

# Research on Three-dimensional Innovative Application of Engraved Paper Sculpture and Mianzhu New Year Painting

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**Abstract**—As an important part of Chinese folk art, paper sculpture has a long history and is rooted in folk soil. Engraved paper sculpture is a new art creation of sculpture. In terms of creative themes and expression techniques, it follows the strong local color and national style of folk art. With the progress of science and technology, folk art has been valued in the diversified development, and paper sculpture art also needs constant innovation. By combining on-the-spot investigation and referring to relevant literature, this paper gives an overall overview of the origin, development, history of paper sculpture art, engraved paper sculpture art, Mianzhu New Year painting and Sichuan Opera, and carries out multi-angle analysis and research on the type, theme, folk customs and implied meaning, line carving style, color and design modeling. Finally, through the summary and analysis, it puts forward the three-dimensional exploration practice of engraved paper sculpture.

**Keywords**—engraved paper sculpture; Mianzhu New Year painting; innovation

## I. INTRODUCTION

According to the article 2 of "The Convention for the Safeguarding of the Intangible Cultural Heritage", intangible cultural heritage refers to the practices, performances, forms of expression, knowledge and skills of various communities, groups and sometimes individuals that are regarded as their cultural heritage, as well as related tools, objects, handicrafts and cultural sites. And in the "Interim Measures for the Application and Assessment of Representative Works of National Intangible Cultural Heritage", China officially defines intangible cultural heritage as "various forms of expression of traditional culture that people of all ethnic groups have inherited from generation to generation and are closely related to people's life, such as folk activities, performing arts, traditional knowledge and skills, as well as related utensils, physical objects, handicrafts and cultural space". China's acceding to the convention for the protection of intangible cultural heritage has created a sound environment for pushing the protection of intangible cultural heritage onto the track of legalization and standardization and protecting China's intangible cultural heritage. As an important part of intangible cultural heritage, paper sculpture art is the crystallization of the wisdom of the Chinese nation and has infinite artistic charm. As a new type of paper

sculpture created in the new era, engraved paper sculpture has far-reaching significance for the inheritance and development of Chinese culture. Art can only continue if it keeps innovating in the process of inheritance under the multi-cultural impact currently. How to excavate the excellent traditional culture and create the engraved paper sculpture art in line with modern aesthetics is an issue worth thinking and studying. The characteristics of the painting are profound artistic conception full of interest.

## II. OVERSEAS AND DOMESTIC RESEARCH STATUS

### A. Domestic Research Status

From Cai Lun's invention of papermaking technology to the continuous technical processing of paper, and then to the improvement of paper abroad, paper art has a long history. Paper sculpture originated in Han dynasty and its development has always been closely related to people's life. For example, the demand of some sacrificial occasions in ancient times produced various images of paper offerings, including figures and objects and even scenes, making paper offering gradually become a decorative art to celebrate festivals. In the old country, when the daughter got married, the mother would make a paper sculpture art work: a pattern, which is both practical and aesthetic. Since the establishment of new China to the reform and opening up, people's appreciation of art is also increasing, and engraved paper sculpture came into being, motivating the spirit of the public with its unique artistic charm. In the process of development, engraved paper sculpture has combined traditional Chinese folk arts of paper cutting, engraving art and fine brushwork. Therefore, paper sculpture art has become an indispensable part of folk art. Paper cutting is the most common paper sculpture art, which is full of the daily folk life in China, and still releases a different brilliance in contemporary society. With the improvement of people's aesthetic needs, the creation form of paper sculpture art is constantly innovating, and the art of engraved paper sculpture is the product of the development of paper sculpture. In the development process, engraved paper sculpture constantly absorbed the creative techniques of other arts to form its own unique artistic characteristics. The work "Riverside Scene at Qingming Festival" by the artist Wang Liming is an example.

## B. Overseas Research Status

With the Western industrial revolution, the paper sculpture art gradually advanced in foreign countries in the West. The origin of paper sculpture can be traced back to the middle of the 18th century in Europe and its popularity was started by a group of artists who loved handicraft creation. The earliest paper sculptures were made from coarse paper mixed by a plant called papyrus. Later, more expensive animal skins were used in creation.

Until the 20th century, similar paper substitutes were used to replace expensive animal skins. This has brought down the cost of paper sculpture. The maturity of paper sculpture technology and the popularity of paper have paved the way for its popularity in daily life. The paper sculpture work "The Origin of Heaven" by the Danish master of paper art Peter Callesen refreshes the Western paper sculpture art with its ingenious artistic conception. Asya Kozina, a Russian paper sculptor, made a stunning baroque hat in homage to the glorious era, which is a marvel.

## III. CLASSIFICATION OF PAPER SCULPTURE

The technology of paper sculpture can be classified into four parts as follows.

- Paper cutting

In a broad sense, paper cutting refers to the use of scissors and cutting knives and other tools for handicraft activities of paper cutting and carving. The techniques of paper cutting include folding, Yin inscribing and Yang carving, and pricking the tapes etc.

- Paper carving

The technique of using a knife to create on paper is called paper carving. With the maturity of science and technology, the method of laser engraving emerges in which laser is used instead of cutting knife for paper processing. And the paper sculpture works made in this way can be put into batch production, which is suitable for mold making.

- Paper rolling

Also called paper quilling, paper rolling is a craft of crimping paper surface and collage according to design idea, often with the help of a pin chip for crimping. Paper quilling works are very decorative, which often uses a pin chip for paper curling, and it was originally an aristocratic handicraft spread out from the European royal family.

- Paper folding

The manual activity of folding paper into different shapes is called paper folding. Its material is not limited to ordinary paper. Paper folding is often used in children's enlightenment and education. On the one hand, it can improve children's practical ability, and on the other hand, it also opens the door of children's cognition of manual art, providing pleasure in learning.

In terms of space, paper sculpture can mainly be classified into the following two parts:

- Plane paper sculpture

Literally, plane paper sculpture includes cutting, carving and other engraving activities other hollow on a piece of paper paved using scissors, cutting knife and other tools on a flat piece of paper. The common forms of paper sculpture are paper cutting and paper carving. Carving paper is a part of the paper cutting in a broad sense, carving on the paper surface with the knife as a tool. It is to depict design first on paper surface, and then engrave the paper, which also distinguishes paper carving from paper cutting in a narrow sense. Due to the perennial paper-cutting activities, paper-cutting artists have well-thought-out designs in mind, so most of the draft is carried out through accumulated experience. But carving paper is more inclined to preparing a draft first and then graving and then creating while innovating. With the development of culture and the maturity of technology, laser engraving machine appeared on the market, which can put patterns drawn on a computer into mechanized carving, which greatly reduces the time for handmade paper cutting. Therefore a large number of quantitative productions of engraving templates emerge. However, the patterns of laser engraving cannot be too small, which represents its difference with hand carving.

- Three-dimensional paper sculpture

Any form of paper sculpture protruding from the plane can be called three-dimensional paper sculpture. It has many production techniques, among which interspersing, are commonly used interpenetration, rolling, folding and multilayer stacking, etc. Three-dimensional paper sculpture is the top priority of study for modern paper sculpture artists. Embracing all sorts of themes and styles, it can either be the fresh pastoral style of the European three-dimensional paper sculpture, or the realistic style as in the work "Self" with sculpture-like modelling feeling by Li Hongjun. The commonly seen technologies in three-dimensional paper sculpture are paper rolling, flower making by pulling the paper, paper piercing and paper folding.

## IV. ARTISTIC ANALYSIS OF THREE-DIMENSIONAL PAPER SCULPTURE

The art of paper sculpture has matured only in recent decades, and before the popularization of computer, people can only perceive the form of three-dimensional works in three-dimensional space through pictures. At the beginning, the paper sculpture designers used simple techniques and flexible artistic language, which can still resonate with the audience. Nowadays, the artistic technique is more diversified. Colors, details and textures, as well as the overall presentation of three-dimensional space can be seen in computer design in advance. Before the work comes out, people can directly peep into its artistic expression. In outstanding works of three-dimensional paper sculpture, the three-dimensional composition and plane composition cannot be separated from each other, from which the aesthetic feeling of the form and various style of the work come. Different from photographic exhibition, three-dimensional paper sculpture can be directly felt by the senses, which is pleasant and interesting, as well as functional and

can make full-dimensional space by breaking through the limitation of plane. The composition and basic rules of three-dimensional paper sculpture are easier to be presented with the law of perspective. The viewer can discover and explore the structure of the work, enjoy and appreciate the visual images of three-dimensional the paper sculpture, which presents its spatial relations, virtual and real relations, high and low scattered relations and other characteristics orderly.

## V. ARTISTIC ANALYSIS OF MIANZHU NEW YEAR PAINTINGS

Mianzhu New Year painting is also known as Mianzhu wood-block New Year print, getting its name for the origin of Mianzhu City. Due to the influence of Bashu culture, its color is bright, which keeps the characteristics of Sichuan and embodies the optimistic thought of Bashu people all the time. With extensive themes and various types, Mianzhu New Year paintings are a unique folk art in China. They are often posted during the New Year to express people's wishes for a better life.

### A. Study on the Artistic Features of Mianzhu New Year Paintings

In terms of creation, Mianzhu New Year paintings inherit the style of hand-painted New Year painting before the Tang Dynasty and continue the maturing woodblock printing style of the Song dynasty. Its composition is exquisite, diverse yet unified; lines are refined and smooth, with proper density, giving a strong sense of rhythm; exaggerated, symbolic expression techniques are often used in modelling, making the paintings more vivid.

In terms of color features, influenced by the traditional concept of five colours of China, Mianzhu New Year painting artists have invented a color using method with Bashu flavor in their long-term artistic creation: "black first (depict the line plate with black), white second (the base color of the hand and face and the sole of the shoe are painted white), gold third (costume and props are painted orange-yellow), fifth, sixth and all the colors of the rainbow are in the costumes (magenta, peach, yellow lead, ultramarine, reddish blue, light green, etc.)". This gives a simple and intense, bright and warm colour feeling, embodying the simplicity and wisdom of the working people. In addition, with the help of the characteristics of the similar colour, the rhythm of the picture is enhanced. And even in the strong contrast, attention is also paid to comfort and harmony.

### B. Problems and Improvement Measures of Mianzhu New Year Paintings

First, the themes of Mianzhu New Year painting are too traditional, and unable to attract attention and interest of young people. Therefore, more researches should be made in theme selection and character modeling innovation.

Second, with various types of paper sculpture including paper cutting, paper folding and paper carving, etc., ordinary aesthetes are confused about the relationship between them,

which is not conducive to its category development. Therefore, the concept of "paper art" can be put forward.

Third, currently there are more paper sculptures in the West, and the modeling and theme selection elements tend to cartoon and popular there. Rarely integrated into the Chinese national elements, they cannot reflect the characteristics of the modern development of Chinese paper sculpture and the art specialization is not strong.

Forth, in the paper sculpture, there are more plane sculptures as the three-dimensional paper sculptures are more difficult, not convenient for non-art professionals to learn. Therefore, it is the main issue in this research how to make easy integration and transformation between plane and three-dimensional paper sculptures.

## VI. APPLICATION OF MIANZHU NEW YEAR PAINTING IN PAPER SCULPTURE ART

### A. Creation Ideas

Chinese culture is extensive and profound, including the folk art with beautiful images and far-reaching significance. But due to the impact of multiculturalism, many excellent folk arts have long been lost. Therefore, efforts should be made to bring forth the fresh by creating a new artistic life with Chinese characteristics. The engraved paper sculpture is an excellent form of paper sculpture in China. Through the investigation and analysis of Mianzhu New Year paintings and Sichuan Opera, this design practice finds the possibility of their coexistence. In the square papers of Mianzhu New Year paintings, there are works about opera highlights in Sichuan Opera, which gives us the feasibility of creating three-dimensional engraved paper sculptures. Through the combination of the three, the paper sculpture works with Chinese charm can be created. This is not only the innovation of engraved paper sculpture, but also the promotion of the arts of Mianzhu New Year painting in Sichuan and Sichuan Opera.

### B. Design Objective

Integrating folk products bearing ethnic beliefs with modern design thinking, thus giving them broader space for development, and forming rich visual images and diversified products will contribute to the promotion of three-dimensional paper sculpture and Mianzhu New Year paintings. By collecting literature on the origin and artistic characteristics of Mianzhu New Year paintings and field investigation in the village of Mianzhu New Year paintings, the researcher analyzed the inheritance and development status of Mianzhu New Year paintings in this village, and explored the theme and form of expression that should be adopted in practical and applied works. Then the determined theme (plot) is applied to the work to design scenes, characters and other elements. Finally, the idea is made into three-dimensional works through the techniques of engraved paper sculpture, with lighting and wood frame combinations added, so as to achieve the ornamental effect.



### C. Design of the Main Modelling of the Painting

This innovative practice of engraved paper sculpture is created by combining the story and stage form of Sichuan Opera and the character modeling of Mianzhu New Year painting. In the overall field, the stage plot of Sichuan Opera "Madam White Snake" is used as the blueprint for the creation, so that all forms of art can blossom in this field. The modeling features of Mianzhu New Year paintings are referred to in the engraving method of the figures, objects and the whole scene, contributing to the fluency and a match of firmness and gentleness in the work, as well as a strong sense of rhythm in the association of activity and inertia.

### D. Color Application

Drawing on Mianzhu New Year painting color skills, the colors of the engraved paper sculpture not only retain the unique features of Mianzhu New Year painting, but also represent an artistic effect of strong contrast and bright color. This strengthens the dynamics of the story, makes the story full of vitality, and maintains harmony in the strong contrast.

### E. Materials

For the sake of engraving and preservation, paperboard with a higher hardness and flexibility is used in this design, which is also conducive to the three-dimensional presentation of the engraved paper sculptures. In the production process, part of the carving is done with a carving knife, the auxiliary wood and glue are bonded to complete the assembly and finally, and the wood frame is used for mounting and displaying.

### F. Works Display

The characteristic modellings of Mianzhu New Year Painting are combined with related fairy tale scenes and the modelling techniques of three-dimensional paper sculpture are used for restructuring and re-expression, so as to make a set of decorative three-dimensional paper sculpture works of Mianzhu New Year painting. This design can be used for the appearance design of tourist souvenirs or daily necessities. At the same time, the series of products combining Mianzhu New Year painting with three-dimensional paper sculpture can also be integrated into the interior decoration and display space decoration. Three themes are used as the story concepts of the designs, namely, the dramatic theme of "Madam White Snake" (see "Fig. 1"), the theme of the "The Portrait of a Lady" (see "Fig. 2"), and the theme of "the God of Door" (see "Fig. 3") and the overall effect of the work can be seen in "Fig. 4".



Fig. 1. The dramatic theme of "Madam White Snake".



Fig. 2. The theme of the "The Portrait of a Lady".



Fig. 3. The theme of "the God of Door".



Fig. 4. The overall effect of the works.

## VII. CONCLUSION

The development of artistic expression is a reflection of the development of human society. Paper sculpture has been involved in human life since a long time ago, and has been constantly developing and innovating up to today. With profound cultural connotation and strong territorial complex, it is the spiritual crystallization of Chinese ancestors. In contemporary society, in order to develop and continue these excellent traditional cultures, it is necessary to constantly add new blood and bring forth the new on the basis of the old creation, so as to meet the aesthetic needs of modern people. Through this creation practice of paper sculpture art, the wonderful Mianzhu New Year painting is combined with the engraved paper sculpture, with the essence of the former integrated into the practice the latter. It is not only the innovation of engraved paper sculpture, but also the inheritance of Mianzhu New Year paintings, which enables China's excellent art creation to be presented to the public in a three-dimensional new form, showing its brilliance, so as to promote the common development of paper sculpture art and Mianzhu New Year paintings.

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