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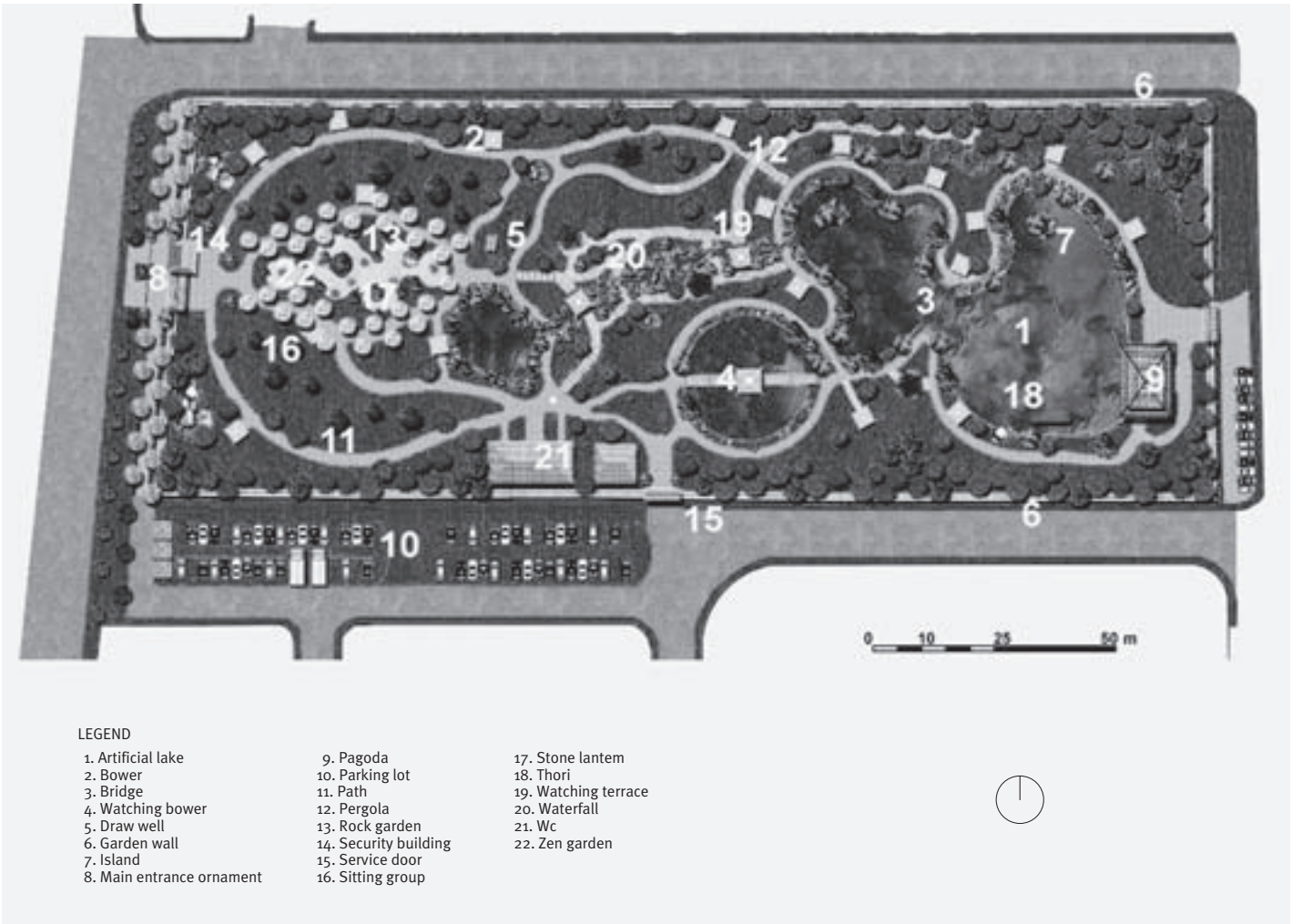

LEGEND

1. Artificial lake
2. Bower
3. Bridge
4. Watching bower
5. Draw well
6. Garden wall
7. Island
8. Main entrance ornament
9. Pagoda
10. Parking lot
11. Path
12. Pergola
13. Rock garden
14. Security building
15. Service door
16. Sitting group
17. Stone lantem
18. Thori
19. Watching terrace
20. Waterfall
21. Wc
22. Zen garden

Fig. 1 The Project of Konya Japanese Kyoto Garden in Turkey
Sl. 1. Projekt japanskog perivoja Kyoto u gradu Konya u Turskoj

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Kyoto Japanese Garden in Konya, Turkey
The Design Principles of Japanese Gardens

Japanski perivoj Kyoto u turskom gradu Konyi
Oblikovni principi japanskog perivoja

garden
Japanese garden
Konya, Turkey
landscape design
symbolism

vrt
japanski perivoj
Konya, Turska
perivojna arhitektura
simbolizam

The natural, exotic and mystic properties of Japanese gardens differentiate them from other gardens in the world. Since Japanese gardens are created in many countries, many garden designers and garden users are curious about the main principles that influence the creation of these gardens. The objective of this research was to evaluate the adequacy of the Japanese garden in Konya in Turkey through application of the principles of the Japanese garden design. According to the research, the created garden in Turkey may represent a good example of Japanese gardens. The results obtained by this study may be taken as guiding principles for the creation of thematic Japanese gardens in the world.

Japanski perivoji razlikuju se od drugih perivoja po svojim obilježjima poput prirodnosti, egzotičnosti i mističnosti. Japanski perivoji ničy po cijelome svijetu i mnogi koji ih stvaraju ili koriste pitaju se po kojim se načelima oni oblikuju. Stoga je glavni cilj ovog istraživanja vrjednovanje autentičnosti japanskog perivoja u turskom gradu Konya primjenom načela oblikovanja japanskih vrtova. Istraživanje je dovelo do spoznaje da taj japanski perivoj može biti dobar primjer. Rezultati dobiveni tijekom istraživanja također bi mogli poslužiti kao svojevrsni standardi u procesu osnivanja tematskih japanskih perivoja u svijetu.

Introduction

Uvod

Japanese gardens are a piece of nature made by the human hand. The garden is a kind of reflection of Japanese landscape.[1] The rules of natural development and dispersion that form this landscape are applied meticulously even in the smallest detail in the garden as well. Artificial hills, rocks, lakes, stream beds and cascades are copied from the outstanding properties of various landscapes in the country.[2] Japanese gardens show an intertwined connection of the concepts of landscape, religion and culture which are peculiar to Japan and make sense to Japanese people. However, the thing which is important here is to show the proficiency of making a huge world formally fit into small places.[3] The city of Kyoto, one part if which was kept relatively safe from destruction in World War II is shown as an inseparable part of Japanese cultural heritage, a home of at least 16 temples and a centre of Japanese gardens Since it has been declared a UNESCO's World Heritage Site,[4] it is also shown in this context as well.

With their wisdoms, slender compositions, calm and profound atmosphere, Japanese gardens attract a great deal of attention worldwide. Therefore, they are built in other countries as well. It is possible to see examples of Japanese gardens being built every year in various countries. Today, there are approximately 690 Japanese-style gardens outside of Japan.[5] Some examples of Japanese gardens are geographically and chronologically presented in Table V.[6]

Area of Research

Istraživano područje

It is determined that Konya[7] and its surrounding was one of the most significant centers of population even during the 8th millennium BC. As far as can be understood from Çatalhöyük excavations, the first settlement, domestic architecture and the first sacred structure in Anatolia were established on this territory.

Additionally, the tomb of Mevlana, the ancient city of Klistra, numerous madrasas, mosques and tombs are located within the boundaries of Konya. The city is located near the southern side of Middle Anatolia, at 1020 m above sea level, at the foot of a huge hill (Alaaddin Hill).[8]

Konya's Japanese garden, which was designed and applied on an approximately 30 000 m^2 area by Konya Metropolitan Municipality in the Province of Konya, District of Selçuklu, constitutes the research area (Fig. 2). This garden is in terms of area the biggest of all Japanese gardens in Turkey.

Research Goals and Methods

Ciljevi i metode istraživanja

Japanese garden elements and design principles have been taken in this reserach as evaluation criteria. Detailed survey of the literature on this subject was also conducted. The purpose of this study is to measure success in terms of Konya's Japanese garden design. In addition, the Japanese garden in Konya is used to determine the elements.

A detailed list of professional literature, plans and reports obtained from related institutions, surveys and photographs of the research area have been used as research materials. Research method is constituted of the study which is based on analysis and synthesis. It is formed by the evaluation of observations which were carried out in Konya's Japa-

1 Nitschke, 2003
2 Tachibana et al., 2004; Sadler, 2007
3 Çınar, Atakan, 2007
4 Van Tonder, 2007
5 Van Tonder et al., 2002; Kenneth, 2007
6 http://jgarden.org/
7 According to the address-based identity register system of 2009, the population of Konya metropolitan municipality is 1.003.373 (The state institute of statistics, 2010). For the province of Konya, the average temperature in the period between 1975 and 2008 is 11.4 °c, and the average rainfall is 26.6 kg/m^2 (The general directorate of meteorology, 2010, The state institute of statistics, 2010).
8 The Konya governorship provincial culture and tourism directorate, 2007
9 Nakawagara, 2004
10 Ketchell, 2001

nese garden which was created in an urban region. Certain principles of Japanese garden art and some design elements were taken from the literature for the purposes of the study. The evaluation of these garden principles applied to Konya's Japanese garden was followed by further suggestions.

Research Results

Rezultati istraživanja

Principles of Japanese Garden Design

Principi oblikovanja japanskih perivoja

The principles of garden techniques, the way they are applied in traditional Japanese art, have not been known for a long time. Instead, knowledge about them which generally spread by secret doctrines and through communication can be considered a source of information.[9] The Japanese garden tradition is absolutely affected by the symbolisms and descriptions that belong to Taoist, Buddhist and Shinto religions: Horai Mountain, Crane and Tortoise Islands, mountains, clouds, pine tree etc.[10] Gardens are sometimes used for reclusion and sometimes for education by Buddhist priests.[11]

Japanese gardens exist as places where people come to observe and contemplate rather than just walk or wander around it, which is more a European view of gardens.[12] The role of the visitors in Japanese garden is important. The paths in the gardens should provide wide sceneries to the visitors. Because of this, creation of scenery in the gardens is the first aim of its design.[13] Most Japanese gardens are designed for particular scenery positions. Some hidden messages are received while looking at the garden from a building,[14] sitting on a chair,[15] and standing on stepping stones.[16]

The natural appearance of Japanese gardens can be assured by avoiding geometrical and artificial applications.[17] The art of garden making is developed by planning efficient usage of limited areas and disarranged parts which is much contrary to the use of wide, flat areas freely.[18] The shapes of flowers and the relationships that are created among rocks depend on asymmetrical triangles and this asymmetrical arrangement means action and energy.[19]

Fig. 2 Location of the research area
Sl. 2. Prostor istraživanja

One of the most important elements of the Japanese garden design is the proportion of mass and space. The origin of this abstraction which has a great importance in the garden art depends on the belief in Zen.[20] Flowers are designed in order to form mass and shape in addition to their aesthetic function in the garden.[21] The line and mass are defined by creating empty places and they are balanced "*vocahu*". It is important not to fill all the space while forming the garden. It is necessary for the visitors to see the rhythm of open and closed areas while they wander around. This rhythm provides natural feelings of rest to the visitors.[22]

The unique concept of Japanese gardens represents symbolism and natural beauty in a miniature form.[23] The technique of miniaturization enables a direct interaction between humans and nature not just visually but also physically in the garden.[24] The more the garden depends on the human proportion, the more it becomes strong in terms of harmony. The human scale is achieved by arranged stepping stones, rocks and by plant pruning techniques. Architectural structures and the garden are in harmony with the human form.[25] Beauty and expression are the vital elements of the garden. A pagoda emerges as a temple among plants and a bridge mountain shows itself on the high point of a stream. All these elements which are made according to the human scale increase the value of garden landscape.[26] The technique of showing a nar-

11 Yamaguchi et al., 2008
12 Sarkowicz, 1998
13 Ketchell, 2001
14 Sadler, 2007
15 Sarkowicz, 1998
16 Suziki, 2004
17 Sarkowicz, 1998
18 Masuno, 2003
19 Ketchell, 2001
20 Masuno, 2003
21 Slawson, 1991
22 Ketchell, 2001
23 Goto, 2009
24 Nakase, 1988
25 Sadler, 2007
26 Hobson, 2007

row garden as if it were big reveals wonderful perspectives. The heights of walls and stones decrease gradually from the back to the front. This linear depth of perspective is not easily noticed but it is thought that it contributes to the garden's effect of deepness.[27] Dry gardens provide a big and wide outlook to its visitors although their dimensions are small.[28] *"Looking from the biggest to the big minimizes and looking from the darkest to the dark enlightens*" technique enables obtaining the desired creations. The simplicity instead of a detail is much more effective in revealing the existing soul.[29]

Elements of Japanese Gardens

Sastavnice japanskog perivoja

Japanese gardens designs include major elements such as artificial hills, lakes, islands, brooks and waterfalls[30] and the inseparable garden accessories such as rocks, stones, bridges, lanterns and sceneries. Their arrangements are never random. Each of them has a different meaning and expression for the Japanese.[31]

Water: In Japanese gardens, water as one of their major elements varies according to its use. There are a lot of ways the motion of water can be expressed in nature. There is falling (from top to bottom), gushing upwards and accumulating in a puddle. While the body of water which moves from the top to the bottom is represented by waterfalls, the water which flows is represented by streams. On the other hand, water accumulating in one place defines the scenery in the form of lake. In the design of waterfalls there is "*kagami-ishi*" (the rock reflecting the shade well) or "*mizutataki-ishi*" (the rock onto which the water flows). These rocks make the water splash as it falls onto them.[32] The stone, known as carp stone is used in its vertical form and is placed in the waterfall.[33]

The water sometimes gushes out from a small stone covered with seaweed and it constitutes the starting point of a short stream. The stream created in this way first flows from east to west and then it flows to the west. It never starts flowing from the east and then towards the west by dividing the garden into two.[34] According to Buddhism belief, water gushing out of the mountains and flowing into the lake or sea represents the life between the birth and death of humans. The rocks through which the water flows are thought to stand for troubles in life.[35] The lakes in the Japanese gardens include glacial and crater lakes, lagoons and are created according to the character of the landscape.[36] In such lake landscapes, stones are placed in the water in a reclining and standing position, similar to a sea landscape.[37] In order to create natural environment, the grass is placed in these arrangements in a way so that is looks like it is hanging down into the pond. In some garden arrangements with wooden stakes, the stakes are placed in the soil and are used in covering the ground with pebble.[38]

Other typical Japanese water usages are water canals combined with the water bowl made of bamboo, called the deer chaser or "*Shishi odoshi*". In fact, due to the weight of the water, bamboo falls onto a stone and makes a crashing sound. The procedure continues with another rising of the bamboo.[39]

Rock, Stone, Pebble and Sand: The art of stone arrangements is mentioned in scientific papers under the title of *"Toita-ishi"*. *"Ishi"* means stone in Japanese and the expression, "*ishi wo taten koto"* does not only mean that placing one rock from a garden onto another, it is also the artistic construction of a garden.[40] The functions of the natural rocks which are valued according to their measure, shape, texture and colors are very big. It is necessary to be preferential while choosing stones for the garden. Every stone should be chosen to befit its purpose and place. There are some rules about placing the stones in the garden. A long and vertical stone is used as the basic rock in the garden. The main stone is generally positioned at the back side of the composition. The front surface of the stone is the most interesting facet of the stone. The front generally faces the visitors and it can have inclined angle for impressive effect. If it is desired, the stones can be buried to some degree and this form a strong connection between the stone and the ground. The stone which is irregularly placed can cause the feeling of distracted harmony that the visitors receive through its damaged balance. The stones are arranged in groups of odd numbers – 3,5,7 and 9 are the numbers with positive content.[41] Such an arrangement was born out of the belief that Chinese and Japanese people consider odd numbers as lucky.[42] Another important thing is enabling stones to create an impression that they have existed in the garden since the ancient times. Be-

27 Miura, Sukemiya, 2007
28 Öztan, 2000
29 Ketchell, 2001
30 Inaji, 1998; Tanriverdi, 1975
31 Akdoğan, 1974; Gültekin 1998
32 Masuno, 2003
33 Nitschke, 2003
34 Akdoğan, 1974; Öztürk, 1994; Gültekin, 1998
35 Tüfekçioğlu, 2008
36 Tanriverdi, 1975
37 Inaji, 1998
38 Akdoğan, 1974; Masuno, 2003
39 Ketchell, 2001
40 Nonaka, 2008

cause of this, the rocks which are worn out and crumbled due to weather conditions, and especially rocks which have moss and spores on them, are preferred in designs.[43]

According to their shape, there are several types of stones. The basic stone of the arrangement is tall, vertical stone called Fuji Rock. "*Fuji-ishi*". It is the rock that represents the famous Fuji Mountain of Japan and gives peace to the environment in which it is used. The Seeking Rock *"Ne-ishi ya da Okiiwane"* is extremely abrupt and it is used as a bolster. This angular stone that is stuck tends to be in an energy movement. The direction representing the potential strength that the rocks assume in The Seeking Rock is either towards left or towards right according to the garden design. The rock *"Nagane-ishi"* which lies horizontally emphasizes long and flat shapes and with its shape at full length stresses the horizontal angle. In some situations, it can be pretty big physically. The stepping stone is used for the purpose of watching or it is used as a bridge. The rock *"Toita-ishi"* the shape of which is like a door is used singularly in the garden design and in rugged rock designs.[44]

The rocks that are used symbolically for the functional, aesthetic and symbolic reasons in dry gardens and lake gardens are generally designed with pebbles.[45] The pebble layer in the gardens called "*Hakusha*" is being used as a material for covering the ground in dry gardens and it is generally preferred in silver or white colors. The reason for this is to bring more light to the gardens that are poorly lit. The most distinctive features of Japanese gardens are the patterns which are made by using nails on the pebble or sand. This art is especially applied in the backyard gardens. The designed patterns are arranged by pulling the harrow made of special wood backwards all along the pebbled area. It is believed that the figures in the gardens recall the feeling of water flowing and its soul and the belief that the harrowed pebbled area carries an abstract energy by carrying a living soul. The ideal balance is established between the energy of the harrowed area and the dynamic groups of rocks in the garden.[46]

Plants: Monochromatic colors dominate the garden. Much more place is given to the plants which are always green.[47] It is thought that the peaceful atmosphere is created with evergreen plants.[48] Instead of the plants which lose their leaves, the place is given to the types the branches and trunks which attract attention even at times when they have no leaves. The flowers which can change the colors of their leaves in different seasons gain a distinctive significance.[49]

Three different groups of plants are used in the plant compositions in the garden design. These are evergreen plants, deciduous plants and bamboos. Among the evergreen plants those which take a prominent place are *Camellia japonica, Rhododendron mollis, Fatsia japonica*, *Pinus sp., Cryptomeria japonica* and *Chamaecyparis obtusa* and among the deciduous plants there are *Gingko biloba*, *Acer palmatum, Prunus serrulata, Prunus mume* and *Salix* sp.[50]

In autumn, the flowers of cherry trees (*Prunus avium L.*), green gage plum trees (*Prunus domestica L.*) and silver birches with their redness (*Acer palmatum Thbg.*) attract a lot of attention.[51] In Japan, the charming flowers of greengage plum trees herald the spring. With their red and rose colors, the greengage plum trees (*Prunus mume*) which blossom from the end of January till March include more than 350 types.[52] In spring, when the cherry trees blossom, wandering in Japanese gardens becomes a charm for millions of people. This period in which the festivals and entertainments are organized is accepted as a national event.[53]

In the garden landscape, the Japanese silver birches set limitless choices with their many types, colors and growth degrees. Without any doubt, this makes it easy for garden designers to create the atmosphere and effect in the way they want. The Japanese silver birch can be placed in two categories. The First is the "The Japanese silver birches" which represent some of the general types of *Acer* used by arboriculture industry. Mostly, it includes the shape and culture of *Acer palmatum:* we can find *A. japonicum, A. pseudosieboldianum, A. shirasawanum,* and *A. Sieboldianum*, in some situation where we can encounter *buergerianum, A. crataegifolium, A. mono, A. rufinerve* and *A. truncatum*. The second one indicates 23 *Acer* types which are important for dendrology and which are endemic to Japan.[54]

Besides hundreds of other usages, bamboos are used in garden art for aesthetic purposes, especially the *Phyllostachys pubescens* type but also as a fence, a water pan and a construction material, depending upon the types

41 Ketchell, 2001
42 Çınar, Atakan, 2007
43 Seike et al., 1992
44 Ketchell, 2001; masUno, 2003
45 Seike et al., 1992
46 Tüfekçioğlu, 2008
47 Tanriverdi, 1975; Nurlu, Erdem, 1994
48 Ketchell, 2001
49 Akdoğan, 1974
50 Tüfekçioğlu, 2008
51 Nurlu, Erdem, 1994
52 Deitz, 2008
53 Ketchell, 2001
54 Vertress, 2001

of *Phyllostachy*, *Pleiblastus* and *Sasa sp.* etc.[55]

Moss, which is often seen in temple gardens, forms beautiful and delicate patterns. The moss generally used in the dreary gardens of the Muromachi period is designed in such a way as to make people symbolically feel the greenery which covered the natural hills and to form a nice contrast to the rocks.[56]

Island, Path and Bridge: Generally Japanese garden contain small holms in the middle of the lakes. They vary in terms of their shape and properties. There are various types of lake landscape with holms: hill islands, flat land islands, forest islands, the islands whose shores are rocky, cloud-shaped island, tide-beach type, pine layer type etc.[57] Since these islands have been thought as standing for those in the middle of the ocean, it is never allowed for them to be connected to the shore with a bridge.[58] According to Taoism, the islands, which are accepted as the symbol of longevity, are also used in the dry gardens at the Zen Temples.[59] While the name "*Tsuri-jima*" is given to the islands that resemble a crane and which are made of pine and shaped by using a few stones and bonsai art, the islands called "*Kame-jima*" resemble terrapins that accompany these islands in the lake and in dry gardens.[60]

In the traditional Japanese gardens paths are divided into three sorts. There are the formal paths leading to the entrances to mausoleums or temples in which ceremonies are held, the semi-informal paths laid out on the way to the houses for temple priests and the informal paths leading to tea houses. While natural stones are used for formal paths, processed stones are placed on the sides of the semi-informal paths. The middle parts contain flat stones which facilitate walking. These stone pavements have a more aesthetic structure than the formal paths. In the informal paths, only small natural stones are used.[61]

Stepping stones are designed in order to protect from mud the long dresses (Kimono) and shoes of guests coming to tea ceremonies and to protect them from the danger that can occur while they walk on slippery moss. The asymmetrical order of the stones reveals the naturalness of the garden.[62] These stones direct the guests to a single building or some other thing. This can be a tea room, lantern or a well.[63] In the designs, the stones which are placed far from each other make the guests walk fast and the stones which are closer to one another make them walk more slowly.[64] There are some important rules in the order of the stepping stones. The stepping stones designed in the garden are used as low-pitched lines and high-pitched lines as well as zigzag forms. These stones can be considerably effective when designed in parallel flat lines. The types of the paths can affect the garden view of the visitors. The paths which are smooth, wide and flat enable people to watch the landscape while walking. On the contrary, there are stepping stones which make the visitors look below and the visitors can suddenly encounter a definite landscape or view.[65] It is possible to run across the paths covered with pebbles in Japanese gardens. These paths which are made of compact pebble layer with the thickness of almost 10 cm provide a useful surface when they are laid on a thick ground.[66]

Bridges are elements which both provide the facility of passing the water and watching the landscape in the gardens.[67] Various shapes of bridges make the garden gain a picturesque character. They can be made out of stone or mat which is made of plant branches covered with soil. The structural details of the bridges also, show variety, especially the wooden ones, which are decorated with elegant details.[68] Wooden and stone bridges built in the shape of arc on the rivers and lakes form a complete circle by reflecting on the water.[69]

Fences, Walls and Entrances: The entrance of the garden is usually shaped like a clothed passage. It has a gate opening inward and outward.[70] Fences have a special meaning in Japanese gardens. These elements show a great variety. The fences may completely or partially limit the garden. The rest of them are like small parts; they are called arm fences or "*sode-gaki*" and they act as a curtain, hiding one section of the garden from the other.[71] Japanese gardens are not always surrounded with a wall. Alongside walls, wooden and especially bamboo fences and plants are also allowed.[72] Bamboo is a material widely used in making fences in Japanese gardens. There are three types of Bamboo fences: curtain fences, see-through fences and the fences that that provide an overhead view. Curtain fences are made by densely filling the convenient parts of bamboo, and they do not allow any sights. They provide privacy. The see-through fences can be used both within the garden and at the border of the garden. Subsegments could be constituted with them. In

55 Tüfekçioğlu, 2008
56 Masuno, 2003
57 Inaji, 1998
58 Öztürk, 1994
59 Masuno, 2003
60 Tüfekçioğlu, 2008
61 Masuno, 2003
62 Seike et al., 1992
63 Akdoğan, 1974; Nurlu, Erdem, 1994; Masuno, 2003
64 Seike, 1992
65 Ketchell, 2001
66 Seike, 1992
67 Nurlu, Erdem, 1994

Japan, various fences have been designed from bamboo. It is a material which can be easily found. The fences are renewed in every 5-8 years.[73]

Pagoda, Lantern and Water Bowl: Garden pagodas, used in Japanese gardens are miniature versions of regular pagodas. In the gardens, arbors are located at high spots, so that they allow the landscape to be displayed. The arbors are built with an umbrella-like roof, woven with straw mats or thin sticks and a central wooden column which carries it. From below, on the other hand, the roof is decorated with elegant shapes of the ridges, wooden paneling and footstalls.

Stone lampions are used in Japanese gardens in order to prevent burglary.[74] Although some of the garden lanterns are made from wood and metal, they are usually stone made. Most of them are made of cushily-dried granite, for the purpose of reflecting the favored sight of austerity, purity and development. Another reason of preferring granite is that it is easy to be processed.[75] Stone lanterns, known as "*İshi toro*", are comprised of 5 sections, namely the base, body, flame box, roof of the flame box and head.[76]

Water bowl is a garden element that is used in Japanese gardens, especially in tea gardens, for the purpose of washing hands and mouth.[77] It was first used in entrance areas of tea houses, in Japanese gardens. According to the Japanese tradition, when the guests of the garden wash their mouths and hands before entering the tea house, this represents their respect to the landlord.[78] Some soul soothing design elements were used in the garden of the period, in order to make the guests enter the tea houses in a purified way both in body and spirit. Water bowl (*Tsukubai*), used in designs of tea houses, literally translates as "to comply with or to kneel".[79]

CREATION OF KONYA'S JAPANESE GARDEN

IZVEDBA JAPANSKOG PERIVOJA U GRADU KONYA

Within the context of the "11th World History, The Union of Cities Conference", held in Konya, on 10-13 June, 2008, the mayors of Kyoto and Konya agreed upon making a Japanese garden in Konya and building a whirling dervish monument in Kyoto, in order to strengthen the amity and the relationships between two countries.

The Kyoto Japanese Garden, whose construction started in 2008, was implemented on an area amounting to 30.000 m^2 and approximately 50 kinds of plants were used. The Japanese garden was put into service at the end of 2009. During the studies of the garden construction, a committee was sent to Japan, concerning the garden issue. Support in the form of advisory service was given by Kyoto Municipality.

The garden is located in the District of Selçuklu, on the way to İstanbul, through Selçuk University Campus, on the right. The design and application of the garden was carried out by Konya Metropolitan Municipality, Parks and Gardens Directorate (Fig. 1).

The garden lies on a rectangular plot, in the east-west direction and it is surrounded by multi-storey buildings. The relatively flat land has been ruffled by land fillings which resulted in the formation of hills. An asymmetrical arrangement is revealed in the garden. A lake with informal lines and paths is the most distinct feature of the design (Fig. 3).

EVALUATION OF KONYA'S JAPANESE GARDEN IN RESPECT TO THE PRINCIPLES OF JAPANESE GARDEN DESIGN

VRJEDNOVANJE JAPANSKOG PERIVOJA U GRADU KONYA U ODNOSU NA OBLIKOVNA NAČELA JAPANSKIH VRTOVA

In our study, it can be claimed that the perspectives, directed at the perception of the visitors were created in the garden. However, it cannot be claimed that it has been successful enough about achieving the depth of perception and the techniques of showing the area wider than it actually is. An informal design was applied in Konya's example but, concrete, which was used in the construction of the pavements and rocky structures, is an artificial matter that caused a reduction of movement and energy of the garden. Due to intensive planting the open spaces are limited. So, the equal relationship between open spaces and the planted areas, which is an important factor for the visitors, has been disturbed.

Konya's Japanese garden was created in a miniature form and this was achieved successfully. Symbolism and natural features are seen as significant features of the garden. Some perspective techniques were attempted to be applied in the garden. Based on the

68 Akdoğan, 1974; Gültekin, 1998
69 Tanriverdi, 1975
70 Akdoğan, 1974; Öztürk, 1994
71 Akdoğan, 1974; Gültekin, 1998
72 Nurlu, Erdem, 1994
73 Ketchell, 2001
74 Nurlu, Erdem, 1994
75 Öztürk, 1994
76 Tüfekçioğlu, 2008
77 Nurlu, Erdem, 1994
78 Ketchell, 2001
79 Seike et al., 1992

FIG. 3 VIEW FROM THE LAKE IN KONYA'S KYOTO JAPANESE GARDEN
SL. 3. POGLED S JEZERA U JAPANSKOM PERIVOJU KYOTO U GRADU KONYA

FIG. 4 VIEW FROM THE WATERFALL IN KONYA'S KYOTO JAPANESE GARDEN
SL. 4. POGLED S VODOPADA U JAPANSKOM PERIVOJU KYOTO U GRADU KONYA

FIG. 5 VIEW FROM THE ZEN GARDEN
SL. 5. POGLED IZ ZEN VRTA

TABLE I ELEMENTS OF KONYA'S JAPANESE GARDEN
TABL. I. SASTAVNICE JAPANSKOG PERIVOJA U GRADU KONYA

Name	Piece	Name	Piece
Wooden lantern	12	Birdhouse	2
Main entrance ornament	1	Sitting group	25
Lighting	85	Pagoda	1
Water game with bamboo	1	Pergola	4
Plant display boards	20	Service door	2
Fountain	3	Watching terrace	3
Dust bin	45	Well	1
Dock above lake and bower	1	Display board	1
Security building	1	Stone lantern	8
Bower	18	Thori	1
Rock garden	5	Totem	1
Boat	1	Parking lot	72
Bridge	3	Toilet	1
Waterfall	1		

proportion of people they were structurally scaled. In general, the garden represents a silhouette image of a Japanese garden.

The arrangement of artificial hills, lakes, islands, streams, waterfalls, bridges, lanterns, bowers and rocks, which are among the basic elements of the Japanese gardens, are shown in the design (Table I). The research results showed that the symbolic meaning and statement of Japanese gardens have been provided. The silhouette of the garden generally represents the image of the Japanese garden.

In Konya's garden, the element of water is represented by an artificial lake, Thori, stream, bamboo water game and a waterfall. The water which is in a motionless state is also used for reflection. Additionally, the arrangement of rock, grass and gravel in the lake landscape has not been given enough attention. However, wooden logs have been used. The waterfall does not dominate the garden (Fig. 4). The fact that natural stones have not been used has substantially weakened its visual and symbolic effect. Although the stream, created in the garden, stretches in the east-west direction within the area, it does not have the necessary curves to enable the circulation of water.

The use of artificial rocks and stones in the garden is considered as a very serious mistake. It is due to that fact that it has been very hard to make arrangements of rocks and stones which carry symbolic meanings in the garden. Besides, the use of artificial rocks in the whole garden causes a loss of natural character of the garden. In this context, the lake, waterfall, bridge and other rock arrangements lose their effect and this condition symbolically causes the rock arrangements to become impossible. The gravel arrangement is made in an attempt to reflect the Zen spirit (Fig. 5).

Approximately 50 kinds of plants have been used in the garden (Table III, IV). Considering the used plants, it is determined that the green color is not dominant. As the most significant plant kinds of the Japanese garden, evergreen (especially pine) and deciduous plants (especially plum) have been given prominence, whereas bamboo is used for experimental purposes due to its climatic requirements. The use of approximately 80 kinds of pines is considered negligible in relation to the total number of plants. The rate of evergreen ones can be considered adequate. Similarly, the number of plums, which would dominate with the color of their flowers and leafless branches especially during the spring months, is also rather small, amounting to only 150 pieces. As a result, it will not be possible to provide the required dominant appearance during the spring months. Approximately 170 kinds of maples are used in the garden. It is erroneous to excessively use the colorful plants that would lessen the dominance of the green color in the entire plantation. Besides, the use of some kinds that would corrupt the human scale is against the criteria of the Japanese garden design. During the planting process, visitors' views of the landscape were taken into consideration, particularly in the long term perspective.

Two islands are situated in the artificial lake. These islands do not have symbolic forms and they provide the required criteria with planting. The fact that there is no bridge that connects the islands to the lake coast strengthens this symbolism (Fig. 6). The pathways within the garden are designed with informally. A natural composition is constituted by defining the routes that would enable visitors to see the garden. Stamped concrete which appears almost as natural stone is used as flooring. Three bridges, small, medium and large, are built in the garden. The large and small ones were produced from wood and the other one is made from artificial rock. While one of the wooden bridges is flat, the other has an arched form (Fig. 7). The bridge built of artificial rock does not in any way serve an aesthetic purpose. .

The garden has three entrances, one of which is the main entrance. The main entrance is in

80 KENNETH, 2007

Fig. 6 view of the lake from the islands
Sl. 6. Pogled na jezero s otoka

Fig. 7 view of the lake from the bridges
Sl. 7. Pogled na jezero s mostova

Fig. 8 view from the main entrance
Sl. 8. Pogled s glavnog ulaza

the form of arch with a closed upper side and is very successful in design (Fig. 8). A decorative door, approximately 2 m high is used as an element of hindrance and the garden is closed off from the outside world. The garden wall seems to have aesthetic features and is functional. It is indicated that the bamboo fences within or around the garden shall be given their proper place at the later stages.

Eight stone and twelve wooden lanterns have been used within the garden. The stone lanterns were also made from artificial concrete. Eighteen camellias, suitable for Japanese architecture have been planted in the garden. Besides, a multi storey pagoda shall also be added in a short time. The pagoda is purposefully being planned in the direction of east, along the lake coast in order to have a reflection both in sight and on the surface of the lake. It is also a big deficiency not to give any place to water bowls and tea houses in the garden.

The use of space in the garden is very successful (Table II). Proportion is provided by the basic garden elements.. Konya's Kyoto Japanese garden has been executed with great efforts in different geographic and climate conditions, as a representation of the Japanese garden culture.

Conclusion

Zaključak

Although the Japanese gardens have a thousand-year-old history, they could not be researched efficiently in Turkey or in the rest of the world. The Japanese culture, religious beliefs, architecture, history and social life should be researched in detail. This garden culture can only be protected by showing it respect in this way. Studies which are carried out only from the point of view decoration can cause Japanese gardens to get estranged to their own physical and cultural characteristics.

Japanese gardens attract attention with their exotic and mystical characteristics, particularly in western countries. It is possible to see examples of Japanese gardens in various countries of the world. Today there are approximately 690 Japanese-style gardens built outside of Japan.[80] The Japanese garden in the Montreal Botanical Garden is one of the most significant examples.[81] In Turkey, Japanese gardens are built in the provinces of İstanbul and Kırşehir. The purpose of this research is to show the Japanese garden culture to the people in the countries which are far from Japan. The research, however, could not examine the gardens from a point of view which goes beyond imitation due to a lack of knowledge and experience of the activities that range from design to application.

Religious and cultural features of Japanese gardens make their design a very difficult task, as well as their construction which is additionally made hard by their natural features. While making the design, a support should be provided by Japanese garden designers and creators. Instead of producing garden elements in the area where the garden is being built, it would be better to bring them from the places of their origin because these elements are products, created by certain artists or craftsmen from the natural materials there. Another issue to be taken into consideration is the arrangement of the elements in the garden. This arrangement should carry true statements both religious and cultural. It is almost impossible to find the characteristic features of Japanese climate and topography in other places. The topographic features can be optimized to a certain point in the gardens. However, such practice would be out of the question because of climatic features. They limit the use of plants, which are among the most significant elements of the garden.

The plants, which reveal the seasonal silhouette of Japanese gardens, consist of specific kinds. The use of these kinds is a necessity in a Japanese garden. If the climate conditions are not convenient for this, the idea of building a garden should be abandoned.

Gardens cannot be successfully built only with structural elements like pagoda, bridge

Table II Use of space in Konya 's Kyoto Japanese Garden
Tabl. II. Korištenje prostora u japanskom perivoju Kyoto u gradu Konya

Name	m²	Name	m
Green area	14.500	Garden wall	400
Artificial lake	3.000	Path	1600
Covered area	350	Bridge	40
Pebble Parking lot	120 1.650		

81 Desranleau, Jacops, 2009

Table III List of Plants in Konya's Kyoto Japanese Garden (Evergreen)
Tabl. III. Popis (zimzelenog) bilja u japanskom perivoju Kyoto u gradu Konya

Species	Piece	Species	Piece
Abies concolor	17	*Juniperus alberetto*	15
Abies procera **"Glauca"**	10	*Juniperus media* "Oldgold"	1.100
Buxus sempervirens **"Suffruticosa"**	130	*Juniperus media* "Pfitzeriana glau."	145
Cedrus atlantica **"Glauca pendula"**	20	*Magnolia grandiflora*	3
Cedrus atlantica **"Glauca"**	8	*Picea engelmanni* "Glauca"	10
Cedrus dedora **"Aurea alberetto"**	2	*Picea abies* "Nidiformis"	25
Cedrus deodora Pendula	2	*Picea glauca* "Conica"	22
Cedrus deodora **"Aurea"**	15	*Picea pungens* "Glauca globosa"	10
Cupressusparis Leylandi	18	*Picea pungens globosa* "Alberetto"	30
Daphne cneorum	10	*Pinus mugo* "Mops schimichi	21
Euonymus alatus	33	*Pinus exelsa*	50
Euonymus fortunei **"Emerald'n gold"**	200	*Pinus nigra pallasiana var.* "Pyra."	6
Ginko biloba	20	*Taxus baccata* "Elegantissima"	50
Ilex aquifolium Albererto	10	*Thuja orienatalis* "Compacta nana "	15

Table IV List of Plants in Konya's Kyoto Japanese Garden
Tabl. IV. Popis bilja u japanskom perivoju Kyoto u gradu Konya

Species	Piece	Species	Piece
Abelia sp.	30	*Hedera helix*	90
Acer negundo	5	*Hibiscus syracus*	144
Acer palmatum **"Atropurpureum"**	72	*Koelteria Peniculata*	20
Acer platanoides **"Crimson king"**	21	*Ligustrum japonica*	500
Acer platanoides **"globosum"**	45	*Mahonia japonica*	20
Acer rubrum **"Schlesingeri"**	25	*Malus purpurea*	20
Aesculus hipocastanum	15	*Morus alba apalla*	7
Albizia julibrissin	6	*Morus alba pendula*	3
Phyracantha coccinea	25	*Nandia domestica*	20
Bambusa Aurea	35	*Paeonia arborea*	50
Berberis thunbergii **"Atropurpurea"**	1.444	*Photinia fraseri* "Red Robin"	65
Betula alba	6	*Prunus cerarifera* "Pissardi nigra"	75
Betula pendula **"Yongii"**	15	*Prunus cerulata* "Kiku Shidera Pen."	5
Buddleia davidii **"Nanho blue"**	100	*Prunus cerulata*	63
Carpinus betulus	14	*Quercus rubra*	18
Catalpa bungei	7	*Rhus typhina* "Laciniata"	50
Celtis australis	25	*Robinia pseu.*	4
Cercis siliquastrum	72	*Rosa spp.*	500
Chaenomeles superba	75	*Salix babylonica*	5
Cornus al**ba** **"Sibirica"**	120	*Salix coprea pendula*	5
Cotinus coggyria **"Royal purple tre"**	31	*Salix tirisdis*	14
Cupressus arizonica **"Conica glau"**	15	*Saxifraga longifalia*	100
Craetegus oxycontha **"Coccinea ple"**	14	*Sophora japonica*	5
Elaeagnus pungens **'Aurea'**	10	*Spirea bumalda* "Anthony Waterer"	120
Fagus sylvatica **"Purpurea pendula"**	4	*Syringa vulgaris*	30
Forsythia xintermedia **"Spring glor"**	95	*Tilia tomentosa*	15
Fraxinus excelsior	9	*Wisteria chinensis*	10
Gleditsia triacanthos **'Sunburst'**	53		

or rock arrangements, showing thus only the Japanese architecture. The construction which provides sustainability of these gardens is also very hard and significant. The design of Japanese gardens could be achieved only if the plants are maintained conveniently. Many gardens are corrupted, since they are not maintained.[82] Gardening, particularly pruning, irrigation, fertilization, disinfection, cleaning and innovation, requires a great sensibility and experience.

There are some cases when presentations of the built gardens were held to the district or local communities as well. Japanese gardens are made for sightseeing and watching purposes. Other recreational activities in these gardens spoil the physical and spiritual meanings of the garden. Therefore such activities should be avoided. Besides, the Japanese garden culture should be explained to garden visitors in an easy way. Visitors' view of the garden should not be based on the fact that it consists only of a few rocks, plants, lake, bridge and pagoda which they can see when strolling around. Rather, they should leave the garden with a comprehension of what these elements express. This will help them keep the thoughts about the garden in their minds for a long time. For this purpose, each element of the garden composition should be introduced to visitors through explanatory panels and guides. This will enable them to learn about the cultural, religious and natural characteristics of the Japanese garden, as well as about the things they observe.

Konya's Japanese garden is a good example of applied principles of Japanese garden design. It received miniature features of Japanese gardens. The spirit of the symbolism which reflects the culture of the Japanese garden influences the garden staff. Dominant elements, such as the pond and waterfall are included in the garden. The entrance and the walls of the garden were also successfully applied. A dry garden, reflecting the spirit of Zen, is also situated within the entire garden arrangement. Generally, the garden is designed for the purposes of walking and contemplating. Stone and rock have not been successfully applied in Konya's garden. This especially concerns the use of stamped concrete for flooring, the use of artificial rocks as symbolic rock applications and the use of artificial materials as decoration above walls. In addition, artificial materials used instead of natural stone for the stone bridge produced unaesthetic effects. Apart from this, Konya's Japanese garden has achieved a successful application of design principles in its effort to represent Japanese gardens.

82 Goto, 2009

Table V Some samples of the Japanese Gardens in geographical and chronological order in the world
Tabl. V. Primjeri japanskih perivoja u svijetu prikazani u geografskom i kronološkom poretku

Name	City	State	Country	Designer(s)	Founded
Asia Japanese Gardens					
Haryana – Pinjore Gardens	Haryana		India		
Ipoh Japanese Garden	Ipoh	Perak	Malaysia		
Lumbini Japanese Garden	Sonauli (Sunauli)		Nepal		
Singapore Chinese and Japanese Gardens	Singapore	Singapore	Singapore	Jurong Town Corp.	1974
Harbin Niigata Friendship Garden	Harbin	Heilongjiang	China		1988
Hiroshima Garden	Chongqing	Sichuan	China		1991
Baltalimanı Japanese Garden	Kırşehir		Turkey	Japan archaeologists	1993
Taman Bunga Nusantara Flower Park	Cipanas	Puncak	Indonesia		1995
Kunming Japanese Garden	Kunming	Yunnan	China		1999
Europe Japanese Gardens					
Moscow Japanese Garden	Moscow	Moscow	Russia	Ken Nakajima	
Jardin de la maison de Claude Monet	Giverny	Eure	France	Claude Monet	1893
Jardin japonais du musee Albert Kahn	Boulogne-Billanco.	Haut-deSeine	France	Achille Duchene	1895
Powerscourt Estate and Gardens		County Wick.	Ireland		1908
Wroclaw Japanese Garden	Wroclaw	Wroclaw	Poland		1913
Budapest Zoo & Botanical Garden	Budapest		Hungary	Sugimura Fumio	1965
Jardin japonais du centre hospitalier du Vexin	Aincourt	Val-d'Oise	France	Hamon	1970's
Kempinski Hotel Zografski	Sofia		Bulgaria	Kurokawa Kisho	1979
Planten un Blomen	Hamburg		Germany	Yoshikuni Araki	1979
Duthie Park Trust	Aberdeen		Scotland	Takashi Sawano	1985
Canada War Museum	Adegem-Maldegem	Flanders	Belgium	Vanlandschoot	1994
Fernelmont Japanese Garden	Fernelmont	Limburg	Belgium	Marc Knaepen	1994
Taunustor Japan Center	Frankfurt	Hesse	Germany	Masuno Shunmyo,	1996
Japanischer Garten, Kaiserslautern	Kaiserslautern	Rheinland	Germany	Volker Menzel	1997
Berlin Japanese Garden	Berlin-Marzahn		Germany	Shunmyo Masuno	2001
Real Japanese Garden	Carmarthenshire	Wales	UK	Masao Fukuhara	2001
Lauriston Castle	Edinburgh	Scotland	Scotland	Takashi Sawano	2002
Ricany Japanese Garden	Ricany		Czech Rep.	Osamu Okamura	2004
America Japanese Gardens					
Osaka Garden at Jackson Park	Chicago	Illinois	USA	Sadafumi Uchiyama	1893
Butchart Gardens	Victoria	British Col.	Canada	Kisheda Isaboru	1905
Takata Japanese Garden	Saanich, Victoria	British Colum	Canada	Takata	1907
Japanese Hill-and-Pond Garden	Brooklyn	New York	USA	Takeo Shiota	1915
Shoto Teien Japanese Garden	Sioux Falls	South Dakota	USA	Joseph F. Maddox	1928
Shofu-en Japanese Garden	Denver	Colorado	USA	Kawana Koichi	1952
Asticou Azalea Gardens	Northeast Harbor	Maine	USA	Osamu Shimizu	1956
Duke Gardens Foundation	Hillsborough	New Jersey	USA	Doris Duke	1959
Seattle Japanese Garden	Seattle	Washington	USA	Iida Juki	1960
UCLA Hannah Carter Japanese Garden	Los Angeles	California	USA	Sakurai Nagao	1961
Armour Gallery & Gardens	Kaneohe	Hawaii	USA	Hiroshi Tagami	1970's
Anderson Gardens	Rockford	Illinois	USA	Hoichi Kurisu	1978
Bloedel Reserve	Bainbridge Island	Washington	USA	Kubota Fujitaro	1978
Buenos Aires Jardin Japonés	Buenos Aires		Argentina		1979
California Scenario	Costa Mesa	California	USA	Isamu Noguchi	1980
Felicita Japanese Garden	Harrisburg	Pennsylvania	USA	Harriet Henderson	1980
Hayward Japanese Gardens	Hayward	California	USA	Kimura Kimio	1980
Earl Burns Miller Japanese Garden	Long Beach	California	USA	Edward R. Lovell	1981
Kurimoto Japanese Garden	Devon	Alberta	Canada	Mitani Kozo	1989
Parca Shiga	Porto Alegre	Rio Grande d	Brazil		1993
New Denver Japanese Garden	New Denver	British Colum	Canada	Roy Tomomichi	1994
Canadian Museum of Civilization	Hull	Quebec	Canada	Masuno Shunmyo,	1995
Wesleyan University Japanese Garden	Middletown	Connecticut	USA	Steven A. Morrell	1995
Four Rivers Cultural Center and Museum	Ontario	Oregon	USA	Hoichi Kurisu	1999
Heisei-en	Montevideo	Montevideo	Uruguay		2001
Ernest and Mary Fenollosa Japanese Garden	Mobile	Alabama	USA	Dr. Takeo Uesugi	2003
Oceania Japanese Gardens					
Cowra Japanese Garden	Cowra	New S.Wales	Australia	Ken Nakajima	1975
Toowoomba Japanese Garden	Toowoomba	Queensland	Australia	Nakane Kinsaku	1983
Melbourne Zoo Japanese Garden	Parkville	Victoria	Australia	Nakane Shiro	1991
Waitakere Japanese Garden	Waitakere		N. Zealand	Elly Maejima	1997

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ILLUSTRATION SOURCE

IZVOR ILUSTRACIJA

FIGS. 1-8 Authors

Summary

Sažetak

Japanski perivoj Kyoto u turskom gradu Konyi

Oblikovni principi japanskog perivoja

Japanski perivoji se razlikuju od drugih perivoja po svojim obilježjima poput prirodnosti, egzotičnosti i mističnosti. Japanski perivoji niču po cijelome svijetu i mnogi koji ih stvaraju ili koriste pitaju se po kojim se načelima oni oblikuju. Primjere japanskih perivoja moguće je vidjeti u mnogim državama svijeta. Danas postoji oko 690 perivoja oblikovanih u stilu tradicijskog japanskog perivoja izvan Japana. U Turskoj također postoje japanski perivoji i to u pokrajinama Istambul i Kirşehir. Namjera ove studije jest dati prikaz kulture japanskog perivoja onima koji žive na velikoj udaljenosti od njegova mjesta nastanka. Buduci da ne postoje dovoljna sveobuhvatna saznanja niti iskustva s japanskim perivojima, od projektiranja do realizacije, ova studija ne može ostvariti više od imitacije. Tema ovog istraživanja jest japanski perivoj u gradu Konya, za kojega je prrojekt naručio i izveo ga Grad Konya u Pokrajini Konya na površini od približno 30.000 m². Po svojoj površini ovaj je perivoj najveći primjer japanskog perivoja u Turskoj. Za potrebe istraživanja koristili su se, uz stručnu literaturu, materijali poput planova i izvještaja dobivenih iz raznih institucija, kao i studije i fotografije istraživanog perivoja. Metoda istraživanja podrazumijevala je načela analize i sinteze, a temeljila se na vrjednovanjima saznanja i opservacija koje su provedene na primjeru japanskog perivoja u gradu Konya. Određeni su se oblikovni elementi i načela umjetnosti japanskog perivoja preuzeli iz stručne literature. Nakon toga, ta su se načela vrjednovala prema različitim aspektima i to na primjeru japanskog perivoja u gradu Konya. Ovaj turski perivoj dobar je primjer primjene oblikovnih principa japanskih perivoja. Minijaturni oblici japanskog perivoja su ovdje vrlo dobro riješeni. Dobro je prenijet duh simbolizma koji odražava kulturu japanskih perivoja. Dominantne sastavnice poput jezerca i vodopada također su i u ovom perivoju. Uspješno su primijenjena i načela oblikovanja ulaza i zidova perivoja. Kao još jedna sastavnica jest i japanski vrt bez vode koji odražava duh Zena. Opaćnito govoreci, japanski perivoj je namijenjen za šetnju i kontemplaciju te je tako i projektiran. No, kao negativna strana perivoja u gradu Konya, naglašava se nepravilna uporaba kamena i stijena jer se umjesto njih koriste umjetni materijali. Primjerice, perivoj je popločen betonskim pločama, umjetnim stijenama predstavljene su simboličke stijene, a umjetnim materijalima izradila se i dekoracija iznad zidova. Osim toga, za izradu kamenog mosta izbjegla se uporaba prirodnog kamena pri čemu se stvorio negativan estetski dojam. Uz sve to, ovaj perivoj u cjelini ipak pokazuje uspješnu primjenu oblikovnih načela i dobro predstavlja japanske perivoje

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Biographies

Biografije

Ahmet Tuğrul Polat (1976) is a landscape architect. He earned his MA and PhD degree at the Institute of Natural and Applied Sciences at Selcuk University. He MA thesis was titled Urban Parks and his PhD Ecotourism. His research areas include parks in urban spaces, visual quality assessment in landscape architecture and garden art history. He works as assistant professor at Selcuk University.

Sertac Güngör (1970) is a landscape architect. He earned his MA and PhD degree at the Institute of Natural and Applied Sciences at Ankara University. He presented his MA thesis entitled Open and Green Systems and his PhD thesis entitled Tourism and Recreational Usage. His research areas include GIS possibilities in tourism planning, wetlands and environment protection. He works as assistant professor at Selcuk University.

Nail Kaklik (1975) is a forest engineer. He is currently enrolled in the MA program at the Institute of the Natural and Applied Sciences, Cukurova University. His MA thesis deals with the use of medicinal and aromatic plants in landscape areas. He works as director of afforestation at Selcuk University.

Ahmet Tuğrul Polat (1976.) je krajobrazni arhitekt. Magistrirao je i doktorirao na Institutu prirodnih i primijenjenih znanosti na Sveučilištu Selcuk. Obranio je magistarski rad „Urbani parkovi" i doktorsku disertaciju pod naslovom „Ekoturizam". Područja istraživanja su mu parkovi u urbanim prostorima, vrjednovanje vizualne kakvoće krajobrazne arhitekture i povijest umjetnosti vrtova. Radi kao docent na Sveučilištu Selcuk.

Sertac Güngör (1970.) je krajobrazni arhitekt. Magistrirao je i doktorirao na Institutu prirodnih i primijenjenih znanosti na Sveučilištu u Ankari. Obranio je magistarski rad pod naslovom „Otvoreni i zeleni sustavi" te doktorsku disertaciju pod naslovom „Turizam i rekreacija". Područja istraživanja su mu mogućnosti GIS sustava u turističkom planiranju, močvarna područja i zaštita okoliša. Zaposlen je kao docent na Sveučilištu Selcuk.

Nail Kaklik (1975.) je inženjer šumarstva. Trenutačno pohađa magistarski studij na Institutu prirodnih i primijenjenih znanosti na Sveučilištu Cukurova. U magistarskom radu bavi se uporabom medicinskog i aromatičnog bilja u krajobraznim prostorima. Radi kao upravitelj pošumljavanja na Sveučilištu Selcuk.