Application Research of Bamboo in Modern Environment Design
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Abstract. This paper takes the application and research of Dao Ming bamboo knitting technology in interior space as the starting point. Through the analysis of bamboo history and bamboo knitting process, it reflects the scientific and innovative use of bamboo in the living room. It also satisfies the principles of form beauty and functionality in the future application of bamboo knitting crafts, and at the same time makes bamboo knitting innovation more vitality and new ideas in contemporary society.

Keywords: Bamboo knitting; Applied research; Environment Design.

1. Research Background

Bamboo is a high-yielding green plant in China (especially in southwestern China), which has advantages that other plants cannot match. In ancient times, the ancients used bamboo to make living utensils and use them to build houses. As an intangible cultural heritage, bamboo weaving has been passed down from generation to generation. It has a long history of culture and an important social status. However, due to the impact of the technology industry, bamboo weaving is gradually disappearing. Nowadays, the society advocates products with spiritual and cultural connotations, especially the environmental protection concept of “ecological green”, and the bamboo knitting process will leap into the eyes of the people. Bamboo weaving not only does not pollute the environment, but also can be recycled many times. It is the best choice for green materials for household products. Through its own advantages, the traditional handicraft skills have been newly passed down and developed, and the modern interior space design has become more "green and ecological". Innovation on the basis of inheritance is a tribute and protection to Chinese traditional culture and an indelible responsibility of the descendants of Chinese.

1.1 Research Purposes and Significance

1. In today's interior space, the application range of bamboo weaving is still very narrow, and the shape advantage of the bamboo knitting process is not fully demonstrated. Bamboo craftsmanship is one of the representatives of traditional handicrafts. However, with the development of science and technology life, all kinds of convenient and fast-flowing crafts are filled with our living space. Compared with its decorative nature, the humanistic meaning is quite weak.

2. In addition to this, the bamboo weaving process has the characteristics of ecological and environmental protection, and also has the natural advantages of warm winter and cool summer, wind and rain. Through the study of its special advantages, the practical range of bamboo knitting has been effectively expanded.

3. In order to make the traditional handicrafts better to inherit and grow, and let more people understand the charm of bamboo weaving, the application of TD Ming bamboo weaving in interior space can not only inherit the craftsmanship but also upload the bamboo knives in the current era. Charm. After the combing of the bamboo weaving process contributes to the sustainable development of the bamboo weaving process, it also develops more possibilities for the application of the bamboo weaving process in the interior space.
2. The Basic Concept and Process of Bamboo Knitting Process

2.1 The Basic Concept and Processing Technology of Bamboo Knitting Process

2.1.1 The Concept of Bamboo Knitting

The bamboo weaving material is bamboo, which is made of processed bamboo raft or bamboo silk. The weaving technique is also known as the "bamboo craft". It is a series of processes in which bamboo craftsmen cut down bamboo, cut off, break open, smash, draw, soak, dye, and weave.

2.1.2 Processing Technology of Bamboo Weaving

Bamboo tools need to be used in a wide variety of tools, using tools to make crafts more beautiful, the knitting process is also very convenient. The purpose is different, there are not many tools used, and even many craftsmen make some tools that can't be named for their convenience. The various tools are used for convenience and security. The bamboo knitting process is roughly divided into the following steps:

1. Dewatering treatment of bamboo weaving process (divided into artificial drying and natural drying);
2. Anti-harm treatment of bamboo weaving (smoke and steaming method);
3. Bamboo fireproof treatment (surface coating and pressurization: injecting flame retardant into bamboo weaving with autoclave);
4. Bamboo color (physical dyeing and greening treatment: immersed in 5% copper sulphate solution, immersed under a certain pressure for about 12 hours to prevent reduction of chlorophyll loss, effectively retaining its own luster);
5. Bamboo molding (manual or mechanical tools).

2.2 Weaving Skills of Bamboo Weaving

1. Three-dimensional weaving:

Three-dimensional weaving is a method of weaving by different shapes of the mold, and weaving and weaving according to the shape of the mold, so that the work presents a three-dimensional shape. The weaving process has the following processes: creping (making patterns according to the shape of the mold), dyeing or whitening (matching the colors), grading (controlling the proportion of bamboo rafts according to the state of the work), starting (removing excess bamboo), closing (the final closing control of the bamboo).

The main application of TD Bamboo is that it has the characteristics of large elasticity and strong toughness, and other objects are used as support structures. Therefore, after entering the 21st century, Dao Ming's "porcelain tire bamboo weaving" developed rapidly, producing many beautifully woven, beautiful and complicated works.

2. Plane bamboo weave: herringbone pattern, cross pattern, mixed pattern, brick pattern and so on.

Herringbone pattern: Herringbone pattern weaving refers to the pattern of weaving in the shape of "human". When weaving, we will close all the warp, and then weave two pieces apart, and repeat the above steps again.

Cross pattern: Also known as the "meter" pattern, it uses the cross lines of the latitude and longitude of the string and the vertical pattern. First arrange the warp beams side by side, and keep the verticals side by side on the warp.

Mixed pattern: In the weaving process, we use a weaving method such as herringbone pattern, Cross pattern, and twill weave to form another unique weave pattern.

Brickwork: The warp is separated by a certain distance, and the Weiwei is closely arranged. Once the Weiwei is worn, it will form a brick-like pattern.

3. Derivation of Three Bamboo Crafts in Interior Space

Through the analysis and research of interior space, the development of bamboo weaving process in interior space is more comprehensive. Understand the various components and functions of the
interior space, in order to better apply the bamboo weaving process to the interior space, in order to better achieve the interior living conditions with reasonable living and perfect functions.

3.1 The Performance of Bamboo Craft in the Interior Space

In order to make the living space more comfortable or better to show the hobby, character, habits, etc. of the occupants, the "furnishing goods" were derived. The current status of the choice of the general family in the 21st century is mainly ornamental. The crafts produced by the factory's large-scale assembly line are difficult to have its own cultural value. Instead, it can only be dominated by a single ornamental. The appearance of bamboo crafts just happens to break this. A glimpse of the situation. The TD Ming bamboo crafts are small and exquisite, and the weaving techniques are changed. Putting the bamboo crafts into the suitable interior space can not only serve the finishing touch but also the spiritual and cultural connotation of the bamboo culture itself. The combination of bamboo and glass ceramics is not only for drinking water, but also uniquely designed to embellish the bamboo culture to make it more ornamental. “Bamboo” is green and green. The advantages of the use of security are extremely high.

3.2 Facilities and Performance of Bamboo Weaving Craft in Interior Space

The facility collocation of the interior space refers to the layout of the space. The green environmental protection advantages of bamboo knitting adapt to the choice of current materials, and its integration makes the material selection more diverse; the cultural connotation of bamboo knitting enriches its spiritual connotation.

In terms of lamps, the bamboo weaving process uses its unique woven pattern and forms a three-dimensional weave with a certain mold. Looking for texture changes from simple patterns, and improving the appreciation of bamboo. Because the concept of green design is deeply rooted in the hearts of the people, the bamboo can maintain the original color, which means that the material is ecologically friendly and the bamboo products are simple and natural, rich in national characteristics, making people feel comfortable and natural.

In terms of chair and stool: there are countless sofas and benches on the market, but they are heavy and bulky, consume large materials, and have complicated shapes. Bamboo-woven products are widely used in interior spaces because of their environmental protection, simple and elegant shape, clear lines and easy movement. In practical use, generally used several kinds of plane weaving techniques combined with three-dimensional weaving molding. When the furniture forms a skeleton, it is like a building. On the basis of a tough skeleton, it is woven with a tough bamboo weaving process. The curved surface of the sofa is smooth and woven. As a whole, the bamboo sofa has a sleek and layered line in the shape, and the shape is full and the material is light, providing a comfortable rest space for the user.

The room interface generally refers to the wall surface, the ground surface, the top surface, and the like. In terms of the room interface, bamboo weaving has strong toughness, good water absorption, can resist summer heat and improve interior air quality, and reduce hot and humid air. Therefore, the use of bamboo in the room interface has advantages that other materials can't match. The southwestern region is a hot and humid climate. In summer, the home is often humid and hot, and it is easy to produce pests. Therefore, the advantages of bamboo weaving just make up for the shortcomings of the climate in Southwest China. The color changes are simple and natural, and can be environmentally colored according to the needs. Bamboo weaving not only makes up for the shortcomings of the climate, but the unique temperament of bamboo weaving makes the spiritual culture of the occupants extremely satisfying.

4. The Performance of Bamboo Craft in Interior Space

4.1 Design of Bamboo in Interior Space

The design is to lay a good foundation in the early stage and plan a complete design plan. The later construction will be more convenient, quick and reasonable. The project of “Bamboo” in the
hometown of bamboo weaving is based on the development of Dao Ming Bamboo, and seeks to carry forward and develop the culture of Dao Ming bamboo in parallel with the times. The building combines the traditional bamboo crafts of the TD with the local regional features to showcase the new architecture that is part of the traditional bamboo crafts of the 21st century and the era.

4.1.1 The Display of TD Mingzhu in "Bamboo"

1. At the beginning of the building, the architectural style was not decided. The design and recruitment of the development of the Da Ming bamboo culture to the whole world was carried out, and the poems left by the tour were “Tai Ping Shi”.

The theme was raised and the “Bamboo” project was selected. The project was completed with high efficiency in only 58 days, and the high standard reflects the design concept of material saving and green environmental protection in the new era. Apply to the traditional handmade bamboo weaving of Dao Ming, highlighting the spirit of Tao Yuan’s non-genetic inheritance for thousands of years.

The word "Bamboo" uses the whole poem here. "Bamboo" includes the natural scenery of the bamboo forest, the cultural heritage of bamboo, and the purity of the bamboo. "Li" is the state of virtue, modesty and peace of mind in pursuit of "heart". The bamboo tree shows a figure-eight shape from the sky. This form is derived from the infinitely large “∞” of the mathematical symbol, and also the “topological deformation” of the Taiji pattern. The top surface of the house is coiled and echoed, and the use of the cultural concept of yin and yang duality gives the interior space a rich cultural and spiritual connotation. The whole house uses bamboo products that are enclosed by TD Mingzhu as the wall surface, which is mainly woven with hexagonal holes. The bamboo work is placed in a three-dimensional manner, combining traditional handicrafts with modern architecture. From a distance, it looks like a beautifully crafted bamboo craft.

2. The bamboo roof is also made of traditional bamboo crafts, and the hexagonal hole-woven bamboo weave is covered with bamboo. The unique woven hole not only makes people feel complicated but also looks comfortable and comfortable, and does not make people suppress in the interior space. It plays a certain decorative role, absorbs excess water generated in the air, and reduces the emission of harmful substances in the air. When the lights are lit at night, they will produce shadows, which will make the color of the ground space more layered. The top surface continues to loop back and surround each other as a voice that shows the yin and yang of the Tai Chi. This is like walking up the arc of a conventional arc. It is a "collision" between tradition and modernity, aesthetics and gravity. The fusion of bamboo weaves makes it conform to the formation of wood, creating a cultural collision image that exceeds the general image quality.

The bamboo wall surface adopts the popular interior room decoration method--concrete cement wall surface. However, it is not like the general decoration technique but combined with the characteristics of the dynasty bamboo woven, and the bamboo shape is printed on the wall surface. Both the sense of touch and the perception can sense changes in texture. In addition, reduce the emission of pollutants from formaldehyde and chemical materials to form a green, comfortable and clean wall. Reuse the unique bamboo mold concrete wall to create a modern texture. On the one hand, bamboo itself is not suitable for load-bearing materials. The use of concrete can not only play a bearing role but also represent the 21st century new decorative style. This is the perfect combination of time and regionality.

5. Difficulties and Methods to be Solved in Bamboo Knitting

5.1 Difficulties in Solving

1. The market demand for bamboo knitting technology: Bamboo knitting as a non-legacy product does not have large-scale production conditions. Even if it can produce a certain amount of production, the production cost is high. Even if the spiritual culture and appreciation are high, the family can hardly bear the expensive bamboo material. cost of production.
2. Bamboo crafts should pay attention to the prevention of finished products during production, and reduce the damage caused by the climate itself, temperature and humidity.

3. Dimensional change grasp: The change of bamboo weaving in the weaving technique is its advantage, and it is also accompanied by certain shortcomings. At the construction site, due to differences in applications, there is no suitable change tool and thus a lot of construction time is consumed.

5.2 Solution

1. Bamboo production sites carry out certain policy support and promotion. Bamboo weaving adopts standard technology for production and processing in the production process. The accessories and connecting parts can be mass-produced, and the scientific size reference is made, making the bamboo products more scientific in use. Convenient. According to the appropriate scale production, bamboo weaving constitutes a certain production line, and many factories participate in the production.

2. Bamboo aging, prevention and other problems, in the process of construction should pay attention to the three anti-disposal of materials and ensure the dryness of the materials, etc., in addition to the mechanized construction in the construction process to ensure the accuracy and standardization of the bamboo knitting process construction, Reduce errors caused by non-standard construction. Apply anti-mite and water-repellent treatment to increase the service life of the interface.

3. Bamboo weaving should be produced in accordance with digital machinery during production to ensure the quality of the products. Construction and construction shall be carried out in accordance with the design drawings. All products shall be processed at the factory to reduce environmental pollution at the construction site, shorten the on-site construction time and construction cost.

6. Conclusions and Future Prospects

6.1 Conclusion

This paper mainly describes the application and research of bamboo weaving technology in modern interior space, especially taking the hometown of Daoming Bamboo and Bamboo as an example to show the unique charm of bamboo weaving. It summarizes the weaving characteristics of the bamboo weaving process, the meaning of social existence and the design principles for interior use. Through the above knowledge, understand and find out some problems and corresponding solutions of bamboo knitting in modern environmental design.

First of all, due to its unique weaving characteristics, the bamboo weaving process makes its shape change in the weaving process, and changes with the design requirements, seeking bamboo craft products combining design and function. It shows that the bamboo weaving process is not only placed in the furnishings and single space, but is also used in the design by combining its own characteristics with modern materials.

Secondly, bamboo weaving has the characteristics of ecological and environmental protection, satisfying people's demand for “green”, and letting people appreciate the unique connotation and atmosphere of bamboo in a healthy and comfortable environment.

Finally, there are certain problems in the participation of bamboo in the interior space, which requires us to solve the problem. Understand the shortcomings that bamboo crafts will produce in practical use, analyze and propose some corresponding solutions, and provide some theoretical basis and support for the subsequent graduation design.

6.2 Future Prospects

Bamboo knitting is the non-legacy culture of the Chinese nation. The diverse development of bamboo knitting cannot be ignored. The application research in modern interior space is immortal. The application of bamboo crafts in the living room is also the inheritance and development of traditional culture. There are several suggestions for the study of bamboo weaving in interior design:
1. Pay close attention to the application and development of bamboo-woven products, and expand the use of imitation bamboo-woven products in modern living rooms to achieve standard construction techniques and decorative effects.

2. Expanding the research scope of Dao Ming Bamboo, focusing on other weaving techniques to combine bamboo and other unique weaving techniques to produce traditional and modern craft products. Not only does the development path for bamboo weaving provide more possibilities for design elements.

3. Should pay more attention to the example of the application of bamboo in modern interior space. Starting from the modeling characteristics of bamboo weaving, we study its various possibilities in the development of interior space, solve some problems in the construction process, make the application of bamboo in modern living room more convenient and quick, and contribute to the inheritance of traditional bamboo weaving process.

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