

Application of Landscape Architecture Design in the Construction of Ecological City

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Abstract:

In recent years, urban design, as an extension of urban planning and an intermediate link between architectural design and urban planning, has received widespread attention. This paper studies the application of landscape architecture design in eco-city construction. This paper analyzes the outstanding role and remarkable effect of landscape design in the construction of low-carbon eco-city. This paper expounds that landscape design, as a comprehensive discipline dealing with human land relations, will play an important role in the construction of low-carbon ecological cities. This paper proposes a variety of landscape design approaches for the construction of low-carbon eco-city. The results show that urban design is based on human beings. Based on the laws of human physiology, psychology and behavior, the urban function can be brought into full play only by spatial layout and body shaping.

Keywords: Urban Planning, Architectural Design, Landscape Design, Ecological City.

I. INTRODUCTION

Under the background of more and more mature social development and increasingly frequent global exchanges, how to maintain the landscape architecture design with Chinese characteristics when the foreign design and foreign design concepts strongly invade the Chinese landscape design field is a problem deeply considered by today's landscape architecture academia [1-2]. This is not only related to our inheritance and development of the characteristics of Chinese classical gardens, but also can make our landscape architecture design have their own design characteristics, with the style of urban landscape with Chinese characteristics [3]. Therefore, the research and Discussion on regional issues will be of great significance and keep pace with the times.

II. OVERVIEW OF REGIONALISM AND URBAN LANDSCAPE DESIGN

2.1 Related concepts

1. Regional landscape

Regionalism refers to the local, national and folk styles of gardens based on local natural environment and climate, respect for local traditions and culture, rational application of local materials and appropriate technologies, so as to show specific regional characteristics of modern gardens [4-5].

In view of the wide concept of landscape and the regional characteristics of landscape types, the research on landscape must be limited to specific aspects and regions before it has practical significance. The regional landscape discussed in this paper refers to the landscape type and landscape characteristics within a certain region. It is a unique landscape with regional characteristics, which is integrated with the natural and human environment of the region.

2. Urban landscape design

Urban landscape refers to the sum of natural landscape elements and human landscape elements of settlements with a certain population scale. It is a space scene composed of natural ecosystem, artificial buildings, roads and other structures within the scope of a city. It is the representation of the interaction between material space and social culture, as well as the interaction of various complex factors. It has rich connotation.

2.2 The summary of the elements of regional characteristics

Since the beginning of the world, many natural landscapes have been gradually formed. These natural landscapes have evolved for a long time to form a relatively stable resource environment, and most human beings can not transform them. Therefore, regionality is closely related to the factors in the natural environment, including topography, climate, plants, water and so on [6]. Not only in China's gardens, but also in western gardens, the elements of landscape also include stone (pavement), plants, water and ground. These natural factors in the natural environment are combined to form different regional environmental characteristics, which has become the basis of regional landscape.

III. URBAN LANDSCAPE DESIGN AND REGIONAL EXPRESSION

3.1 Classification of urban landscape design

The classification of urban landscape design can be classified in different ways from different perspectives, natural landscape characteristics and humanistic landscape features. The following is a detailed description from the historical, regional, ethnic and religious perspectives [7-8].

(1) Historical perspective

The growth of each city is accompanied by the development of human history. Therefore, its structure, form and content will be related to history, and can reflect the city characteristics

of different historical periods, thus showing various urban views under different historical background. Such a city landscape with historical characteristics has obvious time differences because of the different historical time, which is obvious.

(2) Geographical location

From the perspective of geographical location, the basis of division is the physical and geographical location of a city. Each city is located in a different geographical location, so its natural conditions such as climate characteristics, topography and so on are not the same, which have different effects on the urban environment landscape, resulting in regional differences between urban landscapes.

(3) Ethnic and religious perspectives

As far as the nation is concerned, due to the different forms of historical development of each nation, the forms of life customs, dwellings, folk customs and festivals are also rich in diversity. In the aspect of human landscape, it shows a complex and rich landscape, which makes the whole city present a unique urban landscape with national characteristics [9]. For example, the urban landscape of some minority autonomous regions in China has strong ethnic characteristics. Religion is the product of social and historical development. There are many religious sects in the world, such as Buddhism, Christianity, Islam, Taoism, Hinduism, Judaism and so on. Different religions have great differences in architecture, belief, culture and so on, especially in architecture. Therefore, they have an impact on some religious urban landscapes and form distinctive urban landscapes (as shown in Figure 1).



Fig 1: Mecca, the holy land of Islam

3.2 Principles of urban landscape design

(1) Ecological principle

In the process of urban construction, all kinds of human behaviors always affect the natural ecological environment, and the ecological elements of modern society have become the focus

of people from all walks of life. Therefore, in urban landscape design, designers must fully consider the regional ecological structure and pay attention to the ecological design principles. In the process of design, first of all, we should make use of the unique elements of the design area to keep the original landform characteristics as far as possible; Secondly, we should pay attention to maintain the local ecological balance and ensure the coordination and order of the landscape ecological chain; Finally, we should pay attention to the carrying capacity of ecosystem, and deal with the relationship between natural landscape and artificial landscape.

(2) System principles

Urban landscape is a complex, open and dynamic system composed of organic connection of urban landscape elements. A healthy urban landscape system should have functional integrity and continuity [10]. The evolution of urban landscape reflects the process of human history. This requires the construction of urban landscape to highlight the key points, grasp the main structure of the landscape, coordinate the relationship among the subsystems in the landscape system, so as to strengthen the overall effect of urban landscape. Then, the overall effect of urban landscape is strengthened to highlight the characteristics of urban landscape.

(3) Regional principles

When we design urban landscape, we should fully consider the local natural and cultural landscape characteristics, and use the geographical characteristics, regional culture and local folk customs without destroying their natural geographical conditions and social and cultural background to strengthen the local regional characteristics.

3.3 The design technique of regional urban landscape

(1) Representation and abstract expression

Reappearance can also be called reappearance. In artistic expression, artists usually depict their understanding of objective objects in social life in their works of art. Design is also an art. In the regional landscape design, reappearance is not simply the reappearance of some aspects of the regional characteristics, but through the comprehensive analysis of the regional characteristics, the use of clever ideas, combined with new materials and technologies, so as to achieve the design goal of a regional landscape design.

For the regional landscape design, the abstract expression method is mainly the abstract depiction of the relatively distinct regional characteristics of a region. The regional characteristics can be the symbol of a region, or the architectural characteristics and national characteristics of a region. The designer abstracts these regional characteristics and portrays them in his works in a form of design expression.



Fig 2: Characteristic bronze statue of Huangxing South Road Pedestrian Street in Changsha
(2) Metaphor and symbolic means

Metaphor and symbol are both rhetorical methods in literature. Metaphor is used to metaphorically refer one thing to another in literature, and there are inherent similarities between them. Symbol is also a metaphor rhetoric, that is, to suggest other specific things with a specific thing. In the field of landscape design, these two techniques are widely used in Chinese classical gardens, which are better design expression methods.

Metaphor reflects a similar relationship in landscape design. In the expression of landscape design works, we can find similar features and use the form of comparative concrete to reflect the regional characteristics. Through metaphorical method, the history and national spirit in the regional characteristics are abstracted, and the regional cultural connotation with difference is depicted.

Symbol is also a common expression method in landscape design, which is often used to convey the spiritual and cultural connotation. In Chinese classical gardens, the water management mode of "one pool and three mountains" often used by the ancients (as shown in Figure 3) is the application of symbolism. The "three mountains" symbolize the "Penglai", "Abbot" and "Yingzhou" in Penglai fairyland.



Fig 3: One pool and three mountains in the palace of Qin and Han Dynasties

III. ANALYSIS OF THE REGIONAL EXPRESSION OF MODERN LANDSCAPE DESIGN IN FOREIGN COUNTRIES

George Hargreaves is recognized as "the last master of the 20th century" in the landscape architecture field, known as "the father of landscape processism". Taking a comprehensive view of the landscape design works of George Hargreaves, it not only expresses the ecology, but also contains the poetic flavor. It not only expounds the humanistic connotation, but also has the scientific design concept. It embodies the organic, complex design style and strong functional design, and brings the new design style of the landscape design field.

George Hargreaves has his own characteristics and techniques in dealing with the design of the site. He attaches great importance to the expression of the cultural connotation of the site. Many of his landscape design works use unique design ideas to express the new landscape rich in cultural connotation.

Byxbee Park, which was built in 1988, is located in pabalt0, California, with an area of about 12hm². It is a representative work of Hargreaves. It used to be a landfill, and Hargreaves used his unique design techniques to turn it into a distinctive park on the edge of San Francisco Bay.

The park is located on the top of the landfill. In order to prevent the harmful substances from being discharged to the outside world due to the growth of plant roots, the parks in the San Francisco Bay area do not need irrigation and frequent pruning, and the landfill has no irrigation conditions. Therefore, under such conditions, Hargreaves chose native drought resistant grass seeds and wild flowers to make these local plants grow freely in the park and form a stable community.

In terms of terrain design, Hargreaves first opened up soil in the valley to build the "gate of the earth", piled mounds on the hillside, metaphorized the shell pile left by the Indians after fishing, and arranged bird watching platforms to provide people with a place to watch the wild birds in the bay. The material of the path is broken shells, which is related to the metaphorical effect. The sound of people stepping on the shells also produces a special auditory effect, which makes the metaphorical design more vivid. The park is decorated with a large number of modern art forms of electric poles. The top of these wooden poles has been flattened and built on the slope in an array layout, which has a strong contrast with the undulating terrain designed by Hargreaves. It creates a vivid visual effect, which not only metaphors the combination of man and nature in the design, but also arouses people's attention to the high-voltage wires crossing the bay. On the slopes of the park, Hargreaves designed an array of herringbone precast concrete strips that point north to the airport. This arrangement is exactly the same as the aviation symbol "not yet landed". These sculptural formal languages create a disputable sense of disharmony between the modern and the ancient. Hargreaves called it the disharmony between "post industry and primitivism". The application of this disharmony is just a way for Hargreaves to create landscape drama.



Fig 4: Byxbee Park

IV. CONCLUSION

Under the background of the development of modern landscape architecture design, it is necessary to put forward the regional urban landscape design. Because of the development trend of globalization, China's urban landscape has been troubled by "one side of a thousand cities".

The invasion of various foreign cultures and design methods has impacted the regional characteristics of China's urban landscape, and landscape architecture design has gradually lost its regional characteristics. However, in the process of the formation and development of the city, regional characteristics have always been accompanied by the development of the city, and can not be ignored. It is the key factor to explore the unique urban landscape. Therefore, only rooted in the regional characteristics of urban landscape design can make the urban landscape have a unique and lasting development prospects.

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