Research on Modern Environmental Art Design from the Perspective of Ecological Civilization

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Keywords: Concept of Ecological Civilization; Modern Environmental Art Design; Ecological Concept; Design Strategy; Sustainable Development

Abstract: This article focuses on environmental art design under the concept of ecological civilization. Under the background of global ecological problems, this article aims to reveal the internal relationship between the concept of ecological civilization and environmental art design, and explore effective design strategies based on this. By combing the theoretical basis of ecological civilization view and environmental art design, this article analyzes the correlation between them. It is found that the concept of ecological civilization is reflected in the concept, material selection, spatial layout and functional planning of environmental art design. Based on this, this article puts forward the innovation of ecological design methods, such as bionic design and ecological technology integration; Cultural inheritance and ecological integration, covering region and history and culture; Public participation and educational strategies. Integrating the concept of ecological civilization into environmental art design will help promote the sustainable development of this field and provide strong support for creating an ecological and harmonious space environment.

1. Introduction

At the moment when the global ecological and environmental problems are becoming increasingly serious, the construction of ecological civilization has become a key issue for the sustainable development of human society [1]. As a brand-new value concept, the concept of ecological civilization emphasizes the harmonious symbiosis between man and nature and pursues the coordinated development of ecology, economy and society, which has a far-reaching impact on various fields, and the field of environmental art design is no exception [2]. Modern environmental art design aims to create a space environment that meets the material and spiritual needs of human beings. It is not only related to aesthetics and function, but also closely related to the ecological environment [3]. Under the background of the concept of ecological civilization, modern environmental art design needs to make adaptive adjustments and changes to meet the ecological challenges and realize the unity of ecological benefits and design values.

At present, there are some international studies on environmental art design under the concept of ecological civilization. Some scholars focus on the application of ecological materials in design and explore how to reduce the negative impact on the environment through material selection. Some scholars pay attention to the ecological transformation of design concepts and advocate reshaping the design process with ecological thinking [4-5]. However, the existing research still has room for improvement in system and depth, and has not fully explored the comprehensive and in-depth internal relationship between the concept of ecological civilization and environmental art design, and there are also shortcomings in the innovation and operability of design strategies [6].

Based on this situation, this article deeply discusses the influence and function of ecological civilization concept on environmental art design, aiming at revealing the internal relationship between them and putting forward practical design strategies. Through the research, it is expected to provide theoretical support and practical guidance for the development of environmental art design in the era of ecological civilization, and push the field towards a more ecological and sustainable direction.

  DOI: 10.25236/iceesr.2025.016

2. Ecological civilization and environmental art design

The concept of ecological civilization is a brand-new concept formed after human beings reflect on the destruction of the ecological environment by the traditional development model. This concept advocates abandoning the excessive demand for nature, advocating respect for the laws of nature and pursuing the balance and stability of the ecosystem [7]. From the perspective of sustainable development, the concept of ecological civilization requires that the development of contemporary people should not be at the expense of the interests of future generations, and ensure the rational utilization of resources and the lasting health of the ecological environment. It covers many theories such as ecological ethics and ecological economy, and points out a new direction for the development of human society.

Modern environmental art design aims at creating high-quality human living space, and its basic theory contains multiple elements. First of all, it is the constituent elements, involving space, color, materials, etc. These elements interact with each other to build a unique environmental atmosphere. Secondly, the design principle, the functional principle emphasizes that design needs to meet people's real life needs; Aesthetic principle pays attention to the creation of aesthetic feeling of space form; The principle of humanization highlights the concern for people and makes the design conform to people's behavior habits and psychological needs. In addition, it also includes the application of environmental psychology, ergonomics and other disciplines to create a comfortable, safe and culturally rich space environment.

The concept of ecological civilization provides value orientation for environmental art design. It urges the design concept to focus on ecological balance and sustainable development from simply pursuing beauty and function. Under the influence of this concept, designers pay more attention to ecological attributes in material selection and spatial layout. Conversely, modern environmental art design is the practical carrier of ecological civilization view. Through concrete design works, the abstract concept of ecological civilization concept is transformed into a perceptible space environment, the idea of ecological protection and sustainable development is conveyed to the public, and the spread and practice of ecological civilization concept in society is promoted.

3. The embodiment of ecological civilization concept in environmental art design

3.1. The embodiment of ecological civilization in the design concept

Under the influence of the concept of ecological civilization, the concept of environmental art design has undergone profound changes. Traditional design concepts often focus on meeting human material needs and visual aesthetics, while the design concept under the concept of ecological civilization emphasizes the harmonious coexistence between man and nature. Designers began to look at design projects with ecological thinking, and regarded respecting nature and conforming to nature as the starting point of design. In the design process, attention should be paid to retaining the natural features of the site, such as the original topography, vegetation water system, etc., so that it can be integrated into the design scheme and become a unique ecological landscape element in space, realizing the organic integration of human activities and natural ecology.

3.2. Ecological considerations in the selection of design materials

The choice of materials is very important in environmental art design, which is directly related to the ecological impact of the project. Based on the concept of ecological civilization, designers tend to choose materials with ecological attributes.

Renewable materials, such as bamboo and hemp, can be naturally regenerated in a relatively short period of time or quickly supplemented by artificial cultivation. Bamboo grows fast, it can be finished in three to five years, and it has high strength and good toughness, which can be widely used in furniture, decorative partitions and other designs. Degradable materials can be decomposed in the natural environment after use, and will not be left for a long time to cause pollution. Low-energy-consumption materials have lower energy consumption in the production process, which can reduce energy consumption and negative impact on the environment. Like recycled brick,

it uses construction waste and other wastes as raw materials, and its production energy consumption is much lower than that of traditional clay brick. The characteristics of common ecological materials are shown in Table 1 below:

Table 1 Comparison of Characteristics of Common Ecological Materials

Material Type	Typical Material	Advantages	Applicable Scenarios
Renewable Materials	Bamboo	Fast growth, high strength, good toughness	Furniture, decorative partitions, outdoor landscape facilities
Degradable Materials	Starch-based Degradable Plastics	Naturally decomposes after use, non-polluting	Temporary display props, packaging materials
Low-energy-consumption Materials	Recycled Bricks	Utilizes waste materials, low production energy consumption	Building walls, floor paving

3.3. Ecological strategy of spatial layout and functional planning

Reasonable spatial layout and functional planning are important links to realize ecological design. In terms of spatial layout, we should follow the ecological principle and create a spatial form conducive to natural ventilation and lighting. In terms of functional planning, we should pay attention to the multi-functional utilization of space, improve the efficiency of space use and reduce the waste of resources. Taking community space as an example, the green space is combined with residents' activity venues to create a composite space with leisure, entertainment and ecological adjustment functions. In the design of the park, rainwater collection areas are set up, and the collected rainwater is used to irrigate plants, so as to realize the recycling of water resources and embody the ecological strategy of spatial function planning. Through these methods, the spatial layout and functional planning meet the requirements of ecological civilization and create sustainable environmental art design works.

4. Modern environmental art design strategies based on the concept of ecological civilization

4.1. Innovation of ecological design method

Table 2 Application Cases and Effect Comparison of Ecological Innovation Design Methods

Innovative design method	Application case	Specific design points	Realize the effect	Challenges and countermeasures
Bionic design	Honeycomb structure office building layout	Hexagonal modular space and shared partition wall; The faç ade simulates the honeycomb texture, increasing lighting and ventilation.	The space utilization rate is ↑20%, and the flexible area is increased; Structural stability ↑ 15%; Natural lighting rate ↑ 30%, reducing lighting energy consumption.	Challenge: furniture is difficult to adapt; Response: Customize hexagonal space furniture.
Eco-technology integration	Residential building integrating multiple systems	Roof photovoltaic panel power supply; Ground source heat pump optimizes buried pipe heating and cooling; Multi-stage filtration and storage of rainwater	The energy self-sufficiency rate is 60%, and the annual power consumption of the power grid is reduced by 10000 kwh; The indoor temperature is comfortable, and the service time of air conditioner is ↓ 40%; Reduce sewage discharge by 30 tons annually, and the rainwater reuse rate is 70%.	Challenge: the initial equipment installation cost is high; Response: Apply for subsidies and recover costs by saving energy for a long time.

Bionic design is to imitate the shape, structure and function of natural creatures, draw inspiration from nature and create a beautiful and efficient design scheme. For example, the hexagonal

structure of honeycomb is imitated to design the spatial layout of the building. This regular and closely arranged hexagonal structure not only has excellent space utilization efficiency, but also gives the building good stability. Another example is to learn from the self-cleaning characteristics of lotus leaves, develop building facade materials with self-cleaning function, and reduce building maintenance costs and waste of water resources during manual cleaning.

Eco-technology integration aims to integrate various eco-technologies, realize efficient utilization of energy and optimization of environment, and build a sustainable ecosystem. For example, solar photovoltaic power generation technology, ground source heat pump technology and rainwater collection system are used in buildings. Solar photovoltaic power generation provides electricity for buildings, ground source heat pump is used to adjust indoor temperature, and rainwater collection system provides water for landscape irrigation and non-drinking water. Through the integration of these technologies, the dependence of buildings on traditional energy sources and environmental pollution can be reduced. Table 2 shows the application cases and effect comparison of ecological innovative design methods:

4.2. Cultural inheritance and ecological integration strategy

The integration of regional culture and ecology needs to dig deep into regional cultural characteristics and combine them with ecological design. In the traditional water town area, the layout mode of living by water is continued, and the rich local water resources are used to create ecological landscape. At the same time, local traditional building materials, such as blue bricks and tiles, combined with modern ecological technology, not only inherit the regional cultural features, but also meet the requirements of modern ecological environment protection.

The integration of history, culture and ecology, for places with historical and cultural value, carries out ecological design on the basis of protecting historical sites. For example, in the design of the ancient city ruins park, historical architectural relics are preserved, and native plants are planted around the relics to build an ecological buffer zone. In this way, we can not only protect the historical and cultural heritage, but also create an ecological and harmonious space environment, so that history and culture can continue and develop in the ecological environment.

4.3. Public participation and education strategies

At the initial stage of the project, through questionnaires, community forums and other forms, the public's opinions were widely solicited to understand the public's needs and expectations for the space environment. In the design of urban parks, the surrounding residents can be invited to participate in the discussion of the design scheme, so that residents can put forward suggestions on functional zoning and plant configuration, so that the design can better meet the actual needs of the public and enhance the public's sense of identity and belonging to the project.

Relevant departments can carry out lectures on ecological design knowledge, training activities and popular science exhibitions for the public. Through these activities, the relevant knowledge of ecological civilization concept and environmental art design will be popularized to the public, and the public's ecological awareness and aesthetic level will be improved.

5. Conclusions

This article deeply discusses the close relationship between the concept of ecological civilization and environmental art design, and puts forward a series of corresponding design strategies. Through the study of their theoretical basis, it is clear that the concept of ecological civilization provides value orientation for environmental art design, and design is the practical carrier of the concept of ecological civilization. In the design practice, the concept of ecological civilization has been reflected in the concept, material selection and spatial function planning, which urges the design to pay more attention to the harmonious coexistence between man and nature, the ecological attributes of materials and the ecological efficiency of space.

Based on the research, the innovation of ecological design methods, such as the integration of bionic design and ecological technology, injects new vitality into the design and enhances the

ecological benefits and functionality of the design. The strategy of cultural inheritance and ecological integration makes the design show ecological characteristics while continuing the region, history and culture. Public participation and educational strategies promote the application of ecological civilization concept in design from the social level, and enhance public ecological awareness and participation.

To sum up, it is not only an inevitable choice to deal with ecological challenges, but also a key path to achieve sustainable development in the design field to fully integrate the concept of ecological civilization into environmental art design. With the in-depth spread of the concept of ecological civilization, modern environmental art design should constantly explore and innovate, further improve the design strategy, realize the protection and optimization of the ecological environment while meeting the needs of human life, and create more excellent design works with both ecology, humanity and function.

References

[1] Xing Rong. Research on the Application of Chinese Traditional Architectural Decoration Morphemes in Modern Environmental Art Design [J]. Art of Heaven, 2021, (12): 126-128.

[2] Li Yunpu. Analysis of the Application Ideas of Traditional Tea Culture in Modern Environmental Art Design [J]. Fujian Tea, 2021, 43(03): 97-98.

[3] Wen Mao. Thoughts on the Integrated Application of Tea Culture in Modern Environmental Art Design [J]. Fujian Tea, 2022, 44(06): 95-97.

[4] Chong Ying. Analysis of the Application of Chinese Traditional Cultural Elements in Modern Environmental Art Design [J]. West Leather, 2021, 43(17): 129 + 134.

[5] Nie Shanshan. The Application of Tea Culture in the Environmental Design of Modern Teahouses [J]. Fujian Tea, 2022, 44(08): 63-65.

[6] Sun Hongzhou, Luo Beier. The Infiltration and Application of Tea Culture in the Environmental Design of Modern Teahouses [J]. Fujian Tea, 2022, 44(08): 72-74.

[7] She Xing. Visual Representation in the Construction of the Sensory Experience Model of Environmental Art Design [J]. Environmental Engineering, 2022(8): 250-251.