

# Research on the Application of Bamboo and Ceramic Household Lamps

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**Abstract:** *Despite China's lack of forest resources, bamboo materials are abundant and it is easy to form a forest. Bamboo is a more common material in our lives, especially in the rural areas of the south, almost everywhere. A lot of bamboo products are also used in the countryside, but they are very simple weaving. As one of the countries with the most abundant bamboo resources, bamboo materials have a profound history in China. There are not only many poems and allusions about bamboo in history, but it is recorded that some people began to weave bamboo products with bamboo strips as early as ancient times. The combination of bamboo materials and other materials can enrich the design of bamboo products. Enhancing their design and increasing their value can be achieved by using bamboo and ceramic materials in household lamps.*

**Keywords:** *Bamboo, Bamboo weaving technology, Ceramic, Lamp design*

## 1. Introduction

Due to China's abundant bamboo resources, bamboo materials have a long history in the country. In history, there are not only many poems and allusions about bamboo but also a considerable number of bamboo products. According to records, people have begun to weave bamboo products with bamboo strips as early as in ancient times. Out of the house is the bamboo forest. Most of the brooms, chairs, and baskets used in life are bamboo products. Thus, the use of bamboo materials and other materials can enhance the design of bamboo products.

## 2. Research Background

### 2.1. Purpose and Significance of the Research

Firstly, to increase the added value of bamboo, develop bamboo products. Make full use of China's rich bamboo resources, deeply develop the modeling design of bamboo products, and combine with ceramic materials with profound history, so as to gain a unique visual experience and create a good foundation for the future development of bamboo products in China [1]. Secondly, preserve the bamboo weaving technology as an intangible cultural heritage. Bamboo weaving is a handicraft in which bamboo is cut, dried, ground into bamboo strips, and then woven into various articles. Bamboo weaving technology not only has great practical value, but also has a far-reaching history. Up to now, bamboo weaving technology has become an intangible cultural heritage in China [2]. Third, environmental protection and sustainable development. Nowadays, China is short of wood resources and rich in bamboo forest resources. By developing bamboo forest resources, the shortage of wood resources can be alleviated to a great extent. In our country, bamboo is growing rapidly and can become timber in four to five years, making it more useful for humans.

Combining the two materials can enhance the related design of bamboo products, boost the added value of bamboo products, and pass on the bamboo weaving technology. Developing bamboo resources in China can also greatly alleviate the pressure of shortage of wood resources in China. Follow the green design and protect the environment. New design ideas for lamp design in China can also be provided by it to more designers [3].

### 2.2. Research Status at Home and Abroad

Domestically, China has abundant bamboo resources, exquisite bamboo product manufacturing techniques, and a long cultural history. Since ancient times, bamboo has played a significant role in the

lives of Chinese people. Various types of bamboo products have been present in ancient times, and they are closely connected to people's lives. China has been using bamboo for a long time, but with the emergence of new materials and processing techniques, and the development of the times, bamboo materials are gradually being replaced by other cheaper and more industrialized materials. Bamboo products seem to have retreated to the "second line" and are more likely to appear only in rural areas. For such good materials, we should improve the utilization rate of bamboo, innovate the design of bamboo products, and better integrate them into modern life.

Abroad, due to the uneven distribution of global bamboo resources, there are also differences in the development of bamboo manufacturing industries in various countries. There is almost no bamboo forest in Europe, probably due to the unsuitable environment. In recent years, some bamboo materials have been imported, but the industrial development in this area in Europe has not yet taken shape. India, like China, is a big country of bamboo resources. This country is mainly engaged in handicrafts and food processing in bamboo manufacturing. Bamboo materials are also widely used in Japan, mainly for architecture, interior design, and so on. In addition, there are also some countries with relatively high levels of development of bamboo, such as the Philippines, Singapore and other places, mostly used for construction and cultural activities.

### **3. Market Investigation**

#### ***3.1. Purposes of the Research***

Through the market research of related products, we can understand the current market demand for related products, and make clear the audience groups of different types of lamps and their demand. Understand and learn the latest domestic technology and experience, and apply the new technical level learned in the market to your design. Investigate the shape, color, material and price of this kind of products and the purchase of consumers in the market, analyze people's needs and the problems existing in the design of lamps in the market, and we can understand the main design direction of lamps through market research.

#### ***3.2. Research Methods***

This research is divided into two methods: network research and field research.

Network research: on the one hand, by consulting a large number of works and literature related to this topic, collecting necessary materials, understanding the research status in this field, and providing the necessary theoretical basis for the subsequent product design. On the other hand, browsing a large number of design websites, to understand the latest lighting design development to stimulate inspiration. The most important thing is to make up for the shortcomings of field research through network research.

Field research: Take the way of field visits, and on-the-spot investigation of the local home market. Using the interview method, through the exchange with the store sales staff and the boss, to understand the design characteristics, production process, material use, sales price, weight, and other aspects of each lamp. Through the observation method to understand the color of the lamp, the direction of the projection, the color temperature, the proportion of the product size, the suitable use of the place and so on. Finally, using the experimental method, the operation is divided into two cases: knowing the operation steps and not knowing the operation steps, and different experience effects are obtained.

#### ***3.3. Investigation Results***

From the field investigation, we get the conclusion that the market styles of lamps are mainly European lamps, modern lamps and Chinese lamps. European-style lamps: emphasize gorgeous decoration, strong colors and exquisite shapes to achieve elegant decorative effect, while European-style lamps pay attention to curve modeling and gorgeous color. From the material point of view, European lamps are mainly made of resin and wrought iron. Modern lamps: Simplicity, uniqueness and fashion pursuit are the biggest characteristics of modern lamps. Its materials are generally made of aluminum with metallic texture, glass with unique flavor, etc., and the colors are mostly white and metallic, which is more suitable for matching with simple and modern decorative styles. The decoration of Chinese lanterns is mostly hollow or carved wood, which is quiet and simple.

At present, there are still some problems in the development of lighting design in our country. There are few bamboo woven and ceramic lighting fixtures, and the shortcomings of lighting fixtures in the market mainly include several aspects: firstly, the creativity and novelty of lighting fixtures are not enough to attract consumers' attention, and they cannot form a strong and profound impression on consumers from the dazzling selection of furniture products; Secondly, the function of lighting fixtures is single. In contemporary society, consumer demand for product use is gradually increasing. More and more consumers hope to have diverse user experiences and improve product adaptability during the use of products. This not only improves the utilization space of lighting fixtures, but also makes their use interesting and practical, thus gaining the love of consumers.

### **3.4. Market Demand Research**

The lamp is gradually developing in the direction of decoration and interest. The decorative effect of this kind of desk lamp is more significant, but the lighting function is not affected. It not only meets the practical needs of consumers, but also meets the aesthetic needs of consumers. The pendant lamp is still biased towards the European style, and the European style lamp design occupies an important position in the pendant lamp market in China. The materials are mostly glass, metal lamp holder, gorgeous and rich decoration, which are favored by many people. In recent years, the floor lamp has developed in the direction of folding rod. The color is mainly white and black, and the wood color is also more and more popular.

### **3.5. User Demand Research**

During the investigation of lamps in the market, it was found that most of them were European designs made of glass, simple modern designs and a few Chinese lamps. Among them, European style is still the mainstream option of modern decoration. With the development of the times, more and more people tend to choose simple modern lighting style, while many people choose Chinese style to enjoy the quiet and quaint atmosphere. The choice of bamboo-woven lamps is less. During the field investigation, bamboo-woven lamps and ceramic lamps are rarely seen in the lamp store. On the one hand, ceramic lamps are expensive and heavy. Although there are many exquisite ceramic lamps, few people buy them.

## **4. Design Considerations**

### **4.1. Design Ideas**

Understand and grasp the material properties. Bamboo material has good toughness and can be freely compiled into various daily necessities, while ceramic material is hard and exquisite. The combination of the two materials brings different visual experience to everyone through the display effect of thickness comparison. Through the combination of bamboo and ceramics, a household lamp is designed. Firstly, the proportional relationship between bamboo materials and ceramics is clarified, the material and style problems are unified, and the public elements are found to make them connected to form a style-specific lamp product.

### **4.2. Design Concept**

This lamp design combines traditional bamboo weaving with ceramics. Combining the two materials into a simple spherical geometry, the minimalist modeling style can meet the psychological needs of all ages as much as possible. This series of lamps design has a good diffuse reflection effect on the light source and can create a warm, romantic and quiet atmosphere. Generally speaking, the design concept can be summarized as four points:

#### **4.2.1. Modelling**

The overall shape of the lamp comes from the traditional spherical shape. Through the precise angle cutting of the sphere and the combination of different proportions of spherical cutting bodies made of different materials, a strong material effect contrast is formed, so that the product is coarse and fine. A series of products are simple and simple in shape. After the lamp source is installed, the geometric effect of loose color is formed on the wall, which is very warm and beautiful.

#### 4.2.2. Material

In terms of materials, bamboo materials and ceramics are selected for the series lamps. Through detailed communication with shop sellers, different materials are analyzed and compared, and finally the materials of various parts of the products are determined. The lampshade is made of bamboo and ceramics, the base is made of wood, and the light bulb is made of LED energy-saving lamp E27.

#### 4.2.3. Colour

In order to express the green and natural design concept, the lamp adopts the original color of bamboo material, that is, the original color of bamboo strips. After the ceramic is fired, a thin layer of white glaze is applied, and then the ceramic surface can be painted or applied to enrich the decoration of the product, or nothing can be painted, which has the color effect that the ceramic itself is white with a little turquoise [4].

#### 4.2.4. Technology

Bamboo weaving technology adopts traditional weaving techniques. The common weaving techniques are divided into X-shape (the bamboo pieces are connected one by one), V-shape (the bamboo pieces are folded in a V-shape, and the upper and lower parts are fixed with bamboo pieces) and flat shape (the bamboo pieces are embedded one by one in parallel), all of which are compiled by the principle of pressing one by one. This series of lamps uses X-shaped knitting technology and traditional knitting techniques to reflect the minimalist aesthetic feeling of product modeling.

#### 4.3. Design Scheme

The design of this series of lamps is a combination of bamboo and ceramic materials. The outside is a cut ball made of bamboo, and the inside is a cut ball made of ceramic. The bottom is a wooden base, and the middle is connected with light bulbs and wires. The design of this series of lamps includes desk lamp, floor lamp and chandelier, all of which have the same element: the combination of bamboo lampshade and ceramic lampshade. This lamp uses the texture characteristics of two materials to achieve the contrast between the simplicity of bamboo weaving and the simplicity and exquisiteness of ceramics. On the one hand, the combination of the two materials can cause the contrast in texture, on the other hand, it can also be perfectly combined. Lampshades are all designed with simple geometry, which is very simple. Warm yellow light passes through the smooth ceramic wall, and after passing through the X-shaped and V-shaped bamboo woven outer cover, it is diffusely reflected on the wall to project a geometric shape, thus achieving a warm, quiet and warm atmosphere [5-6].

#### 4.4. Design Effect Drawing



Figure 1: The Table Lamp Effect Diagram

The final effect diagram is determined to be made as a table lamp and a floor lamp. The design takes the simple style and geometric shape as the main display effect. After the warm color energy-saving lamp penetrates the bamboo weaving material, the bamboo weaving pattern is reflected on the wall diffusely, which brings warm and comfortable enjoyment to the family. The simplicity of the ceramic inner cover gives people a clean and peaceful spiritual feeling. This series of luminaire design is suitable for a wide range of places, whether it is family or commercial places are very used. It can meet the visual and practical needs of consumers. The whole lamp is light in weight and easy to move and clean. The various components of the lamp have also been designed to facilitate the assembly and disassembly of the user. The function of the lamp is no longer single, and the appropriate increase in interest can better capture the psychological needs of consumers (Figure 1 and Figure 2).



Figure 2: The Floor Lamp Effect Diagram

## 5. Conclusions

The combination of bamboo and ceramic materials, on the one hand, enriches the relevant design of bamboo products, increases the added value of bamboo products, and inherits bamboo weaving technology. On the other hand, the development of China's bamboo resources can also greatly reduce the pressure on the shortage of wood resources in China, conform to nature and protect the environment. At the same time, I hope to provide design ideas for more designers.

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