

The Role of Water in Designing and Shaping of Iranian Gardens

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Abstract: Water in all religions, beliefs and views is sacred. Without water, life cannot be imagined anywhere in the world. Human combines water and different landscapes with house and the environment. So, water in the world's architecture history is considered as an inseparable factor. Endless capacities and role of water is studied in designing the environment.

Keywords: Water, landscapes, water Gardens, environment, architecture

INTRODUCTION

The belief that the four elements of water, wind (air), earth and fire as the world's building elements are traditionally among the world's ancient civilizations such as ancient Iran and Greece.

Life is depending on the water, central factor of life in Iran. Therefore, this element is the symbol of life and hope. Before the advent of Islam in Iran, architecture along the water and into the nature without distorting it makes its presence announced. Temple (Temple of Anahita) and fire-temples along the water and respect to the water were formed. [1, 11].

It seemed that water is a passageway to enter into another world, a pure world which body isn't able to pass it and water is imagined as a pure element in Islam religion such that architects of 8 Behesht, 40 Sotun, Fin Garden, Shazdeh Garden have helped the concepts of reflection, dance and the stagnation of water. Role and presence of water in Iran landscape gardening can be divided into two general categories:

Functional role

- Geometry
- Focus
- Hierarchy

Aesthetic role:

- Sound.
- Movement.
- Reflections

Functional role

Geometry

The presence of water is extremely helpful in making geometric divisions of garden such that the divisions which were carried out based on passing water and gardens' division and major and minor axes. For example, the water from the top branches in Fin Garden, one on the main axis and perpendicular to the main axis flows .on the left side of the major axis, two minor axes and other one is located on the right side. These four branches are connected to each other by a vertical branch and the whole garden has a checked texture.

Often in Iranian landscape gardening, pond or pool was constructed at one of main axis such that the length of pond or pool placed along the length of the garden's space[2].

Focus

In Iranian landscape gardening, water is one of element that plays an essential role in geometric classification of the garden and one of contributing factors in this classification is focus discussion which water has a leading role towards building or palace in the palace and gardens. Main axis of each garden which is considered as important elements of each garden is the location of elements such as the facade, palace, water's pond and water stream. Water movement along the main axis of the garden presents itself and gives mobility and exhilaration to the space.

Hierarchy

Type and use of water in Iranian landscape gardening causes creating a hierarchy of motion in the gardens such that in some gardens, water after passing a way in different intervals enter into the pond or pool which usually this pond or pool was constructed in front

of main palace in square or rectangle form which creating this hierarchy causes defining pause and movement space in the gardens. Because of the current flowing in a narrow waterway to induce a sense of movement, and after reaching to large or larger pond and finally the rest, it conveys a sense of pause such that we get various spatial experiences in movement way in these gardens[3, 4].

Aesthetic role:

Sound:

Sound of water has been always pleasant for the Iranian people and undoubtedly pleasant and fascinating sound of water is calming and gives everyone a sense of enthusiasm and willing to live. Constructing garden on the grounds with a slight slope causes emerging streams with its water with running was pouring down and where the ground was found between the inclined portion of the floor slope parts were decorated with stair design and the floor was covered by stone such that gentle stream of water after colliding with the rocks was throwing from one step to another faster. In fact, stepping down the flow of water is one way of showing water's flow. For example, Fin Garden in Kashan is the most beautiful song to be heard and at the movement of water by creating some fountains the presence of water has been announced and purpose of all this work is that refreshing sound of water will be emphasized.

Movement:

The presence of water has an important role in creating movement path such that in some gardens, along with the traffic, the water is in motion and has a dynamic and movement and reaches to stillness in specific locations and directs human with its flowing.

Reflection:

One of contributing factor of water is its reflecting role in terms of its visual beauty, calm and static pond's water is reflecting the images of spaces and elements in garden, its best example can be seen in Chehelsotoon building such that selection of Chehelsotoon name is because reflecting 20 columns in the pool which is located in front of the building makes it double. In fact, leading water in ponds or large pools due to its darkness and reflection has been desired[12, 13].

Basic definitions and concepts

Water features in designing environment and perspective's architecture

Generally, water is an element that gives meaning to life and his environment. Water is synonymous with life and prosperity. Without the use of water in the design, effectively creating a natural landscape, dynamic and alive is impossible.

In this context, the presence of water in the landscapes and using water element in the design and

architecture as an opportunity for designers is important. Water has unique features that make it a unique element in landscape design and with no alternative[5].

But thinking about functional, aesthetic, visual and conceptual features of water indicates that the capacity of this element of diversity, multiplicity of form and function, makes it such a unique and outstanding element. These capabilities are categorized in four functional, semantic and visual and aesthetic aspects which are discussed below.

Functional aspects of water

The fluidity, movement and dynamism, stillness, ductility, high volume, solid, flowing, vaporize, oozing, bubbling, pour, spray, tonality, reflection, mirror, diversity in being flexible and wavy[6].

Semantic-conceptual aspects of water

Its acceptance as source of life, symbol of cleanliness and purification, purity, brightness, honesty and simplicity, refinement of pollutions.

Aesthetic aspects of water

Always in combination with other functions and natural and man-made elements. Water illustrates the beauties of nature and enhances these beauties. Combining material and semantic states of water can be associated with essential elements of landscape design i.e. the point, line, surface and volume, or a combination of them.



Fig-1: The role of water in design and aesthetic of landscape

Visual aspects of water:

In the creation and development of an aspect or combination of some functional, semantic and aesthetic aspects. The visual aspect can result in a variety of landscape and endless capacity for the creation and arrangement of space and landscape design that provides meaning. Four functional, conceptual,

aesthetic and visual aspects of water can be defined as the capacity that we mention[7, 15].

Developing the components of capacity of water in design

Based on the identification and analysis of four aspects, capacities and water features in the design and architecture can be defined and formulated primarily in ten components as follows:



Fig-2: Iconic and symbolic landscape

Iconic and symbolic:

Symbolic capacities of water are important for human and are common language of different communities to express life, innocence, purity, cleansing, honesty, purity, brightness and visual nature. Water is also a symbol of change.

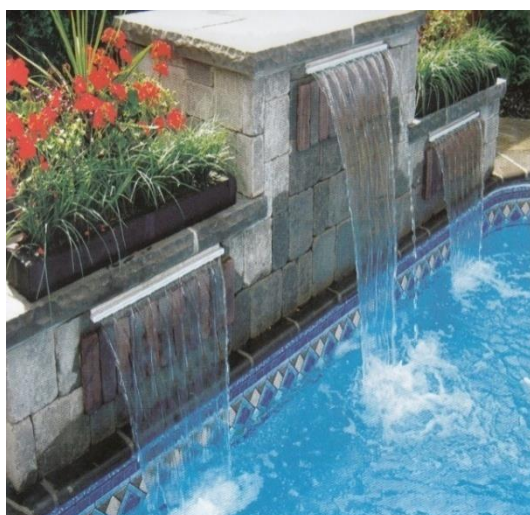


Fig-3: Fluidity and dynamism in landscape

Fluidity and dynamism:

As a fluid in comparison with the soil which is a durable and solid element, it can be imagined as dynamism and fluidity which is capable of flowing and can pass through narrow passages or expand in wide lands[8, 9].

Flow and mobility:

Water is of elements which can be capable of moving. Landscaping or structural elements in many cases are essentially static in a defined place. Architectural, landscape and environment space are considered as a temporary container for the presence and passing of water that makes the transition from one point to another point.

The flow of water through the transition process can create a wide variety of landscapes. The water in the river has a visual quality and in the foothills in another form. The water in the sea, lakes and ponds as an element of the landscape which is somewhat settled and put in a specified place is different from water which is flowing in river.

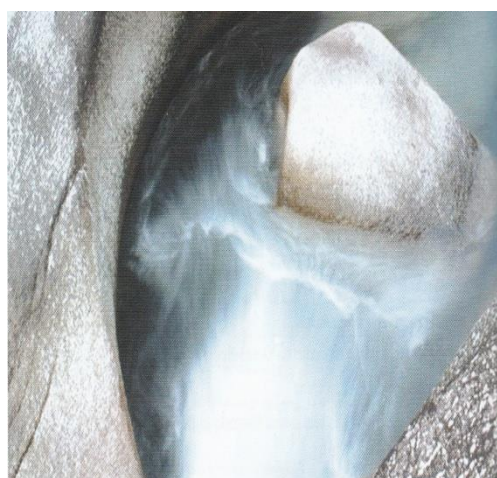


Fig-4: Flow and mobility of water

Permanent change:

These states of water always come from one form to another. Visually we see water shows the various aspects.

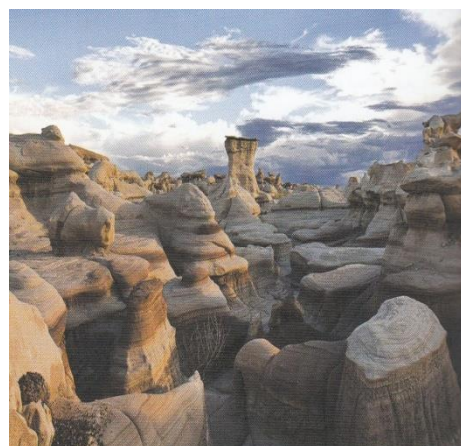


Fig-5: permanent change in landscape

In the course of its evolution based on climatic condition it can be changed from vapour or solid state. It can be appeared in snow, ice, rain, cloud and fog, or appear to be solid and ductile volumes[8, 9].

Reflection:

The water can be reflecting. It can reflect surrounding events by its surface mirror feature. This reflection ability of water in many architectural designs and landscape design is of ancient times. Its clear examples can be found in 40 Sotoon building which architect of this building has consciously used this feature and capability of pool's water and called this beautiful building as 40 Sotoon by reflecting columns in water.



Fig- 6: reflection of water



Fig-7: coloration and light of water

Coloration and high light

Transparency of water allows that desired colours whether in chemical combination of colors with water and flowing or highlighting can be created. Coloration in the day and sunlight and light at night by lighting colourful bulb or moonlight is examples of this feature of water [8, 9].

Abrasion and erosion:

Water by its fluidity feature can doother flows. Water can carry plants and light objects and move heavier objects by moving in low levels. Rivers are clear sample of this feature of water. Erosion is another

aspect of water. Water with its soft water, elegant and fluidity can wear and tear items and put them into shape. Typically, the river bottom sands and rocks that have moved by stream of water or giant rocks that have been eroded by water and holes generated in the course of time, are other examples of the ability of water.



Fig-8: Abrasion and erosion of water

Plasticity and the formation

Water due to its fluidity can be formed. This is one of the most important features. We can pour water as containerized water in containers that are intended for designing in perspective. So water can be shaped their form by putting innatural, cubic, spherical volumes.

Kinetic energy:

By using height and designing stairs and gravity, the water can be directed and controlled in a fluid form towards down. Via pressure, water can be changed to other forms by splashing and spraying.



Fig- 9: Plasticity and the formation of water

Virtual geometry and essential elements of design: Water can be changed to very thin plates or the volume or the point (drop) and changed to surface. It is other properties of water that can represent four basic elements of design: point, line, surface and volume. A spot or particles when the water is bubbling or

splashing. Sometimes a band in a river or stream and is associated with the line and can appear as surface when it's static in ponds or when the waterfalls fall to the ground and it changes to volume when is accumulated in lakes and ponds.

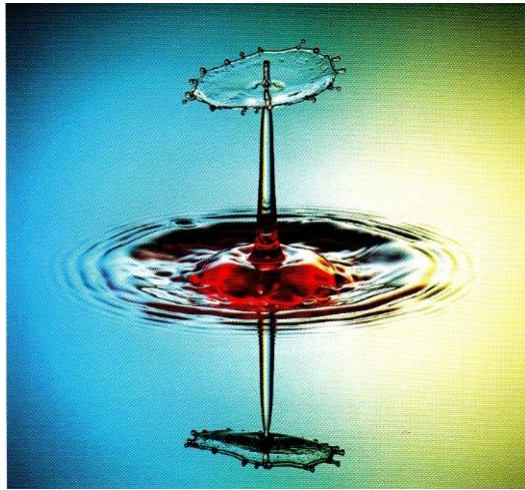


Fig-10: Kinetic energy of water

Water in the landscape is shaping the presence of all creatures including humans, animals and plants. It can be used by different age groups of people including infants, children, adolescents, young adults and seniors used without harm and risk for them.

So, the ability of using water in all situations and times and places is another prominent feature [8, 9].

The role of water in beauty of landscape of Iran gardens

Iran gardens

Most Iranian gardens are designed and constructed on the plains and relatively flat areas with a slight slope. Slope of land was used for flowing water in garden and creating a pleasant environment and created green areas in Desert dry space.

A large pond was constructed in part of the garden in artificial form or by using land's natural elements and sometimes palace was constructed in the middle of this pond which a passageway was designed to its access [10].

In cities which were located along the rivers, the designers were trying to build gardens along the river to use its landscape.

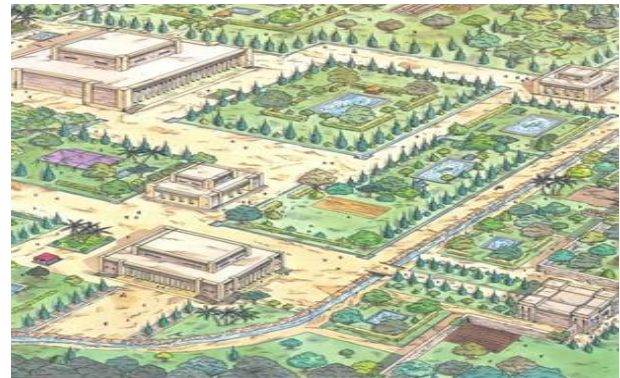


Fig-11: Pasargad Garden

Ancient Iran era:

This era is along with the Achaemenid, Parthian and Sassanian and the implications of paradise garden and city garden determine the relationship between nature and ancient Iranians. These concepts were considered as symbol of freshness and fertility, survival of city was dependent on the existence of garden and water was considered as the origin of life and this water is taken from the land and distributed in the city.

For example, in the Pasargadroyal garden using water as a design element was important and using a four garden pattern which is base of Iranian landscape gardening was established in this era. (Water in the centre of these four gardens is an important element). Paradise garden in Sasanian civilization represents the union of heaven and earth and transferring water into the garden causes refreshing and creating an order[10].

Safavid Gardens

Chehelsotoon Garden

This garden is built in Safavid era to the official reception of guests and foreign ambassadors. The main axis is the one that passes through the middle of the garden and the main entrance of garden is on the east side of the garden through middle axis. There are two wide swimming pools on eastern and western parts of the palace which western pool is smaller and is located along the main axis. In the southern part of the palace a path is defined path that leads to the penthouse and there's a pool in this path. Locating wide pool in front of the palace makes use of the properties of water reflection and the picture of palace and its columns becomes visible in the water and 20 columns will be changed to columns.



Fig-12: Chehelsotoon Garden

The main component of water capacity which is seen in Chehelsotoon garden is of reflection, among other components plasticity can be named [17].

Isfahan HashtBehshst Garden (Bolbol Garden)

This garden is the only remaining of Royal Garden complex of the four gardens built in Safavid era. Two large pools are located in the north and south of palace and the main street of the garden on the same axis. Transverse axis of the main entrance of the four luxurious garden, the pond in the forecourt has been initiated After passing through the building, probably would have led to the entry of fruit orchards in the East And by two large swimming pool built in the East and West and a great space between the western facade of the water is greater recognition. Components like being symbolic, dynamism, movement, reflection and kinetic energy can be named[16].



Fig-13: HashtBehshst Garden

KASHANFin Garden

Fin Garden was built in Safavid Shah Abbas era. Two northern-southern and eastern-westernpassageways in the heart of the garden created a bed for deployment and placement of main pond of garden. Side pathways are parallel to the main north-south axis of the garden, along with other side pathway that bypasses the four directions of gardenand completes movement network in the garden.



Fig-14: KASHAN Fin Garden

In Fin garden, by using earth gravity force in earlier years small fountains were used throughout the garden to give a specific manifestation to human's spirit. Among components of water capacity being symbolic, dynamism, flow, reflection, plasticity and kinetic energy can be named which all represent defined design in that era[14].

Tabriz Shah Goli Garden

There is a large pool at the bottom of this garden which palace of garden is located in the center of this pool and there's a connection way between palace and the out of pool. Axis of garden corresponds to the stream which moves among terraces garden with a width of 55 cm and pour down from 8 terraces to the bottom. This garden is very similar to Shiraz Takht Garden. The most obvious component of water capacity in Shah Goli Garden is reflection which is clearly seen. Among other components, being symbolic and plasticity can be named [14].

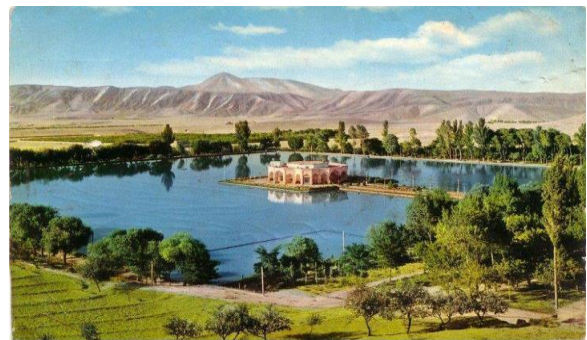
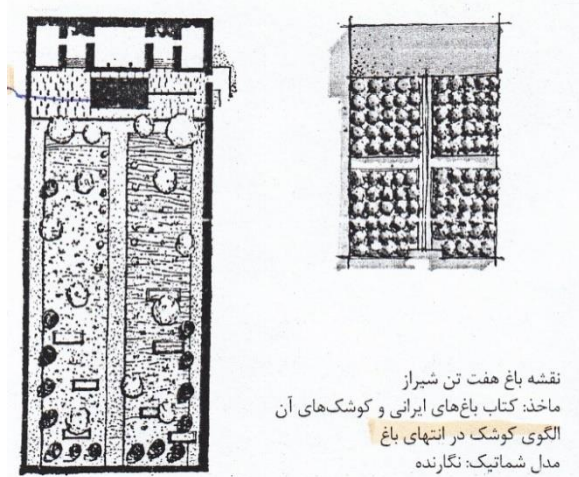


Fig-15: Tabriz Shah Goli Garden

Zand Era Gardens

Shiraz Haft tan Garden

The aforementioned garden is referred to Zand Karim khan. Its' design is such that a palace is built in width of garden and the door of its rooms opens up to the south and a pool is also built in front of the palace. In this garden, the components of being symbolic, reflectivity and plasticity can be named.



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Fig-16: Shiraz Haft tan Garden

Yazd Dolat Abad Garden

This garden was built around the year 1161 BC and is irrigated by canal's water. This garden is composed of two perpendicular rectangles. Larger rectangular is considered as the interior which main axis of garden is symmetry axis of this rectangular, smaller one associates out of garden. The main palace of garden is located in the end of axis of garden and connected to southern wall and a ventilation is installed on it. Pool across the pathway to the main palace and airflow along the water causes entering cool breeze and exiting the air.

Clearly, components such as reflection, dynamism, flow and plasticity is used efficiently in this garden[17].

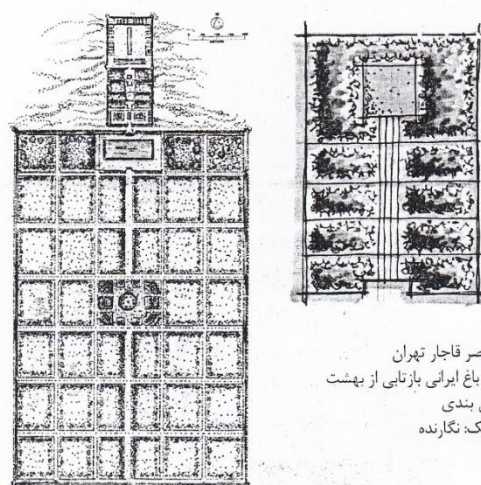


Fig-17: Yazd Dolat Abad Garden

Qajar Era Gardens

Tehran Qajar Palace

This garden is built in QajarFathAli Shah, its main building was built on top of a place which a big pool is built in front of the palace. Garden is in stair form and the pool facing it reminds Shah Goli Garden and Shiraz Takht Garden.



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Fig-18: Tehran Qajar Palace

The sound of water and the use of topography and terraces represent the correct application of dynamic, the kinetic energy and flow components. Among other ones, it is the component of being symbolic and reflection.

TabasGolshan Garden

Garden's design is implemented in a palm grove. The garden has been created in three surfaces and has surface difference. Big pool in water high level will be transferred to the next level in rivers and creates pleasant and desired climatic condition in the heart of Desert. Among components of water capacity, being symbolic, dynamism, flow, reflection and plasticity can be named[14].



Fig-19: TabasGolshan Garden

ShirazTakht Garden

This garden has been existed before Mughal Empire era and later Qajar Agha Mohammad Khan renovated this building. This garden was in seven stories and main building is built on top of this seven-story building. At the lowest level, there is a pool and the water that passes through the garden leads to it.

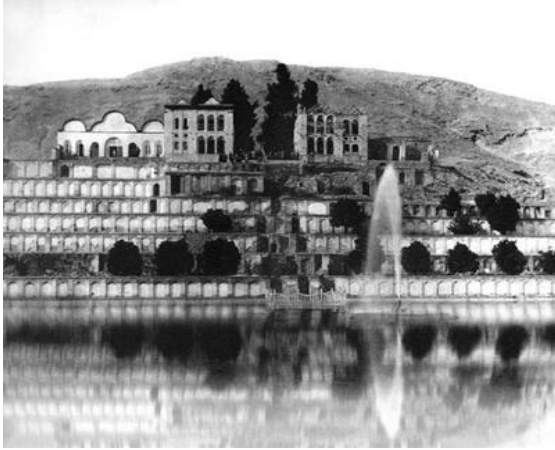


Fig-20: Shiraz Takht Garden

Using topography and land slope and terracing states that components such as kinetic energy and flow are well used and reflection component is also of great importance.

Shazdeh Mahan Garden

This garden is built in bed-garden form and has terraces and in fact is considered as one of terraced gardens in Iran. It's in rectangular form and has 12 terraces which water is flowing in their center. The closer we get to the upper terrace the height difference of terrace becomes lower. The main building of garden is located at the end part of the garden. In the lower terrace, there is a pool in which water flows and moves along the main axis of the garden. Due to many terraces, the most important component of water which is used in this garden is kinetic energy and flow [16].



Fig-21: Shazdeh Mahan Garden

CONCLUSION

- Water has countless capacities for using in creating favourable environments and semi-natural landscapes.
- It can form a space or be ductile in particular spatial coordinates.
- In common languages it represents cleanness, honesty, purity and visual nature.

- Aware recognition of environment designer of water is the origin of creativity in shaping human environment.
- The overall space of the garden to comply with its geometric structure is divided by lines perpendicular to smaller spaces. Therefore, two perpendicular axes divide the whole garden's space into four parts. So, the palace in garden was built according to divided space in different parts. Accordingly, the flow of water follows its regular geometry. This causes creating exact order in planting trees in addition to directing the flow of water and avoiding to waste water.
- So, the outer boundary of the garden, water flow paths, place of fountain, system of planting of trees and plants, the location of the palace and buildings of garden have been determined based on geometric structure.
- In general, in any design in which water exists there's dynamism and vitality.

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