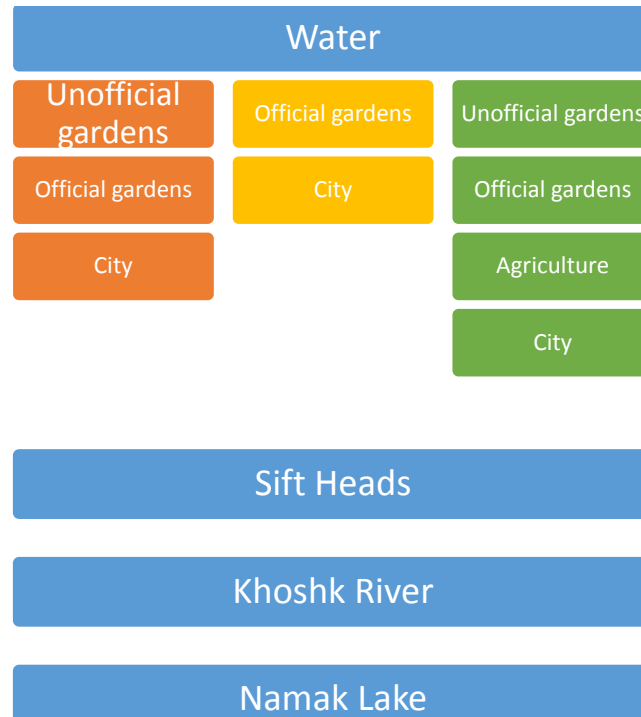


Table. 1. The structure of the garden of Shiraz from the source of water to the salt lake. Reference: Writer.



Reference List

- Arab solghar, N. (2015). the historical shiraz, *bagh nazar*, (33): 82-89.
- Najjar najafi, E., & Latifian esfehani, T. (2013). Relationship between Shiraz Historical City Structure and the Water Network Case study: qanat in 7-14 century, *Sofeh* (60): 105-118.
- Naema, Q. (2011). *gardens in Iran*. Tehran: payam.
- Pirnia, M. K., & Memarian, Q. H. (2008). *Iranian architecture*. tehran: sroush danesh.
- Shahcheraghi, A. (2010). *paradimes pardis*. Tehran: jahad daneshgahi tehran.



Fig. 6. Longitudinal profile of Rokn Abad Waterway. Source: Authors.

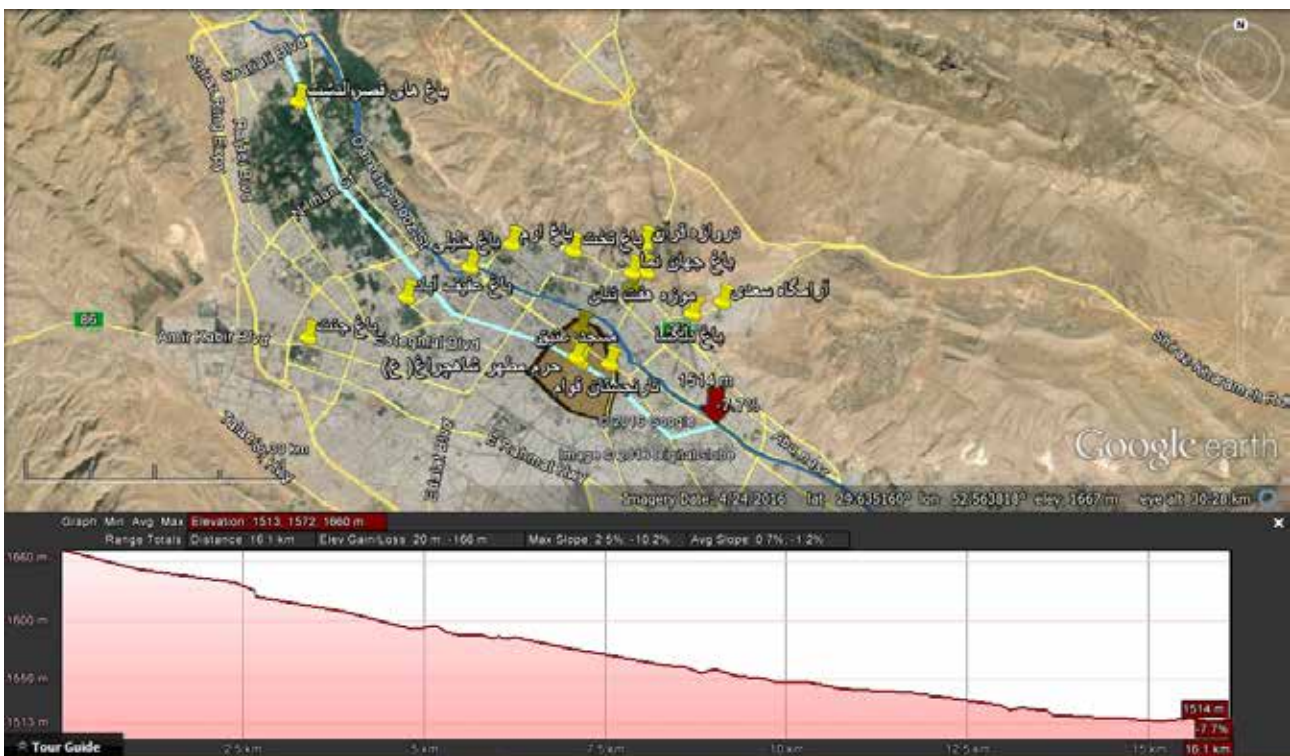


Fig. 7. The longitudinal profile of the Sa'dee Springs. Source: Authors.



Fig. 5. Longitudinal profile of the Khosk river. Source: Authors.

the gate of the Koran, watered unofficial gardens. After passing the number from the gate, it went to the official gardens, like the jahan nama garden. Then it entered the city and after passing it, went to the agricultural land and then, the villages, and eventually drove into the dry river.

So it went through the following path:
 unofficial gardens- official gardens- city- Agriculture- Dry river- Salt lake

In Figure 7, the waterway of Guyom is depicted. Due to urban development in decades, the clear route to this waterway is not clear, but you can imagine it around. Initially, the gardens of Qasr al-Dasht, then the official gardens, such as the Afif Abad Garden, then the agricultural lands and the city, and eventually the same route as before.

unofficial gardens- official gardens- city- Agriculture- Dry river- Salt lake

These are shown in Figure 1

Regarding the structural pattern of Shiraz, the

following can be mentioned:

Dry river water was not desirable for drinking and irrigation.

Official gardens are mostly surrounded by unofficial gardens. The existing sample is the Afif Abad Garden, which is still part of the informal gardens around it.

The water from the main sources (the manifestation of the aqueduct or springs) is extracted by surveys as shown in Figure 1 at the level. The city is divided and eventually flows into a dry river.

The main river drains the remaining water from the city and the surrounding gardens and lands to the south and east of the city. It shows that after consumption in these fields it leads to salt lake.

So the pattern of the city of Shiraz can be expressed as: a city full of gardens, enclosed in the garden.



Fig. 3. Distribution of the gardens of Shiraz. Source: Authors.



Fig.4. Distribution of existing Shiraz gardens. Source: Authors.



Fig. 2. Distribution of the gardens of Shiraz. Source: Authors.

Abad qanat was dragged around Zandieh's complex and provided water for this complex. The next point is the presence of many vineyards near the gardens. The remnants of these vineyards were recently found near the Golshan and Mount Drak mountains which were destroyed by the city's superficial development. Regarding the geographical location of Shiraz, as shown in Figure 3, we find that the city of Shiraz (old Shiraz) is generally in a plain enclosed between mountains, where there is little difference in height in this plain. This difference in height is both in the north-south direction and in the east-west direction (according to the direction of the dry river). In figure 4, the profile of the longitudinal profile is drawn, which is indicated by the direction of the gradient.

According to the previous description and observation of the current situation, three major routes of water movement in Shiraz are seen. The route starts from Roknabad and continues to the Zandieh complex. The direction of the fountain of Saadi, which after its own collection, sprinkles Delgosha Garden and its surroundings. And the path that From guyom (northwest of Shiraz) and after irrigation of Qasr al-Dasht gardens has arrived in Shiraz. According to historical sources, the route of these three waterways is shown in Figures 5-7. Regarding their longitudinal profiles, it is clear that the dry river boundaries are at lower relative altitudes. This can be attributed to the fact that the dry river played the role of collecting the surface waters of Shiraz. Fig 5 shows that Roknabad water, before reaching

B. Old and historical gardens where the major parts are destroyed, but at this time there are works and pieces of them:

1. agha baba khani garden 2. abolfath garden 3. bagh takht GHARACHE garden 4. derki garden 5. rahmat abad garden 6. salari garden 7. sheikh garden 8. saheb ekhtiar garden 9. safa garden 10. samad abad garden 11. ataaldole garden 12. fath

abad garden

C. Valuable gardens of the last century:

1. eram garden 2. haftanan garden 3. jannat garden 4. jahan nama garden 5. delgosha garde 6. soltan abad garden 7. sanghori garden 8. ghavam garden 9. golshan garden (afif abad) 10. nari garden 11. nazar garden 12. navayi garden.

Conclusion

Since Persian Garden is a complete and perfect model for agriculture and life, it has been created on different scales. This pattern is so powerful that it has shaped not only the garden itself but also the city. This effect was surveyed in Shiraz and it is easily seen in other cities of Iran. The next result will be that the city of Shiraz

was a city enclosed in two sets of gardens. Northern and Southern Garden Gardens Collection. In addition, a number of gardens were scattered throughout the city (Fig. 2). Regarding the cases mentioned above, Shiraz water supply was mainly through qanat and in some cases from the spring. For example, Rokn

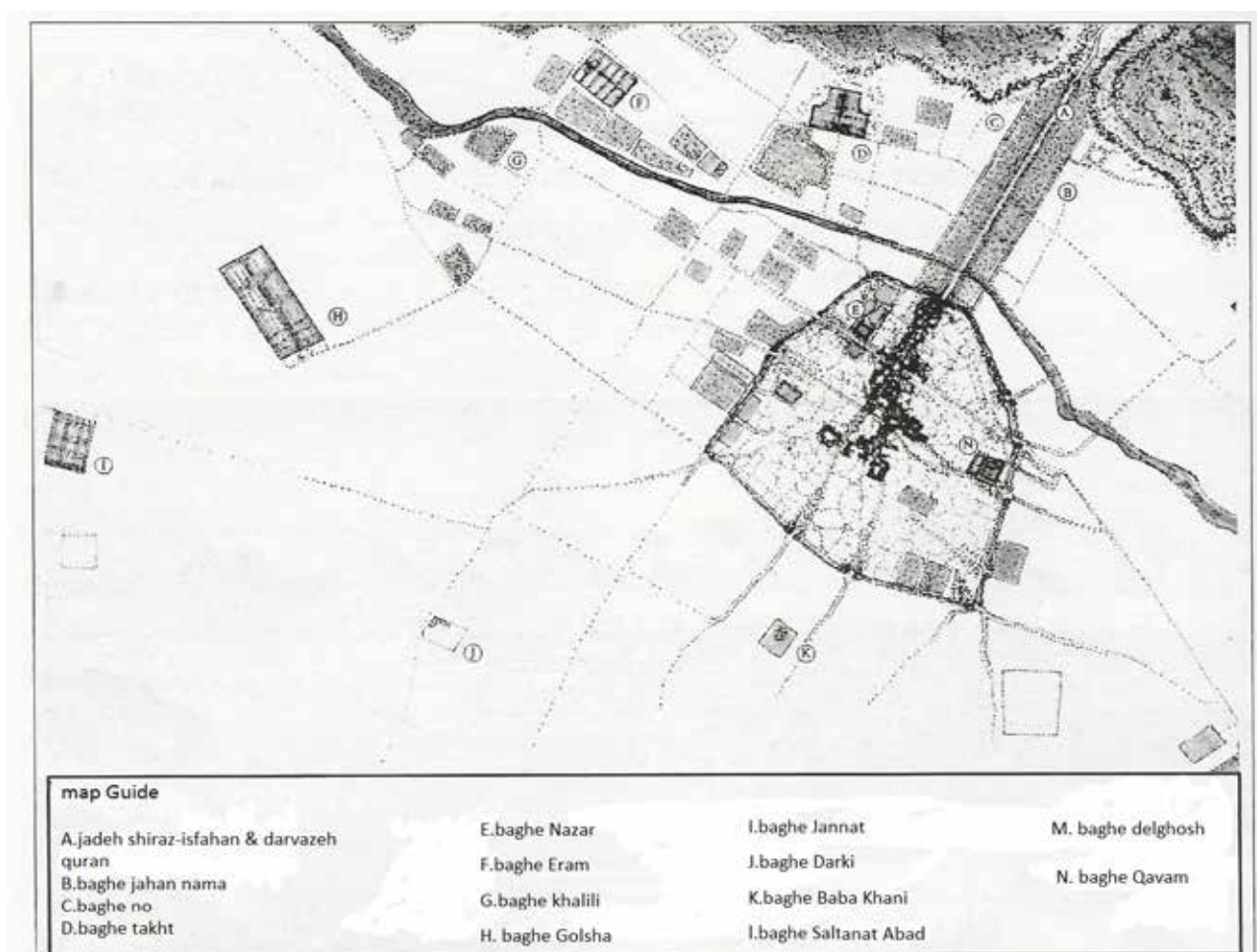


Fig. 1. Some of the gardens of Shiraz. Source: Naima, 2011.

In addition, predictions have been made that water can be used if water is not obtained. The flow of water on the surface of the earth and the direction of the general slope and in accordance with the structure of the geometric structure, creates a linear form of water in the garden. The flow of water in the plots is not permanent, but by irrigation of each plot and drowning it, the water flows into the next. In fact, in our country, the irrigation system of plots of trees is drowned by water and not flowing. But the water in the central axis of the trees is always flowing through the trees, and it always crosses and displays. Water storage in large pools for use in low-water seasons and large water levels reveals water at reflective surfaces. Water is also displayed on a horizontal or horizontal plane in ditches with a low depth and with different shapes, especially square, rectangular, polygonal and 12-sided. In gardens based on steep terrain, which is usually terraced, water in its path on the main axis flooding on level surfaces of the garden and falling from the platform to the other platform make a beautiful view of the small waterfalls which usually displays the vertical shape of the water. Form shapes, linear, surface and volumetric water have a detailed response to the various needs of the water in the Iranian garden, due to its various functions. The water system is responsive to both the need for waterborne irrigation and the water sink that fits any tree and plant, and also since the flow of water in the city starts from the gardens, it has the task of transferring clean water (Shahcheraghi, 2010).

Shiraz Gardens

Shiraz gardens have never been for nothing. In gardens, in each section, trees were planted with special functions. As mentioned, some of the trees were for the shadows that they used to say, like cedar, pine, elm, maple, orchid. Of the fruit trees, most importantly, was the berry tree. Other fruit trees are apples, pears, plums, alos, peach trees and shaflo. Because the peach tree has a limited life, in between them they planted other fruit trees. The fig tree was made more in

the corners of the garden. The grape tree was laid in various species, such as scaffolding or cavalry, walking grape and sleeping grape. Each of these trees had a special place. Next to the streets, they planted cedar, pine and shamshad trees. In the clayey soils, where the soil does not grow well, trees such as Tabriz, Ashberry, Kabudar and Sepidar were planted. Cover the pool with elm trees, maple, willow, shrine beads and purple, and was placed next to the streets of Berry. Plots on the two sides of the garden were more of four planted with fruit trees. In the far flats and around the garden, they made grape trees. The girders and corners of the street were planted in the walls of the fig tree and cedar. Among the plots for spray water prevention, they planted epest, as mentioned, this plant is a kind of alfalfa. But the epest does not kill the bee but it kills harmful insects. When they harvest the epest for wintertime feeds, they also create a view of a green and beautiful lawn. Inside, tall bushes that give the viewer a green and beautiful lawn. In the midst of it, the bushes that covered the garden's landscape were not planted. The flowers also had a special role in the gardens, but not all of its species was used. Several flowers were planted for their benefits. Like red rose or mohhamadi rose flowers for a rosewater that also has medicinal properties. Flames, yellow flowers, doves flowers, or Mashkajah, which is a small flower, with an aromatic flavor (Pirnia, 2008).

The gardens of the past Shiraz can be divided into four categories:

A. Shiraz's old gardens which is gone:

1. atabak garden,
2. eghbal abad garden,
3. baliuz garden,
4. behjat abad garden,
5. bald king garden,
6. podonak garden
7. habib abad garden
8. kholdebarin garden,
9. khndagh garden,
10. rashk garden,
11. zaferani garden
12. zaki khani garden.
13. baghshah garden.
14. sobooh abad garden.
15. west sobooh abad garden.
16. toghi garden.
17. azodoldole garden.
18. ferdows garden.
19. ghatlogh garden.
20. ghale shahzade bigom garden.
21. keshmiri garden.

that the water of this aqueduct appeared in a place outside the city's grave on the earth, and from that point onwards appeared as a stream of stream He arrived and entered the palace of the city of Al-Dawlah Deylami. Some people who have seen the Qajar era in Shiraz have spoken of these rivers; Ibn Battuta, in the eighth century AD, wrote in his book: Five rivers pass through the city. One of them is the famous River Rokn Abad, which has fresh and delicious water. During the Safavid era, Tavernai said about Shiraz: In Shiraz, there are two well-developed markets, in the middle of which there is a stream of water flowing. The waqfs of the Safavid period of 1979 show that the Qanat water was invented in this city during that period. During the period of Zandi, the texts, including the history of the giti goshay, testify to Karim Khan's interest in Rokn Abad water, and it seems that in This brief course of water flows into tributaries to the citadel and associated buildings. forsat Shirazi the writer of the works of Ajam and Hassan Fasaee, the author of the Fars-language, is also mentioned the rivers during the Qajar period in Shiraz. Visitors to Shiraz during the Qajar period, all agreed on the passage of three streams of Roknabad water, water Qavami and water from the city. Zarkoub Shirazi, in the eighth century, explains the benefits of Rokn Abad water: Know that the sum of the traits and properties that the honors and the master of the culture of medicine have endorsed in virtue of water virtue, the sentence is found in Rokn Abad water And among the six qualities that are valid in the kolliat book and other books, this water is present; First, was away from the source. Second, it flows into the Memerry. Third, the one who climbs the rock and the earth. Fourth, animals are not found in this water of any sex. Fifth, on its side is not a fig tree, gourd and popcorn, and anything that changes the temper of water. Sixth, it is flowing from the side of ala sabil to asfal. All of this evidence suggests that the main water supply system in Shiraz was composed of streams or tables Their waters were from outside the city and flowed through the city. The topographic map of Shiraz shows that the

historical city of Shiraz is located on the flat ground and the largest differences The height at the highest and the lowest point of the city does not exceed 15 meters. But if the slope is used properly, it is enough for the flow of water on the ground (Najar najafi, 2013).

In Fars, close to Eghlid in the river is a spring of water, where people who are capable of coming from Shiraz and taking it from the water. They also get water from the tiny paniroon, which has little water. Roknabad water is good enough, but it is low. This water has been highly respected by Shiraz, especially Hafiz, and has done something like, for example, an Indian or Pakistani poet seats beside the river and get jealous of that why they cant have this water in their country. In Shiraz in the past, water was brought from Dorod zan in Fars. Next to the Khaju Mills, there was a passage that led to water from the slopes of the mountain and goes to Shiraz city (Pinia, 2008).

Water supply to the garden

Except for the problem of accessing water from distant places, bringing this water to all places of the garden was another matter. Which gardener builders have solved well. As the water of the aqueduct was spread out in waters, it was found bypassing the original atmosphere, such as the main gardens of the gardens. This irrigation method has certainly influenced garden design. According to another, the design of the garden was based on the passage of water and the separation of the gardens and the main lines and substrings. For example, in the "haft Tan" Gardens of Shiraz, the main line is in the garden, with gardens and plots on both sides of it and two other ways along the surrounding walls. In Golshan Garden and Eram Garden in the same city, the main line is one and the parallel lines are either parallel or perpendicular to it. In the Delgosha Garden, the main line is in the middle of it and has parallels with it. Water supply network in gardens worked in several ways. Sometimes water was obtained from a caries and watered all the garden, such as the Garden of Fin or Delgosha, or the Garden of Dolatabad Yazd or Ghadamgah Neyshabur.

the second axis, from the government garden Safavid and the Shah's garden has led to the gate of the Shah in the west of the city.

Tavernie says: The city gate leads to a very beautiful street with a width of 50 feet. On the two sides of this street are gardens, each with a magnificent entrance and a door with a half-dome arch. On top of each door, they have made a dome. The gates of the garden are located on opposite sides, and their symbolic appearance has created an interesting situation. In the middle of this street, there is a big pool whose edges are made of marble and is always full of water. The width of this pond is as wide as the street, and to get it from both sides, the gardens of the two sides are as large as thirty feet.

Another place was said: in the Safavid period, the starting point of this axis was the government garden located in the Shahi Square And led to the king's garden outside the city. Gardens and courtiers around this axis completed it. From Shiraz, on the northwest, there is a large street and leads to a garden called the Shah Garden. On the eve of the garden there is a beautiful mansion and on the left side of the mansion there is a large lake. From this garden to the mountain is a plain, which is two feet wide and one foot wide, all this vineyard plain. And he belonged to the owner of the land, whoever stretched out his vineyard four-wheeled.

During the Zandieh era, Karim Khan Zand completes the northern city garden. Instead of the Safavid Chaharbagh Street, the street that had been in the middle of it, had many trees and surrounded it with many ornamental gardens. Karim Khan Zand for water supply to the gardens of this axis, Roknabad aqueduct water from the north of the city by The underground gardens and aquatic structures were transferred to this axis, which appeared in the excavations of the contemporary era.

Water Supply Shiraz

The most important water supply sources in Shiraz have long been the Qanats. The water that was flowing through the basements was spread

over the plains and mountains to the nearby city of Qanat, The manifestation of these aqueducts was usually outside the city. From then on, these waters were distributed in the form of creek and water tables inside the city and benefited the whole city. The topography of the historic city of Shiraz and the mountains around it has created closed spaces, which only travel outside the narrow gates and passageways. The height of this area is gradually reduced from the west to the east and at least relative to the Maharlu Lake. The water from the rain and the melting of the snow around the ramp into two parts: The water flowing in or flowing through the river.

And the water that falls on the earth. The water flowing at the level of the seasonal river is not potable due to its low and temporary nature. But the water flowing on the shore of the Shiraz earth and its surroundings flows into underground water in the layer of impermeable clay layers. On the one hand, this water, due to pressure in different places, causes springs, qanats and broms to be made, and on the other hand, to The slope of the plain, in the eastern and southeastern part of the eastern area, appears in shallow wells and occasionally in surface moisture. Most of the city's aqueducts feed on aquifers, which is rich in the northern and northwestern foothills. Due to the high level of impermeable layer of earth and therefore the high level of groundwater aquifers, the manifestation of more water The north and northwest qanats were before reaching the city limits, and since then the waters of these aqueducts were streamed and distributed. The low coefficient of permeability and, at the same time, the low slope of the city made it possible to always eliminate surface water through Tracks are an important issue for preventing waterlogging.

At the beginning of the study, there was a study of the aqueducts where their water entered the city and how this water was flowing in the city. The oldest information about this is from Ahmad ibn Abi Yaqoub in the 3rd century AD. Subsequently, it is mentioned during the Al-Boyah Quaternary period called Guaim. It seems

between the garden and the city. Also, this kind of layout during the Safavid period, the creation of a new city in the gardens of the old countryside and adhering to The structural link between the gardens and the city, including in Shiraz, is during the rule of Allah Verdi Khan, seen in Tabas as well as in Kashan. This layout model has been fully respected in the gardens of the entirely new Shah Abbas Safavi dynasty, including Ashraf, Bahar Shahin and Farah Abad Sari (shahcheraghi, 2010).

The history of shiraz

Shiraz has given its urban life the presence of gardens, either garden-centered or gardens of government (arab_solghar:2015).

In most cities and villages of Iran there are beautiful and valuable gardens, but a few of them are more ancient. It has two to three centuries and many ancient trees and old buildings. Shiraz may have the largest number of these gardens, which is remarkable for its long life and importance. Basically, the soil of Shiraz has a lot of talents to grow the garden and grow the tree, hence the construction of the garden in this city. The ease is possible, and the countless ancient karizas provide the necessary water. The slopes of the mountains of the north and the east and all over the plain surrounding Shiraz have always been covered with gardens and grasslands and fields. The people of the Shiraz call the lush plains around Shiraz deserts.

The word desert, meaning “desert” and “grass”, in the Shirazi dialect means green and green, and stands in front of the garden. In the past few centuries, the Shiraz gardens almost continuously flowed from the slopes of Sa'diyya and Tang-e-ab Khan mountains Northeast of the city to Qasr al-Dasht and the Bardi Mosque, which is in the east, and is still frequent in the city. Houses and yards have gardens and gardens (naeima, 2011). The location of urban and outskirts of old Shiraz gardens was subordinated to two main components: One is the slope of land and water resources, which is inevitable; and the other structural is axes of the city, which

is a government Shiraz was the symbol of its authority and sovereignty in the city. The developmental operations of the rulers of each era have been carried out to stabilize their rule in three main stages: Create water source (Which follows the slope of the earth), Create a city center (Palace, mosque, garden, bazaar) And the establishment of government constituencies for Urban spatial coherence. Four cross-sections in the four periods of government mentioned the government's spheres in the west of the city to the religious spaces on the east. The direction of these axes is parallel to Azodis channel which is In Azodoldole deilami time, he built a set of government buildings for water supply. In each era, a government-dominated axis that begins with the element of the palace and the gardens, which ends with a religious element, has dominated other urban systems. The common point of these four axes, its elemental element, has been a collection of state governance, which is part of the government garden. In the Safavid period, we witness the formation of two gardens in the north and west of the city, on the one hand representing the principles of the garden. The formation of the Safavids was part of the entrance to the identity and on the other hand it was for the development of the city during the Zandyah, Qajar and Pahlavi periods. The main elements of a city's structure can be categorized hierarchically: A) Center or core B) city structure C) small kols.

The structure of the urban structure of Shiraz during the Safavid period was formed on a new axis that was located parallel to the axis (ale booye) and (atabakan fars). This axis began in the east of (school of khan) and led to the Safavid (shah circle) in the west. At this time, another axis was constructed in the form of four gardens stretching from (darvaze esfahan) to (tang alah akbar). In the Safavid era, which has been mentioned in the preceding sections of the government, two important gardens are formed in the spatial structure of Shiraz. The first axis of Tang-Allah Akbar started in the north of the city and ended in the mosque Ali ibn Hamzha;

Introduction

Looking at the modern cities of Iran, it is easy to find that the changes that have occurred in recent decades. The structure of our cities not only does not have a tradition, but also does not meet the needs of the day. Practically after the outbreak of modernism in Iran, and under the influence of modern urban planners, the structure of our traditional cities, which requires the needs of the Iranian people have been in time, completely changed, and changed in the modern form. A city without identities, irrespective of resources, non-productive, contaminated, polluting and, in a word is unsustainable. While our cities did not just have any of these problems until decades ago, they easily had a solution for each of them. For example, cities are formed and developed on the basis of water resources. Productivity has been one of the principles of our past lives. While our

cities today have no sign of this lifestyle. So, in fact, we are from a sustainable city to an unstable city.

The question now is whether the Iranian city was essentially following a particular pattern? And if there's a pattern, can we rely on those modern cities?

This article attempts to find a sample of the Iranian city by examining old Shiraz. To achieve this goal, a brief description of the garden of Iranian cities is first described. Afterwards, there are some articles about the history of Shiraz, due to the loss of many resources and distribution Shiraz waters are necessary to estimate the extent of these resources and the network. Then it was discussed about the urban water supply network and eventually turned into gardens.

Iranian city garden

The ancient faiths of Iranians have paid special attention to agriculture and gardening and praised it. As we read in Vendidad, the Third Trident, Zoroaster states to Ahuramazda: You are the Creator of the material world! The only one! Who is the fourth person to take Earth to the highest degree? Ahuramazda replies: The one who cultivates the highest amount of wheat and grows the most vegetables and plant most trees and the one who lands Drain the water and break the ground soaked and cultivated (pirnia, 2008).

In a report on his exploration in the Pasargad royal garden, Stronch suggests that Cyrus had somehow intended to build a rich garden capital. Also, according to research, it was found that during the Sassanid era, cities were also built up of gardens. In the time of the Abbasids, according to the design of the Sassanid, an infinity of the same model has been formed from Garden. Based on the researches, the garden of the city is one of the main urbanization patterns of Iran during the Safavid period Which takes a logical form And

this pattern of establishment or development of the city based on gardening can be studied in the garden of Qazvin and the garden of Isfahan (Shahcheraghi, 2010).

Garden city of safavi

“bagh mehvar” The urban architectural axis influenced by the garden is an important urban element in the Safavid cities (arab_solghar, 2015). The garden of the city of Isfahan is one of the most comprehensive experiences in the field of urban planning that has been operating in our country about 400 years ago. With this layout of the main regular structure of the new city outside of the former city through the application of Garden principles Also, the major division of the city is formed on the basis of two major axes of the quadrangle. And with only the main field of the new construction and the market of Caesarea, it is linked to the old city with sensitive but relentless interventions. Throughout the Safavid period, the development within the new city follows the order and structural relationship

Garden City, An Examination of the Old Urban Structure of Shiraz

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Abstract

In the old cities of Iran, the city's structure has been shaped by water resources. In this regard, the role of the garden in shaping the structure of the cities of Iran is important. The factor of water and green infrastructure is one of the most important components of the Iranian city. These two factors have created different and at the same time coordinated structures in Iranian cities. Urban green spaces, besides creating greenery in the city, also covered it. As a result, creating an appropriate climate among the climate is inappropriate. At the same time, these green spaces are considered to be the production factor. Small and large production units, which provided not only a metropolitan economy, but also a urban landscape. In fact, the city has been a stable city. The present study seeks to discover this relationship in Shiraz in order to achieve one of the patterns of Iranian city structure. In this exploratory study, based on field observations and library studies, the necessary data have been collected and analyzed. The results suggest a sustainable urban ecosystem that shapes the full cycle of water and plant and city. In addition to creating the right climate, it has created a beautiful and sustainable city landscape.

Keywords

Garden City, Shiraz, Urban View.