Water as a Landscape Element in Historic Garden: The Comparison of Mughal Garden and Japanese Garden

Onumpai Samkhuntod, Kasetsart University, Thailand

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Abstract

Water has long been an important landscape element in garden design. Many historic gardens contain a variety of water features that provide different character and distinct atmospheres. This article seeks to explore water as a landscape element in two major historic gardens, i.e. Mughal garden and Japanese garden, through document study along with on-site observation. All the fieldwork sites are considered pleasure gardens owned by the royal family and built at the same period of time. It is found that in Mughal gardens, i.e. Shalimar Bagh and Achabal, Kashmir, settled in the mountainous terrain with slight slopes, the water character is the movement. The water body is rather small and built in geometric forms. It creates a sense of pleasure and joyfulness. Whereas in Japanese gardens, i.e. Katsura Imperial Villa and Sento Imperial Palace, Kyoto, settled in the flat terrain, the water character is static. The water body is quite large and built in organic forms. It creates a sense of peacefulness and tranquillity. Through the comparison of Mughal gardens and Japanese gardens, water can be employed in creating pleasure gardens in various ways due to its context. This observation of water in historic gardens can help to better understand the application and effectiveness of water in landscape design.

Keywords: historic garden, water, landscape element, Mughal garden, Japanese garden

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Introduction

Water is an important element in landscape design. Landscape architectural design involves the use of various elements such as plantings, water, rocks, landforms, structures, sculptures, and other decorations (Arayanimitsakul, 2015). Water has been used as a landscape element in various ideas and forms (He, 2023). It has a very special quality as a quintessential element in garden design and holds immense aesthetic and symbolic significance (He, 2023; Whalley, 1988). Aesthetic factors in landscape architectural design consist of natural features and spatial pattern. Water is a natural feature that contains specific beauty, provides pleasure, serves as a focal point and landmark, aids in perception and memory, and sets orientation (Arayanimitsakul, 2015). Water has contributed to creating a significant character of many historic gardens. Pleasure gardens were built in which water, so vital for irrigation, became a major element in landscape design (Paul & Rees, 1986). Over many centuries and in many countries, water has been acknowledged and exploited. It has inspired and been a great provider not only in physical terms, but also in aesthetic qualities. Water has contributed to both natural and man-made environments (Whalley, 1988). The graceful interplay of water bodies, such as ponds, streams, and cascades, becomes a canvas for examining how each culture crafts its water features to evoke emotions and harmonise with the surrounding landscape (He, 2023).

In terms of historic garden, there are two major garden styles in the Eastern World; the Persian garden, and the Chinese garden. The Mughal garden, situated in South Asia, derives from the Persian and Islamic gardens in the Middle East, while the Japanese garden comes from the Chinese garden in the East. Undoubtedly, water is a key element in both gardens. He (2023) mentions that East Asian garden design places a great deal of emphasis on water sceneries, which influence both the aesthetic appeal and the emotional resonance of these landscapes. This study, therefore, intends to compare the use of water as a landscape element in those two types of historical gardens. It is stated that a comparative study is an analytical approach that examines uniformities and differences across multiple geographic areas, often involving the comparison of various countries or the tracing of a phenomenon across different contexts using a common conceptual and analytic framework (Comparative Study, 2026). Moreover, comparing the water scenes in the two gardens involves an exploration of their expression modes, design techniques, and underlying purposes (He, 2023).

This study aims to investigate the use of water in historic gardens in the Eastern World; the Mughal garden and the Japanese garden. There are two objectives: (1) to study and collect information on the use of water as a landscape element in the historic gardens and (2) to explore the design and effectiveness of water in the garden landscape. This is a comparative study employing qualitative research using secondary data in conjunction with field surveys. The fieldwork sites are selected by sampling-based methods, focusing on the Mughal garden and the Japanese garden that were built at the same time (1615-1630). Purposive sampling is applied by selecting historic gardens, which are a pleasure garden situated in the palace, summer palace, and/or the royal villa. They are Shalimar Bagh and Achabal in Kashmir, and Katsura Imperial Villa and Sento Imperial Palace in Kyoto. The data analysis applies the framework of landscape architectural design to compare the character and expression of water among those gardens. Aiming to identify the variation of water elements in the garden design.

Water in the Mughal Garden

A review of water in Mughal garden indicates that Mughal love of gardens and symbolism as well as their art of gardening was inherited from Persia (Jellicoe & Jellicoe, 1987; UNESCO World Heritage Centre, 2010). The Persian garden in which water plays a primordial role is typically a charbagh, four-quartered gardens divided by four channels of water (symbolising the four rivers of life) flanked by paved causeways (Alkazi, 2014; Castel-branco, 2011). The enclosed garden is also a Persian concept, and is described as being similar to the garden of paradise. Paradise is seen in Islamic religious scriptures as being a garden with streams. Islamic gardening celebrates the interplay of water and greenery. Therefore, a spirit of harmony between the natural and the man-made pervades the Mughal gardens (Alkazi, 2014).

Water is a major element of Mughal garden design, both still and in motion, for seeing and hearing. It also plays a major function: irrigating and cooling the garden (Alkazi, 2014). Water is a vital necessity to cool the dwelling rooms, supply the baths, and irrigate these immense terraced enclosures (Stuart, 2009). It is used in different forms, whether as canals or jets of water, waterfalls, cascades, ponds or lakes. Canals and ponds are constructed to keep the water brimming to the level of the paths on either side (Alkazi, 2014).

The Mughals traditions laid most stress on the choice of site (Stuart, 2009). They set foot in Kashmir in the 16th century (UNESCO World Heritage Centre, 2010). During the hot Indian summers, the emperors and their courts moved to the Vale of Kashmir. The greatest source of beauty is their setting – lofty mountains descending to a fertile green valley (Berrall, 1978). The scene was transformed into a Mughal pleasure landscape of water. Gardens were set mainly on the lower slopes of the enclosing mountains, luscious with streams. The valley plain is surrounded by mountains and situated Lake Dal. The gardens were sited between the mountains and the lake, to catch the water flow (Jellicoe & Jellicoe, 1987). The undulating landscape and the endless supply of water from running streams and mountain springs introduced two new dimensions into the Mughal garden; terrace garden and water garden. The gardens and pavilions were located on gradually ascending levels with the cascades, the central water chutes, and flowing channels. The water was channelled into rectangular ponds, where jets cast it into the air. Pavilions were often built across the ponds, so that icy water flowed under as well as around them to keep the marble floors cool (Alkazi, 2014; Berrall, 1978; UNESCO World Heritage Centre, 2010).

Shalimar Bagh and Achabal are amongst the very few surviving authentic Mughal gardens that were developed for pleasure, enjoyment and also for holding Court (UNESCO World Heritage Centre, 2010). All the finest Mughal gardens are found in beautiful situations, centring round a hillside spring, or built across a narrow ravine or valley through which a constant stream of water flows (Stuart, 2009). There is a central water channel, which forms the central visual axis of the garden, enhanced by avenues of poplars or chinar trees. There are pavilions with a central open space placed over these water channels which cascade down from one terrace to another in the form of falls, where they fill the larger water pond with an array of fountains. Finally, the water from the central channel joins a water body, either a flowing stream nearby (Achabal), or a lake (Shalimar Bagh) (UNESCO World Heritage Centre, 2010).

Shalimar Bagh

Shalimar Bagh, the most famous garden of Kashmir (Berrall, 1978), is situated between the Himalayas and Lake Dal. The site was chosen by Emperor Jahangir around 1620, who conceptualised the layout of the gardens and his son, Shah Jahan, collaborated with him on the design and oversaw the construction (Alkazi, 2014; Jellicoe & Jellicoe, 1987; Stuart, 2009; UNESCO World Heritage Centre, 2010). Shalimar was developed along the lines of the traditional charbagh concept (UNESCO World Heritage Centre, 2010). The plan was mathematical and symbolic. Each terrace garden was levelled to fit the sloping site and each of the fourfold parts was modelled for irrigation (Jellicoe & Jellicoe, 1987). The garden was arranged in a series of five terraces rising one above the other that make up two and a half charbaghs (Alkazi, 2014; UNESCO World Heritage Centre, 2010). It was divided into two major parts. The lower portion, comprising the first three terraces, was where the emperor held a public audience. The upper two terraces, the Zenana, were exclusively for the emperor and his courtiers. These two parts were screened by a thick masonry wall having two similar gateways at each side of the water channel (UNESCO World Heritage Centre, 2010).

Figure 1

Layout of Shalimar Bagh Shows Water Bodies

Note. Revised from www.google.co.th/maps

The present size of the garden measures approximately 594 x 250 metre (UNESCO World Heritage Centre, 2010). The enclosed garden is shaded by chenar trees and patterned with colourful flower beds. It is divided into three separate parts; the outer garden, the central or Emperor's garden, and the inner garden for the Empress and her court. The outer or public garden, starting with the grand canal leading from the lake, terminates at the first pavilion

(Hall of Public Audience) standing over the waterfall in the centre of the canal, which flows through the building into the pond below. The second garden is slightly broader, consisting of two shallow terraces with the Hall of Private Audience in the centre. The inner garden is dominated by the black marble pavilion built in a large shallow pond which stands in the midst of its spray fountain and surrounded by a series of cascades (Berrall, 1978; Stuart, 2009). A line of ponds is placed symmetrically down the middle of these terraces and connected by a canal. The water comes from a branch of the spring and enters at the upper end, flows through each successive terrace in beautiful stone chutes, leading to the pond below that contains numerous fountains (Alkazi, 2014). The fountains were fed by gravity (Jellicoe & Jellicoe, 1987). The whole of Shalimar is animated by the sound of water rippling down the chutes or ruffling the surfaces of the ponds after splashing out of hundreds of fountain jets (Berrall, 1978).

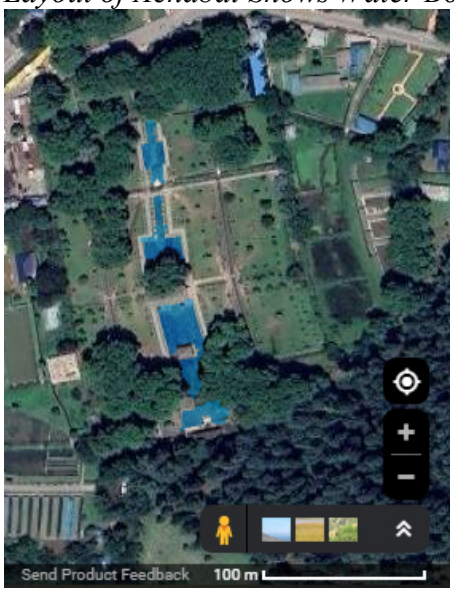
Figure 2
Shalimar Bagh

Note. Source: Author

Achabal

The royal garden of Achabal is located near Anantnag predates the arrival of the Mughals in Kashmir. The present garden was laid by Empress Nur Jahan in 1620. The garden is trapezoidal in shape with an area of around 9.7 acres and follows the traditional charbagh concept (UNESCO World Heritage Centre, 2010). The plan varied the water proportions but kept to the principle of a central thread passing through buildings (Jellicoe & Jellicoe, 1987). Achabal is developed on the base of a forested mountain around a natural spring. The pre-existing garden was greatly enhanced and rearranged by the Empress and consisted of four gently ascending terrace levels (UNESCO World Heritage Centre, 2010). The garden is very handsome, laid out in regular walks, and full of fruit trees (Stuart, 2009).

Figure 3
Layout of Achabal Shows Water Bodies



Note. Revised from www.google.co.th/maps

The central feature of the garden is the spring that strongly gushes out of the earth and the water is so abundant and cool. The spring feeds the entire garden for its irrigation as well as aesthetic needs. The water is collected and dispersed throughout the gardens in the form of a canal, branch canals, and ponds. Fountains and jets are in various forms and fishponds are in great numbers. There is a lofty cascade which in its fall takes the form of a large sheet. Pavilions and platforms, with airy latticed windows and carved flower-bell corbels, were built over the water channel. The pavilion set in the pond just beneath the waterfall is planned for the noontide rest, lulled by the sound of the cascade, cooled by the driving spray. The garden is shaded by chenars and other full-grown trees with a natural landscape background (Stuart, 2009; UNESCO World Heritage Centre, 2010).

Figure 4
Achabal

Note. Source: Author

A survey of both Mughal gardens reveals that water is used and arranged as a major element of the gardens. There is always sight, sound, and touch of water throughout the garden. Water creates the sense of visual, auditory, and tactile sensory. It is strategically placed along the central axis of the garden area, manifesting in various forms including waterfalls, cascades, ponds, canals, fountains, jets. Water also serves as a spatial link, interlocking with architecture, whether flowing through or around the buildings, as well as waterside walkways and water crossings in the form of bridges and stepping stones. The water body is rather small and built in geometric forms with a paved stone surface and border. Some areas have some drops of water on the surface, sometimes with splashes of mist, creating a fresh and pleasant atmosphere. The water character is abundant and lively movement. It creates a sense of pleasure and joyfulness.

Water in the Japanese Garden

A review of water in Japanese garden indicates that the art of garden making was imported to Japan from China (Berrall, 1978; Hyams, 1971). It was transformed to the Japanese taste and to give expression to their own philosophy and religion (Hyams, 1971). The garden has been looked upon as a part of the yearning for nature. It has become a necessity of life, both for its physical beauty and mental and spiritual uplift (Berrall, 1978). Garden making was one of the fine arts and the Japanese carried the art further into the realm of the abstract (Hyams, 1971). The Japanese garden is created not merely as a place of beauty but as a place of peace and rest, a fitting abode in which the soul can find nourishment (Berrall, 1978).

One of the Japanese garden styles consists mainly of water and has been made in varying sizes. Lakes and ponds play such a very important part in garden design (Berrall, 1978). The garden was laid out with the pond as the main feature (Hyams, 1971). The gardens of ancient Japan seem to have been a lake with an island and bridges (Berrall, 1978). One of the symbolic elements in the Japanese garden is an island, shaped like a tortoise and inhabited by tortoises, cranes and immortal beings. It is auspicious and favourable to longevity (Hyams, 1971). Garden lakes usually have islands. They vary in form and character (Berrall, 1978), and are frequently represented in the form of crane-shaped ponds with tortoise-shaped islands (Hyams, 1971). It is always planted with pine trees and signifies longevity (Berrall, 1978). Sometimes water is meant to appear as big as an ocean; others represent rivers, lakes, or swamps. With the aid of trees and plants, they are curved so as not to let their full extent be seen from any one position. In the construction of the banks, some parts are arranged with rocks, others with posts and still, others with turf coming to the edge of the water. In certain places, stone steps lead down to the water (Berrall, 1978).

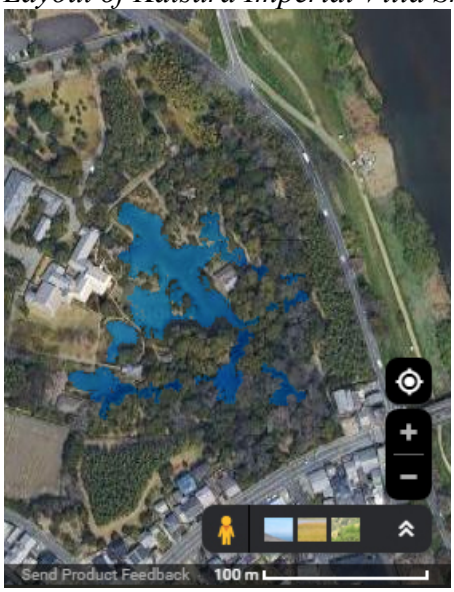
The Japanese Garden is a stroll garden (Imperial Household Agency, 2019). The stroll garden has been so called to suggest a landscape in which the observer or participant is in movement (Jellicoe & Jellicoe, 1987). During the Edo period from I605 to 1867 (Kyoto was a cultural, artistic, and traditional capital with the presence of the imperial family), one of the garden styles is based on a lake with paths all round and vantage points or belvederes to view it as a series of pictures (Hyams, 1971). There is a walking path that encircles the lake. The lake is large and located in the middle of the garden area with the edge curving naturally. The water is still and reflects the sky. The pond is also composed of various types of bridges, islets, shores, and the water's edge curves and traverses. It gives a different visual experience while walking through the garden (Imperial Household Agency, 2019). Endless details as to the placing of rocks or planting of trees must be carefully thought out in order that different parts of the garden may be admired from varying angles (Berrall, 1978).

Katsura Imperial Villa

The last quarter of the 16th century, a number of famous gardens were created in Kyoto. One of the masterpieces is the garden of the Katsura Imperial Villa (Berrall, 1978). The construction was commissioned by the younger brother of Emperor Goyozei, Prince Toshihito, and was completed in 1615. Then, the villa fell into disrepair through a decade of disuse following Prince Toshihito's demise. Later on, Prince Toshihito's son, Prince Toshitada restored and expanded the villa by around 1662. Prince Toshitada also made improvements to existing ponds and gardens. The total area of the Katsura Imperial Villa is approximately 69,000 square metres (17 acres) (Imperial Household Agency, 2019). It is said to have been undertaken by the master Kobori Enshu on three conditions: no limitation as to time of completion, no interference, and no limit on expenditure (Berrall, 1978).

Figure 5

Layout of Katsura Imperial Villa Shows Water Bodies



Note. Revised from www.google.co.th/maps

In the middle of the villa's grounds, there is a lake with an intricate shoreline and there are five artificial islets of various sizes over which there are bridges made of earth, wood and stones, as well as a boat mooring. There is also a garden, with lanterns and wash basins in appropriate locations, with pathways laid out in a circuit for strolling (Imperial Household Agency, 2019). The path of stones circuits the garden from and to the villa. The garden is

traditional and at least two ancient symbols (both of longevity) survive in the land forms: the tortoise-shaped island and the flying crane-shaped lake in which it is set (Jellicoe & Jellicoe, 1987). The walk through the garden is one that constantly surprises the visitor with its clever design – at times the pond disappears entirely from view, only to return in a panoramic vista, with the path itself leading the visitor from the waterside to elevated positions (Imperial Household Agency, 2019).

Figure 6
Katsura Imperial Villa

Note. Source: Author

Sento Imperial Palace

The Sento Imperial Palace served as a residence for the retired Emperor. It was built in 1630 as a Palace for the retired Emperor Gomizunō. The garden with a vast courtyard was created by the most well-known artist of the era, Kobori Enshu (1579-1647). The Sento Imperial Palace encompasses approximately 75,000 square metres (18 acres) and is surrounded by an earthen wall with coping tiles. There are a vast garden and two ponds, the North Pond and South Pond, which are located along a north-south axis. Upon leaving the palace from the side gate, the entire view of the North Pond comes into sight. The islet, situated to the east of the pond, adds a depth of perspective to the view as seen from the west. In the South Pond, there are two islets, offering a clear contrast that results from the differing forms of the bridges, trees, boulders, and the teahouse. The different styles of bridges: the bridge covered with wisteria, the stone bridge, and the arched bridge, contribute to the visual contrast (Imperial Household Agency, 2019b).

Figure 7
Layout of Sento Imperial Palace Shows Water Bodies

Note. Revised from www.google.co.th/maps

The artist designed all gardens according to fixed principles, but within these there was scope for individual originality. The Sento Imperial Palace gardens were made soon after Katsura and, although apparently similar, are different in feeling. They seem less tender and more sophisticated, as suggested in the view over the bridge towards the tea pavilion. Kobori Enshu's materials, such as the flat-topped stones, were traditional (Jellicoe & Jellicoe, 1987). An innovation was the long beach that was laid out from the shoreline into the pond, where every flat and oval pebble was individually chosen (Imperial Household Agency, 2019b; Jellicoe & Jellicoe, 1987). The view from the teahouse looking to the South Pond is one of the most renowned spots in all the palace grounds (Imperial Household Agency, 2019b).

Figure 8
Sento Imperial Palace

Note. Source: Author

A survey of both Japanese gardens reveals that water is used in the form of large ponds or lakes in the centre of the garden with a sophisticated layout and natural landscape surroundings. There are islands, islets, bridges, aquatic vegetation, and riparian vegetation. The garden path winds around the pond, creating diverse perspectives; sometimes close to the water, sometimes further away, and sometimes the water is not even visible. Other landscape elements are used in conjunction with water, including trees, pebble beaches, rocks, stone lanterns, pavilions, tea houses, and bridges of various styles made of wood, stone, and earth. The water body is quite large and built in organic forms with natural materials. The riverbank area features grassy hills, pebble beaches, rocks, trees, and gardens, all of which are natural elements. Overall, the water character is static and serene, reflecting the sky and the trees. It creates a sense of peacefulness and tranquillity.

Conclusion

The study entitled “Water as a Landscape Element in Historic Garden: The Comparison of Mughal Garden and Japanese Garden” contains two objectives: (1) to study and collect information on the use of water as a landscape element in the historic gardens and (2) to explore the design and effectiveness of water in the garden landscape. The study reveals that water has been utilised as a major landscape element in gardening to create space for pleasure. Water features have been created in a wide variety of forms, sizes, and materials. Water is an element that creates beauty, stimulates a sensory experience: vision; hearing; touch, shapes the surrounding space, and provides a certain atmosphere. Water is sometimes combined with other elements such as pavilions, bridges, paths, plants, rocks, etc. Furthermore, water serves as a symbolic representation of different meanings across cultures. In terms of the design and effectiveness of water, the expression and effect of water depend on the design. Regarding the Mughal gardens situated on the sloping hillsides, small geometric ponds and waterways are used along with the flowing water. The vibrant and lively atmosphere is created with the sound of flowing water and splashing spray. In case of the Japanese gardens, while flat terrain is common, large, naturally shaped lakes or ponds and islets meander through the garden area. The still water creates a peaceful and tranquil atmosphere. The lakes are appreciated from various viewpoints alongside other natural elements, e.g. rocks, pebbles, plants. The comparison of water in the Mughal garden and the Japanese garden is summarised in the following table (Table 1).

Table 1
The Comparison of Water in the Mughal Garden and the Japanese Garden

	Design	Perception	Character	Expression	Effectiveness
Mughal garden	hardscape, geometric, small	sight, sound, touch	movement	diverse, delight	Garden of pleasure with sense of freshness and joyfulness
Japanese garden	softscape, organic, large	sight from various spots	static	uniform, serene	Garden of contemplation with sense of tranquillity and peacefulness

According to He (2023) by comparing two gardens, which capture the distinctiveness of each tradition, common aesthetic values and a variety of design philosophies are discovered. The findings suggest that through the comparison of Mughal gardens and Japanese gardens, water can be used in creating pleasure gardens in various ways due to its context, e.g. geography, culture, beliefs, techniques, materials, which is consistent with contextualism theory; a garden's beauty is influenced by its cultural and environmental context (Fenner & Fenner, 2024; Hosseini et al., 2024; Olivadese & Dindo, 2022). Water is fluid, so it depends on the body or container as well as the adjoining elements and surrounding environment. The landscape design shapes the expression and effectiveness of water, as demonstrated in Mughal gardens and Japanese gardens, which show different ways of employing water that stimulates sense and perception through sensory experience. Numerous studies on sensory experience and sensory landscape have indicated that garden provides multisensory experiences, e.g. visual delights, sound of running water, touch of splashing water, kinetic sense of moving in and through a space, thus contributing to aesthetic pleasure. Garden also evokes thought and feeling as well as carries certain associations (Ross, 1998; Ross, 2002; Sarmadi et al., 2020; Wagenfeld & Singley, 2016). This investigation of water features in historic gardens identifies the design and expression of water and consequently dedicates to better understanding the application and effectiveness of water in landscape design which could be adopted in contemporary work.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author declares that Grammarly, an AI-assisted writing software, was used in proofreading and refining the language used in the manuscript. The usage was limited to correcting grammatical and spelling errors and rephrasing statements for accuracy and clarity. The author further declares that, apart from Grammarly, no other AI or AI-assisted technologies have been used to generate content in writing the manuscript. The ideas, design, procedures, findings, analyses, and discussion are originally written and derived from careful and systematic conduct of the research.

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