Influence of ceramic molding technology on its decorative techniques by Analysis of Computer Software

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Abstract. The development and improvement of ceramic molding technology has promoted the continuous innovation of decorative techniques. In this industrial era of pursuing speed and efficiency, ceramic products are becoming more and more highly standardized, and ceramic raw materials, their processing technology and firing temperature are also simplified. The design and innovation of modern ceramic products ignore the coexistence and development of various raw materials and processes, and ignore the development of potential characteristics of ceramic materials themselves. Ceramic molding technology belongs to the field of human material culture as a whole, and it is the concrete application of science in production. It is of great benefit to study the relationship between ceramic molding technology and decoration technique, the influence of technology on decoration technique, and the improvement of artistic creation level and innovation ability. In this paper, from the perspective of practical innovation of ceramic materials and manufacturing technology, on the basis of ceramic product design, the ceramic molding technology and decoration techniques are discussed based on the analysis of relevant software, and in the process, the innovation methods are summarized and analyzed, so as to make the ceramic design to achieve new technical breakthroughs.

Keywords: Ceramics, Process Technology, Decorative Techniques, Innovation, Computer Software

1. Introduction

China is one of the earliest civilized countries in the world, and ceramics is a great invention of the working people in ancient China. The emergence and development of Chinese ceramics has made outstanding contributions to human culture, and its exquisite craftsmanship and decorative techniques are an important part of the splendid culture in ancient China [1]. In traditional arts and crafts, ceramic decoration is a relatively special category. There are many kinds of shapes, ornamentation and colors,
and the combination of different decorative elements evolves diversified decorative meanings. Ceramic decoration is an artistic treatment on the surface or blank of ceramics, in order to reflect the economic value, artistic value and the artistic accomplishment of the author. In this industrial era of pursuing speed and efficiency, ceramic products are becoming more and more highly standardized, and ceramic raw materials, their processing technology and firing temperature are also simplified [2]. The design and innovation of modern ceramic products ignores the coexistence and development of various raw materials and processes, and ignores the development of potential characteristics of ceramic materials themselves [3]. With the improvement of people's aesthetic consciousness, many criticisms have begun to arise for traditional ceramic products. While ceramic products pursue functionality, they have higher requirements for the corresponding production technology [4]. Ceramic technology belongs to the material and cultural field of mankind as a whole. It is the concrete application of science in production and the materialized scientific force. Therefore, it is close to science and emphasizes rationality. The more sophisticated the process, the more it must obey science.

Ceramic decoration technique is to carry out artistic treatment on the ceramic body surface to reflect the economic value, artistic value and artistic accomplishment of the finished ceramic products [5]. That is to say, technology is the concrete means of implementing decorative techniques, and decorative techniques create their own unique artistic language and artistic character through technology [6]. For traditional decoration, its non-audible and non-literal existence attribute determines that its marking system is different from the material form of language, but many elements in its expression form also come from people's daily life and production practice [7]. Ceramic molding technology and decorative techniques are contradictory, complementary and integrated. Ceramic molding technology belongs to the material and cultural field of mankind as a whole, which is the concrete application of science in production and the materialized scientific force. It is of great benefit to study the relationship between ceramic molding technology and decoration techniques, the influence of technology on decoration techniques, and the improvement of artistic creation level and the enhancement of innovation ability [8]. With the continuous development and transformation of ceramic technology, its decorative forms are also rich and colorful. Decoration is not simply carried out for the technological requirements, but a kind of creation and perfect design to adapt to the technological characteristics [9]. In this paper, from the perspective of practical innovation of ceramic materials and manufacturing technology, based on the design of ceramic products, the ceramic molding technology and decoration techniques are discussed, and the innovative methods are summarized and analyzed in the process, in order to make new technological breakthroughs in ceramic design.

2. Language structure of traditional ceramic decoration

2.1. Invariance of decoration

Like Saussure's linguistic semiotic structure, the traditional decorative language structure is a form of existence based on sociality. In the language structure, the coding and translation of language symbols are carried out according to this social existence rule, from the sending and transmission of language to the expression process. The reason why ceramics can be presented in front of people with various shapes and colorful decorations is closely related to the types, compositions, properties and processing methods of raw materials. There must be differences in the way people express their works when they
are happy and sad. Although the content they express is literally the same meaning, the thinking consciousness they convey is quite different. This reflects that the linguistic sign system contains the individuality of emotional structure besides the commonness of empirical structure [10]. In the process of making ceramic products, clay is the foundation of molding, and technology and decoration are important factors in the development of ceramics. Through traditional handicrafts in different periods, it can be found that there are innovations in traditional ceramics in the new historical period. Therefore, as far as current ceramic materials and processes are concerned, continuous innovation is an inevitable trend of historical development.

In traditional decoration, the fixity of feudal history and culture for thousands of years makes the corresponding experience structure relatively stable. Taking ancient color as an example, most of the modeling symbols are symmetrical, including axial symmetry and central symmetry. This kind of shape feature reflects an empirical composition based on pragmatism and aesthetic concept, that is, pursuing mellow and plump modeling features and practical criteria that are convenient and easy to use. Experimental ceramic design can not be separated from the participation of traditional handicrafts, while ceramic products with handicraft characteristics have unique charm that cannot be copied. The details to be grasped and the standards to be implemented in any link of the decoration process all come from the experience structure of the producer. For example, in its painting decoration technique, compared with the colorful colors in Ming Dynasty, blue color was added, which replaced the underglaze blue-and-white decoration, making the overall sense of picture decoration stronger. Behind it is a directional function of process and expression effect.

2.2. The variability of decoration

The emotional structure of traditional decoration has its particularity of development, which is reflected in its special political system, cultural background and corresponding economic and porcelain trade environment. There are many kinds of ceramic products, different properties of green bodies, different shapes, sizes and firing temperatures of products, so there are various molding methods. In the production process of ceramic products, materials are the basis of product plasticity and complement each other with the production process of products. In other words, the continuous development of materials can effectively promote the replacement of process level. The firing process plays a key role in the manufacture of ceramics, and at the same time, it has a great influence on the decorative techniques of ceramics. Compared with official kilns, the development environment of civilian kilns is relatively loose [11]. This makes its expression form properly highlight the creator's will, and the creator has more autonomy in emotional expression. Generally speaking, the emotional structure in traditional decoration is mainly embodied in two types, one is the emotional structure of court nobles represented by emperors; The two are the popular emotional structures represented by folk literati. In the molding process, some decorative forms are produced along with the molding process, such as mats or mats printed on the bottoms and shoulders of some objects, and some are made by artistic processing after molding. Traditional ceramics are always high, transparent and white, but the cost is too high. On the premise that the use function is satisfied, the glaze can be developed according to local conditions, so that the products can be decorated with varied glaze colors. In the process of ceramic production, we can change the color of the soil, enhance the plasticity of the soil and change the shrinkage rate of the soil through special processes, so as to innovate the related functional characteristics.
3. Innovative exploration of ceramic materials and processes

3.1. Innovative exploration of ceramic molding process

Ceramic art is a traditional handicraft in China, and materials and techniques are the core of handicraft development. Judging from the development characteristics of traditional decoration, its directional combination emphasizes craftsmanship and technicality, while there are some shortcomings in the exertion of artistry. Since the birth of ceramics, whether it is official kiln or folk kiln, its pursuit of craftsmanship and techniques seems to have never stopped. To a certain extent, many methods in the design process of many handicrafts are interlinked. Therefore, we can understand the handicraft technology of a certain product and apply it flexibly in the design of ceramic products. Mud is the foundation of ceramic molding, and molding process is an important step in ceramic transformation. Technology and skill are an important factor in ceramic development. A little improvement or improvement in technology or skill in each historical period can lead to new varieties in modeling and decoration. In different times, ceramic crafts have different ways of making. With the development of the times, some crafts have been inherited, but some excellent crafts have been forgotten. At present, with the development of diversified society, designers in the new period can try to discover the craft culture that has been forgotten by history, and extend it in combination with the current design and apply it to the real design.

The application of folk art symbols in ceramic decorative art is the best fusion form of ceramic art and folk art. The research on rheological properties of ceramic materials is mainly based on the measurement of macroscopic dynamic viscoelasticity of materials and the theory of blending system with low filling. Figure 1 is a schematic diagram of plasma treatment of ceramic materials.

![Figure 1. Principle of plasma treatment of ceramic materials](image)

In the design of ceramic products, the difference between conventional materials and special materials is relatively vague, and some special materials are often used in this process, which usually has unexpected effects in the experimental process. If the design concept of ultra-thin ceramic products is involved in the current design, it can better break the rich and round visual effect in traditional ceramic design, and give people a kind of light, delicate and unique visual beauty. The
restriction of ceramic technology will affect the launch of new forms of ceramic works, so it is necessary to explore new technologies and materials constantly. As far as ceramic materials are concerned, there are many possibilities to explore in every link from clay to molding to decoration to firing, which is more helpful for designers to study and innovate. The essence of decoration needs to be integrated with its unique shape, glaze color, material and craft, and is not limited to a single form of expression. The unique feature of this design is that it can closely link conventional design with real life, and can create product categories according to the characteristics of materials. Therefore, this innovative design concept is a new design breakthrough [12]. The works break through the heavy conventional feeling given by ordinary ceramic products, and have the effects of lightness, transparence and paper texture. Using the light transmission effect of this material and the natural texture pattern formed by the original production method, the lamp is designed to be elegant and natural.

3.2. The improvement of molding promotes the innovation of art form

In the molding process, some decorative techniques come into being along with the molding process, for example, mats and cloth patterns are printed on the bottoms and shoulders of some objects, which are printed by placing objects on mats or mats in the molding process. Different fabrics will form different textures, and regular or random placement of fabrics will also form different shapes. Different fabrics will have different effects of vignetting and adsorption, and different dyeing methods will bring different effects. The successful exploration of this technology can bring about countless kinds of effect forms, which greatly promotes the development of ceramics. With the improvement of sculpture technology, the Qin pottery figurines and horses with high artistic achievements, which are various, vivid and realistic, the same size as real horses, neither cracking nor deforming, are produced. The emergence of a new art form is always accompanied by the improvement and improvement of its molding process and technology, and they promote each other and innovate together. Generally speaking, the image symbols of traditional decoration mainly refer to the performances of mountains and rivers, vegetation, birds and animals, insects and fish from nature and daily life. Whether it is the morphological features in decoration or the realistic or freehand expression in painting, its noumenon still does not surpass the bionics of nature and living conditions.

It is a higher level of humanized design to make the users feel happy. To reach this level, we should start from two aspects: artistry and culture. In the concept of humanized design, people are eager to decorate their environment and space with items that represent their tastes and express their individuality. When designing, firstly, the basic elements such as processing technology and materials are integrated, combined with the professional knowledge of ergonomics, and the key consideration is whether it is easy to put, take and use. Thereby satisfy people's psychological and emotional experiences and improve that durability of products. When the green glaze is fired, because there is more iron in a certain part of the glaze, the iron there can not be completely reduced, thus showing dark brown spots of fat. People find the defects in this firing very interesting, so they consciously add iron in some parts. Throughout the development of traditional decoration, its expression technique has not changed fundamentally. In addition, from the symbolic symbol of traditional decoration, it is mainly manifested in the expression of special meaning and aesthetic pursuit of image decoration [13]. However, the changes from decorative pattern to its corresponding moral direction are not obvious in ancient and modern times. For example, peony symbolizes elegance, and baby play decorative pattern
symbolizes many children and many blessings. With the development of various times and regions, there will be many ancient production methods. However, with the development of the times, some methods may be eliminated or forgotten. In the contemporary diversified development, perhaps we can retrieve them and endow them with modern creative techniques and expressions. It is a good breakthrough to combine the unique manufacturing method with product design, and consider the product types according to the characteristics of materials. This kind of ceramic product has a manual flavor and unique personality, which is different from the batch products of instruments.

4. Conclusion

In fact, the expressive process of traditional ceramic decoration techniques is the binding expression of the aesthetic will of individuals or specific groups in ceramic crafts. Under this ideographic mode, the performance of traditional ceramic technology has changed or innovated with different aesthetic ideologies, which has become the main thinking mode and guide for the development and innovative research of traditional ceramic technology. In the process of constantly pursuing innovation, ceramic products can greatly promote the improvement of ceramic materials and processes. At the same time, the continuous development of new materials and new processes can be applied to the production of products, bringing new ideas to the further innovation of products and creating more valuable ceramic products. Ceramic molding technology and decorative techniques are both opposite and unified. Design can affect the improvement of ceramic materials and processes, while the application of new processes and materials can react to product design, bring more creativity and breakthroughs, and promote the development of product design. In order to create good works and produce good products, it is necessary to understand and master the characteristics of ceramic molding process, so as to combine them perfectly and create brand-new high-quality ceramic art products constantly. It is a good breakthrough to combine the unique manufacturing method with product design, and consider the product types according to the characteristics of materials. This kind of ceramic product has a manual flavor and unique personality, which is different from the batch products of instruments.

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3.Special research project of subject group of Nanjing XiaoZhuang University 《Practice and Exploration on training teachers of traditional art skills in primary and secondary schools by giving full play to the advantages of intangible cultural heritage research base》

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