

## Sustainability of Isfahan's Landscape Design during Safavid Period.

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### Abstract:

Respect and reverence for water and trees have been institutionalized in many ancient civilizations due to their various socio-cultural traditions, values and beliefs. In Iranian societies, respect for water has been a well known cultural value before and after Islam as has explained in first section of this paper.

In continue, Garden City has discussed as an importance type of Persian Garden during safavid Period. Sustainability and water supply for new gardens has specified as problems that have been solved in urban design of Isfahn. This section has explained about quality of sustainable usage of gardens as composer elements in Isfahan during safavid period

Finally, principles of urban design and city axis features of Isfahan have been classified and mentioned about design inventions that have been used in new Isfahan city sections in Safavid Dynasty. The result of the present study shows principles, which have used in Isfahan, create longevity in the design of the city and its environment.

*Key Words: Persian Garden- Sustainability- Isfahan- City axis – Garden City- Safavid Dynasty.*

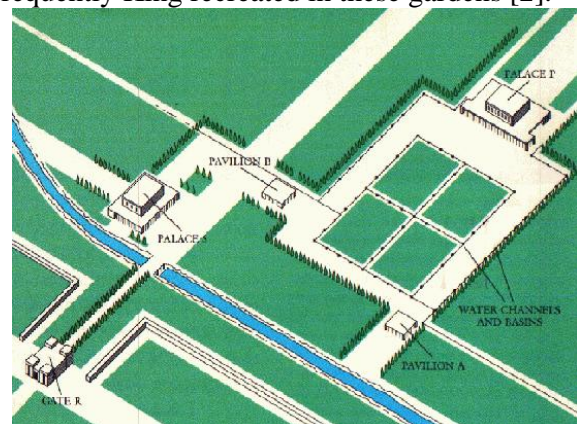
### 1- Introduction:

In ancient civilization of Iran, plants have had special position. Supernatural powers that had been in trees such as life-giving, young giving, productivity and Immortality made them sacred for Ancient Iranian people. In addition, some plants were important as they were Herbaceous Gods and some were as usage in religious ceremonies. Some trees such as Platanus, Cedar, Grapevine and Pomegranate were symbolic and sometimes be holy and life given. Pomegranate was the symbol of Everlasting, multiplicity with unity, long productivity and. Superabundance [1]. However, attending to supernatural power of plants was the importance reason that people regarded to plants and made some symbols such as “Life Tree” has income.

In Zoroastrian<sup>1</sup> religion books, more values have said about Supernatural cost of plants. Plants have a special value in Zoroastrian Fire Temples, religious ceremony and routine life.

Therefore, garden and gardening were sacred for Iranian. Oldest Persian gardens that

have discovered dependent on Achaemenids Empire (559–330 BC) and there were in Pasargad(Picture1). About importance of trees and gardening for Achaemenids, Xenophon (430 - 354 BC) had written: Sometimes after equestrianism, Young Persian people have implanted trees. This craft has taught by father to his son [2].Also he said: This is important for King that many gardens have been in allover of his country. These gardens have named “Paradise”. On the days, that weather was good, frequently King recreated in these gardens [2].



Picture (1): Pasargad

Source:<http://www.caissoas.com/CAIS/Images2/Achaemenid/Pasargadae/pasargadae.jpg>

<sup>1</sup>- is the religion and philosophy based on the teachings ascribed to the prophet Zoroaster, after whom the religion is named. The term Zoroastrianism is, in general usage, essentially synonymous with Mazdaism.

After Islam, The Heaven was the importance concept that made a big vicissitude in Persian Garden. Many features of Heaven that has said in Quran such as greenery and fresh, immortality, Wall and Doors and Emphasis on Center have substantiated in Persian Garden. Persian Garden is a delectable example of an innovation, which fuses artificiality with naturalness. A fusion of water and vegetation, golden divisions, the harmony between internal and external areas, the consistency of human artifacts with natural phenomena, and briefly, the creation of delightful and tranquil atmosphere are among some of the idiosyncrasies of Persian gardens. In both artificial and natural domains, whether in tree plantations or flower arrangements, whether in water circulation or water sprays, whether in the enclosures or in the openings, an appropriate order gives it such a sense of security that, along with the dominant presence of nature, causes a peaceful and desirable atmosphere.

During Safavid Period, gardens had used as composer elements in urban design. A powerful idea in city planning that made development and establishment of cities according to Sheih ideology. Heaven idea in short and large scale used in urban design and gardens as a composer element formed the city as a Heavenly garden. Therefore, city had formed as an image of Heaven. It was a suitable place for peoples as surrogate of God in the World.

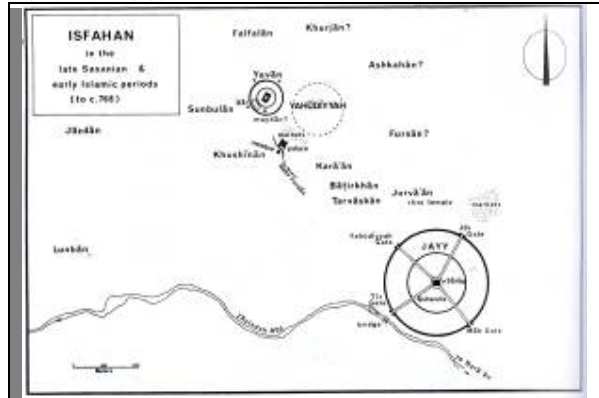
## 2- Sustainability and water supply

Since antiquity, supplying and restoring water for drinking, irrigating, washing, etc have been the essential issue for survival. Kariz (Qanat) is an ancient water provision technology that described as the greatest contribution made by Iranians to hydraulics. This system maybe has started at least 5000 years ago in Iran. Kariz system is usually has found in central Iran toward the east and southeast of Iran.

In Isfahan during safavid Dynasty, attended to water supply as a strategic topic. Gardens had selected as city development composer elements, therefore sustainability of them had been as an importance subject.

### 2-1-The City of Isfahan.

Isfahan history began from two thousand and five hundred years ago (Sasanians Era). This city was the Capital during Buwayhids<sup>1</sup>, Seljukids (1038-1194 AD) and Safavids (1501/1502 to 1722) Dynasties. Ebn e Houghel (6th A.D.) has named two sections in Isfahan, Yahoodieh and Jey (Shahrestan) that they were 2 miles apart [3]. Yahoodieh was twice the size of Jey (Shahrestan) (Picture (2)).



Picture (2): Isfahan in the late Sasanians and early Islamic periods (to c.768).

Source: [4].

Jey was a military pre-design city with walls, gates, palaces, buildings and special gardens. Jey has had a regular open space that was named "Meidan Kohneh". Yahoodieh contrary to Jey was an organically found city and had none geometrical design and most of its buildings such as synagogues had geometrical order design that had been combined with non geometric order of city. This process (Jey developed regular and Yahoodieh irregular) had continued during development of Isfahan before Safavids Dynasty [5].

The city started its great reputation since it was chosen as the capital of the great Seljuk Empire. Seljuks, who practically ruled a huge chunk of Asia in 12th and 13th Century, turned the city into the most important city of the country. The northern part of the city, which is packed with great buildings and monument dates back to this era. The structure of the city in this period was based on a large organic square, called Meydane Kohneh (or the old square). This

<sup>1</sup> During the 900s, Buwayhid dynasties took power in Fars (southwestern Iran, 934-1062); Rayy (977-1029); Jibal (932-1028); Kerman (936-1048).

organically shaped square was located where the major thoroughfares converged in the centre of the city [6]. The main routes leading from outside to inside of the city transform into to the major branches of the grand bazaar, a pattern which has preserved its major characteristics until now.

City of Isfahan became Capital (1591A.D.) after Ghazvin and during of Safavids Dynasty and reign of Shah Abbas (1587–1629). During Shah Abbas reign, Isfahan was one of the most developed cities in Iran with wide streets, large open spaces, several mosques and palace, some of them have remind until now.

Shah Abbas paid attention to the development and beauty of Isfahan because of the rivalry that existed between Isfahan and Constantinople as the Capital of the Ottoman Empire (1299–1922), while he did not have any rivalry with London or Paris of those days. Therefore, Shah Abbas decided to adorn Isfahan such that foreign tourists, merchants and ambassadors to be attracted to it [7].

Table (1) shows situation of Isfahan in two historic periods of Seljukids and Safavids Dynasties from points of dividing, landmarks, discipliner and connection elements and kind of city.

Kind of City	Connecting Elements	Ordering Element	City Landmarks	Sectors
In Seljukids city	Bazar and narrow lanes with desert cities style.	City has formed in organic shape, around the Atigh Open Space.	Minarets for guiding traveler .	The City of Isfahan has had four sectors with several kinds of people that had lived there with different religious and cultural opinions: 1- Jewes and Muslims had been lived in Seljukids' City region that had developed by Shah Abbas. 2- Emigrants from Tabriz had been lived in Abbasabad (Tabrizno) that where in north of the Zayanderood. 3- Armenians had been lived in Jolfa at south of river and west of Charbagh. 4- Zoroastrians who had been lived in Gabrabad at south of river and east of Charbagh.
In Safavids city	Garden city with geometric and grid iron pattern.	Charbagh street as a north-south axis had created from Darvazed olat to Hezarjarib garden.	Religious elements that are major elements in height and form.	

### 3- Zayandehrood has used as a sustainable water resource.

Safavids Dynasty had made many changes to Isfahan, but those changes did not turn it into a city fabricated by official decree, such as we find in Soltanieh (14th. A.D.) . Soltanieh had been built by the Kings' order and did not possess an organic background [8]. During Safavids Period, old downtown of Isfahan had been largely destroyed due to neglect and ignorance and it was gradually transformed to a poor and destitute area [4]. Zayandehrood River made it possible to have easy and inexpensive access to water; therefore, the development of the city of Isfahan as the Capital of the Safavids Dynasty was made possible in the form of a Garden city along the old city sections.



Picture (3) : Isfahan development in Safavids period and Maadies location.

Source: Authors (Base picture source: [9]).

Gardens and green spaces were the main elements of the cityscape in the new city sections. In order to create sustainable green cityscapes, the Safavids had built channels<sup>1</sup>, which branched from the Zayandehrood and made water

Table (1): Situation of Isfahan in two historic periods of Seljukids and Safavids Dynasties- Source: Authors.

<sup>1</sup> - Maadi is the local name of these channels or water canals.

accessible to flow throughout the city (Picture (3)). This invention created sustainable green spaces in the new city section. Table (2) shows the situation of Zayandehrood River during various periods of Persian history during Islam.

Zayandehrood		
Buwayhids	Seljukids	Safavids
1- Zayandehrood riverbank had been in the border of city. 2- Zayandehrood riverbank had belonged to the palaces and mills. 3- Celebrations and recreational activities had taken place on the riverbank.	1- Garden and palaces had been developed in the city rampart until river. 2- Zayandehrood had strengthened as an outer city recreation and historic axis. 3- Some activities that have had relation with water (such as mills) had been in the city rampart.	1- The Zayandehrood river had run through the middle of the city, and it along with the Charbagh axis had divided the city to four sections. 2- Zayandehrood River was utilized throughout the city and had formed Isfahan according to a model of a garden city. 3- Safavids Designers had caused sustainability in the green urban spaces by the intelligent use of the Zayandehrood water all over the city. 4- Commercial activities that had depended on water had spread all over the city. 5- Celebrations such as "Abpaashan" and "Golrizaan" were conducted on the Zayandehrood riverbank.

Table (2): Situation of Zayandehrood River during various periods of Persian history during Islam- Source: Authors.

### 3-1-Usage of Charbagh Street as a sustainable liner open space.

Safavid designer built Charbagh Street as major new city axis. Charbagh had used to connect new and old sections of city. Charbagh had created as the most important element of Isfahan urban design and a Safavids invention in the new city section. This street has designed as the axis of Isfahan Garden City therefore; it has conformed to special features of Persian Garden axis. It has formed according geometrical order

and pre design map. Unlike most of the old streets in the old Isfahan, this avenue was a wide, straight boulevard with two rows of large trees and a stream in the middle. This boulevard was created as a north-south extension of the old city, continuing to the south, where an extensive complex of Safavid gardens was created. The glorious bridge of Sio-seh-Pol across the river Zayandeh-Rood was used to connect Charbagh to the south of the river [10].

The essential structure of Isfahan in the Safavid period can be described by two major axes of development: first, the north-south axis alongside the old backbone of the city, which was formed alongside the main chains of the bazaar and extended through Charbagh Avenue to the south of the river; and second, the east-west axis alongside the Zayandeh-Rood river and its artificial branches, or madi's. Whereas the first axis of development shaped the built environment in Isfahan, the second axis provided the natural element and its influence on the urban life.

Charbagh Street had formed to make special identity for new sections of city. It had formed to make a rivalry between new city sections and Seljughid core (organic section) of city. This street had designed with spatial features and special visual elements to make a new public walk for Isfahan. Thus, we shall pay more attention to this in the following sections.

### 3-2-Special features of Charbagh axis

Shah Abbas had ordered to innovation Charbagh Street in 1598A.D. and it had formed according to Safavid King's opinion in 1616. In this paper, we have covered five features of Charbagh that will come as follows.

1- The kind and location of trees: Tavernier and Gemelli Careri<sup>1</sup> write that there had been two rows of trees on both sides of the street [11]; Kernlis Brovin<sup>2</sup> had drawn pictures of the Charbagh Street. This picture has remained as an engraving on copper and two rows of trees are visible in it (Number 1 in picture (4)).

<sup>1</sup> - Italian tourist who had traveled to Isfahan at 1694 A.D.

<sup>2</sup> - Dutch painter (1704 A.D.)





Picture (4): Charbagh Street that remained as an engraving on copper by Kernlis Brovin. Source: Authors (Base picture source: [11]).

2- The continuance of the Charbagh side trunk: The gardens that had been on both sides of the street had constituted Charbaghs` side trunks (Number 1 in picture (4)). Engelbert Kempfer at 1096h reported on the number of those gardens and writes, that there had been 30 gardens on both sides of the Charbagh [12].

3- The kind of activities that were done in Charbagh- Some activities that were done in Charbagh are as follows:

3-1- Commercial activities: "Bazarcheh Boland<sup>1</sup>".

3-2- Recreation and site seeing: Charbagh Street was a boulevard created from Jahannama Building<sup>2</sup> to Hezarjarib Garden. Recreation and site seeing in Charbagh was not exclusively for men, but according to Shah Abbass` order (1609), women were given rights to enjoy Charbagh and its Royal Gardens on each wednesday of the week [13].

3-3- City connections: Charbagh Street had been used as the main road and it had connected north of the city to the south. It had been the main road connection in the new section of the city.

<sup>1</sup> - It had been a Bazar in Charbagh Street that had located beside "Madreseh-e Charbagh". This *bazarcheh* is completely separated from the main Bazaar and is designed to enhance the Charbagh axes.

<sup>2</sup> - This building had constructed in three levels in Safavids Period and had been demolished in rule of **Zel-e-Sultan** (son of Naser-ed-Din Shah) in Isfahan.

3-4- Educational and religious uses: "Madreseh-e Charbagh<sup>3</sup>" which was a religious and educational institute was located on this street.

3-5- Governmental agencies: A number of the gardens on both sides of the Charbagh belonged to the king and the authorities, in which many government functions were performed.

3-6- Residential function: Many gardens of Charbagh and Abbasabad quarter (Tabrizno) were residential places.

4- An emphasis on identity creation: Charbagh as the widest boulevard of the city along with Royal Gardens and minor elements of landscape design including water ponds, facades and also monumental elements such as the Jahannema Tower and Hezarjarib Garden at the beginning and the end of Charbagh acted as elements of identity creation for the new Safavids Capital.

5- Using minor elements in landscape design: In the landscape design of Charbagh, minor elements such as water ponds, gardens facades and monumental signs and elements have been used. Images of Charbagh engraved on copper clearly show the aforementioned elements (Number 2, 3, 4 in picture (4)).

#### 4-Conclusion:

Considering the previous information, it can be concluded that new sections of Isfahan was structurally formed by the use of two linear organizing elements (Charbagh and Zayandehrood) that mentioned in this paper. Charbagh as the manufacture element and river(Zayandehrood) as the natural element. This special design method has derivate from Persian Garden's design origins and made city has formed as a large garden. Some of the principles in the construction of Isfahan are as follows:

- **In the design of new city sections,** usage of native and local geographical methods was emphasized.
- **The comprehensive knowledge of the characteristics of the site,** such

<sup>3</sup> - Madreseh-e Charbagh: The school of Charbagh which was a religious seminary.

as the best direction for utilization of natural sunlight, and protecting the natural environment of the surrounding cities, the highest standards of design were used. In addition, other potentialities such as the river and best possible road accesses were chosen.

- **City relationship with nature:** In the design of Isfahan from within and without, the relationship of city with nature (especially with regarding Zayandehrood) had created a coordinated whole with nature and the surrounding area.
- **Peoples` understanding:** In city design, attention was paid to the cultural, racial, religious and lifestyle of the people who were to use the facilities and the environment which was created and made available.

Considering the points above, we can claim that achievements which took place in Isfahan during the Safavids dynasty and principles used in the design of the city which included the sustainability of the city and the main elements of landscaping which included plant and vegetation coverage, turn the city into a standard of excellence in city design in order to create city gardens and greenways such as Charbagh which were used in the design of other cities such as Mashhad and Shiraz. The principles, which have used in Isfahan, create longevity in the design of the city and its environment. The usage of water canals in order to transfer water from the river to the city and irrigation of the gardens had ensured its natural environment sustainability. Also sustainability of people presence in new city sections have obtained by using an ideal pattern of an organizing linear axis in city design in the form of an open city space with multiply uses specially as a processional path which included special landscape designs, cultural and service oriented uses as the identity creating element of the city.

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