

The importance of multi-sensory interactive waterfront landscape design

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Abstract: With the continuous improvement of people's quality of life, more and more people pay attention to the comfort and perception of the surrounding environment. The current urban waterfront landscape design still focuses more on the visual experience of formal beauty, ignoring the connection between the waterfront landscape and people, so designers need to strengthen the perception of the environment, focusing on the sensory experience of landscape design and people's enjoyment of the environment at a high level. Therefore, the integrated use of multiple senses of vision, hearing, touch, smell and taste will be a popular trend in waterfront landscape. This paper analyzes the importance of multi-sensory experience in the creation of waterfront landscape by reviewing the literature and sorting out the current research and problems of multi-sensory waterfront landscape.

Keywords: riverfront landscape; multisensory experience; importance

1. The significance of sustainable development of multi-sensory waterfront landscape

1.1 Maintenance of ecological sustainability

Maintaining ecology is one of the more important elements in the design, making full use of the unique original ecological landscape, creating natural ecological waterfront parks and green facilities, awakening people's perception of the beauty of nature through the creation of multiple perceptions, and calling on people to protect the natural environment. In the specific landscape design, pay attention to the use and design of water, and through the visual feeling to trigger people's thinking or emotional resonance. As shown in Figure 1, the waterfront landscape along the canal located on the west side of Amsterdam, the Netherlands, which has been under construction for the last two years, is designed with plant elements throughout the river, evoking the initial historical memory of the canal by resembling a natural art installation, forming a bright landscape through the unique wooden pile design and adding a different scenery. The design elements that make comprehensive use of people's senses are fully integrated with water features, renewable resources, animals, etc. to strengthen people's communication with nature and create a colorful ecological experience landscape[1-2].



Figure 1: Waterfront Waterscape in Amsterdam, Netherlands

1.2 Sustainable development of plot economy

In the process of waterfront landscape design, designers should focus on managing the environment, protecting the river, improving the image of the waterfront landscape, attracting more citizens and tourists through the design of people's sensory experience, fully embodying the entertainment function of the waterfront, integrating tourism and shopping, commercial offices and people living there. The commercial industry is an important factor to increase the vitality of the area. The most important thing

to attract people and thus drive the commercial industry is the attractiveness of the landscape. Because people are most sensitive to the stimulation of the senses, the stimulation of the senses is an important factor in increasing the interaction between people and scenery, and a good landscape accelerates industrial prosperity, promotes a good local economic cycle and creates a good business atmosphere.

1.3 Sustainability of waterfront construction and development

Urban waterfront development and construction can directly affect the effect of waterfront landscape, in order to ensure the orderliness and rationality of landscape construction, in addition to comprehensive consideration of the overall financial situation, the most important thing is the result of the landscape. The motivation of people to participate in the landscape is also the most important motivation for development. We can start with plants, garden paths and commercial buildings, for example, in the creation of plants can be based on the texture of plants to bring people tactile feelings, aromatic smell to bring people olfactory sensations; as shown in Figure 2, the paving material and style of the garden paths can bring different visual and tactile sensations. Then the design of lighting, gardening and urban furniture in turn, fully reflecting the virtuous cycle, truly designing participatory landscape features and realizing the real sustainable features of construction and development.



Figure 2: Gravel paving

2. Expressing the historical and cultural characteristics of the city

The city's historical and cultural heritage is a masterpiece of people's long-standing spiritual civilization and a valuable resource for the city. In recent years, we have called on the whole society to pay attention to the inheritance of culture and advocate that the unique cultural background of the city and the principle of nature protection must be followed in the waterfront landscape design. Take the unique history and culture as the support point of waterfront design, fully explore the regional culture through traditional art techniques, such as folk stories, folk customs, see the streets, old brands, etc., and refine them to form characteristic landscape symbols, integrated into the pavement, sculpture, scenic walls or water form, so as to cause people's emotional resonance through visual, tactile and auditory senses. In Figure 3, the Diana Memorial Fountain, which combines the life history of the figure with the water landscape, gives the water feature a special vitality. The irregular circular design is presented by way of lines, the combination of elliptical circular water flow and topography, with green vegetation, is seen as an artificial green island, profoundly expressing that in addition to Diana's resting place on the island, the visual and auditory stimulation resonates with people. On the basis of reasonable protection, the sensory landscape and historical and cultural elements are integrated together, thus triggering people to think more[3-4].

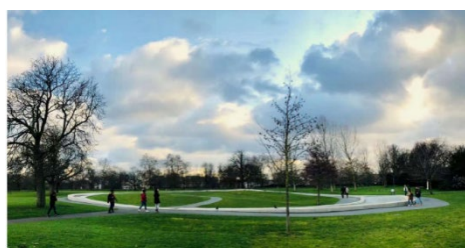


Figure 3: Diana Memorial Fountain

3. Enhance the experience and interaction between people and the landscape

3.1 Enhance the visual experience

The visual creation of waterfront landscape is one of the most important and direct sensory design elements. It can better enhance people's new perception of the landscape and make them feel the characteristics of nature. For example, static water with surrounding aquatic plants, such as reeds, emerged plant, floating plants to create an immersive environment, people can directly feel the natural movement and static, rich visual landscape layers. In Figure 4, the dynamic fountain in Cheonggyecheon, South Korea, combined with the characteristic stepped waterfront platform, the combination of the dynamic water feature and the surrounding static platform attracts many visitors from the surrounding commercial streets, the combination of visual and tactile senses enhances the sense of spatial hierarchy, bringing a rich experience of the landscape and enhancing the significance of the waterfront water feature construction.



Figure 4: Cheonggyecheon, Korea

3.2 Enjoy the listening experience

In the design of waterfront water features, full use is made of the sounds of nature to allow people to experience the landscape features and be integrated into the landscape environment. The sound of water in a waterfront water feature can relieve stress and negative emotions. The splash of water, the sound of rushing water or the sound from a fountain allows people to experience the sounds of nature in an aural way. In early landscape design, designers used the sense of hearing in connection with the landscape, such as in the Humble Administrator's Garden, where people were made to feel the beauty of nature through the lapping of rain on the plants. For example, the beach park in Australia uses the original shipyard as a feature to recreate the sound of a boat being launched in the area where it is to be launched, allowing visitors to immerse themselves in the experience through the sense of hearing. At a distance from the water basin, the auditory experience can still be integrated into the environment, such as in the park at the Beijing Olympics, where the sound of water flowing beneath a wooden trestle bridge, the sound of people walking on the bridge and the sound of birdsong are transmitted through microphones to a mixing console, allowing visitors to hear the sound before they are even close to the water, a sound immersive landscape experience that allows people to close their eyes and relax in the environment.

3.3 Rich tactile experience

In a landscape environment, people can really interact with the space emotionally or in the space, and must be able to feel the presence and characteristics of the landscape in person. Tactile sensations are not as intuitive as visual or auditory experiences, but through the contact between the experiencer and the landscape, the experiencer is able to experience the environment in a more nuanced way. People feel the temperature of the water, the smoothness of the landscape, the cold stainless steel or the variety of the sculptures through their skin, and these tactile sensations can stimulate our bodies to produce complex emotions. For example, we hear the pleasant sound of flowing water, which can bring comfort and relaxation to the experience, and when going to touch the cool, flowing water, one can more truly integrate into the natural environment. For example, the plants chosen should have a characteristic form and texture, and people can feel the morphological characteristics of the plants by touching the texture. There are also the colour characteristics of the plants, for example, the red maple chosen will give a warm spring feeling, and the ginkgo will give a warm autumn sun feeling. The design of a water-friendly landscape gives people the opportunity to touch the water, to really feel the temperature and the speed of the water. For example, a water fall in Gellerup City Park in Figure 5 allows people to stand close to the water feature and feel the water flow, enriching the tactile experience and making people more willing

to stay and interact with nature.



Figure 5: Gellerup City Park water fall landscape

3.4 Enhancing olfactory perception

The sense of smell is a basic functional requirement in the waterfront landscape space. The sensory stimulation of smell will increase the level of landscape perception, from the initial visual senses to the sensory experience of smell, enhancing the visitor's experience of the landscape. The floral scent of plants can give people the pleasure of being close to nature. Even a small rest area with a light fragrance around it can give a different kind of relaxation and relieve the mental stress of contemporary people. A floral and earthy spatial environment enhances the sensory enjoyment of the whole environment. In general, it is preferable to use one type of scented plant, which facilitates the creation of a characteristic floral and botanical space and strengthens the people's perception of nature[5-7].

4. Conclusion

The effect of sensory water features on the experience is to make people's senses more sensitive, not only through the visual experience of nature, but also with their eyes closed to understand and feel nature, and to pursue the multi-sensory stimulation of the environment in a more active and enjoyable way. In the waterfront water experience, visitors can feel the environment through different senses, through the skin to directly feel the waterscape to get a tactile experience, when the sense of touch is not enough to meet our experience of the landscape, through our sense of hearing and smell to make up for the lack of experience. The experience of the environment is achieved through the interaction between the senses and the landscape, thus making our interaction with the landscape more intimate and releasing people's mental stress. In addition, the integration of elements of sensory experience into the waterfront landscape is of some importance for society in terms of ecological sustainability, economic sustainability and cultural heritage.

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