

Research on the interplay and innovative development of lacquer and ceramics

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Abstract: *The invention of lacquer and pottery is a historical witness of mankind's progress towards the threshold of civilization, and China is the country with the longest history of lacquer and pottery. After thousands of years of evolution and accumulation, the culture of lacquer and ceramics has exuded a world-renowned artistic brilliance and unique charm. In this paper, we trace the origin of lacquer art and ceramics, borrow the paradigm of lacquer art and ceramics as a carrier, highlight the uniqueness of their integration, and build a system for the innovative development of contemporary lacquer pottery art, so as to build a practical and effective theoretical basis for interpreting the ideas and expressions of lacquer pottery art; we adopt experimental analysis of new techniques and new technologies, and improve the properties of the original materials to explore the inheritance of lacquer pottery art in the contemporary context. The exhibition will explore the mode and practice path of lacquer art in the contemporary context.*

Keywords: *lacquer art, ceramics, cross-fertilization, innovation and development*

1. Introduction

Since ancient times, China has respected and promoted the spirit of craftsmanship, and some craftsmanship levels have long been leading in the world. General Secretary attaches great importance to the development of excellent traditional culture, and clearly proposes to "realize the creative transformation and innovative development of traditional Chinese culture". Lacquer and ceramics are both traditional arts with a long history in China, and their complex techniques and rich materials give them a place among the traditional Chinese handicrafts. With the development of the times people began to pursue and innovate traditional art, the art of lacquer pottery was born, its inheritance and development need our unremitting efforts and heritage innovation, so that it re-emits its unique artistic charm.

2. The origin of the intersection of lacquer art and ceramics

The invention of lacquer and pottery is a historical witness of mankind's advancement to the threshold of civilization, and China is the country with the longest history of lacquer and pottery. The culture of lacquer and pottery has evolved and accumulated over thousands of years, radiating a world-renowned artistic brilliance and unique charm. The combination of lacquer and pottery has been practiced many times in history. As early as the ancient times, people had a new demand for pottery household items as productivity improved, and ordinary earthenware products could not meet the need of storing liquid because of loose soil and strong water absorption, so they were painted with lacquer on top to play the role of isolation, thus forming the earliest lacquer pottery. The earliest lacquerware can be traced back to the Neolithic Liangzhu culture (Fig. 1), where the need for various cooking vessels, drinking vessels, and utensils arose because of the need to live, and the earthenware lacquerware developed from a single practical coating and protection to the painting of exquisite patterns in the process of perfecting lacquer-making and earthenware technology, achieving the transition from practical to aesthetic. Lacquerware on earthenware was mainly found in the south, where the lacquer tree grows, due to geographical constraints. For example, the lacquer pottery francium (Fig. 2) currently in the Xuzhou Museum is crafted and decorated with brown lacquer on the inner wall, and then painted with vermilion lacquer on top of the brown lacquer to form Zhu Li, which is painted with vermilion lacquer with fine patterns of clouds and air, changing the characteristics of the first Qin's red tape, and the lid has a different style from the body, and the top of the lid is decorated with dense patterns. The combination of practicality and aesthetics is realized[1-2].



Figure 1: Lacquer-painted pottery cup



Figure 2: Lacquer-painted pottery francium excavated from Xuzhou Museum

The combination of the two natural materials not only has the delicate and soft beauty of lacquer, but also retains the simplicity and antiquity of the clay. During the Song and Yuan dynasties, porcelain and lacquer had similarities in design elements such as shape, decoration, color, technique, and structure, and the interpenetration and mutual influence of design features and styles between inlay lacquer and black-glazed porcelain. strong between the appliques on porcelain and the black-glazed porcelain ground, with an inherent consistency in the overall design style between the two, which can be described as different and similar. During the Ming and Qing dynasties ceramics and lacquer arts further borrowed from each other, and in addition to the fusion of different materials, the works were more diverse in expression. The two arts interpenetrated vertically and horizontally, and over time our era retained both their traditional characteristics and their trendy attributes. By studying the historical development of the combination of materials between lacquer and lacquer, and by combining the respective chemical characteristics of lacquer and ceramics, we advocate new explorations in a new era and environment. The addition of ceramic tires to lacquer creation not only extends the space for experimental lacquer creations, but also explores more possibilities that pottery presents when combined with other materials. Along with the rise of contemporary art thinking and the progress of contemporary art aesthetics, it is developing as a new force, and this art of lacquer and ceramic composite media has become one of the modern traditional crafts that urgently needs to be developed and improved.

3. Build a system for the innovative development of contemporary lacquer pottery art

As the most distinctive cultural symbols of the three most traditional Chinese media (lacquer, ceramics and ink), lacquer and ceramics, as important components of arts and crafts, are facing the major challenges of the times as the social environment changes and the audience's demand for art and culture evolves. The key to the modern transformation and sustainable development of traditional culture is innovation, which can inject new vitality into the creative transformation and development of traditional crafts[3].

3.1 The connotation of lacquer pottery art and its development strategy.

Although lacquer art and ceramics have a long history of accumulation, lacquer pottery creation is still a scarce item on the stage of history. Nowadays, along with the progress and development of the times, contemporary artists have more creative expressions to express the "whimsical" effect in terms of technology, technique and vision. "Whimsical" effect. For example, Japanese lacquer artist Sakurako Matsushima uses only a few simple colors, such as black, gold and inlay, highlighting the contrasting and conflicting materials, but under her unique flowing lines the variation is very modern. (Fig. 3) In the creation of lacquer pottery, the failure to grasp the characteristics of the material process, such as plasticity, wet and dry, shrinkage rate, etc., does not have a skilled grasp of the problem of molding difficulties, shrinkage and deformation and difficult firing, resulting in the technical constraints on the development of the creation of lacquer pottery from the process. Only through new technology, new techniques and improvement of the original material properties can we meet the real needs of the creator, thus broadening the "materiality" of modern lacquer pottery materials.



Figure 3: Sakurako Matsushima (Japan) Lacquered body equipment








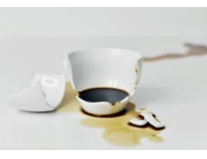







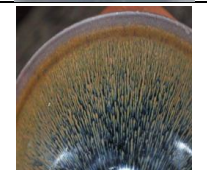


Due to the lack of its specific cultural connotation, it is too single in artistic expression, and the similarity between process and effect appears, weakening the image charm of the work, while the final artistic image is invisibly lost. Combined with the practice, we should get rid of the old concept of the hold, forever maintain and carry forward the grand ambition and power shown by both lacquer and ceramic art, highlight the uniqueness of the intermingling of the two, so that the modern lacquer pottery in the national culture through thousands of years and the indestructible vitality is continued. By borrowing the paradigm of lacquer and ceramic art as a carrier, we will build a real and effective theoretical basis for interpreting the thoughts and expressions of lacquer pottery art, so as to establish a new direction and development idea of lacquer pottery art.

3.2 Comparison of the artistic language of lacquer and pottery.

The atmospheric spirit of lacquer culture, a medium that is constantly being explored from the material to its inner language, remains invaluable to us today. In the study of lacquer materials and the craft of lacquer decoration, the physiological character and ecological structure of lacquer phenols were discovered, and the ecological character of the lacquer molecular structure of lacquer phenols in raw lacquer was understood in lacquer. The coloring of the glaze can make the exterior of the billet protected, in addition to allowing the ceramic exterior to show a glassy texture. The difference between the color of glaze and that of other chemical materials is that it must be forged by fire in order to take on a mysterious color. Lacquer has the same natural texture effect as glaze, both of them have different ways to get it though, and the effect presented has the same random uncertainty. Such as Jingdezhen's high-temperature color glaze is rich in variety, the final effect presented by the glaze is affected by a variety of factors. It is the glaze composition ratio, blowing glaze thickness degree, firing way temperature, kiln atmosphere and so on different, only appear "uncontrollable" randomness, create more waves of texture effect. The texture effect of the lacquer surface is related to the thickness of each layer of lacquer, the degree of contact with the lacquer surface after the free distribution of the same texture material, and the subjective polishing treatment, etc. Many of the textures we usually see are obtained by directly taking the cloth, branches, stones, etc. and turning the mold to print, so the creator

needs to be flexible in application.

Table 1: Comparison of "lacquer" and "glaze"

| Category | Paint | | Glaze | |
|----------------------------|---|--|---|--|
| Raw materials |  | The liquid collected off the tree is expensive and not easy to obtain. |  | Mineral raw materials, minerals, natural inorganic, vitreous minerals, chemical elements. After grinding to make a glaze paste, applied to the surface of the blank. |
| Side effects on human body |  | A small percentage of people are allergic and non-toxic. |  | It is not allergic and should not be taken. |
| Drying and hardening |  | Temperature 20~30 degrees, humidity 70~80% natural shade drying |  | High temperature 800~1250 degrees firing |
| Adhesion |  | Can be attached to any carcass, strong adhesion, off the tire can be anti-drop. |  | Burned at high temperature never flakes and is fragile. |
| Tools |  | Hair brush painting, inlay, carving, carving, filling, stacking, polishing, etc. |  | According to the shape of the head classification there are four kinds of pointed, round, flat, serrated, according to the use of the selection classification there are plastic, press, scraping, carving, digging and cutting six kinds. |
| Color |  | Overlapping grinding after the color paint dries |  | Mutual influence on color |
| Wear and tear |  | It will leave traces of age and antique beauty worn by use. |  | No wear and tear |
| Compatibility |  | Pottery can be lacquered or glazed to accompany it, but the two cannot overlap. |  | Bad body to provide modeling physical, glaze is to increase its visual aesthetics |
| Thermal insulation |  | The lacquer is attached to linen, which can be insulated. |  | Cannot be combined with other materials for high temperature firing |

Lacquer and pottery are both highly inclusive art materials, and the organic combination of the plasticity of pottery and the decorative nature of lacquer produces new artistic vitality and artistic

expression. The high-temperature color glaze of ceramics is relatively similar to the painting of lacquer, both using brushes and different colors for painting, and both focusing on color matching and harmony of composition. The effect of color glaze of ceramics and the effect of lacquer art change coating, the fusion of color glaze will appear unpredictable patterns, lacquer art change coating presents a staggered fusion of different colors, color glaze and change coating of these two processes are similar. There is also the black and white crackle glaze of ceramics presents an effect very similar to the eggshell inlay of lacquer. Eggshell inlay, a thin layer of black lacquer on the surface of the object, eggshell pressed on it, eggshell broken will reveal the bottom color of the black lacquer. It can be seen that the effect of lacquer inlay is very similar to the effect of crackle glaze of ceramics, getting the basic language and strong vocabulary of lacquer pottery. Through a side-by-side comparative analysis of the two craft decoration techniques in Table 1, it is easy to find that the two have a lot in common in terms of decorative techniques, and there are craft barriers between the two crafts, but their principles are the same, and a lot of communication and learning is needed in the creative practice to achieve integration in order to effectively retain the beauty of the two craft materials[4].

Therefore, only by grasping the beauty of both ceramic and lacquer materials, standing at the best balance point to use both materials comprehensively, understanding the characteristics of the two processes complement each other, and flexibly using the diversity of materials and techniques. In terms of decoration, we can draw on the use of the overall effect of the point line surface of the plane composition; the use of lacquer and glaze combination of decoration, to enrich the expressive power of the work, the presentation of lacquer and glaze in lacquer pottery is both a formal innovation and a characteristic expression of decoration. In terms of craft technique, this process requires overcoming the limitations of the two media materials to combine organically, with both complementing each other and being rigid and flexible. Through an in-depth understanding of the cultural value and spiritual meaning of lacquer pottery art, especially the warm and gorgeous beauty of lacquer and the elegant and calm aesthetic artistic characteristics of glaze, to enrich the expressive language of lacquer pottery art.

4. The experimental analysis of modern lacquer and pottery combination process technology

The lacquer surface in lacquer pottery often encounters warping, curling and peeling of the lacquer film, which destroys the beauty and integrity of the lacquer pottery. The causes of warping and peeling of lacquer film are complex and are determined by a combination of lacquerware's own nature and external environmental factors. The intrinsic factors include the degradation of the lacquer film, the aging of the bonding material, and the combination of thermal expansion coefficient, water absorption and dry shrinkage properties caused by the different physical and chemical properties of the body and the lacquer film; this makes the mixture of the two interesting to study, through experimental data samples, analyze the viscosity of the lacquer and pottery combination, obtain the best data that is scientifically reasonable, and verify the relevant process technology. This makes it interesting to analyze the viscosity of lacquer and pottery combination through the experimental data samples, to obtain the best scientific and reasonable data, and to verify the rationality of the related technology.

Measurement procedure

1) the standard shape of the four ceramic test piece of the intersection of the surface with clean, the need to use sandpaper before the experiment will be ceramic piece of bonding surface grinding, up to this surface grinding whether clean and smooth, remove the oxide layer, increase the roughness, improve the bonding.

2) Weigh 30g of lacquer with a paper cup, divide it into 5 groups, Phantom with different blending ingredients respectively, and stir evenly with a color mixing knife. The thinness and thickness of the coating is kept the same.

3) Apply the blended lacquer evenly on the glued surface of the ceramic specimen and clamp it with iron clamps, and prepare 4 pieces in total. Put the specimen flat into 200°C oven for half an hour, take out by cooling down, keep the same oven time in each specimen.

4) tensile test to keep the longitudinal axis of the specimen and the same direction of tension, to keep the specimen is placed vertically, the actual experiment, due to the relationship between the fixture, to keep the specimen completely vertical with some difficulty.

Test results: Temperature: 28°C Humidity: 55% Tensile speed: 3mm/min

Table 2: The adhesion values of raw lacquer + different flour paste and japonica rice paste

| Samples | Bonding width (cm) | Bond length degree (cm) | Bonding area s(m ²) | Load at damage of specimen f(N) | Bond strength X (N/m ²) | Average bond strength X (N/m ²) |
|---------|--------------------|-------------------------|---------------------------------|---------------------------------|-------------------------------------|---|
| 1 | 2.00 | 1.64 | 3.04 | 1796.71 | 6.446 | 6.3932 |
| 2 | | 1.56 | 3.22 | 2200.71 | 7.235 | |
| 3 | | 1.67 | 3.02 | 2005.36 | 6.842 | |
| 4 | | 1.58 | 3.12 | 1807.43 | 6.656 | |
| 5 | | 1.75 | 2.84 | 1890.00 | 4.787 | |

Note: Since the starch paste needs to be mixed with the lacquer in the process of use, and the lacquer contains a certain amount of water, which will change the viscosity of the batter, the results of this test cannot be equated with the final results.

The adhesion values of raw lacquer + different flour paste and japonica rice paste were tested by peeling strength. The analysis shows that the adhesion force of raw lacquer + glutinous rice paste is the largest in No.2, the adhesion force of raw lacquer + dough is average, and the adhesion force of No.5 directly with raw lacquer and cooked lacquer is the smallest. The adhesion and peeling strength of flour paste were better than that of japonica rice paste, but the flour paste particles were coarse and not fine enough. In the same amount of use, the bonding layer formed is thicker and dries more slowly. Glutinous rice paste is smaller and more delicate, and the bonding layer is thinner and dries slightly faster. Therefore, it is recommended to use japonica rice paste with lacquer to make lacquer paste material. It is an ingenious and natural restoration technique formed by painting broken vessels with lacquer. The joints between lacquer and ceramics in restoration are the key to restoring the vessels. It not only brings back the beautiful broken vessels, but also gives a new connotation to the original vessels, as shown in Table 2.

5. Lacquer art and ceramic innovation translation

5.1 The way of contemporary translation of lacquer pottery art.

In the process of creating lacquer pottery, the material medium of lacquer + ceramic has a powerful expressive power, and it is necessary to hold on to the local and national ones, to study them thoroughly, and to apply the cultural standpoint to modern art creation, so that the contemporary translation of the language of both lacquer and pottery can be based on evidence. Different molding methods, firing procedures, and painting methods can produce different accidental forms in each step of creation, and the unpredictability of this possibility, which is not fully controlled, greatly inspires the creator to challenge it. In the modern language of lacquer pottery, many artists also choose to adopt the decorative method of not applying glaze to the surface of the blank. It can be found that the mysterious nature of glaze brings more unexpected effects to the visual nervous system, and the artistic sense formed by the ceramics after the fire is the identification with the traditional cultural attributes. At the same time, there is no way to avoid the difficult problems to be dealt with in those demanding process links, and the breakthrough of this bounded motivation is tireless. The contemporary transformation of the innovative design of traditional lacquer pottery, the lacquer potter chooses the right materials to create and decorate, turning lacquer and ceramic materials into the language of art. By using the characteristics of different materials and experimenting with innovative techniques and new material languages, they have brought about a good visual effect, in line with the discourse and analysis of the "contemporary" turn of lacquer pottery. From a macro perspective, we reflect on the boundaries between lacquer and ceramics, and form a way to break the barrier, reflecting the diversified and open artistic thinking and aesthetic interest of today's time, thus completely constructing the creative transformation and innovative development path of Chinese contemporary lacquer and ceramic art.

5.2 Contemporary lacquer pottery creation practice

With the development of society people's aesthetic interests continue to improve, materials are processed and used by lacquer potter to form a unique artistic language, choosing the right materials for creation and decoration, turning lacquer and ceramic materials into the language of art. By using the characteristics of different materials, we constantly try innovative techniques and new material language to bring good visual effects, reflecting that learning tradition is not for mere inheritance, but for innovation and interpretation on the basis of tradition, moreover, it is an expression of emotions, thoughts and artistic concepts.

In modern lacquer pottery creation, the expression of intentions and the artistic personality of the work, in addition to the use of unique artistic forms of expression, is achieved to a large extent through a comprehensive understanding of materials and the use of special materials. The process of creating lacquer pottery art can be problematic if the materials are not well mastered. There is no superiority or inferiority of materials, because different materials show their unique artistic beauty, and this beauty cannot be distinguished by superiority or inferiority. Currently, most ceramicists and lacquer artists only focus on the creation of one material to learn, and rarely try to study the integration of cross-materials. Professor Zhang Wenzhi of Guangzhou Academy of Fine Arts is engaged in the study of lacquer and pottery, and she has left hand lacquer and right hand pottery. Her works are mainly strong reflections on the meaning and dignity of life, directly touching the increasingly numbed nerves, and through the symbolic expressions of "alienated man" and "giant baby", her works clearly highlight the reflections on forward-looking and cultural values. She elaborates on the endowments of various special materials and their different tensions in expressing artistic inspiration. Pottery is simple in nature and lacquer is flamboyant in nature, and these two materials come with their own material language. You should choose the material that suits the content, expression and effect of your work when creating. Artists want the materials to show the charm of lacquer pottery to the maximum extent, they must discover, select, understand, grasp and apply from the process of art's ontological language to observe, presenting new creativity and inclusiveness, in order to have a broader selectivity and freedom, and to play an important role in the contemporary practice of lacquer pottery creation.

6. Conclusion

The fusion of lacquer and ceramics has expanded the expressive space of these two materials in the historical context of a variety of schools of thought. Artists should actively explore new forms of expression for this ancient art with a long history, and effectively integrate modern innovative thinking with the essence of traditional lacquer culture. From the new technology and new concept of the importance of the development of the combination of both lacquer and pottery, reflecting the continuity of traditional Chinese craft culture in the new era of development, forging the artisan spirit and thus guiding practice, the function of the works of lacquer and pottery not only to meet the practical, but also to a greater extent as an important part of cultural life, is the innovation of lacquer art in the traditional sense, giving the development of ideas for the creative change of lacquer art, exploring The lacquer pottery art in the contemporary context of the inheritance mode and practice path. Standing at the starting point of the new era, the translation and generation, collision and interplay of lacquer and ceramic art in contemporary art not only extend the space for experimental creation of lacquer art, but also present more possibilities of combining ceramics and other materials.

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