

A Brief Analysis of the Technical Characteristics of Doucai Porcelain in Ming Dynasty

Bo Tan^{1*}

¹ College of History and Culture, Northwest Normal University, Lanzhou City, Gansu, China

Email Address

1357883426@qq.com (Bo Tan)

*Correspondence: 1357883426@qq.com

Received: 31 July 2023; **Accepted:** 15 August 2023; **Published:** 21 September 2023

Abstract:

With the development of The Times, cultures permeate each other in the world. Since the advent of doucai porcelain, it has a profound cultural heritage in the history of Our country, with its exquisite shape, exquisite painting has been favored by people. Bucket color formation process. The production technology and painting technique concentrate the essence of Chinese ceramics. In this paper, the production process of the bucket color porcelain in The Ming Dynasty is elaborated, the decorative techniques of the bucket color porcelain in the Ming Dynasty are understood, and the evolution of the technological characteristics of the bucket color porcelain in the Ming Dynasty is analyzed, and the technological characteristics are studied from the early, middle and late Ming Dynasty. In order to deepen our understanding of the different periods of the Ming Dynasty in the process of porcelain to get a deeper study and understanding. The purpose is to study the technological characteristics of the Ming Dynasty doucai porcelain and the development of the development and decoration techniques, at the same time in the process of research to find the problems worth in-depth discussion, put forward their own understanding, so as to have a new understanding and insight on the characteristics of the Ming Dynasty doucai porcelain.

Keywords:

Ming Dynasty, Bucket Color Porcelain, Process

1. Craft Characteristics of Ming Dynasty Doucai porcelain

The porcelain used in the court is the bucket color porcelain, its shape is beautiful, the process is perfect, so the process characteristics of the bucket color porcelain of the Ming Dynasty is very rich, the most important aspect of the process is the combination of the two, mainly blue and white under the glaze and the embellishment on the glaze. The use of dot color, fill color, dye color, cover color and other techniques will be blue and white as the main color of the bucket diagram and outline the outline of the decorative line, and then fill the glaze content, the second firing, repeat the previous process content, to produce the most exquisite Ming dynasty

bucket color porcelain. The following will be analyzed from three aspects: firing process, decoration process and application process of bucket color porcelain.

1.1. The firing process of bucket color porcelain in Ming Dynasty

Bucket color is a simple term for bucket color porcelain, is a special decorative porcelain art things, it will be the blue and white under the glaze and the content of the glaze combined, focusing on highlighting the artistic decoration effect of color porcelain, and from the side to write the perfect combination of blue and white and glaze. In the pattern of Doucai porcelain, blue and white is the main color. The first step is to draw some Outlines and lines of flowers and birds with blue and white pigments on the outside of the embryo body, and then use color materials to gather the whole flower and bird, called bucket color.

Then the next step of the work on the basic molding of the solid color porcelain, with blue and white material in the formation of a good embryo to complete the work of drawing and tracing, shallow pen outline the general outline and appearance of the required pattern, but after the appearance of further color, or color a layer of no color glaze on the color. The porcelain was fired and baked in a furnace at 1300 degrees Celsius. Use mineral pigments on the glaze to dye, cover and dot the glaze for a second or more time. Then leave a blank in advance in the blank space outside the blue and white pattern on the fired underglaze blue and white ware and add color, or do color inside the blue and white color, fill all the color materials as needed to complete the entire pattern. Re-enter the furnace, bake at a low temperature of 800 degrees Celsius, and finally fire into shape. In this process, we can find that the color porcelain has undergone some different changes, and more performance points are between the blue and white under the glaze and the color on the glaze, and the two form an obvious struggle relationship, and then erase the different sparks.

1.2. Decorative craft of bucket color porcelain in Ming Dynasty

The application of bucket color technology in ceramic decoration has changed the monotonous situation of ceramic decoration form. The combination of overglaze color and underglaze color makes the decoration of porcelain more perfect. Blue and white color porcelain appearance makes people feel very clear, because its shape is simple and clean, not procrastinate. Compared with colorful porcelain, it is more simple and beautiful. In the pattern of blue and white porcelain, you can also see the unique beauty brought by simplicity. The feeling is natural, not pompous.

From the emergence of Xuande blue and white in the Ming Dynasty to the decline of Doucai porcelain in the late Ming Dynasty, the decorative style of Doucai porcelain in the Ming Dynasty was increasingly influenced by Chinese painting. In addition, many emperors in the Ming Dynasty were good at painting, and the contents of these paintings were mostly related to traditional plant, animal and human themes, which were directly related to the meaning of decorative patterns reflected in the Doucai of official kilns. Intended to express auspiciousness, wealth and longevity, full of Chinese cultural spirit, and closely related to the cultural aesthetic characteristics of the Chinese nation. The plant pattern decoration of the Ming Dynasty Doucai porcelain is mostly wrapped branches, banana leaves, group flowers (peony, lotus, chrysanthemum), Ruiguo, plum, orchid, bamboo and chrysanthemum, etc. As the decoration of Doucai, these decorative flowers are endowed with different meanings, and people combine historical and cultural metaphors to express their thoughts. For example, in the decoration of the past dynasties, the peony means grace and wealth,

the chrysanthemum is given the meaning of auspicious longevity, and the lotus symbolizes purity and flawless, which has been common in the decoration of the bucket since ancient times. The animal decoration of the Ming Dynasty's Doucai porcelain is often seen as dragon phoenix, cloud crane, mandarin duck, magpie, unicorn, etc. The dragon pattern is unique, strong and fierce, magnificent, and is a kind of animal in the imagination of the gods. Under the feudal slavery system at that time, the dragon pattern is a common spiritual pillar and supernatural symbol of the society as the dignity and symbol of the imperial power. There are two kinds of baby plays in the decoration of Ming Dynasty's Doucai porcelain: one is to show "innocence", and the other is to cater to the idea of "more children and more happiness". Other decorative patterns such as eight diagrams, eight treasures and other abstract and specific traditional decorative styles are a reflection of the feudal society and culture at that time.

According to the development of Doucai porcelain in the Ming Dynasty, we can accurately discover some characteristics of porcelain. Bucket color porcelain is small, easy to carry, giving people the feeling is delicate and lovely. The color is very full, the color is clear, the amount of dark division is very good. In addition, in terms of appearance, the feeling is fresh and refined, there is not much content. The visual feeling is real, natural and beautiful.

1.3. The painting technique of bucket color porcelain in Ming Dynasty

At the beginning of the production of Doucai porcelain, it was mainly filled with color, and various patterns were drawn on the embryo with blue and white materials. After high temperature firing, fill various colors on the glaze along the outline of the blue and white material, and then burn at low temperature. Color is the most important key point for the Doucai porcelain at that time, which is different from other porcelain. In the Chenghua period of the Ming Dynasty, with the change of time, the technology of Doucai is constantly changing, and the color of the new blue and white Doucai gradually becomes full in the subsequent development. The reflection of the picture gives people a bright, mainly blue and white under glaze, glaze color. The most important colors are bright red, clear green, yellow, black and so on.

Among them, the method of "double hook filling color" is the earliest and most worthy of reference. Due to the different contents depicted, the amount of color used is also different. The filling of color is very important, mainly in the use of four methods, respectively, fill color, overlay color, dye color, dot color and other easy color methods. In fact, only "double hook filling color" a technique of bucket porcelain is rare, most bucket porcelain is on the basis of double hook filling color. "Filling color" is not only on the color, but in the porcelain with blue color pigments, through the white painting method to outline the most basic outline content. Then, on this basis, a firing is carried out, adding colors and filling colors. It can achieve the texture needed by the pattern and the decorative effect to be sent; "Adding color" is not a simple addition of color, but in the completed process products, using the method of underglaze or glaze to dot, giving people the feeling of "icing on the cake", so that the porcelain becomes more three-dimensional, visual sense, overall to enhance the expression of porcelain, rich public demand for porcelain.

In the development of the Ming Dynasty, the most significant blue and white fighting colors played a decisive and leading role to a certain extent. It can perceive and affect the development and direction of the pattern as a whole, in the later

painting, the underglaze and the glaze are filled in accordance with a certain proportion of color, so that the effect can be imperceptible. Slowly can achieve "blue and white painting its half body, compounding color material, add its whole" spell a wonderful picture. Even some pictures, basically by blue and white performance, glaze only slightly embellished color.

Among them, the color of Chenghua Doucai porcelain is the most abundant, and the color on the glaze of Doucai porcelain is extremely critical. Their colors are composed of three colors, the highest color has generally three or four kinds, and some glaze colors such as chicken cups are used more than six kinds. The color of the color selected on the bucket glaze is determined according to the object of its application. The flexible use of color in Chenghua bucket color is also a very key point, it can bring many innovative points in decorative aspects, and the color selected is carefully chosen. After a long time, will try to fight color chicken cup. In addition, there is also a certain color contrast. In the process of investigation and research, we can find that the choice of color is passed on layer by layer, from one, two, three slowly upward. The use of three or four colors is more, more than five colors less. However, no matter how many colors are selected, it will not affect the beauty of the bucket color porcelain, and the sophistication of its appearance. Both simple elegant and fresh style. The decoration pattern of Chenghua bucket color is elegant, simple and fresh, which brings a good visual sense, and can be unique in the "bustling" effect.

2. The Evolution Characteristics of Doucai Porcelain Craft in Ming Dynasty

According to the evolution characteristics of Doucai porcelain in Ming Dynasty, the process characteristics of Doucai porcelain in the whole Ming Dynasty can be divided into three periods, which are the early Ming Dynasty, the middle and the late. Among them, the famous wucai porcelain represented by Xuande in the early Ming Dynasty is the starting point of bucket color porcelain crafts in the Ming Dynasty, which plays a very important role in promoting the bucket color art porcelain in the middle of the Ming Dynasty, greatly improving the innovation of our country's bucket color porcelain ideas and learning motivation. In the middle of the Ming Dynasty, the bucket color porcelain innovation is large, especially the bucket color porcelain in the Chenghua years is extremely exquisite, and the production of bucket color porcelain technology level has reached the peak of the Ming Dynasty. The technological development of Doucai porcelain in the late Ming Dynasty was somewhat innovative compared with that in the middle period, but the technological development of Doucai porcelain was lost due to the natural disasters and political and economic corruption in the late Ming Dynasty, which led to the reduction of the royal family's financial resources and the stop of the firing of Doucai porcelain, and the lack of innovation was mainly based on imitation Doucai porcelain. From the early, middle and late periods of the Ming Dynasty, the technological characteristics of Doucai porcelain in each period of the Ming Dynasty are found out and compared with the technological characteristics of the period before and after, and the changes and evolution of the technological characteristics of Doucai porcelain in this stage are found.

2.1. Technological characteristics of early Ming Dynasty Doucai porcelain

The Doucai porcelain that appeared in the early Ming Dynasty was in the period of Hongwu Emperor Zhu Yuanzhang, Jianwen Emperor Zhu Yunwen, Yongle Emperor Zhu Di, Hongxi Emperor Zhu Gaochi and Xuande Emperor Zhu Zhanji. This period

belonged to the initial development stage of Ming porcelain, which had just ended the chaotic times and a hundred things were waiting to be developed. The reason for this division is that the early development of Ming Dynasty Doucai porcelain originated from Ming Dynasty blue and white colorful porcelain.

The Yongle and Xuande dynasties of Ming Dynasty were the golden age of the development of Jingdezhen porcelain industry. There are many new inventions and creations in porcelain-making technology. The combination of underglaze blue and overglaze color is a new technology invented by Jingdezhen Imperial Kiln Factory at that time, such as blue and white red color, blue and white gold color, blue and white and so on. Among them, most of the decoration problems encountered inside are conceived and filled with the most detailed blue and white lines in local aspects. This way of using and filling colors has become part of the decoration of bucket colors.

Due to the lack of certain actual material verification, before the 1980s, most people believed that the starting point of the development of Doucai porcelain in the Chenghua period of the Ming Dynasty was Zhu Shan, Jingdezhen, and a large number of porcelain specimens with Ming characteristics appeared in special places of the Ming Dynasty. This later researcher provided better data for adoption. Through the study of newly unearthed materials, it is found that Doucai porcelain first appeared in the Ming Dynasty, that is, Doucai porcelain sprouted in Xuande, developed and grew in orthodoxy, and matured in Chenghua period.

To the Xuande period Jingdezhen Imperial Kiln factory fired porcelain porcelain white porcelain, solid and delicate body, glaze fat, glaze crystal soft, blue and white porcelain firing, unprecedented achievements. These porcelains were specially used for royal consumption, and as the exchange of gifts from the court inside and outside, the requirements were very strict and regular. It was precisely because of the continuous development of politics, economy and culture in the Ming Dynasty that Jingdezhen developed rapidly as a porcelain capital and porcelain was constantly burned.

The Xuande period of Ming Dynasty was the heyday of ceramic development in China. On the basis of inheriting the blue and white porcelain of Yuan Dynasty, there was great innovation and development. During the Xuande period, Zhu Zhanji carried out diplomatic activities, so the porcelain of the Xuande Dynasty was used in a special way. Most porcelain was used as gifts and gifts from the government to other countries. A large number of Xuande porcelain were exported overseas with beautiful shape and delicate and soft texture, which promoted the development of Sino-foreign relations and strengthened the status of the Ming Empire in Asia. Ambassadors from various countries came to China, most of them carried some special local products as tributes to the Ming Court. Therefore, most of the Xuande porcelain was also regarded as the government's reward and gift to the foreign countries, which promoted the exchange of Chinese and foreign cultures. Many ceramic ware types produced at that time were also influenced by the outside world, and the shape and decoration were also very special. Examples can be found in Islamic artifacts. Xuande period blue and white colorful (Figure 1) began to burn, blue and white decorated with dragon pattern (Figure 2, Figure 3) is very lively, the dragon head shows a variety of gestures, the expression is very rich. However, there are few character lines, the reason is because the imported hemp from the green material is easy to halo scattered, there are black spots, not suitable for the performance of the character picture. This period of yellow glaze delicate yellow desire drops, mostly for the palace sacrificial. During the

Xuande period of the Ming Dynasty, due to the great influence of foreign culture, most porcelain models had a common feature, that is, they copied the utensils of West Asian countries, such as the different styles of gold, glass and pottery, and then integrated them into their own craft. Although the Xuande Dynasty was short, it achieved unprecedented success in the production and firing of porcelain.



Figure 1. Ming Xuande · Colorful fish and algae pattern jade pot Spring bottle.



Figure 2. Ming Xuande · Doucai sea dragon pattern small pot with lid.



Figure 3. Ming Xuande · Dou painted baby cricket jar.

Photo source: Artron.net

2.2. The technological characteristics of Doucai porcelain in the middle Ming Dynasty

The middle Ming Dynasty refers to the period under the rule of four emperors: Orthodox Emperor Zhu Qizhen, Jingtai Emperor Zhu Qiyu, Tianshun Emperor Zhu Qizhen, Chenghua Emperor Zhu Jianshen and Hongzhi Emperor Zhu You. During this period, Doucai porcelain has gradually progressed after previous development, reaching the peak of Dou CAI porcelain art development in the Ming Dynasty during Chenghua period. The Chenghua period of Ming Dynasty is a very special period in the history of Chinese ceramics. During the Chenghua period, through the development of Xuande, Orthodox and Jingtai Dynasties, the politics were stable and the economy developed, presenting a peaceful and prosperous scene. All aspects of society began to be refined, and the development of Jingdezhen official kiln was also prosperous, and the porcelain production was greatly developed. Chenghua years of bucket color porcelain variety complete, rich content, bucket color skills, the famous Ming Chenghua bucket color chicken cup produced in this period, is the Ming Dynasty bucket color porcelain development of the most attention.

The speed of development of Dou color porcelain in the three stages of orthodoxy, Jingtai and Tianshun in the Ming Dynasty is relatively slow, because there are many external factors inside. The existing factors can be roughly as follows: social unrest, economic instability, There were many wars and kilns stopped producing porcelain, which directly affected the development and optimization of porcelain decoration from a great point of view. During the Chenghua period, the process of political revival and the rise of economy gradually restored the former prosperity of Jingdezhen, a declining kiln, and began to pick up the old business and fire porcelain. In this case, Chenghua Doucai porcelain began to become very popular, more reasons are still affected and infected by blue and white porcelain. The shape is also light and delicate, the overall perception of the line is still relatively good, the body is light and delicate, the texture is solid and thick, the glaze is warm, the tone is elegant and pleasant, especially the small vessels are more artistic value.

Chenghua bucket color porcelain is based on the content of Xuande blue and white colorful porcelain, and slowly achieve excellence. The characteristics of Doucai porcelain in Chenghua period are different from those in Xuande period. This article will elaborate the technological characteristics of Chenghua Doucai porcelain in Ming Dynasty from the aspects of decoration and preservation.

a. Mid-ming Dynasty bucket color porcelain decoration process

Compared with Xuande wucai porcelain, Chenghua bucket color porcelain is more light and simple, full of smart atmosphere. Chenghua Doucai porcelain further broadened Xuande blue and white porcelain, and a small part of Chenghua Doucai porcelain adopted line painting and color filling technology, which became the decoration method of all the ware patterns.

b. Ming Dynasty bucket color porcelain molding process

The Doucai porcelain of the Ming Dynasty is a professional pronoun of the dynasty. It is one of the fine porcelain types fired by the imperial court. It is exquisite and beautiful in shape, elegant and rich in color, and diverse in the application of color. And each porcelain has a certain dynasty logo and dynasty consciousness. It is a masterpiece of the imperial kiln. At that time, the output was very small, very valuable, which Chenghua Doucai is valuable, not only because of its fresh color, but also the charming brilliance of the blue and white blue near the embryo body under the glaze through the white glaze, and the beautiful and brilliant color painting on the glaze competition, giving people a bright and hazy aesthetic feeling. The two dynasties of Xuande and Chenghua were only more than 30 years apart, but the styles of Doucai porcelain vessels were completely different. Chenghua Doucai porcelain contains a kind of female beauty, small and exquisite, elegant painting, exquisite painting, which is unprecedented in the Ming Dynasty Doucai porcelain. But there is no denying that the shape of Chenghua bucket color porcelain is created. They all have a deep relationship with Emperor Chenghua himself, because his character is very soft, giving people a sense of comfort. More feminine, he is good at painting, love art, so Chenghua Doucai fresh and elegant style and Chenghua Emperor's character and aesthetic is also more consistent.

There were many exquisite Doucai porcelain in the Chenghua period of the Ming Dynasty. Today, there are some very exquisite pieces that remain with the world. For example, Mingchenghua Doucai Sanqiu Cup (see Figure 4), Mingchenghua Doucai baby play cup, Mingchenghua Doucai grape cup, Mingchenghua Doucai flower and bird cup and other Doucai works were once famous in the world. Among them, Ming Chenghua bucket color chicken cup (as shown in Figure 5, Figure 6) is the most famous. In Wanli "Shenzong Record" there is a record: "Shenzong fashion food, there is a pair of Chenghua chicken cup, worth 100,000." There is also a "chicken pot song" in history to praise the chicken pot cup. Through the Ming Dynasty Chenghua Doucai porcelain described above in terms of shape, Chenghua Doucai porcelain itself does not have a large capacity, they are relatively small and delicate. In general, items such as lidded jars, cups, plates, and bowls are common, while those with large capacities are extremely rare. In terms of painting techniques, Chenghua Doucai porcelain reflects the typical artistic style of the Ming Dynasty. It does not pursue meticulous painting, but paints casually, with intensity the child. The filling color on the glaze is also less accurate, and the color material often overflows the outline. The decoration theme of Chenghua bucket color is rich, and the most common is a variety of flowers, including various forms of wrapped branches and clumps. In addition, the very

famous Doucai chicken cup in Chenghua Doucai porcelain was auctioned at auction, with a high of HK \$29 million per piece. Chenghua Doucai is basically a piece of official kiln porcelain, each piece has its own style. There are two main styles, one is the six-character “Ming Chenghua year”. These six characters are arranged in two lines, and the outside of the model has a border, some have a pair of circles, some have a pair of boxes. The other is the “day” character (Figure 7). The word “day” mainly appears on the Chenghua bucket color pot, and the exterior is not closed around it. Chenghua Doucai porcelain as the Ming Dynasty royal family can use things, the glaze color gives people the feeling of white jade, delicate shape, the picture with the nature of simple and childlike, can be called the Chinese porcelain treasure in the fine.

c. The painting process of bucket porcelain in Ming Dynasty

In the Ming Dynasty, Chenghua Doucai porcelain has always been regarded as a precious variety. In terms of color, the color is rich, transparent and bright. There is no black, and other colors have a special charm: red is mostly used to decorate stars and flowers, the color is bright and eye-catching, and it is difficult for future imitators to match. Yellow is unpredictable, light yellow and light yellow are delicate and transparent, apricot yellow is slightly red, beeswax yellow is slightly transparent, turmeric. While most greens are bright and shiny greens, pine greens are dense and shiny greens. Purple is mostly like ripe grapes, usually purplish black or lavender like young eggplant skin color. More special is the deep purple, like a layer of black metal oxide, with a colorful halo. Cheng Hua is beautiful and purple, the color is like hematite, the surface is dry and dark.



Figure 4. Mingchenghua · Chenghua style bucket color Three Autumn cup. Photo Source: Palace Museum



Figure 5. MingChenghua · Chenghua style fighting color chicken cup. Photo Source: Palace Museum



Figure 6. MingChenghua · Chenghua bucket color chicken cup. Photo source: Artron.net



Figure 7. Ming Chenghua · Doucai seahorse pattern sky type pot. Photo Source: Palace Museum.

2.3. Technological characteristics of Doucai porcelain in late Ming Dynasty

The late Ming Dynasty refers to the period ruled by seven emperors: Zhengde Emperor Zhu Houzhao, Jiajing Emperor Zhu Houcong, Longqing Emperor Zhu

ZaiHou, Wanli Emperor Zhu Yijun, Taichang Emperor Zhu Changluo, Tianqi Emperor Zhu Youxiao and Chongzhen Emperor Zhu Youzhan. The period ruled by these emperors belongs to the late Ming Dynasty. In the late Ming Dynasty, there were political chaos and corruption, and the state finance was tight. The frequent occurrence of natural disasters in various places, the people's livelihood has also provoked civil unrest in many places, and the development of bucket porcelain has also been limited, there is not enough finance to create and burn new bucket porcelain, and the superb bucket porcelain firing technology in the Chenghua period has not been completely spread, resulting in the loss of many bucket porcelain skills. The development of bucket color porcelain in the Ming Dynasty also began to decline to the trough.

Most of the finished products of Doucai porcelain were perfected in the late period of this, and Zhengde, Jiajing, Longqing, Wanli, etc., will also have the relevant charm they have retained. Although Doucai porcelain reached its peak in the Chenghua period, it underwent a more complex process in the late Ming Dynasty: after the mid-Ming Dynasty, Doucai porcelain production became flat and decreased in quantity, which was related to Emperor Hongzhi's order prohibiting the reduction of firing porcelain. Bucket color porcelain developed and prospered in the Chenghua King Dynasty, and then gradually entered the trough.

During the Zhengde Emperor's period, Zhengde Doucai ware (as shown in Figure 8) has been handed down, but the number is very small, very rare, the number of genuine Zhengde Doucai porcelain passed on to future generations is very small, can only see the furnace and washing and the like, there are great novel points in the bucket color, such as the drawing of the green double outline pattern of the bucket color. The glaze is filled with two colors of yellow and green, "Zhengde system" these four words, the horizontal and vertical styles are different, the use of italics written, and then the color of green materials to fill and cover, gradually extended in the small rectangular frame.

In the Jiajing and Wanli years of the Ming Dynasty, the output of Doucai porcelain was not large, which was related to the popularity and prosperity of blue and white porcelain or wucai porcelain at that time, and the rough decorative style and simple decorative methods had replaced the exquisite decorative style in the Chenghua period. Jiajing period of Doucai porcelain also spread, Jiajing Doucai porcelain decoration is unique, because the Jiajing emperor believed in Taoism, so Jiajing dynasty Doucai porcelain mainly based on Taoist themes. During the period of Jiajing and Wanli, Doucai porcelain was decorated by filling and filling colors. The glaze coloring material is more bright than that of Chenghua Doucai porcelain, the blue and white outline is rough, and the body is also very heavy, which is difficult to compare with Chenghua Doucai porcelain. From Jiajing to Wanli, because the colorful porcelain was very popular at that time, the love and evaluation received was the highest, and because of the popularity and recognition of the colorful porcelain, the bucket color porcelain fell out of favor, and gradually was not concerned and loved by the public. Over time, the degree of attention paid to the firing of bucket porcelain has gradually decreased, the output has become less and less, and more simple imitators will appear, fewer innovators. Although their shapes, patterns and ornamentations are almost identical to those of Chenghua Doucai. At that time, the color scheduling was the most popular and valued, and it was also influenced by the style of five-color porcelain, which slowly became popular. At that time, the colorful porcelain was a very popular color collocation, and I liked to use the unique and rare pigment "Hui

Qing” to complete the follow-up work. This color is very unique, it reflects the blue makes people’s eyes bright, feel very young. In addition to this point, another key point is to have a sense of The Times. Although the painting skills are slightly immature, a little rough and not beautiful, but in the following picture you can see Jiajing’s imitation of the Dou color broken branch ganoderma grain plate (as shown in Figure 9), lotus pond Yuanyang grain plate, baby play pattern cup (as shown in Figure 10), broken branch chrysanthemum pattern cup, etc. are written in blue and white script on the outside bottom of the “Daming Jiajing system” six-character double-line around the blue and white frame.

Jiajing Bucket color innovation vessels only see a small number of bottles, furnaces, plates and other utensils, but also imitation of Chenghua bucket color porcelain, modeling patterns are also imitation Chenghua bucket color porcelain, but it is not imitation, written Daming Jiajing year. For example, under the edge of the bucket color wrapped branch ganoderma grain garlic bottle, there are six horizontal blue and white italics "Daming Jiajing year" from right to left. Jiajing Dou color broken branch lotus eightfold pattern two ear furnace outside the bottom of the blue and white script towards the six characters double line peripheral double circle style. Jiajing Dou color wrapped lotus flower pattern plate collected by the Palace Museum has a unique style. The outer bottom is painted with folded branches of peony, with black hook edge, leaf veins, stems and leaves filled with green color, peony petals are filled with yellow color, and inside the heart of the blue and white script this dynasty's six-character double-line outer blue and white frame.

During the Longqing period, the rarest porcelain was the Doucai porcelain. Its appearance gives a very advanced feeling. When it imitated the Yuanyang lotus pond pattern plate in Doucai, it was the hottest new type of porcelain at that time. Its imitation porcelain is popular with the public, from which we can see that the Palace Museum in the collection is a bucket color flower pattern shallow cup. The production process of this is to slightly cut the bottom, on top of which, covered with a layer of regular script “Daming Longqing year made” words, the color is colored with alum layer by layer. Among them, the shape of the words in italics is the outside, forming both sides of the box from the outside to the inside. From this study, we can understand one thing, although Longqing is highly praised, the technical content is not up to standard, and it is very easy to take a more relaxed way. Over time, he used his own way to turn the Doucai porcelain into a symbol specially belonging to this dynasty.

The bucket color porcelain fired during the Wanli years is for the purpose of pursuing profit, and the bucket color porcelain of Wanli is mainly modeled after the bucket color porcelain. For example, Wanli years of imitation Chenghua bucket color porcelain broken branch Liantuo eight auspicious grain bowl (see Figure 11), Tubal flower grain bowl, spirit moire cup, tubal lotus grain tall cup, wrapped branch lotus grain pot (see Figure 12) and so on. The innovative vessels are Dou color Taotie pattern square tripod, which is decorated with "Ming Dynasty Wan Li Nian system" six-character blue and white script. The six-character model is more common in the six-character double-line peripheral double-circle model, and there are a few six-character double-line peripheral double-box and six-character horizontal row models.

With the political and economic corruption in the late Ming Dynasty, the development of Doucai in the Ming Dynasty was inhibited and lost its former glory. From the 36th year of Wanli Era to the Chongzhen Period, under the background of

unrest and instability, the economic situation of the downward curve made the work of Jingdezhen Royal Kiln Factory appear white and stopped the production of porcelain, that is, from this time on, The royal kiln factory stopped producing the famous porcelain bucket color series. And temporarily terminated, but the Ming dynasty bucket color porcelain will always be a strong color in ancient Chinese porcelain.



Figure 8. Ming Zhengde Dou CAI interior and outer dragon pattern bowl. Picture source: Artron.net



Figure 9. MingJiajing Doucai Ganoderma grain plate Photo Source: Palace Museum.



Figure 10. Ming Jiajing Doucai baby print cup Photo source: Artron.net



Figure 11. Ming Wanli · Doucai Lianto eight auspicious grain bowl Photo source: Artron.net



Figure 12. Ming Wanli · Dou color wrapped branch lotus pattern pot. Photo source: Artron.net

3. Conclusions

Through the research of firing, decoration and painting of bucket porcelain, the technological characteristics of bucket porcelain are analyzed in an all-round way. The firing process of bucket color in the Ming Dynasty is mainly complex, and the most important thing is the firing times of bucket color, which generally reach more than two times of goods. But also pay special attention to the painting part of the embryo body, after the glaze operation, about 1300 degrees of high temperature firing, in order to form a more exquisite porcelain. Then on this basis, the remaining 800 degrees of porcelain is fired here, and finally the finished product is fired. The decoration process is to draw a pattern on the embryo, after high temperature firing and then fill the color, and finally through low temperature firing; The painting

process is “blue and white painting its half body, compounding color material, add its whole” spell a wonderful picture. Even some pictures are shown by the perspective of blue and white, and the glaze is only an embellishment. Through the above discussion, in the early Ming Dynasty, the underglaze blue and white were mainly combined with the glaze color, and a small part was filled with blue and white lines. In the middle of the Ming Dynasty, the line drawing and color filling technology adopted by a small part of Xuande blue and white porcelain were further expanded. They did not pursue meticulous painting, but randomly painted, and the color filled with glaze was not accurate enough. Material spills often occur, burying the contours. Finally, in the late Ming Dynasty, it evolved into mainly imitating Chenghua Doucai porcelain. At this time, Doucai porcelain was decorated by filling colors and filling colors. The glaze color is more vivid than Chenghua, the blue and white outline is rough, and the body is also very thick.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

References

- [1] Lv, C.L. Introduction to Doucai porcelain in Ming Dynasty. Cultural Relics, 2005.
- [2] Wang, F.; You, L.Z. Research on decorative art of Ming Chenghua bucket color. Chinese Ceramics, 2017.
- [3] Jiang, X.M. On the painting technology of bucket color porcelain in Ming Chenghua from archaeological data. Journal of the Palace Museum, 2016.
- [4] Huang, X.H. On the technical characteristics of blue and white color. Journal of Jingdezhen Higher College, 2012.
- [5] Wu, Z.J. Characteristics and influence of Chenghua Doucai. Ceramic Science and Art, 2012.
- [6] Wang, Z. Research on Modern form design and decoration of “Chenghua Doucai”: [Master dissertation]. Beijing: Beijing Institute of Fashion Technology, 2019.
- [7] Wang Qiuhan. Research on bucket color porcelain in Ming Chenghua. University of Chinese Academy of Social Sciences.
- [8] [Qing] Zhang, J.Y. Nanyao Notes, Guilin: Guangxi Normal University Press, 2012.
- [9] Zhang, T.Y. Qing Dynasty. History of Ming Dynasty. Beijing: Zhonghua Book Company, 1974.
- [10] Zhou, Q.Y.; Zhou, W. Try to describe the historical status of Doucai in porcelain of Ming and Qing dynasties.

- [11] Fang, L.L. Jingdezhen People Kiln. Beijing: People's Fine Arts Publishing House, 2002.
- [12] Zhao, H. Research on the pottery administration in Ming Dynasty. Ceramic Research, 1999.
- [13] Wu, Y.H. Appreciation of Blue and White Porcelain paintings of Ming and Qing Dynasties, Beijing: Beijing Library Press, 2005.
- [14] Cheng, J.C. Chinese ceramic art theory. Shanxi: Shanxi Education Press, 2001.
- [15] Kong, L.Q. Art history of Chinese ceramic painting. Nanjing: Southeast University Press, 2003.
- [16] Sun, S.S. The creative burning of bucket color and the innovative exploration of contemporary blue and white bucket color. Jiangxi: Ceramic Culture, 2021.
- [17] Wu, G.P.; Wang, H.H. Talk about the artistic characteristics of blue and white color decoration. Journal of Jingdezhen Higher College, 2013.



© 2023 by the author(s); licensee International Technology and Science Publications (ITS), this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (<http://creativecommons.org/licenses/by/4.0/>)