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Uniqueness of the Ornamentation and Design of the Wooden Beam System in Jiangnan Traditional Architecture: Wan Motif on Baofujin Color Paintings on Gaoyang Bridge in China

Jian Li[1], Siti Rohaya Yahaya[2]

Abstract

The vulnerability of vernacular architecture places the wooden structures and color painting decorations of traditional Chinese architecture at risk of gradually disappearing from history. The Chinese character for wan (卍; also pronounced wan), which is a homonym for the Chinese character wan (万, meaning "10,000"), is a common artistic element in traditional Chinese architectural color painting. However, the wan pattern in the Gaoyang Bridge color paintings exhibits a distinctive composition form and thus creates a novel theme for the Baofujin color painting art. This study uses a qualitative case study combined with a field survey and observational study to explore the uniqueness of the design form of the wan pattern and its profound symbolism in the Gaoyang Bridge Baofujin color painting. In addition, this study proposes methods and suggestions for preserving and developing this decorative technique. The results of this study will benefit scholars, artists, architects and traditional craftsmen concerned with traditional Chinese architectural color painting. It will enable them to gain a more in-depth understanding of the pattern design methods and artistic thematic content of Baofujin color paintings. It will provide new perspectives and an important reference source for further research on Jiangnan traditional architectural color paintings.

Keywords: *Ornamentation Design, Wooden Beam System, Jiangnan Architecture, Wan Motif, Baofujin Color Painting.*

Introduction

Works of architecture are embodiments of history, art, and architectural history, as well as carriers of folk culture, traditional skills, and regional aesthetics (Song & Liao, 2023). However, Western influence has initiated a shift in the lifestyles of the Chinese people, which is destroying indigenous Chinese architecture and related art forms (Sicheng, 2014). Unlike palaces, temples, and even houses—which are often appreciated for their appearance and sides—bridges are often overlooked as less architecturally significant (Knapp, 2012). The Gaoyang Bridge is charming in its overall design and features many elaborate and intricate traditional architectural paintings that decorate the surfaces of the internal girders of the bridge. Its beams are decorated with Baofujin color paintings (Figure 1), which belong to the category of traditional Chinese architectural color painting decorative art and is an important artistic cultural heritage of China (Figure 2), (Ji, 2017). In China, traditional ancient architectural color painting is a decorative art that uses wooden structures as vehicles of expression (Fu et al, 2021). First, the paper surface is replaced with wood. Then, the wooden structure of the building is decorated with paint of various colors to depict themes based on practicality and further artistic expression (Mo, 2008).

[1] Fine Art Department, School of The Arts, Universiti Sains Malaysia, Penang, Malaysia, Email: LiJian.Harvey@student.usm.my.
[2] Fine Art Department, School of the Arts, Universiti Sains Malaysia, Penang, Malaysia. ysrohaya@usm.my (Corresponding Author)

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Figure 1. The Baofujin Color Paintings Decorated on The Wooden Beams of Chinese Traditional Architecture

(Source: Photograph by Li Jian).

Figure 2. Baofujin Color Painting Decoration of Wooden Beams in The Interior of The Gaoyang Bridge

(Source: Photograph by Li Jian)

However, many ancient wooden structures in China have been damaged over the course of their long history due to the degradation of material properties, the natural environment, and improper human behaviour (Hua et al., 2023). Due to the corrosive effects of light, water, and salt, many ancient architectural color paintings from the Qing Dynasty period suffer from a considerable amount of chalking, flaking, and warping. In many cases, this deterioration has resulted in the complete disappearance of the pigment layers of these paintings (Fu et al., 2020). It indicates that the preservation of traditional wooden structures and their architectural decorations is an urgent matter. Currently, most conservation studies on gallery bridges in China have focused on their architectural features and the overall architectural structure (Knapp, 2012; Wang et al., 2023). There is limited research on the architectural decorations of gallery bridges. Therefore, this study instead focuses on the decorative beams of the Gaoyang Bridge, as they possess significant cultural value (Chun et al., 2015). Meanwhile murals and color paintings on ancient wooden buildings have both artistic and historical value, and therefore, they should be the focus of preservation efforts (Gong et al., 2004).

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Our field study of the Baofujin color paintings on the frame of the Gaoyang Bridge revealed that the traditional Chinese character component *wan* (卍) was used extensively as an artistic motif on beam paintings. Usually, the *wan* pattern is mostly used as the decoration of the rafters or the auxiliary decorative element of the color painting. It is rare to find traditional Chinese architectural color paintings that use the *wan* pattern as the main artistic element and form a unique artistic theme from it. Comparing the *wan* decoration used on the color painting of the Gaoyang Bridge frame with the basic form of the traditional Chinese character of *wan* reveals that the *wan* design used on the Gaoyang Bridge differs significantly from the original character (Figure 3). This design can be described as a new design that is based on the traditional *wan* (卍) character component. Therefore, this essay reports on a case study of the *wan* character component found in the frame color paintings of Gaoyang Bridge, focusing on its unique design and symbolic meaning. In addition, this study explores the compositional form of the Gaoyang Bridge Baofujin color painting by analyzing the changes in the design of its *wan* pattern.

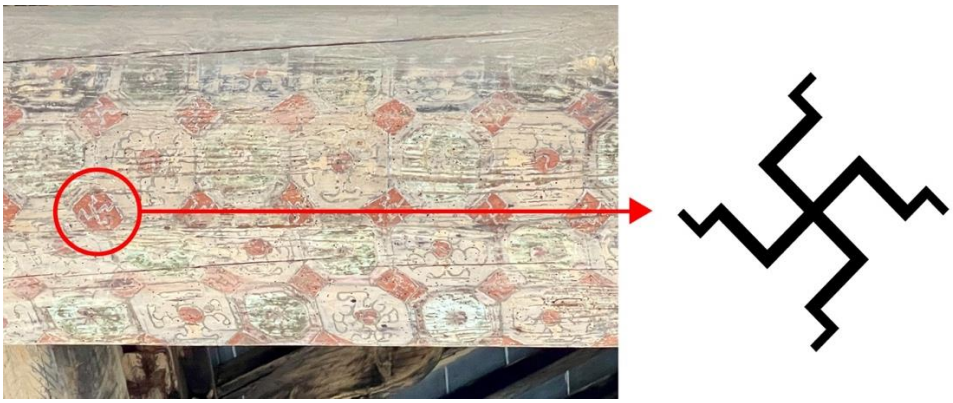

Figure 3. The *Wan* Character Pattern Used in Gaoyang Bridge Beam Color Painting

(Source: Photograph and Created By Li Jian).

The objectives of this study are to (1) explain the design of the *wan* pattern in architectural color painting, (2) summarize the formal characteristics of Baofujin color paintings, with a focus on the artistic theme of the unique *wan* pattern, and (3) promote the preservation of historical artifacts and traditional skills.

Historical Review of Chinese Traditional Architectural Baofujin Color Paintings

The use of pigments on the surfaces of wooden objects dates back to the Warring States period (c. 770–476 BC) (Han et al., 2023). Originally intended to protect the wooden structures of buildings, color paintings have evolved over thousands of years to become a decorative form of art (Zhang, 2020). From the text *Yingzao fashi* (营造法式) of the Song Dynasty(960–1279) to the literature of the Ming (1368–1644) and Qing (1636–1912) dynasties, written records have documented the history of official architectural color paintings; however, there are few records that document the development and evolution of local architectural color paintings during the same period (Wang, 2019).

As a regional decorative art, Baofujin color paintings were a form of architectural folk-art paintings prevalent in the Jiangnan region of China. This art form began during the Song dynasty (960-1279) with the use of traditional brocade to wrap beams and frames for decorative purposes (Chen, 2014). Brocade is a form of textile, and therefore, the wrapping of beams with brocade was affected by the regional climate and humidity levels. Moreover, the brocade often did not last for very long. In response to the poor durability of textiles, architectural color paintings that imitate brocade patterns were gradually adopted as a method of decorating traditional buildings (Chen, 2014).

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Methodology

- *Research Case*

Gaoyang Bridge is located in the ancient town of Tangmo in the Huizhou District of Huangshan, Eastern China. It was built during the Jiajing period (1522–1566) under the Ming Dynasty (1368–1644) and was restored during the Qianlong (1736–1796) and Jiaqing periods (1796–1821) periods under the Qing Dynasty (1636–1912). The main structure of the bridge is aligned northeast–southwest (Song, 2019).

The Gaoyang Bridge belongs to the style of stone-arched corridor bridges, a representative structure of traditional Chinese architecture. *The Encyclopaedic Dictionary of Chinese Civil Engineering, Bridge Engineering* states that bridges with columns on the bridge deck that form long, corridor-like walkways are called gallery bridges (Yao & Li, 1999). The Gaoyang Bridge consists of two parts. The main body of the bridge is an arch made from stone, and the bridge deck consists of both brick and a timber structure with columns (Figure 4).

Figure 4. The Architectural Appearance of Gaoyang Bridge

(Source: Photograph by Li Jian)

The interior beams of Gaoyang Bridge are decorated with many Baofujin color paintings, reflect the region's unique characteristics and the development of Jiangnan culture and humanist values since the Ming and Qing dynasties. They can be regarded as embodiments of the humanistic ethos of Jiangnan culture (He et al., 2014).

Research Design and Study Site

This case study of Gaoyang Bridge in Tangmo, China, uses the qualitative methods of in-depth observation and field survey to effectively gather data. Gaoyang Bridge is a functional bridge, and its girders are decorated with Baofujin color paintings that feature a combination of decorative and functional motifs. More specially, the frame of Gaoyang Bridge was chosen for its unique themes and composition, which includes a large number of Chinese *wan* characters. In this way, the frame of the Gaoyang Bridge constitutes a highly valuable research sample for this study.

This study seeks to demonstrate that the stylized *wan* character used on the Gaoyang Bridge frame color painting influenced the compositional features of Baofujin color paintings and contributed a new compositional form to Baofujin color painting. This study analyzes the findings of previous studies and further analyzes the development of the *wan* pattern over time. Subsequently, this study identifies the *wan* pattern as an important artistic motif of traditional Chinese architectural Baofujin color painting.

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The research consisted of three main steps. First, we explored the existing literature on the origins and the allegorical meanings of the *wan* character motif. The literature was sourced from the Universiti Sains Malaysia Library, Google Scholar, and China National Knowledge Infrastructure. Second, we employed the qualitative technique of fieldwork observation to focus on how the characteristics of the *wan* design on Gaoyang Bridge changed over time. Third, we elucidated the formal characteristics of the thematic composition of the *wan* design on the Baofujin color painting of Gaoyang Bridge frame by referencing existing literature and making observation.

Results and Discussion

The Wan Character Motif in the Baofujin Color Painting

The Development of the Wan *Character Motif*

The *wan* character, which means "everything and eternity," is derived from Sanskrit. In Buddhism, it symbolizes light and the endless cycle of rebirth (Chen et al., 2022). The development of the *wan* character pattern can be divided into three main stages. That is, it was a symbol during the ancient period, a religious symbol in the period of Buddhist fusion and development, and a decorative symbol in the period of pan-secularization (Wang, 2022). The Chinese *wan* pattern has a unique origin and is considered a traditional Chinese pattern. The *wan* motif has also been found on pottery from the Mesopotamian period in Western Asia. After the Bronze Age, the *wan* motif was also prevalent in Europe (Wu, 2013). Practitioners of the traditional Dutch decorative arts imitated Chinese script motifs, the most frequent of which was the *wan* motif (van Noord, 2021). It is evident that the *wan* pattern had a profound influence on the Chinese and foreign decorative arts. Chinese academics previously concluded that the *wan* motif was introduced to China via Indian Buddhism (Wu, 2013). However, subsequent archaeological discoveries have revealed that *wan* motifs also appeared in Pengtoushan culture (c. 9000–8300 years ago) in northern Hunan, China, and that bird beak motifs appeared on pottery plates from the Hemudu culture (c.5000–3300 years ago) in Yuyao, Zhejiang Province, China; in the Majiayao culture (c. 4000 years ago) in Liuwan in Ledu, Qinghai Province, China (Figure 5); and in the Xiaoheyan culture (c. 3000 years ago) in northeast China (Guan, 2015). In 693 AD (the second year of the Zhouchangshou Dynasty), the character components 卐 and 卍 were pronounced *wàn,* which is identical to the term *wan*, meaning "the collection of all virtues of good fortune" (Xia & Chen, 2011).

Figure 5: The *Wan* Character Pattern Found in The Majiayao Culture (C. 4000 Years Ago),

(Source: Photograph by Wei, 2011).

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During the Middle Tang (766–835) and Late Tang (875–907) dynasties, as well as the Song and Yuan (1271–1368) dynasties, Buddhism became increasingly integrated with traditional Chinese culture, and during this time, the form and aesthetic meaning of the *wan* motif changed. It gradually expanded beyond its initial Buddhist connotations to be used as a decoration on works of architecture, carvings, costumes, utensils, and various craft times. In this way, the *wan* motif transformed from being a Buddhist accessory to become a popular and auspicious motif in traditional Chinese culture (Wang, 2022). During the Song and Yuan dynasties, the *wan* pattern continued to develop, and its "auspicious" meanings continued to multiply. Moreover, the standard forms of the *wan* pattern began to appear on daily objects, such as powder boxes and porcelain bowls (Wang & Han, 2021).

The Symbolic Meaning of The Wan *Character Pattern*

As a long-established decorative symbol, the *wan* pattern is a rich and varied visual element of the traditional Chinese decorative arts. Additionally, the *wan* pattern has been associated with multiple auspicious meanings throughout its evolution and, therefore, is deeply embedded within Chinese culture. In this context, the term "auspicious" refers to symbols of good luck and good fortune (Yueyang & Kim, 2020). In traditional Chinese culture, good luck and fortune hold significant importance; in this essay, this is referred to as "Chinese auspicious culture." Indeed, Chinese auspicious culture condenses and records people's moral emotions, consciousness, aesthetic sense, and religious sentiments. At its core, it inspires people to create a better life (Han, 2014). Chinese auspicious culture can be seen as a unique aspect of Eastern culture. It has a wide cultural field, rich content, and long history. It is also a part of other cultural forms that cannot be replaced (He, 2022). The range of options available for auspicious culture is broader than what is generally perceived. It both reflect a mindset of avoiding harm and consists of a complex system with a 2,000-year-old history. Moreover, it contains a large number of traditional cultural concepts with deep-rooted philosophical and cultural underpinnings (Tan, 2012).

At present, there are three main views on the original allegorical meaning of the *wan* motif. The first view asserts that it originated from the cult of female fertility and reproduction. The second view holds that the symbolic meaning of this character is sun worship (Pan, 2019). The third view asserts that the *wan* pattern has the formal structure of square characters, and therefore, it is believed to be a lost Chinese character that was inscribed on the pottery of the Majiayao culture of Gansu, China, 6,000 years ago (Zhang, 2010). According to American scholar O. A. Weiler and Chinese scholar Liu Zhiqun, the *wan* pattern is a symbol of "polygamy" and, therefore, has a clear connection to a fertility cult (Wang, 2022). Some scholars believe that the *wan* pattern means "the collection of good fortune" in Sanskrit, and Buddhists believe that it represents the appearance of Sakyamuni's chest, which symbolizes the heart of the collection of ideas and means "good fortune," "10,000 blessings" (*wan*), and "10,000" (万) lives (Wu, 2013). During the Five Dynasties period (907–960), as well as the Song and Yuan Dynasties, the *wan* pattern became a widely recognized Buddhist symbol. Some *wan* symbols were also used by the Nestorians during the Yuan Dynasty, and the symbolic meaning of the pattern further diversified during this time. During the Ming and Qing Dynasties, the shape of the *wan* pattern underwent significant changes, and it gradually began to lose its symbolic Buddhist connotations, resulting in the present-day *wan* pattern that is considered a "traditional Chinese pattern" (Guan, 2015).

The Wan Character Motif in the Baofujin Color Paintings

The *wan* pattern conveys the auspicious symbolic meaning of "continuous blessings" and is divided into gold and ink *wan* (Huang, 2021). The *wan* pattern generally rotates in a right-to-left direction. However, there are several that rotate from left to right (Figure 5). There are also single-line and double-lined compositions, as well as a *wan* that resembles a back-shaped pattern (Wei, 2012). Indeed, the *wan* character is a basic unit used to create a variety of patterns (Zhang & Ju, 2017). From the studied cases, it can be found that the basic form of the *wan* pattern that appears on the Gaoyang Bridge frame color paintings is the less common left-facing *wan* (卐). The four right angles of the

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wan pattern, curve to the left, and the pattern forms a dynamic leftward- spinning shape (Figure 6). The *wan* pattern on Gaoyang Bridge uses the basic design of the left-facing *wan* while adding an additional right angle at the end of each line. Second, the lines of the *wan* pattern on Gaoyang Bridge are relatively thin, and when comparing them to the lines that make up the other elements of the beam frame painting, the thickness of the *wan* pattern lines appears to be between the thickness of single lines and double lines. Third, the *wan* pattern of Gaoyang Bridge does not consist of the common horizontal form; rather, it displays 45-degree rotation to the left.

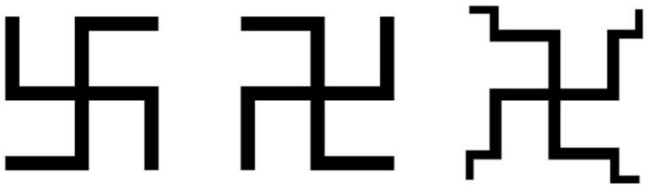

Figure 6: Left And Right Rotation *Wan* Character Patterns, and Gaoyang Bridge *Wan* Character Pattern

(Source: Created By Li Jian).

Works of Majiayao pottery also feature *wan*, and recent studies have debated whether this *wan* should be left- or right-facing; most scholars, however, have concluded that the right-facing *wan* is correct (Wei, 2012). In the context of religious symbolism, the left- and right-facing *wan* represent Buddhism and Benjamins, respectively (Zhang, 2010). According to Yu, the *wan* pattern is related to the following saying from the famous Chinese book Huainanzi: "The god of the Big Dipper is divided into male and female" (Yu, 2002). According to Wang Xiaoyun, there is considerable ambiguity regarding where the left- and right-facing *wan* differ in symbolic meaning. However, they cannot be understood separately, and resolving this ambiguity requires combining the two into a pair for analysis (Wang, 2018). However, the *wan* pattern in the color painting of the Gaoyang Bridge frame only uses the left-facing *wan* pattern. Therefore, this case study confirms that the left- and right-facing *wan* pattern did not appear at the same time as decorative patterns, and therefore, it is not feasible to analyze their combination. According to Zhou Jianpeng, the transformation of the character for ten (十) into the *wan* character can be expressed as a linear movement, with the four endpoints of the cross running two units to the north, west, south, and east, completing a cycle of east, north, west, south, and east (Zhou, 2011).

Composition Form of The Wan Motif in Baofujin Color Painting

The artistic themes of Baofujin color paintings are clearly classified and can be divided into botanical, animal, geometric, and special artistic symbol themes. The motif of the *wan* pattern found on Gaoyang Bridge belongs to the category of the special artistic symbolic theme of Baofujin color paintings. The term "special artistic symbol theme" refers to taking different fixed forms of symbols with special representative meanings and rich connotations as the theme elements and then designing and arranging the composition of a Baofujin color painting with special symbols at the center of decoration. This category of symbols has a fixed design basis; it is also reproducible and has a high communication value that can be easily optimized and improved. Moreover, each special symbol has a clear development path of its own and has deep cultural value.

Baofujin color paintings can be divided into three main categories according to their composition: tied wrapping (*ji baofu*, "系包袱"), stacked wrapping (*die baofu,* "叠包袱"), and underlap wrapping (*da baofu*, "搭包袱") color paintings. The Gaoyang Bridge Baofujin color paintings use a tied wrapping compositional form (Figure 7). Among them is the *wan* motif Baofujin color painting, with the *wan* motif as the visual center of gravity. During the design process, a *wan* pattern that has been rotated 45 degrees to the left is drawn in the visual center of the painting in what is known as "four-square continuous" (*si fang lian xu*, "四方连续") typography, with each *wan* pattern decorated with a square block of color on a vermilion-red

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background. The *wan* pattern is filled with white pigment, forming a sharp contrast with the vermilion-red background. The visual effect is striking. The four-square continuous pattern is created by arranging and extending a pattern unit both up, down, left, and right, and there are three main pattern composition methods: scattering, concatenation, and overlapping (Gao, 2016). The four-square continuous composition is based on a graphic unit and is an important means of filling an infinite plane with infinite overlap (Liu et al., 2022). The graphic elements of the *wan* pattern are often laid out in a two-sided continuous or four-sided continuous form to render the effect of *wan* in a large number, signifying eternal longevity (Liu, 2020).

Figure 7. Tied Wrapping Compositional Form Baofujin Color Painting in Gaoyang Bridge

(Source: Photograph By Li Jian).

The *wan* pattern of Gaoyang Bridge, which was the focus of this case study, overlaps with the vermilion-red background, and the combination of the two can be interpreted as a complete *wan* art element (a). Four complete *wan* art elements (b) combine to form a square composition, and the central area is decorated with a floral motif (b). The floral motif evolved from the rotating sun motif (see Figure 8). The combination of (a) and (b) forms a complete Baofujin color painting composition (Group c). Group c reproduces and extends in four directions in a four-sided continuous typography to form the central area of the Baofujin color painting. The outer area of the Gaoyang Bridge *wan* theme Baofujin color painting contains two double-lined rectangular borders. The middle of the two borders is drawn with a pine branch pattern, and the pattern is arranged in a straight line as a two-sided continuous typography (Figure 9). The space inside the lines of the two rectangular borders contains a continuous pearl pattern (Figure 9), which is also arranged in a straight line as a two-sided continuous typography.

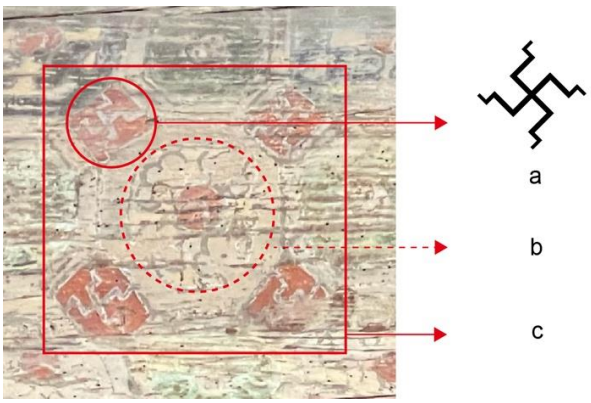

Figure 8. *Wan* Elements (A), Floral Motif (B) And A,B Combination to Form A Complete Group C

(Source: Photograph And Created By Li Jian).

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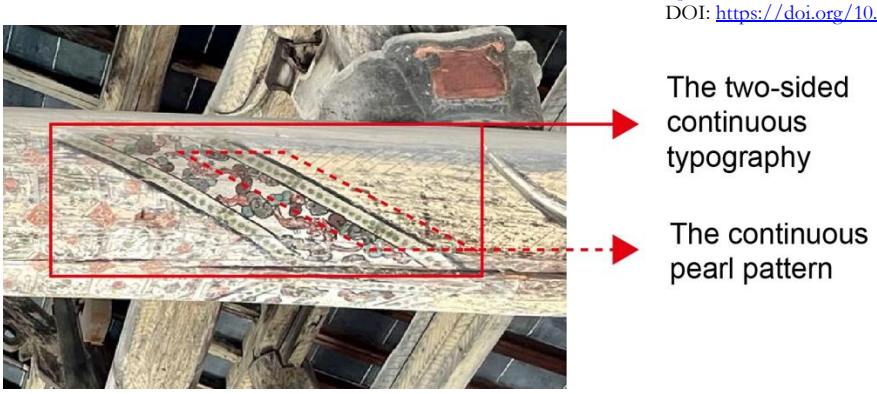

Figure 9. The Two-Sided Continuous Typography and Continuous Pearl Pattern

(Source: Photograph and Designed by Li Jian)

The two-sided continuous (*er fang lian xu*, "二方连续) pattern refers to a unit pattern that repeats continuously in two directions, either horizontally or vertically, producing a beautiful and rhythmic band pattern, which is also referred to as a lace pattern (Wang, 2013). Creators of this two-sided continuous pattern were skilled at ensuring symmetry, balance, evolution, unity, rhythm, and rhyme perceived in life into abstract and beautiful kinds of "mother themes" with points, lines, and surfaces. Moreover, both patterns are designed according to the two-sided continuous pattern, forming a harmonious and unified visual effect. Additionally, the patterns maintain an orderly distribution with changes (Liao, 2008). The two-direction continuous pattern is arranged consecutively in a side-by-side manner so that the regular arrangement looks very delicate and rigorous (Zhao & Zhang, 2022). The crispness of the continuous straight-line arrangement of the two-direction pattern and the undulations of the curves create visual interest, which conforms to the original use of lines in traditional Chinese patterns (Liao, 2008).

Thus, the composition of the Baofujin color painting on Gaoyang Bridge can be described as follows: The rectangular area in the center of the color painting is laid out according to the four-direction continuous form in Group C, and the border decoration of the painting is designed in a straight line that conforms to a two-direction continuous form. The center and border areas of the color painting use different compositional forms, and they form a strong contrast. The colorful design approach mentioned above highlights the visual center of the painting, giving this complex painting a feeling of structure and clarity.

The Preservation of Color Painting Historical Artifacts and Traditional Techniques

Decorative elements exist in all fields, from small objects to urban planning (Sağlam, 2014). Architectural color paintings are extremely important and exquisite decorative elements in traditional Chinese architectural decoration, and therefore, the question of how to preserve this important historical and cultural heritage for future generations has emerged as a pressing research question in the study of traditional architectural decoration (Karabörk et al., 2015). Due to the rise of globalization, intangible cultural assets are under threat, and safeguarding them has become an important issue for governments and people around the world (Lin & Lian, 2018). In traditional Chinese architecture, design tasks were mainly the responsibility of craftspeople rather than architects, with traditional craftspeople realizing multi-purpose designs based on real-life needs (Song & Liao, 2023). However, currently, the preservation of China's architectural heritage is facing the pressing problems of a lack of skilled artisans and the loss of traditional craftsmanship (Li, 2008). In the Huizhou region, where the Gaoyang Bridge is located, collectors began removing the ornate wooden and stone elements from works of Huizhou architecture in the 1980s, transporting them away from the ancient Huizhou region and storing them in other regions of China (González Martínez, 2022). This demonstrates that the beam decorations of Huizhou architecture possess a high decorative value and are often separated from the original structure and as a decorative elements. Moreover, it shows that the traditional architecture of the Huizhou region has not been properly protected, resulting in the loss of architectural heritage.

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Architectural color painting is a decorative art form that serves both practical and decorative functions. Its decorative function is to beautify the exposed wooden beams of a building, while its practical function is to protect the wooden beams and reduce damage from humidity and termites. Wendel Dietterlin has stated that decoration should include only that which is present at the time the building is constructed (Sağlam, 2014). Thus, the protective function of architectural color paintings on structures is illustrated by the fact that their own value has not been limited to the decorative significance of architectural structures and that, furthermore, they have been integrated with architectural wooden structures. Together, they enhance the functional value of structures. Therefore, the preservation of traditional Baofujin color paintings is the preservation of not only architectural color paintings as a category of decorative art but also historical buildings themselves and their wooden elements. This illustrates the importance of preserving traditional architectural color paintings.

In recent years, 3D LiDAR technology has been applied to the field of architectural preservation, and 3D scanning, high-precision measurement, and reconstruction have diversified the range of methods of architectural preservation used in China and have significantly improved the capacity for architectural preservation in China (Li et al., 2023). While conducting research on the protection of traditional architectural color paintings with Baofujin patterns, Chen (2014) and Ji (2017) used interviews to collect data. They conducted unstructured interviews with traditional craftsmen to obtain a large amount of first-hand data on Baofujin color paintings and recorded the steps involved in the production of Baofujin color paintings. Moreover, based on the data obtained from the interviews, Ji recreated a Baofujin color painting using step-by-step experiments to verify the accuracy of the interview data. Ji's experimental process also proved the possibility of preserving the art of Baofujin architectural color paintings. To study techniques for recording and visually restoring traditional decorative architectural motifs, Karabörk et al. (2015) used close-up photogrammetry in a case study on Islamic motifs to record the complex ornamentation of decorations on buildings surfaces. They asserted that conducting a survey is the most important step in the restoration of historical and cultural heritage and that contemporary survey methods have replaced traditional survey methods by combining photogrammetric evaluations with architectural surveying techniques and advances in surveying technology. This, in turn, has made the measurement process more accurate and practical.

Gong (2004) suggests that there are two technical difficulties in the conservation of colored paintings that appear on the wooden elements of ancient Chinese buildings. The first is the need to fortify the color paintings to prevent pigments from falling off. The second is to prevent the blackening of the surface of the color paintings to ensure that they maintain their vibrancy. Zou et al. (2021) assert that none of the existing methods are adequate for the virtual restoration of traditional Chinese architectural color paintings, and therefore, they proposed a method for the virtual restoration of architectural color paintings that uses multiple deep-learning algorithms. This restoration process reframes the problem of recovering the unrecognizable color of color paintings as a semantic segmentation problem. Zou et al. (2021) argue that the virtual restoration of traditional architectural color paintings using multiple deep-learning algorithms can help restoration experts conduct simulation that help them imagine the colors and styles of the paintings before they oxidized, resulting in better restoration. The fieldwork conducted in the Jiangnan region for this study found that historical buildings with relatively well-preserved architectural color paintings are all designated as officially protected sites, and therefore, the government has a crucial role to play in the protection of traditional architectural color paintings.

On this basis, the methods for preserving and passing down the art of traditional architectural color painting can be divided into two categories: (1) interviewing traditional craftsmen and documenting the steps used to create traditional architectural color paintings, as well as (2) using new digital technologies to enhance the documenting of traditional architectural color paintings. Through the fieldwork conducted for this study, it was found that the existing historical architectural color paintings are experiencing weathering, color loss and peeling. Therefore, the original appearance of these architectural color paintings cannot be fully known through observation research only. By interviewing craftsmen, researchers can document the steps used to create traditional architectural color paintings, and according to these steps, researchers can create a more complete picture of architectural color paintings. Moreover, the restoration process is

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experimental and more intuitively recovers the craftsmanship of traditional architectural color paintings and the appearance of the paintings before they faded and peeled. Countries have different regulations governing the protection of cultural artifacts. The Law of the People's Republic of China on the Protection of Cultural Relics stipulates that "the repair, maintenance and relocation of immovable cultural relics must comply with the principle of not altering the original state of the relics." This indicates that using cultural artifacts for interior decoration is not allowed. They must be restored for immovable historical buildings and kept in their original form. Therefore, virtual restoration and recording using digital technology can help to enrich the dataset of traditional architectural motifs and preserve the memory of irreparable historical buildings.

To sum up, this study concludes that the conservation of traditional architectural color paintings can be carried out by combining both traditional craftsmanship and virtual restoration technology. First, the recording of traditional crafts and experimenting with them can help preserve the techniques of traditional architectural color painting, which is an ancient intangible cultural heritage skill, and pass them down to the next generation. Second, because the traditional method of restoring architectural color paintings has many processes and takes a considerable amount of time, the original appearances of architectural color paintings should be restored virtually using digital technology. Virtual restoration can help craftsmen better understand the intended final painting and adjust the picture effect of the color painting in advance to improve the efficiency of color painting and reduce the repetitive work associated with the actual painting process due to the adjustment of the picture and painting errors.

Conclusion

The *wan* character motif in the architectural Baofujin color paintings on Gaoyang Bridge constitutes a novel form of expression. The symbolic meanings of the *wan* pattern include fertility worship, sun worship, Chinese character culture, and Chinese auspicious culture. After a long period of development and evolution, the *wan* character pattern has come to imply the symbolic meaning of auspiciousness, 10,000 (万) blessings, and longevity. The form of the Baofujin color painting on Gaoyang Bridge can be described as follows: The rectangular area in the center of the painting is laid out in a Group C pattern in a four-direction continuous form, and the border decoration of the painting is designed in a linear two-direction continuous form. The center and border areas of the painting use a different composition form, and the two form a strong contrast. In addition, the study found that the future conservation of traditional architectural color painting may be more suitable to be carried out by using a combination of traditional craftsmanship and virtual restoration techniques. The findings of this article help promote the contemporary application of traditional *wan* character decoration, update the composition form of traditional architectural color painting, and provide an important reference for the future study of traditional architectural color painting art.

Disclosure Statement

The authors report there are no competing interests to declare.

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