Research on the Design of Eco-Friendly Landscape Architecture

Liya Chen

Sichuan Vocational and Technical College, Suining, Sichuan, 629000, China

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Abstract: Traditional landscape architecture mostly only pays attention to human needs and lacks care for other creatures, and even ignores the rights of other creatures' living space. This paper aims at the main problems existing in the current landscape architecture design, based on the development and achievements of ecological concepts in architecture and landscape architecture, conducts analysis, synthesis, induction and empirical research, and exploratively proposes the concept of bio-friendly landscape architecture. , To determine the scope of research and further development direction, point out the types of bio-friendly landscape architecture and biological coexistence, and apply ecological concepts to landscape architecture design. It is concluded that bio-friendly landscape architecture should follow the five basic design principles of "bio-oriented, ecological priority, system optimization, safety and harmlessness, and 5R integration", and explore four design strategies of "control, blanking, guidance, and special projects". Through analysis, excavation, inheritance and development of existing ecological design, flexible design, etc., the combination of the design method of the landscape architecture body and the object is proposed, and Changsha Martyrs Park is selected as an example to conduct on-site investigation, analysis and analysis of the landscape architecture in the park. In conclusion, in order to promote the construction of bio-friendly landscape architecture, corresponding suggestions are made for landscape architecture in the park. This paper is mainly to promote the efficient use of landscape architecture, promote the adaptation of organisms to the disturbed environment by humans and the benign interaction with landscape architecture, promote the harmonious symbiosis of people, landscape architecture and biology, and make more of biodiversity and creation. Make efforts to improve the garden environment and promote the process of ecologicalization.

1. Introduction

When the human living environment was retaliated by nature, ecology and ecologicalism were pushed to the forefront, and people began to reflect deeply. Charles Robert Darwin's evolutionary theory tells people that the survival and development of living beings depend on their keen awareness and adaptability to environmental changes. Lan McHarg pointed out that the environment is very tolerant in "Design Integrates with Nature", but some environments are not tolerant, and pointed out that the first task of design is to find a suitable way of expression. The design of uncertainty has brought us great enlightenment. The essence of the construction process of our landscape architecture is the process of creating and transforming the land. We must recognize and respect the nature of the life of the land, control the artistic processing within the tolerance of the environment, and create the most suitable disturbance A continuous dialogue, try to control adverse interference. From the 1960s to the present, ecological concepts have emerged in the landscape architecture design like a spring after the rain, trying to make the landscape architecture scientific, healthy, ecological and sustainable.

2. Basic Concepts Related to Bio-Friendly Landscape Architecture

Biologicals, living objects, have the main attributes of reproduction, metabolism, growth and development, self-regulation and repair capabilities, which distinguish them from non-biological. The most important and basic feature of organisms lies in their metabolism and inheritance. Biology in this article refers specifically to humans, animals and plants. Animals in landscape gardens

mainly include wild animals and domestic animals, and plants include wild plants and cultivated plants. In view of the in-depth understanding of the concept of "environmentally friendly", I proposed the concept of "bio-friendly". Bio-friendliness means "harmless creatures", and it is a relationship form that advocates giving priority to biological protection and harmless to organisms. Harmless means that under the interference, the control of the degree does not cause fatal harm to the feeding, growth, and reproduction of organisms. Bio-friendliness is not easy to quantify directly and accurately, and it is a characteristic that makes organisms more suitable for the environment. The bio-friendly landscape architecture is defined as: in the whole life cycle, it is beneficial, harmless, or minimizes adverse effects to the survival and reproduction of organisms, and provides healthy, suitable and efficient use of space for organisms. Biology in this article refers exclusively to humans, animals and plants. Bio-friendly landscape architecture is the product of caring for people, animals and plants and promoting the harmonious coexistence of the two under the current ecological orientation. Unlike general landscape architecture, bio-friendly landscape architecture reflects the uniformity and treatment of life. tolerance. Bio-friendly landscape architecture is no longer exclusive to humans, but other creatures share natural resources with humans. The comprehensive utilization of landscape architecture area and space promotes the friendly coexistence of creatures and landscape architecture in the same environment.

3. Research on the Design Principles of Bio-Friendly Landscape Architecture

People-oriented is the universal principle of current design. It refers to people as the core of value and the standard of society, and the concept of people as the starting point and destination. Nature-oriented has also received a higher voice and development, reflecting the respect for nature in design, Responding to nature and continuing nature is an ideal pursuit; this article puts forward "bio-oriented" as the primary principle of bio-friendly landscape architecture design, which is the core of value in landscape architecture, focusing on improving the comprehensive utilization of landscape architecture Reflecting the initiative of human beings as the "agent of nature" and the dynamic design principles of overall life maintenance, it is the transition from being humanoriented to nature-oriented. Ecological priority_that is, on the basis of respecting the natural ecology, making full use of the perfect combination of nature and humanity, and bio-friendly landscape architecture should be optimized on the basis of avoiding damage to the original natural environment, various animal and plant habitats, and historic sites design. With the attitude of minimal disturbance, the developers try to protect and use local species and building materials as much as possible, so as to preserve the local flavor and minimize the construction cost of landscape architecture. Compliance with the ecological planning provides some allowable and restrictive conditions, so as to provide a basis for the landscape decision-making of the bio-friendly landscape architecture design. A truly bio-friendly landscape architecture is the result of a complete system design. Considering the integrity and paying attention to the entire life process of the building, there must be systemicity in the diversity. It is the plan that determines the part, and the details obey the reflection of the whole. The product of comprehensive consideration of ecology, economy, and art. The principle of safety and harmlessness is the bottom line of biological friendliness, which embodies the absolute safety and health of the user and the biological harmlessness as far as possible. According to the needs of the service subject, comprehensively and fully investigate and analyze the habitat and existing species of the constructed land. Different individuals have different preferences and loyalties to the habitat. According to factors such as regional traits and characteristics, weigh the pros and cons to adapt to the natural process of the region. Including nontoxic materials, structural safety, etc., making the design pay attention to protecting the decisive habitat characteristics of the survival of the original species, controlling the adverse effects of manmade, and reflecting and showing the historical imprint and style of the region are also the requirements of ecological practice.

4. Research on the Design Strategy of Bio-Friendly Landscape Architecture

Landscape architecture services are characterized by popularity, integration with the environment, functional dynamics, artistic identity, and the most efficient. The construction of biofriendly landscape architecture will help improve the comprehensive utilization rate of landscape architecture, enrich the spiritual and cultural connotation, ensure vitality, and promote biodiversity. Design is generally divided into two stages: preliminary design and construction drawing design. In the preliminary design stage, comprehensive research is required, and the main contradictions are grasped. At the same time, technical control requires simultaneous research on landscape architecture and landscape environment. The design includes the design from scratch, as well as the transformation design, which are all integrated control, arrangement and construction under the existing conditions, background and environment. According to the service object, the bio-friendly landscape architecture is divided into general landscape architecture and special landscape architecture, both of which are based on the safety of the service object. In the former design, meeting the functional needs of people is the first priority, and then meeting the life needs of other organisms; the latter is first used as a user of landscape architecture from a biological perspective, such as zoos, conservation center buildings, and animals. Facilities, etc., indirectly provide humans with visual beauty and spiritual enjoyment. Design strategies mainly include control strategies, hidden strategies, guiding strategies, and special strategies, among which guiding strategies are the most active. Nature has the characteristics of self-balance and self-repair. Once foreign matter invades an environment, the animals and plants in the environment will respond and adapt to each other. However, excessive interference or poor tolerance of certain environments can easily lead to the deterioration of the environment. . Landscape architecture is a product that occupies time and space, natural resources, uses engineering technology and artistic means, and meets human needs through artificial re-creation. It has the characteristics of conforming to the situation, scattered in volume, flexible, open and transparent. Nature seems disorderly, but there are certain "rules" and "orders". Understanding and cognizing the environment is a prerequisite for landscape architecture design. When designing, constructing, transforming or dismantling landscape architecture, we should find An appropriate way of expression, in terms of form, function, volume, etc., try to control the adverse effects of landscape architecture on the natural environment and the original organisms in the region from the "source", with respect for nature as the prerequisite. Understanding and recognition Knowing the environment is the prerequisite of design. Through onsite investigation and information collection, building plots can be selected according to wind, topography, biological types and their range of activities, routes, feeding locations, activity rules, habits, etc., to maximize the overcoming of buildings. Negative effects on living things. Make full use of topography, environment and resources, pursue natural harmony, concealed construction layout, etc., to fundamentally control the harm to living things. Choose with a critical eye, and choose the site mainly from the following three Exquisite aspects: (1) The dependence of organisms on the habitat, reproduction and life of the living beings is selected according to the life history and imprints, courtship, migration, domain and other behaviors of the creatures within it, and the key areas for the survival and reproduction of living things are refused to be occupied. Maintain an ecological safety network; (2) Reduce the surface contact area, pay attention to the preservation of the original large trees, etc., and at the same time, through ecological compensation and other methods, guide organisms through the creation of niches; (3) The most efficient use of environmental resources, Save energy and water, use waste land, etc. "The whole is greater than the sum of its parts" _is a response to the benefits of agglomeration. The architect Deleuze believes that diversity must have a comprehensive effect of integrity, and it also reflects The systematic evolution of design is the comprehensive effect of pre-analysis, ease of construction, maintenance and post-processing. When landscape architecture shows a positive effect, the method of centralized construction is advocated, so that the building spontaneously produces new functions and forms related values. The chain effectively reduces the area of walls, roads, infrastructure and paving; when it shows a negative effect, it is recommended to promote decentralized layout, and at the same time, attention should be paid to avoid the fragmentation of habitat caused by dot layout. Comprehensively from the overall layout and spatial combination, The size is exquisite, one is to strive to maintain the continuity, integrity, and functionality between the landscape architecture buildings, and the other is to reduce the cumulative negative effects brought about by the construction. By controlling the overall system, balance the advantages and disadvantages of the energy resource consumption rate, etc., Making landscape architecture use the least resources to play the most efficient role. In order to meet the size and proportion of people in general landscape architecture design, safety is still the premise. For special landscape architecture such as biological habitats and shelters, It should be based on the users of landscape architecture, that is, one or more specific biological needs, and reduce unnecessary or exaggerated expressions. The most important thing is applicability and rationality. The intensification of design forms reduces the volume. To quantify, at the same time, make specific requirements based on the protected organisms, study the local structure and size of landscape architecture, and increase its resilience and utilization rate.

5. Conclusion

This article exploratively puts forward the concept of bio-friendly landscape architecture. The bio-friendly landscape architecture is defined as: in the whole life cycle, it is beneficial, harmless, or minimizes adverse effects to the survival and reproduction of organisms, and provides healthy, suitable and efficient use of space for organisms. Biology in this article refers exclusively to humans, animals and plants. Analyzed the coexistence of bio-friendly landscape architecture and creatures, and summarized them into three categories: mutual benefit, partial benefit and harmlessness. The harmless type is the neutral relationship, which is the lowest standard of the bio-friendly landscape architecture design; the mutually beneficial type is the highest goal pursuit of the bio-friendly landscape architecture design. Five design principles that bio-friendly landscape architecture should follow are proposed, namely, the bio-based principle, the ecological priority principle, the system optimization principle, the safety and harmless principle and the 5R integration principle. Among them, the principles of bio-oriented, safe and harmless, and 5R integration are the unique principles of bio-friendly landscape architecture.

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