

## APPLICATION AND PRACTICE OF "REPLACING PLASTIC WITH BAMBOO" IN CULTURAL AND CREATIVE PRODUCT DESIGN

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### ABSTRACT

*Bamboo weaving is an excellent traditional handicraft in China, but at present, there are some problems, such as conservative product categories, insufficient innovation, insufficient attraction to young consumers and low added value of products. Under the background of "replacing plastic with bamboo", bamboo woven cultural and creative products have attracted more and more attention from traditional scholars. This paper analyzes the cultural inheritance value of traditional bamboo weaving, investigates the regional characteristics of Dongyang bamboo weaving and Shengzhou bamboo weaving in Zhejiang Province, and from the perspective of modern design, applies the regional characteristics such as three-dimensional characteristics of Dongyang bamboo weaving and fancy weaving patterns of Shengzhou bamboo weaving to the design of cultural and creative products, thus making up for the lack of innovation of modern bamboo weaving cultural and creative products, and providing new ideas for the development of bamboo weaving technology. It provides more application scenarios for "replacing plastic with bamboo".*

**Keywords:** Replacing plastic with bamboo; Wenchuang product design; Dongyang bamboo weaving; Shengzhou bamboo weaving

### 1. INTRODUCTION

Bamboo weaving is a modeling technique that uses bamboo as raw material to weave it into shape. It occupies an important position in the development history of Chinese traditional handicrafts. At present, many bamboo weaving techniques have been selected into the national intangible cultural heritage list. Although bamboo weaving skills have been supported by national policies and extensively studied by experts and scholars, there is also a tendency of traditional bamboo weaving artists to embody bamboo weaving skills, especially the lack of research on bamboo weaving shape, structure, variety and cultural attributes, which directly leads to the lack of innovative development of bamboo weaving products. Our ancestors began to use bamboo very early, and bamboo woven products provided many conveniences for people's production and life. The value of bamboo weaving is mainly reflected in three aspects: cultural inheritance value, economic practical value and humanistic care value.

Bamboo weaving is one of the six traditional weaving skills in China, which has a rich history of cultural development. Since ancient times, bamboo woven products have high economic value because of their practicality. Now, with the diversification of people's needs, their unique "natural" aesthetics makes them have the economic benefits of "works of art". The reason why bamboo weaving skills have been mastered

by people very early is that, on the one hand, its materials are taken from nature and easy to obtain; On the other hand, because of its wide practicability, it can be applied to many fields of people's production and life.

## **2. HISTORICAL AND REGIONAL CHARACTERISTICS OF BAMBOO WEAVING**

### **2.1 The development process of bamboo weaving in China**

The bamboo woven products excavated at Hemudu site in Yuyao City, Zhejiang Province are the earliest known bamboo woven objects in China. In 1958, Liangzhu cultural site in the late Neolithic Age, dating back 4,700 years, was discovered in Qianshanyang, Wuxing County, Zhejiang Province. More than 200 pieces of bamboo weaving utensils were unearthed, including baskets, dustpans, grain baskets, bamboo mats, etc., and complex and diverse weaving techniques began to be used. During the Southern Song Dynasty, bamboo weaving technology has developed to a high level. After 1949, with the recovery of domestic economy, import and export trade promoted bamboo weaving technology to overseas markets. By the 1980s, bamboo weaving products had been exported to many countries, favored by foreign consumers, and directly promoted the economic development of bamboo weaving producing areas.

Bamboo products have gradually developed from the initial daily necessities to folk handicrafts, which play an important role in improving people's quality of life and enriching people's spiritual and cultural life. At the same time, bamboo weaving technology contains the traditional Chinese creation concept of "harmony between man and nature", emphasizing the harmony and unity between man and nature, and becoming an art of life from the perspective of life aesthetics, nourishing people's body and mind, recording people's daily life. Bits and pieces of life make people feel the uniqueness and beauty of life.

### **2.2 Regional distribution and characteristics of bamboo weaving**

Zhejiang bamboo weaving is one of the traditional handicrafts in China, which is famous for its exquisite skills, beautiful shape and elegant color. In the process of its development, because of the different cultures of each region, the regional characteristics of bamboo weaving are also different. In particular, Dongyang Bamboo Weaving and Shengzhou Bamboo Weaving, two national intangible cultural heritage projects, fully reflect their different artistic characteristics. At present, in the innovation of bamboo weaving cultural and creative products, the difference of bamboo weaving in different regions has become a distinctive cultural symbol.

As a traditional folk culture brand, Dongyang bamboo weaving is famous inside and outside Zhejiang Province and even the world. Its bamboo woven products are exquisite in workmanship, vivid in shape, elegant in color and rich in folk art characteristics, which is a model of the integration of practicality and artistry. Dongyang bamboo weaving focuses on the production of daily necessities and ornamental furnishings, and has the characteristics of rich themes, various kinds and good at three-dimensional weaving. Dongyang bamboo weaving combines the strengths of woodcarving, calligraphy, painting and other crafts with its own craftsmanship, especially influenced by the theme, shape and aesthetics of Dongyang woodcarving, forming the unique bamboo weaving characteristics of Dongyang.

Different from Dongyang bamboo weaving, Shengzhou bamboo weaving, which was selected into the national intangible cultural heritage list in 2006, has a wider range of applications, and even has four more accurate product classifications: "practical products, art appreciation products, home decorations and bamboo hall interior decoration", with great innovations in craftsmanship and color. It pioneered four distinctive features: "simulated animals, flower tendons, bleaching and blue tire paint". Most of the practical products are in the form of birds, among which animal-shaped practical products are lively,

smart and cute, and have unique charm. Art appreciation products are made of fine bamboo silk, and its purpose is to make the subtleties of animals' expressions to the fullest.

### **2.3 Cultural value and inheritance of bamboo weaving art**

Both bamboo weaving daily necessities and bamboo weaving works of art reflect the ingenuity of bamboo weaving artists, highlight the profound heritage of Chinese culture, have unique cultural characteristics of the Chinese nation, are an important part of Chinese traditional culture and a prominent representative of Chinese culture. Bold and creative design on the basis of inheriting the excellent traditional bamboo weaving technology is conducive to the inheritance and development of bamboo weaving skills, and is of great value for carrying forward and spreading the excellent Chinese bamboo weaving culture.

### **3. PRACTICE AND TREND OF "REPLACING PLASTIC WITH BAMBOO"**

Bamboo has excellent characteristics such as short growth cycle, wide growth range, no pollution and recyclability, and is known as "one of the most influential materials in the 21st century" and "a miracle given by nature". China ranks first in the world in terms of bamboo types, planting area and bamboo output. Chinese people began to use bamboo very early in production and life. From the bamboo slips invented more than 2,000 years ago to the later bamboo mats, wine sets, smoking sets and garden decoration, bamboo has been fully used in various fields. As a kind of biomass material, bamboo has excellent characteristics such as green, low-carbon, fast-growing, renewable and degradable. It is of great significance to make full use of these characteristics to develop and utilize it for environmental ecological protection and economic and social development.

In November 2022, the Chinese government and the International Bamboo and Rattan Organization jointly launched the "Replacing Plastic with Bamboo" initiative; In October 2023, China's National Development and Reform Commission and other departments issued the "Three-Year Action Plan for Accelerating the Development of "Replacing Plastic with Bamboo"", which is intended to accelerate the establishment of the "replacing plastic with bamboo" industrial system to accelerate the "replacing plastic with bamboo" development process. "Replacing plastic with bamboo" is a sunrise industry in China's forestry development. As a fast-growing and degradable biomass material, bamboo is an important substitute for plastics and provides an effective solution to reduce plastic pollution.

### **4. DESIGN PRINCIPLES OF CULTURAL AND CREATIVE PRODUCTS**

For bamboo carving cultural and creative products, their craftsmanship, materials and types all have unique cultural connotations. Culture is an important force for a nation to generate national self-confidence. It shows the long-standing national culture with modern cultural and creative products, giving it new vitality.

### **5. EXTRACTION AND APPLICATION OF REGIONAL CHARACTERISTICS OF BAMBOO WEAVING**

#### **5.1 Analysis of the characteristics of regional bamboo weaving art**

China is a big bamboo-producing country, which not only covers a large area of bamboo forests, but also has a wide variety, especially in Yongzhou, Jiangsu and Zhejiang. China is also the first country to use bamboo as products. As early as Qin and Han Dynasties, people would use bamboo to make bamboo baskets, weave bamboo shoes and make bamboo hats for use in their lives. He also likes to decorate with bamboo in clothing and painting patterns. Not only that, the core of Chinese bamboo culture is anthropomorphic characteristics, which raise the characteristics of bamboo to the height of character,

morality and personality. As one of the four gentlemen of plum, orchid, bamboo and chrysanthemum, bamboo has the characteristics of "solid foundation", "straight nature", "empty heart" and "chastity", and is a symbol of a modest gentleman. Therefore, since ancient times, under the rich cultural background, China has had a deep affection for bamboo.

Through in-depth study of bamboo weaving skills and aesthetic styles in various places, designers can draw inspiration from the local ecological environment, festival customs, traditional colors, patterns and other elements to create bamboo weaving cultural and creative products with local cultural characteristics and modernity. This practice aims not only to enhance the use value of bamboo, but also to strengthen the public's awareness of the decline of bamboo weaving art and awaken people's attention to and inheritance of traditional handicrafts.

### **5.2 Refining of regional cultural elements**

China is a big cultural country, and it can also innovate by exploring the humanistic color behind bamboo. Bamboo is symbolized by integrity and gentleman, and it is the preference of ancient scholars and writers for chanting poems and painting. Using the cultural attributes of bamboo to design a healthy semantic expression method, and using this innovative point to design products with more Chinese culture, it not only meets the needs of modern consumers, but also spreads Chinese traditional culture more thickly.

China has a vast territory and abundant resources, and different nationalities and regions have a variety of cultural customs and characteristics that have been passed down from generations to generations. In the domestic consumer market, bamboo products with local cultural characteristics can be produced by combining local customs and characteristics, or national totems, folk legends, local historical stories and other elements. Bamboo products are no longer home ornaments, but symbols with cultural heritage significance.

### **5.3 Application of regional characteristics in bamboo weaving design**

Combining Chinese culture and folk customs to design bamboo weaving can combine bamboo weaving art with modern cultural and creative product design to create innovative products with unique charm. This not only enriches the types and forms of cultural and creative products, but also provides designers with new design ideas and methods.

The design method of bamboo products combined with raw materials can start from the characteristics of the materials themselves. Bamboo has many excellent characteristics, such as good toughness, simple processing methods, natural texture, and can be organically combined with various materials. In product design, bamboo can be combined with modern industrial materials to create novel and unique product forms. For example, the toughness and plasticity of bamboo can be used to bend it into various shapes, and then combine it with modern metal, glass and other materials to form a contrasting and layered design. This combination not only showcases the natural beauty of bamboo, but also gives the product a modern and technological feel.

At the same time, the natural texture and color of bamboo can also be used to integrate it into the design of products. The texture and color of bamboo vary due to the growing environment and age, which provides designers with rich design materials. For example, different shades of bamboo texture can be used to design layered and three-dimensional patterns to add a unique visual effect to the product.

### **5.4 Practice of regional characteristics of bamboo weaving in cultural and creative product design**

**5.4.1** Combining the three-dimensional weaving characteristics of Dongyang bamboo weaving to design cultural and creative products

Dongyang bamboo weaving is good at three-dimensional weaving, which has great application potential in cultural and creative product design. For example, you can design a three-dimensional bamboo weaving ornament based on animals, and use the three-dimensional weaving technology of Dongyang bamboo weaving to vividly present the image of animals. At the same time, some traditional patterns or cultural elements can be added to animals to make the products more cultural connotation and artistic value.

In addition, the three-dimensional weaving features of Dongyang bamboo weaving can also be applied to the design of daily necessities, such as designing a bamboo lamp. Through ingenious weaving skills, the shape of lamps is designed into various three-dimensional shapes, such as sphere and square. At the same time, you can also use the natural texture and color of bamboo to add a unique visual effect and warm atmosphere to the lamps.

#### **5.4.2 Cultural and creative product design combined with the fancy weaving pattern of Shengzhou bamboo weaving**

The fancy weaving patterns of Shengzhou bamboo weaving are rich and colorful, which has extremely high artistic value. In cultural and creative product design, we can make full use of these pattern elements and integrate them into product design. For example, you can design a stationery set with the theme of Shengzhou bamboo weaving pattern, including pen holder, notebook, bookmark, etc. By presenting these patterns on stationery in printed or engraved ways, it adds unique artistic flavor and cultural connotation to the products.

In addition, you can also apply the fancy weaving pattern of Shengzhou bamboo weaving to the design of household goods, such as designing a bamboo carpet. The pattern of the carpet can adopt the classic elements of Shengzhou bamboo weaving, such as flowers and birds, landscapes, etc. Through ingenious weaving skills, these patterns are presented on the carpet in a three-dimensional or flat way, adding a unique artistic flavor and cultural atmosphere to the home environment.

## **6. INNOVATION AND DEVELOPMENT OF BAMBOO WEAVING CULTURAL AND CREATIVE PRODUCTS**

### **6.1 The integration of traditional skills and modern design**

In the design of bamboo weaving cultural and creative products, attention should be paid to the integration of traditional skills and modern design. Traditional skills are the core and essence of bamboo weaving culture, while modern design can inject new vitality and creativity into bamboo weaving cultural and creative products. Therefore, in the design, we should fully tap the potential of traditional skills, and at the same time combine modern design concepts and elements to create cultural and creative products with both traditional charm and modernity.

### **6.2 Application and exploration of multiple materials**

In addition to traditional bamboo, you can also try to introduce other materials into the design of bamboo cultural and creative products. For example, metal, glass, ceramics and other materials can be combined with bamboo to create more novel and unique product forms. The application of these multi-materials can not only enrich the design elements and layering of products, but also improve the practicality and durability of products.

### **6.3 Implementation and practice of environmental protection concepts**

With the continuous improvement of people's awareness of environmental protection, the design of bamboo cultural and creative products should also pay attention to the implementation and practice of

environmental protection concepts. In the design, we should make full use of the renewable and degradable characteristics of bamboo to reduce the impact on the environment. At the same time, consumers can be guided to form the concept and behavior habits of green consumption by publicizing and promoting the environmental protection attributes of bamboo cultural and creative products.

#### **6.4 Excavation and dissemination of cultural values**

The design of bamboo cultural and creative products should also pay attention to the excavation and dissemination of cultural values. By digging deeply into the connotation and essence of bamboo weaving culture and integrating it into product design, products become an important carrier for inheriting and carrying forward bamboo weaving culture. At the same time, we can also popularize the relevant knowledge of bamboo weaving culture to the public by holding exhibitions, lectures and other activities, and improve the public's awareness and recognition of bamboo weaving culture.

### **7. CONCLUSION**

Under the background of "replacing plastic with bamboo", bamboo weaving cultural and creative products, as the product of the combination of traditional handicrafts and modern design, have great development potential and market prospects. By digging deep into traditional skills and cultural connotations, and combining modern design concepts and elements for innovative design, we can create bamboo cultural and creative products with unique charm and cultural connotations. At the same time, paying attention to the implementation and practice of environmental protection concepts and the excavation and dissemination of cultural values are also important aspects to promote the development of bamboo weaving cultural and creative products. In the future, with the continuous improvement of people's awareness of environmental protection and their emphasis on traditional culture, bamboo cultural and creative products will surely usher in a broader development space and opportunities.

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