

Pavilion In Persian Gardens

A Review on Nine-part Pavilions

Heshmatollah Motedayen
Ph.D. in Architecture, Faculty
member of the University of
Tehran. Iran.

motedayn@ut.ac.ir

Reza Motedayen
Ph.D. Candidate in Architecture,
ENSA Paris-Malaquais. Paris.
France.

r.motedayen@alumni.ut.ac.ir

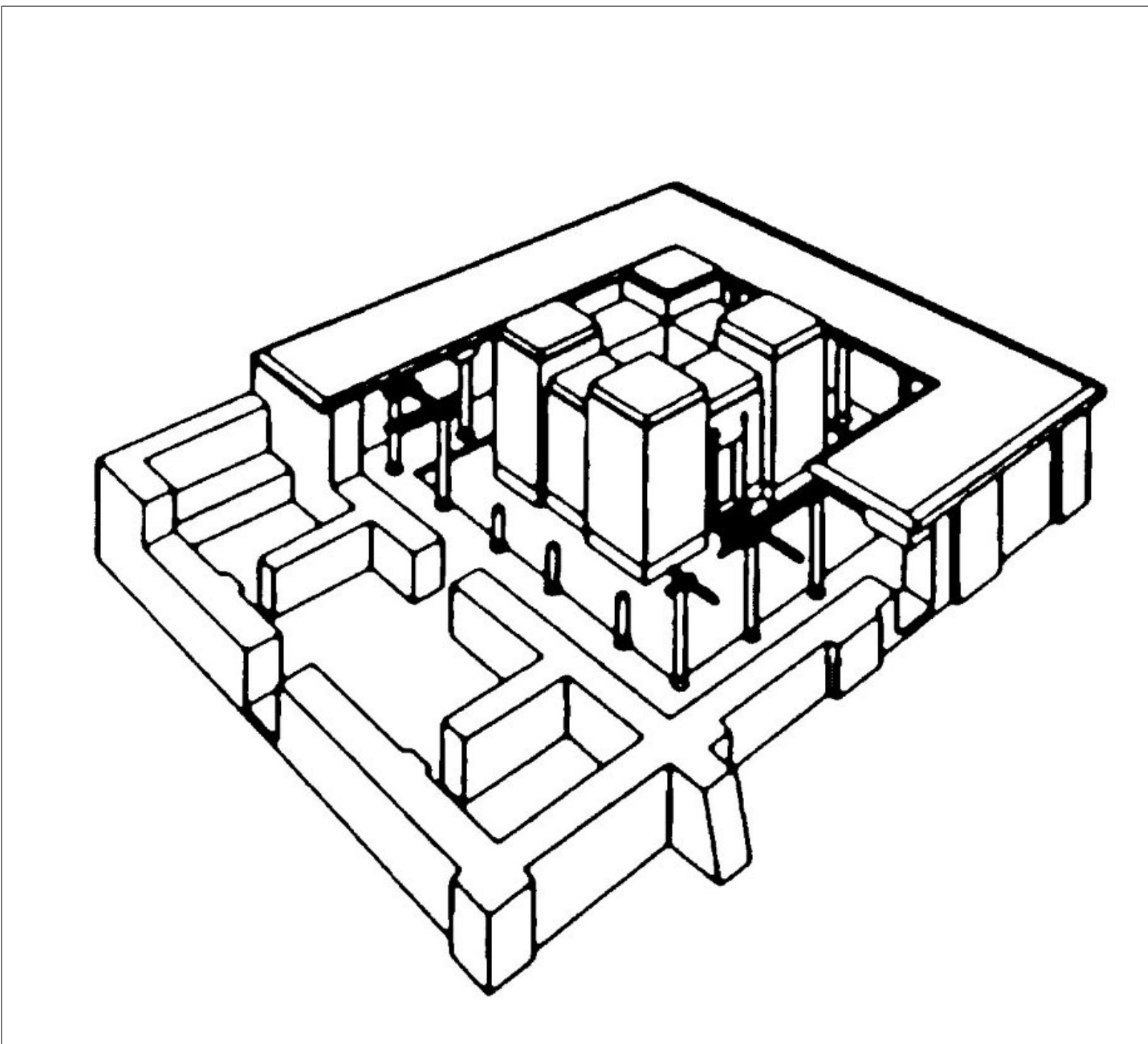
Abstract | The Pavilion can be outlined among the most important architectural identity elements in Persian gardens. Usually these structures were built in the middle of the garden and at the confluence of two longitudinal and transverse axes in such a way that it could be seen from four sides to maximize the geometrical composition of the Persian four-garden. Although relatively different reasons for the formation and structural categorization of these architectural spaces can be seen in Persian gardens.

Nine-part divisions in Iranian pavilion are of an extensive use. This type of architecture is the result of the fusion of three basic requests in architecture: Attention to beauty, function and stability. Thus, the right mix of volumes, adds to their beauty. The existence of hierarchy to achieve empowerment for the palace's performance and also the inhibition of central thrust loads, have made significant contributions to the sustainability of these Persian environments. On the other hand, this plan has strengthened the permanent request of centralization in four-part buildings, adorned Persian gardens from the Achaemenids period so far in two major forms of introvert and extravert.

In this article firstly the need for such spaces in the existence of hierarchies and response to promotional aspects of palaces is demanded. Another question is that, in the same condition and in the heart of the Persian garden, why is this map implemented sometimes completely closed (Châhâr-Sofe), at times a combination of closed and semi-open spaces (Hasht-Behesht) and in rare cases like the central building of Qajar palace in Tehran, completely semi-open (Canopies)?

The results of this study show that the existence of four homogeneous facades that open to the axis of the charbâgh, empowered the architectural mass over the mass of landscape and helped their coalescence and spatial fusion and in general, the hierarchical architecture in the heart of a four-garden structure would not have a better answer than a nine-part space. Also it seems that, on one hand, a climatic-seasonal usage and on the other, paying attention to the bio-ritual and occasionally ceremonial functions, in order to meet the demands of the governments, are among the main reasons for these changes.

Keywords | Apadana, Châhâr-Sofe, Hasht-Behesht, Nine-part buildings, Pavilion, Persian garden.



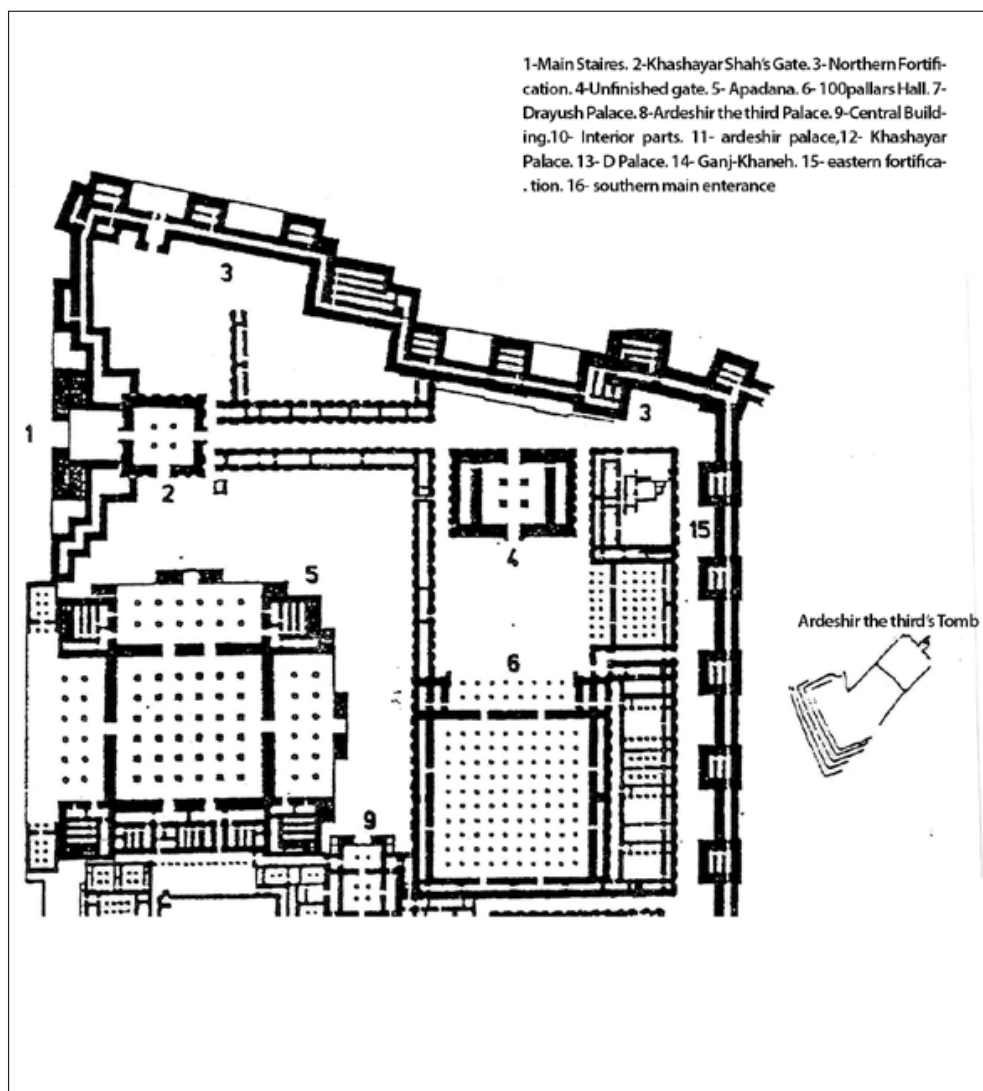
Pic 1: The Urartu temple.
Source: Piotrovsky, 2002.

Introduction | The use of nine-part divisions in Iranian pavilion has a long history; simplicity of design and implementation has led it to be used in the construction of the ceremonial and religious buildings. This model while having a center-oriented geometry provides the architects and designers of large structures with one of the best spatial distributions. There are various discussions regarding the reason to use square and nine-part plans. But a general conclusion to these studies and achieving a unified theory about these reasons is not performed yet. Also the causes of differences between these nine-part buildings that had different performances under the same conditions and therefore had a somewhat different structure, is not studied. In this study after an overview of nine-part buildings' evolution process, first, the existing examples of Persian architecture and gardens are presented to better determine the vast use of this scheme in different types of Pavilions. Then the reason to use these plans in Iranian gardens is studied through the study of the structure, execution time, function and other features.

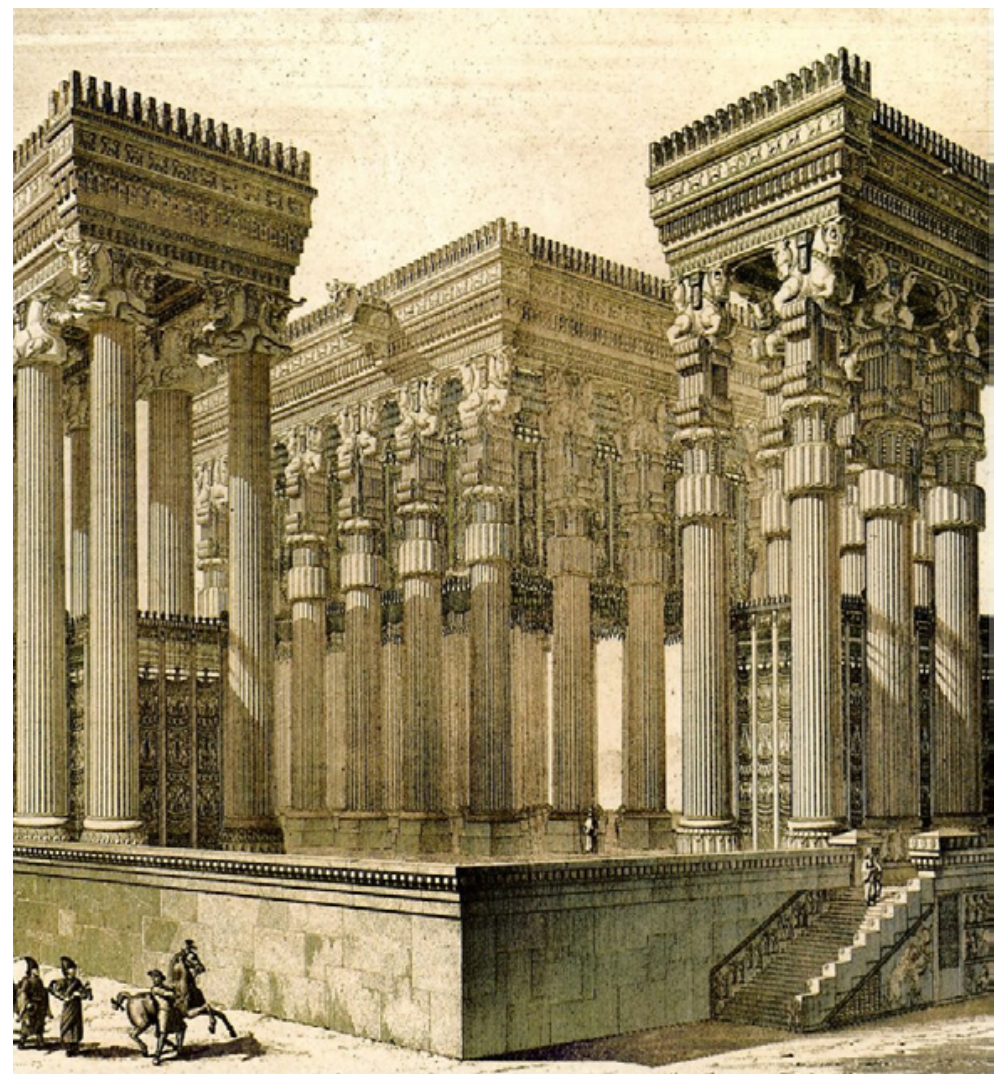
The evolution of nine-part buildings: from Urartu temples to Timurid palace-gardens

Since the Achaemenids era nine-part Pavilions have been

built in Iranian gardens as introverted and extroverted buildings. But the initial pattern of nine-part buildings that was later used in building these Pavilions has more historical background. The oldest type that benefits from this pattern is the introverted form and regarding its formation it can be mentioned that architects obtained a nine-part pattern by building four pillars at the center of a square in a very simple and basic way. The first use of nine-part pattern is observed in the architecture of Urartu period. "The Urartu temple (Pic. 1) belongs to 1000 BC which has a nine-part combination that the architect has depicted a four-column cube by creating a size difference" (Piotrovsky, 2002: 45). This figure orders the space in connection with the center by highlighting the main directions. Thus, the whole space directs everything in the moderate and balanced way needed by the structure of the temple. In the Achaemenids period, the Nation's Gate entrance vestibule (Pic. 2) and smallest halls in the south side of Persepolis used this type of nine-part square. Achaemenids kings use the extrovert nine-part Pavilions as a good model in the design and construction of palaces and ceremonial buildings in Susa and Persepolis (Pic. 3). The extrovert nine-part buildings are known as Apadana (Ghirshman, 1967: 70). These palaces are the

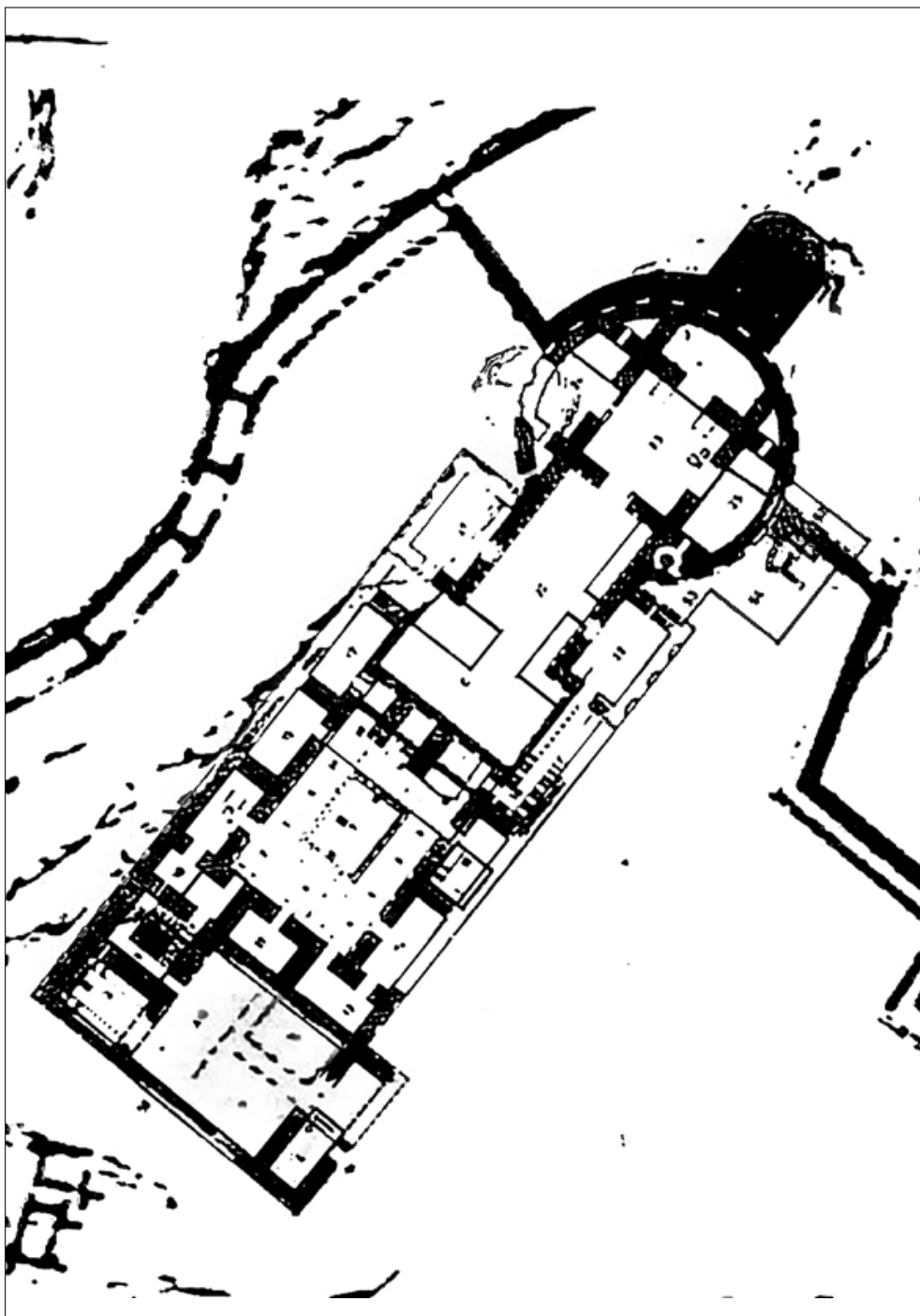


Pic 2: The nine-part Pavilions in Takht-e-jamshid.
Source: Godard, 1998.



Pic 3: Apadana place in Takht-e-jamshid; an example for nine-part extroverted buildings.

Source: apadana-palace/6949/http://tarikhema.net/subject/shrine-palace



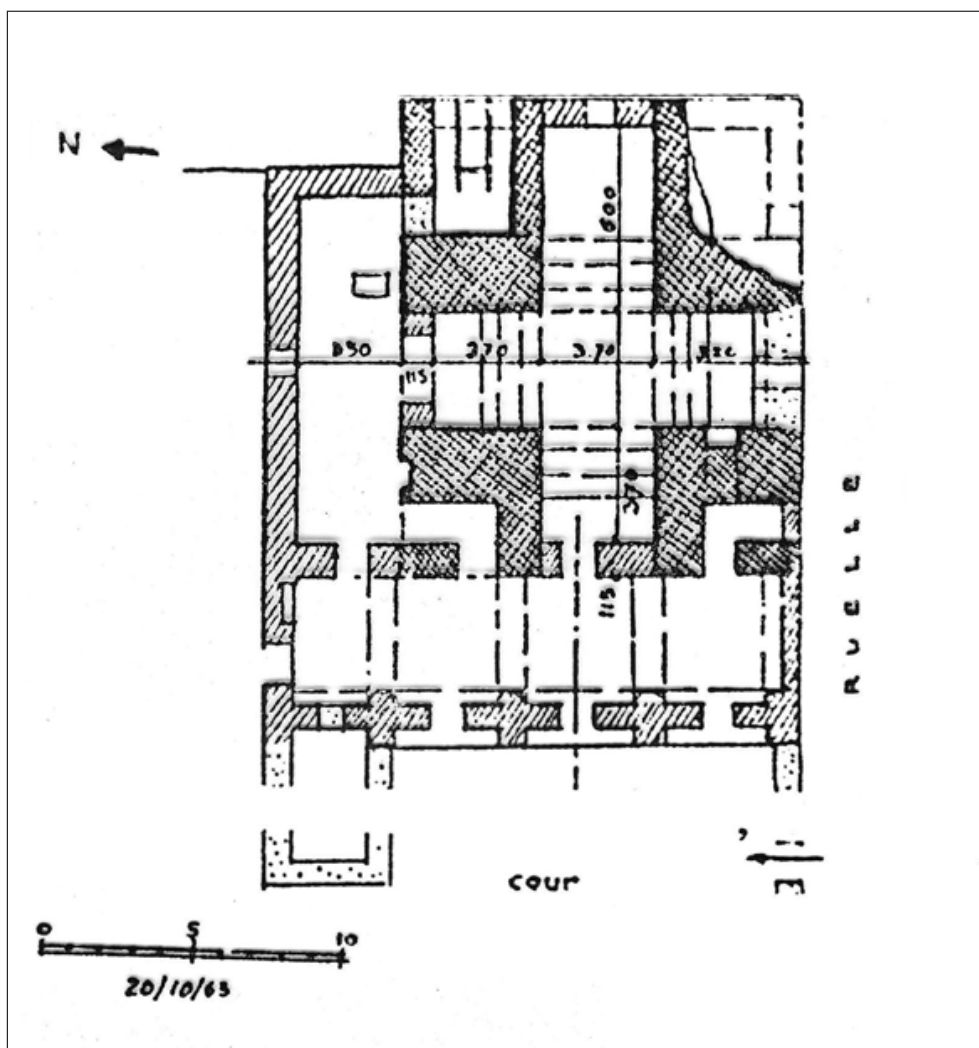
Pic 4: Qal'eh Dokhtar in Fars.
Source: Godard, 1998.

largest extrovert nine-part spaces in Iran. First the nine-part square is designed (by dividing a square to nine equal ones), then the size of the central square is considered larger than other sectors that presents the promotional aspects of the Palace and the empire to everyone, as the levee hall along with the great body of the palace and its great façade. Darius's Apadana at Persepolis and Susa are important examples of these square based extroverted buildings and "Dahan-e Gholaman" Achaemenids building in Sistan is among the smaller examples of the introverted style.

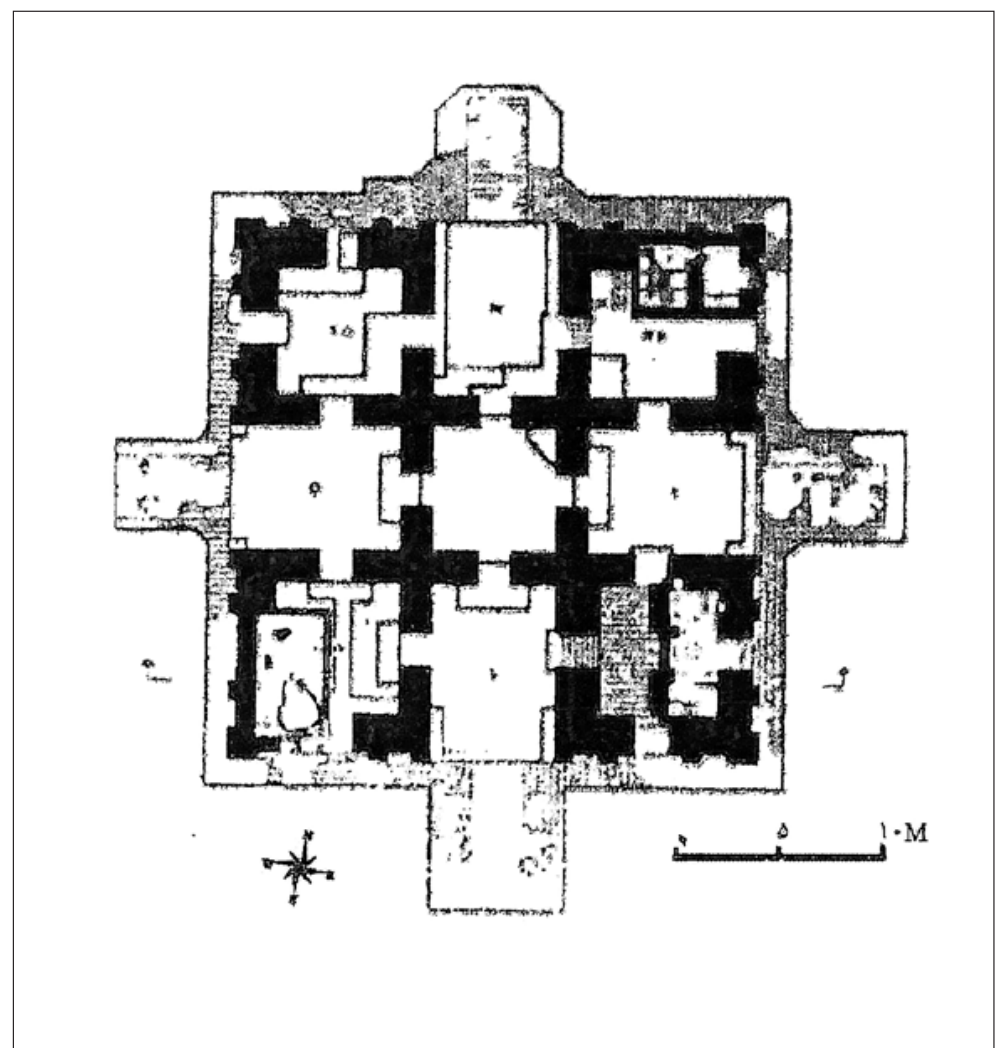
Darius's Apadana is well known for its porches with huge columns surrounding the central hall at four sides. This "portico" pattern named "Setavand" ¹ is among sustainable paradigms of Iranian architecture. We can see its rebirth with new shapes and materials in Safavid palaces like Chehelsotoon and Alighapoo palaces in later periods.

After the Achaemenids, although Hoff considered the predominant mansion at the center of Ardeshirkhore as extroverted nine-part building in his paper (Hoff, 1979: 77), archaeological evidence only confirms the existence of introverted nine-part buildings in Sassanid period. In the dome around Sarvestan palace, a hall with a central dome and four columns, in the castle of Qal'eh Dokhtar in Fars (Pic. 4) there are four arcs inscribed in a circle and also in Vandadeh Meymeh temple in Esfahan (Pic. 5), a full four-arc plan is seen.

In the early centuries of the Islamic era, the continuation of four-arc, the survival of four-arc structure is seen in Umayyads, Abbasids and Sultan Mahmoud Ghaznavi



Pic 5: Vandadeh Meymeh temple in Esfahan.
Source: Joodaki, 2014.



Pic 6: Central Pavilion of Lashkari Bazaar palace.
Source: Hillenbrand, 2009.

palaces. Their entrance is through a porch.

But the Central Pavilion of Lashkari Bazaar palace according to Hillenbrand (Hillenbrand, 2009: 671) is the first nine-part extrovert building with a central dome (Pic. 6). In his article on Rahim Abad garden in Bam, Joodaki Azizi considers it to belong to the Safarian period and prior to the Pavilion of Lashkari Bazar (Joodaki, 2014: 67).

In Timurid and Safavid era, we can see the growth and maturity of this valuable plan in the heart of royal gardens. Wilbur and Clavijo discuss about the Timurid period Crusade Palaces "Wilbur in the Garden of Sycamore and new garden talks about large palaces that has had a cruciform" (Wilber, 1995: 241).

Clavijo writes: A beautiful palace was built in the middle of the new garden the foundation and plan of which was cross shaped, there was a room inside with three semi-circle alcoves which were a bit higher than the ground and their floor was covered with colorful tiles (Clavijo, 1987: 230). The palace of Delgosha Garden in Shiraz (Pic. 7), that is attributed to the Qajar period but according to its history the possibility of its patterns belonging to prior periods is likely, can be mentioned as an example of nine-part pavilions with cross shaped plans. Thus, such buildings with nine-part divisions had a significant presence in Timurid Palace-Gardens.

Four-Arc and "Hasht Behesht" Pavilions in Qajar and Safavid era

One of the most common extrovert nine-part style buildings in Qajar and Safavid era that is especially vastly

used in palace-gardens of these periods is a pattern called Hasht Behesht.²

Bani Masoud quoted a Venetian tourist itinerary about a garden known as Sahib Garden that was built during the reign of "Uzun Hasan", the founder of Ak Koyunlu dynasty in Tabriz that is called Hasht Behesht for the first time: "the beautiful palace that was built by King Hassan Beik should not be neglected... the palace was built in the middle of the garden... it is called Hasht Behesht in persian which means eight part because it is divided into 8 rooms" (Bani Masoud, 2005: 5).

Pavilion plan in Iranian garden is based on a four-arc plan with square, octagonal, Hasht Behesht and circular plans in some cases. Most of these pavilions share the same physical properties on their four main facades. In some cases, the facade with higher points in terms of the climatic orientation, sight and perspective, location and other physical characteristics was chosen as the main facade. Thus, the main porch of Hasht Behesht mansion in Esfahan opens to the north and Chehelsotun palace. Hasht Behesht architectural pattern is similar to four-arc that is built in square or octagonal plan with surrounding extrovert porches. In this pattern the plan with two perpendicular axes creates nine parts in its simplest form. Each side leads to the porches and four corner squares surround the rooms. The central square is dedicated to the dome as the heart of the building. "The central square in the Safavid period becomes an eight and half-eight plan and gets bigger. So the width of the porches will be greater than the rooms" (Bani Masoud,



Pic 7: The palace of Delgosha Garden in Shiraz
Source: <http://www.panoramio.com/photo/35568449>.



Pic 8: Nazar palace-garden
Source: <http://www.panoramio.com>.



Pic 9: Jahan Nama palace-garden
Source: <http://wisgoon.com/pin/5734383>.

2005: 7). “Nazar” and “Jahan Nama” palace-gardens are among classical examples of these Hasht Behesht buildings with octagonal plans (Pics. 8 & 9).

Two space divisions are also observed in the Safavid palace-gardens. In the first division, the nine-part plan in the ground plan is repeated on the top floor such as the Chehelsotun Qazvin palace (Pic. 10). The second pattern is Hasht Behesht mansion in Esfahan that the nine-part

plans of the first and second floor are different due to the existence of the porches and the high central dome.³ In this building, the central cross is in double height but four side spaces are divided in two floors (Pic. 11).

The reason of using nine-part plan

In the first step, the nine-part square of Urartu- Achaemenid with flat roof and four middle pillars aims to create a



Pic 10: Chehelstun Qazvin palace.
Source: <http://www.behrah.com/photo-show.php?pid=24309652&uid=773014>

centralized geometry and strengthen the balance in Iranian space. The geometry is observed in all 4 part spaces of these areas such as four-garden, four-arc and four-porch.

The extroverted form of nine-part square is a good example in designing and building palaces and ceremonial buildings. In this type the plan goes beyond the initial nine-part divisions. Promotional aspects, space divisions, the establishment of hierarchical order to reach the great central levee and fulfillment of structural aspects are the main reasons for this issue. Godard while reviewing Tachara and Apadana Palaces considers their extroversion low for dominance and look over the vast plain. He writes: "Persepolis Buildings are consisting of three identified categories: the army (neighboring mountain), treasury in the south and the third part is the life of King (Tachara) and reception (Apadana) that are designed in the west side and dominate the plain of Murghab" (Godard, 1998: 142).

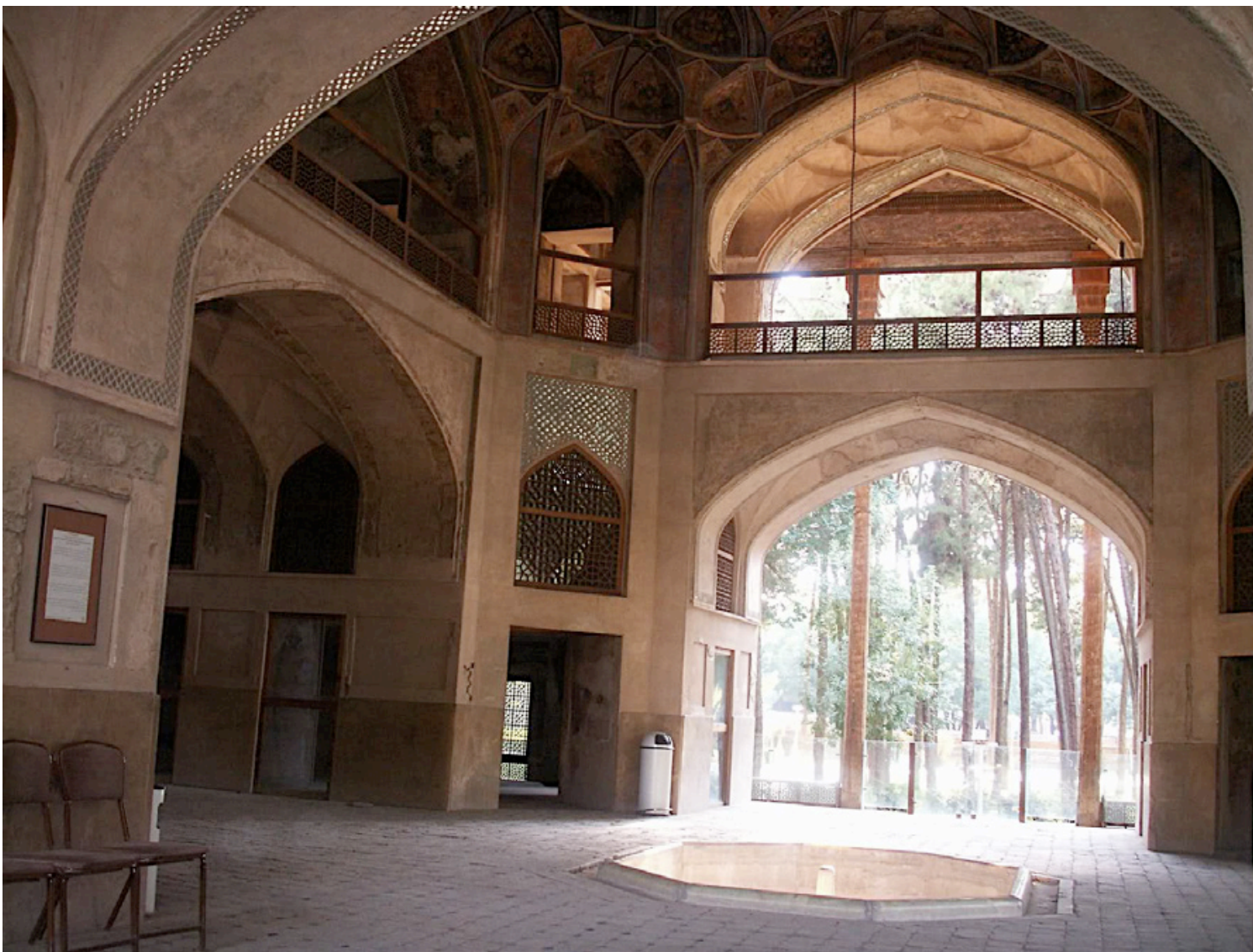
Thus the reasons behind the extroversion of this pattern in Apadana Palace and similar examples in the Achaemenid period was to connect the architecture to its peripheral landscape. The reason of lack of construction of large

projects such as Achaemenid examples in later periods is hard to find. But the shrinking of the empire after Alexander's invasion and the lack of need for big scale levee halls for Satrap heads could be mentioned as one of the causes of the weakening of the central hall of nine-part spaces followed by its surrounding spaces. In the Sassanid era such spaces such as "Qal'eh Dokhtar" castle in Fars is built in a scale limited to the royal levee.

Niaresh (structural) advantages of nine-part buildings

In this period the structural design is also an important concern. Joodaki writes: "Saq⁴ cover is possible in openings with limited size and the design of nine covered spaces inside a square requires a lot more Niaresh ideas. This was not a great concern in Achaemenid period, the availability of long wooden beams and sometimes the use of several of them along each other has helped to have large nine-part spaces with the least drift" (Joodaki, 2014: 84).

In the Sassanid period and afterwards, because of the pressure created by the dome of the main house, the



Pic 11: Hasht Behesht mansion in Isfahan
Source: <http://myourland.com/places/view/41-/44>.

volumes of the surrounding eight parts act as the support and stabilize the building⁵.

In more mature examples of the Islamic period, the central space in the plans is usually larger than the other parts which requires the cover used in these spaces to be larger than other side spaces and this creates an enormous thruster in the lower level. The existence of smaller covers around this space acts as the volume-support.

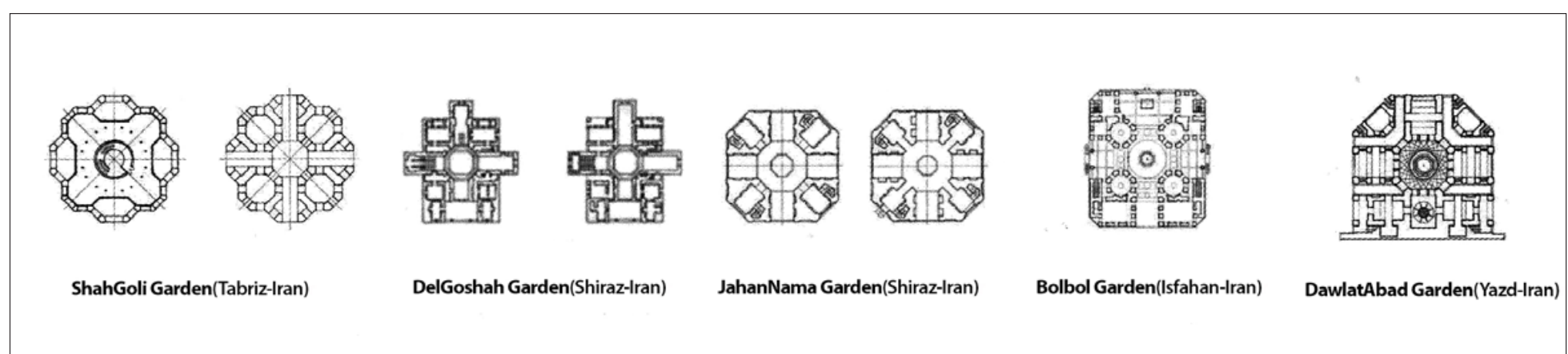
Continuity of the space in nine-part pavilions and the garden

In recent years, nine-part spaces are made in two ways. The first group has a single body and the second group is considered a part of a bigger architecture.

In the first group, which is more seen in gardens, four homogeneous facades that open to the main axes of the four-part gardens give a certain charm to the building. Thus

the need to create such palaces in the center of the garden is felt. In these gardens the pavilion divides the garden into four parts. Gardens such as the Jahan Nama, Delgosha and Bolbol are in this category (Pic. 12). The palace with one or two stages creates a full opening to the garden. The building is connected with courtyard through the porch, hall, or the arc. The Centrality of the architectural mass's plan, its singularity and the clarity of the garden's geometry makes the time factor ineffective to the observer experience. In other words, the observer has understood the totality of the palace and the essential parts of the garden and the passage of time and his movement towards the palace will only lead to a more detailed understanding of the facades.

Therefore, one of the main reasons of using nine-part pavilions that create four homogeneous facades facing the garden is the integration of the building with the garden. This case is less felt in long palaces with two facades like



Pic 12: Plans of nine-part palace-gardens in Iranian Persian garden.
Source: Khansari et al, 2004.

the palace of the Eram garden in Shiraz. Interference and integration of the garden and the building is one of the nine-part pavilions characteristics. "The Pavilion inside the garden is a small garden itself. This association and fusion is created by linking space connections and constituent elements of the garden" (Shahcheraghi, 2013: 85). Thus

Conclusion | According to the studies about the reason of the formation of Pavilions as nine-part buildings, it can be concluded that the initial nine-part square pattern orders the space in connection with the center by accentuating the main directions. While strengthening religious aspects, this pattern strengthens the moderation and balance of sacred spaces. Apadana Halls are adorned on one hand by hierarchical order of the Achaemenid court with the help of massive verandas and on the other hand by the outlooks to the surrounding landscapes that create extrovert nine-part plans.

The reason why the best nine-part pattern in the heart of Islamic gardens is the continuation of this Achaemenid extrovert design should be searched in the combination of the hierarchical order of the architectural mass with the landscape mass in Iranian Hasht Behesht plan. The spatial continuity of

in nine-part pavilions located at the center of the garden the space is led inside in every corner (Pic. 12). Therefore, another reason to use nine-part buildings and especially the extroverted type is to maximize the use of spatial continuity with the surrounding garden.

the four directions that does not limit the observer's view and depicts Pavilion as an inseparable part of the total body and the centrality of the architectural mass plan, its individuality and clarity of the geometry of the garden give an unlimited charm to the passage of time and the observer's motion. The stability of the building and Niaresh reasons have also been contributed in the initial formation of these patterns and with functional changes of the Achaemenids with long horizontal beams and Sassanid to the Safavid that used large central domes with small covers as the support are different types of the structure of these buildings and finally it can be mentioned that the maximum attraction of the building, space continuity, the cohesion of the complex with the hierarchy and the continuation of open, semi-open and closed spaces are only possible in extroverted nine-part Pavilions.

Endnotes

1. Setavand: a forty columned portico that is enclosed from three sides.
2. This pattern plan that is also seen in Mughal tombs in India such as the Taj Mahal is the continuation of the tradition of Iranian nine-part plans created by Timur descendants.
3. Shahcheraghi writes: "The level of the Pavilions and porches in

this garden is higher than the ground to use the outer view properly" (Shahcheraghi, 82 :2013).

4. Saq: the coverture and roof of a house, dome and suchlike.

5. This is repeated in nine-part mosques including Shahzadeh Mosque and Sultan Ahmed Mosque in Istanbul

Reference List

- Bani Masoud, A. (2005). Bâgh-e Saheb Abad-e Tabriz [Saheb Abad garden in Tabriz]. *Bâgh-e Nazar Journal*, 1 (4): 3-12.
- Clavijo, R.G. (1987). *Safarname-e Clavijo [Clavijo's Diary]*. Translated by Masoud Rajabnia. Tehran: Elmi-o Farhangi. (Original work published in 1928).
- Ghirshman, R. (1967). *Honar-e Iran Dar Doran-e Mad Va Hakhamaneshi [Iran's Art in Maad and Achaemeni era]*. Translated by Issa Behnam. Tehran: Bongah-e Tarjome va Nashr-e Ketab. (Original work published in 1963).
- Godard, A. (1998). *Honar-e Iran [Iran's Art]*. Translated by Behruz Habibi. Tehran: University of Shahid Beheshti. (Original work published in 1962).
- Hillenbrand, R. (2009). *Memari-e Eslami [Islamic Architecture]*. Translated by Etesam, I. Tehran: Sherkat-e Pardazesh va Barnamerizi-e Shahri-e Shahrdari. (Original work published in 2004).
- Huff, D. (1987). *Firuz-Abad*. Translated by Afsar, K. Tehran:

Ministry of Culture and Islamic Guidance Publications. (Original work published in 1979).

- Joodaki Azizi, A. (2014). Kooshk-e Rahim Abad-e Bam. *Bâgh-e Nazar Journal*, 11 (30): 67-88.

- Khansari, M. Moghtader, M. Yavari, M. (2004). *Bâgh-e Irani, Baztabi az behesht [Persian Garden, a reflection of heaven]*. Translated by Aran Consulting Engineers. Tehran: Cultural Heritage Organization.

- Piotrovsky, B. (2002). *Urartu*. Translated by Masoud Rajabnia. Tehran: Elmi-o Farhangi. (Original work published in 1969).

- Shahcheraghi, A. (2009). *Paradigm-haye Pardis [paradise's paradigm]*. Tehran: Jahad-e Daneshgahi.

- Wilber, D. (1995). *Bâgh-haye Iran Va Kooshk-haye Aan*. Translated by Mahin Dokht Saba. Tehran: Elmi-o Farhangi. (Original work published in 1962).