibid.*), (Figs 8 & 9).

The two-sided slope led the garden to have a two-sided view and landscape; in the north, the broad view to the plain of Behshahr and Miankaleh Bay and the Caspian Sea, and in the south, the view to the lake and Chahar Taqi. The main reason for the creation of this garden was to obtain a beautiful landscape and a sense of privilege and domination, which is an old and prominent notion in Iranian aesthetics. In addition, the relationship with water and water area in Chahar Taqi indicates the specific role of water in Iranian architecture and culture. When the lake is full, the bases of Chahar Taqi are completely inside the water and by intensifying the perspective, represents the water area broader than what actually is (*ibid.*).

The nature and manner of observation of the landscape from the lookout of the Abbasabad Garden:

- The interior deep and limited landscape using the river in the middle of the axis and the ornamental trees in the margin;
- The broad view to the plain of Behshahr and Miankaleh Bay in the north;
- The view to the lake and the Chahar Taqi between it in the south;
- The close view to the wide water area and pristine surrounding nature from Chahar Taqi at the middle of the lake;
- The two-sided view to the broad landscape of the plain of Behshahr and lake and the Chahar Taqi between it from the covered columned space with a mere observational function;
- The four-sided view to the broad water area and the pristine surrounding nature from the Chahar Taqi at the middle of the lake.

The effect of the landscape on the architectural placement and the spatial structure of the main pavilion is as follows:

- The establishment of the main pavilion at the highest elevation code of the garden with a two-sided slope (a sample of the flat two-sided gardens where the main pavilion is located at the highest point);
- The main pavilion is predicted to be a covered and observation space;
- Chahar Taqi is located at the farthest end of the main axis and in the middle of the lake (without any access bridge).

Discussion and conclusion

Although the Persian garden has common features in organizing the space, the conditions prevailing in the garden context have affected the shape and pattern of

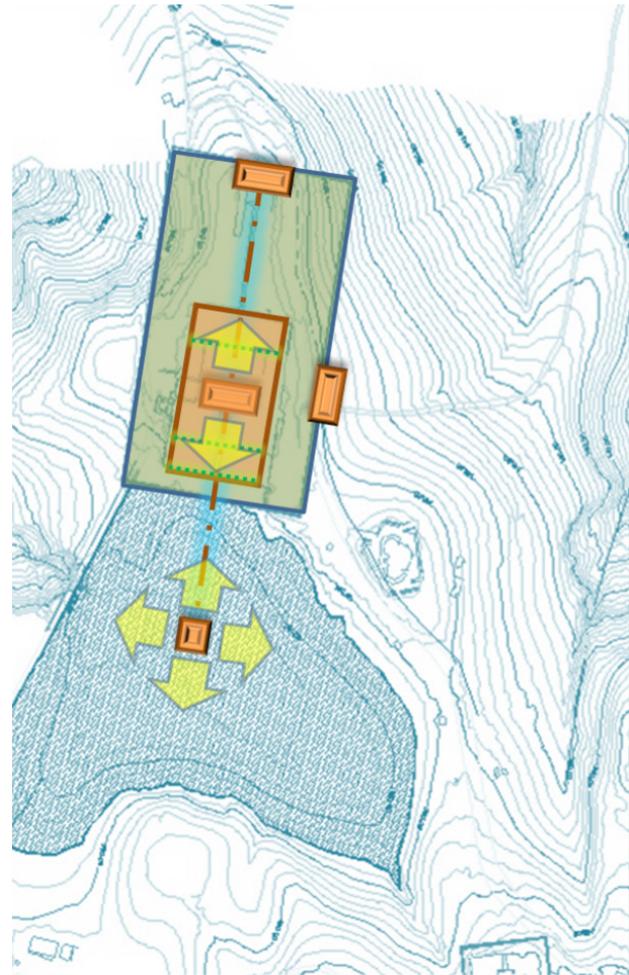


Fig. 8. The analysis of the plan of Abbasabad Garden; rectangular geometry, deep axis and terracing the garden; the placement of the semi-open pavilion at the highest point of the garden, the deep inner view and landscape and exterior views from the mansion to the lake and plain of Behshahr and Peninsula of Miankaleh. Source: Authors.



Fig. 9. Abbas Abad Garden; The southern view to the lake and the Chahar Taqi between it. Source: www.mazandchto.ir.

the placement of different natural and artificial elements, different types in the Persian garden can be seen. During the Safavid period, few gardens were built in northern Iran. The purpose of this paper was to analyze the pattern and structure of four gardens among those gardens. The current study aimed to recognize the pattern governing their structure based on the historical documents and archeological excavations for the visual retrieval of the four gardens, the evidence of which was more completed. Among the northern gardens of Iran that are the prominent samples of Persian gardening, there are gardens the pattern of which are compatible with the principles of the gardens of the central plateau. However, in some gardens, the organization principles were changed in the main pavilion. Some of these differences can be seen in the placement and spatial structure of the main pavilion in these four gardens than the other gardens.

-The change in the placement rationale of the main pavilion in these four gardens is as follows:

In Chehel Sotoun Garden, which has a structure similar to (terraced garden) Bagh-e Takht, the main pavilion must have been constructed at the end of the garden and the street of the garden should have been constructed in front of the main pavilion. However, the main pavilion was located in the middle of the garden, and the main road of the garden has the same importance on both sides of the main pavilion. In Jahan Nama Garden with the open garden structure and four-part pattern in the geometrical structure, it was expected that the main pavilion be located at the intersection of the main axes. However, due to the lake and the significance of using its landscape from the pavilion, the main mansion along the eastern-western axis was transferred towards the river to enjoy both the landscape of the related axis and the landscape of the river and sea. Nevertheless, In Cheshmeh Garden, the placement of the main pavilion is compatible with the pattern of the flat garden and is located at the end of the garden and highest point. In Abbasabad Garden, which is one of the special samples of the Persian gardens with different topography and context, the main pavilion was constructed at the highest elevation code of a natural hill, and the garden has a downward slope at the two sides of the main pavilion, and the location of the main pavilion was predicted to be at the highest point of the garden.

-The change in the spatial structure of the main pavilion in these four gardens can be analyzed as follows:

In Chehel Sotoun Garden, which has the structure of the flat garden, the semi-open hall with sloping roof and columns and high wooden hall indicate the precedence of the lookout space to the closed space in the main pavilion

that in terms of architectural proportions as well as the functional spaces with the low area, they have been located at the two sides of the hall in a way that the extension of the view and the infinite landscape at the two sides of the mansion is not disrupted. However, in the Jahan Nama Garden, the spatial structure of the main pavilion, similar to the open gardens, does not follow the four-porch and Hasht Behesht patterns and is not different than the pattern of the pavilions of the open gardens. In Cheshmeh Garden, considering the structure of the Bagh-Takht constructed on the slope, it was expected that the main building of the garden has a porch along the main axis and has a one-view structure. However, the priority of using the landscape of the surrounding environment and the privileged position of the landscape of the region led to the plan of the main pavilion of the garden becomes different than the common pattern in the Bagh-Takht and has a four-porch pattern similar to the flat gardens so that it could enjoy the landscape and interior perspective of the garden as well as the surrounding landscape of the garden. Nevertheless, in Abbasabad Garden, the main pavilion has become a lookout space. The covered and semi-open space was implemented by wooden structure and the functional spaces were transferred to the surrounding environment of the garden so that the extension of the view to the pristine nature surrounding the garden would not be disrupted and, in addition to this pavilion, a small Chahar Taqi was also constructed at the middle of the lake to have a close view to that (Table 3).

By analyzing the changes in the placement and spatial structure of the main pavilion in these four gardens, it can be concluded that in addition to the functional and semantic systems, the natural features of the context of the garden and the landscape of the surrounding environment can be considered as the organizing and influential elements on the physical systems of the northern garden, and in proper contexts, the Persian garden tends to direct towards the maximum use of the capacities of the landscape of the nature surrounding the garden. It is significant that even in a climate like the north of Iran with green landscapes and ample pristine views, the orientation of the building and main axial vision is in a way to frame the landscape beautifully, and the whole of the geometrical system of the garden changes its direction so that the visual angle becomes more aesthetics and dominant and visible. That is to say, in such contexts, the natural landscape perceived from the lookout along with the artificial landscape of the garden in line with the observation deck and influenced by it, determines the architectural placement and the spatial structure of the main pavilion.

Table 3. Analysis of the relationship of the changes of the main pavilion and the landscape of the surrounding environment in the gardens under study. Source: Authors.

	Garden's name	A comprehensive pattern of garden	The change of the placement of the main pavilion to the reference pattern	The change of the spatial structure of the main pavilion	The natural landscape of the surrounding environment	The reasons for the changes of the main pavilion
1	Chehel Sotoun (Behshahr)	Bagh-Takht (terraced garden)	Established in the middle of the garden	A columned and open porch on two sides	-Behshahr plain -Alborz mountains	Using the natural landscapes of the garden's context
2	Jahan Nama Garden of Farahabad	Open garden	Established at the farthest end of the garden and at the margin of the lake	Four-porch pattern with a four-sided view	-Tajan River -Caspian Sea	Using the natural landscapes of the garden's context
3	Cheshmeh Garden (Behshahr)	Flat garden	Established at the farthest end of the garden	Four-porch pattern with a four-sided view	-Behshahr Plain -Alborz Mountains	Using the natural landscapes of the garden's context
4	Abbasabad Garden of Behshahr	Two-sided flat gardens	Established at the center of the garden	The semi-open space with observational function	-Behshahr Plain -Miankaleh Bay and Caspian Sea -Natural lake	Using the natural landscapes of the garden's context

Endnote

*This article is extracted from the Eshagh Rezazadeh's Ph.D. thesis entitled "Recognition of the role of look-out in formation of the Persian Garden; Case study: Safavid's garden in north of Iran" which is being done under supervision of Dr. Armin Bahramian and Dr. Ahmad Aminpour and advisement of Dr. Vahid Heidar Nattaj, at the Faculty of Architecture and Urban Design, Art University of Isfahan, Iran.

1. A roofless platform whose level is higher than the level of the yard and is usually placed in front of closed spaces.
2. A flattened garden with terraces formed by the steep slope of the ground.
3. For more information regarding the gardens of the north of Iran, refer to: Heidar Nattaj, 2010a.

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