

SILK ROAD AND ISFAHAN'S GARDEN CITY SUSTAINABILITY DURING SAFAVID PERIOD

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1. Introduction

Historians credit the Safavids with being the first rulers to lay a foundation for a national consciousness in Iran, a land populated by diverse ethnic and linguistic groups. They established Shiite Islam as the state religion, promoted Sufism, and instituted state capitalism to support wide-ranging political and social goals. Commerce was so important to the Safavid polity that its most powerful dynast, Shah Abbas I (reign 1588-1629), effectively re-routed the Silk Road through Isfahan so that his empire would enjoy a trading monopoly [11]. The Silk Roads' were an interconnected web of routes linking some ancient societies. The silk roads' which are defined as a network of land and sea paths built with commercial purposes in Asia and connected East Asia to the West and South Asia as well as the northern Africa and East Europe, resembling a chain of countries [5]. It contributed to the development of many of the world's great civilizations and enabled the exchange of technologies and ideas that reshaped the known world.

The area of the Silk Roads encompasses a wide variety of topographic, hydrographic, climatic and ecological regions, including the physical and climatic zones of mountain, steppe, grasslands, deserts, river valleys and deltas. These geo-ecological zones lay at the core of some of the most important Silk Roads interactions, and their significance is reflected in the naming of sections of the route; such as the grass route, the steppe route, and the oasis route. These factors had a significant impact upon the nature of the routes: including the specific choice of routes (mountain passes, desert margins, river crossings, etc.), the seasonality of routes, and the ability to sustain major population centers along the routes. The "trans-ecological" nature of the routes [6] may have also been of major significance, providing an impetus for the movement of goods and materials between different zones. Silk Roads empires and societies adapted to the ecological context of regions, but they also exploited the contrasts between them to develop long-distance exchanges.

The art of garden designs and landscapes has always been favored by the residents living near the silk path. In those eras, being surrounded by green mass gardens, most of the Iranian cities were regarded as convenient havens for the residents and cities such as Isfahan, Shiraz, Qazvin, and centuries earlier, cities of Neyshabur, Balkh, Herat, Samarqand, and Bactria were famous for their beauty, liveliness, delicacy, and numerous marvelous gardens in those days [10]. This paper will focus on Isfahan city.

By the seventeenth century, Isfahan attracted not only European merchants but also missionaries and mercenaries, as it became a religiously tolerant hub of mercantile and diplomatic activity. The city fabric is significant as an embodiment of this religious, commercial, and political unity, and was exceptional in the early modern Islamic world [11].

Isfahan developed on this time according garden city model which has explained in this paper.

2. Abstract

In general, Iran has an arid climate which characterized by long, hot, dry summers and short, cool winters. The climate is influenced by Iran's location between the subtropical aridity of the Arabian Desert areas and the subtropical humidity of the eastern Mediterranean area. Therefore, sunlight and its heating effects were important factors of Iranian architecture and gardens structural design. Textures and shapes were selected by architects to harness the light and supply a shadow in the summer.

Water is very important in this climate, both in the architectural design and longevity of gardens. In addition to water, the plants in Iran had been particularly significant. In the ancient civilisations of Iran, plants had a special position. Life-giving, youthfulness, productivity and immortality have been some of the supernatural powers possessed by trees that made them sacred to ancient Iranian people. Therefore garden has been invaluable to Iranians.

Form the ancient eras, the form and appearance of Iranian gardens has always been in harmony with the climate, environment and the amount of water available to them. The phenomenon of garden designs has an old history in Iran and the paintings of springs and forests on the pottery found in the city of Susa along with other similar patterns could indicate the importance of gardens in the lives of people who were used to deserts and sunshine in the ancient region of Iran. In fact, most of the Persian gardens had a sustainable design [3].

The Persian garden style has been developed during the centuries. Persian garden's design system includes three main orders which among them water is the most important. However, the climate conditions in more sections of Iran has always been difficult to provide water. This problem and its solutions have been explained in the first section of this paper with emphasizing on Persian garden's types (Table 1) as well as garden city.

Throughout much of the sixteenth century, Iran was troubled by turbulence and instability caused by internal political upheavals and external threats, especially the military advances of the Ottoman Empire in the west and of Uzbekistan in the Syr-Oxus basin in the east . The reign of Shah Abbas I (1587-1629) marked the apogee of the Safavid era and a unique period in its dynastic history. Born in 1571, Shah Abbas I (sometimes known as "the Great") was an overpowering individual: energetic, curious, courageous, impetuous, and imperious [4]. Unlike his predecessors, this Shah was not just an aristocrat, but an autocrat. He presided in Isfahan, after transferring the capital there from Qazvin in 1597, and directed the affairs of a highly centralized government. His monarchy resulted in "enlightened despotism" which manifested in politics, the national economy, international trade, and even art, thus reviving the ancient grandeur and glory of his country [1].

The Safavids' access to foreign markets was confined because Uzbeks controlled the trading routes (the Silk Road) to the east, the Portuguese monopolized those in the south, and the Turks occupied the silk-producing provinces in the north-west. Realizing that a strong economic base was a prerequisite for creating a stable and powerful state, and supporting an infantry and artillery armed with muskets and cannon [9], Shah Abbas I placed an emphasis on the expansion of Iranian trade.

Shah Abbas I planned the beautiful city of Isfahan and its architecture as propaganda for his government and for the promotion of national and international trade. The capital was admired by European travelers as one of the great cities of the world and to the contemporary Persian poets, it was Nisf-i Jahan (Half the World), a metropolis of monuments and gardens, political magnificence and architectural beauty [4]. According to more references, Safavid era was the golden age for Persian Garden and some of the best gardens were constructed in Isfahan. Gardens have played a significant role in the beauty of this city. Therefore this paper will explain the Isfahan Garden City design process as the Safavid Dynasty Capital.

The city has been designed and planning for enhancing citizens' health and wellbeing. Climate adaptation and water supply problems have been solved in Isfahan's urban design (Fig. 1). The image of the town altered by water channels that ran all around the city and expansion of gardens as major physical composer elements along Charbagh Street and other new city regions. The subjective image of new city depicts an ideal figure of Heaven and integrated it with the beauty of gardens and nature. This research discuss the methods which Safavid's had applied for attaining sustainable water supply and proper shade space to produce urban vitality in hot and dry climate of Isfahan.

Persian garden types according form and function	Garden City	Garden city is 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 strength procedure of city planning.
	Bagh Kooshk(Pavilion Garden)	
	Bagh Hayat(Court Garden)	
	Bagh Maghbereh(Tomb Garden)	
	Bagh dar Bagh(Garden inside Garden)	
	Bagh Chador(Tent Garden)	
	Bagh Ghaleh(Castle Garden)	
	Bagh Tajir(Garden with Semitransparent wall)	
	Bagh Takht(terrace garden)	
	Bagh-e Vahsh(Zoological Garden- Such as Tavoos khaneh va Shir Khaneh in Isfahan)	
	Bagh-e Shekar(Hunting Garden)	
	Bagh-e Aab(Water Garden)	
	Bagh-e Melli(National Garden)	
	Bagh Bisheh(Forest Garden)	
	Bagh-e Giah shenasi(Botanic Garden)	

Table 1: Persian garden types.

Finally, this paper introduces the foundations of urban design and the city axis features to indicate the inventions and adaptation to climate. The result of the study shows that Isfahan's urban design principles has been used in accordance with climate conditions during Safavid period, created a state of longevity in the design of the city and its environment. Most of new buildings have been constructed inside gardens as pavilion and changed to extrovert model (Fig. 2). Some buildings formed according introvert model with big courtyard as garden. Therefore, the gardens provide thermal comfort as the new technique. This innovation was the new solution in urban design and architecture to be adapted to the hot and dry climate.

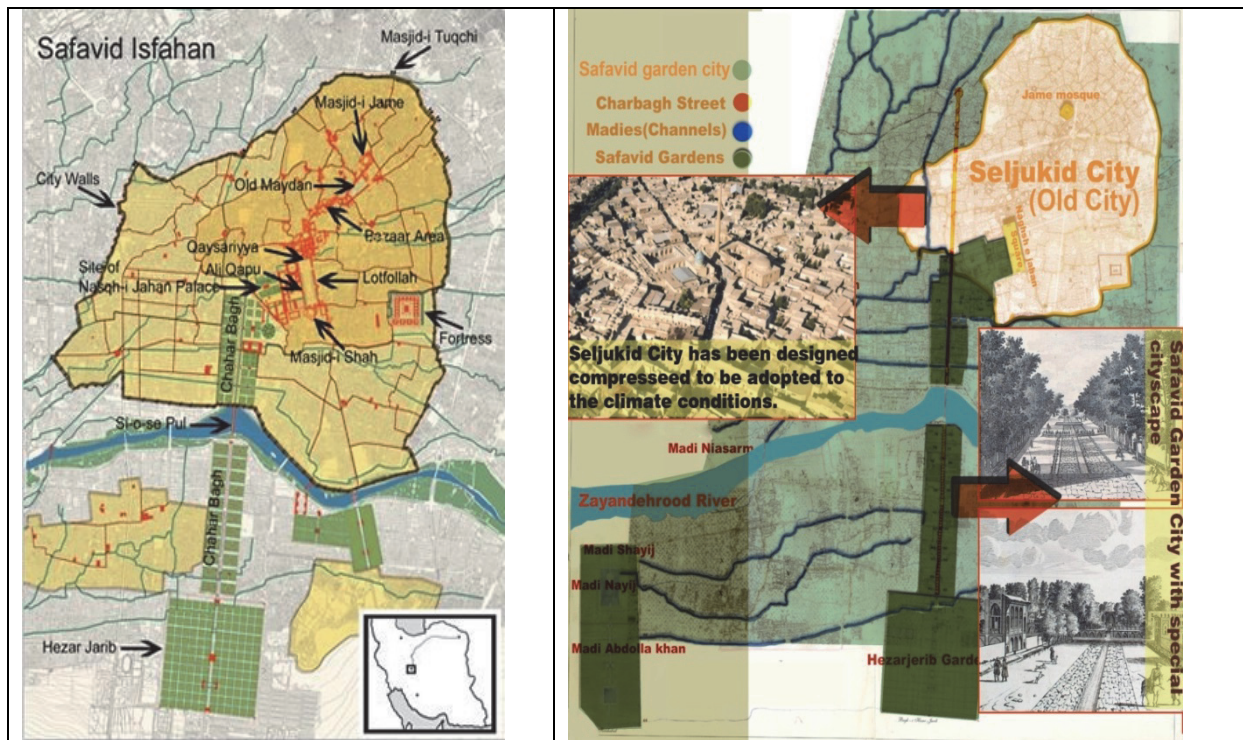


Figure 1: Isfahan Seljukid (old) city and its development as garden city during Safavid period. In order to create long-lasting green cityscapes in garden city, the Safavids developed and used dug canals (madi) which branched off the river. The old and new sections of city were different in cityscape. The trees have been the main elements of cityscape in Safavid garden city [6].

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