

Analysis of the Japanese printing and dyeing techniques: Yuzen dyeing

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Abstract. Yuzen dyeing is one of the traditional Japanese printing and dyeing techniques. Its production process is complex and exquisite, colorful, using Yuzen patterns dyed by Yuzen dyeing technique. In Japan, according to the region, it can be divided into Kyoyuzen, Kagayuzen and Tokyoyuzen. The cloth dyed by Yuzen is usually made into clothing, bags and other products. Yuzen patterns bear the creativity and spiritual culture of the Japanese nation. This paper will mainly analyze the background origin and artistic characteristics of Yuzen patterns, hoping to provide help for traditional printing and dyeing techniques and patterns.

Keywords: Yuzen; Pattern; Traditional craft.

1. Introduction

The application of painting in dyeing technique is a major feature of Yuzen Dyeing, and the combination of painting and printing pattern technology make the form of pattern expression more free and flexible than traditional printing and dyeing technology. The humanistic thought and national characteristics contained in Yuzen patterns are the main reasons for their enduring popularity, as well as the national spirit in it.

2. The background of Yuzen dyeing

The Japanese Yuzen pattern originated in the Edo period. At the beginning of the Edo period, the political system established by Tokugawa Ieyasu was very strict, and the two rule over the shogunate by two generations of generals, Tokugawa Hideyoshi and Tokugawa Iemitsu, gradually stabilized. As the biggest feudal Lord in the Edo era, the general directly managed a quarter of Japan's regions and major cities, while the rest of the country was divided into more than 200 vassals of different sizes. The lords of vassals were called vassals, who directly took orders from the general. In the Tokugawa era, the Japanese people were strictly divided into four classes: samurai, farmers, craftsmen and merchants, which resulted in the differences of customs and cultures between different regions showed by Yuzen patterns. Among different classes, there were a series of prohibitions against the use of certain crafts or patterns in order to ensure the authority of shogunate and samurai. Such class barriers also cause differences in patterns among different classes.

With the premise of political stability, the economy also develops. During the Tokugawa Tsunayoshi era, the economy developed well, so that the status of businessmen was greatly improved. Genroku culture flourished among merchants and farmers, resulting in a new style with bright colors and abstract patterns. This is a kind of artistic style based on the life of urban businessmen, reflecting the growth of urban citizens' class and the new awareness of citizens' class, with the tendency of anti-feudal naturalism and realism. In terms of arts and crafts, Hishikawa Moronobu, a painter who came from a family of embroidery workers, created Ukiyo-e, namely popular genre paintings, mainly focus on women, actors and sumo wrestlers, which gained popularity among people after being printed by woodblock printing. Also, colorful printed silks created by Miyazaki Tomozon in Kyoto, all of which are arts and crafts developed during this period. In the first half of the 18th century, the emergence of capitalism and the new mode of production fundamentally shook the foundation of Tokugawa era. After the Meiji Restoration, the Yuzen dyeing also started a new development with the trend of the times.

3. The origin of Yuzen dyeing

Yuzen dyeing first appeared in the sector drawing process. The term “yuzen” originated in the book *The Tale of Genji*, published in Jogan fourth year in Japan. In this book, Yuzen dyeing first appeared in the sector drawing process and then used in clothing production. In modern Japan, yuzen textile productions include some bags, scarves and other decorations. According to *The Tale of Genji*, yuzen had already gained popularity in 1681 (the first year of Japan's Tenwa era). In the following year, the Japanese novelist, Ihara Saikaku, published his first erotic novel *A Lustful Man* (*Koshoku ichidaiotoko*), in which he mentioned that Yuzen fans appeared as the belongings of rich dudes at that time. In addition to this book, published in 1682, the popularity of Yuzen fan in Japanese people's culture was more or less mentioned in successive books published in Japan in the following years, indicating that Yuzen fan was very popular at that time.

The use of Yuzen craft in clothing production was mainly due to a ban on kimono in the second year of Tenwa era (1682), which restricted the use of some expensive materials and elaborate production techniques used in clothing. During the Edo Period, Japan's commodity economy, handicraft industry and culture were all well developed. At this time, the peasant class, who already had economic strength, began to create a civilian culture that reflected their self-consciousness. As the economic development at that time brought powerful strength to the townspeople, it also strengthened their artistic creativity gradually. In the middle of Edo period, there was a trend of enjoyment in the society. The wealthy began to add precious materials and more elaborate manufacturing techniques to their costumes, which led to the prevalence of social comparison. As a result, the Shogunate issued a series of laws banning clothing from being made by embroidery, mesh cloth and other expensive materials and complicated and elaborate techniques. In response to these bans, the peasant class began to take corresponding reactions, which did not violate the regulations, but also met the public's demand for clothing decoration.

Japanese fan painting master Miyazaki Tomozen applied unique yuzen fan painting techniques into costumes, satisfying the peasant class's desire for clothing decoration. And it was more flexible and exquisite compared with traditional printing and dyeing, so yuzen dyeing started developing in clothing.

4. The craft of yuzen dyeing

Yuzen dyeing is a dye-proof process. At the early stage, Yuzen Dyeing used plant dyes, and used glutinous rice flour and glutinous rice bran powder to blend into paste as dye-proof material, while at the later stage, modern industrial dyes were used more. While Chinese blue dyeing craft uses a wide range of anti-dyeing materials. Taking batik as an example, beeswax and paraffin wax are often used as anti-dyeing paste, while paraffin wax, due to its material properties, will produce cracks in the production process and produce beautiful crack-like patterns on the cloth, while glutinous rice anti-dyeing paste can't achieve this effect, so this pattern can't be found in Yuzen pattern. In the production process, firstly, the outline of the pattern is sketched with anti-dye paste, so as to prevent the dye of adjacent patterns from being cross-colored. After the color blocks in the picture are drawn in layers, the painted part is covered with paste to prevent the dye from seeping in when it is put back into the dye bath.

In terms of the production process, yuzen is mainly divided into hand-painted yuzen and type yuzen. Hand-painted yuzen, as its name implies, means that the whole pattern picture is made by hand painting. First, draw the pattern on silk cloth, and then draw the dye-proof paste on the cloth surface with a cone-shaped tool to prevent cross-color between different color block areas. After the whole pattern is colored, a layer of anti-dyeing paste will be spread on the picture to prevent the background color from affecting the pattern that has been drawn when dyeing. Hand-painted yuzen is much time-consuming with exquisite process, so the price is high. The emergence of type yuzen dated back to Meiji restoration, when a large number of brightly colored chemical dyes entered Japan after the western industrial revolution, and the type yuzen was developed by hand-painted yuzen dyer Hirose

Jisuke. The making method of type yuzen is mainly made of hollow paper. When making patterns, each color will use a unique piece of paper. According to the difficulty of patterns and different shades of colors, hundreds of pieces of paper will sometimes be used to make a Yuzen pattern. In mass production, in order to ensure the accuracy of the connection, there is no trace at the connection of each paper pattern, and the skill of the craftsmen is highly required. Although the production of type yuzen is not simple, it is much simpler than the hand-painted yuzen, and the paper used can be reused, which also provides great convenience for the future mass production.

After the Meiji Restoration, the Japanese royal family moved from Kyoto to Edo, and Edo changed its name to Tokyo. During the Meiji Restoration, Japan began to implement industrialization and mass production, and introduced many advanced technologies and materials from the West, which also promoted the change of Yuzen Dyeing to a certain extent, and reduced the production cost by using new materials and technologies. In addition to material changes, the Meiji Restoration also liberated people's minds, and the government began to gradually abolish the unequal provisions on the social class system, including the restrictions on the use of some patterns, which also promoted the industrial production of Yuzen dyeing. After World War II, Japan's Yuzen dyeing attracted the attention of experts and scholars all over the world, and therefore Yuzen dyeing gained better publicity worldwide. The Japanese government also began to protect its traditional handicrafts and issued a series of protection policies. However, due to the economic development, the power of businessmen gradually grew, and environmental pollution, chemical dyes and machine production appeared in yuzen dyeing's production, which to some extent also led to the shoddy yuzen dyeing process. Moreover, yuzen dyeing has higher requirements for dyes and water sources, and in modern times, yuzen dyeing has used shallow high-quality water sources in Kyoto. But due to environment pollution, it's difficult to get high-quality water from deeper bottom, which has a great impact on the dyeing and weaving industry. In Kyoto, however, with the spirit of craftsman, a group of designers with unique understanding of the new era have emerged. They kept high demands on yuzen dyeing and added their own understanding of the spirit of the times, endowing yuzen dyeing with new inspirations for its development in modern times.

5. Philosophy contained in yuzen dyeing

Some aesthetic thoughts about "feeling the truth" and "emptiness" are reflected in the patterns of Japan's Yuzen, which may come from Japan's geographical location. Because of typhoons and frequent earthquakes all the year round, they have a higher reverence for life, and they have different feelings for the rotation of the four seasons and the replacement of vegetation. Therefore, plant patterns are used to express their praise for life and desire to be one with heaven and man. In the yuzen dyeing patterns, plants often appear as the main characters in the picture.

There are many kinds of Japanese traditional plant patterns, among which there are many, such as vortex pattern, vertical surge pattern and grass roll pattern. As we all know, Japanese culture has absorbed and developed a large number of excellent foreign cultures, including China. After absorbing the patterns of other nationalities, many other plant patterns have been added to the traditional plant patterns of Japan, such as chrysanthemum pattern, peony pattern, pine pattern, lily pattern, etc. Some have been deformed and adjusted to form patterns with their own characteristics, such as crab peony, which is a new pattern formed by combining peony patterns with crab patterns. Heian Period is the development period of Japanese plant patterns, when plant patterns with Japanese traditional national style were formed and the style of foreign patterns was not completely abandoned, and the color and pattern design became richer and more exquisite.

In Japanese culture, many patterns are endowed with unique meanings. When the seasons change, Japanese people will hold some flower admiring activities to express their cherish of life and gratitude to nature. Cherry blossoms, or sakura symbolizes diligence, courage and wisdom in Japan. Although Japanese cherry blossoms are the most famous and well-known, in fact, cherry blossoms are not native flowers in Japan, but were brought to Japan by envoys of Tang Dynasty in China and loved by

the people. Although cherry blossoms are the mainstream of flower viewing in Japan now, in Nara era, plum blossoms that can bloom even in a cold and harsh environment were the main attraction of flower viewing. The resolute spirit embodied by plum blossoms has always been appreciated by the Japanese nation, and plum blossom patterns have a long history in Japan. Born in the Heian period and widely used in the Edo period, pine wood grain is considered a symbol of good luck and longevity in Japan because the pine tree is always green. Bamboo is also one of the common plant patterns in yuzen dyeing, and it grows straight and upward, which contains the spirit of self-improvement. Besides, bamboo has long been regarded as a sacred plant by the Japanese because it is described in traditional Japanese novel *The Tale of the Bamboo Cutter* that it gave birth to Kaguya (the goddess of the moon). In Japanese patterns, pine, bamboo and plum patterns are often combined to form a new pattern, which is called "Three Friends", and its connotation is basically the same as that of Chinese "Three Friends of Winter". Pomegranate patterns were also introduced into Japan from China, which symbolize reproduction and vitality, and are often combined with bergamot to express longevity and good luck. The tung pattern is used by the Japanese royal family and has a long history. The culture of tung pattern originated from China. According to legend, the phoenix perches on the phoenix tree, symbolizing the auspicious sign of the birth of the holy son of heaven. Therefore, tung pattern is a very noble pattern in Japan and represents power. In addition to the above plant patterns, the common plant patterns in Yuzen dyeing include autumn grass, vines, peach patterns, grapes, maple, and so on, all of which are endowed with many meanings, reflecting the ancient Japanese people's eulogy and blessing for life

6. Yuzen dyeing in different regions

In the Edo era, the technique of yuzen dyeing was used in clothing from the sector by Kyoto master Miyazaki Tomozen, and it was called "Kyoyuzen". Then it was introduced into Kanazawa in kaga, known as "Kagayuzen". After the Meiji Restoration, the Japanese royal family moved to Tokyo, and the yuzen dyeing developed in Tokyo was also called "Tokyoyuzen". Since then, the traditional yuzen dyeing were divided into three factions, and Kyoyuzen, Kagayuzen and Tokyoyuzen own their unique characteristics.

The specific difference between them lies in the difference of color and pattern content.

In terms of color and tone, Kyoyuzen uses rich and magnificent colors, with red and gold predominating and embroidery as the main feature, while Kagayuzen's colors are soft and dominated by brighter tones, and it adopts the classic "Kaga Colorful", namely "blue, purple, rouge, khaki and grass green" five colors, which are more vivid than those used by Kyoyuzen. One of the major characteristics of Tokyoyuzen is freshness, and it often uses blue and other cold colors, and the color is more stable and simple.

In terms of pattern contents, Kyoyuzen patterns are mainly plant and flower patterns and ancient style patterns, and prefer to more concrete patterns. Elegant curve lines are detailed and smooth, with the traditional ancient style patterns, such as professional patterns and Linpai patterns, and professional patterns are decorative patterns on ancient official clothing, supplies and carriage equipment, Linpai patterns are gold and silver foil as the background, the theme is mostly flowers, trees, birds and beasts or character stories. In the Kyoyuzen pattern, the inner color of flowers is often aggravated, and the outer color is lighter, which makes it a major feature, and it can be called the best product.

Kagayuzen is somewhat similar to Kyoyuzen in themes, but compared with it, the pictures of Kagayuzen are more calm and elegant. In plant painting, Kagayuzen will emphasize the external color and lighten the internal color, which is different from Kyoyuzen patterns, and contrast colors are used in some natural patterns. In addition, Kagayuzen also uses a painting technique called "insect-eating" in the description of fabric patterns, adding dark spots in the part of the leaves in the pattern, forming the visual effect of the insect bite.

Besides natural plants, the theme of Tokyoyuzen also likes to draw wavy patterns, with compact pictures. It also likes to take people's lives as objects, drawing all kinds of people's lives, and the pictures are full of life and fun. The theme of Tokyoyuzen is very close to the public, so this is also a major reason why Tokyoyuzen can be widely spread in the folk

The reasons for this factional difference may be the following:

First of all, it is the difference of political regions. In 794 AD, Emperor Kanmu moved its capital to Heiankyo, and it was the capital of Japan until 1868 AD, when Tokyo established its capital. The historical and cultural accumulation made Kyoto rich in cultural heritage, and it was one of the important towns of Japanese traditional culture. At the same time, Kyoto Prefecture had a large population, which was not only the spiritual hometown of Japanese, but also the origin of Japanese culture, representing Japanese culture. The Kaga is different. Before the Meiji Restoration, there were many vassal states in Japan. Although they claimed to be ruled by the Tokugawa shogunate, they were actually independent. When the U. S. army attacked Japan and opened the Japanese door, some vassal states, such as Tosa Domain, Choshu Domain, Satsuma, and Aizu, all tried to pull the tide at the end of the Shogunate, which could be called strong vassals. However, the Kaga was the rich vassal state in Japan's history that could be compared with the Tokugawa Shogunate, so that the style of yuzen patterns presented in Kaga is relatively bright and colorful is reasonable for some political regional reasons. Edo Castle has been one of the major cities of Japan since the Tokugawa Shogunate. After being renamed Tokyo during the Meiji Restoration, it developed into the center of Japan's politics, economy, culture, transportation and other fields. In the process of development, Edo Castle has formed two different regional types: one is private area, namely the center gathered by businessmen, vendors and craftsmen, and they are mainly engaged in water transportation, goods distribution and various commercial activities; and the other is the area where the upper class act, includes the daimyo and Chimoto residential areas, which are the political centers of Edo Castle. The political and economic development has also brought cultural prosperity. The emergence of civilian culture also symbolizes the heyday of cultural development in Edo Castle. After World War II, Tokyo not only became the center of world commerce, finance, popular culture and fashion, but also one of the most developed and wealthy cities in the world. Therefore, Tokyoyuzen also produced different effects under the cultural influence of different classes and the capital relocation.

Secondly, the natural environment is different, and the requirements of dyeing and weaving industry for water resources are relatively strict. Kyoto, located in the west of Japan, is an inland city, located in the northern half of the Kyoto Basin (mountain city) and the eastern mountainous area of the Tamba Plateau, so Kyoto provides high-quality superficial water for the dyeing of Kyoyuzen. Located in the southwest of Ishikawa County, Kaga is blessed with abundant natural resources such as the sea, mountains and rivers. Since ancient times, Kaga has also been known as the hometown of hot springs. In addition, there are two rivers running in Kaga, namely the Rhinokawa and Asano River. The rich water resources give Kaga a great advantage in yuzen dyeing. Tokyo has subtropical monsoon climate, four distinct seasons, abundant rainfall and Edogawa, but the development of modern industry has affected the quality of water resources. In addition to water resources, natural dyes produced in different regions are bound to be different. For example, the Kaga region is rich in minerals, which can also be of great help in dyes.

7. Conclusion

Yuzen dyeing is not only a traditional printing and dyeing technique in Japan, but also a treasure of the world printing and dyeing culture. The good wishes for life contained in its patterns and the excellent national spirit inherited by craftsmen are the main factors that make Yuzen dyeing last for a long time, which makes Yuzen dyeing still shine brilliantly all over the world after hundreds of years.

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