

Intelligent Landscape Design Fusion of Ceramic Waste Materials based on AHP Model

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Abstract. With the continuous improvement of the economic level of Chinese residents, people's requirements for quality of life have shifted from the satisfaction of material conditions to the improvement of spiritual and cultural levels, so that they can fully relax themselves under the stress of busy study and work. In order to meet this demand, modern landscape design tends to deeper cultural connotations and continue to innovate in design. Ceramic art is the traditional art of China. Applying ceramic art to modern landscape design makes the designed landscape more innovative, and opens up new channels for the spread of ceramic art culture. Since ceramics have stable chemical properties after sintering, they cannot be decomposed by the environment, which brings great pressure to the environment, and also brings inconvenience to our future life. From the reuse of resources, the aesthetic value of waste ceramics is discussed.

Keywords: AHP model, Ceramic chip, Reuse of waste materials, Intelligent design, Landscape design.

1. Introduction

Ceramic materials are inorganic non-metallic materials with high melting point, good oxidation resistance, high hardness and good wear resistance. The plasticity of ceramic materials is very strong, and all kinds of complicated shapes can be shaped, especially the shaping of characters, including the shape of the characters and the expressions of the characters. The application of ceramic materials in modern landscape design is based on the characteristics of ceramics. For the production of ceramic works, the application of molds will be completed, which will make the long work of ceramic works easier and the cost will be reduced. Ceramic materials can also be used to imitate other materials, such as wood, metal, etc., which can be reproduced in a vivid way, which is not available in many other materials. For a long time, metal materials are often used in modern landscape design. However, long-term retention in the air and the design of the water environment in the landscape will cause the metal to be corroded, not only destroying the landscape, but also the cost of user maintenance. high. In modern landscape design, color is indispensable. Coloring on ceramics does not easily fall off and does not cause fading. The color of the ceramic material itself is also very rich, so the color requirements for the urban landscape design can be fully satisfied.

The reason why ceramic chips are called waste materials mainly refers to the damage or incompleteness of the original physical parts of ceramic components, and the loss of the original use functions, such as the storage and decoration functions of ceramic pots, and the paving function of ceramic floor tiles. However, from the perspective of aesthetics and art, it still has the smooth and beautiful texture of ceramics and the colorful beauty, and the damaged pieces have natural shapes and vivid lines, like ice cubes in spring melting. Generally beautiful. The external color beauty and form beauty of waste ceramics prove its artistic value, which can of course be applied to landscape design as a new decorative medium.

Ceramic shards are widely used in landscape environments. They not only create unique decorative forms and artistic styles, but also provide new ideas for enriching and exploring environmental decorative art language. More importantly, they solve the problem of difficult handling of ceramic fragments. The waste that cannot be effectively processed at present is resourced and reflects the requirements of environmental protection. Moreover, the reuse of ceramic chips has broadened the function of ceramic decoration and beautifying the environment. It has pointed out the direction for people to advocate the old and the waste, and protect the ecological environment, which is conducive to the sustainable development of human society.

2. The Proposed Methodology

2.1 Analytic Hierarchy Process.

Analytic Hierarchy Process (AHP) refers to a complex multi-objective decision-making problem as a system, which decomposes the target into multiple targets or criteria, and then decomposes into several levels of multiple indicators (or criteria, constraints), and calculates the hierarchy through qualitative index fuzzy quantization method. Single sorting (weights) and total sorting as a systematic method for target (multi-indicator) and multi-scheme optimization decisions. The analytic hierarchy process is to decompose the decision problems into different hierarchical structures according to the general goal, the sub-goals, the evaluation criteria and the specific preparation plan. Then, the method of solving the eigenvectors of the judgment matrix is used to obtain each level. The element has the priority of the element of the previous level, and finally the method of weighting the sum is used to merge the final weight of each alternative plan to the total target. The final weight is the optimal solution. The analytic hierarchy process is more suitable for the target system with hierarchical and interlaced evaluation indicators, and the target value is difficult to quantitatively describe the decision problem.

According to the nature of the problem and the overall goal to be achieved, the analytic hierarchy process breaks down the problem into different components, and combines the factors according to the interrelated influences and affiliation of the factors to form a multi-level analytical structure model. Therefore, the problem is ultimately attributed to the determination of the relative importance of the lowest level (solutions, measures, etc. for decision making) relative to the highest level (total target) or the ranking of relative merits.

The analytic hierarchy process takes the research object as a system and makes decisions according to the decomposition, comparison judgment and comprehensive thinking mode. It becomes an important tool for system analysis developed after the mechanism analysis and statistical analysis. The idea of the system is not to cut the influence of various factors on the results, and the weight setting of each layer in the analytic hierarchy process will directly or indirectly affect the result. The extent to which each factor in each level affects the results is quantified and very clear. This method is especially useful for systematic evaluation of unstructured characteristics and systematic evaluation of multiple objectives, multiple criteria, multiple periods, and the like.

The goal of decision-making, the factors considered (decision-making criteria) and the decision-making objects are divided into the highest layer, the middle layer and the lowest layer according to the mutual relationship between them, and the hierarchical structure diagram is drawn. The highest level refers to the purpose of decision-making and the problem to be solved. The lowest level refers to the alternative when making decisions. The middle layer refers to the factors considered and the criteria for decision making. For two adjacent layers, the upper layer is referred to as the target layer and the lower layer is the factor layer.

2.2 The Aesthetic Significance of Waste Ceramics.

The landscape includes architecture, gardens, and landscape sculptures. Landscape design is a comprehensive discipline for outdoor environment construction. It refers to the environmental design of all exterior spaces of buildings. Its purpose is to integrate people and nature through the coordination of the relationship between human and natural human environment. Not only must we meet the requirements of human life function and mental health, but also constantly improve the quality of human life and enrich people's psychological experience and spiritual pursuit.

The external color beauty and form beauty of waste ceramics prove its artistic value, that is, it is beautiful and / has life 0. Therefore, it can be applied to landscape design as a decorative medium. The use of waste ceramics in the field of landscape design is a requirement of economic development, an inevitable trend of social development, and also provides the necessary conditions for the artistic design of landscape design. The entry of waste ceramics into landscape design is a new development in the field of modern art.

Waste ceramics is mainly used as a decorative medium in landscape design. It is an artistic expression that combines ceramic culture with landscape culture and blends with the landscape environment. The natural cracks of the irregular geometry produced by the broken ceramics are different in texture, color, shape and size. They are perfectly combined into an organic whole or various patterns in the landscape environment. This is the most important decorative method for waste ceramics and has been adopted by many artists, making a lot of useful attempts in the landscape environment.

The most representative of the decoration of the building using scrap ceramic chips is the Bartro apartment designed by Spanish architect Gaudi in 1904. The ceramic chip collage art is a unique landscape in the building, which greatly enhances the function and connotation of the building and brings a strong visual impact. Gaudi's architectural design is the best example of the successful application of waste ceramic chips in landscape architecture. In addition to the Casa Batlló, there are Mira Apartments, Vincent Apartments, Gul Park, Sagrada Familia, etc. These designs are no exception. The floor is decorated with collage on the outer three-dimensional surface of the building. Waste ceramics is the medium of artistic creation of artists. It is used in landscape architecture to explain the aesthetics of waste ceramic fragments. The scrap ceramic fragments were redesigned with beautiful designs and graphics under the artist's design. The buildings decorated with waste ceramic fragments are aesthetically pleasing. It can be seen that the combination of waste ceramic chips and architecture constitutes a new visual image that plays an important role in beautifying the environment.

2.3 Channels for Reuse of Ceramic Chips in Landscape Design.

On the issue of the application of ceramic chips to construction, many architects have carried out a lot of exploration and practice, so that ceramic fragments have been used more in the decoration of buildings, and have played a good decorative and beautifying effect on the architectural environment. Spanish architect Gaudi's work likes to use colorful mosaic stone inlays to decorate the exterior with colorful tiles or rock collages. The more typical works are the "Guer Park" built in 1900~1914: Gaudí is based on the high and low undulating terrain, with colorful mosaics and ceramic fragments as veneer materials to design colorful mushrooms and sweets and the fairytale fun pattern of the house and the colorful lizard.

Landscape architecture is an indispensable element in landscape design, and it is the main content that constitutes a rich atmosphere. It also reflects different functions and cultural atmospheres. The use of ceramic chips in environmental facilities is often reflected in the surface or local position of rest benches, flower beds, planting containers, etc., to protect facilities and beautify the environment. The ceramic debris environment facility gives a natural and harmonious intimacy, can trigger people's active participation in outdoor environmental protection, and has a finishing touch in creating a space atmosphere.

Pavement design is one of the elements of landscape design. It is the context of landscape design. In addition to the traffic function, the road also carries the role of guides and decorations. In the new campus of the Sichuan Academy of Fine Arts, the ceramic shard pavement pattern on the small square opposite the student canteen not only serves as a beautifying environment, but also has the function of suggesting a view to the center of the campus. At the same time, this design method is also applied to the combination pavement at the entrance of the main gate of Chuanmei New Campus. The design combines ceramic chips with other waste bricks and waste tiles, and uses the principle of plane composition to be artistically designed and collaged. The pavement with beautiful effect and water permeability gives us a more personalized and artistic landscape.

Landscape sculpture is an artistic form in the landscape environment in the form of three dimensions, with a three-dimensional aesthetic. Ceramic fragments can also be used as veneer materials for landscape sculptures. For example, the new campus of Sichuan Academy of Fine Arts uses abandoned ceramic fragments to create a colorful and fun-filled children's sculpture house. The surface of the cabin is regularly collaged by colored pieces of porcelain, combined into different patterns, and the glaze of ceramic fragments is bright. The unique charm of surface and texture has

become the focus of landscape vision, making it a beautiful landscape in the landscape environment, which greatly enriches the diversity of landscape design, and adds people's aesthetic pleasure, in the blending with the environment landscape. It conveys the shock of the soul and touches the teachers and students living around it.

2.4 Application of Ceramics in Modern Practical Landscape Design.

In the urban landscape, lighting facilities exist as infrastructure and also reflect the urban cultural image. Various materials can be used in the production of urban lighting facilities, including metal materials, stone materials, glass, and the like. In recent years, many cities have chosen ceramic materials to make lamps, that is, the production of lamp posts and the production of lampshades are mainly made of ceramic materials, which not only can make the lighting function reflect, but also infiltrate the Chinese ceramic culture. Spreading the cultural heritage of the city with the lighting facilities as a carrier, the cultural content of the urban landscape is more abundant.

There are many signs in the city streets that have become an important part of the city's appearance. The design of these logos is made of ceramic materials, the texture is delicate, the art style is simple and simple, and the logo is also very unique. These ceramics mark the urban landscape, which improves the quality of the urban landscape, and is also rich in cultural characteristics, which has improved the urban environmental benefits.

It is difficult to choose the right material for the decoration of the ground. Urban streets are highly practical and part of the urban landscape. Therefore, in terms of the choice of street floor decoration materials, from a practical point of view, it must have good abrasion resistance, good anti-slip effect, and easy to clean. And has good drainage performance. The use of ceramic materials is ideal. From the aesthetic point of view, the use of ceramic materials on the streets of urban streets makes the streets more cultural and artistic. In addition, the shops on both sides of the city also use ceramic materials. The simple craft design exudes the beauty of the times and will make the whole city Full of vigor. In summary, the urban landscape represents urban culture, which not only covers historical culture, but also reflects the urban cultural spirit. The full use of ceramics in modern urban landscape design is the use of ceramic art for landscape design, which has become a spiritual cultural symbol in the urban landscape, giving people the enjoyment of beauty and playing a certain role in cultural communication.

The park is another important construction content of modern cities. In addition to the functions of rest and entertainment in the square, it can also attract tourists and then promote local economic development. At the same time, the construction of the park is also in line with the theme of the era of environmental protection, which plays a role in changing the micro-gas and promoting ecological balance. The landscape design of the park is very particular. The content is usually covered in ancient and modern times, and it has to be rich in form. Considering the people of all ages, it can play a good environmental protection effect.

After thousands of years of development, the construction industry has achieved great success, both practical and ornamental. As one of the main contents of the modern urban construction, architectural design faces more challenges. Many cities pay more attention to the creativity and style of architecture. Because of the increased functions, they must take into account the appearance, environmental protection, economy, and humanities, so that their functions can be greatly expanded. In terms of appearance, ceramic tiles and glazed tiles are used more, which can protect buildings from wind and rain, and have a strong sense of art in the times. Therefore, modern designers attach great importance to creativity.

3. Conclusion

Ceramic art has always been moving forward in the interweaving of rationality and sensibility. Its cultural heritage comes from human cognition of life and the pursuit of spirit. Therefore, people have a strong recognition of ceramic art, especially its value. In today's society, the rapid development of ceramic art in the world has emerged from the various styles and diversifications of ceramic art, and

its application is also more extensive. Ceramic art is used in urban landscape design. Urban landscape design includes a variety of content, involving many aspects, currently mainly follows the principles of nature, humanities, culture and so on. How to create a unique cultural atmosphere in thousands of cities is the focus of ceramic artists and designers, and is also the focus of the general public. Ceramic art provides a new direction for people and provides a new reference for urban planning and design personnel. This requires further research on the ceramic art culture. The ceramic art is gradually introduced into the urban construction, injecting more elements into the urban landscape design and contributing more power to the construction of the charming city.

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