

# Research on the Production Technology and Inheritance Status of Southern Zhejiang Clamp-Resist Dyeing

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## Abstract

As a national intangible cultural heritage of China, the southern Zhejiang Clamp-resist dyeing is a kind of blue quilt manufacturing technology used by ancient folk people. This kind of folk homescloths has its own unique folk aesthetic form, and its patterns are mostly monochrome square symmetrical baizi figures, opera figures and auspicious patterns. In the local customs of Zhejiang province, this kind of quilt is often used as a dowry for women when they get married (Zhang, 2010). In this paper, the author made an in-depth investigation and research on the technical details and inheritance of the southern Zhejiang Clamp-resist dyeing.

**Keywords:** southern Zhejiang clamp-resist dyeing, intangible cultural heritage, printing process, indigo making, plate engraving, Intangible cultural heritage inheritor

The manufacturing process of the southern Zhejiang Clamp-resist dyeing includes three steps: indigo manufacturing, wood carving and cotton printing and dyeing. Today, these three skills are distributed in Ruian, Cangnan and Leqing counties of Wenzhou city, Zhejiang Province (Zhang, 2012). Therefore, from August 19 to August 31, 2021, the author conducted a field survey in these three places for two weeks, took 821 photos, obtained 6.84G of detailed audio and video materials, and conducted in-depth face-to-face interviews with Wang Hesheng, Chen Xianwu and Huang Qiliang, the most core Intangible cultural heritage inheritor of the project. Through this investigation, we have a deeper understanding of the process characteristics of the Clamp-resist dyeing in southern Zhejiang, the development and operation status of the inheritors.

## 1. Ruian MaYu Town (Indigo Manufacturing Skills)



Figure 1. Indigo pond



Figure 2. Carved wood

Ruian city is located 30 kilometers south of Wenzhou city. In Ruian city, Ma yu Town water Jingshui village (瑞安市马屿镇净水村), there is a small "Clamp-resist dyeing museum". Curator Wang Hesheng is a representative

inheritor of indigo dye refining technology. During the conversation with Mr. Wang, he talked about his career experience: Wang worked in Beijing in his early years. In 2008, he returned to the village to work in the printing and dyeing industry and set up the Clamp-resist dyeing Museum (Zheng, 2016). In order to make a good blue dye "indigo" by himself, he planted large patches of isatidis root on a hill not far from the museum, and set up two large cement tanks outside the museum for dye production and fermentation (Figure 1). First of all, the branches and leaves of isatidis root harvested will be poured into the fermentation tank, and water will be added to flood the branches and leaves. After three or four days, the pigment is gradually dissolved in the water, at which point the residue of the leaves should be picked up. The remaining pigmented water is then drawn into the dye pool with a suction pump and a certain proportion of lime is added. In the old days, the dye was made at four or five in the morning, before the sun rose, by four or five men in their prime, holding wooden handles, beating the water rhythmically for about two hours (Zhou, 2015). But now generally rely on machines to carry out this process, so the time is greatly shortened. The ingredients are stored in plastic buckets in the back of the house in the shade, ready to use when needed.

## 2. Engraving Skills in Gaolou Town

In Dajing Village, Gaolou Township (高楼镇大京村), 2.5 kilometers away from Wang Hesheng, there lives Huang Qiliang, an inheritor of the Clamp-resist dyeing engraving process. Master Huang's father-in-law, Su Shangtie, was a famous local Clamp-resist dyeing engraving maker when he was alive. In 1973, Huang was 15 years old. When he was on farm leave, his father asked him to learn engraving from Su. Four years later, Huang gradually mastered all the skills of engraving by himself. At Ruian, in addition to Su, his three daughters, son and daughter-in-law have joined the industry. At the same time, they also hired some helpers to form a small family workshop. After the reform and opening up, machine printing quilt surface appeared in the market, the new style stimulated new consumption, since then, the Clamp-resist dyeing has been gradually eliminated. Due to the sluggish market, Master Huang had to turn to carving furniture and door panels with the skills he learned from engraving, or carving Buddha statues in temples. He had also been engaged in the processing of leather shoes for a long time (Zheng, 2009).

According to master huang, Clamp-resist dyeing engraving process is mainly the design patterns on board, by means of intaglio printing version patterns need to preset the dyeing liquid circulation of coherent "pumping", also need to design "back channels" let dyeing liquid circulation to the closed position such as the character's eyes and nose (Zheng, 2004) (Figure 2). The main step of engraving process is to select wood and carve patterns. The length of a Clamp-resist dyeing plate is 43 cm, the width is 17.5 cm, and the thickness is 2.5 cm. It takes 17 Clamp-resist dyeing plates to make a complete blue Clamp-resist dyeing quilt surface, so the above procedure must be repeated 17 times to complete the carving (Zhao, 1991). Engraving patterns can be used in previously stored patterns or recreated. The engraving process of south Zhejiang blue engraving is different from other wood carving forms such as bed, furniture and decorations. As a part of the whole blue engraving process, the engraving master not only needs to be skilled in using various engraving tools and have exquisite carving skills, but also needs to know the procedures of the later printing and dyeing process.

## 3. Printing and Dyeing Skills in Yandang Mountain

In Yandang Mountain, yueqing city (乐清市中雁村), more than 30 kilometers northeast of Wenzhou city, the production of Clamp-resist dyeing is still continuing. Chen Xianwu's workshop is here. Chen Xianwu said that his ancestors had been making Clamp-resist dyeing locally, and it was the third generation when it was passed to his father Chen Songyao, who was too old to make Clamp-resist dyeing anymore, so he took over the mantle from his father and became the fourth generation (Figure 3). The first floor of this small family workshop is a small supermarket run by his family. Down the stairs to the basement, there is a small room of 10 square meters, two big dye vats placed in the corner, and tools are hung on the wall. Outside, there is a large open air drying platform, dyed cloth hanging on bamboo poles to dry.

Master Chen Xianwu introduced and demonstrated a series of printing and dyeing processes. The cloth used for printing and dyeing is now a relatively rare local hand-woven homespun cloth, with a width of about 50 centimeters and a length of 10 meters. In order to remove the brush paste from the surface of the homesickness cloth for better coloring, the homesickness cloth should be boiled before use and then soaked overnight in water. Then take it out to air, and fold the cloth in half until it is half dry. Measure the length with a ruler on the folded edge and mark the length and spacing of the plate with a pen. After marking, roll the cloth from end to end with a round wooden stick. When finished, begin to assemble the plate with an iron frame (Li, 2019).

A set of edition has a total of 17 marked serial number of flower edition, each edition in order to discharge, will be carved wood and cloth interlacing each other, one by one to arrange and arrange flat (Lin, 2015). After the

flower version shop, on the most surface of the plate on the two iron bars, and then put on vertical iron bars between the upper and lower bars, with screws one by one to tighten adjustment, so that the cloth version is fully squeezed (Figure 4).



Figure 3. The old dyeing house used by Chen Xianwu's grandfather

Before the use of iron frame, artists in the iron hoop and flower plate constantly inserted a number of wedge-shaped wood blocks to beat, until no more plug, "flower quilt" from the name. The two most two flower plate for single-sided carving, the remaining 15 pieces are double-sided carving, because the two flower plate needs to bear direct pressure from the iron frame, so it is twice as thick as the rest of the plate.

Once the wood and cloth are packed, lay them flat in the dye to soak. In the past, the dip-dyeing operation depended on the lever principle and needed manual operation. Now the two hanging ropes of the device can be hooked by the machine, and then slowly put into the dyeing VAT, and ensure that the whole cloth is immersed and suspended in the dyeing solution (Figure 5). Each soaking takes half an hour, and then it is suspended and oxidized in the air for 10 minutes. The number of soaking depends on the required shade of color. If you want to get the effect of traditional dark blue and solid color, this process should be repeated seven, eight or even ten times before it can be completed. After the dyeing is finished, the cloth can be dried before the iron frame is removed and the flower plate is removed to obtain a clear blue and white pattern.

Finally, the whole layout in water to wash floating color, dry can be used. Because of the narrow width of cloth, the popular quilt cover in this area is to cut the 10-meter long cloth into four sections and then splice them into a rectangular quilt of 2 meters  $\times$  2.5 meters (Zhang, 2019).



Figure 4. Carved wood clamped with iron frame



Figure 5. dye VAT filled with dye

## 4. Inheritance of Clamp-resist Dyeing Technology in Southern Zhejiang

### 4.1 Selection of National Inheritors

Before my research trip to Wenzhou, I have been troubled by an important question: Why has Clamp-resist dyeing been rated as a national intangible heritage in 2011, but no national inheritor has been selected until 2021? After field research, we found that this problem is directly related to the interest disputes among the three provincial inheritors. The core craft of Clamp-resist dyeing is divided into three parts, which belong to three craftsmen, Wang Hesheng, Chen Xianwu and Huang Qiliang respectively, all of whom are qualified to be selected as national inheritors. The personal relationship between the three artisans was not harmonious. For more than ten years, the selection of national non-inheritor was always unsuccessful, which was due to the competition of interests among the three artisans.

### 4.2 Inheritance Status of Chen Xianwu

An earlier report by Wenzhou University said Chen's workshop had an annual turnover of 1.5 million yuan and a profit of more than 150,000 yuan (Shi, 2017). After field research, I think these data are not true. I think Chen Xianwu's business situation is not good. His wife has no job and works as a supermarket salesgirl at home. His eldest son has gone to work in Ruian city and his youngest son is still in junior high school. When Chen Xianwu mentioned the turnover to me, he hesitated a little and said that he had not calculated it carefully. "The combined sales of the supermarket and Clamp-resist dyeing products at home may be less than 1 million." But I think this figure may be exaggerated. Moreover, most of the turnover of the 1 million yuan should be the turnover of small supermarkets, and the income he earned from his work in the dyeing house may not be as rich as the Wenzhou University research report said.

According to the report, Zhang Qin, a scholar who studies Clamp-resist dyeing quilts, orders a large number of Clamp-resist dyeing quilts from Chen's home every year. But according to my inquiry, Zhang Qin went to the United States three years ago and did not place orders with Chen Xianwu in recent years. Especially since 21 years, Chen xianwu said the two "have not contacted each other this year." At present, Chen Xianwu's products are mainly silk scarves and cushions, such as cushions, cushions and bags ordered by some teahouses in Yueqing city. Chen xianwu also produced a new style of silk scarves, priced at 800 yuan each, which sold well. The quilts mentioned in the Wenzhou University study are now almost completely out of production. And the previous research said Chen Xianwu opened a Taobao shop to sell Clamp-resist dyeing products, sales are excellent. But through my search, Taobao shop has already closed, can not find any trace. I asked Chen Xianwu. He said he had never opened a Taobao shop and did not know where the information about this Taobao shop came from.

### 4.3 Inheritance Status of Inheritor Huang Qiliang

The Clamp-resist dyeing engravings are so strong that many can survive decades of continuous use. So there are few opportunities for engraving, and the artisans who work in this industry often live in poverty. Currently, a 17-plate set of Clamp-resist dyeing engravings, including the wages of the wood and carver, costs only 20,000 to 25,000 yuan (\$3,106-3,882). Inflation has increased in recent years, and prices in previous years were lower than this price. This level of income hardly provides a decent living for carvers.

But from my interviews, Mr. Wang and Mr. Chen still find that too expensive. It has been five years since Mr. Wang visited Mr. Huang to carve wood, and he now uses a computer engraving machine. Chen xianwu also tried using a computer engraving machine, but computer engraving manufacturers were reluctant to accept his orders because there were so few orders. So he still has to hire Huang qiliang to sculpt.

Because it is not profitable, fewer and fewer craftsmen in Wenzhou are engaged in the process of Clamp-resist dyeing. Around 2000, Zheng Juxin said in his research report that there were at least four highly skilled engraving craftsmen in Wenzhou (Zheng, 2002). But now, huang Qiliang is the only local man who can do the job. Master Huang Qiliang mentioned in our conversation that he was older and not well-educated, so he was not able to design new products. When there were no orders, he would settle down to do farm work at home.

### 4.4 Erosion of Traditional Clamp-Resist Dyeing Technology by Modern Technology

The old technology of engraving was quickly replaced by computer engraving. Carving intricate patterns on wood is at the heart of Clamp-resist dyeing, but the centuries-old technique is rapidly being replaced by computerized engraving machines. According to the results of my investigation, not only the inheritors Wang Hesheng and Chen Xianwu purchased machine engraving, but even huang Qiliang, the inheritor of wood carving technology, also made extensive use of computer engraving related technical equipment to carry out a series of engraving auxiliary work.

Wang Hesheng now uses wood carving board, is the use of computer engraving mechanism. Compared with the traditional manual carving technology, computer carving technology has many advantages: fast speed, low price, high accuracy. Traditional hand carving patterns, a piece of wood needs 3-5 days, and computer carving only takes dozens of minutes; Traditional small-size wood carving costs about 2,000 yuan a piece, while computer carving costs 500 yuan. Computer engraving patterns and design drawings are completely consistent, there will be no obvious errors and errors, and the precision of craftsmen is obviously not as good as computer. In an interview, Chen Xianwu said that computer carving is better than hand carving. In fine, efficiency, flatness have great advantages. The only problem is that the computer-carved patterns are too precise and neat without any vivid traces of hand.

Twenty years ago, the living conditions of Clamp-resist dyeing engraving craftsmen were not good, and they often had to engage in other carpentry work to support their families. But at present, the engraving technology is eroded by advanced modern technology, the situation is more critical than 20 years ago.

#### 4.5 Understanding of Government Subsidies

Chen Xianwu, Huang Qiliang and others misunderstand the meaning and value of government subsidies. In interviews, Both Chen xianwu and Huang Qiliang generally agreed that government subsidies should be continuous and large enough to provide them with a better life. Wang Hesheng, on the other hand, believes that the amount of money provided by the government is small, but more significant. "Clamp-resist dyeing accounted for less than 10 percent of my turnover and I don't make much money from Clamp-resist dyeing products," Wang said. However, the identity of the Inheritor of The Silk Heritage is very important to me. If I lose my identity as an authority recognized by the government, I will not be qualified to cooperate with universities, silk museums and other official institutions."

We believe that China is a big country with thousands of intangible cultural heritage in need of protection. Therefore, the government can provide very limited financial subsidies to the double Clamp-resist dyeing, which can only maintain the basic survival of the artisans, and it is impossible to give rich money to the inheritors. Government subsidies provide an official identity certification, reflecting the government's attitude toward inheritors. With official certification, inheritors can carry out their own business activities in an official capacity. For example, Wang Hesheng relies on the government's identity certification and actively cooperates with Wenzhou University, Wenzhou Technician College, Wenzhou Trade College, Donghua University, Silk Museum, Zhejiang Sci-Tech University and other universities. He has provided experimental bases, internship bases and intangible cultural heritage experience bases for these universities, and has obtained a substantial income. Chen xianwu and Huang Qiliang, on the other hand, did not cooperate with any other organizations. They just kept applying for more subsidies from the government, hoping to get more money directly from the government. This is clearly a misunderstanding of government subsidies.

#### 5. Conclusion

Southern Zhejiang Clamp-resist dyeing is an important national intangible cultural heritage in China. It is made in three main steps: creating dyes (using plant materials), carving patterns (using wood), and dyeing (using cotton). Wang Hesheng, Huang Qiliang and Chen Xianwu are the only remaining craftsmen who have mastered this skill. In the research, we have an in-depth understanding of the production process and inheritance status of Clamp-resist dyeing.

Compared with the cheap and varied textile products on the market, the cost of Clamp-resist dyeing process is too high and the price is relatively high, making it difficult for the general public to afford it. This situation leads to the predicament of the Clamp-resist dyeing technology. The convenience and advantages of modern printing and dyeing technology are huge. The traditional folk dyeing and weaving products made by hand are basically completely replaced by machine production and chemical printing and dyeing process. Due to the high labor cost, these fine traditional handicrafts are destined to be not cheap, so it is difficult to popularize into the daily life of the modern masses, which is obviously very regrettable.

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