

The Historical Information of the Decorative Polychrome Painting in the Hall of Mental Cultivation Complex, Forbidden City

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ABSTRACT This paper analyses the decorative polychrome painting of architectural members (*caihua*) that has survived in the Hall of Mental Cultivation (Yangxindian) in the Forbidden City, Beijing. Beginning with the Yongzheng emperor, the Hall of Mental Cultivation was the residence and centre of daily governance for Chinese emperors. Combining information gained through on-site surveys and scaled drawings executed during a recent conservation project with evidence from historical records and other sources, this study finds that the remaining decorative polychrome painting can be dated to four different historical phases: the reign of the Jiajing emperor; the late Ming and early Qing dynasties; the reign of the Qianlong emperor; and the late Qing Dynasty and beginning of the Republic of China. It reveals that the designs of decorative polychrome painting on architectural members are closely related to changes in the functions of the buildings and imperial use. As part of an investigative conservation project, the study aims to provide a reliable basis for the conservation and repair work in the next step.

KEYWORDS historical information, decorative polychrome painting of architectural members (*caihua*); Hall of Mental Cultivation (Yangxindian); Forbidden City; *caihua* under the Ming, *caihua* under the Qing

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Introduction

The Hall of Mental Cultivation complex is situated to the west of the courtyard of Palace of Heavenly Purity (Qianqinggong) and to the south of the Six Western Palaces in the Forbidden City, Beijing. The major buildings in that complex were originally constructed in the 16th century during the reign of the Jiajing emperor (r. 1521–1566) of the Ming Dynasty. The Kangxi emperor (r. 1661–1722) of the early Qing Dynasty assigned it as the Workshop of the Inner Court. After the Yongzheng emperor (r. 1723–1735) succeeded the throne, he used the hall as his residence and centre for daily governance. From his reign until the abdication of the Xuantong emperor (r. 1909–1912), eight emperors used the hall as their palace for living and administration. As the political core of the Qing Dynasty, the Hall of Mental Cultivation was the scene of major historical events in domestic and foreign affairs, the death of emperors, and the changing hands of power (Figure 1).

The primary architecture in this complex is the 工-shaped Hall of Mental Cultivation at the centre of the courtyard. The plan takes the shape of the Chinese character *gong* 工, with a front hall for administration and rear hall for residence. The bays in the centre of the front hall were used for the emperor to handle state affairs. The western warmth chamber (*nuange*) of the front hall was where the emperor read memorials to the throne and held confidential conversations with ministers. The Hall of Three Rarities (Sanxitang), the study of the Qianlong emperor, was set up in this room together with the place for the emperor to make offerings to the Buddha and relax. The eastern warmth chamber was where Empress Dowagers Cixi and Ci'an attended to state affairs behind a screen during the late Qing Dynasty (Figure 2).

The eastern side hall of the Hall of Mental Cultivation was a Buddhist prayer hall; the western side hall was for the consecration of tablets of deceased emperors. The rear hall was the residence of the emperor, with five subsidiary

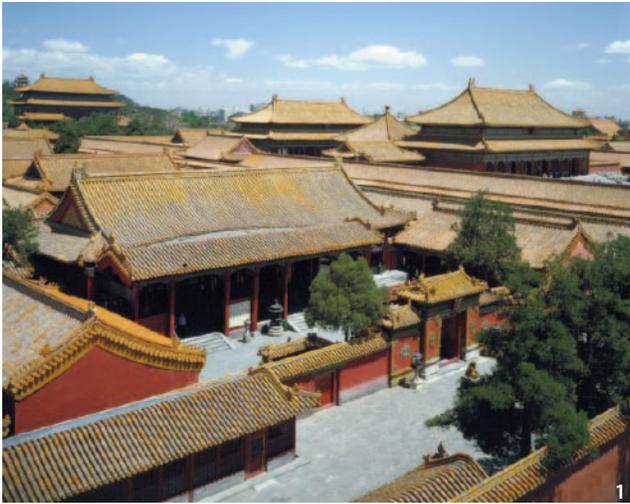


Figure 1 Bird's-eye view of the Hall of Mental Cultivation Complex (Source: Hong Yang).



Figure 2 The central bay of the front hall of the Hall of Mental Cultivation (Source: Hong Yang).

rooms in each of the two wings. The rooms in the east were used as the temporary residence of the empress; the rooms in the west were used as the residence of the highest-ranking imperial concubines. Around 10 bays of the surrounding buildings were set adjacent to the east and west of the main halls; they had small rooms, simple furnishings, and were used as the temporary residences of lower-ranking concubines. Still smaller buildings in front of the Gate of Mental Cultivation (Yangxinmen) were used by the eunuchs on duty who served the emperor (Figure 3).

At the end of 2015, the Palace Museum launched the 'Research-oriented Conservation Project for the Architectural Complex of the Hall of Mental Cultivation'. One of the primary tasks of this project is to assess and preserve the hall as a whole, with the decorative polychrome painting of architectural members (*caihua*) as an integrated part. This paper analyses the changes that took place with the decorative polychrome painting from the 14th to early 20th centuries in chronological order. The study detects the changes from various aspects, including review of historical documents, on-site investigation of existing buildings, study of the functions and their owners, and technological tests.

Dating Decorative Polychrome Painting in the Hall of Mental Cultivation Complex

Reign of the Jiajing Emperor in Middle Ming Dynasty

The earliest date for the construction of the Hall of Mental Cultivation complex is significant when assessing the value of its architecture. According to volume 201 of *Ming Shizong Shilu* (Chronicle of Emperor Shizong of the Ming),

the Hall of Mental Cultivation was completed in the sixth month of the 16th year of the Jiajing emperor's reign (1537). However, the historical record does not clearly indicate whether this was a new construction. On-site investigations have revealed that most of the bricks were made in 1535; the timber used for the frame of the main hall is mainly *nanmu* (Phoebe zhennan S. Lee)¹; and the timber members show typical features of the Ming Dynasty. All these findings strongly support the complex having been at least extensively reconstructed and expanded during the reign of the Jiajing emperor. This dating is significant when studying changes in the layout of the Forbidden City in the middle and late Ming Dynasty.

There is no record of the function of the Hall of Mental Cultivation at the time of its original construction. A detailed study of this topic by Xieping Li suggests that as a subsidiary hall for the emperor in the Inner Court, the complex served as a religious area, the imperial kitchen, and a living area in different historical periods (Li 2016).

Central Bay of the Main Hall, and the Eastern and Western Warmth Chambers

The treatment of the ceiling and wooden materials used in this area indicates that the central bay of the main hall and the eastern and western warmth chambers date back to the Ming Dynasty. For example, the *douba-zaojing* (domed coffered ceiling with a curled-up dragon and mixed golden decoration) in the central bay of the main hall is believed to be a significant hallmark of architecture under the reign of the Jiajing emperor of the Ming Dynasty (Li 2016). In addition, the wood used in the frame of the main hall has been identified as being mainly *nanmu*²;

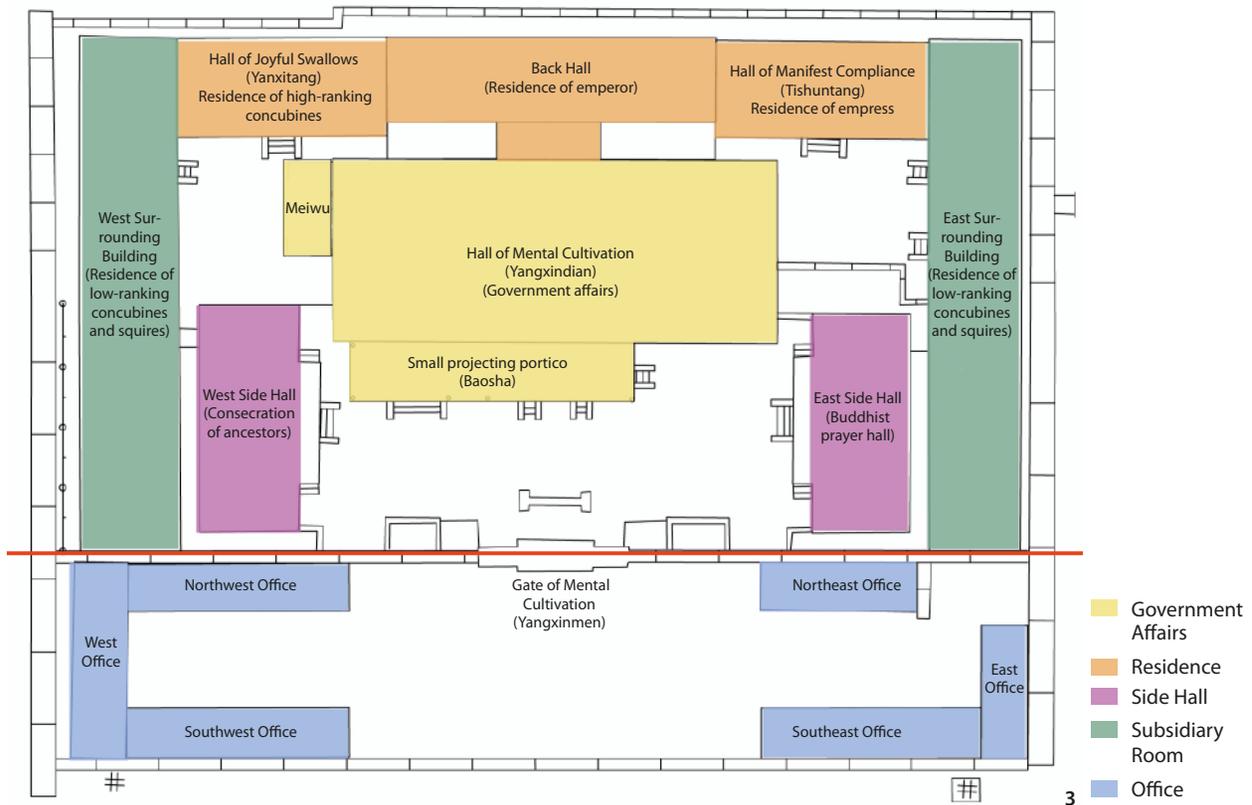


Figure 3 Layout of the functions of the buildings in the Hall of Mental Cultivation Complex in Qing Dynasty (Source: Hong Yang).

that timber was also employed in the ridge of the central bay of the main hall as well as for components coated with decorative polychrome painting in the ceilings of the eastern and western warmth chambers. Features of the members in the wooden frame also conform with practice during the Ming Dynasty³.

With regard to the decorative polychrome painting on the architectural members of the main hall, the black-inked, gilded *xuanzi* with a blank middle portion⁴, the *baofu* (frame of the *caihua* in the middle of a beam) with red inking, and the coloured cloud pattern on a golden ground painted on members of the ridge are believed to be original and to date from the Ming Dynasty (Figure 4)⁵. The craftwork on the three members of the ridge shows that they were directly painted onto the wooden surface, rather than onto a plaster base (*dizhang*). Both blue-green and green were shaded in the style of *shinianyu*⁶. Most of the pigments appear stable, which implies that they could be mineral pigments made from azurite, malachite, and cinnabar. Optical microscopic analysis of pigment samples confirmed that inference: most of the pigments were mineral, with only a few parts containing vegetable pigments (Figure 5)⁷. Two kinds of blue-green were used: azurite blue-green and indigo, on the bottom and sides of the tie

beam (*fang*) of the ridge. Microscopic analysis of sections determined that there is no other layer of painting; thus, the paintings would appear to be original. Furthermore, the pigment layers indicate that the light colours were painted first: *heiyanzi* (black ash) used for *hecao*⁸ is found in the ground layer, and darker colours were successively overlaid upon it. That is the reverse of the practice during the Qing Dynasty, which began with colours and ended with white. Therefore, it is confirmed that the decorative polychrome painting on the members of the ridge were painted during the reign of the Jiajing emperor.

Hall of Joyful Swallows (Yanxitang)

The Hall of Joyful Swallows is the western subsidiary room of the rear hall of the Hall of Mental Cultivation⁹. The building was probably constructed during the reign of the Kangxi emperor in the Qing Dynasty. During the reign of the Yongzheng emperor, the Hall of Joyful Swallows became the temporary accommodation for high-ranking concubines when they served the emperor at night. It was also a temporary residence for Empress Dowager Cixi when she attended to state affairs behind a screen during the reign of the Tongzhi (r. 1862–1874) and Guangxu emperors (r. 1875–1908).



Figure 4 The decorative polychrome painting on the structural members of the ridge above the ceiling in the central bay of the main hall (Source: Hong Yang).

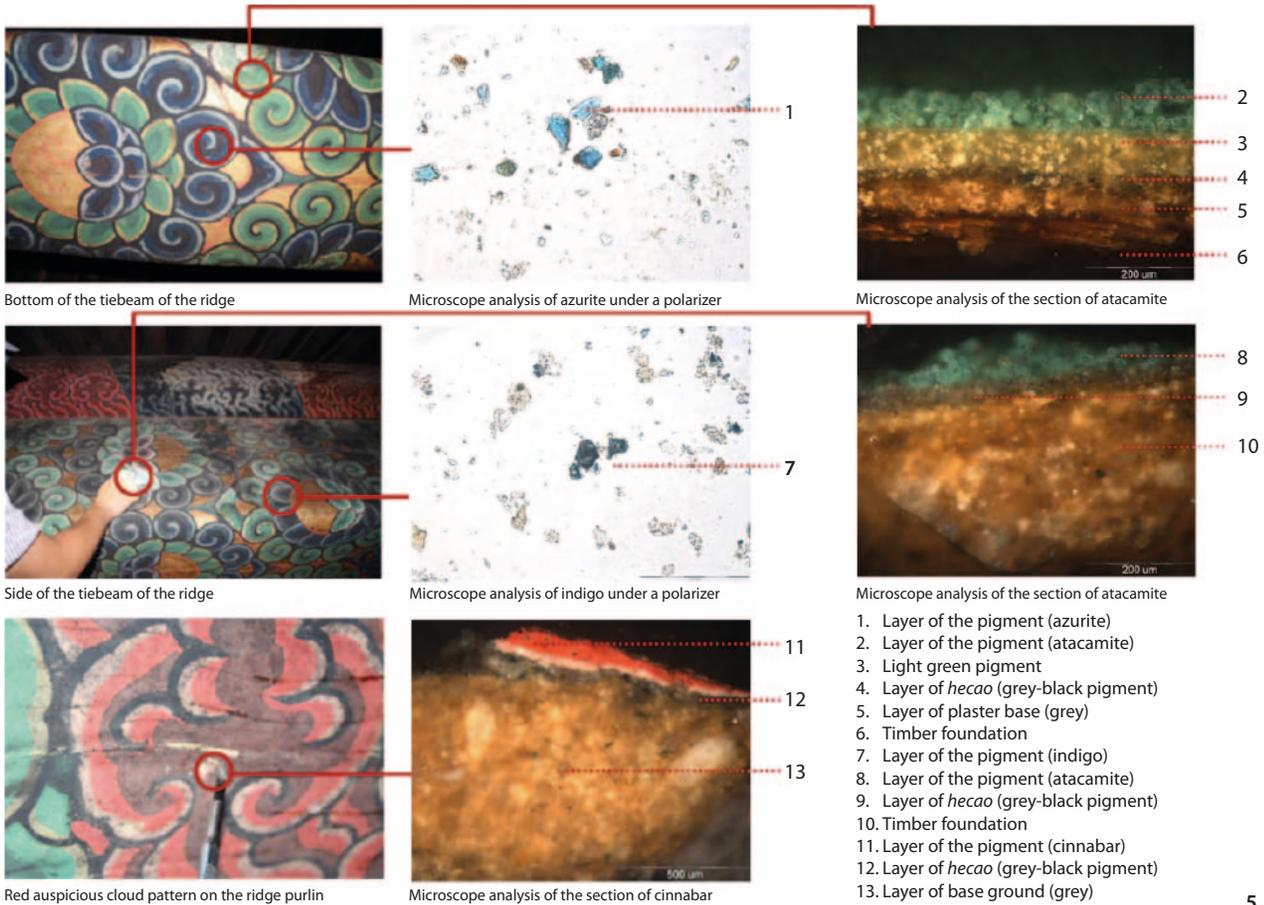


Figure 5 Sampling and optical microscope analysis of the pigments of the decorative polychrome painting on the structural members of the ridge of the Hall of Mental Cultivation (Source: Hong Yang).

Although the Hall underwent repair many times from the time of the Ming to the Qing Dynasty, the original wooden frame still largely exists^{10, 11}. Although the pigments¹² of the decorative polychrome painting at the front eave have been largely covered by pasting paper during the decorative works conducted through history, the contours of the patterns are still recognisable. For example, the painting at the ends of the horizontal architrave linking (*e'fang*) are in the shape of one whole and two half *ruyi-tou* patterns (☯) with three curves. The ends of the middle portion (*fangxintou*) feature double concave lines (☯); the ends of the timber members are painted only with secondary head hoop (*gutou*). Moreover, the painting was painted directly onto the horizontal architrave without a plaster

base (Figure 6). Both blue-green and green were shaded in the style of *shinianyu*, which is typical of craftsmanship in the early and middle Ming Dynasty. The stylistic features are similar to those on the tie beam of the ridge of the main hall and under the front eave of the 13th bay from the south of the western surrounding building (Table 1).

Judging from the characteristics of the timber frame and the decorative polychrome painting on architectural members of the Hall of Joyful Swallows, it is clear that the interior painting on the horizontal architrave of the front eave is in the official style of the Ming Dynasty, with the patterns and styling inheriting the practice of the early Ming Dynasty; thus, the wooden frame should have been finished by 1537.

Figure 6 Interior decorative polychrome painting on the horizontal architectural linking of the front eave of the east adjacent bay inside the Hall of Joyfull Swallows (Source: Hong Yang).

1. secondary *gutou*,
2. *hezi*,
3. *ruyitou* with three curves,
4. *chakouxian* (an edge line between the end of *zhaotou* and *lengxian*)
5. *lengxian* (a kind of edge line that delineates the middle portion)
6. *fangxin* (the middle portion)

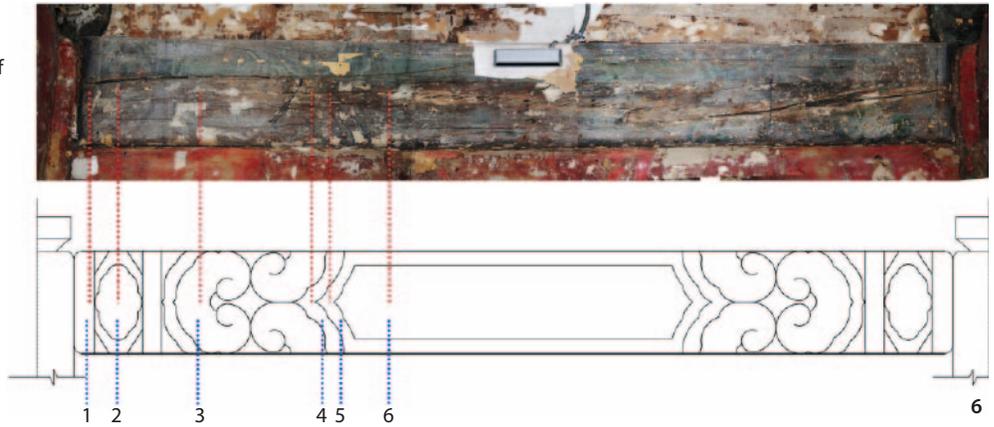
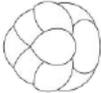


Table 1 Cross-reference of the patterns used in the decorative polychrome painting of the ridge tiebeam of the main hall, Hall of Joyful Swallows and the western surrounding building (Source: Hong Yang)

Name of building	The western surrounding building	Hall of Joyful Swallows (Yanxitang)	The main hall
Placement of member	Horizontal architecture linking under the front eave of the 13 th bay from the south of the building	Interior of the horizontal architecture linking of the front eave of the east adjacent bay	Ridge tiebeam of the central bay
Category of <i>caihua</i>	<i>Xuanzi</i> of five elegant colours (<i>yawumo</i>) with a blank middle portion	<i>Xuanzi</i> of five elegant colours with a blank middle portion	Tiebeam: black inking gilded <i>xuanzi</i> with a blank middle portion
Type of <i>fangxintou</i> and styling of <i>lengxian</i>	<i>Fangxintou</i> : sword tip of straight lines; <i>Lengxian</i> : three-fold concave lines. 	<i>Fangxintou</i> and <i>lengxian</i> : two-fold concave lines. 	<i>Fangxintou</i> : sword tip with straight lines; <i>Lengxian</i> : three-fold concave lines. 
Spiral flower (<i>xuanhua</i>)	Whole spiral flowers	Spiral flowers in the shape of <i>ruyitou</i>	Whole spiral flowers (circular or in the shape of flowers)
Centre of the spiral flower	Lotus 		Upward-turned lotus base+ <i>ruyitou</i> 
<i>Hezi</i>		<i>ruyi</i> cloud pattern 	Eight-petal spiral flower with cloud pattern at the four corners; the profile looks like diamond Chinese crab flower <i>hezi</i> ; the centre of the <i>hezi</i> is the pattern of <i>xixuan</i> 
Treatment of <i>Gutou</i>	Secondary <i>gutou</i> at the ends of the members		
Treatment of Plaster Base	No plaster base, directly painted on the wooden surface		
Texture of pigments	Mineral pigments, mainly from azurite and atacamite, stable hues		

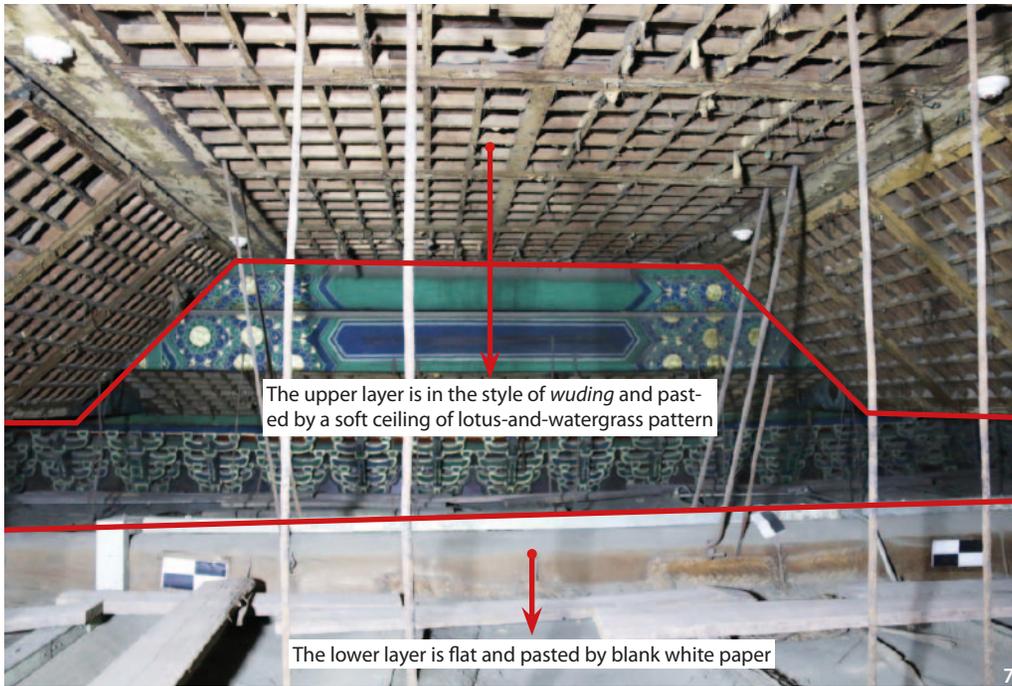


Figure 7 *Wuding* ceiling and decorative polychrome painting on the timber frame members in the western and the eastern warmth chamber (Source: Hong Yang).

Late Ming Dynasty and Early Qing Dynasty

From the late Ming Dynasty, the Hall of Mental Cultivation was used for both residential and administrative purposes. From 1690 to 1708, under the reign of the Kangxi emperor, the Department of Imperial Household Construction (*Zaobanchu*), together with its workshop, was established there. The Hall formally became used for both residence and administration during the reign of the Yongzheng emperor. Interior decorative polychrome painting on girders and beams of the eastern and western warmth chambers of the main hall, eastern and western side halls, eastern and western surrounding buildings, the Hall of Joyful Swallows, and the *gong*-shaped gallery were partly altered during that period. The alterations reflect changes to the interior decorations of the Hall of Mental Cultivation conducted in the early Qing Dynasty; they are significant to studies of changes made to the architectural layout of the Forbidden City in the early Qing Dynasty.

Eastern and Western Warmth Chambers of Main Hall

The ceilings of the eastern and western warmth chambers are in the form of two layers of an unpainted wooden lattice (*baitangbizi*), which is a rare feature in the Forbidden City. The lower layer is a flat ceiling pasted with paper, which joins the interior top of the horizontal architrave to hold bracket-sets (*pingbanfang*). The upper layer is in the style of *wuding* (fixed on five sides)¹³; it joins the beams attached to the ceiling and is pasted using the craft of ‘soft

ceiling’¹⁴ (Figure 7). Investigation during a conservation project revealed that only fragments of the ceiling survive; and it is inferred from the remaining features of the ceiling that its decorative polychrome painting would have been in a lotus-and-watergrass pattern (Figure 8). Accordingly, it is necessary to determine when the ceilings were installed and what was the *terminus ante quem* of the decorative polychrome painting on the ceilings and wooden frame members.

As evident in Cheng Zhang’s Diary (1690)¹⁵, the Department of Imperial Household Construction was established in the Hall of Mental Cultivation no later than 1690; the walls and ceilings of the warmth chambers were already pasted with white paper. This means that the *terminus post quem* of the lower layer of ceilings would be 1690 and the *terminus ante quem* of the upper layer and decorative polychrome painting on the wooden frame members should be the same year (Figure 9, Figure 10). Compared with that on the ridge purlin of the main hall, the painting here would have been executed after the reign of the Jiajing emperor of the Ming Dynasty. Thus, the decorative polychrome painting of the eastern and western warmth chambers of main hall should date from the late Ming and early Qing dynasties.

Eastern and Western Side Halls

There is no record of major repairs to the eastern and western side halls of the Hall of Mental Cultivation following their construction. Thus, the wooden frames of the

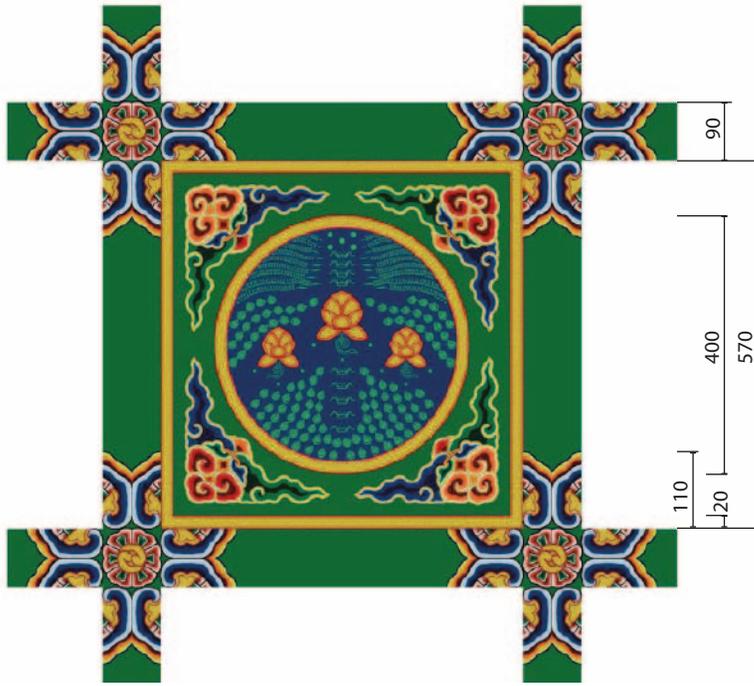


Figure 8 Lotus-and-watergrass pattern on the *wuding* ceiling of the eastern and western warmth chambers (Source: Hong Yang).

Ming Dynasty are largely conserved, with the characteristics of the wooden frame members generally match the practice during the Ming Dynasty¹⁶.

The interiors of the two side halls feature whitewashed walls pasted with white paper. However, an on-site investigation found that unpainted wooden lattices are installed behind the paper on the gable walls and rear eave wall. The wooden frame members above the lattices are covered by black-inked, gilded *xuanzi-caihua*, which is similar to that found in the ceilings of the eastern and western warmth chambers (Figure 11a, Figure 11b, Figure 12). The rear eave walls and gable walls under the beams and girders are earthen walls covered with gold. The connecting ceiling beam at the rear eave purlin, which joins the five-purlin beam, is painted green. Traces of green connecting ceiling beam are also left at the bottom of the five-purlin beam at the north gable wall of the northern subsequent bay and top of the intermediate purlin of the front eave of the eastern side hall. All these evidences imply that in the side halls, there were wooden frames under the ceilings covered by decorative polychrome painting; the earthen walls were covered with gold, decorated with wide granular-green edges and black-and-white decorative lines (Figure 11c). This style of interior decoration dates from the late Ming and early Qing dynasties.

Hall of Joyful Swallows

Decorative polychrome painting of the Ming Dynasty remain inside the front eave of the central bay, adjacent

bays, and the eastern subsequent bay of the Hall of Joyful Swallows. Further, traces of stick-shaped components used for support are evident in the following places: above the unpainted wooden lattice ceiling; on the joist of *dou* (*yadoufang*) of the front eave; and in the middle part of the four-purlin beam inside the western subsequent bay. Bracket sets and interconnecting boards under the top column joist (*zhengxinfang*) were replaced by a wooden board. These findings signify that there was formerly a latticed ceiling; the wooden frame under the ceiling was covered by decorative polychrome painting, and the gable walls of the subsequent bays were earthen walls covered by gold (Figure 13a, Figure 13b). Jambs covered with red oil paint and green connecting ceiling ring beams are found under the four-purlin beams below the pasting paper. This means that the eave columns were originally covered with red oil paint, and there used to be a ceiling. That is most probably the interior decoration style before the 7th year of Yongzheng (1729). The ceiling beams are painted with *yawumo-caihua*, which indicate a relatively low rank. That is not in accordance with the type of painting used for the residences of the emperor or concubines. Thus, they may not have been painted before the reign of the Yongzheng emperor.

The Hall became the residence of concubines after the 7th year of Yongzheng (1729)¹⁷. So a new ceiling was installed at the level of the four-purlin beams and front eave; the paper pasting work was done again. The decorative polychrome painting on the wooden frame of the



Figure 9 Black inking gilded *xuanzi* with a blank middle portion on the beams of the east and the west axes (*feng*) of the eastern warmth chamber (Source: Hong Yang).



Figure 10 Black inking gilded *xuanzi* with a blank middle portion on the beams of the east and the west axes (*feng*) of the western warmth chamber (Source: Hong Yang).

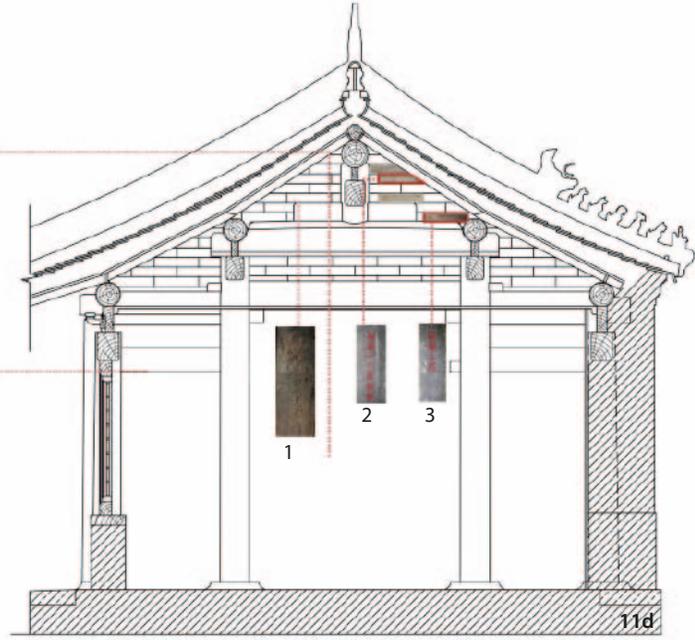


Figure 11 Analytic diagram of the Decorative polychrome painting on the horizontal architecture linking of the front eaves inside the side halls, and the earthen gable walls of the side halls covered with gold (Source: Hong Yang).

- a. Current situation of the north gable wall at the north subsequent bay of the west side hall
- b. Decorative polychrome painting on the *baotouliang* (short beam inserted into the eave column on one end and into the intermediate interior column on the other end) in the south subsequent bay of the west side hall
- c. Earthen wall covered with gold
- d. Locations of the inscriptions on the bricks made under the Jiajing emperor's reign in the south subsequent bay of the east side hall
 1. Inscription on the southern side of the first axis on the right of the left wing of the imperial kitchen
 2. Inscription of 1534 on a brick
 3. Inscription of 1535 on a brick

ceiling of the western subsequent bay and that on the four-purlin beams of the east and west axis of the ceilings of the central bay, the eastern and western adjacent bays, and the eastern subsequent bay is *xuanzi-caihua* in five elegant colours; the central part has 'sword-tip ends' and there are *hezi* of whole gardenia blossoms. These features belong to the late Ming and early Qing dynasties (Figure 13c). Furthermore, optical microscopic analysis of pigment samples¹⁸ revealed that the decorative polychrome painting at the east and west axes of the eastern adjacent

bay were painted on a thin plaster base. The yellow lead colour is largely found under the layer of green colours; no plaster base has been detected under the painting of the gables of the eastern adjacent bay. These features together with the style of the painting suggest that the interior decorative polychrome painting of the Hall of Joyful Swallows were painted in the late Ming and early Qing dynasties. In line with this dating, the painting is similar to that of the eastern and western warmth chambers of the main hall (Table 2).



Figure 12 Black inked golden *xuanzi-caihua* on the bottom of the ceiling beam at the southern axis of the north adjacent bay of the west side hall (Source: Hong Yang).



Figure 13 Feature analysis of the decorative polychrome painting in the east and the west axis of each bay of Hall of Joyful Swallows (Source: Hong Yang).

- a. Decorative polychrome painting in the east axis above the unpainted wooden lattice of the west subsequent bay of Hall of Joyful Swallows.
- b. Unpainted wooden lattice of the adjacent to the west gable wall of Hall of Joyful Swallows.
- c. Decorative polychrome painting in the west axis below the unpainted wooden lattice of the east adjacent bay of Hall of Joyful Swallows.



Eastern and Western Surrounding Buildings

According to *Huangcheng gongcheng yashu tu* (Painting of the Governmental Offices in the Imperial Palace of the Imperial City) (Figure 14)¹⁹ of 1679 and *Qianlong jingcheng tu* (Painting of the Capital City under the Reign of the Qianlong Emperor) (Figure 15)²⁰ of 1750, these two buildings before the early Qing Dynasty were independent; they had 12 bays on both the eastern and western sides. The rear hall and its two subsidiary rooms were also independent; these five buildings were not linked to one another. By 1750, the subsidiary rooms became connected to the rear hall; the surrounding buildings²¹ became connected to the three buildings of the rear hall with colonnades of 18 bays on both sides²². Two more bays were added to the northern ends of the surrounding buildings so that they could align with the rear eave walls of the subsidiary rooms.

The surrounding buildings originally lacked ceilings: all the wooden frame members were painted, and the rafters

were painted green. The current investigation determined that part of the rear eave walls behind the interior pasting paper of the western surrounding building were earthen walls covered with gold. Sill frames occur under the pasting paper at the level of the five-purlin beams. The interior columns and sill frames are covered by red oil paint; partition boards pasted with paper were added in a later period. The wooden frame features of these two buildings match the practice of the Ming Dynasty. For example, the craft of *zengjian* was used for the tenons at the joints between the horizontal architrave and the columns. Some of the bottom part of the blocks in the bracket sets used at the lowest purlins within the eaves are obviously curved; baffles (*tuodangban*) covered by red oil paint are employed between the three-purlin and five-purlin beams.

It may be inferred from historical records²³ that the eight bays in the north of the eastern and western surrounding buildings became residences for concubines in

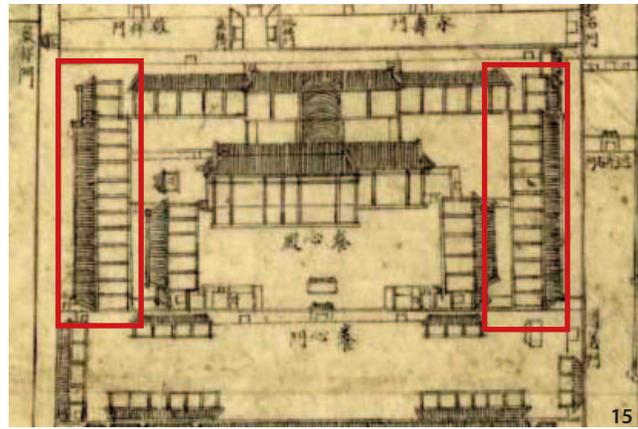
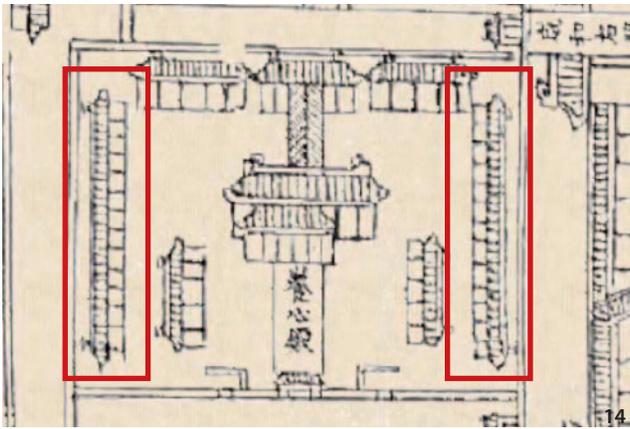


Figure 14 Location of the eastern and the western surrounding buildings in the Hall of Mental Cultivation Complex in *Huangcheng gongcheng yashu tu* [Painting of the governmental offices in the Imperial City and the Imperial Palace] (Source: Hong Yang).

Figure 15 Location of the eastern and the western surrounding buildings in the Hall of Mental Cultivation Complex in *Qianlong jingcheng tu* [Painting of the Capital City under the Reign of the Qianlong Emperor] (Source: Hong Yang).

Table 2 Cross-reference of the patterns used in the decorative polychrome painting of the late Ming and the early Qing Dynasty in the eastern and western warmth chambers of the main hall and Hall of Joyful Swallows (Source: Hong Yang)

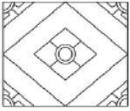
Name of building	Eastern warmth chamber	Western warmth chamber	Hall of Joyful Swallows
Placement of member	The east and the west axis	The east and the west axis	The east and the west axis of each bay
Category of <i>caihua</i>	Black inking gilded <i>xuanzi</i> with the middle portion filled with the ‘—’ shaped pattern		<i>yawumo-xuanzi</i> with the middle portion filled with the ‘—’-shaped pattern
Type of <i>fangxintou</i> and styling of <i>lengxian</i>	<i>Fangxintou</i> : sword tip of straight lines; <i>Lengxian</i> : one-fold concave lines.		Both are straight lines 
Spiral flower (<i>xuanhua</i>)	Whole spiral flowers (circular or in the shape of flowers)		
Centre of the spiral flower	petal-shaped centre, or upward-turned lotus base + <i>ruyitou</i>  	upward-turned lotus base + <i>ruyitou</i> 	Petal-shaped 
<i>Hezi</i>	<i>Shidi</i> pattern <i>hezi</i> ; the profile is of straight lines; the centre of the <i>hezi</i> is two concentric circles 	<i>Shidi</i> pattern with an eight-petal spiral flower; the profile looks like curved diamond Chinese crab flower <i>hezi</i> ; the centre is <i>yin-yang</i> fish pattern 	Hard <i>hezi</i> with cloud pattern at the four corners; the centre of the <i>hezi</i> is two concentric circles 
Treatment of <i>Gutou</i>	Secondary <i>gutou</i> at the ends of the members		
Treatment of plaster base	No plaster base, directly painted on the wooden surface		
Texture of pigments	Mineral pigments, mainly from azurite and atacamite, stable hues		



Figure 16 Decorative polychrome painting in the western surrounding building of the Hall of Mental Cultivation Complex (Source: Hong Yang).

Figure 17a Decorative polychrome painting in the north central bay and the north adjacent bay of the west gable side of the three bays in the centre of the main hall (Source: Hong Yang).

Figure 17b Decorative polychrome painting of the interior eave of the central bay of the main hall (Source: Hong Yang).

the 7th year of Yongzheng (1729). Unpainted wooden lattices pasted with paper were installed during the accompanying changes. All the remaining decorative polychrome paintings on the wooden frames of the surrounding buildings are *xuanzi-caihua* in five elegant colours; the middle portion has a ‘—’-shaped pattern. It shares the features of the painting in the eastern and western large buildings of the Gate of Divine Prowess (Shenwumen) and Imperial Tea House in the Forbidden City, which were painted in the late Ming and early Qing dynasties; thus, it should have been finished before the reign of the Yongzheng emperor (before 1723) (Figure 16).

Decorative Polychrome Painting during the Reign of the Qianlong Emperor

In the middle Qing Dynasty, during the reign of the Qianlong emperor, the eastern warmth chamber of the Hall of Mental Cultivation was used as a residence and the daily administrative centre of the emperor. The Changchun

Study, Xianlou Fotang (Buddhist prayer room with building models for celestial beings), Hall of Three Rarities, and other zones having different functions were set up in the western warmth chamber. Part of the decorative polychrome painting inside the central bay of the main hall were changed during this period, reflecting the history of changes to the interior decorations of the Hall of Mental Cultivation during the middle Qing Dynasty. Thus, the painting is significant to studies of the development of the architectural layout of the Forbidden City at that time.

According to on-site investigations, the decorative polychrome painting on the horizontal wooden frame members below the domed coffered ceiling and the ceiling of the central bay are in the type of dragon *hexi* with hooped *gutou* (Figure 17a, Figure 17b). Judging from the characteristics of the patterns, the craftsmanship, historical layers²⁴, period when hooped *gutou*²⁵ was in use under the Qing (Yang 2009), and historical documentation²⁶, the bottom layer of the interior decorative polychrome



Figure 18 The ceiling of dragon well patterns in the central bay of the main hall of the Hall of Mental Cultivation (Source: Hong Yang).
Figure 19 Domed coffered ceiling with a curled-up dragon in the central bay of the main hall of the Hall of Mental Cultivation (Source: Hong Yang).

painting is original and dates from the Qianlong period. The green pigments at the bottom layer possibly date from the same period as the architrave at the rear eave of the Buddhist prayer room and the painting on the edge of the earthen wall covered by gold at the rear eave of the central bay; both those features were decorations under the reign of the Kangxi emperor, when the Hall of Mental Cultivation was used as the office of the Department of Imperial Household Construction. A historical document from the 12th year of Tongzhi (1873) records that the decorative polychrome painting on the wooden frame and the domed coffered ceiling in the main hall were renovated²⁷. The top layer of pigments does in fact appear like the ultramarine and Paris green of the late Qing Dynasty. Optical microscopic analysis of sample sections has confirmed that there are three layers of decorative polychrome painting in the east and west axes of the central bay. The bottom layer is relatively thin, which implies that it could have been painted at the same time as the architrave at the rear eave of the Buddhist prayer room. Moreover, the test report confirmed that the pigments of the top layer of the painting are atacamite and Paris green; the blue-green and green pigment of the original painting are azurite, malachite, and atacamite. Therefore, it may be concluded that the decorative polychrome painting on the interior wooden frame of the main hall were renovated in 1873 based on the original patterns and colours of the Qianlong period.

In addition to the above findings, on-site investigation

has revealed that all the major lines of the decorative polychrome painting on the horizontal wooden frame members are straight; that feature is different from the curved edge lines of the *hexi-caihua* in the Palace of Abstinence (Zhaigong) under the reign of the Yongzheng emperor. Straight edge lines with shadings outside the edges are characteristic of the practice that began in the middle and late Qianlong period. The *zhaotou* of the architraves of the east and west axes of the central bay of the main hall are painted with rising dragons, partly gilded on a blue-green ground, and descending dragons, partly gilded on a green ground. The *zhaotou* of the architraves of the front and rear eaves are painted with descending dragons, partly gilded on a blue-green ground, and rising dragons, partly gilded on a green ground. The bodies of the dragons feature scales and a belly. That is different from the practice of the late Qing Dynasty, which depicted rising dragons on a blue-green ground and descending dragons on a green ground on *zhaotou* with the dragons' bodies featured solely the belly pattern. Hence, it may be concluded that the decorative polychrome painting on the wooden frame of the central bay matches the characteristics of the middle Qing Dynasty. The test reports of pigments and craftsmanship confirm that the pigments and craftsmanship of the top-layer painting date from the period of Tongzhi.

During the investigation, multiple layers of renovations were found in the *douba-zaojing*, which had a curled-up dragon and the ceiling of the central bay, which was

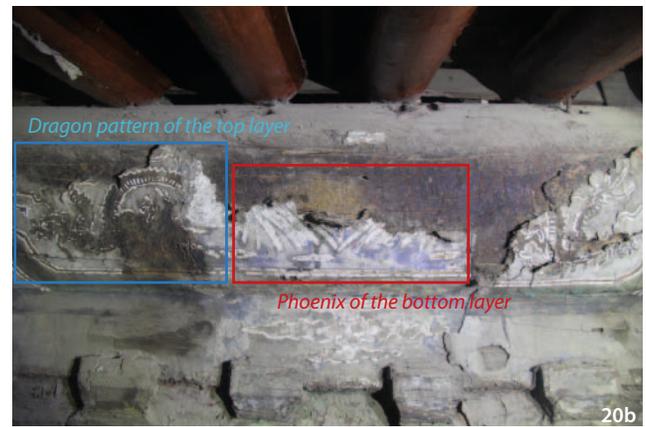
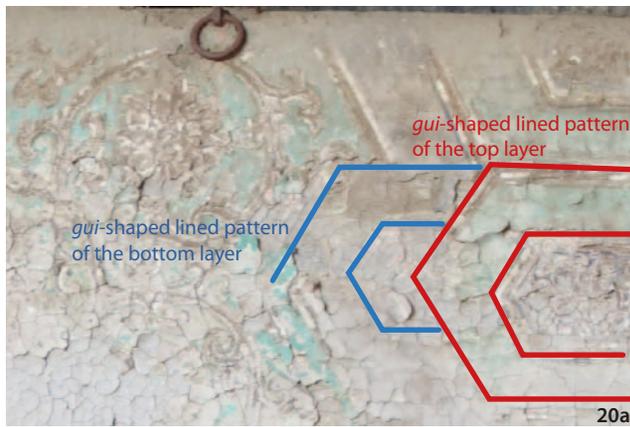


Figure 20a Decorative polychrome painting on an architrave at the west façade of the *gong*-shaped gallery (Source: Hong Yang).

Figure 20b Two layers of decorative polychrome painting at the middle portion of the third intermediate purlin at the south of the western surrounding building (Source: Hong Yang).

painted with rising dragons and descending dragons. The base of the ceiling was found to have a plaster ground made of linen cloth; silken cloth was mounted on multiple layers of paper pasted onto the linen, and patterns of rising and descending dragons were painted on the silken cloth. Further analysis of the painting revealed further indications of the period of execution. First, the blue-green and green grounds within the *yuanguzi* (circle at the centre of a painted ceiling board) and *fangguzi* (square outside the *yuanguzi*) in the latticed ceiling had been renovated during the Tongzhi period; the pigments used were ultramarine and Paris green. Clearly, the wheel and swallow tail patterns (*gulu-yanwei*) on the bars of the ceiling were added at a later period (Figure 18). Second, dragon and phoenix patterns in the *douba-zaojing* were all painted using the technique of *saojin* (golden powder applied on a special kind of glue) (Figure 19). Optical microscopic analysis of the sample sections revealed that there were three layers of gold foil. They were probably applied by covering pink gold with *tung* oil, which matches the Record of Reimbursement by officials of the Imperial Household Department²⁸. Traces of two to three layers of renovation were found at the blue-green and green grounds of the corners of the domed coffered ceiling; they are decorated with carved phoenixes. Optical microscopic analysis of sample sections revealed that the pigments used in the blue-green grounds are ultramarine, azurite, and malachite from, respectively, the top to bottom layers; those in the green grounds are two layers of green pigments. With regard to the corner tie beams, three layers of renovation are found; the pigments used from the top to bottom layers are, respectively, Paris green, ultramarine, and malachite. All this evidence confirms the historical documentation of 1873, which states, ‘Exterior and

interior decorative polychrome painting as well as the buharhut caps (*pilumao*) and the ceilings inside the Hall of Mental Cultivation were renovated based on old painting.’

Decorative Polychrome Painting in Late Qing Dynasty

During the late Qing Dynasty in the periods of Daoguang (1821–1850), Tongzhi (1862–1874), and Guangxu (1875–1908), Empress Dowager Cixi twice attended to state affairs behind a screen. During that time, Empress Dowager Ci’an lived in the Hall of Manifest Compliance (Tishuntang), Empress Dowager Cixi resided in the Hall of Joyful Swallows, and the eastern warmth chamber of the Hall of Mental Cultivation was where they attended to state affairs. At that time, the Hall of Mental Cultivation complex was the scene of significant turning points in the political history of the Qing, such as the inheritance of imperial power in the 13th year of Tongzhi (1874) and the shift in the core of power in the 15th year of Guangxu (1889). Interior fixtures in the complex were also changed, and the exterior decorative polychrome painting were repainted. These changes reflected the evolution of the decorations in the Hall of Mental Cultivation in the late Qing Dynasty; they are significant to the studies of the development of architectural layouts of the Forbidden City during that period.

Hierarchical Order of the Decorative Polychrome Painting at the Exterior Eave of the Hall of Mental Cultivation

According to a record from 1873²⁹, the decorative polychrome painting on the interior eave, exterior eave and small projecting portico (*baosha*) of the Hall of Mental

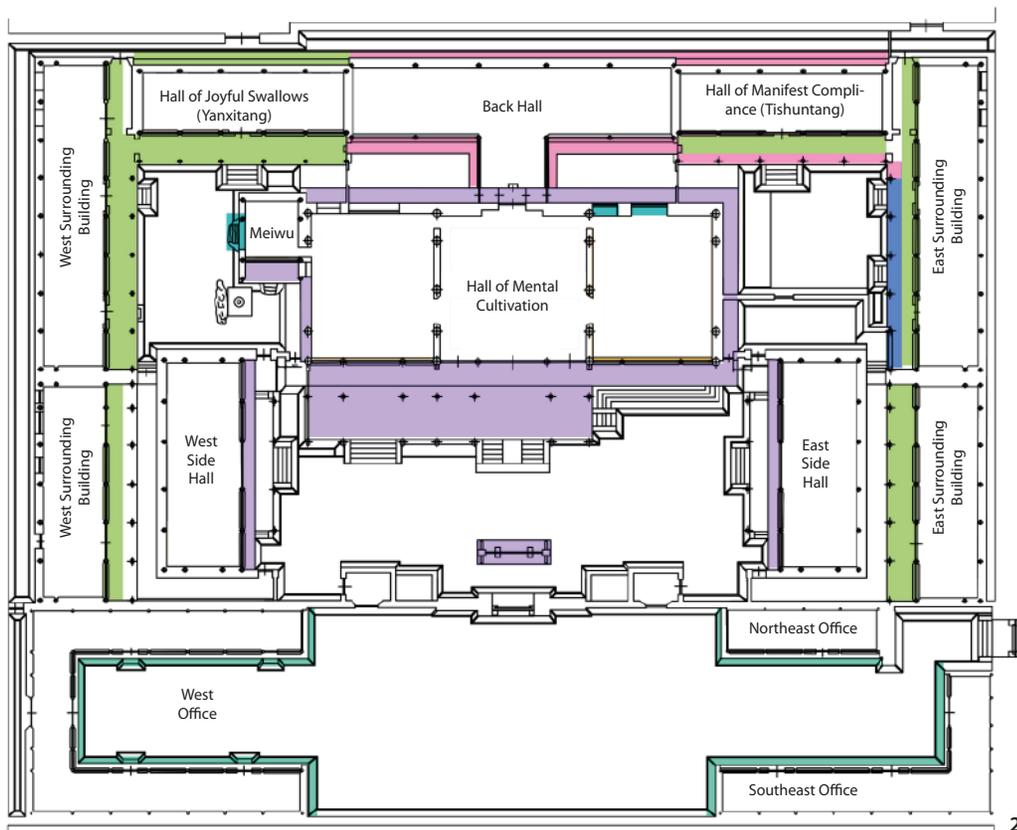


Figure 21 Layout of the styles of decorative polychrome painting at the exterior eave of the Hall of Mental Cultivation Complex at the south of the western surrounding buildings (Source: Hong Yang).

- Dragon *hexi caihua*
- Dragon-and-phoenix *caihua*
- Composite *caihua* of golden inking dragon-and-phoenix pattern (frame is *hexi* and *xuanzi*)
- Composite *caihua* of golden inking dragon-and-phoenix pattern (frame is *xuanzi* and Suzhou-style)
- caihua* with a middle portion of dragon brocade pattern
- All-over realistic *caihua*

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Cultivation were renovated at that time based on the original painting. The lower frames of the surrounding buildings of the hallway and offices were also repainted that year. However, comparative analysis of the current situation, the pattern of colours, the techniques used, characteristics of patterns and layers of renovations of all the exterior decorative polychrome painting of all the buildings in the Hall of Mental Cultivation Complex reveals that the painting of the top layer matches the characteristics of the late Qing Dynasty; they were thus most probably painted then (Figure 20a, Figure 20b). There is no record of renovation of this part of the painting after the period of Tongzhi; so based on the bottom layer of the painting painted during the reign of the Qianlong emperor, it may be inferred that these exterior paintings were renovated in 1873.

Judging from the current situation of the decorative polychrome painting in the Hall of Mental Cultivation complex, they were designed as a whole. They have strict ranks and are harmoniously coordinated, so as to serve the etiquette of the imperial household (Figure 21).

The four ranks of the painting are as follows: dragon *hexi*; dragon-and-phoenix *hexi*; golden-inked dragon-and-phoenix pattern; and black-inked minor golden *xuanzi*, with a middle portion featuring a dragon brocade pattern. They are used in accordance with the ranks and

functions of the buildings. The highest-ranked buildings were where the emperor conducted state business and the Buddhist prayer room; the second-highest ranked was the residence of the emperor; the third was the temporary residence for the empress when she attended upon the emperor; that was followed by the residence for high-ranking concubines; that was further followed by the residences for the other concubines; temporary residences for imperial consorts of even lower ranks had lowly ranked layouts and decorations to match their status (Table 3).

Decorative Polychrome Painting at the Exterior Eaves of the Hall of Joyful Swallows, Hall of Manifest Compliance, Eastern and Western Surrounding Buildings and Other Buildings

The composite decorative polychrome painting with a middle portion of the golden-inked dragon-and-phoenix pattern on the exteriors of the Hall of Joyful Swallows, Hall of Manifest Compliance, and eastern and western surrounding buildings were painted during the Tongzhi period (1862–1874). They are rich in characteristics of the late Qing style and reflect the style of decoration during the period when Empress Dowager Cixi dealt with state affairs behind a screen; there was strict attention to ranks and orders (Figure 22a–22d). This style of painting does

Table 3 Cross reference of the decorative polychrome painting at the exterior eave of the Hall of Mental Cultivation and the functions of buildings (Source: Hong Yang)

Name of building	Function of building	Type of <i>caihua</i>	Pattern motif
Main hall of the Hall of Mental Cultivation Complex and Meiwu	The emperor's daily governance	Dragon <i>hexi</i>	Dragon pattern
Eastern and western side halls	The consecration of the tablets of former deceased emperors, and as a Buddhist prayer room		
Back hall and hallway	Residence of the emperor	Dragon-and-phoenix <i>hexi</i>	Dragon-and-phoenix pattern
Hall of Manifest Compliance (Tishuntang)	Temporary residence for the empress when she attended upon the emperor (or the temporary lounge for the Empress Dowager Ci'an during the periods of Tongzhi and Guangxu)	Dragon-and-phoenix <i>hexi</i> and composite <i>caihua</i> with golden inking dragon-and-phoenix patterns	Dragon-and-phoenix pattern, passionflower,
Hall of Joyful Swallows (Yanxitang)	Temporary residence for the imperial concubine when she attended upon the emperor (or the temporary lounge for the Empress Dowager Ci'xi during the periods of Tongzhi and Guangxu)	Composite <i>caihua</i> with golden inking dragon-and-phoenix patterns	<i>kuilong</i> (a kind of animal that appears in myths which looks like snakes and Chinese dragons)
East and west surrounding buildings	Temporary residences for lower concubines when they attended upon the emperor		
Offices inside the Gate of Mental Cultivation (Yangxinmen)	Temporary residences for imperial consorts of low ranks	black inking minor-golden <i>xuanzi</i> with a middle portion of dragon brocade pattern	Dragon pattern, brocade pattern, spiral flower pattern
Rainshed of the main hall	Protection from sunlight and rains	All-over realistic <i>caihua</i>	Grapes, Chinese wisterias, Chinese crab flowers
Rainshed of Meiwu			Plum blossoms

not belong to any of the five categories of official decorative polychrome painting under the Qing; it is a distinctive feature of the decorative polychrome painting system of the Forbidden City, and it renders this kind of painting rich in historical value and research significance.

According to investigations of the remains of the exterior decorative polychrome painting of the Hall of Joyful Swallows, Hall of Manifest Compliance (except for the outer side of the eave-lifting beams [*qingyanfang*]), and eastern and western surrounding buildings, there are two kinds of framing compositions for the major lines of the composite golden-inked decorative polychrome painting. The first is for purlin beams (*linfang*; those above and below the eave-lifting purlins), on which the framing composition of *xuanzi*- and Su-style *caihua* is based. The second is for the upper and lower tie beams at the eave-lifting area³⁰, on which the framing composition of *xuanzi*- and *hexi-caihua* is based. The patterns employed

are dragons, phoenixes, and passion flowers. The dragon-and-phoenix pattern is used only in high-rank Su-style *caihua*. Sunflowers and *kuilong* patterns painted at *zhaotou* usually appear in the early Qing *hexi-caihua*; *zhaotou* of sunflowers and glossy ganoderma patterns and the middle portion of the dragon-and-phoenix pattern occasionally appear in Su-style *caihua*; the *zhaotou* of *xuanzi-caihua* are painted only with spiral flowers. Passion fruit ointment³¹ was a medicine often used by emperors and empresses; the passion fruit pattern was frequently used as by them a decorative motif. With respect to the craft with gold foil, the major lines of painting are all embossed gilded double lines. Such patterns as those of the dragon and phoenix, passion fruit, and *kuilong* were partly gilded, and the hooped *gutou* were delineated with golden inking. In brief, these composite golden-inked painting combine the framing and layouts, pattern motifs, craftsmanship, and colour settings of *hexi*-, *xuanzi*-, and Su-style *caihua*.



Figure 22 Types of decorative polychrome painting in the Hall of Mental Cultivation Complex (Source: Hong Yang).

- a. *hexi caihua*
- b. *xuanzi caihua* in five elegant colours
- c. composite *caihua* A
- d. composite *caihua* B

In addition to the five major categories of decorative polychrome painting under the Qing, a new style developed under the specific social conditions of the Tongzhi and Guangxu periods of the late Qing Dynasty; it reflected the aesthetic tendency and the desire of keeping good health of Empress Dowager Cixi.

Conclusion

The decorative polychrome painting on the architectural members of the Hall of Mental Cultivation complex reflects the history of construction and changes in functions of the buildings in the Ming and Qing dynasties. The decorative polychrome painting carry rich historical information and cultural connotations from different periods of history; the motifs used in those periods played a significant role in the design of the painting in

that complex. The patterns used in the painting symbolise the ranks and identities of the feudal ruling class. In the middle Ming Dynasty, as the residence, imperial kitchen, and place for Taoist practices of the emperor, the wooden frame members at the ridge area of the central bay of the main hall were painted with black-inked golden *xuanzi-caihua* of a high rank. In the late Ming and early Qing dynasties, the Hall of Mental Cultivation was a subsidiary hall for the emperor; it was used by the Department of Imperial Household Construction during the reign of the Kangxi emperor. At that time, the golden lotus-and-watergrass pattern and black-inked golden *xuanzi-caihua* was retained above the newly added ceilings of the eastern and western warmth chambers. *Xuanzi-caihua* in five elegant colours was used above the new ceilings of the eastern and western surrounding buildings. In the period

of Yongzheng, the Hall of Mental Cultivation formally became a place for both residence and administration. The interior decorations were largely changed, especially during the reign of the Qianlong emperor. The rank of the painting on the wooden frame inside and outside the main hall was increased: dragon *hexi-caihua* appeared in the central bay; dragon-and-phoenix *hexi-caihua* appeared in the rear hall (emperor's residence) and *gong*-shaped gallery. During the periods of Tongzhi and Guangxu, Empress Dowager Cixi twice attended to state affairs behind a screen; patterns of dragon *hexi*, dragon-and-phoenix *hexi*, composite golden inking, and *xuanzi* were painted in different places of the exterior eave of the buildings belonging to the Hall of Mental Cultivation complex according to their function and rank in the hierarchy. The decorative polychrome painting from the middle Ming, late Ming and early Qing, middle Qing, and late Qing dynasties truthfully reflect the history of the architecture of the Forbidden City during those times, providing strong evidence for dating the buildings which is significant in studying the development of the architectural layout of the Forbidden City during those two dynasties. (Translated by Xinyi Gu, proofread by Alexandra Harrer and Yingchun Li)

Notes

1. Identification of the timber was conducted by the Chinese Academy of Forestry; *nanmu* was chosen mostly for the timber frames in the Forbidden City of the Ming Dynasty.
2. Identification of the timber was conducted by the Chinese Academy of Forestry; *nanmu* was chosen mostly for the timber frames in the Forbidden City of the Ming Dynasty.
3. Examples are as follows. (1) The craftwork in the lap joints in the tails of upper rafter leaning from the ridge (*naochuan*) and intermediate rafter (*huaajiachuan*) is of the type known as 'goose's neck'; 'mantis tenon' (*tanglangsun*) is used at the joints of the timber frame; (2) the members of the interior wooden frame are mostly made of large unjointed pieces of timber; (3) The large blocks (*dadou*), small blocks (*xiaodou*), and blocks on either end of the central short bracket arm (*caoshengzidou*) used in some of the inner brackets are obviously curved at the inverted trapezoidal bottom part; a centre block (*qixindou*) is used on the outermost or innermost bracket arm (*xianggong*).
4. *Xuanzi-caihua* is a style of official Qing Dynasty decorative polychrome painting featuring floral patterns with petals of the outermost ring in a spiral shape (Figure 8).
5. For more details about the features of particular periods of the official decorative polychrome painting from the early and late Ming Dynasty, see Yang 2012.9–2015.12, Yang 2016.
6. Gilded *shinianyuan caihua* is found in historical records of the Ming: *shi* is short for mineral pigments (*shise*). The naming of *nianyu* first appeared in *Yingzao Fashi* (The Building Standards) under the Song Dynasty. The official decorative polychrome painting of the Ming Dynasty inherited the practice of *nianyu* under the Song, in which blue-green and green were the major colours; red was a secondary colour; black and golden inking were used for the contours and boundaries of hues; blue-green and green were shaded. This provided a style rich in arrangement of colours.
7. Pigment sampling and analysis was conducted by the Department of Cultural Relics Conservation Technology, Palace Museum.
8. *Hecao* means applying a thin coat of dilute gelled alum water mixed with a small amount of dark colour (usually black or dark blue) evenly and thoroughly on the plaster base. See Jiang, Guangquan. 2005. *Zhongguo Qingdai guanshi jianzhu caihua jishu* [Techniques in the Official *Caihua* under the Qing]. Beijing: China Architecture & Building Press, 205–206.
9. This building was originally called Zhenxiangguan. It was joined to the rear hall in the 15th year of the Kangxi emperor's reign (1676), and thereafter it became the western subsidiary room. Subsequently, it is occasionally referred to in historical records as the western principal building, Shunshandian, or principal building of the western courtyard, among other names. The name Ping'anishi appears for the first time in the 2nd year of the Xianfeng emperor's reign (1853); the building was renamed Yanxitang in the 9th year of the Tongzhi emperor's reign (1870).
10. Evidence for this includes the following features: (1) the fish-bellied four-purlin beams (*yufuliang*) within the structure, which is one of the characteristics of the wooden frames of the Ming Dynasty. This type of beam tapers from the middle to the ends, forming a gentle curve, which is similar in appearance to the shape of a fish's belly; it illustrates the legacy of crescent beam (*yueliang*) from the Song Dynasty with its exquisite craftsmanship and graceful shape; (2) the 'added shoulder' (*zengjian*) used for the tenons in the joints between the horizontal architrave and the columns; (3) the obvious curves at the bottom of the brackets used with the lowest purlins within the eaves; and (4)

- nanmu* employed for the wooden frame, with some members made of hardwood pine.
11. 'Added-shoulder' (*zengjian*) is the triangular part of an horizontal architecture linking and the joint with the top of a pillar.
 12. *Hezi* is a kind of decorative pattern used in decorative polychrome painting for long timber members in between two *gutou* at both ends. See from Jiang, Guangquan. 2005. *Zhongguo Qingdai guanshi jianzhu caihua jishu* [Techniques in the Official *Caihua* under the Qing]. Beijing: China Architecture & Building Press, 301.
 13. The unpainted wooden lattice was used to fix the pasting paper and did not contain any metal. Nevertheless, if 錠 means 定 (both are pronounced *ding*) and both Chinese characters mean 'fix', then 'fixed on three sides' is called *sanding*, and 'fixed on five sides' could be called *wuding* (五錠).
 14. 'Soft ceiling' (*ruantianhua*) means that the wooden-framed decorative ceiling is pasted using paper or silken cloth (*juan*). By contrast, 'hard ceiling' (*yingtianhua*) means that the painting is directly painted onto the wooden ceiling. See Jiang, Guangquan. 2005. *Zhongguo Qingdai guanshi jianzhu caihua jishu* [Techniques in the Official *Caihua* under the Qing]. Beijing: China Architecture & Building Press, 303.
 15. See Zhang 1973. The text translates as: 'I sent for Father Su Lin, and together we went back to the Hall of Mental Cultivation ... We went into the room on the left and found it crowded with limners, sculptors, and painters. There were also many large bookcases containing many books. The other subsidiary room is a lounge for His Majesty. However, this place is simple; there are neither decorative polychrome painting or golden lining nor curtains; the walls were pasted only with white paper.'
 16. For example, the members of the interior wooden frame are mostly made of large unjointed pieces of timber; the upper outer queen posts (*tuodun*) on the five-purlin beam, which supports the three-purlin beam and joins the purlin tie beam (*jinfang*), is a carved square shape. The *xiongbei* ('bear's back', chamfered top of a purlin) of the five-purlin beam was cut with an adze. The five-purlin beams are shuttle-shaped and are also referred to as 'fish-bellied beams'.
 17. In the 1st year of Yongzheng (1723), removable and immovable windows were added to the western adjacent bay of the rear living hall (Hall of Joyful Swallows), but the locations of the windows were not recorded. In the 7th year of Yongzheng (1729), the interior decoration of the five bays of the western principal building of the rear hall (Hall of Joyful Swallows) was changed; thus, the interior layout of Hall of Joyful Swallows started to change. Two partition boards were added to the western subsequent bay of Hall of Joyful Swallows, and the earthen wall covered with gold in this bay was replaced by board walls. In addition, two *kangzhao* (decorative cover of heatable brick bed), two beds, and one square window were added to this bay; a *dikang* (brick bed heated by fire) was added to the western adjacent bay. From the development of the interior layout of Hall of Joyful Swallows, it may be inferred that the western subsequent bay started to function as a residence in 1729, which was when the interior layout became modified in line with the change in function.
 18. Pigment sampling and analysis were conducted by the Department of Cultural Relics Conservation Technology, Palace Museum.
 19. *Huangcheng gongcheng yashu tu* (Painting of the Governmental Offices in the Imperial Palace of the Imperial City) is collected by the Palace Museum in Taipei No. Pingtu 021601.005. According to the study by the architectural historian Dunzhen Liu, the painting was carried out in the middle of the Kangxi emperor's reign. For his article, see Liu 1935.
 20. *Qianlong jingcheng tu* (Painting of the Capital City under the Reign of the Qianlong Emperor) is collected by The First Historical Archives of China. For more details, see Yang 1984.
 21. *Neiwufu zouxiaodang* [Record of Reimbursement by the Imperial Household Department]. No.05-0106-034 (Compiled Vol. 60856)
 22. The number of bays in the past is different from what now remains. Today, the six bays in the south of the surrounding building at the passageway at the rear of the western side hall are as follows: the wooden frames of the front porch are painted with oil paint, and they do not have decorative polychrome painting; that is different from the front porch of the six bays in the south of the eastern surrounding building, which is completely covered with decorative polychrome painting. Hence, it may be inferred that when the 18 bays of colonnades were added, the six bays in the south of the western surrounding building were not connected by colonnades.
 23. See Zhu 2003. The text translates as: 'On the 5th day of the 8th month of the 7th year of Yongzheng (1729), interior fixtures of the western main building and the

- western surrounding building were altered.
24. A layer of green pigment is found on the plaster base under the *gutou* at the northern end of the architrave of the northern central bay on the eastern gable side of the three bays at the centre of the main hall. Analysis shows the pigment to be malachite.
 25. The pattern of hooped *gutou* developed in the early and the middle Qianlong period; it was originally used in the *hexi-caihua* of some religious architecture. Examples include the following: Yuhuage of 1749 in the Forbidden City; the Mahavira Hall of Puning Monastery of 1759 in Chengde; Wanfaguiyidian of Putuozongcheng Monastery of 1771 in Chengde; and Zhuxianguan in the Forbidden City from 1772 to 1776. All the *hexi-caihua* in those examples have hooped *gutou*. Hooped *gutou* was not applied to Su-style *caihua* until the late Qianlong period. According to investigations, the Su-style *caihua* of Chengguantang and its eastern side hall in Beihai were painted around 1779 and used the pattern of hooped *gutou*. After the succession of the Jiaqing emperor, hooped *gutou* was further applied to *hexi-caihua* of the high-ranked halls of the imperial palace, such as Palace of Heavenly Purity of 1798 and Hall of Union of the middle Qing Dynasty.
 26. There are only four clear records of the renovation of decorative polychrome painting in documentation of the Hall of Mental Cultivation complex, which took place in 1748, 1750, 1764, and 1873. None of the records gives an explicit time of the painting work for the interior of the main hall. However, the documentation of 1750 states, 'It is approved, so the Dragon Well Gate *saojin* with red and yellow golden powder and decorative polychrome painting on the bars of the ceiling lattice was renovated.' Cheng Zhang's diary states, 'The top of the hall is painted with colours and golden pigment.' The decorative polychrome painting on the wooden frame of the central bay of the Hall of Mental Cultivation was painted at least before 1750.
 27. *Quanzong* 05, *Zou'an* Vol. 0871, No. 012, *Zou'an* 05-0871-012 (Compiled Vol. 64039). 'Exterior and interior decorative polychrome painting as well as the buharhut caps (*pilumao*) and ceilings with the Hall of Mental Cultivation were renovated based on the old painting.'
 28. *Neiwufu zouxiaodang* [Record of Reimbursement by the Imperial Household Department]. No. 05-0110-002 (Compiled Vol. 60723). 'It was estimated that 77 *liang* and 9 *qian* of pink gold is needed to make the gold foil; 70 *liang* of pink gold was received from the Storage Office; 64 *liang*, 6 *qian*, 2 *fen*, and 4 *li* of pink gold was actually used; 5 *liang*, 3 *qian*, 7 *fen*, and 6 *li* of pink gold remains.' (*liang*, *qian*, *fen*, and *li* are all weight measurement units.)
 29. *Quanzong* 05, *Zou'an* Vol. 0871, No. 012, *Zou'an* 05-0871-012 (Compiled Vol. 64039)
 30. The outer side of the eave from the 7th to the 12th bay in the south of the eastern surrounding building.
 31. Passion fruit ointment was a classic tonic in the dietetic invigoration plan of Empress Dowager Cixi. It is effective in treating such conditions as neuralgia, insomnia, menstrual pain, and diarrhea. As a floral decorative pattern, passion fruit was used on utensils from quite early in the history of China; it was widely used in architectural decorations, decorative polychrome painting, and interior fixtures in the Ming and Qing dynasties. The passion fruit pattern prevailed during the reign of the Qianlong emperor, and it became an exclusive pattern of the imperial household; it was forbidden for ordinary citizens to use it.

References

- Li, Xieping. 2016. "Ming zhi Qing chu shiqi de Yangxindian [The Hall of Mental Cultivation from the Ming Dynasty to the early Qing Dynasty]." *Forbidden City* (12): 55.
- Liu, Dunzhen. 1935. "Qing huangcheng gongdian yashu tu niandai kao [A Research of the Dates of the Painting of Palaces and Government Offices in the Imperial City of the Qing]." *Zhongguo Yingzaoxueshe huikan* [Journal of the Society for the Study of Chinese Architecture] 6 (2): 106–113.
- Neiwufu zouxiaodang* [Record of Reimbursement by the Imperial Household Department]. No. 05-0106-034 (Compiled Vol. 60856).
- Neiwufu zouxiaodang* [Record of Reimbursement by the Imperial Household Department]. No. 05-0110-002 (Compiled Vol. 60723).
- Quanzong* 05, *Zou'an* Vol. 0871, No. 012, *Zou'an* 05-0871-012 (Compiled Vol. 64039).
- Yang, Hong. 2009. "Gugong jianfugong qu zhuzhouxian jianzhu youshi caihua baohu xiufu sheji [Design of the Conservational Restoration of the Decorative Polychrome Painting in the Buildings of the Main Axis of the Area of Jianfu Palace in the Forbidden City]." In *Proceeding of the Sixth Annual Academic Conference of China Association for Preservation Technology of Cultural Relics*.
- Yang, Hong. 2012.9–2015.12. "Mingdai guanshi caihua yanjiu—yi Zijincheng wei li [A Study of the Official

- Caihua under the Ming: The Forbidden City as an Example.]” Ministry of Culture Foundation No.12DG31.
- Yang, Hong, Lifang Ji. 2016. “Zijin Cheng Mingdai guanshi caihua niandai kaolüe—yi damu liang lin fang wei li [A Study of the Dates of the official caihua in the Forbidden City under the Ming Using the Girders, Purlins and Beams as Examples].” *Palace Museum Journal* (4): 95–106.
- Yang, Naiji. 1984. “Qianlong Jingchengtu kaolüe [A Research on the Painting of the Capital City under the Reign of the Qianlong Emperor].” *Palace Museum Journal* (3): 8–24.
- Zhang, Cheng. 1973. *Zhang Cheng riji* [Zhang Cheng’s Diary]. Translated by Chen Xiafei. Beijing: The Commercial Press.
- Zhu, Jiabin, ed. 2003. *Yangxindian zaobanchu shiliao jilan* [Edited Historical Records by the Zaobanchu of the Hall of Mental Cultivation]. Beijing: Forbidden City Press.