

Design and application of Cyanotype technology in cultural and creative products

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Abstract. Cyanotype is a type of traditional hand-printing process, different from film and digital techniques in the later stages of photography. The craftsmanship and uniqueness of the traditional Cyanotype are invaluable in the mechanization and infinite reproduction in today's digital photography era. In recent years, Cyanotype has gradually become active again in the photography world, becoming a weapon for followers of traditional photography crafts to fight against the proliferation of digital technology. Going back to the ancient method, Cyanotype images have always been loved by modern photography enthusiasts because of their calm and simple tones, unique shapes and intuitive feelings of manual development. The traditional hand-printing process of Cyanotype allows images with rich possibilities, full of innovative vitality today. The author believes that especially in today's cultural and creative design context, cyanotherapy still retains its novelty of life temperature and has huge research and development space. Therefore, this paper takes the exploration of the life temperature of cyanotherapy as the starting point, settles in the cultural innovation and multi-dimensional display of Cyanotype, and conducts in-depth research on the modeling methods of pictures, objects and environments of Cyanotype, and horizontally expands the application of Cyanotype in cultural creative design. Possibilities and Practices in.

Keywords: Cyanotype, cultural creative design, activation design.

1. Introduction

In 1842, the third year that photography was officially invented, John Herschel invented the first iron (non-silver) photographic process and named it Cyanotype. Cyanotype is a handcrafted classical photographic process, also known as "non-traditional photographic development". It is a self-made sensitizer. The negative or real object is placed on the paper brushed with sensitizer, and then directly transferred to the sun for development. The characteristic of this developing process is that the size of the negative film is the same as the size of the final photo. Potassium ferricyanide and ferric ammonium citrate are used as sensitizers. The exposure reaction is divided into two steps: first, under ultraviolet irradiation, iron ions are reduced to ferrous ions, and ferric ammonium citrate is oxidized to acetone dicarboxylic acid; then, ferrous ions combine with ferricyanide ions to generate coatings with excellent performance Prussian blue. The main process steps are: preparing a sensitizer, brushing the sensitizer on the fabric, pasting a negative film for exposure, washing and developing, and drying. In the 170-year history of the invention of the traditional Cyanotype, many classic photographic works and artistic creation practices have been born. However, under the demands of the era of cultural and creative design, how to boldly activate the traditional Cyanotype techniques, explore a larger multi-dimensional application space, and create new ideas from the ancient methods will be the main research goals.

2. The value of traditional Cyanotype

Just as everything is developing, from the beginning of the invention of cyanotherapy to the present, enthusiasts continue to seek the rich development of cyanotherapy, and more and more people play new tricks. This has more interpretation with the Cyanotype images that have always been the subject of photographic creation. Cyanotype is generally used as an artistic creation of photography, gradually adding artistic design thinking to make it more colorful, such as the combination of Cyanotype and illustration, collage, screen printing, weaving, or the physical application of

Cyanotype images, etc. . The Cyanotype realizes the cross-border combination of various categories, and the artistic design opens up many possibilities for the application space of the Cyanotype.

The domestic research on Cyanotype technology mostly stays in photography creation, mostly some photography practitioners, and a few are combined with their own professional direction. Most of the foreign countries pay attention to the research of the Cyanotype technique itself, or artistic creation. In recent years, the research and practice of the Cyanotype technique has a trend of diversified development. These research results have more space for the application of cultural and creative design. Therefore, the author hopes to explore the performance of Cyanotype application in a more multidimensional way on the basis of predecessors and in the context of cultural and creative design.

3. Traditional Cyanotype and research on drawing

The cyanophore method was discovered in chemical experiments, applied to photographic creation, and presented with a two-dimensional visual effect, which is a "painting of light". It can be said that the study of the law of drawing is the basis of the study of the Cyanotype. The art of drawing is the basic course of art design. It refers to the decomposition, arrangement, and order of figurative and abstract forms in a two-dimensional plane according to the order and rules of contrast and unity, rhythm and rhythm, symmetry and balance, dynamic and static. Combine and reconstruct to achieve the ideal flat image. From the dimension of drawing, form is the basic state and situation of graphics, and language is the way of expressing graphics. Morphology and language have various combinations. As researchers, we need to explore the rationality and aesthetics of these combinations.

Based on the understanding of Cyanotype techniques, the author believes that the development of Cyanotype morphological language can be divided into two steps: one is morphological acquisition, that is, the source of graphics; the other is morphological interpretation, that is, language expression. First of all, the Cyanotype is used for morphological acquisition, which is generally divided into physical projection and direct photography. Based on the basic rules of drawing, we can use the Cyanotype technique to complete the practice of collecting some graphic forms. In this process, we mainly need to consider the formal rules of composition and capture the shape we need. Physical projection is a unique modeling method of classical printing techniques such as Cyanotype. Physical projection has unique artistic charm in Cyanotype image modeling. Direct photography is more suitable for landscape modeling in Cyanotype. The material captured by direct photography needs to be made into a black and white negative film, and this process can be combined with computer software to do some image processing. Second, the Cyanotype is used for morphological interpretation, which is generally divided into monomorphic and polymorphic designs. Morphological interpretation focuses on the expression of graphics, and texture and color are the rhetorical methods of this expression. In the polymorphic stage, you can try different textures created by pressing, kneading, scraping, and bouncing. In the polymorphic and polymorphic stage, the graphics can be decomposed and reconstructed on the basis of one-dimensional polymorphism to obtain innovative graphic styles.

4. Process material design

In the process of developing the morphological language of Cyanotype graphics, following the route of morphological acquisition and morphological deduction, the author finds that graphics and texture are the two creative aspects of the development of Cyanotype morphological language. Graphics, that is, its two-dimensional image formed by the relationship between points, lines and surfaces; Texture is generally the trace characteristics left by the effect of materials on graphics, which is rich in special texture. These two factors are sometimes relatively independent, because in the creation of Cyanotype image, blues has given a language to the work, and it is perfect without additional modification in a certain state. However, in the development of Cyanotype morphological

language, especially driven by the activation design of Cyanotype, the richness and possibility of Cyanotype image creation requires that graphics and texture are more complementary.

From the scientific principle of Cyanotype, as long as the material can be coated with photosensitive solution, it can basically dry out blue images. In this way, the Cyanotype materials will be very extensive, and the experimental space will be very broad. Paper, cotton, silk or linen fabrics can be used as blue photo paper. After exposure and development, the blue is still strong and calm. The traditional Cyanotype photography technology takes paper as the bearing material more. Although paper appears flat in three-dimensional shape, it is a variable material. First of all, the texture of paper is divided into many kinds. Some paper is smooth, some paper is rough, some paper is soft and some paper is hard. Undoubtedly, no matter what kind of paper can be used as the photosensitive photo paper of the Cyanotype technique, and can sun out the blue image, but the blue imaging color is biased. The difference of paper mainly affects people's touch, which makes people directly feel the state of things. The concept of two-dimensional flat paper may not be obvious to the object, but when this kind of paper with blue image is used as the cover of a book or the packaging of a gift, the touch of the material of the paper will be particularly important.

Secondly, in terms of technology, the variability of paper materials can make paper rich in various forms. We know that using the waste old paper to soak, crush and mold can be made into pulp products and change the two-dimensional properties of the paper plane. Pulp products are efficient, ecological and environmental friendly. Printing Cyanotype images on pulp objects is more appreciative and beautiful. Through the Cyanotype technique, the pulp modeling has achieved the natural shadow of plants, vivid modeling, rich details, elegant and exquisite, and has great artistic effect. It can be seen that Cyanotype has a certain value space in the field of pulp process product development. Cyanotype also has great development space on the cloth. After Cyanotype, its blue ferrous ferrocyanide precipitates in the cloth fiber, which is stable and non fading. In the process of processing, the cloth is directly soaked in the photosensitive solution, and after it is dry, the beautiful image is dried with real object or film negative. As the telescopic shape of cloth is no less than the change of paper, people are also very active in the exploration of Cyanotype cloth art. For example, in her paper practice, Liu Yanghua of Jiangnan University used the Cyanotype technique to design three sets of clothes for the design purpose of the second "Purple Gold Award" competition. Combined with the cultural characteristics of Jiangsu, the clothing has rich expression techniques, and expresses the simple and natural design concept through simple and steady colors. Compared with the Cyanotype method, in addition to the application of paper and cloth materials, the author also found that the manual experts on the network are very active. Some people sun the Cyanotype image on wood or gypsum or even eggshell. The exploration of this experiment is conducive to the exposure of the Cyanotype image on the allogeneic shape, producing a surprising and wonderful effect.

Finally, the material applications mentioned above are all materials that can be developed directly by Cyanotype. In addition, the author believes that the cultural innovation and multi-dimensional display of Cyanotype images should not be limited to the techniques of direct development by Cyanotype. The Cyanotype image is scanned and printed on cloth and ceramics by digital printing or heat transfer. To a certain extent, it still uses the graphic expression of Cyanotype, which is not only the practice of the application of Cyanotype physical state, but also the practical innovation of cultural and creative design.

We know that the fabric is soft and feels comfortable. The Cyanotype image with this material as the carrier is particularly suitable for making household products. For example, the fabric parts of chairs and stools, cloth bags and other personalized manual customization. In the design of cultural and creative products, this kind of product, which uses the artistic charm of Cyanotype, excavates the design value of Cyanotype cultural creativity, suits the hobbies of some people, and is customized in order to pursue the commercialization of products, is also the most direct embodiment of the contemporary activation of Cyanotype technology.

5. Epilogue

This paper makes an in-depth study on the Cyanotype drying method, which will inject new vitality into cultural and creative design. This has made a new attempt to explore the Cyanotype method, which has always been dominated by photography. In the context of cross-border joint, from photography to design is a cross-border. At the same time, the multi-dimensional display of Cyanotype requires breaking the boundaries of plane space, and it is a cross-border in design. The activation of traditional Cyanotype drying method in cultural and creative design will help to enhance the expressiveness of Cyanotype drying technology, create more cultural and creative design works and realize its cultural and economic value. Therefore, the development of Cyanotype cultural creative design system is an effective way to activate Cyanotype techniques.

The picture below (Figure 1) shows the Cyanotype digital pattern designed by the author. The transformation of traditional craftsmanship into digital mass production has positive significance for the inheritance and development of Cyanotype.



Figure 1. Author's design

The Cyanotype pattern gives the elegant style of cultural and creative products. Combined with the traditional theme bamboo leaves, it shows more literati temperament. The audience of the product is middle-aged.

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References

- [1] Written by James (C.) and translated by Lu Jiajia Professional course of photography and picture making technology in the United States [M] Shanghai: Shanghai People's Art Publishing House, 2006
- [2] Wang Changhui. Classical photography technology - Cyanotype experiment Popular literature and art, 2010
- [3] Zhang Tianpeng. Fast Cyanotype method Surveying and mapping bulletin, 1958
- [4] Wang Changhui. Research on the application of Cyanotype technology in fiber art practice Shaanxi Normal University, 2011

- [5] Liu Yanghua, Liang Huie. Innovative design and application of Cyanotype on cotton fabric Printing and dyeing, 2015
- [6] Liu Yanghua. Design and application of traditional Cyanotype technology in cotton fabric Jiangnan University, 2015
- [7] Pan Shuang, Wei Jingwei, Zhang Junjie. "Classical handmade Cyanotype - recollection of blue image" Friends of photography, 2015
- [8] Li Tianhua. Practical research on classical Cyanotype craft Shandong youth, 2014