

Received 2015/25/04

Accepted 2015/16/07

The Impact of Timurid Gardens in Samarkand on Safavid Gardens in Isfahan (Chaharbagh)

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Abstract

Throughout history, “creation of garden” has been one of the most spectacular human activities. Art of gardening is considered as one of the ancient Iranian arts that has valuable traditions and spiritual power. Stepping into an Iranian garden compels us to think about this idea that what mysteries have been concealed behind its adorned appearance. It has not gotten old over the centuries. Also invites modern human being for a visit with its tempting perspective. Surrounding environment and the amount of water cause the appearances of gardens in Iran. Since the information about the gardens of Samarkand are limited to reports of Clavijo and a number of articles, and most gardens of Samarkand and Isfahan don't exist now, the physical structures of gardens in Samarkand and Isfahan are the main issue of this paper so that the present contents in this study will be a step for further studies in this field.

Accordingly this study by a descriptive – historical approach, intends to identify the elements that have formed Timurid gardens and Safavid gardens and the similarities and differences between these gardens in two different eras. Indeed, the descriptions that represented in these two periods have more detailed than previous periods and these have helped to recognize the gardens in these periods. Also the question will be responded that how much Timurid gardens and especially the gardens which had built in Samarkand by Timur, affected on the subsequent gardens. We consider gardens in these two eras i.e., Timurid and Safavid eras, by the aid of historical descriptions, itineraries and documents and comparison them with each other as well as studies which done by contemporary researchers, it is concluded that Safavid style landscape gardening, especially the Chaharbagh avenue, roots in Timurid era.

Keywords

Chaharbagh, Samarkand, Isfahan, Timurid era, Safavid era.

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Introduction

Iranian gardens, as one of the oldest landscaping experiences, need to be recognized. Many factors have influenced on the formation of Iranian gardens and for these factors, it is important to recognize the sites where these gardens formed. Iranian people have always been interested in having beautiful and bracing gardens. The remained dishes from past with shapes of trees, branches and leaves imprinted on them and patterns of carpets, represent their interest in gardens.

“Iranian garden is a cultural, historical and fundamental phenomenon in Iran and it is generally built in an enclosed limited area with trees, water and buildings assembled in and provides a desirable, safe and calm place for people” (Shahcheraghi, 2011: 41) In fact Iranian garden is formed from the effect of the appearance shape in a framework system that is shaped on sensory organs and could be known as a wise relationship between human and nature.

In this article, the properties of gardens in Timurid era in Samarkand and Safavid era in Isfahan, which were two sequent major eras in history of Iran, are completely mentioned. These two cities had common aspects. For instance, both of them were large cities and constructed beside rivers which have had a significant role in the formation of abundant gardens in these cities. In addition to natural factors, other factors are contributed to the influence of the gardens in Samarkand on gardens of Isfahan. According to Wilber, during Shahrokh, the center of politics and art was transferred from Harat to Samarkand (Wilber, 2005). Since the Shah Abbas, spent his childhood in Harat and it was one of the capital cities of the Timurid and contains a lot of gardens, therefore, garden city of Harat which was influenced by the garden city of Samarkand, had located as an example in mind of Shah Abbas.

History of research

The books of Donald Wilber (1995, 2005) described the gardens in Timurid era such as Samarkand

gardens. These books plus itineraries of Clavijo (1995) and are important resources for studying in Samarkand gardens. Among historical texts that have discussed about Chaharbagh Avenue, we can mention in the writings of historians of Safavid era, such as Tarikh- e Alamaray- e Abbasi by Eskandar Beig Turkaman (1971) and Jonabadi's Rawzat al-Safaviye (1999). These books with remaining itineraries from Safavid era, such as Pietro Della Valle (1969), Jean Chardin (1995), Engelbert Kaempfer (1984) and etc., have described Chaharbagh avenue and the gardens around it and Dr. Mahvash Alami's articles and numerous books regarding Iranian gardens; are used in this article. Also Ph. D. thesis of Mojtaba Ansari titled as “Values of Persian Garden (Safavid-Isfahan)” is an important resource for recognizing Safavid gardens.

Wilber represented in his book that Samarkand and Harat gardens affected on the art of gardening in other regions and also in Subsequent periods (Wilber, 2005).

Methods of research

Method of research in this article is descriptive – historical. Most of the signs of these gardens have vanished. So characteristics of these gardens have been achieved by researching in historical resources, itineraries, remaining documents from those periods, giving voice to the old illustrated documents, review in articles and contemporary writings and image reconstruction and etc. In fact descriptions are given in the gardens of these areas are much more detailed compare to previous periods. This is helpful for recognizing the gardens in these two historic periods and the question that to what extent Timurid gardens, especially the gardens built by Timur in Samarkand, have influenced on subsequent gardens, will be responded.

Samarkand in Timurid era.

In the late eighth century, when Timur chose Samarkand as his capital, he tried hard to reconstruct and renovate the city; in fact, he wanted to turn Samarkand into the greatest and the most honorable

city in the world. Zarafshan (koohak) river was located in the north of Samarkand and a lot of honors irrigated all of the places around the city and the reason of verduring of the city was the existence of this river that all of the places of it was irrigated well by water.

The word “garden”, as used in the Timurid resources, often refers to wooded estates that Timurid princes and other propertied individuals used them as their residences (Wilber, 1995). Although Timur had spent most of his life fighting in wars because of his thirst for power which only resulted in murder and devastation, he had understood that to maintain his power, he must pay attention to arts and support artists (Kavoosi, 2006). Therefore Timur was interested in constructing palaces and luxurious gardens in the last years of his life, although he still showed interest in war, murder and further conquests (Amirkhani, 1997).

Timur had the habit of keeping the craftsmen alive amongst all the people he killed, so that he could bring them back to Samarkand to decorate his luxury capital.

In Samarkand, rulers with different positions were forced to build palaces and inhabitable places and gardens according to their capabilities and wealth. (Ansari, 1968) Timurid gardens in Samarkand (figure1) included following gardens.

“Delgosha garden, North garden, Flower garden, New garden, Square garden, Sycamore Garden, Naghsh- ejahan garden, Boland garden and Jahan nama garden which were all built in the era of Timur’s rulership. Then Alagh Beig, added Duldud garden and Nurozi garden, and Mohammad Torkhan added Chaharbagh to them” (Wilber, 2005: 240).

• Descriptions of Samarkand gardens

Gardens in each era are represented ideal and dreamy world of the people who lived in that era had in mind. Samarkand gardens had influenced on the art of gardening in other places as well as in subsequent periods. Wilber has been expressed this subject in his books “In fact, ordinary type of these gardens influenced

on to east and west. Babur, himself propagated it in India; and it was developed and completed there while being affected by natural conditions and climate. Garden had a specific shape in west of Iran plateau and some of its new aspects transmitted to India in sequent periods (Wilber, 2005: 71). Clavijo’s report (The head of delegation of ambassador of the King of Spain in 1403 AD) is considered as a valuable source because it is an available manuscript which interprets and describes Samarkand in Timurid era. In the following, it is mentioned to some descriptions of the gardens of Samarkand that represented by Clavijo.

-Roses Garden: “There was a clayey wall surrounding the garden. The length of the wall can be estimated about three miles. In the garden, there are different fruit trees except lemon. Also, there are six pools of water with a creek that flows in the middle of the pools taking its water from them. In the middle of the garden, there is a tall artificial hill made of soil surrounded by wooden beams and one could easily reach other hills using straight pathways. There are a lot of beautiful palaces in the garden (Wilber, 1995: 240-241). In this garden five wide avenues were built with robust and shady trees on both sides of them, and the foot of the trees was paved and made stone benches out of them”(Wilber, 2005: 64). In figure 2, revised major plan of garden in Samarkand that was Roses garden is represented (Fig, 1,2).

- Delgosha Garden: Astronomers set a blessed day to build the garden and artists had prepared designs to regularly arrange the streets of garden according them; and consider a place for flower hill. They designed garden space with high fitness and created streets, rectangular shape small garden and “small forest” in various forms in it; Elm trees are planted on both sides of streets and the rest of the garden space was decorated by fruit trees and flower bushes. Palaces are built into each corner of garden space and their facade covered with tiles; and a three stage palace was built in the middle of the garden (Wilber, 2005) He also mentioned that a lot of tents made of silk or a fabric like that were in the garden (Clavijo, 1995).

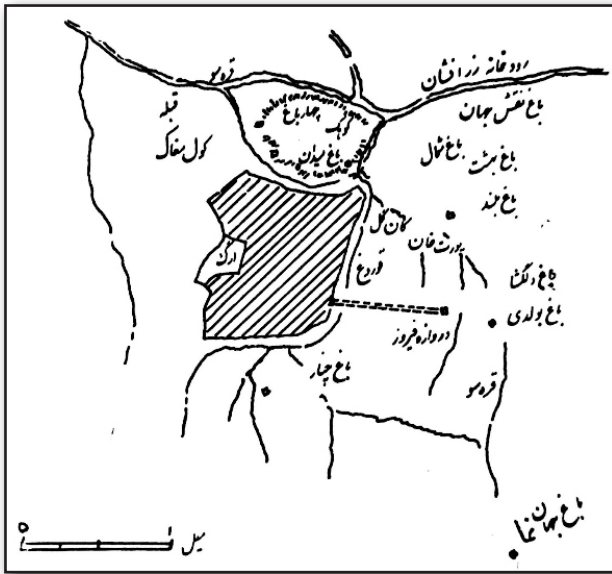


Fig. 1. Maps of the gardens around Samarkand. Source: authors.

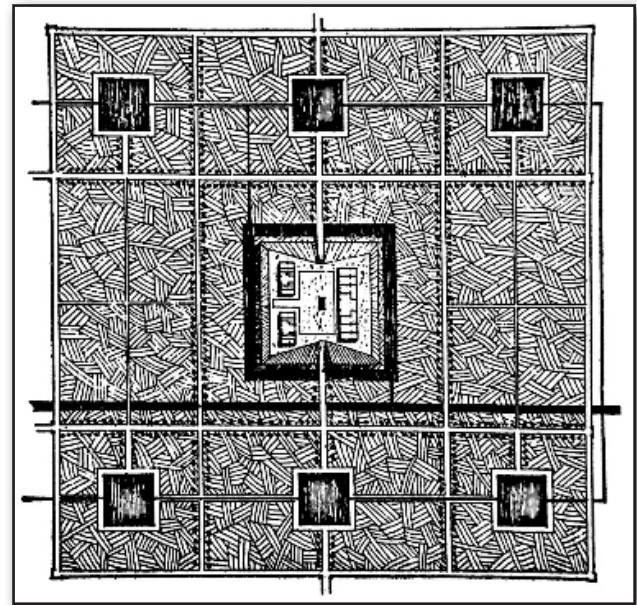


Fig. 2. Revised major plan of garden in Samarkand that was Roses garden. Source: authors.

Sycamore Garden: “The garden had a glorious palace that was still under construction. That garden was in the shape of a square surrounded by an extremely tall wall. They had built a rounded and tall tower in each corner of the garden. A large palace with cross-shaped design was built in the middle of the garden and there was a pool in front of it (Wilber, 2005: 241).

- North garden: “North Garden was planned to be constructed for Timure’s granddaughter i.e., Miranshah’s daughter. This palace had pavilions in its four corners (Wilber, 1995: 242). It also has a rectangular palace and a central palace with walls made of marble and tiles. This garden takes its name from its location, because the garden was located in the north of Samarkand. A prominent feature of this garden is that it has no central building; there is no building that can be called a palace (Wilber, 2005). Jahan-aray garden was constructed by influence of this garden (Wilber, 1995).

- New garden: The vast area of this garden, which was rectangular, was surrounded by a very tall and rounded wall; tall tower was built into each corner of the garden. A large palace with the cross-shaped design was built in the middle of the garden and there was a pool in front of it. Clavijo believed that this palace with the vast garden surrounding it was the most beautiful garden that he had seen

ever in his life; and its golden and blue tiles were the most beautiful compared to what he had ever seen anywhere else (Clavijo, 1995). This garden has many fruit and shaded trees and has many streets and tents which can be seen on the sides and around the garden (Wilber, 2005).

- Chaharbagh: Babur wrote about Chaharbagh: “it was located near the Square garden and was built on a small stack. One of the features of this garden that was built by command of Mohammad Turkhan, is that various pieces of land are located on top of another one with a regular plan; and it is decorated with elm trees, cypress and Tabrizi trees. The defect of this garden was that it had no main creek in it. (Wilber, 1995)

- Garden ? (the name of garden was not mentioned) : “... the garden this celebration was being held in, was very vast and there were a lot of fruitful and shady trees in it; and there were fireboxes that guests passed along them. Tents were raised all over the garden with booths or porches with a canopy of colorful fabrics that shadowed them. A beautiful palace was built in the middle of the garden which had a cross-shape map and foundation. Inside the palace was decorated with curtains. There was a room inside the palace that had three “Shahneshin” in shape of a semicircular room with floors which

slightly higher from the ground and walls and floors covered with colorful tiles”(Clavijo, 1995: 230).

In table 1, specifications of some gardens in Samarkand are represented according to descriptions of historical sources (Table 1).

Typology of Samarkand gardens

Considering typology of gardens in Samarkand we can mention Fruit garden, Tent garden, Zoological garden, Grove garden and Pavilion garden.

- Fruit gardens: Clavijo had seen grape gardens that surrounded the city during his journey to Samarkand. These Gardens were so numerous that when a passenger was moving towards city from distance, could only see a mountain of trees, and houses built inside the gardens, were not visible (Mirjafari, 2000).

- Tent gardens: In Clavijo's reports, tent was mentioned as a major element in most of the gardens (Clavijo, 1995: 229-230).

Zoological gardens: These gardens held wild animals that gifted to kings during various times. Clavijo was described the shows that performed by elephant (Clavijo, 1995: 262-265).

- Grove gardens: The part of gardens that geometric system was not founded in order to create ambiguity and interest in planting trees and plants and a collection of plants were planted in mixed shape, were named Grove gardens or Baghmisheh in Turkish language (Ansari, 1998: 194) An example of this type of garden has been described in Delgosha garden in Clavijo descriptions. "... In that built streets and rectangular crofts and "small jungles" in different shapes, in two sides of streets planted Elm Trees...." (Wilber, 2005: 62).

- Pavilion gardens: Existence of the pavilions was reported in the gardens of this era which were built by using wood and tent as their major material. Also the palaces without separated rooms have been known public custom in Samarkand by Clavijo (Clavijo, 1995: 235).

Review of major systems

- Planting system: Fruitful and shady trees, were

mentioned as the dominant species of trees in the gardens of this era. In most gardens it mentioned in geometric order of planting and in others, such as grove garden and prairies this geometric order is not seen.

- Water system: Creating an axis or a number of main axes of water crossed with pools, choosing a natural slope and creating a hill to ensure the proper flow of water, choosing a proper place for a palace or pavilion along the stream of water and often in the middle of the garden were the features of most gardens in Samarkand (Wilber, 1995). The emphasize this entry we can mention Clavijo's description of Chaharbagh that says it had no big pools and he knew this as a defect for this garden (Ibid).

- Manufacturing system: The descriptions of Timurid gardens are indicated that gardens with central pavilion with different shaped such as quadrangle and cross shaped were dominant species of gardens in that era. Numerous descriptions of tents were described in most parts of Clavijo's itinerary and he gave a detailed description of these tents. Most of these tents were set up inside fences. This point confirms the nomadic nature of these people who spent exorbitant fees for these tents and they often had magnificent tents rather than magnificent palaces and they used precious textiles and wood to make them; This is why there is no remaining palace that belongs to this era. Also "palaces without separate rooms were common in Samarkand" (Clavijo, 1995: 235) Written sources about the gardens of Samarkand emphasize expensive construction and precious decoration. (Wilber, 1995) While describing garden gates, Clavijo mentions that they were very tall and arranged with golden and blue tiles.

Constructing a porch upstairs, with a view of flower gardens, was common in Samarkand (Wilber, 2005).

- Geometric system: These gardens were often built in shape of a square or a rectangle. "dividing space is into four parts, selecting a sloped piece of land or creating an artificial hill to ensure that water flows in the garden completely etc" (Wilber, 2005: 66).

In fact, Timur was influenced by Iranian gardens

in his designing of gardens .He also built a garden around Samarkand named “Jahan nama” which was inspired by Jahan nama garden in Shiraz.

Main routes of Samarkand (garden city)

While studying historical documents of Timurid era about Samarkand city, a few routes are introduced in the city that can be known as main routes. Timur built a ring of royal gardens around and near Samarkand as its capital, but these gardens weren't described in geometric system than describe city and had regular communication (Ansari, 1998).

“Samarkand was the first garden city in the history and the major difference from Isfahan in Shah Abbas's era was the fact that it did not have any comprehensive and general plan.

Although each garden was designed in the style of Persian garden; but their connection with each other and with the whole town was completely accidental (Heydarkhani, 2009: 11).

In following descriptions of these axes will be given while physical and functional features of these axes are mentioned in table 2.

“Babur speaks of a street that connected Samarkand and its gardens to the eastern side of the city. As usual, this street was considered recreational and there were trees on two sides of this road” (wilber, 2005: 71).

“Timur ordered to build a street that passed through Samarkand with shops on both sides of it that sold all of the goods. The new street extended from one side to the other side of the town and passed among city center. “Fountains were built at various distances of the street.”...Old houses were not destroyed yet when builders came and built a wide avenue with shops on its two sides and built a stone bench that had a white tablet on it in front of each shop. Each shop had two rooms, one in the front and the other was located in the back of the shop. A domical and arched roof was built over the street that had windows for light to come inside (Clavijo, 1995: 277).

This subject shows the tourism and commercial activities in this region specially the body of these axes; these auxiliary elements were also used in

the landscaping of these axes. According to the Clavijo's description :“ ... there are villages around the city from 1.5 Farsakhs(an old unit for length) to 2 Farsakhs and city is located between them.” and “... these routes, were communication routes between suburbs of the city to the city center (Rigestan square) (Clavijo, 1995: 460). So some of the gardens around the routes were residential and these routes were considered links. Some of these paths reached to state gardens, as Babur had mentioned an avenue which got started from Firooz or Firoozi gate and was extended to Delgosha garden.

In the following, two systems (Planting and watering systems) are described:

Planting system: According to Clavijo and Ibn Battuta's descriptions, it is probable that gardens around Samarkand were benefited with planting trees in rows. Donald Wilber has mentioned two rows of pine trees in the street that reached to Delgosha garden from Firozi gate (Wilber, 2005).

Watering system: A lot of creeks and coulees passed through streets of Samarkand and also through gardens inside and outside the city (Clavijo, 1995).

Isfahan in Safavid era (Chaharbagh Avenue)

Gardens across the city were considered as elements in shaping the physical structure of the city since Safavid era. All the evidences from that period indicate that Isfahan had plenty of water. Zayanderud in this city was a natural axis and water was sent to all parts of this city and the gardens using creeks. In fact architecture of Isfahan during Safavid dynasty was formed in the substrate of the city and its nature. Safavid capital was moved from Qazvin to Isfahan in 1006 Hijri. Shah Abbas the 1st, decided to decorate his capital (Isfahan) in every aspect and turn it into the best city of the world. Construction of the long and wide Chaharbagh Avenue that at first was the royal promenade and today is one of the best esplanades in Isfahan, was one of this king's works (Honarfar, 2004). Construction of this street is described in Iskenderbeg Turkaman's book as such: “... from Zayanderud river to the mountain in the south of the city which

was the end of the street, the lands on the sides of the street is divided among the rulers and lords of victorious government and each one of them have built a garden..." (Turkman, 1971).

A list of gardens- each of them having an area of more than ten Jerib- in Isfahan that were built from the beginning of the selection of Isfahan as the capital in 1006 Hijri until the failure of Safavid dynasty in 1135 Hijri, was introduced by Honarfar; Jahan nama palace and Hezar jarib garden were located at the beginning and the end of Chaharbagh street; also Chardin expressed the names of gardens in the eastern and western sides of Chaharbagh Abbasi street as following: Khargah, Bulbol, Berry, Guesthouse of Ne'matollahi dervishes and Shyrkhanh gardens were located on eastern side while Octagon, Takht, Gape, Guesthouse of Heydari dervishes and Tavooskhaneh gardens were located on west side of Chaharbagh Abbasi street in Isfahan (Chardin, 1996).

Descriptions of some gardens in Chaharbagh Avenue
 Khargah garden: A garden existed at the beginning of Abbasi Chaharbagh avenue on eastern side, that called camp that currently the remaining parts of the entrance of Camp garden (which is now joined to Bulbul garden) exists as ruins, this garden is now called Shahid rajaee. The reason this garden was called camp was that it was a place for Royal tent and had a square for holding competitions. Camp garden was also known as Khargah garden, because in Persian language, Khargah or means big camp, large tent and is equal to the word. "Kheimegah" which means a place for camping. Mrs.Mahvash Alami has described the palace of this garden in an article as such: "This palace shows us an interesting application of heavy and light monuments. A wooden structure is located on top of an Octagon foundation with arcuate sides and a huge tent was erected on top of this structure" (Alami, 2006: 86).

- Bulbul garden: Bulbul garden in Chaharbagh is a rectangular garden that has Waterfronts in four directions and the palace of "Hasht behesht" is perched on a stone bench at the intersection of north-south and east-west axes; thus the garden is divided

into four parts and each parts is also divided into smaller parts with northern-southern routes (Fig. 3).

- Shirkhaneh garden: This garden was located in the Eastern side of Chaharbagh Avenue. "...there were a few tigers, leopards, elephant and rhinos" (Wilber, 2005: 116). This garden plus aviary garden and peacock garden, affirm the existence of animals in some gardens of this avenue. Speaking of typology of these gardens, they can be considered as zoo gardens.

- Grape Garden: On the west side of Chaharbagh Avenue, there was a garden called "Grape garden". Adam Olearius, German traveler has described this garden as such: "Chaharbagh has a Grape garden that is used to grow numerous different types of grapes including a specific type of grape that has black beans with the size of a knuckle which is very delicious (Olearius, 2000: 614).

- Hezar jarib garden: At the end of Chaharbagh Avenue, there was a large garden called Hezarjarib. Appellation of Hezarjarib was based on the area it occupied. The lands of this garden have a slight slope and is said to be almost square, and its length and width were more than one thousand and three hundred steps. The garden is divided into two parts with an inclined wall between them and at first the purpose was that people could stay in the back garden while king and his attendants were lingering in the front garden. The current king [King Soleyman] know this distance than The desirable size and for this reason built a place for staying harem people in a corner of the front garden (Kaemfer, 1984).

There is a stone creek in the middle of the main road which has a fountain in every ten steps (Honarfar, 2004). Also this street that was exactly along Chaharbagh Avenue, has two rows of tall sycamore trees in both sides which is the main ornament of Hezar jarib garden. (Fig. 4) Also it should be mentioned that it had four bird nests in each corner of the land. These nests were formed like castles and were made of clay raw. The roof of each nest has many holes for pigeons and jags were built for pigeons to sit in" (Honarfar, 2004). Furthermore

it is mentioned in Olearius' itinerary that hunting ceremony was held in this garden (Olearius, 2000). Gardens around Zayanderud: Royal garden had been built on the corner of Zayanderud and in the north corner of chaharbagh avenue that continued to Khajo bridge. This garden was known Saadatabad (Wilber, 2005). Besides Khargah garden, tents were also used around Zayanderud River according to Ozhen Flanden's description: "The king's camp by Zayanderud River was the first place we went. The white tents of soldiers were pitched respectively and a few huge luxurious tents were amongst them which belonged to ministers, court officers and commanders who were the king's attendants" (Flanden, 1945: 133). In figure 5, a reconstructed map of Chaharbagh Abbasi Street and in table 1, information gathering of Chaharbagh according to descriptions presented in historical texts and itineraries and the map represented by Wilber is provided.

Typology of gardens in Chaharbagh Avenue

In the typology of Isfahan's gardens we can mention to fruit, public, tents, Fences, hunting, grove, zoological and palace garden (Fig. 5).

- Fruit gardens: Fruit gardens have mentioned in most reports; also there was a garden with name grape in the west corner of chaharbagh abbasi.

- Public gardens: Most travelers have mentioned the publicity of the gardens of this Street. Regarding this Della Valle states: "these gardens belong to the king; but people are completely free to use them and there are so many fruits that is more than adequate for the whole city" (Dellavalle, 1969). Also Olearius have mentioned to eat fruits of trees in chaharbagh gardens and not take them out by paying four copper coins (Olearius, 2000).

- Tents garden: In addition to Khargah garden, existence of tents has been described around the Zayanderod River.

Fences gardens: The authoritarian reign of the Safavid in Iran, political security and economic development in society causes the Fences garden was created by



Fig. 3. Plan of Bulbul garden, according to Wilber and Kaemfer's sketches. Source: authors.

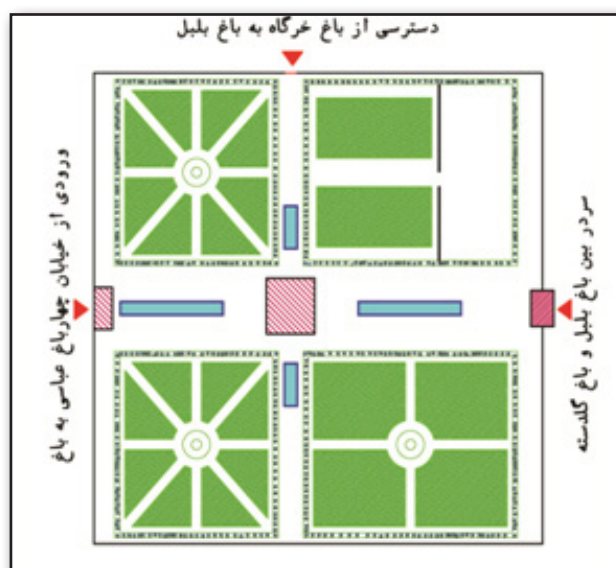


Fig. 4. Hezar jarib and its castles, Isfahan. Source: authors.



Fig. 5. The restructuring plan of Chahar bagh Abbasi Avenue according to Wilber and Kaemfer's sketches and the represented descriptions of this avenue in historic resources. Source: authors.

lattice wall (Ansari, 1998).

- Hunting garden: In some parts of Hezarjarib garden, hunting was done in the garden (Olearius, 2000).

Grove gardens: Kaemfer have mentioned to Saadatabad around of zayandehrud in his Itinerary.

Zoological garden: These gardens are a place for wild animals which are given to kings of various periods as a gift. Tavooskhane garden and Shirkhane in charbagh street are an example of these gardens.

- Palace gardens: In the most gardens of this era palaces were existed in the gardens.

Review of major systems

- Planting system: Olearius described the trees in Chaharbagh Avenue as such: "People of Isfahan and basically all the Iranian people like gardens; but do not decorate their garden with flowers and different types of fruitful trees like Europeans, but plant shady trees such as sycamore in them. Sycamore tree that has wide leaves like the leaves of grape tree is nearly unknown in Europe. It is not fruitful and its wood is used to make windows and doors" (Olearius, 2000). He believed there were thousands of sycamore trees and also mentioned abundant fruitful trees such as grape trees in these gardens (Olearius, 2000). Like Samarkand gardens, in most gardens of this era, the geometric arrangement in planting is existed, in addition to, in some gardens like grove garden, in order to create an attraction the geometric

arrangement not observes.

Watering system: MADIs¹ were used to conduct water from the street to the inside of the gardens where it could flow as a creek. The existence of pools in "Hasht-behesht" and "Bulbul" gardens authenticate this point.

Manufacturing system: It is inferred from the writings of travelers and historians that each of the gardens around the Chaharbagh avenue in Isfahan, had two buildings ;one of them was located in the entrance that opened both towards the avenue and the garden and the other one was in the middle of the garden and was known as central pavilion. Pietro, DellaValle and Jean Chardin have reported that palaces in all of the gardens were approximately identical in area but different in structure (Della Valle, 1969;Chardin, 1996). Using wood as the main structural element in constructing halls with three opened sides and wooden pillars in the front side of the palace, are the main features of pavilions in this era.

The use of external elements such as pools, fountains, etc, construction of tall buildings (terraced palaces) Inside the gardens or adjacent to the gardens and creating small cages for birds which was inspired by Chinese designing; such as Lion garden (Shirkhaneh), King's hennery (Aviary) and Peacock home and the connection between the inside and outside of buildings are considered to be other features of gardens in this period².

Geometric system: Square was the major shape in the geometry of these gardens in this era. Also innovative changing of patterns of Iranian garden (such as octagon geometry in Goldasteh garden and trapezoid in Khargah garden) has been seen in gardening of these two eras.

Isfahan garden city Main axes (Chaharbagh Avenue) Garden city is one of the most fundamental model of Iranian urban in safavid era that takes reasonable shape.

Main axes were reported in Safavid Isfahan. Despite all the changes the signs of these routes can be seen yet in contemporary era. In this article Chaharbagh

will be described as a main axis.

“Shah Abbas had lived in Herat since he was a child to the beginning of his 18-year reign .Herat city was one of the capitals of Timurid dynasty and included lots of gardens. The “garden city – Herat” played a significant role in forming his imagination of the ideal city. So he had the initial pattern in mind and ordered to develop the city based on patterns of Iranian garden -that was also known as a kind of garden city- with the help of Shia scholars specially “Sheikh Bahaei“ (Ansari, 2001: 50).

In Chaharbagh Avenue of Isfahan and gardens surrounding it, different activities were being done such as: business, tourism, communications and educational – religious activities, governmental and residential activities. Eskandar Beig Turkaman mentioned water festival (Alami, 2008) and Jonabadi mentioned Coffee Houses and pubs. Chardin has pointed to existence of two Guesthouses (Heydari-Ne'matollahi) in this avenue (Chardin, 1996) and most travelers

Have pointed to people roaming in this avenue. The Chaharbagh Avenue in Isfahan was considered a thoroughfare and in terms of performance, it connected the southern part of the Safavid government house to the northern part of the town (Hezae jarib garden).

In the following, three systems (Planting, watering and manufacturing systems) are described:

Planting system: Like Samarkand gardens, in some gardens of this era, the geometric arrangement in planting is existed, in addition to, in some gardens like grove garden, in order to create an attraction the geometric arrangement not observes.

“Four rows of sycamore trees” was a common fact that between most of the tourists that had visited

Isfahan in Qajar era (Dieulafoy, 1999;Holtzer, 1976). Tourists who visited Isfahan during Safavid era represented that they saw two rows of sycamore trees in Chaharbagh avenue (Kaemfer, 1984;Careri, 1968). Most of the travelers have only mentioned sycamore streets;only in Tarikh- e Alamaray- e Abbasi pine and ailanthus trees are mentioned besides sycamore (Turkman, 1971). It is thought that during the construction of the gardens trees such as sycamore, cypress, pine and ailanthus existed, but after a while, were replaced with sycamore trees or the number of these trees was too small to draw people’s attention ;so after a while, especially in Qajar era these trees were not seen. Also some travelers have mentioned the flower gardens (Dellavalle, 1969;Chardin, 1996). Watering system: French traveler Chardin’s report about architecture of watering system in Chaharbagh Isfahan has always been the most detailed report about that era. He mentioned that there were seven pools in the avenue (Chardin, 1996) but did not mention the distances between the pools; but in the introduction of each pool he has mentioned the alleys and gardens surrounding it. Besides the middle creek, creeks on the sides of the street were mentioned in Tarikh- e Alamaray- e Abbasi (Turkman,1971). Most tourists have pointed to the middle creek in Chaharbagh avenue

Also travelers have mentioned pools in the entrances building which had very beautiful fountains and through stone canals branched from the main Creek in the middle of the street (Dellavalle, 1969: 474).

Manufacturing system: The symmetry of the two sides of the street with location of the gates have been mentioned in DellaValle and Chardin’s descriptions (Dellavalle, 1969;Chardin,1996).

Conclusions

Samarkand and Isfahan had also common features in terms of the natural potentials and the ruling government in those eras. These common features have influenced on gardening (landscape gardening) in these two cities. In resources, it has been mentioned that Samarkand and Isfahan have had a lot of gardens. By applying Iranian garden traditions, Timurids had influenced on Mongolian Indian and Safavid gardening.

Specific features of Timurid gardens

- Creation of artificial hills in the garden has been seen in Timurid era.
- The absence of any recognized and large central building in Timurid gardens.

Specific features of Safavid gardens

- Utilization of trapezoid and Octagonal plans in Khargah gardens in the beginning of Abbasi Chaharbagh avenue and Goldasteh garden in the east of Bulbul garden, and this innovations was not reported in Samarkand gardens and reports have only mentioned squares and rectangles in Samarkand.

Common features between gardens and main axes in two eras in Samarkand and Isfahan.

- Garden city.
- Publicity of gardens.
- Application of wooded- street in the garden path.
- Gardens in Chaharbagh Avenue were divided between rulers and commanders like gardens around Samarkand.
- Utilization of the anthropocentric scale in entrance (like Ilkhani era)
- The most common gardens, gardens with a central pavilion
- The existence of palaces in gardens (costly construction and precious decoration).
- Utilization of tents in the gardens and numerous tents in groves and gardens and dedicating luxurious elegant tents to ministers, officers of the court, and commanders.
- Constructing lots of creeks and waterfronts
- Using gardens for official ceremonies and parties.
- Having walls around gardens (It was more important in Timurid era).
- Vast area of some gardens in both eras such as Hezar jarib garden in Isfahan.
- What important in Iranian garden is paying attention to landscapes, for this reason, pavilions are located in gardens in a place where landscapes of the garden can be seen from inside and the pavilions itself, would not block the view of garden which this point was reported from both periods.
- Building gardens outside the city in a vast area.
- Existence of creeks and benches for people to sit in the pathways.
- The existence of different activities like business, tourism, government and residential activities in main axes of the city.

Table 1. Specifications of Samarkand and Chaharbagh Isfahan gardens according on descriptions of historical sources. Source: authors.

*In Isfahan unlike Samarkand, the total of these utilities are assembled in one index axis called Chaharbagh avenue but in Samarkand, it is reported in numerous axes.

Tymurid						
garden	Flower garden	Delgosha garden	Sycamore Gardens	New garden	chaharbagh	? Garden
Geometric shape	-----	-----	Square	Rectangular	-----	-----
pool	Six pools	Big pool in front of the pool	-----	Big pool in front of the pool	Lack of the pool	-----
trees	robust and shady trees fruit trees except lemon	Fruit trees Elm trees flowers	-----	Fruit trees Shady trees	Elm, cypress and Tabrizi	Fruit and shady trees
building	numerous palaces	Central palace Quadrangle palace palaces in each corners	Cruciate plan	Cruciate plan	-----	Cruciate plan
tent	-----	✓	-----	✓	-----	✓
Rounded castle	-----	-----	✓	✓	-----	-----
Typology	Palace garden	Tent garden Palace garden	Palace garden	Palace garden	-----	Tent garden Palace garden
safavid						
garden	Khargah garden	Bulbul	shirkhaneh	Grape Garden	Hezar jarib garden	Gardens around Zayanderud
Geometric shape	Trapezoid	Rectangular	Rectangular	Rectangular	Square	-----
pool	✓	In four direction of central palace	✓	✓	Numerous pools	✓
trees	-----	-----	-----	A lot of Grapes	Sycamore	-----
building	Combining of Pavilion and Tents	Pavilion Central- palace (octagonal based on a cruciform plan)	Numerous cages	Central pavilion	Numerous pavilions (square - Combined volumes)	Pavilion with different geometry (combined volume - regular octagon, (.etc
tent	✓	-----	-----	-----	-----	✓
Rounded castle	-----	-----	-----	-----	✓	-----
Typology*	,Tent, Pavilion ,Fence public garden	,Tent, Palace ,Fence Special pleasure garden	,pavilion ,Fence Public, Zoo garden	,Pavilion Fence, Public, Fruit garden	,Pavilion ,Fence Hunting Public garden	,Tent, Pavilion Grove garden

Table 2. Planting, water and manufacturing systems in two cities- Samarkand and Isfahan according on descriptions of historical sources. Source: author.
 *. In historical resources has mentioned to the existence of tents in some gardens; but numerous descriptions of different tents corroborate the existence of tent in other gardens in Timurid era, so these period's gardens can be classified in tent garden

			Samarkand	Isfahan
Plant system	Index axis	rows	Two rows of tree	Two rows of tree
		The dominant tree	Pine	Cypress and sycamore, pine and ailanthus (Sycamore(The dominant tree
	garden	The dominant tree	Shady trees	Shady trees
Water system	Index axis	creek	Middle creek	Middle creek and creek under trees in (two sides (tree creeks
		Pool,Fountain	Numerous fountains	Numerous pools
	garden	creek	Axis or major axes of water	Axis or major axes of water
		Pool	Pool in front of the pavilion	Pool in front of the pavilion
Manufacturing system	garden	pavilion	-The absence of any recognized and large central building in Timurid gardens - Numerous pavilions	Numerous pavilions in Guesthouse of Ne'matollahi and Heydari The absence of central pavilion - (Octagon garden at west of (.Chaharbagh avenue
		wall	- existence of walls around gardens -Groves Without Walls -Dividing gardens with walls (fences)	- existence of walls around gardens (the role of it was less important in this era) -Groves Without Walls -Dividing gardens in two parts (Hezar jarib garden)
		gate	Excellent gates that decorated with golden and blue tiles. -high gates	utilization of the anthropocentric-scale
		tent	Residence of Timur and his -retinues in spring and summer seasons in tents(most of the (time	Existence of tents in Khargah garden and gardens around Zayanderud
		Porch	Porch on the top floor,- overlooking the garden of flowers porches at the entrance-	Porches in Chaharbagh avenue were- for watching the garden and in the entrance of the street for watching the street and gardens
		Rounded castles	Sycamore and New garden have rounded and tall castles	Hezar jarib garden had four birds nests in each four corners of the land. These are formed like castles and .made of Clay raw
		Stone bench under trees	the foot of trees has been-paved and it becomes stone bench	the foot of trees were slightly-.elevated for resting people
		Decorations	attention to aspects of-Chinese Use cardboard and pieces of) (thin wood with cross plans attention to aspects of Indian-Decorated with beautiful and) (elegant marble stones emphasis on expensive - construction and precious decoration	creating small cages for birds that-take affect from Chinese Plans; such as Lion garden (Shirkhaneh), King hennery(Aviary) and Peacock home (paintings (major decoratin -
*Usage	Index axis	Commercial (most use), tourism, government and residential	Tourism (most use), commercial, government and residential	

Footnotes

1. Water network and its channels (named MADIs) have major roles in water management and transfer to agricultural and other parts of Isfahan city.
2. It is derived from Soudabeh Gholipour's M. A. thesis with title "Mould in lost Safavid garden and palaces in Isfahan with emphasis on scripts and documents: case study: 4bagh)" in Art University of Isfahan.

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