

# The Application Strategy of Zisha-stoneware

## -- Tea Sets based on Bionic Design

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### Abstract

**In order to improve the diversity of Zisha-stoneware tea sets and meet the spiritual needs of contemporary people, this paper proposes an application strategy of Zisha-stoneware tea sets based on bionic design. The application strategy starts from the imitation theory and combines with bionic design, which makes the shape of Zisha-stoneware teapot have a qualitative change. Based on this, the application strategy also makes the Zisha-stoneware teapot add a kind of natural and simple beauty on the basis of aesthetics and practicability. The results show that the application strategy can make the shape of Zisha-stoneware tea set more diversified, and can also meet the spiritual needs of contemporary people close to nature.**

### Keywords

**Bionic Design; Modeling Design; Color Design; The Zisha-stoneware Teapot.**

### 1. Introduction

In the period of ancient Greek civilization, the theory of imitation came into being. Ancient Greeks believed that as a part of human practice, imitation is human nature. From birth, people need to imitate all kinds of things from the outside world, so as to master survival skills. For example, infants need to imitate language to communicate with their parents, and infants need to imitate behavior habits to obtain food they need. With the continuous development and extension of imitation theory, in the process of human practice, imitation theory has been applied to the field of design. With the development of industrial revolution, people began to realize the importance of design. At the same time, with the continuous improvement of social and economic level, human demand is no longer the level of food and clothing, but constantly rising to the level of personalization. Therefore, more and more people begin to pay attention to the design of daily necessities. At the same time, more and more people begin to choose different shapes of daily necessities to meet their needs and preferences.

It can be seen that imitation is the beginning of creation, and human practical activities are always created and extended on the basis of imitation. People continue to develop and deepen the theory of imitation and develop it into a contemporary science and technology, namely bionics. When people apply bionics to the field of modeling design of things, it can not only make people associate with nature when using these appliances, but also strengthen the consciousness of protecting and respecting nature. In addition, in nature, all things have their own characteristics. Human beings integrate colorful things into the modeling design of daily necessities, which not only improves the interest of things, but also enriches the modeling of things. In this context, the products that take all things in nature as bionic objects become the sustenance of contemporary people to meet their inner needs. In this paper, a novel application strategy of Zisha-stoneware tea set based on bionic design is proposed. This strategy applies

the bionic design method to the modeling design of Zisha-stoneware teapot. The author believes that the bionic design techniques are rich and varied, and can use a variety of ways to express the bionic objects, such as realism, abstraction, exaggeration, deformation and so on, so as to meet the needs of contemporary people.

## 2. Theoretical Basis

### 2.1. Bionic Design

Bionic design, also known as Design Bionics, is based on bionics and design. At the same time, it can also be considered as a deep combination of bionics and design, which is a new frontier discipline, involving a wide range of disciplines, such as mathematics, biology, electronics, engineering, psychology, aesthetics, color science, etc. This also determines that the research field of bionic design is very broad, and its content to be explored by human is also very rich. At present, with the construction of ecological environment, bionics and design also combine natural science, social science and ethics [1].

### 2.2. The Zisha-stoneware Tea Set

The Zisha-stoneware tea set, is a traditional handicraft in Yixing, Jiangsu Province. It has a long history and was produced in Song Dynasty. The Ming and Qing Dynasties were the peak period of Zisha-stoneware tea sets. In the Northern Song Dynasty, Zisha-stoneware tea set was invented and created by Buddhist monks, and then gradually popularized. With the promotion of China's international status, it is gradually welcomed and sought after by a large number of overseas people [2].

The particularity of this kind of clay is that it is rich in iron and has strong plasticity. The temperature of firing Zisha-stoneware tea set is as high as 1050 °C. Due to the different color and texture of purple clay, the oxidation-reduction conditions of oxygen enriched and anaerobic are different at different temperatures, and the color of the finished product after firing is also different. Usually, the color of Zisha-stoneware teapot is azure, jujube, cinnabar and chestnut yellow. In addition, through the blending of Zisha-stoneware with different texture and luster, we can make the finished product of Zisha-stoneware tea set more colorful, such as bronze color, light ink color, etc. The high-quality tea pottery in southern Yixing of Jiangsu Province and Northern Changxing of Zhejiang Province creates good conditions for making high-quality Zisha-stoneware tea sets. Moreover, On the north and south sides of Tianmu Mountain range, in the south of Yixing in Jiangsu Province and in the north of Changxing in Zhejiang Province, the mud produced has created good conditions for making high-quality tea sets.

The Zisha-stoneware teapot has many advantages, such as cold and heat resistance, retaining the fragrance of tea, not hot. Therefore, in Chinese history, the value of Zisha-stoneware tea set can be compared with gold.

Through the continuous innovation of Chinese people in the past dynasties, we have researched and made Zisha-stoneware tea sets with different shapes and colors. The author of this paper is the representative inheritor of Zisha-stoneware in the 12th and 13th heirs. Generally speaking, people think that a high-quality Zisha-stoneware tea set should have three kinds of "beauty", namely, beautiful modeling, high-quality production process and practical functions, which are the Chinese people's requirements for art [3].

Compared with other types of tea sets, Zisha-stoneware tea sets have unique advantages, such as diverse modeling styles and cultural flavor, which makes Zisha-stoneware tea different from other types of tea sets. At the same time, the quality of Zisha-stoneware teapot is also very suitable for making tea. To be specific, due to its air permeability and impermeable double porosity property. Using Zisha-stoneware teapot to make tea can better preserve the taste of

tea; using Zisha-stoneware teapot to store tea is conducive to the normal temperature fermentation of fermented tea; even in the hottest summer, using Zisha-stoneware teapot to make tea overnight will not be rancid.

### 3. Aesthetic Characteristics of the Zisha-stoneware Tea Set

The modeling design of Zisha-stoneware tea set is closely related to Chinese traditional culture, which is deeply influenced by Chinese traditional culture. The shape of the Zisha-stoneware tea set embodies the traditional Chinese aesthetics, which has become an important material for many aestheticians to study and explore Chinese traditional culture. Through comparison and research, the author believes that the aesthetic characteristics of Chinese Zisha-stoneware tea sets are mainly reflected in three aspects, namely, paying attention to the unity of truth, goodness and beauty, highlighting the transformation of the virtuality and the reality, and emphasizing the relationship between form and meaning.

Firstly, paying attention to the unity of truth, goodness and beauty. Confucius, a great thinker and educator in China, believes that if an individual wants to achieve all-round development, he / she should set up lofty aspirations, take social moral standards as the standard to measure his / her own behavior, give full play to his / her love and roam in the ocean of knowledge and art. In today's society, Confucius' emphasis on the importance of art and aesthetics is still of great value. The modeling design of Zisha-stoneware tea set is also closely related to Confucianism. In terms of design concept, the modeling design of Zisha-stoneware tea set is not limited to practicality, but shows the aesthetic concept and social philosophy. At the same time, with the change and development of social background, people pursue nature and harmony. Therefore, the design of Zisha-stoneware tea sets also emphasizes the harmonious unity of human and nature. In addition, in addition to the external shape of the Zisha-stoneware tea set, it also reflects the beauty of nature because of retaining the fragrance of tea. Therefore, using Zisha-stoneware teapot to make tea can make people feel the beauty of nature, peace and harmony in the process of tea making and tea tasting.

Secondly, highlighting the transformation of virtuality and reality. The design concept of Zisha-stoneware tea set points out that only by dynamically showing the "virtual and real" of Chinese traditional culture can we build a dynamic beauty that conforms to people's aesthetic concept. Therefore, from the design point of view, Zisha-stoneware tea sets usually reflect the dynamic beauty of the combination of dynamic and static. When people use the Zisha-stoneware teapot to make tea, they can often feel the beauty of the natural world; when people use the Zisha-stoneware teapot to taste tea, they can often feel the changes of many elements in the nature, such as the breeze, streams, mountains, flowers and plants, etc.

Thirdly, emphasizing the relationship between form and meaning. Chinese classical painting art and poetry art are both famous for freehand brushwork. In Chinese ink painting, a few strokes can outline the shape and meaning of the things expressed, leaving people with infinite reverie. The traditional Chinese aesthetic view pays attention to the connotation while not neglecting the external aesthetic feeling, paying attention to the expression of profound meaning while expressing the form of things, paying attention to sensibility while not excluding rationality [4]. This point is also reflected incisively and vividly in the modeling design of Zisha-stoneware teapot. In the production of Zisha-stoneware tea sets, artisans often extend according to the characteristics of Zisha-stoneware and the original shape, and pay attention to the integrity of Zisha-stoneware tea sets without ignoring the local aesthetic feeling. Therefore, the excellent Zisha-stoneware tea sets of all ages in China often have both form and spirit, which not only has the beauty of modeling, but also has practicability, and can convey the profound golden mean. This also enables tea tasters to taste the tea fragrance, but also to appreciate the profound meaning of Chinese traditional culture represented by the Zisha-stoneware tea set.

## 4. Application of the Zisha-stoneware Tea Set based on Bionic Design

### 4.1. Modeling Bionic Design

Modeling bionic design, proves in the process of product design, using a variety of design methods, such as simplification, exaggeration, etc., to integrate the morphological characteristics of bionic objects into the appearance design of products. Therefore, a successful modeling bionic design product can make the audience connect the appearance of the product and the bionic object at once, which is also the design purpose of the designer. The bionic design of Zisha-stoneware tea set needs to be grasped and designed from the whole and part. Through bionic design, we can make the shape of Zisha-stoneware tea set more abundant and express the content conveyed by the designer. In the design process of Zisha-stoneware teapot, the application of modeling bionic design is very extensive, among which, the modeling bionic design can also be divided into the overall modeling bionic design and the local modeling bionic design [5].

### 4.2. Bionic Design of Integral Modeling

Most of the Zisha-stoneware teapots with bionic design are based on the natural forms of common animals and plants in daily life. Designers often integrate the common animal and plant forms into the bionic design of integral modeling of Zisha-stoneware tea sets. It is worth noting that the modeling bionic design is based on the nature, but it is not simply copying the natural animal and plant forms, but the designers play their own subjective initiative and creatively combine the theoretical knowledge of modeling bionic design to refine and sublimate the bionic object morphology, so as to make it deeply integrated with the appearance of Zisha-stoneware teapot. In the process of bionic design, the designer can fully understand the shape of the object and the bionic design process.

Teapot with designs of magpie and plum blossom is a typical representative of the overall bionic design. It is based on the magpie shape in nature, simplifying, refining and sublimating the shape of magpie. At the same time, the designers also bionic the branches and stems of plum trees. Through careful observation, we can find that the body of this teapot is like a huge plum branch. The plum tree on the pot body echoes with the magpie on the lid, just like a magpie resting on the plum tree. Through the bionic design of the overall shape of plum tree and magpie, the designer fully displayed the shape of plum tree and magpie on the teapot. At the same time, the teapot also shows a lively and natural beauty. Since ancient times, magpie has been regarded as a symbol of good luck by Chinese people. Therefore, this kind of teapot is not only good for self-use, but also a good gift.



Fig 1. Teapot with designs of magpie and plum blossom

### 4.3. Bionic Design of Local Modeling

The Zisha-stoneware teapot with bionic design of local modeling is designed on the body of Zisha-stoneware teapot with smooth surface and no decoration. Usually, designers will outline the shape of bionic object by means of relief according to the shape of bionic object. The Zisha-

stoneware teapot designed by bionic design of local modeling conforms to the principle of beauty and practicality, which is the common modeling of Zisha-stoneware teapot in daily life. Three friends of winter are a typical representative of local bionic design. The body of this teapot is smooth and mellow, giving people the beauty of nature. The designer adopts the design method of local modeling bionics to depict the characteristics of pine, bamboo and plum on the body, lid and handle of the pot. From the body of this pot, we can not only see the green color of bamboo leaves, but also see the beautiful posture of plum blossom opening, as well as the majestic pine trees. In traditional Chinese culture, pine, bamboo and plum are known as "three friends of winter". This is because these three kinds of plants can still stand in the coldest winter and maintain their tenacious vitality. Therefore, in traditional Chinese culture, pine, bamboo and plum trees represent a gentleman with noble personality and are often compared to loyal friendship. Therefore, the teapot in the home, can reflect the owner's high moral integrity. At the same time, this kind of teapot is also very suitable for giving away relatives and friends.



**Fig 2.** Three friends of winter

Gongchun teapot with design of dragon is also a typical representative of bionic design. In Chinese culture, dragon is the master of wind and rain, the representative of auspiciousness, and the totem of the Chinese nation. According to the dragon totem of ancient China, the designer depicts the claws and scales of the dragon on the body of the pot, making the image of the Dragon looming and adding a sense of mystery.



**Fig 3.** Gongchun teapot with design of dragon

#### **4.4. Bionic Design of Texture**

Texture bionic design is the bionic design of surface texture and texture of materials. In nature, natural rain flower stone, plant branches and leaves, animal fur, etc., are the surface texture of natural materials. Designers can apply the texture of natural materials to product design, so that the designed products have the texture characteristics of these bionic objects. Through the bionic design of texture, the product can better reflect the beauty of nature and give people a natural, gentle, intimate and comfortable feeling. Texture bionic design, in essence, is to imitate the texture of natural materials, organizational structure, texture characteristics and other characteristics to make products have the same texture, so that people can connect the products in front of us with bionic objects, which is also the designer's design goal [6].

Teapot in the shape of sailboat is a typical representative of bionic texture design. The teapot was commissioned by the China Maritime Museum to the author Qian Yingying, who painted

the teapot as a sail on a ship. Through the depiction of the texture of the bulging sails and the depiction of the wave contour, this pot is like sailing bravely on the ocean.



**Fig 4.** Teapot in the shape of sailboat

The following picture, Figure 5, shows the author's Gongchun teapot collected by Victoria and Albert Museum. The Gongchun teapot, is also a typical representative of bionic design of texture. The body of the teapot imitates the texture effect of the tree root, showing a yellowish-brown color. Therefore, the texture of the teapot body is like the tree root, with the beauty of simplicity.



**Fig 5.** Gongchun teapot collected by Victoria and Albert Museum made by the author

#### 4.5. Color Bionic Design

In the color bionic design of Zisha-stoneware tea sets, makers often use three kinds of basic clay to make Zisha-stoneware teapots, which are black, dark green, yellow, red and purple. These kinds of clay can not only be used alone, but also mixed according to different proportions. According to the different ratio and temperature, different colors of Zisha-stoneware teapot can be made. Designers often distribute the three basic colors of clay in nature through color and color proportion, so that the Zisha-stoneware tea set has the bionic characteristics.

Teapot with designs of frog and lotus nut made by Qian Qihong is a typical representative of color bionic design. The frogs on the tea cover stay on the lotus leaves, giving people a feeling of summer. At the same time, the bright yellow of lotus and the green of lotus leaves on the pot give people a cool feeling of summer. This kind of teapot conveys the strong natural wind, embodies the beauty of nature, and makes people experience the nature. Using this teapot to make tea, you can feel the cool summer wind by the pond in midsummer night.



**Fig 6.** Teapot with designs of frog and lotus nut made by Qian Qihong

## 5. Conclusion

Liu Zongyue, the father of oriental aesthetics, put forward the Theory of Tea Sets without Mind, which includes three parts.

First, the "selflessness" of designers. In the process of creation, designers need to remove self-consciousness and focus on the design process itself, rather than for fame and wealth.

Secondly, the user's "selflessness". In the process of use, users will not deliberately show off to others how precious the teapot is. Even the most precious teapot, users should also regard it as a daily utility. Otherwise, it is likely that the user will lose the pleasure of using the device, and for the device, it will also lose its practical value.

Finally, nothing. Liu Zongyue thinks that the design of teapot should obey the beauty of nature and follow the way of Laozi and Zhuangzi. The design of teapot should start from the natural angle, not from the artificial angle.

In this materialistic world, people began to miss the rural life far away from the city noise and began to pursue the beauty of nature. Bionic design originates from imitation theory, which is a new design thinking and design method. It can make people living in the noisy city feel the beauty of nature in their daily life. The bionic design of Zisha-stoneware teapot not only improves its ornamental and diversity, but also increases the beauty of natural simplicity. In the current era of increasing emphasis on ecological protection, the deep integration of bionic design method and Zisha-stoneware tea set meets people's spiritual needs.

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