Reconstruction Study for Decorative Painting at the 'Can Chanh Dien', Main Palace of the Nguyen Dynasty

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Abstract

This study was carried out to clarify the painting techniques used in the reconstruction of columns at 'Can Chanh Dien' palace in Hue, the capital city of Thua Thien-Hue Province, which is located in the central part of the Socialist Republic of Vietnam, during the Nguyen Dynasty (1802-1945). Can Chanh Dien was restored several times and some change made during Nguyen Dynasty. In 1947, Can Chanh Dien was damaged by the Indochina War (1945-1954). The wooden structure and roofs were destroyed by fire, leaving only the platforms intact. It is one of the imperial palaces in the Complex of Hue Monuments (hereinafter referred to as the "Hue Monuments"), which was designated an UNESCO World Cultural Heritage sites in 1993.

In the Hue Monuments, various painting techniques are seen in architectural decoration, religious articles, and arts and crafts. These painting techniques include decorative lacquer painting stick with gold and silver leaf. The lacquer was produced in Vietnam. It is thought that China, Japan and France influenced the development of the painting technique in Vietnam. Discussions on painting techniques in the report of the Can Chanh Dien reconstruction project conducted by Professor Emeritus Nakagawa Study Group at Waseda University and Hue Monuments Conservation Center focused on columns in the 'Thai Hoa Dien' palace and suggested the need for comprehensively examining through comparison with painting patterns seen in the existing remains. Because the majority of architecture at Nguyen Dynasty Palace is wooden, the coating of the existing Hue Monuments has deteriorated significantly due to biological damage and the harsh natural environment that includes high-temperature and humidity, which has made it difficult to study the restoration of painting performed before recent times. A portion of the coating that can be recognized in the Hue Monuments is assumed to have been restored during and after the Nguyen Dynasty. However, there are few documents describing the specific details of the restoration of painting. Restoration year, methods and materials are unknown except in the case of recent work. The structure of the palaces was made up of columns and beams by timbers. Columns play a role both as structural member and as base for interior decoration. This study was also carried out to create basic research material on traditional wooden architecture painting techniques in the Hue Monuments through the clarification of design methods and spatial concepts observed on the columns

Background and Objectives

This study was carried out to clarify the painting techniques that were used during the Nguyen Dynasty (1802-1945) to reconstruct the columns at Can Chanh Dien palace in Hue, the capital city of Thua Thien-Hue Province, located in the central part of Vietnam. Built in 1804 in the central area on the main central axis of the imperial city, Can Chanh Dien was where successive emperors and officials conducted state affairs during the Nguyen Dynasty. It was damaged by the war in 1947. Its wooden structures and roofs were burnt down, leaving only the platform intact. It is one of the imperial palaces that compose the Complex of Hue Monuments, which was designated a UNESCO World Cultural Heritage site in 1993.

Among the Hue Monuments, various painting techniques are seen in architectural decorations, religious articles, arts, and crafts. These painting techniques include decorative lacquer paintings with gold and silver leaves. Lacquer is produced in Vietnam. Some of the decorative paintings that are found in the Hue Monuments are assumed to have been restored during and after the Nguyen Dynasty. However, few specific details are available ont the restoration of paintings other than recent restoration work.

Because the majority of the palace architecture of the Nguyen Dynasty is wooden, the coating of existing Hue Monuments has deteriorated significantly due to biological damage and the harsh natural environment characterized by high temperatures and humidity. This has made it difficult to study the restoration of paintings performed before recent times. The structure of the palaces was made of timber columns and beams. The columns functioned not only as a structural member, but also as an important element of interior decoration.

Discussions on painting techniques in the report of the Can Chanh Dien reconstruction project conducted by the study group led by Professor Emeritus Nakagawa at Waseda University (hereinafter referred to as "Waseda") and Hue Monuments Conservation Center (hereinafter referred to as "HMCC") focused on the columns in Thai Hoa Dien palace and suggested the need to comprehensively examine, through comparison, painting patterns seen in the existing remains.

Thai Hoa Dien was built in 1805. It stands in the Outer Court in the front center of the Forbidden City at the Hue Imperial Palace, after relocation and several restorations. HMCC is engaged in its preservation and restoration from the viewpoint of preserving historic monuments, and is working to preserve the old columns that display remnants of coating that was applied prior to the recent restoration. Under such circumstances, the approaches made by HMCC are of significant importance in the consideration of future restoration and reconstruction of historic monuments. The old columns provide reference material of the highest quality on the historical architecture of Thai Hoa Dien. Thus, HMCC's research has contributed a large part to the examination of painting techniques seen at Can Chanh Dien.

This study was carried out to clarify the painting techniques using in the reconstruction of columns at Can Chanh Dien. We conducted this study to obtain information on the decorative paintings on the columns by utilizing the result of studies carried out by Waseda and HMCC, as well as to analyze specimens of red coating obtained from old columns at Thai Hoa Dien.

Previous Studies

Reconstruction studies of the buildings of Can Chanh Dien include restorative examinations on platforms, planes, and structures based on literature, old photos, platform surveys, comparison with the measured values of similar cases such as those at Thai Hoa Dien, and the results of digital photogrammetry. These studies provide an overview of painting techniques with dates of restoration and various evidence thereof

Detailed descriptions of paints and expressions of the dragon motif in red, gold and silver have been found in the Han Nom documents. Specific descriptions of restoration and preservation suggest the possibility that the Nguyen Dynasty took initiative in the restoration, maintenance, and management of architectures and paintings.

Architectural and painting techniques, pattern types, forms, structures, and the layout of columns at Thai Hoa Dien have been analyzed based on data obtained from field surveys.

Hue painting patterns have been studied in depth in terms of their meaning, based on studies carried out and published during the French presence in Vietnam.

Discussions on painting techniques in the report of the Can Chanh Dien reconstruction project focus on columns but no examinations of pigments have been undertaken in previous studies.

Study Methods

We attempted to organize information on the decorative paintings at Can Chanh Dien, including repair dates, methods, materials, and patterns, by utilizing the results of previous studies based on literature, old photos, and platform ruins. Due to the loss of columns at Can Chanh Dien, we examined painting techniques by utilizing the results of experimental analysis conducted at Thai Hoa Dien. To examine the restoration of columns at Thai Hoa Dien, we surveyed all columns to classify patterns according to painting technique, type, and form, and to analyze the relationship between pattern and layout based on on-site surveys conducted by Waseda and HMCC. We also attempted to analyze specimens of red coating obtained from old column in Thai Hoa Dien. After a visual check of the condition of the coating layers, small samples were subjected to X-ray analysis to identify the inorganic compounds contained therein. This study also carried out to create basic research material on traditional painting techniques in the Hue Monuments through the clarification of design methods and spatial concepts observed on the columns.

Literature, Platform Surveys and Old Photos of Can Chanh Dien

Literature describing painting techniques at Can Chanh Dien includes mention of gold leaves, brass, oil, lacquer, lead, and tin in the column as ingredients that were used in the repair of Can Chanh Dien. This was possibly a description regarding painting technique. In addition, a description of the Son Song Thep Vang technique appeared in 1923.

Old photos of Can Chanh Dien before the reign of Emperor Thanh Thai (1889-1907) were taken from limited positions and are not clear. This meant that conditions for analysis were limited and prevented the identification of patterns on the columns in the building. During preparation for work on the platforms at Can Chanh Dien in 1991, evidence of black paint was found on the top of the foundations.In old photos taken after the reign of Emperor Khai Dinh (1916-1925), patterns could be observed. Photos taken 1925-

1947 are relatively clear, but details of patterns such as dragon heads are limited.

Restoration work on the platform of Dai Cung Mon gate, front gate and the platforms and central court of Can Chanh Dien conducted by HMCC revealed circles of black paint on the foundations of the main and center posts in the front and main buildings, which suggested the possibility that the old wooden structure had been painted with black lacquer.

Techniques, Layout, Patterns, Old Photos and Pigment Surveys at Thai Hoa Dien

Painting Techniques and Layout: Painting techniques employed at Thai Hoa Dien wereof three types. The Son Son Thep Vang technique employed red lacquer to draw patterns, and the patterns were decorated with metal leaves and powdered metal leaves and coated with transparent lacquer. The Son Song technique employed red lacquer, and the Son Den technique employed black lacquer. The Son Son Thep Vang technique was observed on old and repaired columns. The Son Song and Son Den techniques were observed on the outside wings on both the left and right sides, the Son Song technique was observed on the exterior of the building, on the front and back "Chai" wings, and the Son Song Thep Vang technique was observed on all other columns. The columns were placed relative to the mid compartment.

Pattern Types, Forms and Composition: Dragons, clouds, stars, flames, suns, and fountains were observed on old column. Pattern compositions were classified into two types, with and without dragons on the body of the columns. Different patterns were painted on different parts of the columns. Bands and waves were painted at the base. Fountains, carps, dragons (head/limb), flaming balls, and beads were painted at the base. Dragons (body/upper limb) and clouds were painted around the middle of the columns. Dragons (tail) were painted at the top. Cloud-covered moons were painted at the head of columns. Stars, flames and suns were painted scattered from the base to the head of the columns.

Examination of Dragon Forms and Composition: (1) Body winding around the column in a spiral toward the top, where it meets the cloud. (2) Large head, face drawn sideways with one or two horns, glaring round eye, a large snub nose, catfish-like bards, five strong claws on large limbs, classified into single-horned dragons with five claws and two-horned dragons with five claws. (3) Top of the head in irregular or camel shapes, scales and center part shaped like the Japanese character "王" or "壬". (4) Accordion-like body with back fins, surface covered with carp-like scales. (5) Two different types of tails, one with two long tails and the other with a spreading tail. (6) Three limb types, one catching a cloud, one on a cloud, and one catching a flaming ball. (7) Dragon holding a bead in its mouth, with the bead displaying a mesh or radiating pattern. (8) Dragon whose mouth is connected to a fountain or a cloud.

Among the above, (1) and (2) with two-horned dragons, (3) to (6) holding onto or riding on a cloud, and (8) with mouth connected to a fountain were observed on original columns. (1) to (8) were observed on repaired columns.

Direction of the Body and Tail of Dragons: When classifying the direction of the dragon's face and body winding toward the top and the direction of the tail winding left and right, the axis is relative to the central axis of the building in the mid compartment.

Eye Height: The average height from the column base to the center of the eye is 1584.8mm, and the height from the floor to the center of the eye at Thai Hoa Dien is higher than the eye height of a standing individual. This suggests that dragon heads were drawn on the columns at a height where the emperor could look down at them from his throne. The dragon may have also symbolized the power of the emperor.

The coating on the old columns at Thai Hoa Dien has suffered significant deterioration. There are some sections where the wooden base is exposed and shows signs of repair. Coatings are red, black, brownish-red, light brown, and white. Some sections were found to be coated with gold leaves. X-ray analysis and measurements of the red painting on the old column show that the red pigment was cinnabar, and that gold leaves were used. Minerals such as muscovite and kaolinite were detected, suggesting the possibility that they were ingredients used for decorative paintings employed at Thai Hoa Dien.

Old photos that show column patterns at Thai Hoa Dien were all taken with a focus on the mid-height of the columns. The points at which photos were taken were limited and the photos are not clear, so analysis was necessarily limited. However, dragon and clouds motifs were observed, and were classified into first and second phases judging by the content of the photos. A comparison of Thai Hoa Dien today with old photos at certain points reveals that in the second phase, areas covered with the sun motif and certain details differed; however a similarity of patterns was apparent.

One can imagine an imperial audience at Thai Hoa Dien, at which the emperor might have been dressed in a gorgeous yellow robe and seated on a golden throne placed on the four-tiered platform, with bureaucrats

wearing ceremonial robes standing in order on both the left and right sides of the mid compartment. At the front of the mid compartment, dragons painted in gold on 44 red columns probably shined in the dark. The solemnity of the scene symbolized the power of the emperor, and the 44 shining dragons looked like servants protecting the emperor. The rows of water-spewing dragons in the front building and main building are thought to have had the role of driving out evil spirits.

Discussion on Decorative Painting Techniques Employed on Columns at Can Chanh Dien

Old photos were taken from a limited position and are not clear, so they provide limited information about color. However, a comparison of old photos of the columns at Thai Hoa Dien with those of Can Chanh Dien taken after the reign of Emperor Khai Dinh shows that at Can Chanh Dien, dragons were painted on the bodies of columns, dragon heads were painted around the bases, and tails were painted around the top. This suggests that patterns, compositions, and structures were similar to those seen in old photos, old columns, and present-day Thai Hoa Dien. Therefore, it is thought that the patterns at Can Chanh Dien during and after the reign of Emperor Khai Dinh employed the Son Son Thep Vang technique and had characteristics similar to the patterns used at Thai Hoa Dien. An X-ray analysis of coating specimens revealed that the red pigment on the old columns at Thai Hoa Dien was cinnabar. Cinnabar must have been a rare and valuable pigment at the time. The result suggests the possibility that cinnabar was also used for the red pigment in Can Chanh Dien.

Patterns painted on the columns in the existing remains located on the central axis of the palace defined the central area relative to the central axis of the imperial city. The painting techniques, including the dragon motif and color layout, employed at Thai Hoa Dien seem to have played an important role in forming a spatial order in the architecture of the palace during the Nguyen Dynasty.

In our examination of architectural painting techniques used in the reconstruction of columns at Can Chan Dien, the analysis of literature, old photos and existing remains led to the conclusion that Can Chan Dien and Thai Hoa Dien had similar characteristics, but their status may have been little differentiated by different expressions of paintings.

We identified patterns similar to '王' or '壬' on the heads of dragons on some columns in Thai Hoa Dien. '王' means king. "壬" refers to the ninth rank among the ten signs of Chinese zodiac, water in the Chinese theory of five elements, and the direction north. The paintings on the columns at Thai Hoa Dien were red, gold and blackish brown, and the use of different colors in different locations indicated the relationships of spatial orders. In addition, it was also pointed out that Chinese geomancy, Yin-Yang and the five elements were associated with buildings in Hue, Vietnam. These facts suggest the role of decorative painting techniques used at Thai Hoa Dien, including its columns, in forming spatial order. The role of Can Chanh Dien was greater at the end of the Nguyen Dynasty in welcoming guests and for celebrations. Therefore, the status expressed by the paintings at Thai Hoa Dien is considered equal to or greater than that expressed by paintings at Can Chanh Dien. At Can Chanh Dien, the dragon motif was the main pattern painted on columns, and was drawn to wind around the column in a spiral toward the top in gold and red.

Conclusions

This study suggests that painting techniques, colors, and patterns were placed relative to the central axis of the building by positioning the central area on the central axis of the imperial city. The techniques applied to the decorative paintings on the columns were important elements that determined the interior layout of the buildings, and the relationship between column decorations and the functions and characteristics of imperial palace architecture was expressed by these decorative painting techniques.

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References

[1] This study is based on Saito (2001, 2013, 2015), and Saito and Nakagawa (2012a, 2012b, 2014). A portion of this paper was presented at annual meetings of Architectural Institute of Japan.

[1] Waseda and HMCC (2012), Lê (2006, 2009), Otaki (2009).

[1] Saito (2012a).

[1] Saito (2012b).

[1] Léopold (1919), Nguyễn (2007), Trần (2008).

[1] Heritage Waseda and HMCC (2012).

[1] X'Pert PRO produced by PANalytical was used for X-ray analysis. The target element was Cu, X-ray tube voltage was 45kV, X-ray tube current was 40mA, and a semiconductor detector (PIXeel) was employed at a scanning speed of 4 degrees/min, a scanning range of 5 – 65 degrees, and a divergence slit of 0.5deg. Scientific analysis was conducted in cooperation with the AGNE Gijutsu Center Inc.

[1] Quốc Sử Quán (1917) vol.44, p. 4.

[1] Phan (2007).

[1] Lê (2006, 2009).

[1] Lê (2009) analyzed shooting date, location and change in old photo of Can Chanh Dien.

[1] Saito (2013).

[1] Son Den (Middle region dialect), Son Then (Northern dialect).

[1] Measurement of 700 Vietnamese males by Nguyen Van Tuan,Ph.D. in 2005 showed an average height of 194.3cmThe average height and horizontal line of sight of people during the Nguyen Dynasty are thought to have been below that. [http:www.ykhoa.net/congtacvien/nguyenvantuan/nvt_chieucaonguoiviet.htm]

[1] Taniuchi (1943).

[1] Yagishita (1999).

Bibliography

Quốc Sử Quán Triê`u Nguyễn. *Đại Nam Nhất Thống Chí*, 1882,1909.

Quốc Sử Quán Triê`u Nguyễn. *Khâm Định Đại Nam Hội Điển Sự Lệ*, 1852, 1917.

The Oriental Institute Keio University, facsimile edition. *Đại Nam Thực Lục* , vol. 1-20. The Oriental Institute Keio University, Tokyo, 1961, 1962-1963,1968, 1971-1977,1979,1980-1981.

Durier, Albert. *Dekorative Kunst in Annam, vierundffzig Tafelin, mit Vorwort und Tafelverzeichnis; aufnahmen von Vo Truy und Le Duc Tram.* Stuttgart: Verlag Von Julius Hoffmann, 1926.

Heritage-Waseda and Hue Monuments Conservation Center. "Reconstruction Study of Can Chanh Dien." Tokyo: unpublished, 2012.

Cadière, Léopold Michel. *L'Art à Hué* (Art of Hue). B.A.V.H.1919, Nouvelle Edition autorisée par l'Association des Amis du Vieux Hué, Nhà Xuất Bản Văn Hóa, Huế, 1998.

Lê Vinh An. "Reconstruction Study on the Foundation of Can Chanh Palace." Master's thesis, Waseda University, Tokyo: unpublished, 2006.

Lê Vinh An, "Reconstruction Study on the Plan and Section of the Can Chanh Dien main palace of the Nguyen dynasty." Doctoral dissertation, Waseda University, Tokyo: unpublished, 2009.

Nguyễn Hữu Thông. *Mỹ Thuật Huế* (Art of Hue). Nhà Xuất Bản Thuận, Huế, 2007.

Otaki, Norihisa. "The dimensions reconstruction of the Can Chanh Palace by the Digital photogrammetry." Master's thesis, Waseda University, Tokyo: unpublished, 2009.

Phan Thuận An. *Kiến Trúc Cố Đô* Huế(Monuments of Hue). Nhà Xuất Bản, Đà Nẵng, 1994,

In lần thứ14, 2007.

Saito, Shiomi. "Lacquer painting technique for Imperial palace of Hue in the Nguyen Dynasty." Master's thesis, Waseda University, Tokyo: unpublished, 2001.

Saito, Shiomi. "Reconstruction study for Decorative Painting at the 'Can Chanh Dien', Main palace of the Nguyen dynasty." Doctoral dissertation, Waseda University, Tokyo: unpublished, 2013.

Saito, Shiomi and Takeshi Nakagawa. "Reconstruction Study on the Traditional Architectural Lacquer Painting Technique for the Imperial Palace of Hue, Vietnam as Seen through the Han Nom Documents in the Nguyen Dynasty." *Architectural Institute of Japan Collection of Theses on Architectural Planning* Vol. 77, No. 675 (2012): 1231-1240.

Saito, Shiomi and Takeshi Nakagawa. "Reconstruction of Traditional Lacquer Decoration Patterns on Columns at Thái Hòa Điện, the Imperial Palace at Hue, Vietnam." *Architectural Institute of Japan Collection of Theses on Architectural Planning* Vol. 77, No. 679 (2012): 2191-2200.

Saito, Shiomi and Takeshi Nakagawa. "Painting Technique Employed for Old Columns at Thái Hòa Điện: Studies on the Imperial Palace of Hue, Vietnam in the Nguyen Dynasty (Part 181)." *FY2014 Architectural Institute of Japan Kanto Branch Research Report Collection II* (2014): 461-464.

Saito, Shiomi. "Study of Painting Technique at the 'Thái Hoa' Palace, Imperial Palace of Hue, Vietnam." *Sekai Kenchikushironsyu* (Collected papers of Architectural history in the world), 215-225. Tokyo: Chuokoronbijyutusyupan, 2015.

Taniuchi, Jikitsu. *Annan no Urushi* (Lacquer of Vietnam). Tokyo: Kotsutembosha, 1943.

Trần Đức Anh Sơn. Huế-Triều Nguyễn Mộ Cái Nhìn (Hue-Studies of Nguyen dynasty), Nhà Xuất Bản Văn Hóa Thông Tin, Hà Nôi, 2008, pp.175-180.

Yagishita, Atsuhiko. "Analysis on the Planning of Disposition Studies on the Imperial Palace of Hue Vietnam in the Nguyen Dynasty." Master's thesis, Waseda University, Tokyo: unpublished, 1999.

Yamamoto, Tatsuro. "Royal Consecration, Bathing and the Dragon: Traditions in Southeast Asia." *Transactions of the Japan Academy* Vol. XLVIII (1994): Th 65-80.

Yu Zhuoyun, ed. *Shikinjyo kyuden*. Japanese version translated by Tan Tanaka and Yumiko Suefusa. Tokyo: Kodansha, 1984.