

A Comparison Between Buddhist Temple Architecture in The Tang Dynasty and In Japan

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Abstract. This paper discusses the similarities and differences between Tang Dynasty and Japanese Buddhist architecture by comparing the architectural features of the East Hall of Foguang Temple, a Buddhist temple in the Tang Dynasty in China, and the Golden Hall of Toshodaiji Temple, a Buddhist temple in the Nara period in Japan. First, the two buildings are very similar in structure. Both adopt the mortise and tenon structure and the beam, column, and bracket transmission system of Tang Dynasty architecture, reflecting the simple and majestic style of Tang Dynasty architecture. However, the two buildings are different in terms of roof slope, the location of doors and windows on the wall under the front eaves, and the combination of brackets. Secondly, there are also differences between Tang Dynasty and Japanese temples in terms of overall layout, architectural style, and material selection. Tang Dynasty temples pursued a mysterious realm and liked to be in famous mountains or deep in the suburbs of the city, while Japanese temples were usually built near the gathering of the people and were in spacious and flat areas. The Buddhist architectural style of the Tang Dynasty was complex and gorgeous, while Japanese architecture was simpler and plainer. Finally, this paper believes that Tang Dynasty Buddhist architecture had a profound impact on Japanese Buddhist architecture, but while absorbing the architectural style of the Tang Dynasty, Japan also formed its own unique architectural style.

Keywords: Tang Dynasty; Buddhist architecture; Japan; East Hall of Foguang Temple; Golden Hall of Toshodaiji Temple.

1. Introduction

Buddhism is not only widely discussed because of its history of friendly cultural exchanges between different countries, regions and ethnic groups, but also its values and life wisdom of emphasizing equality for all, encouraging people to be kind, be proactive, and overcome excessive greed still have an important position in modern society. Therefore, in today's world, exploring the significant contributions made by Buddhism in promoting the progress and development of civilization and creating extraordinary cultural achievements has become the focus of many scholars.

In the study of Buddhism and Japanese culture, existing research can be divided into the following aspects: First, combining the social and historical background of Japan, systematically examining the introduction and localization process of Buddhism in Japan and its profound impact on Japanese culture [1]. Second, discussing in detail the major sects that have an important position in Japanese Buddhism and traditional culture, as well as modern Japanese Buddhism [2]. Third, emphasizing the origin of Sino-Japanese Buddhism and introducing the figures and Buddhist systems that have made important contributions to the history of Sino-Japanese cultural exchanges [3]. Fourth, exploring the mutual influence and absorption between Japan's original Shintoism and Buddhism [4].

However, research on Buddhist architecture is still insufficient. In order to fill this research gap, this study attempts to conduct a more targeted comparative study by comparing Chinese Tang Dynasty Buddhist architecture with Japanese Buddhist architecture of the same period. It is worth mentioning that 87 years ago, famous architects Liang Sicheng, Lin Huiyin and others successfully found two Tang Dynasty wooden structures, Nanchan Temple and Foguang Temple, despite difficulties, thus breaking the conclusion of Japanese scholars that there were no wooden structures in China before and after the Tang Dynasty. After years of investigation, a total of four relatively well-preserved Tang Dynasty wooden structures have been discovered in China, namely Nanchan Temple in Wutai Mountain, Foguang Temple in Wutai Mountain, Guangrenwang Temple in

Ruicheng and Tiantai Temple in Pingshun, and they are all in Shanxi Province. These wooden structures with mortise and tenon structures and no need for nails show the unique artistic charm of the Tang Dynasty.

Liang Sicheng once said, "For the study of Chinese Tang Dynasty architecture, there is no better reference than the Golden Hall of Toshodaiji Temple in Japan." This article takes the Chinese Tang Dynasty Foguang Temple and the Japanese Nara Period Toshodaiji Temple as examples to explore the similarities and differences between the two in terms of architecture. It further elaborates on the characteristics of Tang Dynasty temple architecture and Japanese temple architecture of the same period, to provide useful inspiration for related research [5].

2. East Hall of Foguang Temple of the Tang Dynasty

Foguang Temple, located in Wutai County, Xinzhou City, Shanxi Province, was firstly built during the reign of Emperor Xiaowen of the Northern Wei Dynasty (471-499 AD) and rebuilt in 847 AD. The temple was built on the mountain, facing east and west. Its Tang Dynasty architecture, sculptures, murals and inscriptions are known as the "four wonders". The temple consists of three courtyards, distributed on a terraced base. At present, there are more than 120 buildings in the temple, including halls, towers and pavilions. Among them, the seven rooms of the East Hall are Tang Dynasty buildings, the seven rooms of the Wenshu Hall are Jin Dynasty buildings, and the rest are Ming and Qing Dynasty buildings. The temple has exquisite buildings and rich cultural relics. In addition to buildings such as the East Hall, the Heavenly King Hall, and the wing rooms, there are also stone towers, ancestral towers and other Tang Dynasty relics. In the fifth year of Huichang of Emperor Wuzong of the Tang Dynasty (845 AD), the Buddhist extermination incident occurred, Foguang Temple was destroyed, and only the ancestral tower was preserved. In 847 AD, Buddhism was revived and Foguang Temple was rebuilt. Since then, it has been repaired in the Song, Jin, Ming and Qing dynasties.

The East Hall of Foguang Temple was built in the 11th year of Tang Dazhong (857 AD). It records the structure and exterior decoration of Tang Dynasty wooden structures and provides important physical materials for future generations to understand and study Tang Dynasty architecture. Its roof form, bracket style, large cross hands, "side feet" and "rise", and the proportional relationship between the various parts of the beam frame are all characteristics of Tang Dynasty architecture, reflecting the construction techniques of Tang Dynasty architecture. The wooden structure system includes brackets, internal space, and roof frame. The brackets of the East Hall of Foguang Temple use high-level seven-layer brackets, which is the only example of Tang Dynasty wooden buildings in the world.

Although the highest level of brackets is recorded as eight-layer in the "Yingzao Fashi", no wooden buildings with eight-layer brackets have been found in the world, and the brackets of the East Hall of Foguang Temple have become the highest level of brackets in existence. The plane space of the East Hall of Foguang Temple is a golden porch, that is, it is enclosed by two circles of inner and outer columns. The altar is in the inner groove space enclosed by the inner circle of columns, while the outer circle of columns encloses a wide space for worshipping Buddha. The structure of the East Hall of Foguang Temple is a layer of columns and a layer of brackets. The brackets support the flat dark, and the roof frame is above the flat dark. The roof frame, brackets, and space interact with each other and together constitute the wooden structure system of the East Hall of Foguang Temple [6].

3. The Golden Hall of Toshodaiji Temple from the Nara Period in Japan

In 754 AD, at the invitation of Emperor Shomu of Japan and the request of the monks sent to Tang Dynasty, the eminent monk Jianzhen led his disciples to Japan and was warmly welcomed by the Japanese government and the public. In order to welcome Jianzhen, the emperor specially planned

to build a new temple, Toshodaiji Temple. The project started in 759 and was completed around 770 [7].

The Golden Hall of Toshodaiji Temple was built by Jianzhen's disciple Rubao in the late Nara period. It is one of the largest existing buildings from the Tenpyo period. Other buildings span different eras. The lecture hall and the ordination platform were built in the Tenpyo period; the drum tower, the auditorium, and the Buddha statues, instruments, and scriptures from the Kamakura period (1185-1333 AD) were built in the Kamakura period [7].

Structurally, the architectural units of Toshodaiji Temple adopt the mortise and tenon technology and the force transmission system of beams, columns, and brackets of traditional Chinese architecture, retaining the forms of Tang Dynasty temple doors, windows, and roofs, showcasing the simplicity and grand style of Tang Dynasty architecture.

The exterior of the Golden Hall of Toshodaiji Temple is similar to the East Hall of Foguang Temple in Mount Wutai, but it is slightly smaller in size, and the specific treatment of the architectural structure is slightly different. The Golden Hall is the main building. The main hall faces south, is seven bays wide and four bays deep, and has doors in the five bays on the front. The central bay is slightly wider. The entire building is located on a stone platform about 1 meter high. It adopts a single-eaved hip roof structure composed of a circle of eaves columns and a circle of inner columns, which is full of the architectural style of the prosperous Tang Dynasty. There is a colonnade under the front eaves of the Golden Hall. The columns are sturdy, and the column heads and brackets are simple and powerful. They are mainly painted red and white. The wooden components are red, and the walls are white. There are owl tails at both ends of the roof of the Golden Hall as decoration. The Golden Hall houses a golden Vairocana Buddha, with a height of 3.7 meters; the Thousand-armed Avalokitesvara statue is placed on its west side, with a height of 5.36 meters; and the Medicine Buddha statue is placed on the east side, with a height of 2.03 meters. The main Buddha Vairocana is a unique Nara-era statue made of lacquer. It is said to have been designed by Jianzhen's disciples Yijing or Shituo and sculpted by Japanese craftsmen. The Thousand-armed Avalokitesvara and Yakushi Nyorai statues on both sides are wood core lacquer statues. After the advent of Shodaiji Temple, its construction techniques gradually became the basis of traditional Japanese wooden structure construction techniques [8].

4. Similarities and Differences Between Buddhist Architecture in the Tang Dynasty and Japan

The Tang Dynasty was a glorious period in Chinese history. Its Buddhist architecture displayed unique artistic charm and profound cultural heritage. The temples of the Asuka and Nara periods all belonged to the six southern sects that were directly introduced from China. Therefore, the Buddhist temples standing in various places all exude a strong Chinese flavor. Japanese scholars believe that "the culture of the Nara period was almost all developed under the influence of Tang Dynasty culture." As for the temple architecture, its main buildings were arranged in rows in the center, and the left and right were evenly arranged. Even the wall building materials and decorations were all Chinese style. Of course, the Chinese style here mainly refers to the style of Chang'an in the Tang Dynasty [9].

4.1. Similarities and Differences Between the Foguang Temple and the Golden Hall of the Toshodaiji Temple

Although the main hall of Foguang Temple and the Golden Hall of Toshodaiji Temple were built nearly a hundred years apart, they are very similar in structure and style. Both halls are seven bays wide and four bays deep, with golden pillars surrounding the interior, single-eaved four-beamed roofs, moon beams on the column heads, and small square lattice ceilings on the beams. Although the two halls are slightly different in size, both the exterior and interior present a very similar image and style, which is the style of Tang Dynasty architecture. However, the two halls have different details [5].

First, the slopes of the roofs of the two halls are different. The slope of the roof of the Golden Hall of Toshodaiji Temple is much steeper than that of the main hall of Foguang Temple. However, this is not a fundamental difference, but the result of later reconstruction. In fact, the slopes on the restored map are basically the same. This relatively gentle slope is one of the main characteristics of Tang Dynasty architecture.

Secondly, the positions of the doors and windows on the walls under the front eaves of the two halls are also different. The doors and windows on the front wall of the main hall of Foguang Temple are located on the line of the front eave's columns, without a corridor; while the doors and windows of the Golden Hall of Toshodaiji are located on the line of the front golden columns, leaving a long corridor in front, making its front effect significantly different from that of the main hall of Foguang Temple. However, this difference does not affect their similar styles.

Furthermore, the bracket combinations of the two halls are also different. As far as the brackets themselves are concerned, the difference between the Golden Hall and the main hall of Foguang Temple is very large. Of course, they also have similarities: both are double copied (called "second-hand first" in Japanese) with lower ang (called "tail stick" in Japanese). Golden Hall has a single lower ang, while the main hall of Foguang Temple has double lower ang; the first copy jumps to the head to "steal the heart" and does not use a horizontal bracket (called "elbow wood" in Japanese). However, due to their different combination methods and detailed treatments, they present different effects.

There are also differences between China and Japan in the height-to-width ratio of "materials" (i.e., standard materials for brackets and trusses). After the middle of the Tang Dynasty in China, brackets were generally made with a height-to-width ratio of 3:2, while in Japan it was closer to 4:3.

On the vertical center line of the capital, the common practice in China after the middle of the Tang Dynasty was to use layers of overlapping beams above the first layer of gongs; Japan used a layer of gongs and a layer of beams alternately. In this respect, the practice of the Golden Hall is similar to that of the early Tang Dynasty in China.

The brackets of the main hall of Foguang Temple are already heavy brackets, while the buildings of Golden Hall and its previous and later periods only use single brackets. The difference in the treatment of the lower bracket is particularly obvious. The bracket mouth of Golden Hall is slightly curved upward, and its truncated surface is perpendicular to the ground, presenting a rectangular plane section on the front elevation; the bracket mouth of the main hall of Foguang Temple (as well as the Dunhuang murals of the late Tang Dynasty and the architectural examples after Liao and Song Dynasty) is not curved but cut obliquely from top to bottom into a "pizhu bracket", presenting a pointed shape. On the horizontal bracket above the bracket mouth, as seen in the main hall of Foguang Temple, there is a head intersecting with it, but there is no such thing in Golden Hall.

In addition, the method of filling the gaps is also different. The main hall of Foguang Temple uses a more complex filling gap, while the Golden Hall only uses short columns and a bucket to support the upper and lower beams. This is a manifestation of ancient style, which can no longer be seen in the main hall of Foguang Temple in the late Tang Dynasty.

Moreover, the treatment of the walls is also different. The outer wall of the main hall of Foguang Temple is a thick brick wall commonly used in the north, while the wall of the Golden Hall is relatively thin. Therefore, the columns under the eaves of the Golden Hall are completely exposed, while the columns of the main hall of Foguang Temple, except for the front, are hidden in the wall at the back and on both sides.

As for the layout of the inner hall, the interior of the Golden Hall seems a little cramped due to the corridor in front. However, this does not affect the five-room long altar inside the main hall of Foguang Temple, making the interior feel relatively lighter.

4.2. The Influence of Tang Dynasty Temple Architecture on Japanese Temples

In terms of architectural style, the temples of the Tang Dynasty were mainly built with towers as the center, and were divided into single-tower, double-tower, and no-tower styles, each with its own unique variations. Among them, the one-tower temples usually arranged the tower and the hall along

the north-south central axis, such as the Daxingshan Temple and Qinglong Temple in the Tang Dynasty. Another layout is to place the tower and the hall in different courtyards, such as the Daci'en Temple and the Dafusi Temple. In Japan, the one-tower temples have different layouts, such as the vertical style, the tower and the hall facing each other horizontally, and the three-hall tower-protecting style. The differences between the two countries in the two-tower style are also subtle [10].

The overall layout of Japanese Buddhist temples is similar to that of the Buddhist temples in Chang'an in the Tang Dynasty. They all use stone-wrapped rammed earth bases, stone column grids, and water-dispersing stones. They are symmetrically distributed along the central axis, and the surrounding buildings are connected by corridors, with a regular layout. This style reflects the exchange of ancient architectural culture between the two countries.

From the Nara period to the early Heian period, although the number and scale of courtyards of Buddhist temples in the Japanese capital (such as Daanji Temple, Todaiji Temple, etc.) were not as grand as those of Ximing Temple, Ci'en Temple, Zhangjing Temple, etc. in the Tang Dynasty, they showed a clear development trend in terms of horizontal and vertical expansion of layout, expansion of scale, and increase of functions, which was consistent with the development of the plane configuration of Buddhist temples in Chang'an City in the Tang Dynasty.

The Buddhist temples and ordination altars in Chang'an in the Tang Dynasty had an impact on Japanese Buddhist temples. In 755 ADS, after Jianzhen traveled to Japan, he established the Ordination Platform in Todaiji Temple, making it the base camp of Japanese Buddhism and establishing its leading position among Buddhist temples in the country. Japanese monks were qualified to become high monks only after receiving the ordination at the Todaiji Temple or the ordination platform of its subordinate temples.

In addition, the configuration of the bell tower, the palace at the base of the pagoda, the layout of the golden hall column network (reduced column structure or golden box bottom groove, etc.), and decorative building materials such as gargoyles and colored glaze tiles in the Buddhist temples in Nara and the early Heian period in Japan are basically similar to those of the Buddhist temples in Chang'an City in the Tang Dynasty. Moreover, the kiln sites discovered in the ruins of Japanese Buddhist temples were mainly used to burn bricks and tiles and other building materials required for Buddhist temple construction. This practice is the same as that of Ci'en Temple in Chang'an City in the Tang Dynasty, and there may be a heritage relationship between the two.

4.3. The Differences Between Tang Dynasty and Japanese Buddhist Architecture

The site selection styles of Chinese and Japanese temples are very different. Chinese temples pursue a mysterious realm and like to be located in famous mountains or deep in the forests on the outskirts of the city. They are influenced by the Buddhist philosophy of seclusion, harmony between man and nature, and "feng shui"; Japanese temples are usually built near places where people gather. They are located in spacious and flat areas and are accessible to the market. They embody the Zen Buddhist spirit of "the truth and the secular are consistent" and "the truth and the secular are inseparable". Many famous temples are located in cities and are closely related to people's daily lives.

Influenced by Confucian hierarchical thought, China pursued a courtyard layout with central axis symmetry. During the Asuka and Nara periods, Japanese temple and shrine architecture mostly imitated China and adopted an axis symmetrical layout, such as Horyuji Temple and Shitennoji Temple. However, Japan is an island country with many mountains and hills. Under such natural conditions, it is not appropriate to build strictly symmetrical temples. After the 13th century, most buildings turned to Japanese-style asymmetrical layout. Although Horyuji Temple initially imitated the Chinese layout, it gradually evolved into an asymmetrical layout, such as the horizontal arrangement of the five-story pagoda and the golden hall, which is rare in Chinese temples. Otowasan Kiyomizu Temple in the Heian period is a typical example. Its layout is flexible and natural. It is built on the mountain and integrated with the surrounding peaks. It not only adapts to the terrain but also reflects the national spirit [11].

From the architectural details, Japanese temples were initially built following the Tang Dynasty's raised-beam structure, but later incorporated Japan's unique "small house group" technology to raise the roof to cope with increased rainfall. For example, the roof slope of the Golden Hall of Toshodaiji Temple is steeper than that of the main hall of Foguang Temple, while the Tang Dynasty architecture has a gentle rise and fall and a light roof. In addition, brackets are a unique structure of Chinese architecture. Although Japan later adopted the bracket system, it did not fully master its development process, and therefore adopted a relatively simple "stealing heart" form [5].

In terms of material selection, transparent and light wooden structures are widely used in traditional Japanese temples and shrines. Nara Horyuji Temple is a representative of the Asuka style. It was built in 607 AD and covers an area of about 19 hectares. It is divided into two courtyards, the East and West Courtyard. The West Courtyard is the most complete and oldest existing wooden building complex in the world. The overall craftsmanship is superb, and it is a typical representative of traditional Japanese wooden temples and shrines.

In terms of architectural style, although traditional Japanese architecture draws on Chinese techniques, its style is simpler and plainer. Tang Dynasty Buddhist architecture is complex and gorgeous and focuses on decoration. Japanese architecture has rich textures, exquisite details, and a scale that is approachable. For example, although there are large-scale buildings (such as the five-story pagoda) in Kyoo Gokokuji Temple, the overall design is delicate and elegant. Its temple and shrine architecture controls the proportions from the whole to the details, showing a delicate, simple, exquisite and elegant charm.

Japanese temples focus on the sense of space. Traditional Japanese temple and shrine architecture shows the worship of gods and Buddhas by creating the mystery of space. Its charm lies in the beauty of space extension, light changes and natural blending. The building adopts a majestic bracket frame to support the gentle roof and the deep eaves, creating a dark and mysterious atmosphere. Traditional buildings do not have direct sunlight, and the light is soft and hazy. The layout is mostly perspective and whirlpool, and the line-of-sight flows and turns. The fluidity of space reflects the non-eternal thought, and aesthetics emphasizes the irregularity and disorder. Non-fixed walls are used for space connection, and the flow of indoor and outdoor is flexible, so that space and time blend and penetrate, creating an artistic conception that transcends objective nature. Focusing on the sense of scale, traditional Japanese temple and shrine architecture has exquisite details, simple scale, and overall refinement, giving it an elegant temperament. Architecture focuses on "degree", that is, modulus, to control proportion. "Room" and "branch cutting" are used to reflect the delicate and exquisite charm. The distance between columns is used as a measurement and proportion tool. Odd-numbered rooms are mostly used, such as the door of the building is reduced floor by floor. The value of "Room" varies from building to building, but it is usually kept constant.

5. Conclusion

The paper provides an overview of the similarities and differences between the East Hall of the Foguang Temple in Tang Dynasty China and the Golden Hall of the Toshodaiji Temple in Nara period Japan, focusing on its structure, roof, windows and doors, and brackets. It also mentions the profound influence of Tang dynasty architecture in Japan. However, due to the limitations of data acquisition difficulties, it has not delved into the historical, cultural, or technological reasons for these differences, or fully explored the influence of other factors on Japanese architectural style.

In the next step, it is necessary to use cross-disciplinary research methods, combining history, architecture, cultural anthropological, and architectural spatial perspectives to conduct a deeper investigation into Sino-Japanese Buddhist cultural exchanges and architectural history.

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