РУСЕНСКИ УНИВЕРСИТЕТ „АНГЕЛ КЪНЧЕВ”

СЪЮЗ НА СПЕЦИАЛИСТИТЕ ПО КАЧЕСТВОТО В БЪЛГАРИЯ

ФЕДЕРАЦИЯ НА НАУЧНО-ТЕХНИЧЕСКИТЕ СЪЮЗИ

НАУЧНИ ТРУДОВЕ

XXIV МЕЖДУНАРОДНА НАУЧНА КОНФЕРЕНЦИЯ ЗА МЛАДИ УЧЕНИ

май 2015 г., РУ „А. Кънчев”

НАУЧНИ ТРУДОВЕ

XXIV МЕЖДУНАРОДНА НАУЧНА КОНФЕРЕНЦИЯ ЗА МЛАДИ УЧЕНИ ' 2015

Русе, 2015

Това издание е финансирано от

Съюз на специалистите по качеството в България

ISSN 1314-4669

Тираж 100

София, 2015

СЪДЪРЖАНИЕ

APPLICATION OF WATER SURFACES IN LANDSCAPE ARCHITECTURE

Assoc. Prof. Vaska Sandeva, Assoc. Prof. Katerina Despot, Sanja Stevcheva
** University "Goce Delchev" - Stip, Rep. of Macedonia **

Abstract

The water areas have been an inseparable part of the park architecture, since its early development. Today it is almost unimaginable not to predict water surfaces in the design of parks and gardens. The only elements that have changed through the years are the composition and the positioning of the water surfaces in a given location. Aesthetic value of certain aquatic forms and motives may have changed, but their application and significance have always been in accordance with the needs of the time period.

The monotony caused by excessive foliage is cleared up with implementation of water surfaces in the parks. They are one of the most important aesthetic elements. Their application (in natural or artificial form), significantly enriches the visual composition of each park. Water elements are of extreme importance for the quality of life and the sustainability of the ecosystems, and at the same time they contribute for increasing the attractiveness of the landscape.

Introduction

Water is one of the most important components in the natural landscape and plays a significant role in the formation of green spaces, especially parks. The elements with water are affecting the microclimate; also they counteract the air temperature and are increasing the air humidity.

The water surface represents irresistible and attractive ornament of each garden, and is one of the most important natural components. Water, like no other element inside the garden, improve the space with especially attractive changes, which reflect the environment, sounds and movements. Even when it is frozen, its surface presents striking contrasts of colors and structures.

Regardless of the size of the water surface, they ennoble any space giving it freshness and liveliness with its spill, spraying, and purity with transparent and translucent appearance.

The basic physical property of the water is its "flexibility", i.e. the possibility as "material" to fit into any shape. The water surface can be static or dynamic nature and character, depending on whether is it still (lake, swimming pool, open water, etc.) or running (alpinium, river, stream, waterfall, etc.).

Water surfaces are vastly present in modern gardens and parks and are separated with their rich visual processing from the atmosphere and ambient of the park. Expert using of different decorative effects of water can allow creating of compositions with strong emotional impact.

One of the effects that water creates is its sound. Despite its calming effect, it also represents a remarkable sound barrier, with its noise absorption effect.

Depending on the composition of the park as a whole, water elements are formed in:

- Geometric forms
- Landscape Forms

In both cases, the importance of water is microclimate factor and motive that rouses and enriches the parks scenery. Various types of water surfaces create different effects.

From ancient times until the beginning of the XVIII century in almost all regions of the world, develops the geometric style, which is subordinated to the strict geometric shapes and symmetry in the planning of parks and gardens. It is dominant in the time of ancient Egypt, Assyria and Babylon, Ancient Greece and Ancient Rome, and during the Middle Ages and during the Italian Renaissance, French classicism and German baroque.

With the dawn of the new social and economic relations in Europe as a result of the introduction of Western civilization with the culture of the Far East, in the XVIII century it appears and develops landscape style in the park art. It completely denies the geometric style and introduces only natural and ecological lines and shapes. This style in most European parks is combined with the inevitably existing before geometric park spaces, which impose the appearance of a third concept in this regard - mixed style park art.

The water resources of the area we cultivate as rule determine and form its composition. Rivers, streams, a series of lakes, ponds with an elongated shape and channels represents the compositional

axis of the park, while water surfaces (ponds and lakes) represents compact forms - compositional centers.

Facilities with a smaller size as fountains, pools, waterfalls, and springs became centers inside the composition of the park or their accents.

Water elements and objects in the park environment are divided into:

- Artificial (man-made ponds, water mirrors, fountains, fountains, swimming pools)
- Natural (streams, rivers, waterfalls, lakes, seas)

Depending on whether they are man-made or just shaped by it.

Artificial lakes

Artificial lakes are man-made lakes and in their construction we can insert and use a variety of techniques through lighting, inserting dynamism, etc.

The best locations for setting lakes are the lower parts of the gardens and parks. The shape of the lake should be natural and simple.

Water surfaces are essential elements that bring a particular feature in the park composition. They the spirit of the landscape and create a natural atmosphere, freshness, shade and many more different effects. With its bright spots and a vibrant reflection of the vegetation and the architectural and landscape elements, they evoke an impression for static and dynamic effects. They are also the most attractive places for rest.

The artificial lakes reduce the space inside the park, and from them are required to create a dynamic park line bringing it closer to the natural line.

One of the main applications of water in the park art is increased flexibility in the scenery. This is achieved with its use in a dynamic state:

- falling - by amplification or reinforcement of the occurred effect of the water noise, fig.1.

Figure 1: Water elevation drop

- spraying – through horizontal, vertical or at an angle directed water cannons with different length through the transmission of the dispersion system, fig.2.

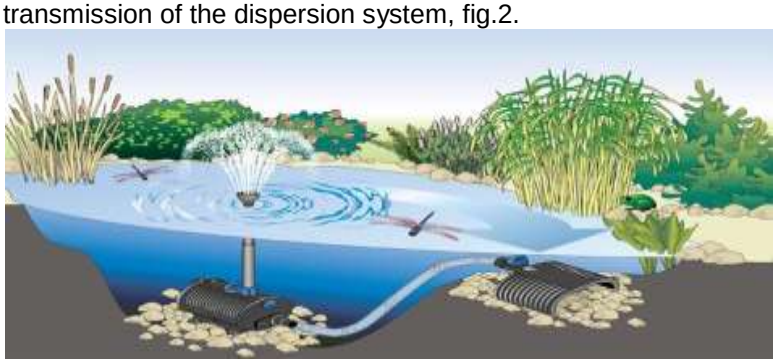

Figure 2: Water spraying

- pulling – of smooth surfaces at an angle

High and steep banks generate the illusion of narrow water areas. Reverse - on the gentle shores, where the entire angle range is blocked of the opposite coast, contribute to the optical perception as larger water spaces.

Lighting

Water surfaces act remarkable in daylight while the sun's rays are bouncing off their waves, but when night falls they practically disappear visually. Regardless of their shape or size, if they are artfully created they should be illuminated. With the use of lamps of different intensity and color, we can express the most striking properties of the water surfaces. During the lighting of the lakes we need to rely on the opportunities offered by our Mother Nature. If the lake is encircled with tall trees, we can mount the lights in their branches directed towards the water surface, which capture the natural effect of the moonlight. In this way we create intriguing shadows on the water surface created by the silhouettes of the trees. With the lightening of the surrounding landscape, we can create an effect of reflecting water surface. If we set zone lighting along the coast, we outline the edges of the lake and we can create reflecting variety of the water surface. By placing the sunken lights on the edges of the lake, we could portray the color and shine of the fish that pass nearby.

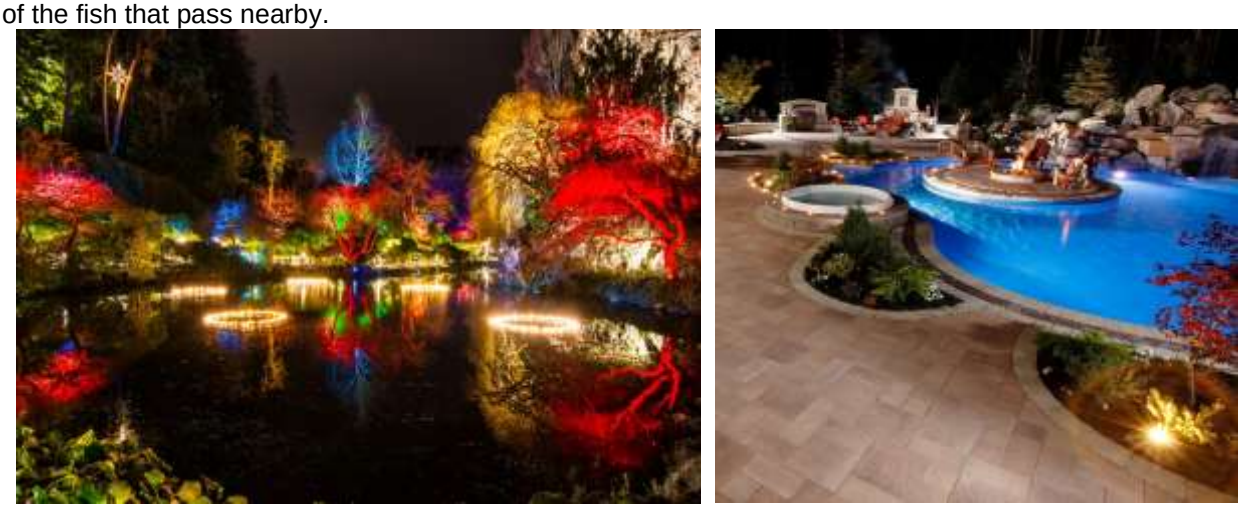

Figure 3: Lighting of water areas

Lighting of the fountains, cascades and other facilities with water depends on their sculptural form or their game with jets, which should especially be separately lighten, often with underwater lights or reflectors.

In both cases, there is a close connection between all the elements of the space, because every single part must not be separately viewed, but only as part of the whole.

Greenery

For diversification (diversity) and decoration of smaller lakes (reservoirs), hydrophytes and hygrophytes are often used. Through them we are getting natural-looking water areas, but they should be regularly thinned from vegetation so they don't completely lose the impact of the water surface.

The size of the area with vegetation, lakes and other major reservoirs (tanks) in park environment boils down to the following:

a. creating of open spaces (beaches) on the south oriented shores

b. tightly clustered arrays of trees and shrubs close to the water in the orientation to the north or south coast (which creates aesthetic impact of thrown shadows and reflection from the plant forms on the waterline, which gives more vivid and dynamic effects on the coastlines).

c. construction of the half-open spaces from the east and the west (via ornamental groups of trees, shrubs and skyscrapers, generates greater flexibility of the space and can model interesting games of lights and shadows in the mornings and afternoons).

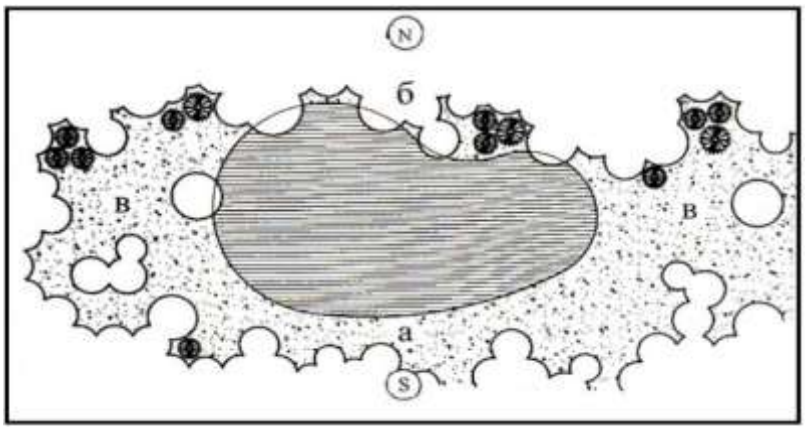

Figure 4: Graphical display of water surface surrounded by vegetation

The image of water surfaces are built on the basis of a fundamental creative principle: Discovery of water - marking the width of the lake, the architectural rhythm of the fountain, the dynamic line of the river or stream.

An example for application of water surfaces by lakeside

Water is one of the most powerful tools that a landscape architect can create. The goal in designing the water surfaces is to get visually interesting environment, which will also be practical. Whether the water surface is used as reflective surface of an object, or represents the focal point of an urban park, a sprinkling fountain on a playground or square, our goal as a designers is to change the way people experience the places that we create. One of the things that fascinates us is the feeling of relaxation that water surfaces provides. In addition, water can be calm and refreshing, but it can also be fun - water is the first playground. The water is alive, and constantly changes its shape and color.

The composition is the main component in shaping the idea in the design of any work of art. Ideally, when defining the forms of the water surfaces, we should abide by the idea of the designer, which is precipitated by defined aesthetic rules, while at the same time is in line with the functionality and sustainability of the above mentioned forms and ideas.

For this purpose, the design of the water surfaces takes several factors:

1. Purpose of the task - which is the effect you want to achieve with the construction of water surfaces.
2. Function - what would be the role of these bodies of water (sports and recreation, relaxing, esthetic value or function to another object, etc.).
3. Location – it has a major impact on the position for building these water surfaces. They can be part of a larger park composition or central focal point in the smaller parks. They can be located near to major natural or artificially formed man-made bodies of water.
4. Cost-benefit – what's the financial justification for their construction and future maintenance.

Water complex

When the goal is designing water surfaces that are located near lakes, we always have to take in account the defined shape. For help in defining the form we should look around the surrounding landscape. To achieve visually pleasant composition, the edges of the water surface should follow the free form of the coast of the lake. Thus, we can incorporate our idea in a any given location. All changes we create and later insert in the design of the water surfaces, in the end should always be merged and compositionally linked, even to the smallest detail. That way we get a versatile system in accordance with the architectural idea and synchronously we get a functionality of the surface that we have created, because nothing in the design can be seen as just a single element, but as a part of the whole.

The goal towards which we strive in the process of design is to get closer to nature. Water surfaces that we create near lakes or seas should fit into the environment so you get a visual perception like as it is created by itself, ie represents a real gift from nature.

One of the ways by which we can achieve the imaginary composition is by using the asymmetry as an architectural tool that allows for the free expression of the designer. It represents the exterior untold story and provides an opportunity for the free development of creative thought.

The asymmetry unlike the symmetry, acts emotionally, secretly and at first glance does not depict the strict consequential forms of the symmetry. But unlike the symmetry which at times might seem boring, asymmetry is natural and is always different.

The role of vegetation as part of the environment is undoubtedly huge. Plants, as part of the natural landscape, are radiating visually striking coloration, simultaneously having calming effect on the human psyche, contributing to the act of purification of the air, creating relaxing deep shadows, positively influencing the microclimate, represent a habitat of wildlife, complement the composition of the water surfaces themselves and so on. When selecting the plant species themselves, except aesthetic characteristics, we always should take into account the morphological, biological and environmental factors too. Commonly used plants in greening of the water surface, are so-called hydrophytes (Lotos, Nuphar, Nymphaea, Typha spp., Etc.) and hygrophytes (Typha, Caltha, Cyperus, Phragmites australis, etc.) and also ferns, palm trees, etc.

Recommendations:

• Before we compose a design for the establishment of the water surfaces, it is necessary to have a detailed analysis of their purpose, functionality, geolocation, environmental impact, sustainability, cost and so on.
• To obtain a compositional solution closer to that of the nature, we can use asymmetrical (free) forms for forming of the water surfaces. In this way, our creative ideas are not constrained by the limited number of variants which symmetry offers.
• In order to attain the decorative effect of water surfaces at night, it is a must for the application of various techniques for lighting. For this purpose bulbs are used in a variety of colors and intensity.
• When selecting the vegetation around the water areas, except the decorative features and layout of the plants, it is essential to take into account the environmental and biological factors.

Conclusion:

Water surfaces always had great application in landscape architecture. The idea of forming water surfaces is based on the principles of using natural elements in defining the aesthetic values. Asymmetric forms of water surfaces in a combination with vegetation enrich the landscape, generating particulary picturesque and varied environment. With the cultivation of aquatic surfaces with light fixtures, sprinklers, adding waterfalls and other architectural elements and forms, further contributing to the completion of the visual image that people perceive. As an essential part of the green space, water surfaces have always represented one of the most decorative natural elements in the various forms of the green space while creating a special life expression. Today it is almost unimaginable to design a park without the presence of any form of water surface. Water always had, has and will always continue to have a great impact and importance for humanity. It will always remain an element without which human life cannot be imagined.

References:

1. Vujkovic, L., Necek, M., Vujovic, D., 2003 Tehnika pejzaznog projektovanja, Beograd
2. Васка Сандева, Катерина Деспот 2014, Теорија на пејзажната уметност, Штип,
3. Сугерев Д., Градини и парковите. Софија 1960
4. Fomina, L., 1988 Osnovi na parkovoto iskustvo, SofijaJones,
5. Vujkovic, L., 1995 Pejzazna arhitektura – planiranje i projektovanje, Beograd
6. Стојчев, Л. Парково и ландшафтно искуство, Софија 1961