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Innovations in the Charbagh Axis of the Safavid Period

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Abstract

Respect and reverence for water and trees are institutionalised in many ancient civilisations due to socio-cultural traditions, values and beliefs. In Iranian societies, respect for trees and water, separately and in composite form as gardens, is a well-known cultural value both before and after Islam. Therefore, the first part of this paper explains the value and importance of plants and gardens according to the religious and socio-cultural beliefs of the Iranian people in various historical periods. The paper continues by focussing on the history of the Persian garden city during the Timurid and Safavid dynasties. The straight streets, long-lasting gardens and the water supply of the three capitals of Samarqand, Herat and Isfahan are explained individually according to their historical references. Furthermore, it explained the special idea that has had direct relation with religious believes. In Safavid period designers often used the gardens as parables of Heaven. This idea influenced on urban design and was important in selection of green spaces as composing elements in urban fabrics. Finally, the paper classifies the features of Charbagh Street as an axis of the city of Isfahan, and compares these features with the features of the axes in the cities of Samarqand and Herat. The results of the study compare the design innovations, features and origins of the Charbagh axis of Isfahan, the Safavid garden city, with earlier garden cities of the Timurid period.

Keywords: *Persian garden, Isfahan, City axis, Garden city, Safavid dynasty.*

1. Introduction

In the ancient civilisations of Iran, plants held a special position. Life-giving, youthfulness, productivity and immortality were some of the supernatural powers possessed by trees that made them sacred to ancient Iranian people. Some plants were important because they were considered herbaceous gods while others were sacred because they were used in religious ceremonies. Plants such as platanus, cedar, the grapevine and pomegranate were symbolic and sometimes considered holy and life-giving. Supernatural powers were attributed because of the way people regarded plants. This high regard for plants led to the creation of symbols such as 'the Tree of Life'.

The Zoroastrian religion has two trees – the Tree of the Solar Eagle, which sprang from the primordial ocean and the Tree of All Seeds whose seeds are 'the germs of all living things'. In Islam, at the foot of the Tree of Tuba or Sidra, in the centre of Paradise, flow the four rivers of water, milk, honey and wine [1].

According to these religious orders, gardens and gardening were sacred to the Iranians. Xenophon's writings show the importance of trees and gardening to Achaemenid's kings (559–330 BC). Xenophon states:

Lysander (Spartan commander and politician (b. ca. 454 BCE; d. 395 BCE)), it seems, had gone with presents sent by the Allies to Cyrus, who entertained him, and amongst other marks of courtesy showed him his "paradise" at Sardis [2]. Lysander was astonished at the beauty of the trees within, all planted [3] at equal intervals, the long straight rows of waving branches, the perfect regularity, the rectangular [4] symmetry of the whole, and the many sweet scents which hung about them as they paced the park. In admiration, he exclaimed to Cyrus: "All this beauty is marvellous enough, but what astonishes me still more is the talent of the artificer who mapped out and arranged for you the several parts of this fair scene" [5]. Cyrus was pleased by the remark, and said: "Know then, Lysander, it is I who measured and arranged it all. Some of the trees," he added, "I planted with my own hands" [6].

The oldest Persian gardens that have been discovered date back to the Achaemenid Empire and were found in Pasargadae (Figure 1). The garden plan of Pasargadae had a great influence on the structure of subsequent gardens. The innovations of the main plan (four-part gardens) in Pasargadae were copied widely and with more complexity in all subsequent Persian and Islamic gardens [7] .

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The reflection of the Pasargadae's four- part gardens is clearly evident during the Sassanids Period (224-651AD) and long thereafter, during the Seljukids(1038-1194 AD) Dynasty. The Achaemenids' garden design that had been started from Pasargadae, continued to be prevalent during the Sassanids period, so much that – with respect to the huge square elongated gardens of those times – the Sassanids can be deemed as the corroborators of the four-part(Charbagh) garden designs, by making them more complex.

According four-part (Charbagh) concept, Moslems designed Islamic gardens as an image of Heaven in this world. In the Quran (the central religious text of Islam), Heaven is described as a place surrounded by eight principal gates with lofty gardens, shady valleys, fountains scented with camphor or ginger; rivers of water, milk, honey and wine; delicious thornless fruits in all seasons. Arabs by getting advantage of the above perception from the heaven as well as the plan or image of Pasargad garden on the discussed discovered potteries, they imitated that ancient design at the court of lions in Alhambra palace (Figure 2).

After Islam, 'Heaven' became an important concept that made a big change to the Persian garden. Many heavenly features highlighted by the Quran – such as greenery, freshness and immortality, walls, doors and the emphasis on centricity – were all used to make the Persian garden design successfully combine artificiality with naturalness (Table 1).

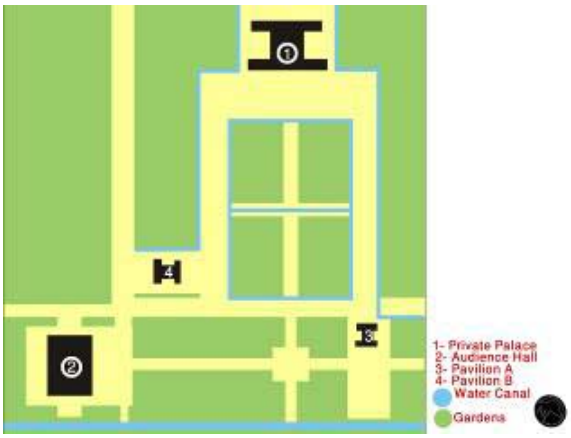


Fig. 1 A reconstruction of Cyrus (or Cambyses) the Great's palace garden at Pasargadae c550 BC. Water channels define the space between two palaces. This is the earliest known remnant of what became the classical Persian garden. The plan is based on David Stronach's Pasargadae.
Available at: http://www.gardenvisit.com/history_theory/ library_online_ebooks/ml_gothein_history_garden_art_design/persian_gardens_iran_plateau(accessed date: 20 February 2010)

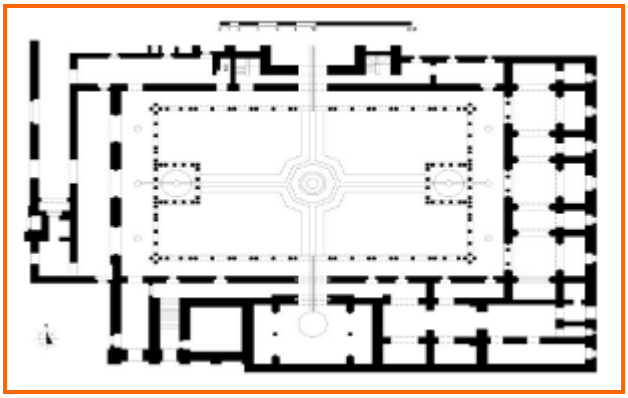


Fig. 2 Plan of the court of lions in Alhambra palace

Table 1 Portrayal of heavenly features (according to Quran descriptions) in the Persian garden. Source: Authors

Portrayal of heavenly features in the Persian garden	Greenery and freshness	Climatic features allow designers to use both deciduous and evergreen trees. These varieties provide shade in the summer and sun in the winter. The differences between the trees available in the Persian garden mean that there is fruit in all seasons and greenery throughout the year (Refer to Sura-e-Ar-Room, Verses 15).
	Immortality	The principles of design and site selection used in the Persian garden follow the origins that caused these gardens to become immortal, the same as the Heaven (Refer to Sura-e-Taha, Verses 120).
	Heavenly pavilions	A pavilion in the Persian garden is symbolic of the heavenly pavilions (Refer to Sura-e-Al-Ankabut, Verses 58).
	Heavenly rivers, wells & waterfalls	Water that possibly emanated from the heavenly wells is drawn through the Persian garden along the canals with varying outer shapes. In addition, waterfalls are often used in various forms and settings. The sound of water is also important (Refer to Sura-e-Al-Waqiah, Verses 20-21 and Sura-e Mohammad, Verse 15).
	Enclosure	The Persian garden has always been enclosed by surrounding walls (Refer to Sura-e-Aɬ Raad, Verses 23).
	Endless	The Persian garden is designed with features that cause them to seem endless or more extensive than they really are (Refer to Sura-e-Aɬ Hadid, Verses 21).
	Naturalness	In the Persian garden designers tried to create some natural environments. Therefore, in some spaces they used plants in their natural forms and refrained from ornamental pruning (Refer to Sura-e-Aɬ Baghareh, Verses 25).
	Centricity	The highest point created for the garden is a symbol for 'Ferdos' (the highest point of the Heaven, according to the Muslim prophet Mohammad). The pavilion is located at this point and usually water is divided from there (Refer to Sura-e-Al-Nur, Verses 35).

In the fifteenth century, the Safavids converted to Shi'ism and established Shi'a (The second largest denomination of Islam, after Sunni Islam) as the official religion of their empire. The Islamic concept of the Ideal City, formed according to the Garden of Eden, was taken into consideration in the Safavid period. Gardens as parables of Heaven were often used as composing elements in urban design. This idea resulted in the formation of a powerful method of city planning that drew its conclusions from Shi'a ideology about the human place in the physical world and the Islamic concept of the Ideal City. Urban designers used the ideas of Heaven in small and large-scale gardens and used heavenly features as composition elements to create the city. Thus, the city was formed as an image of Heaven. It was a suitable place for people as surrogates of God in the world.

2. Garden city history in Iran's Timurid and Safavid dynasties

The governmental cities of the Achaemenid Empire form the background of the Persian garden cities of Iran. The Achaemenids built governmental buildings beside the main cities and inside a group of gardens, such as Pasargadae and Shoush, the two oldest garden cities.

Prior to the Safavid dynasty, the largest garden cities were built in the Timurid period ((1370–1405 AD) in Central Asia, which survived until 1857 as the Mughal empire of India). In the Timurid era, many residential government gardens were built around Samarqand and Herat.

Samarqand was situated on an extensive plain. Adjacent to the town was a wide zone of forest, orchards, and vineyards, and beyond that was grazing land. Within this belt of green dwelt more people than were confined within the strong walls. In this belt were to be found the royal gardens and palaces[8]. The Zarafshan (or Kuhak) river lay to the north and numerous channels and streams traversed all the area about the town (Figure 3).

In Samarqand, the formal relation between the town itself (Firuzeh Gate) and the royal garden (Bagh-i-dilgusha), as Baber describes it (Qurugh), survived and was conspicuous at Isfahan in the seventeenth century [10] (Figure 3).

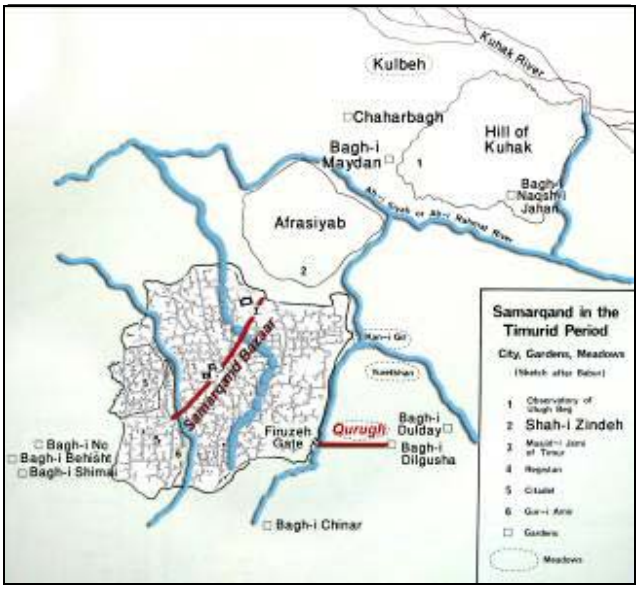


Fig. 3 Samarqand in the Timurid period. City plan and water canals[9]

Clavijo (the ambassador of Henry III of Castile to the court of Timur) also described the Samarqand bazaar, built by order of Timur (Figure 3): "The street commenced at one end of the city and went through to the other. They made the street very broad and covered it with a vaulted roof, having windows at intervals to let in the light. As soon as the shops were finished, people were made to occupy them, and sell their goods; and at intervals in this street there were fountains" [11]. Shah-i Zinda was also an imposing complex, complete with a monumental staircase that gives place to the entirely human scale of a street bordered by irregular 'houses' (mausoleums), arranged so as to allow views of the countryside and the townscape to impinge (Figure 4).

Herat had been another Timurid garden city, before the Safavid dynasty. Baber (Following a series of setbacks, Baber finally succeeded in laying the basis for the Mughal dynasty of India (1526-1761)) visited all the palaces and gardens in and near the town. He wrote down the names of some of the Herat gardens shown on the third map.

Herat had a straight street named Gazur Gah (Khiyaban-e Sultani) (Figure 5). In addition to mentioning Gazur Gah Garden, Baber speaks of a 'Khiyaban', or avenue, apparently the same kind of tree-lined promenade as found in Samarqand and gardens to the east of that town. Today there are no traces of any of these gardens, although the approach to the shrine of Gazur Gah has a charm and atmospher created by its towering pines and several pools, which seem reminiscent of earlier centuries4-2. According to Esfezari, many gardens bordered the street[13].

There was another straight street in Herat similar to Shah-i Zinda in Samarqand. Mo'in al-Din Mohammad Zemchi Esfezari (1493 AD) describes that street in Rawdat al-jannat fi awsaf madinat Herat. He states: "It had been a public walk and a place for public prayer outside the town (Mosala). It had been a street with some mausoleums along it".

It appears that Safavid urban designers used the features of Timurid garden cities to develop Isfahan as the capital city of the Safavid dynasty. Straight streets with landscape design elements were important, as well as gardens and green elements. Similar to Timurid cities (Samarqand and Herat), new parts of Isfahan were built in the vicinity of the old city and belonging to the governmental neighbourhood.

Following a brief description of the history and specific features of Isfahan, the next section of this paper compares some of this city's urban features with earlier Timurid garden cities.

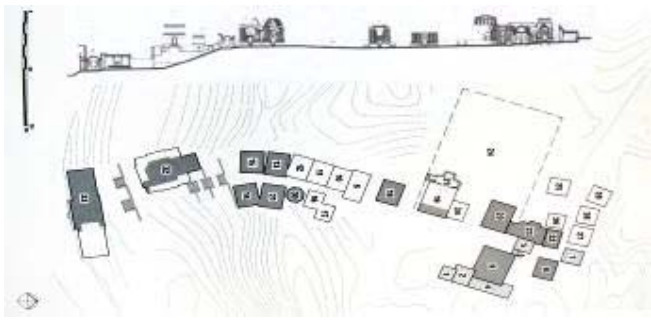


Fig. 4 Samarqand, Shah-i Zinda, Plan of the ensemble in the Timurid Period [12]

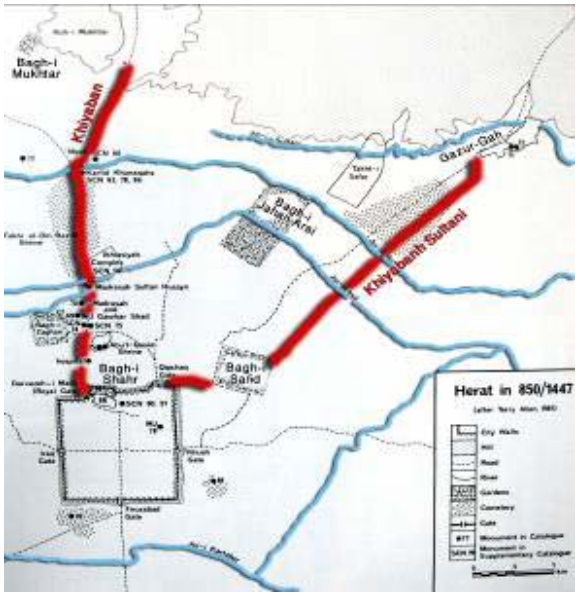


Fig. 5 Herat in 850/1447 (after Terry Allen, 1981). City plan and water canals [14]

3. The city of Isfahan

Isfahan history began twenty-five hundred years ago (Sasanian era). This city was the capital during the dynasties of the Buwayhids(During the 900s, Buwayhid dynasties took power in Fars (southwestern Iran, 934-1062); Rayy (977-1029); Jibal (932-1028); Kerman (936-1048)), Seljukids (1038-1194 AD) and Safavids (1501/1502 AD to 1722 AD). Ebne Houghel (6th century AD) named two sections of Isfahan, Yahoodieh and Jeyy (Shahrestan), and said they were two miles apart [15]. Jeyy (Shahrestan) was twice the size of Yahoodieh (Figure 6).

Jeyy was a military pre-designed city with walls, gates, palaces, buildings and special gardens. In contrast to Jeyy, Yahoodieh was an organically founded city and had no geometrical designs. Most of its buildings, such as synagogues, had geometrical architecture that had been combined with the non-geometric order of the city. This process (Jeyy developed it regularly and Yahoodieh irregularly) continued during the development of Isfahan prior to the Safavids dynasty [17].

The city started off with a great reputation since it was chosen as the capital of the great Seljuk Empire. The Seljuk, who ruled practically an enormous portion of Asia in the 11th and 12th centuries, turned Isfahan into the most important city of the country. The northern part, packed with great buildings and monuments, 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 organically shaped square was located where the major thoroughfares converged in the centre of the city [18]. The main routes leading into the city turned into the major branches of the grand bazaar, a pattern which has preserved its major characteristics to this day (Figure 7).

The city of Isfahan became the capital of the Safavid dynasty (1596 AD) after Ghazvin, during the Safavids dynasty and the reign of Shah Abbas (1587–1629 AD). Monajem states: “In the first part of Safar [1005 A.H./late November 1596 AD], [the Shah] set out for Isfahan with his courtiers. At the end of Safar [late December], he entered Isfahan. In the middle of Rajab(the seventh month of the Islamic calendar) of this year [1006 A.H./mid-February 1598 AD], most of the courtiers went to Isfahan. Isfahan became the capital of the state because of the Uzbek conquests” [19].

During the reign of Shah Abbas, Isfahan was one of the most developed cities in Iran with wide streets, large open spaces, several mosques and palaces, some of which still remain.

Shah Abbas looked after the development and beauty of Isfahan because of its rivalry with Constantinople, the capital of the Ottoman Empire (1299–1922). There was no rivalry with the cities of London or Paris of those days. Shah Abbas decided to adorn Isfahan such that foreign tourists, merchants and ambassadors would be attracted to it [20].

The Safavid dynasty transformed Isfahan to such a large

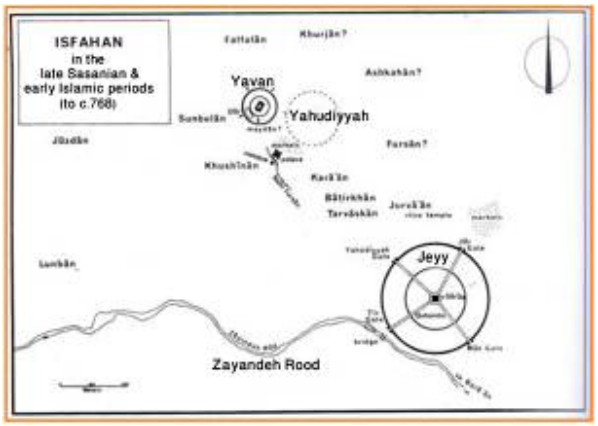


Fig. 6 Isfahan in the late Sasanian and early Islamic periods to c768 [16].

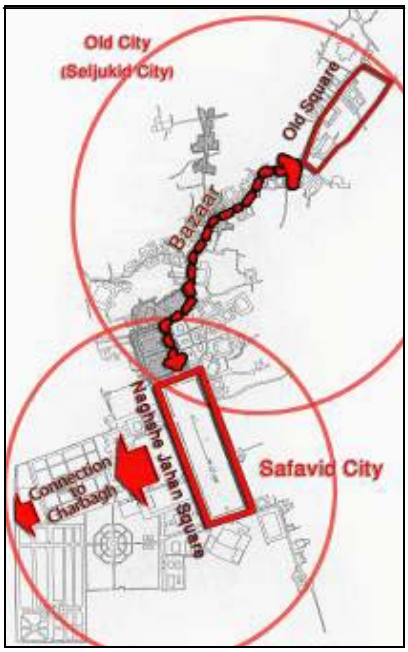


Fig. 7 The Seljukid and Safavid sections of Isfahan. Source: Authors

extent that one could not really call it a 'fiat' city that arose ex nihilo at the command of a ruler, as did Sultaniyyah [21]. During the Safavid period, the old city centre of Isfahan had been largely destroyed due to neglect and ignorance and gradually transformed into a poor and destitute area. The old centre was in ruins, a virtual slum and it was far more expedient to reorganise it [22] (Figure 7 and 8). The creation of Naghshe-Jahan Square in Isfahan was one of the most important acts of Safavid urban designers. The very well thought and well-designed connection of this new urban space with the older structure of the city was the most significant element of this square. The key point in the design of this square is linking it with the main chain of the Grand Bazaar, which extends from the Old Square, in a way that it becomes part of the overall structure of the city (picture7).

Two major axes can be described in the main structure of Isfahan in the Safavid period. The first is Charbagh Street that formed the north-south axis along the old backbone of the city; the other is the Zayandeh-Rood River. Charbagh Street was formed along the main chains of the bazaar and extended to the south of the river. Zayandeh-Rood is the east-west axis. The first axis (Charbagh Street) organised the built environment and the second axis provided the opportunity to use natural elements on a vast scale inside the city.

The Zayandeh-Rood gave inexpensive and easy access to water and therefore permitted the development of the city of Isfahan as the capital of the Safavid dynasty in the form of a garden city along the Seljukid city sections.

According Shi'a ideology about human place in the physical world and the Islamic concept of the Ideal City (that described it before), gardens and green spaces were the main elements of the cityscape in the new city sections. In order to create long-lasting green cityscapes, the Safavids dug canals(Maadi is the local name for these water channels or canals), which branched off the Zayandeh-Rood River and made water accessible throughout the city (Figure 8). It was the same method as used in Samarqand and Herat (Figure 3 and 5) and helped to create long-lasting green spaces in the new city sections. Table 2 shows the situation of Zayandeh-Rood River during the Buwayhid, Seljukid and Safavid periods.

Iskandar Beg Munshi (Court historian of the Safavid emperor Shah Abbas I, ca. 1540 - ca. 1632) has written about the Zayandeh-Rood water channels and their impact on the realisation of the main idea of Isfahan Garden City as an image of Heaven. "[T]he special qualities of that paradisal city, the suitability of its location, and the waters of the Zayandeh-Rood and the Kawthar-like (In the Quran, Kawthar is the name of a river in Paradise) channels which branch off the aforementioned river and flow in every direction" [24]. He also wrote about Charbagh's gardens and their similarity to Heaven: "In sum, every garden would command the envy of garden of Paradise" [25].

3.1 Charbagh Street as a major linear open space

Charbagh Street was used by Safavid designers as the major axis of the new city sections and to connect the new to the old sections of the city. It was the most important element of Isfahan urban design and a Safavid innovation.

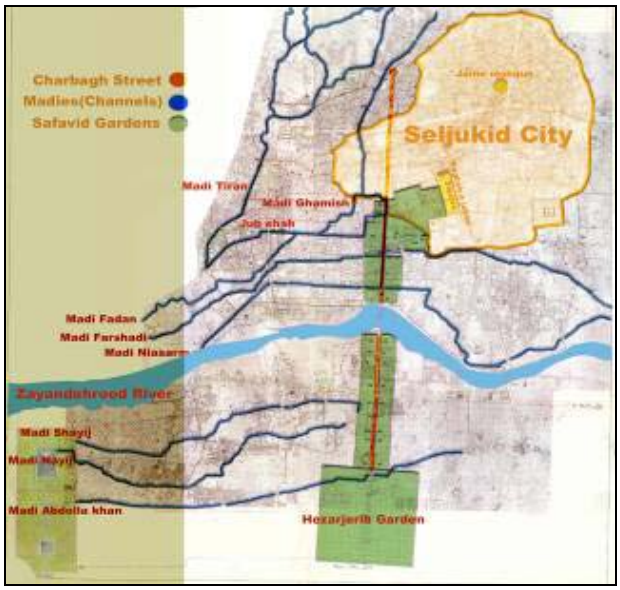


Fig. 8 Isfahan development during the Safavid period and at the Maadies location.
Source: Authors. Original Image source [23]

Table 2 Situation of Zayandeh-Rood River during various periods of Persian history during Islam. Source: Authors

Zayandeh-Rood river		
Buwayhid	**Seljukid**	**Safavid**
1- Riverbank was the border of the city. 2- Riverbank belonged to the palaces and the mills. 3- Celebrations and recreational activities took place on the riverbank.	1- Gardens and palaces had been developed in the city ramparts all the way to the river. 2- The river had gained strength as an outer city recreation site and historic axis. 3- Some activities related to water (such as mills) had been developed in the city ramparts.	1- The river ran through the middle of the city, and with the Charbagh axis it had divided the city into four sections. 2- The river was utilised throughout the city and had formed Isfahan according to a model of a garden city. 3- Safavid designers created long-lasting green urban spaces with their intelligent use of river water all over the city. 4- Commercial activities dependent on water spread all over the city. 5- Celebrations such as Abpaashan and Golrizaan were conducted on the riverbank.

Since it was designed as an Isfahan garden city axis, the street conformed to the special multi-functional aspects of Persian garden axes such as dividing and connecting and the visual characteristics as drawing vision to specific vistas.

Iskandar Beg Munshi described Charbagh Street and its features. "From the Naqsh-i Jahan to the edge of the Zayandeh-Rood they laid out an avenue flanked on both sides by gardens. At the entrance to each of these gardens, sublime structures were designed. From the [other] bank of the river, the avenue ran to the foot of the mountains south of the city. The land along the sides [of the avenue] was divided among the Amirs and notables of the all powerful state, each of whom was to erect at the entrance of his garden a suitably royal structure consisting of an entry gate. […] At the end of the avenue, an extensive garden terraced in nine levels was designed for the Shah himself. […] On both sides of the avenue, water channels would run and cypress, linden, juniper, and pine trees would be planted. A stone-lined canal would be built down the middle of the avenue so that water would also flow [there]" [25].

Some features of this street, such as its broad width, and some landscape elements such as the central water canal and linear rows of trees were used in the same way as in the Persian Garden axes.

This axis was formed in accordance with geometric order and a pre-designed map. Unlike most of the narrow streets in the old Isfahan, this avenue was a wide (Tavernier: "It is 1500 steps long and 70 or 80 steps wide" [27] and Kempfer: "I measured this street with long steps. I estimate it is 63 steps wide" [28]), straight boulevard with two rows of large trees and a stream in the middle. The boulevard created a north-south extension of the old city, continuing to the south, where an extensive complex of Safavid gardens was created. Historical references such as Tarikh-i Alam Aray-i Abbasi have stated that it was one farsakh (A unit of distance in the Middle East. The farsakh comes from an ancient Persian unit, the parasang, in principle the distance a horse would walk in an hour, about three miles) in length. The glorious bridge of Sio-seh-Pol across the Zayandeh-Rood was used to connect Charbagh to the south bank of the river.

Charbagh Street was created with various visual and functional features that caused it to become a gnomonic figure in the city. Therefore, it was important to the creation of identity for the new city sections. It made for a rivalry between the new sections and the old Seljukid city core (organic section). Iskandar Beg Munshi described the date of its completion: "In 1025 (A.H.) [1616 AD; when this noble book was written], those pleasant buildings and admirable gardens became manifest in such a way that the outcome of the produced work was made in accordance with the plan fixed in the blessed heart of the eminent one and they were brought to completion in perfect subtlety and the degree of exquisiteness" [29].

This street had been designed with spatial features and special visual elements that made it a new public promenade for Isfahan (Figures 9 and 10). Thus, we shall pay more attention to this aspect in the following section

3.2 Features of the Charbagh axis

Shah Abbas ordered the innovations of Charbagh Street in 1598AD. The work had been done to the Safavid king's satisfaction by 1616 AD. This paper deals with six specific features of the Charbagh axis as follows.

1. The type and location of trees: Tavernier and Gemelli Careri(Italian tourist who had traveled to Isfahan at 1694 A.D.) state that there had been two rows of trees on both sides of the street [30]; Corneille le Brun (Cornelis de Bruijn, Dutch artist and traveler (1652-1727)) drew pictures of Charbagh Street(1704-1705 AD.). Figure 11 presents one of his pictures clearly showing two rows of trees (no. 1). Iskandar Beg Munshi has also pointed to this. "On both sides of the avenue, water channels would run and cypress, linden, juniper, and pine trees would be planted" [31].

2. The continuance of the Charbagh flanks: The gardens on both sides of the street constituted the flanks of Charbagh Street (no. 1 in Figure 11). Reporting on the number of gardens, Engelbert Kempfer at 1096 (A.H.) writes that there had been 30 gardens on both sides of Charbagh Street [33].

3. The kinds of activities conducted on Charbagh Street. Some of them were as follows:

3.1 Commercial activities: 'Bazarcheh Boland' (This bazaar in Charbagh Street was located beside 'Madreseh-e Charbagh').

3.2 Recreation and sightseeing: The Charbagh Street Boulevard stretched from the Jahannama Tower (This three-storied building was constructed in the Safavid period) to Hezarjarib Garden. Recreation and sightseeing on Charbagh Street boulevard was not restricted to men. According to Shah Abbas's order (1609 AD), women were given the right to enjoy Charbagh and its Royal Gardens on Wednesdays [34].

3.3 Traffic: Charbagh Street was used as the main thoroughfare. As the main trunk road it connected the north of the city to the south and the new section of the city to the old.

3.4 Educational and religious uses: The religious and educational institute Madreseh-e Charbagh(Madreseh-e Charbagh school was a religious seminary) was located on this street.

3.5 Governmental agencies: A number of gardens on both sides of Charbagh Street belonged to the king and the authorities, and were where many government functions were performed.

3.6 Residential function: Many gardens along Charbagh Street and in the Abbasabad quarter (Tabrizno) were residential places.

4. An emphasis on identity creation: Some visual and functional features created a specific identity for Charbagh. For example, its great width, the Royal Gardens and minor elements of landscape design including water ponds, facades, the central water canal and monumental elements such as the Jahannema Tower and Hezarjarib Garden all combined to create a special identity for this street. Also, its visual and functional features created a special identity for it as a major open space in the city. Some governmental and public ceremonies ('Abpaashan' and 'Golrizaan') and carnivals that took place in this street were important in establishing the identity of Charbagh Street as a major, large-scale public space

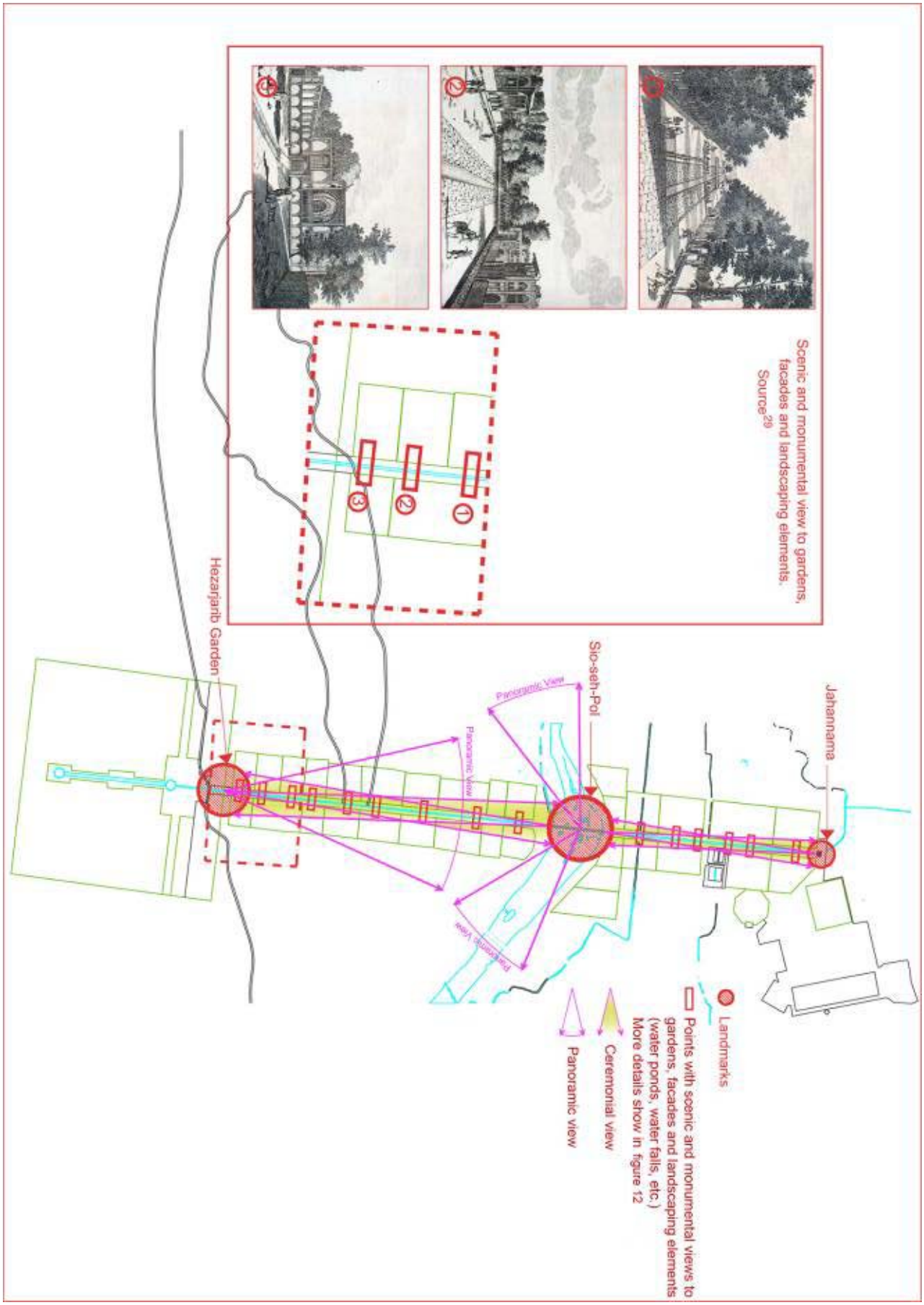


Fig. 9 Visual analyses and serial views along Charbagh Street. Source: Authors

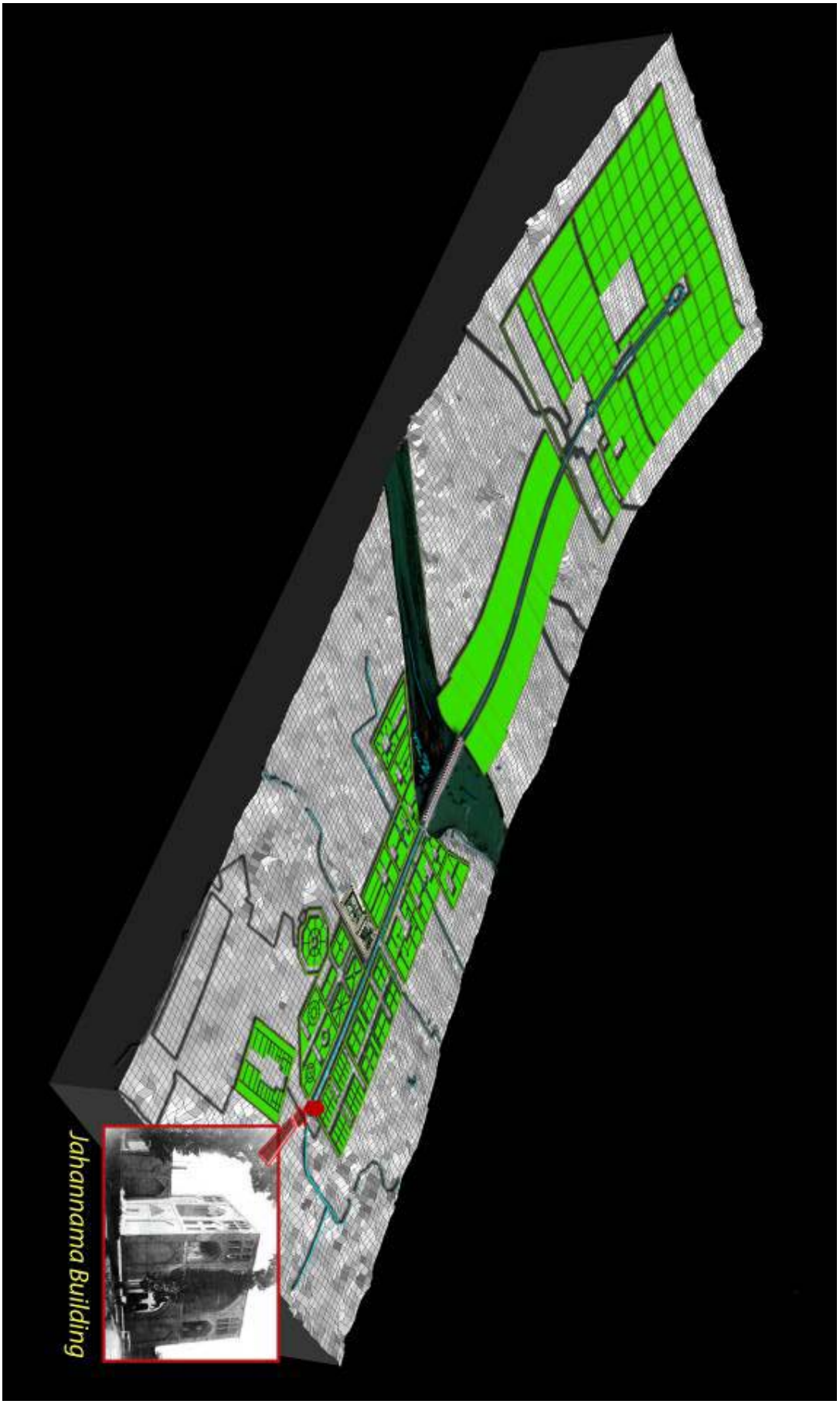


Fig. 10 Computer-graphic reconstruction of Charbagh Street. Source: Authors

Fig. 11 A picture of Charbagh Street by Cornelis de Bruijn (Dutch artist and traveller).
Source: Authors. Original source of picture [31]

and as such, it also attracted people to the new city sections.

5. The use of minor elements in landscape design: The landscape design of Charbagh uses minor elements such as ponds, gardens and facades as well as monumental signs and elements. Images of Charbagh Street engraved on copper clearly show these elements (see nos. 2, 3 and 4 in Figure 11 and Figure 12 as well).

6. Agreement with the features of Heaven: Most of the heavenly features in the Persian garden have been used in the design and landscaping of the Charbagh axis. The street's heavenly features have been noted by many tourists, such as Kempfer. Iskandar Beg Munshi states: "The trees raised their crowns to the heavens and the fruit-bearing trees, you might say, were a graft from the Tuba tree of Paradise. In sum, every garden would command the envy of the garden of Paradise" [35].

4. A comparison of Isfahan Charbagh and the straight streets of Herat and Samarqand

Isfahan Charbagh and the straight streets of Herat and Samarqand are similar in some aspects but some innovations in Charbagh caused it to become major city axis that worked as city open space. Table 3 compares these streets in terms of physical structure, function and landscape elements.

According to the table, some features of Charbagh Street are similar to those found in Qurugh in Samarqand and Gazor Gah and Khiyaban in Herat. In these axes, features such as the location of trees and the kind of activities are almost the same

Fig. 12 The use of minor elements in the landscape design of Charbagh. Source: Authors

Table 3 Similarity value between Isfahan Charbagh and the straight streets of Herat and Samarqand

in all. However, the usage method and some details are different.

One important difference between Charbagh Street and the other axes is its formation method. Charbagh was built according to a pre-designed method. As a result all the elements and activities were put in suitable places and were formed in a unified process.

In the Charbagh axis, landscape design elements were used as parts of the physical structure and so their usage was simultaneous with the construction process. However, in Samarqand and Herat, landscape design elements were used after the building process to reinforce recreational possibilities along these paths and increase the quality of the vistas at the cities' entrances.

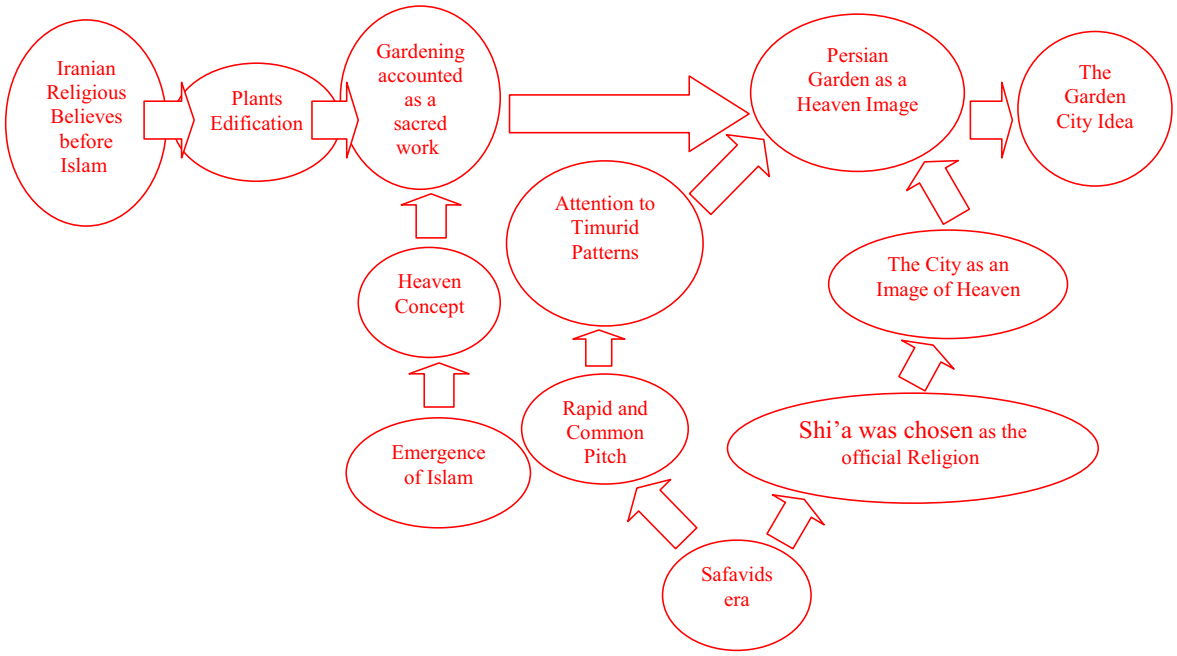
In the Isfahan, Samarqand and Herat axes, the designers laid the emphasis on their being linear urban open spaces. The axes had a special role in the provenance of the structure's identity. Nevertheless, with regard to this topic of identity, there are some differences between these axes. Charbagh Street was made to give a special identity to the new city sections but the major city axes of Samarqand and Herat derived their identity from the buildings and elements constructed along their routes (Shah-i Zinda from mausoleum, Gazur Gah from the Shrine and Ghorogh from Royal Garden). Minor elements in landscape design, types of activities and street arrangement were used to reinforce Charbagh's identity as the main new city promenade.

5. Conclusion

Considering the above information, it can be concluded that the new sections of Isfahan were structured by using Charbagh Street and Zayandeh-Rood River as two linear organising elements. Charbagh was the manufactured (artificial) element and the river was the natural element. This special design method is derived from the original designs of the Persian garden. It seems that designers used this method according to a pre-designed plan and by employing this innovation they caused Isfahan to be formed as one large Persian garden.

Considering the subjects explained above, we can claim that the sustainability of the new cityscape with its greenery and green spaces had been an important subject in Isfahan during the Safavid dynasty. Water was vital to maintain long-lasting green elements, which in turn were important because they were part of the basic composition that gave identity to the new cityscape. Canals used to transfer water from the river to the city and irrigate the gardens ensured the sustainability of Isfahan's natural environment.

It seems that what was done in Safavid Isfahan in relation to the creation of sustainability was that same as had been done in Samarqand and Herat. All three cities have similar water supply systems based on the use of minor canals branching off from their rivers and flowing according to the natural ground slope. With respect to the date of formation, it can be concluded that in Isfahan, achieving the sustainability of



green spaces had been done in the same way that had been used in Samarqand and, especially, Herat.

It seems that emphasis on sustainability of green elements and spaces has had direct relation with Safavids ideal city. They had tried to build city, as an image of heaven according their religious believes. The Safavids' garden city idea bases has been shown in below diagram

In new city sections, addition to stability of landscape and green spaces, stability of people presence was important. So Charbagh Street ensured the lasting presence of people in the new sections of Isfahan. The street was organised as a linear axis and had been formed as an open city space with multiple uses. This axis was formed geometrically with pre-designed plans and in accordance with the special features of the Persian garden axis. In fact, special design and functional features of Charbagh that caused it worked as an open space is the most important difference between Charbagh Street and the other axes in Samarqand and Herat. Most of the visual and functional features of Gazorgah and Ghurogh were used in Charbagh. However, the innovations of the Safavid designers lay in their methods and ability to recognise the potential of these features. They recognised the special features of the Samarqand and Herat axes and used these in their pre-designed plan for Charbagh along with the special features of the Persian garden axis and also social attractive.

The role of city axes in the daily life of citizens is an important subject. Occasionally, especially during religious and governmental ceremonies, the straight streets of Samarqand and Herat were used as social open spaces. In contrast, Charbagh Street was deliberately designed to be the city's main thoroughfare and as a continually open space suitable for multiple uses. The special physical and visual features, tourist attractions, varying functions and special position of the Charbagh axis in the city transport network are all values that make the axis work as the main linear open space of Isfahan .

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