

## Natural environment of Zayande-Rood and the Safavid development of Isfahan

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Received: March 2011, Revised: February 2012, Accepted: November 2012

### Abstract

Isfahan is a historic city that has experienced several urban developments throughout its shining and glorious past. They began in Al-buyid and Seljuq periods, and continued through the Safavid urban evolution in the sixteenth century. Zayande-Rood is an important and effective natural element in the city's landscape and plan. This article reflects the conclusion of a historic study on revitalization of Zayande- Rood's riverfront. The interaction of Zayande- Rood, its nature in Isfahan plain and the city in Safavid period is the main scope of this article. Therefore, the historic changes of the natural-historic environment of the river are studied. The documents used in this study are historic texts, foreign and vernacular tourists' travelogues, and historic maps and pictures from natural – historic environment of the Zayande- Rood River. The conclusion is cognition of: I) Interaction between Zayande- Rood river & Isfahan in Safavid Era, II) Theory of the Safavid development of Isfahan in relation to the river. They provide a theoretical base for planning, conservation and development plans of the city, especially for the Zayande- Rood's natural-historic environment.

**Keywords:** Zayande- Rood river; Isfahan, Safavid era, Natural-historic environment.

### 1. Introduction

Zayande- Rood is one of the most important natural elements in Isfahan plain and has a complex relation with the city. Seventeenth century Isfahan is the the greatest Islamic capital; therefore, it accepts a development plan that is an important point in its urban history. One of the main effective potencies in planning, execution and success of the development plan is a permanent and noticeable flow of water in fertile plain of Isfahan. Considering the main role and importance of Zayande- Rood in safavid development of Isfahan, this article reflects conclusion of studies on Zayande- Rood and Isfahan in the safavid's development plan.

### 2. The City and the river in pre-safavid Isfahan

The plain and the city of Isfahan has experienced more than one thousand years of Islamic-persian urbanization. Two main eras in the pre-safavid history are: I) Integration of small cities and villages and creation of Isfahan in Al-Buyid Era, II) City

development in Seljuq Era. [1]

According to most of the historic documents, first human settlement in Isfahan plain was formed near the Zayande-Rood, "Jey". [2], [3] Isfahan in the eleventh century was two separated cities, "Yahudieh" and "Shahrestan" with a few fine villages around them; Jey being one of the best villages near Shahrestan. [4]

Shahrestan was a political center near the Zayande- Rood that had a good connection to the southern reigions of Iran via the historic bridge on the river.

In the eleventh century, the main architectures on the north riverfront were only grinder buildings and some elegant palaces near the city. Isfahan in the twelveth century had three important aspects in relation with the nature of Zayande-Rood:

I. Network of fresh water in the city,

II. The finest and the most civilized Persian city in connection with the surrounding nature, [5]

III. Existence of four great gardens in relation to the city. [3]

### 3. The city and the river in Safavid's Isfahan

Isfahan grew in the seventeenth century, because it had become the capital of the Safavid Empire. Moreover, because of the political and economic activities directed by Shah-Abbas, the population grew quickly through immigration. The agriculture on the plain of Isfahan was intensified in order to

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support this population and the imperial system. Without an efficient distribution of the Zayande-Rood's water, the agricultural system on which the capital depended on would have failed. The growth of Isfahan required organization and investment, so some decisions were planned and implemented:

- 105 streams (Madi) were flowing from the river in the city and the plain, [6]
- Twelve bridges were constructed on Zayande- Rood. Some of them acted both as a bridge and a dam. [6]
- Three soil dams were built below the last bridge on the river for raising the water level to irrigate the land on either side. [7]
- An intricate system of water sharing which supplied all the villages near the river. A form of this system has survived through the signature of Shaikh Bahai.
- An attempt to increase the flow of Zayande-Rood River by building a tunnel and transferring some of the Karun River's water to the Zayande- Rood River. [8]

Isfahan, the new capital of the Safavid Empire, adopted a new master development plan in the seventeenth century. In this development, the city grew all the way to the river, passed it and contributed to the Zayande-Rood River in forming and making the new urban spaces.

The main and the most important aspects of this urban development, through studying the historic documents, are:

#### A) City Scope

"existence of gardens in the city, high minarets and domes, flowing of the Zayande-Rood's, several streams flowing from river into the streets and alleys, different urban spaces and, finally, to the houses, great amount of water in the city and the plain, existence of many gardens all around the city" are the phrases which describe the city scope in the Safavid Era. [9], [10], [8], [11]

#### B) The main spatial elements of the development plan

Old city of Isfahan was developed in the following zones:

I. Chahar-Bagh Street as the main axis of the city development,

II. Series of royal gardens on both sides of Chahar-Bagh Street,

III. Jolfa Bridge (Si-o-se-pol), Khaju Bridge,

IV. Hezar-Jerib Garden,

V. New urban districts in relation to the river: Abas-Abad, Jolfa, Gabr-Abad, Shams-Abad, Khaju, Sheikh-Yusof on both sides of the river,

VI. Farah-Abad Garden,

VII. Chahar-Bagh-Sadri Street and Gardens,

VIII. Saadat-Abad Gardens. [9], [12], [10], [8], [13]

#### C) Chahar-Bagh Street and its gardens

Outstanding aspects of this street and its royal gardens are as follows:

- A common walk-way across the river, which stretches from the king's palace all the way to the Softe Mountain, open to the public, [9]
- Water flowing on both sides and in the centre, with pools, waterfalls, fountains, [12], [8]
- Seven pools along the street leading to the river, [8]



Fig. 1 View of a part of Chahar-Bagh Street in 1870 [15]

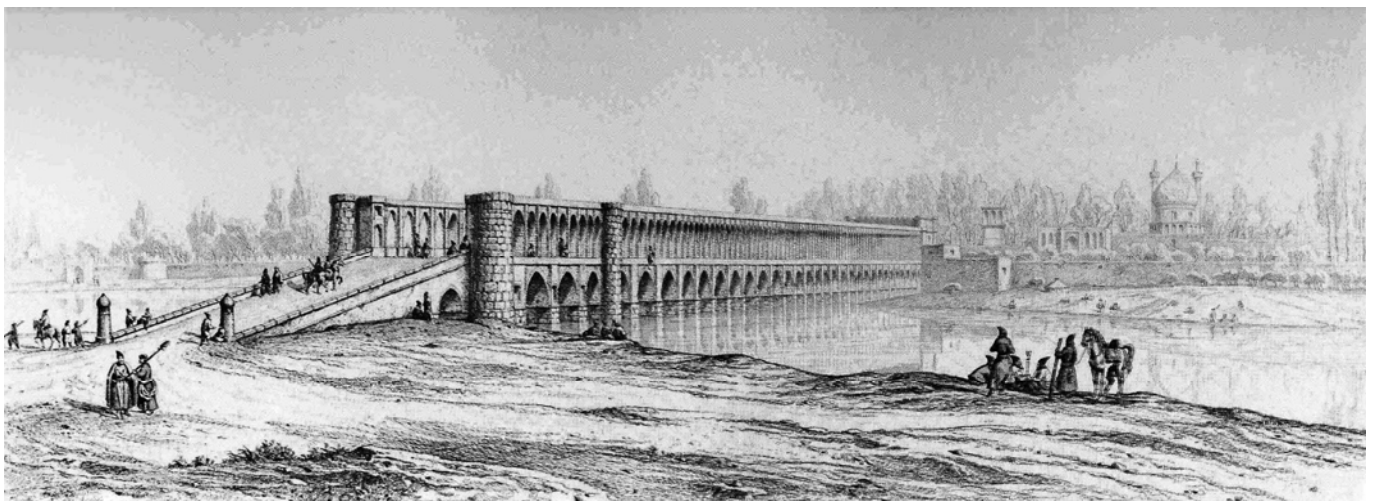


Fig. 2 Jolfa Bridge in the Seventeenth Century [16]

- Tall sycamore trees on both side, [9], [14], [13]
- Vast Persiaan Gardens and palaces on both sides with transparent walls, an entrance building, a central hall, long and regular lines of trees, open to the public, [12], [10], [8], [14]
- Existence of grand buildings, royal gardens, great urban spaces, and royal palaces in the close vicinity of the street.

*D) Jolfa Bridge (Si-o-se-pol), Khaju Bridge,*

These two bridges, which currently are in existence, are the extensions of two great axis of the Safavid development plan over the Zayande-Rood River. Their common qualities are:

- Different passage ways installed on the bridge for providing access to the river's surrounding nature,
- Creating spaces on the bridge for people to view the surrounding riverscapes,
- Natural environment of these bridges was a place for different celebrations associated with the nature, such as "Aab-Pashan". [9], [10], [8]

*E) Hezar-Jerib Garden*

The southern end of Chahar-Bagh axis was a vast royal regular garden. Zayande-Rood's water was used to supply their water needs, with some pools, streams, waterfalls and fountains. It, also, was a centre for growing special trees and scarce fruit. [9], [8]

*F) New urban districts*

As the population of the city grew, some new districts were planned in the area south of the Naghsh-e-Jahan Square. These six districts were on the riverfront. They were built for special royal purposes such as,

- Abas-Abad for king Abas'es relatives who immigrated from Tabriz resided on northern riverfront next to Chahar-Bagh Street, [8]

- Jolfa for the Christians who were moved to Isfahan by king Abas from Jolfa, a city on Aras River's riverfront. They were housed on the southern riverfront next to Chahar-Bagh Street, [10]

- Gabr-Abad for Zoroastrians; they resided on the southern riverfront between Jolfa and Khaju bridges,

- Shams-Abad, Khaju and Sheikh-Yusof districts on northern riverfront,

Some common natural features are as follows:

- Almost all alleys had a stream which flowed from the river and two lines of tall sycamore trees,
- The finest and the greatest buildings were located on the riverfront. [8], [10]

*G) Chahar-Bagh Sadri Street*

Chahar-Bagh Sadri Street was another street near Chahar-Bagh which was planned and built during the city development. It stretched all the way to the river and passed it. [17]

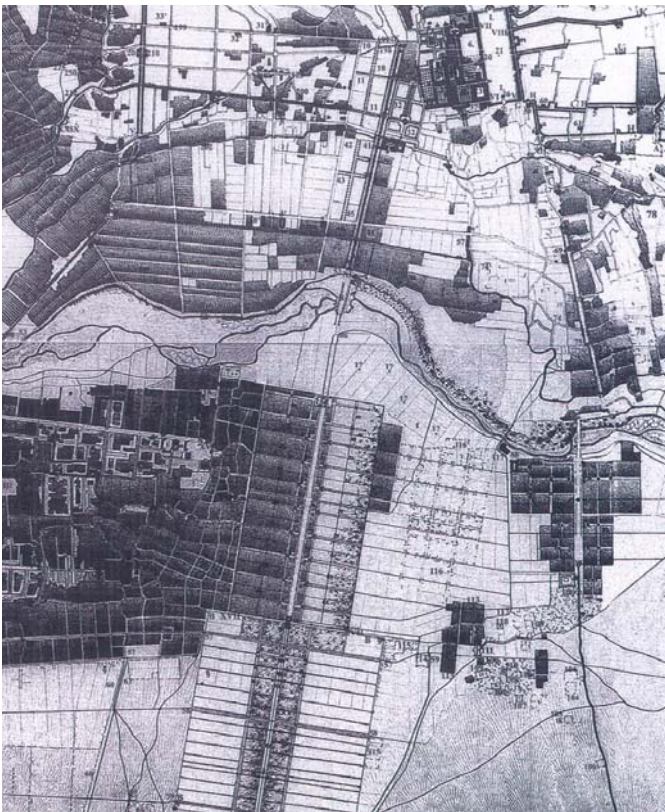
*H) Saadat-Abad, Farah-Abad Gardens*

Saadat-Abad was a complex of gardens and royal buildings built on both sides of the river. It was located near the Khaju Bridge, where the river expands and takes the form of a lake. Zayande-Rood River passed through it and a bridge connected the two parts. Thus, it was a good place for big royal celebrations with water and nature theme. [8], [14], [13]

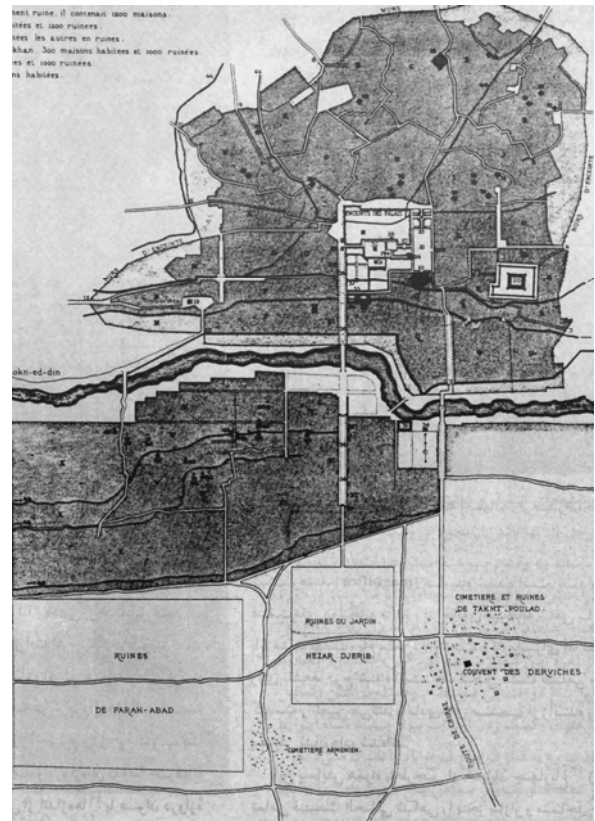
Farah-Abad was a complex of gardens and palaces in south of Jolfa district. It was the most important countryside palace of the Safavid kings. [18]



**Fig. 3** Khaju Bridge and a part of Saadat-Abad Garden in the Seventeenth Century [16]



**Fig. 4** Map of Safavid's Isfahan, drawn by Cherikov in the Eighteenth Century. It clearly shows the structure of the development and its parts in connection to the river. [19]



**Fig. 5** Map of Isfahan, drawn by Kempfer in the Seventeenth Century, showing the new urban districts, Hezar-Jerib and Farah-Abad Gardens, historic bridges, Chahar-Bagh axis and the old Seljuqid's Isfahan.

#### 4. Zayande-Rood River's flow and its surrounding natural environment

Zayande-Rood was a great natural element in Isfahan plain that supported the Safavid's city development plan. The main achievements of the planning depended on the river and its nature. Therefore, the river in the development plan is not only a natural-supporting system but also a fine architectural system in the city and its spaces. All the historic documents from the Safavid Era and the tourists' memoirs place emphasis on the planned presence of natural elements in the city.

The major features of this presence are as follows:

- One of the main features of the historic city was the river and the streams which branched out of it. [9]
- Water was enough to flow in all alleys connecting to the Chahar-Bagh Street, [12]
- The complex management system of water contribution by the streams,
- Connecting the north and the south urban riverfront via four dam-bridges,
- Supplying water from the river to every palace and house in the city,
- Most of the streets contain, at least, one line of trees and a stream.
- The city was surrounded by agricultural lands that were irrigated by the river and its streams. [10], [8], [11], [14], [13]

#### 5. Conclusion

Selection of the historic city of Isfahan as the capital of the Safavid Empire prepared it for a planned royal development. With respect to the structure of the old city, the city grew all the way to the river which contributed in turn to the new structure of the city.

The main physical zones of the plan are as follows:

- Chahar-Bagh as the first axis of development,
- Zayande-Rood river as the second axis of the development,
- New urban districts,
- Urban and suburban royal gardens and palaces,
- Urban and suburban water distribution network.

Theory of the Safavid development of Isfahan in relation to the city and the river is as follows:

- I. Applying different natural elements and their images in urban spaces,
- II. Development based on nature,
- III. Activating nature's potentials in the city with a respectful approach to the nature,
- IV. Applying some natural elements as well as streams in the architectural contexts, thus changing the architectural natural elements,
- V. Taking the nature and the river to the scityscape and the people's image of the city,
- VI. Changing the old city, far from the river, to a riverain city, connected and related to it.

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