

The Characteristics and Influencing Factors of the Colour of the Cizhou Kiln Porcelain

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ABSTRACT

The colour of Porcelain is influenced by many factors, reflecting different periods, different regions of the aesthetic concept, social development and cultural connotation. Cizhou Kiln is the largest folk kiln in northern China. Its colour style, mainly black and white, is very distinctive. There has been much research on the shape, pattern and production techniques of Cizhou kiln porcelain, but little research on the factors influencing colour at it. This study analyzed the colour characteristics of Cizhou kiln by comparing the images of Cizhou kiln porcelain with those of ancient Chinese porcelain. Then, the Interview method was carried out to verify the results of image analysis and find the influencing factors of the colour of Cizhou kiln porcelain. The results showed that period, region and social culture are the main influences on the colour of the porcelain of the Cizhou kiln. Therefore, the main contribution of this study is to 1) explored the visual characteristics of Cizhou kiln porcelain from the perspective of colour. 2) analysed the factors influencing the colour of Cizhou kiln porcelain and developed the influencing factor model of the visual characteristics of the colour of Cizhou kiln porcelain.

Keywords: Cizhou kiln porcelain, Colour, Influencing factor

INTRODUCTION

Chinese ceramic art has a long history and is popular all over the world. Existing research literature on porcelain colour points out that porcelain colour is influenced by a variety of factors, which can reflect the aesthetic concepts, social development and cultural connotations of different periods and regions. For example, the pursuit of neo-Confucianism in the Song Dynasty and the reverence for natural Laozhuang thought led to the Song Dynasty's celadon colour tending to be plain and elegant (An, 2008). The colour of black glazed porcelain from Yaozhou kilns in the Tang Dynasty was influenced by geographical factors, Buddhist thought and social culture (Zhang Jie, 2007). In contrast, the colour of the imperial kiln porcelain of the Ming and Qing dynasties was restricted by the feudal hierarchy (Cai et al., 2011). In addition, the colour of porcelain also largely depends on the heating technology and raw material composition (Santos et al., 2022).

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Cizhou kiln is the largest civil kiln in northern China in ancient times. Cizhou kiln porcelain has high artistic value and influence and is famous in northern China. It is known as “Jingde in the south and Pengcheng in the north”. Its kiln site is located in Pengcheng Town, Fengfeng Mining area, Handan City, Hebei Province, and Guantai Town, Ci County. Ci County was called Cizhou in Song Dynasty, hence the name Cizhou Kiln. Existing studies have made a detailed analysis of the history, decorative patterns and porcelain modelling of Cizhou kiln (Zhang et al., 2022), but there are few studies on the colour characteristics of Cizhou kiln and its influencing factors.

In this study, through the collection and analysis of porcelain pictures, the horizontal comparison between Cizhou kiln porcelain and other porcelain in ancient China was made, and it was found that the unique colour of Cizhou kiln porcelain was mainly black and white. Then through the tabletop survey method and field survey method to explore the influencing factors of the colour of Cizhou kiln porcelain.

IMAGE ANALYSIS

A collection of 50 images of ancient Chinese porcelain and 50 images of Cizhou kiln porcelain were collected using Baidu. The main colours of each porcelain were extracted using Adobe Color to form the Ancient Chinese Porcelain Palette and the Cizhou kiln Porcelain Palette to analyze the characteristics of the colours of Cizhou kiln porcelain by comparing them with the Ancient Chinese Porcelain colours.

Sample Collection

Using Baidu’s image search function, type ‘ancient Chinese porcelain’ and ‘Cizhou kiln’ into the search box and select the first 50 images with suitable angles and high pixels, respectively, and the backgrounds were removed for subsequent colour extraction (see Figure 1, Figure 2).



Figure 1: Images of ancient Chinese porcelain.



Figure 2: Images of Cizhou kiln porcelain.

Main Colour of Sample

The five main colours of each porcelain in the two sets of images were extracted one by one using Adobe Color. These colours were used to construct the Ancient Chinese Porcelain Palette and the Cizhou kiln Porcelain Palette.

Building Colour Palette

The main colours of the two groups of porcelain were brought together to form the Ancient Chinese Porcelain Palette (see Figure 3) and the Cizhou kiln Porcelain Palette (see Figure 4), and the two palettes were compared. The results showed that: Ancient Chinese porcelain is rich in colour and colour scheme, with cyan and white predominating, as well as bright, flamboyant colours such as yellow, green and red. In contrast, the colours of porcelain from Cizhou kiln are predominantly black, white and brown with low saturation, and only a few porcelains are coloured with red and green, giving them an overall plain and understated appearance that is distinctly different from other porcelains from ancient China.

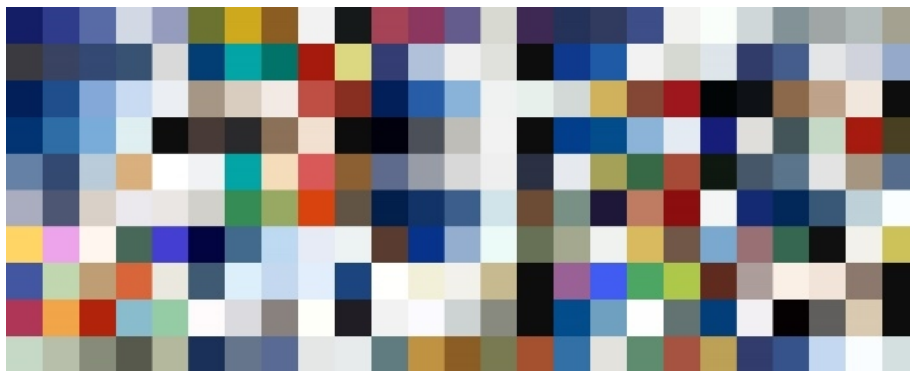


Figure 3: The ancient Chinese porcelain palette.

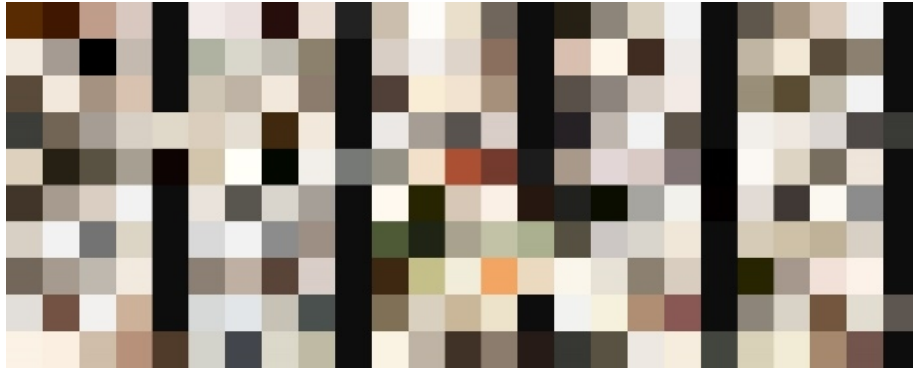


Figure 4: The Cizhou kiln porcelain palette.

INTERVIEW RESEARCH

On the 1st of April 2023, a field research trip was conducted in the Fengfeng Mining District of Handan City, Hebei Province. The purpose of the trip was to visit the Cizhou Kiln History Museum and the China Cizhou Kiln Site Museum, as well as to conduct semi-structured interviews with a docent at Cizhou Kiln History Museum, the owner of a porcelain shop in Pengcheng Street, and a craftsman of the art studio in Cizhou kiln Site Museum. These interviews aimed to gain a deeper understanding of the colour characteristics and influencing factors of Cizhou kiln porcelain.

Coding of Interview Results

The results of the interviews were coded at three levels to extract keywords regarding the visual characteristics and influencing factors of the colour of the Cizhou kiln porcelain (see Table 1, Table 2, Table 3).

Analysis of Results

The interviews verified the conclusion from the image analysis that the porcelain of the Cizhou kiln was characterized by a predominantly black and white colour palette. In addition, when asked questions about the causes of colour formation at Cizhou Kiln, the keywords period, region and social culture appear several times, suggesting that these three factors were the main influences on the colour of Cizhou Kiln porcelain.

RESULT DISCUSSION AND INFLUENCING FACTORS ANALYSIS

Period

Cizhou Kiln has a long history of porcelain production, with a distinctive decorative style beginning to emerge with the creation of “black painting on a white ground” in the mid to late Northern Song dynasty, and moving towards a prosperous heyday in the Jin and Yuan dynasties, with continuous firing through the Ming and Qing dynasties and the Republic of China to the present day.

Table 1. Coding of the interview with a docent of Cizhou kiln history museum.

Questions	1. Do the Cizhou kiln porcelain has any characteristics in terms of colour?	2. Are all the porcelains from Cizhou kiln black and white?	3. Why are the porcelains of the Cizhou kiln in the Jin dynasty different from the previous ones?
Level 1 Code	The most distinctive colour of Cizhou kiln porcelain is black and white, which is called “black painting on a white ground “.	No, the feature of black and white was formed in the Song dynasty, after which the colour of the porcelain changed somewhat. You can go to the exhibition over here to see how much richer the colours of the porcelains from the Jin dynasty Cizhou kiln would have been.	The multi-colour painting of the Cizhou kiln in the Jin Dynasty was made based on the decoration of black painting on a white ground, drawing lessons from the low-temperature three-colour painting techniques and the red and green painting techniques, using some unique mineral pigments. This was also because of social and political stability, economic and cultural prosperity and people’s pursuit of luxury in the Jin Dynasty. And the aesthetic culture of the scholars was also strongly impacted, no longer purely pursuing the beauty of plain colours.
Level 2 Code	Cizhou kiln porcelain is black and white.	The colour of Cizhou kiln porcelain varied across different periods.	The firing techniques of the Cizhou kiln changed in the Jin Dynasty. Jin Dynasty’s social environment and national culture impacted porcelain colour preferences.
Level 3 Code	black and white	period	period, social culture

Table 2. Coding of the interview with the owner of a porcelain shop on Pengcheng street.

Questions	1. Which porcelains in your shop have the characteristics of the Cizhou kiln?	2. The patterns on these porcelains are very interesting. Could you tell me something about them?	3. Do you know why this black and white colour characteristic was developed at that time?
Level 1 Code	Here, the Cizhou kiln porcelain is mainly black and white. These porcelain pillows, teapots and teacups are all fired in the style of a Cizhou kiln.	Most of the patterns on Cizhou kiln porcelain depict people, flowers and other things that people often saw in their daily lives. For example, the picture on this porcelain pillow is a sleeping child full of life atmosphere.	The literati ink painting influenced this in the Song Dynasty. when the artisans of the Cizhou kilns found this style of painting so beautiful that they applied the ink painting form to porcelain, creating the black and white colours of Cizhou kiln porcelain.
Level 2 Code	The porcelain of the Cizhou kiln is mainly black and white.	The patterns of Cizhou kiln porcelain reflect the lives of common people.	The literati ink painting of the Song Dynasty influenced the black and white colour of Cizhou kiln porcelain.
Level 3 Code	black and white	social culture	period, social culture

Table 3. Coding of the interview with a craftsman at the art studio in Cizhou kiln site museum.

Questions	1. Can you tell me about your work?	2. Most of the Cizhou kiln porcelains are black and white, but I have observed that you possess some coloured porcelain. Do they also belong to the Cizhou kiln?	3. Do you know why the porcelain of the Cizhou kiln forms the colour characteristics mainly in black and white?
Level 1 Code	Yes, these are all made by our studio. They have a typical black-and-white colour scheme of Cizhou kiln, which is made just of the raw soil left over from the Cizhou kiln in the yard.	Yes, a small part of the porcelain in the Cizhou kiln is coloured. They need to be fired twice. This style emerged in the Jin Dynasty. But the porcelain of the Cizhou kiln is still mainly black and white.	Because the raw materials of the Cizhou kiln, such as makeup soil, Daqing soil and Erqing soil, will turn black and white when fired.
Level 2 Code	Cizhou kiln porcelain has a typical black-and-white colour scheme. Cizhou kiln porcelain was made from raw materials unique to the region.	The process of making coloured porcelain is more complicated than that of black and white porcelain.	Cizhou kiln porcelain is made of raw materials unique to the region.
Level 3 Code	black and white, region	black and white, period	region

The porcelain of the Cizhou kiln in the Song Dynasty is mostly black and white. This is related to the political and historical background of the time. The Song Dynasty was under constant threat from the nomads in the north, and political instability led to a long history of repression of national character and a tendency towards feminine beauty in artistic aesthetics. The literati of the Song dynasty were increasingly introspective and quiet under the dual stimulus of this mentality and Neo-Confucianism, with restrained and repressed emotions and a preference for light beauty in aesthetic taste (Zhang, 2022). The rise of literati painting in the Song Dynasty, and in particular the growing dominance of the expressive style of ink and wash, saw the use of this colour idiom transfer to the folk, with successful examples in folk clay toys and woodblock prints (Wei, 2005). The craftsmen of Cizhou Kiln were also influenced by literati ink painting and applied the colour style and painting techniques of ink painting to the production of porcelain, resulting in the unique decorative style of “black painting on a white ground” of Cizhou kiln.

In the Jin Dynasty, based on “black painting on a white ground”, the Cizhou kiln produced some richly coloured porcelain, drawing on the techniques of the Liao Dynasty and low-temperature tri-colour of the Song Dynasty and folk red and green colour painting. These include red and green colour, red and yellow colour, red, green and yellow “three-colour”, red, green, yellow and black “five-colour” and painted sculpture and other decorative varieties. The process has realized the evolution from “monochrome” to “multi-colour”, “underglaze painting” to “underglaze and overglaze combination” and “painted sculpture integration”. This is because of the social and political stability, economic and cultural prosperity, and people’s pursuit of luxury in the middle Jin Dynasty, and after the Jin Dynasty people entered

the Central Plains. And the aesthetic culture of the Song literati was strongly influenced by the Jin dynasty's domination of the Central Plains, and they no longer simply pursued simplicity as a beauty (Lu, 2015).

During the Yuan and Ming dynasties, black and white continued to be the main colour of the kilns (Zhou, 2021). In the late Qing Dynasty and the Republic of China, Cizhou kiln gradually lost the typical artistic style of the Song and Yuan Dynasties, with black painting on a white ground being replaced by blue and white, and began to produce blue and white and colourful porcelain, which were popular in society at the time. It is precisely because of its unique characteristics of inclusiveness and adaptability to the market that Cizhou Kiln continues to this day, becoming one of the kilns with the longest continuous firing time. This is also the secret of the kiln fire that has lasted for a thousand years in Cizhou kiln.

Region

The site of the Cizhou kiln is located in Pengcheng Town, Fengfeng Mining area of present-day Handan City, Hebei Province, and Guantai Town, Ci County. Ci County was called Cizhou in the Song Dynasty, hence the name of the kiln. The production of ceramics in the Cizhou area can be traced back to the Cishan culture in the Neolithic Age. At that time, exquisite Cishan black pottery was produced in this area. By the time of the Northern Dynasty, the porcelain-making techniques, represented by Jia Bi celadon, had been perfected, completing the transformation from pottery to porcelain. In the Song Dynasty, China's culture and art were highly prosperous. Cizhou, with its superior geographical location and long history of cultural and economic development, became one of the highly developed cultural regions of the Central Plains, centred on the capital of the Song Dynasty Mu Liang. From the folk point of view, the location of Cizhou kiln in northern China has traditionally been characterized by the simplicity of the people and their bold temperament. All these provide fertile soil for the formation of the rough, bold and majestic colour style of Cizhou kiln. As a result of these advantages, the people of Cizhou at that time had high cultural accomplishments and were good at accepting fresh artistic thoughts, which led to many of the court arts of the pre-Tang dynasty period going to the people and becoming popular (Liu, 1984).

In addition, from the perspective of geological conditions, the clay rocks of the stratum where the Cizhou kiln is located were rich in iron and produced a great deal of blue clay (Xiao, 2023). The porcelains fired with this kind of clay were mostly greyish-white or greyish-yellow, with coarse pores, making it difficult to present a delicate texture like other porcelains. However, the ancestors of the Cizhou kiln cleverly covered the surface of the porcelain with a layer of white make-up clay processed from locally mined alkali stone, firing the make-up white porcelain, changing the appearance of the porcelain of Cizhou kiln, which was coarse in quality and ugly in colour. The use of make-up white clay has resulted in the formation of a porcelain body with multiple layers and different colours, creating the conditions for the unique processing techniques of the Cizhou kiln (Ren, 2010). There is also a local

mineral containing iron oxide, called Piebald stone, which takes on the colour of rust after firing and is used as the painting material for Cizhou kiln porcelain. Therefore, Cizhou kiln brushed white make-up clay on the surface of the porcelain body, took the contrast of black and white glaze as the main decoration style, and added the picking, carving, scratching and other techniques, so that a strong contrast between black and white picture could be presented after the kiln.

Social Culture

Porcelain kilns in ancient China were divided into official kilns and civil kilns, both of which had very different styles.

The feudal society practised a centralized system, and the government directly intervened in and managed the handicraft industry. The craft attributes of porcelain intensified the differentiation and hierarchical production of the ceramic industry. The “official kilns” gathered the highest quality human and material resources and fired the most exquisite and luxurious imperial porcelain of wonderful shape, gorgeous decoration, excellent glaze colour and exquisite luxury regardless of cost, which embodied the will of the royal family and reflected the psychological needs of the ruling class (Cai et al., 2011).

Before the Song Dynasty, “cyan” and “jade-like” were used as benchmarks, which established the aesthetic standard and ethical sequence of porcelain as “cyan is the best”. During the Ming and Qing dynasties, emperors attached greater importance to the production of porcelain, which promoted the formation of the exclusive production pattern of imperial porcelain. As an important instrument for royal sacrifice, the colour and form of porcelain gradually went beyond the aesthetic scale and solidified into a sequence of class identity markers, and formed a colour system that had to be strictly observed from the royal family down to the common people. With the increasingly common use of porcelain for royal daily use and furnishings, the colour of porcelain was customized. It was incorporated into the Palace rules and regulations of the Qing Dynasty, and the colour application of the concubines had been normalized.

The “Five famous kilns”, the most famous official kilns in the Song Dynasty, specialized in the production of porcelain for the imperial nobles at that time, using extremely elaborate raw materials, shapes and decorative motifs. But this also to a certain extent limited the producer’s intelligence, for example, some verses reflecting feudal superstition and negative, pessimistic and world-weary thoughts were unlikely to appear in the official kilns. Cizhou kiln, as a civil kiln, was different. The porcelains produced in the Cizhou kiln were used by the common people in their daily lives. Compared with the official kilns, on the one hand, the colours it can use are limited. But on the other hand, the artistic creation of the Cizhou kiln was freer and full of folk aesthetic taste. Most of the porcelains abandoned the ornate and cumbersome decoration, and the overall colour presented bold, natural and simple visual characteristics.

CONCLUSION

This study discusses the visual characteristics and influencing factors of the colour of Cizhou kiln porcelain. The colour extraction of Internet images shows that the colour of the Cizhou kiln is mainly black and white. This view is verified through field investigation and interview, and it is concluded that the colour of Cizhou kiln is mainly affected by three factors:

1. **Period:** The distinctive colour style of Cizhou kiln porcelain was developed in the Song dynasty, but thereafter, with changes in the social environment, aesthetic concepts and production techniques, the colours of porcelain from the kiln varied somewhat from period to period.
2. **Region:** The region where Cizhou Kiln is located has a long history of ceramic firing, The bold and heroic character of residents and special mineral raw materials influenced the colour selection of Cizhou Kiln.
3. **Social culture:** Cizhou kiln is a civil kiln. Compared with official kilns, although the choice of colours was somewhat more restricted than at the official kilns, the artistic creation was more freedom and versatility, and the colour palette reflected the aesthetic pursuits of the folk.

Based on these findings, a model of the factors influencing the characteristics of the colour of Cizhou kiln porcelain was developed (see Figure 5), which demonstrates the reasons for the formation of the colour of Cizhou kilns. The model is not only applicable to the porcelain of the Cizhou kiln but also to the study of the colour of other porcelains.

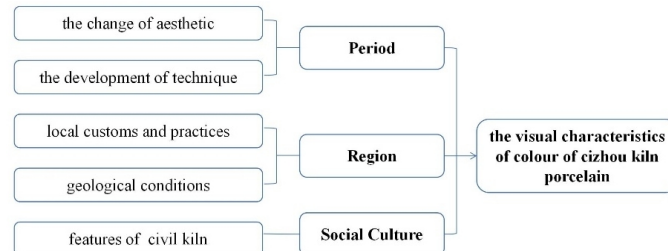


Figure 5: Influencing factor model of the characteristics of the colour of Cizhou kiln porcelain.

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