

Gene Extraction of Nanjing Yunjin Culture and Its Application in Fashion Design

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Abstract: *Nanjing Yunjin is an outstanding example of traditional Chinese silk production techniques. It has a long history and is regarded as an intangible cultural heritage. This article takes Nanjing Yunjin culture as the research object, and extracts the color gene, pattern gene, and process gene of Nanjing Yunjin to discuss from these three core factors. In the current era of strong inheritance and protection of traditional culture, cultural gene theory has broadened new ideas for the inheritance and application of Nanjing Yunjin in clothing design, making clothing design more personalized and human culture, and effectively improving the artistic connotation and cultural taste of clothing design in daily life.*

Keywords: *Nanjing Yunjin; Gene extraction; clothing design*

1. Introduction

Nanjing Yunjin Culture has a long history and is known as “inch brocade and inch gold”. Nanjing Cloud Brocade is famous for its colorful colors and exquisite craftsmanship. It is not only one of the four major brocades in China, but also one of the precious silks that have been loved by people for thousands of years. In its production process, it has inherited the fine tradition of ancient Chinese silk thread technology and has strong historical characteristics. At present, the inheritance and protection of Nanjing Yunjin culture is mainly based on the living inheritance, with a relatively single form and insufficient innovation. Therefore, it is extremely important to have a theoretical basis to support the development of Nanjing Yunjin culture. The theory of cultural genes is based on the theory of biological genes. The theory of biological genes refers to the transmission of genetic factors with genetic information from one individual to another through various chemical processes. This transmission of information is carried out in the form of replication, thus preserving the information characteristics of the previous generation. Therefore, traditional culture also has cultural genes for inheritance. As long as we grasp the core factors and integrate them with clothing design, new sparks will collide and more conducive to the inheritance and promotion of traditional culture.

2. The Feasibility of Cultural Gene Theory in Fashion Design

The cultural gene theory is derived by analogy with the concept of biological gene theory. In 1976, at the end of Dawkins' "The selfish gene", "meme", or "meme", was proposed. It pointed out that civilization is formed by communication and interaction between different people, and they communicate in different ways^[1](Zhao Haiying, 2021). "meme" refers to people's continuous creation and improvement to achieve their own self realization, as well as communication and interaction with other people. "Meme" is regarded as an important cultural carrier that integrates human wisdom and spirit in a form that is not limited by any heritage.

In terms of gene extraction and application of traditional culture, Chinese scholars have also conducted rich research. For example, Yang Yizhen extracted the diverse and integrated culture of southern Fujian as the research content, extracted core factors such as language and culture genes, architectural culture genes, and popular culture genes, and applied them to tourism souvenirs, enhancing cultural connotation and enriching visual experience^[2](Yang Yizhen, 2021); Liu Linlin utilizes the principles of genetic map construction to extract cultural elements of kite Wei's production techniques and add them to cultural and creative design^[3](Liu Linlin, 2021). Through in-depth research on Lingnan brick carving culture, Lan Xingwu has constructed a digital resource library that integrates its material interpretation, evolution, information extraction, and transformation of modern design, thereby achieving a perfect presentation of aesthetic values.

Through the above analysis, it is concluded that the theory of cultural genes has high research value in design. Currently, the research of cultural gene theory in Nanjing Yunjin culture is still in a blank state. Therefore, a theoretical model of cultural gene is established, and the above-mentioned method of gene extraction is used to extract Nanjing Yunjin cultural genes, so as to apply it to the field of clothing design.

3. Historical Tracing of Nanjing Yunjin Culture

Brocade is an outstanding representative of traditional Chinese brocade art, and cloud brocade is even more outstanding among them. Its raw materials are valuable, its production process is complex, its texture is exquisite, and its style is elegant. Therefore, it is known as “inch brocade inch gold”.

The development of Nanjing Yun brocade can be traced back to the late Eastern Jin Dynasty, when Liu Yu led the army in the Northern Expedition, bringing a large number of local craftsmen to Nanjing, and establishing a Brocade Department to manage the brocade business. This also marked the beginning of Nanjing Yun brocade. According to historical records, among the hundreds of workers in the post Qin period, the number of practitioners in the brocade industry was very large. They incorporated the traditional techniques of the Han Dynasty, the Cao Wei Dynasty, the Western Jin Dynasty, and ethnic minorities into their works. Their exquisite skills laid a solid foundation for the emergence of cloud brocade at that time.

In the Yuan Dynasty, cloud brocades became a specialty of the royal family. In the Ming Dynasty, the brocade process became increasingly mature and perfected, gradually forming a unique local characteristic. Silk jacquard brocade was the local weaving characteristic of Nanjing at that time. In the Qing Dynasty, cloud brocade reached its peak in terms of variety, scale, and craftsmanship, forming a wide variety of colorful, exquisite, and solemn patterns. The royal government set up a specialized organization in Nanjing to manage brocade, Jiangning Weaving Mansion. According to existing data, there are about 30000 local weaving machines used for brocade weaving in Nanjing, with about 300000 people directly or indirectly participating in the manual labor of brocade weaving. At that time, brocade weaving became the largest handicraft industry in Nanjing.

With the advent of the 1940s, the inheritance and development of Yunjin faces severe challenges. Although there are only a few craftsmen who understand cloud brocade throughout the country, cloud brocade, as a unique handicraft, enjoys a high reputation at home and abroad. Therefore, protecting and inheriting cloud brocade has become a top priority. In 1954, the Nanjing Yunjin Research Institute was founded as the times require, and was officially established in 1957, making contributions to local development.

4. Analysis of Gene Characteristics of Nanjing Yunjin Culture

From the above explanation, it can be seen that Nanjing Yunjin Culture is a genetic treasure house. The practical patterns, colors, materials, and weaving techniques of Nanjing Yunjin have high historical research value. These hairstyles can be extracted from the perspective of cultural genes, and then analyzed and compared for reasonable use to endow the design with new vitality.

The basic characteristic of biological genes is that inheritance and variation realize the continuation and evolution of biological species. By analogy, Nanjing Yunjin cultural gene refers to the inherent genetic characteristics expressed by design features that can carry the genetic information of Nanjing Yunjin culture. Through the application of cultural gene theory, it reflects the characteristics of Nanjing Yunjin, improving the identifiability of clothing design objects and the continuity of clothing culture. In this regard, the three core factors of Nanjing Yunjin culture, namely color, pattern, and craftsmanship, are extracted for further exploration and research.

Through literature search, it can be found that color and pattern are the most intuitive expressions of Nanjing Yunjin cultural characteristics, so this can be regarded as a dominant gene in biological gene theory, while Nanjing Yunjin weaving technology is regarded as an invisible gene. Taking this as a starting point, we can then analyze it in terms of priority and establish a model (Figure 1) to more intuitively express the acquisition process.

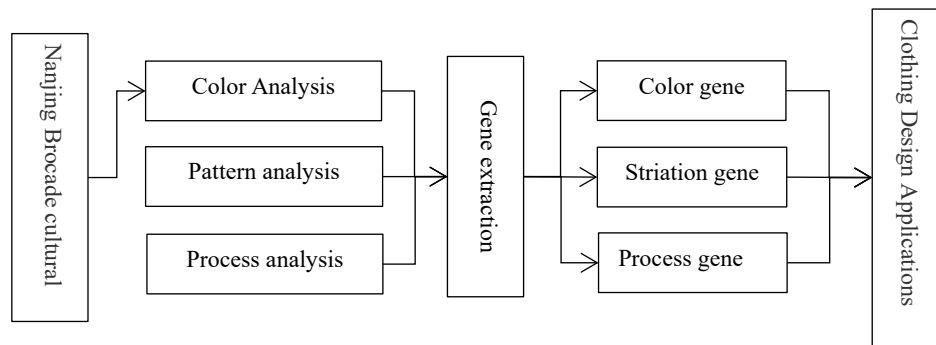


Figure 1: Gene extraction model diagram.

5. Extraction of Nanjing Yunjin Culture Gene

When analyzing cultural heritage, we must ensure that each heritage is unique and that its content is unique to Nanjing. Through the above investigation and research and the establishment of a model, the cultural genes of Nanjing Yunjin culture were extracted.

5.1. Color Gene Extraction

There is a record in “The Six Books” that “the weaving of colors is called brocade in the text,” which shows that in ancient times, cloud brocade had brilliant colors. Chinese culture has always preferred warm, bright, bright, and strong positive colors to dull or repetitive tones (Figure 2). Therefore, the common colors in Nanjing Yunjin culture include cyan, red, yellow, green, purple, white, and black. As the cloud brocade is designed specifically for royalty and nobility, its colors and patterns must reflect a noble, magnificent, noble, and elegant temperament, in order to match the identity of the user and create a luxurious atmosphere for the palace.

“Makeup flowers” are the most colorful and colorful among the four major modeling categories of Nanjing Yunjin. In the past, there was also an ancient saying “running horse makeup flowers”. Therefore, galloping on horseback will instantly give a distinct and strong visual experience, mainly relying on the role of color.

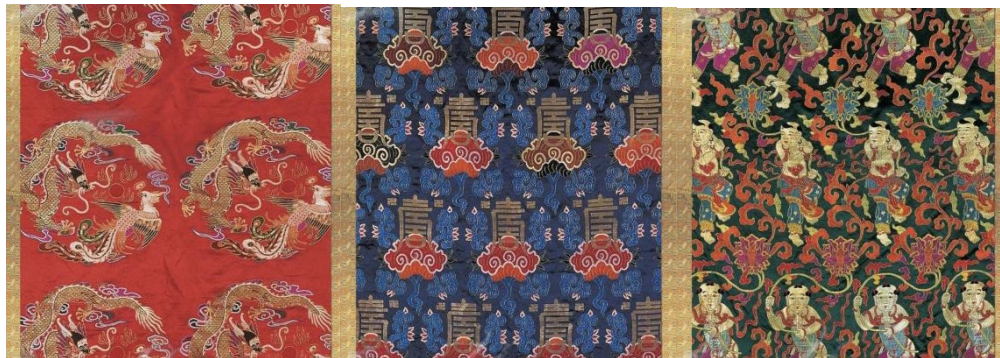


Figure 2: Nanjing Cloud Brocade in Different Tones.

5.2. Pattern Gene Extraction

The design of the cloud brocade has a noble temperament, and its exquisite craftsmanship makes it perfect in terms of detail conception, color matching, texture assurance, detail refinement, and exquisite details, making its decoration, practicality, aesthetics, and refinement all presented. The cloud brocade artwork in Nanjing includes four different patterns (Figures 3): “Tuanhua”, “Size”, “Size”, “Eight”, “Qushui Pattern Brocade”, “String Chrysanthemum Brocade”, “Ice Plum Brocade”, “Entangled Lotus Brocade”, and “Phoenix Lotus Brocade”. “Tuanhua” patterns are common, “four principles”, “six principles”, and “eight principles” patterns are common, while “Qushui pattern brocade”, “string chrysanthemum brocade”, “ice plum brocade”, “tangled branches lotus brocade”, and “phoenix lotus brocade” patterns are more exquisite.

In addition to the patterns, Nanjing Cloud Brocade also uses a large number of symbolic patterns, achieving the goal of “meaning must be intentional, meaning must be auspicious”. Its core is “power, happiness, wealth, longevity, happiness, and wealth.”. The patterns used include patterns of plants, animals, religions, musical instruments, characters, and the four treasures of study. From a folk perspective, some of them are used in bats, peonies, fish, pomegranates, etc; From the perspective of the royal court, there are themes such as dragons, phoenixes, seawater, and longevity. The combination of patterns and patterns using a suitable combination of patterns, bipartite continuity, quadrilateral continuity, or a combination of the three makes the patterns used variable and gorgeous.

Through the above investigation of patterns, a large number of patterns with different meanings were used in Nanjing cloud brocade, making Nanjing cloud brocade culture rich in profound connotation.

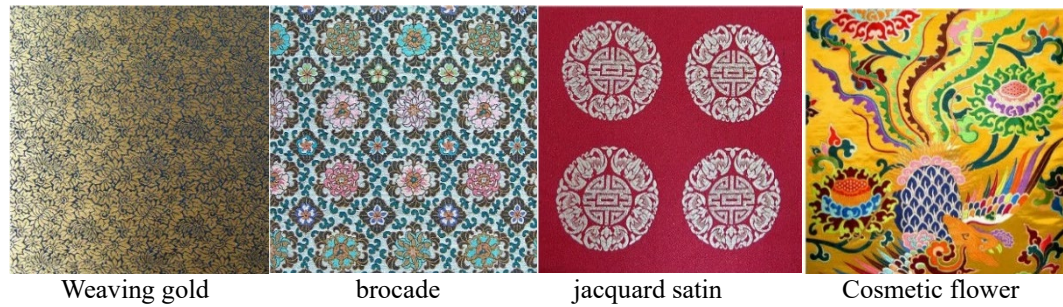


Figure 3: The Different Pattern Shapes of Nanjing Cloud Brocade.

5.3. Process gene extraction

Nanjing Cloud Brocade, with its unique technology, perfectly integrates the precious materials from the “three famous brocades” into other brocades. Its uniqueness lies in its use of ancient large wooden looms and perfect technology to perfectly present the craftsmanship of Chinese silk. The technological process of Nanjing Yunjin is very cumbersome, from painting to sewing, to using machines, selecting raw materials, and completing the entire process. Among all the steps, especially the embroidered peach blossom knot, is a crucial step. There are different weaving techniques for different categories. Among them, “makeup flower” is the most complex variety in the weaving process of Nanjing Yunjin, characterized by “open warp and broken weft”, large color contrast, and rich changes. It is also currently still unable to be replaced by modern industrial machines. “Animal feathers are mostly used as colored threads in the materials used, with” makeup peacock feathers “being the most typical. This is the process of twisting peacock feathers into threads and weaving them through a special process.”. In “A Dream of Red Mansions”, the complexity and rarity of its craftsmanship are reflected in “Yong Qingwen’s Disease Repairs the Birds’ Golden Fur”.

6. The gene of Nanjing Yunjin culture is widely used in clothing design

6.1. Application on cheongsam

In order to revitalize the art of Yunjin, we should not only inherit its exquisite decorative techniques, but also expand its application scope by incorporating contemporary texture elements into its works to enrich its visual effects. It can draw on the expression forms of Chinese meticulous painting. The design of the cloud brocade transcends conventional structures. It not only presents a complete structure, but also combines traditional painting techniques with it, making the work full of motion and mystery.

The "Qiman's Robe" Qipao is a clothing that is very suitable for Chinese women. It combines tradition and modernity, bringing classical aesthetics into modern life. The design inspiration for the Yunjin cheongsam comes from two different elements: one is a traditional pattern, and the other is a modern design.

The first situation is that the overall design of the cheongsam should fully consider its components and the cultural connotations it conveys, such as colors, patterns, etc., in order to better reflect the original intention of the designer (Figure 4). At the same time, the material of cheongsam should be carefully selected to avoid wasting its value and achieve the best visual effect. The second method is to

use a cloud brocade pattern on the cheongsam (Figure 5, co branded by Teenie Weenie and Nanjing Cloud Brocade Research Institute in 2021). This method can reduce the cost of the entire garment, and is also the most common style. Using various techniques, such as stitching, repairing, and inlaying, the cloud brocade pattern is meticulously decorated on the shoulders, chest, waist, hem, and back of the cheongsam.



Figure 4: The Application of Nanjing Cloud Brocade on Qipao.



Figure 5: Nanjing Yunjin Research Institute and Brand Co branding.

6.2. Application in stage performance clothing

The color matching of cloud brocade is very outstanding. Based on “color halo” and combined with a lively and dignified momentum, it brings the decorative art of color painting of Chinese palace buildings to the extreme, creating a solemn and elegant atmosphere with color combinations such as bright red, dark blue, sapphire blue, and dark green, making the heavily colored flowers on the dark ground more vivid and giving people excellent visual impact.

This color can be used in stage art costumes. Cloud brocade is a very elegant costume that can provide magnificent performances for dancers. Under the illumination of the light, the gold and silver threads of the cloud brocade will shine, presenting a rich and colorful effect.

6.3. Application of digital technology in clothing design

Today, with the rapid development of high-tech technologies such as big data, cloud services, and artificial intelligence, the digital era is rapidly spreading, and they have profoundly affected our daily lives and changed our future. Due to the time-consuming and labor-intensive traditional manual weaving technology, this technology is used in the design process.

The traditional cloud brocade pattern uses manual drawing of lines on artisan paper, and then uses

color to paint the block surface, often taking six months to a year. With the integration of the Zhongyun Brocade process and CAD technology, the originally cumbersome design process can be completed in a short time, but for complex patterns, it may take several years, making the modern market increasingly rapidly changing and unable to meet the needs of consumers. In order to maintain traditional manufacturing methods, we must focus on scientific research and innovation. Using CAD aided design, we can more effectively complete complex manufacturing tasks. By using computers to replace human labor, we can complete manufacturing faster and better ensure the quality of our products, thereby promoting and selling them more effectively.

7. Conclusion

Nanjing Yunjin, famous for its colorful colors, is one of the world's most valuable intangible cultural heritage. However, with the development of science and technology, innovative applications can be made and new forms of artistic expression have emerged. Based on this, through the analysis of its genetic characteristics through cultural gene theory, core factors are extracted and applied to contemporary clothing design, enabling clothing to carry a brilliant civilization, maintain national spirit, and endow clothing with special cultural attributes, which is conducive to the development of the creative industry of Nanjing Yunjin Culture, thereby better carrying out cultural inheritance.

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