JURNAL TEKNOLOGI, Edisi No.1, Tahun XV, Maret 2001, 85-95. ISSN 0215-1685

Study on the Architecture of Zen Buddhist Temples Bracket Complexes (*kumimono*)

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Abstrak

Style baru yang masuk dari China, yang diberi nama Karayô (Chinese style) atau Zenshuyô (Zen style), mempunyai kedudukan yang sangat penting, tidak hanya pada masa Kamakura (1182~1333), akan tetapi, juga dalam keberhasilannya pada perkembangan arsitektur di Jepang pada waktu itu.

Sistim dari arsitektur bracket complex dari kuil-kuil sekte Zen ini, mempunyai keunikan tersendiri, dengan bentuk yang sangat sederhana tertata di bagian bawah atap. Skala dari bracket complex ini menjadi lebih kecil dan rumit dengan susunan yang berlipat-lipat ditata dalam sebuah space diletakkan di atas pilar-pilar.

Studi ini di mulai dengan mengumpulkan bahan-bahan yang didasarkan pada catatan-catatan sejarah, studi lapangan dan juga menggunakan beberapa referensi dari hasil penelitian. Kemudian dilanjutkan dengan pembahasan mengenai beberapa tipe arsitektur bracket complex dari kuil-kuil sekte Zen.

Arsitektur bracket complex dari Zen style ini mempunyai perbedaan bila dibandingkan dengan Japanese style (Wayô), baik dari susunan penataan maupun detailnya. Di samping itu, beberapa kuil dari sekte Zen telah menggunakan kedua style tersebut.

Abstract

The new Chinese style called Karayô had the most important position, not only in the Kamakura periode (1182-1333) but also in the succeeding development of Japanese architecture. At the beginning this style developed independently with the erection of mant temples of the Zen sect.

The bracketing complex system is quite unique, with plain brackets under the eaves of the lower roof and very complex brackets in the space between the upper and the lower roof. Bracket complexes became smaller in scale and more crowed by duplication of the bracket complexes within the space supported by pillars.

This study discuss about the various types of bracket complexes architecture of the Zen Buddhist temples.

1. Introduction

The historical backgrounds of Rinzai Zen sect temples as well as the large monasteries was concentrated inside the cities. The development of the temples was supported by the military government. At that time, the samurai who took over the political power from the court in Kyôto accepted Zen Buddhism [Okumura, 1987], in this case the Rinzai Zen sect. And as Myôan Esai[1] (1141-1215) received the patronage of the second Kamakura shogun[2], Minamoto no Yoriie (1182-1204) he was able establish temples in Kamakura and in Kyôto.

The architecture of Zen style (*Zenshuyô*) was introduced from China during the Sung dynasty (960-1279) and was copied exactly for the Zen monastery in Japan. The Zen sect generally used the Zen style to bring an architecture order to the main buildings inside the monastery. It is said that Japan has send carpenters to China. Tradition states that he sent master carpenters to Hangchow, the Southern Sung capital, to observe carpenters techniques and to study a particularly

impressive Zen temple there [14]. Outside the central complex from the main buildings we find limited beyond which Japanese Zen sect was not except the standard from China, inside the living quarters of the monks. Another said that, though the Zen style was imported from Sung China, it would be a mistake to assume that Japan's extant Zen structures are perfect replicas of Chinese prototypes [10]. So it must not be confused with the early *Karayô* (Chinese style) of the Chinese Six Dynasties, which was introduced to Japan in the seventh century along with the first Buddhist propaganda [Tsuda, 1985]. The heavy influence of Chinese architecture and the determination of the Japanese to stay abreast of continental stylistic change were continually tempered by indigenous development. An outstanding example of this tendency is the invention by native builders of the architecture, an innovation which gives a characteristic Japanese cast to the structures using it.

After the beginning of the medieval period with the introduction of the Sung styles, bracket complexes increased in intricacy. The number of bearing blocks increased and were set closer together. Bracket complexes were pilled up in there, four or more steps. Here again is illustrated the Japanese ability to absorbs method and technique so perfectly that their unbridled enthusiasm for something new can carry them even beyond the reasonable.

This study began through a collection of materials based on historical records, field research and also used as references the works of several studies, is written as follows. The bracket were no longer confined, as in the *Wayô* (Japanese style) to the top of the pillars, but were increased in number and introduced between the posts as well: certain carved beams decoration came to be used for the gable-ends, and also on the ends of beams, etc [5]. According to Kin'ya (1966), the bracket of the Zen style has more complicated form then that of Japanese in the respects that it has longitudinal two steps and that it set not only a column axes but also between them. Parent (1985), describes, in Zen style buildings, the bracket are piled up step by step until they are long enough to carry up to five bearing blocks. This is the type of architecture that became fixed in Japan and preserve until the Tokugawa regime, when it burst into such unexampled exuberance and luxury [4].

From these references, this study will discuss about the various types of bracket complexes architecture of Zen Buddhist temples which can be categorized into the new architecture style that developed from the Kamakura period (1182-1334).

2. The Architecture of Zen Style

At the beginning of the Kamakura period there were three different styles of architecture. One was the native style called *Wayô* (Japanese style) transmitted from the preceding period. The second, the Hindu or Indian style called *Tenjikuyô*, which was introduced from China in connection with the restoration work of the Tôdai-ji monastery in Nara. And the third one was the Chinese style called *Karayô* which was introduced with Zen Buddhism. The new Chinese style, had the most important position, not only in the Kamakura period but also in the succeeding development of Japanese architecture (Tsuda, 1985). At the beginning this style developed independently with the erection of many temples of the Zen sect. But later on, the Chinese style was modified by certain elements of indigenous style, which greatly prospered in the succeeding ages. The bracket of Zen style is more complicated in comparison to other bracketing as the Japanese style or the Indian style. And not long after the Indian and Zen styles of architecture were introduced, Japanese carpenters were already combining elements from them with those of earlier architecture to new, eclectic effect.

The architecture of Zen style brought a philosophical form which was placed in the Zen Buddhist monasteries, constitute integration between the humans, the buildings and image of the Buddha. The sophisticated architecture in Zen temple was seen to be religious in the arrangement of the buildings. At that time, all such

evidence proved that a determined effort was made by the organizers of Zen to bring over Chinese custom including architectural characteristic as complete and correct in form as possible. In case of Zen monastery, temples were quite different both in plan and detail from what had preceded them.

Thus, the central functioning buildings of the Zen Buddhist monastery reflect the repetition, consistency, persistence, and order of the monastery ritual. The ritual was brought from China, and also did almost all parts of the building's styles including such Chinese elements as swinging doors, windows, tiled floor, etc (Figure 1).

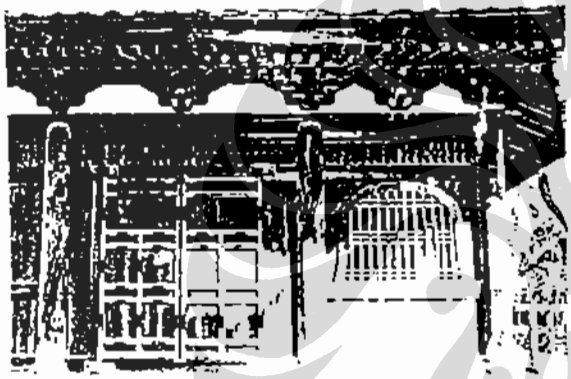

Figure 1 It has at the end of these plates and the doors are Chinese paneled style (*sankarado*) swinging on a pivot and not on hinges (*waraza*). The doors and window have arched heads (*katomado*) and the latter wooden latices.

3. The Bracketing Complex of the *shariden* of Engaku-ji Temple

This temple, once one of the great centers of Zen Buddhism, was established in 1282 by Hôjô Tokimune (1251-1284). The *shariden*[3] has a *kagami tenjô* (mirror ceiling) in which innumerable slats of wood radiate out the like umbrella spokes from a square of planks at the top. From the outside, the buildings, with the slim outer pillars and perky wood-single roof has a delicate, almost petite appearance (Figure 2). But inside, the high mirror ceiling and majestic pillars reaching up to it, lend an aura of strength and space unimaginable from the outside [2]. Here the relic of Buddha's tooth, brought over from China, is enshrined. The hall is five spans square, of double-story construction. It has a heavily thatched *irimoya* roof, the eaves of which are supported by a double row of ribs spreading out like the sticks of a fan (Tsuda, 1985). The exact date of its construction is not known, but it is believed that the building, which is an out standing example of the *Karayô*, was built in the last decade of the thirteenth century[4] (Munsterberg, 1988).

Figure 2 The *sariden* of Engaku-ji (The Traditional Arts of Japan, 1964).

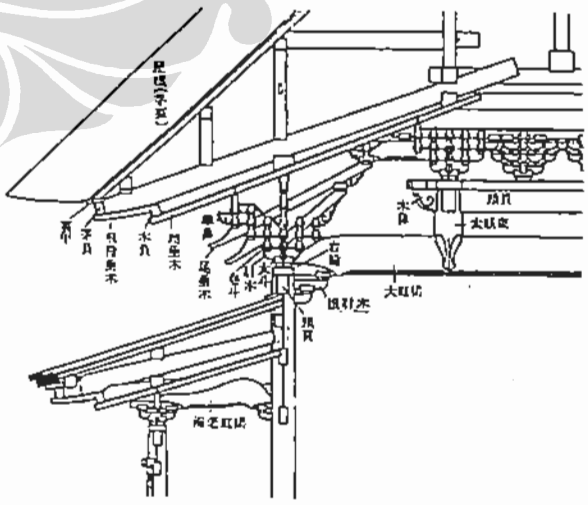

Figure 3 The bracket complex of the *shariden* of Engaku-ji temple (*Nihon no Kenchiku 3, Nihon Chusei II,* 1977).

The bracketing of the lower story is simple enough, but that of the upper is rather complex, with close bracketing on the plates that lie on the tops of the pillar. The composition of one bracket complex with the next bracket complex seems precisely equal in arrangement. Bracket complexes are set not only on the top of pillars, but are lined up in the bays between them, and called inter-columnar bracket complexes (*tsumegumi*). The bracket complex of the lower roof, which is simpler than the upper roof, is an expression both of Zen spiritual with strength and beauty to make accomplishment. The upper roof is an three-stepped tail rafters (*odaruki*), the shape of the bearing block (*masu*) and the bracket arms (*hijiki*) are refined in structure. At most of the Zen temples which use the Zen style architecture, the bracket complexes have the building upper roof that are more complicated than the lower roof (Figure 3). It is quite unique, with plain bracket under the eaves of the lower roof and very complex bracket in the space between the upper and lower roof (Munsterberg, 1988).

4. The Bracketing Complex of the pagoda of Anraku-ji temple

The finest of the Zen style bracket complexes, which are perfect, is the one of the pagoda of Anraku-ji temple in Nagano. The three storied pagoda exhibits a pure Zen style with its inter-columnar bracketing, fan rafters and earthen floors. With its octagonal shapes, roofs delicately uplifted at each corner, this building reveals that elegant proportions were achieved through stronger framing and joinery techniques. In many cases, the bracket complex of the Zen style gives the feeling of being very tightly packed. Tail rafters (*odaruki*) are also doubled. In case of the pagoda of Anraku-ji temple was different as mentioned above.

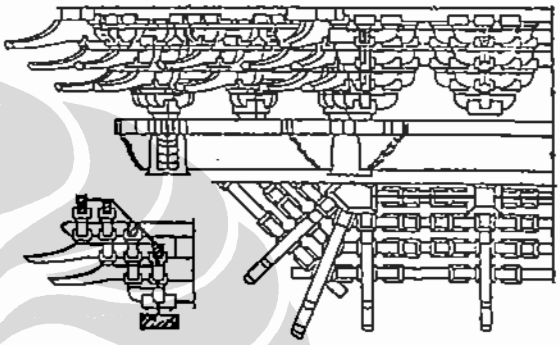

Figure 4 The three-stepped (*mitesaki*) bracket complex of the pagoda of Anraku-ji temple, Nagano (*Kokenchiku no Saibu Isshō*, 1972)

The octagonal joinery corner in every storied used the bracket complex with a three-stepped bracket arrangement, then the tail rafters are inserted on the three steps (Figure 4). If it is compared to the Chinese architecture bracket complex, the bracket complex similar to that in typical Chinese temples. Under the penthouse the column-

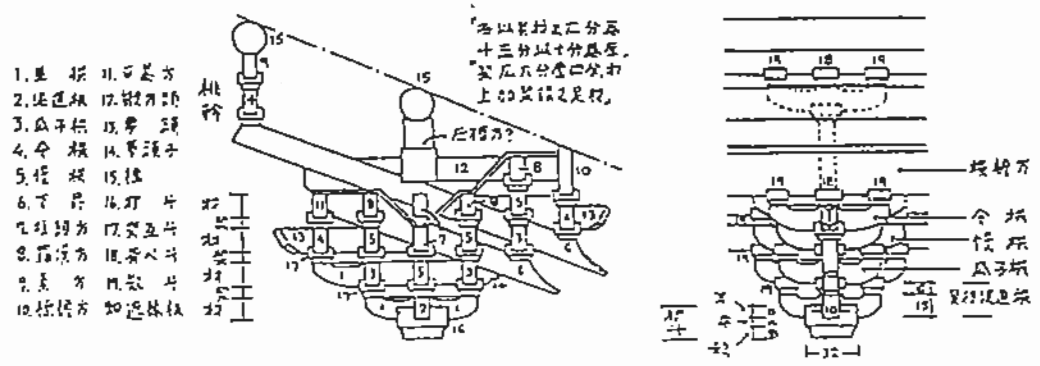

Figure 5 The *eizo yoshiki tokyo*. The Chinese bracket complex architecture. (The bracket of the Zen style, 1966).

head unit has two false *ang*, while under the main roof it has two tiers of *hua* arms and one false *ang*. The inter-columnar unit in the same situational has, respectively, one *hua* plus one true *ang*; and one *hua* plus two true *ang* [16]. According to Kin'ya (1966), it was known that the architectural style of bracket complex was named *eizo yoshiki* taken from the Chinese architecture style (Figure 5). Thus, if a three-stepped bracket arrangement is used, the tail rafters are inserted on two steps. Also if a two-stepped bracket arrangement is used, the tail rafters are inserted on one step. The tail rafters extend to the interior and are visible (Figures 6 and 7).

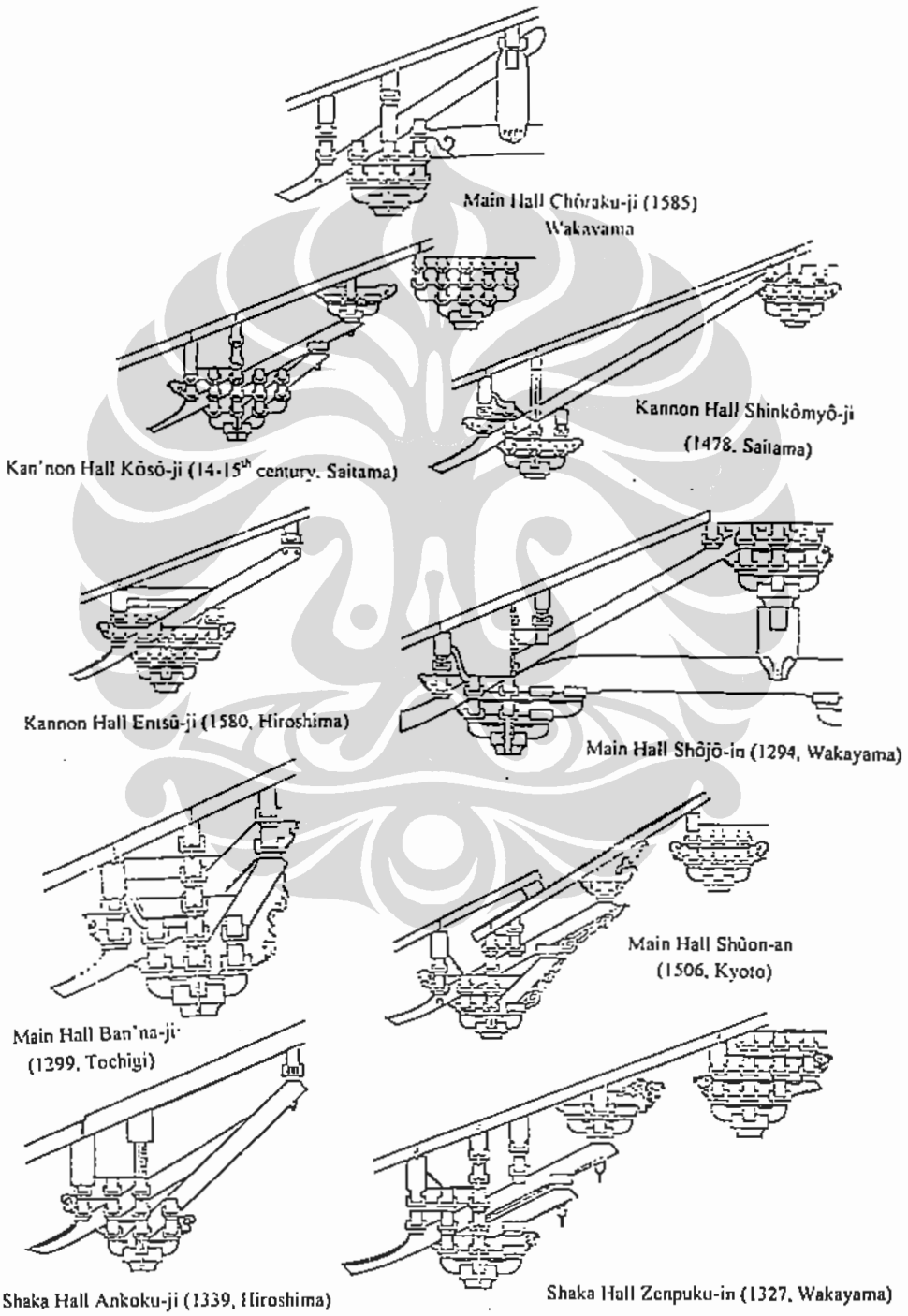

Figure 6 The two-stepped (*futatesaki*) bracket complex arrangement with one-tail rafter (*odaruki*) inserted. (The bracket of the Zen style, 1966).

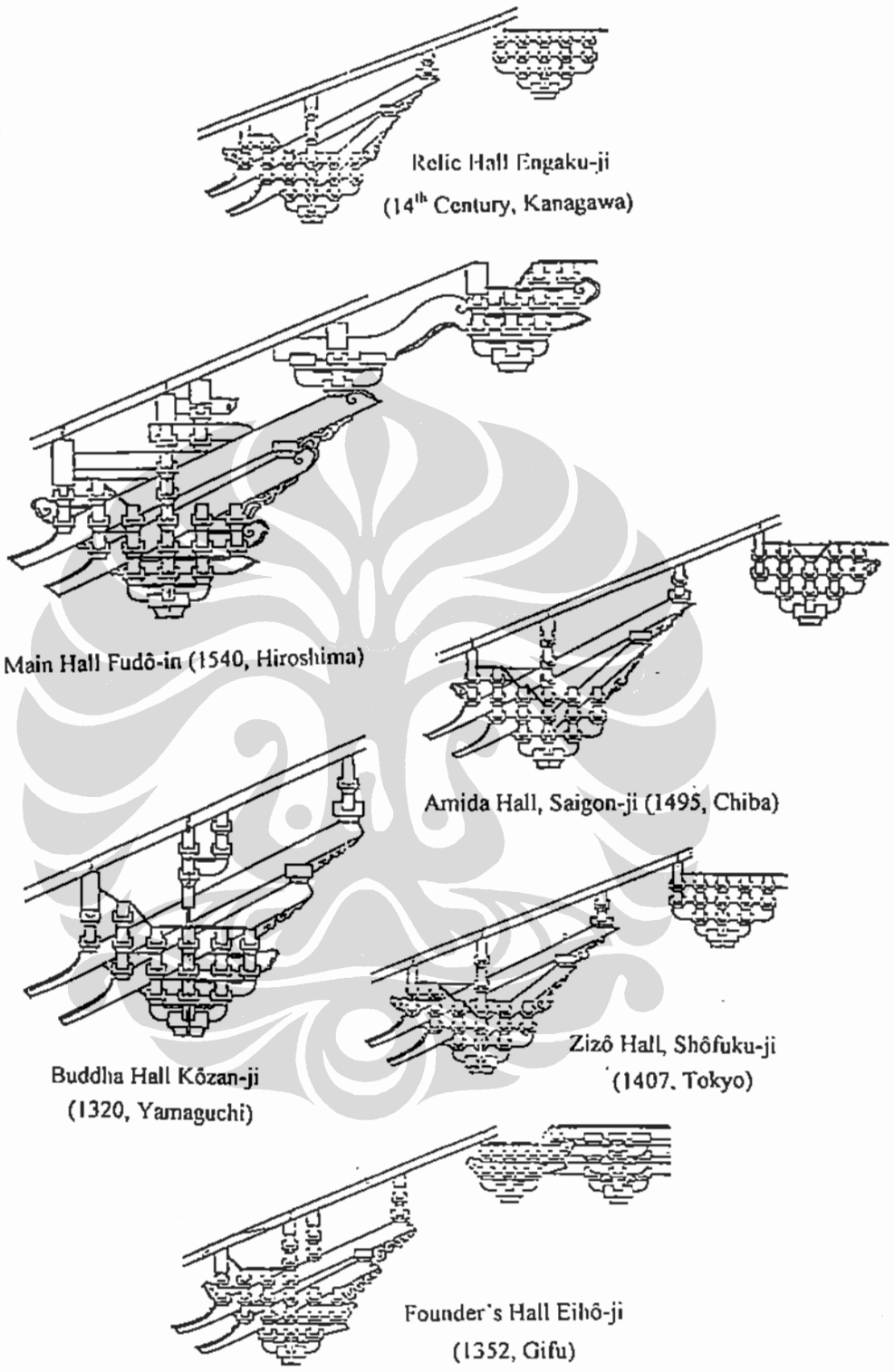

Figure 7 The three-stepped (*mitesaki*) bracket complex arrangement with one-tail rafter (*odaruki*) inserted. (The bracket of the Zen style, 1966).

5. The Bracketing Complex of the *Sanmon* of Tôfuku-ji temple

The *Sanmon* (Tower gate) of Tôfuku-ji was built in 1236. It is a two-storied gate of five spans and two spans both with three doorways. Both sides are provided with staircases (*sanrô*) leading to the upper story. This is the earliest *Sanmon* remaining of the Zen monasteries, and the general style of construction is a mixture of Zen style (*Zenshuyô* or *Karayô*) and Indian style. The Indian style bracket complex system is harmoniously combined with the Zen style (Figure 8). This only exception is an excellent example of contemporary architecture, which shows a mixture of traditional Japanese and continental traits, which have been built in pure Chinese style.

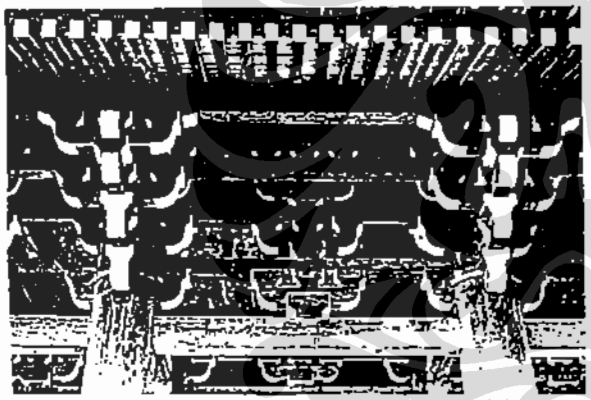

Figure 8 The bracket complex of the *Sanmon* of Tôfuku-ji monastery temple. The arms (*hijiki*) emerge from the building, each with a bearing block (*masu*) at its end to assist the further projection of the one above.

The bracket arms (*sasihijiki*) is purely Indian style, giving an expression so strength and is arranged orderly which are simply placed a top the post. The most peculiar feature of this style is its bracketing. The main pillars, in the first place, raise all the way to the underside of the roof. In case of the *Sanmon* of Tôfuku-ji temple, they give an experience for the Indian style to involve into the Zen monastery temple. The bracket complexes of the *Sanmon* and the *Butsuden* (Buddha hall) have the same characteristic style.

6. The Bracketing Complex of the *Sanmon* of Kennin-ji temple

The bracket complex of the Tower gate (*Sanmon*) of this temple has two styles that was influenced this gate. The style and the architecture form of this building are constituted of mixture of Japanese style and Zen style. It can be seen on the details of bracket complex, and between inter-columnar of the two pillars there can be found the frog-leg strut (*kaerumata*) carvings with flora. Generally, in Zen style within inter-columnar of the two pillars placed the close-bracketing, this arrangement called *tsumegumi* (Figure 9).

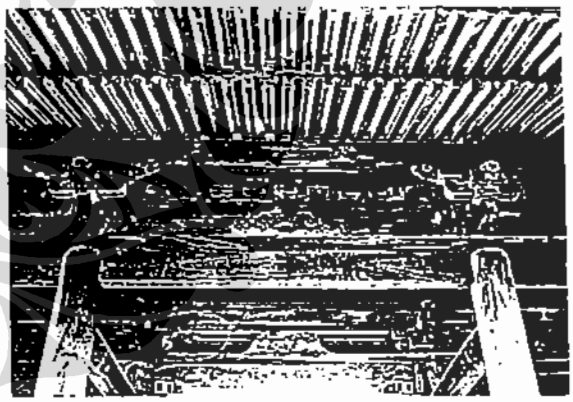

Figure 9 The bracketting complex of the *Sanmon* Kennin-ji monastery temple. The frog-leg strut (*kaerumata*) can be seen between intercolumnar two pillars.

The *kaerumata* is placed between below the *daiwa* (wall plate) and above is penetrating tie beam (*nuki*), which is part above from the tie beam placed small block in line. The bracket complex of the *Sanmon* is simplified if compared to the bracket of the Dharma hall (*Hattô*). The second-storied bracket complex is three-stepped

complex (*mitesaki*) which two-tail rafters are set on the bearing block to support the middle purlin, and the lower tail rafters have bearing block that support the upper tail rafters. The bracket complex of the *Sanmon* have the second such assembly projecting one-stepped complex (*hitotesaki*), and the second storied used two-stepped complex (*futatesaki*) a second step outward to support a second purlin. The second story of this gate between two columns, which is set up strut and block (*kentozuka*) is provided by inter-columnar support (*nakazonae*). This strut and block is set up below the *daiwa* and above the tie beam (*nuki*) and have the same arrangement with first story. The bracket complex of second story in the joinery corners had two-tail rafters. The basic composition of bracket complex is simple in arrangement compared to other *Sanmon* of Kyoto *gozan* and *rinka* monasteries temple[5]. These temple tower gates probably was developed in the Muromachi period (1395-1596).

7. The Bracketing Complex of the *Sanmon* of Nanzen-ji temple

The bracket complex of the *Sanmon* of Nanzen-ji temple used the Zen style and was set up under the eaves of the building. The *Sanmon* is a two-storied building and the bracket complex is placed in both storied. The structural elements produced a rich decorative effect. The second-storied bracket complex is a three-stepped complex (*mitesaki*). It has a two-tail rafters which are set on the bearing block to support the middle purlin, and the lower tail rafters has bearing block that supports the upper tail rafters. The bracket complex between the upper roof and lower roof of the Dharma hall (*Hattô*) in Nanzen-ji temple was different in style, and it was mixtured of the Japanese style and the Zen style. (Figure 10) It is the same compared to the bracket complex of Daitoku-ji and Myôshin-ji monastery temples are purely used the Zen style. For instance, the bracket complex of the *Sanmon* of Myôshin-ji is a simple one-stepped complex (*degumi* or *hitotesaki*) which it is compared to the second story of the bracket complex (Figures 11 and 12).

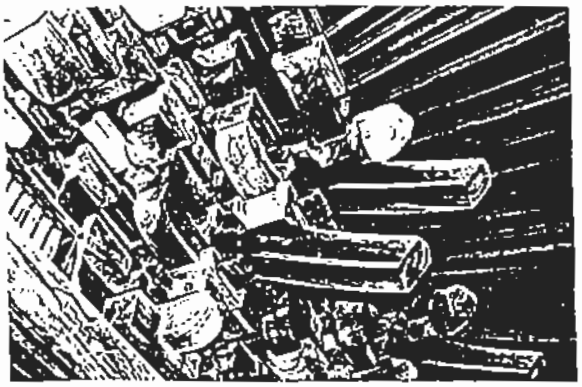

Figure 10 The bracketting complex details of the *Sanmon* of Nanzen-ji monastery temple.

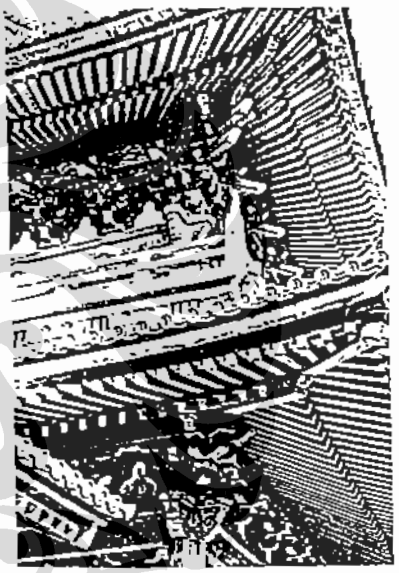

Figure 11 The bracketting complex of the *Sanmon* of Daitoku-ji monastery temple.

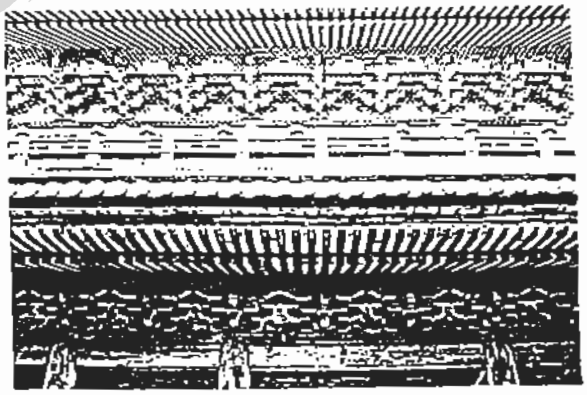

Figure 12 The bracketting complex of the *Sanmon* of Myôshin-ji monastery temple.

8. Discussion

The purpose of this study is discussing about the various types of bracket complexes architecture which used in the Zen Buddhist temples. Though the bracket complexes used in the Zen Buddhist temples are all different in configuration. The composition of the bracket system and the complicated construction is the most basic, and its general characteristic apply to the Zen and Japanese style as well.

In the Japanese style, the grandeur of the temple is in large part created by the deep eave overhang of the dignified roof, and the course of bracketing that supports it beneath. The bracket system is thus one of the keys to both the structure and the ornament of the temple, and it has undergone a long series of refinements in consequence. Additional support for the wall-purlin is provided by inter-columnar supports (*nakazonae*) placed in the interval between the bracket complexes that have post supporting them. In Zen style structure, entire bracket complexes are used in these inter-columnar spaces as well as above the post themselves, but in other styles simple member are used.

In Indian style, the bracket arms (*sashihijiki*) are set directly into the post, making them quite different from the conventional brackets which were simply placed atop the post. The posts are laterally stabilized by penetrating tie beams (*nuki*) which pierce the center of the posts. These beams provide stronger structural support than the common non-penetrating tie beams (*nageshi*), which are pinned to the posts' side. The post are strengthened back to front by more penetrating beams tied into the posts at the core of the structure. By and large, the brackets themselves face only front to back, and lateral arms are in general eschewed in favor of unbroken brackets (*tôrihijiki*) that provide necessary lateral support.

In Zen style, the rafters radiate from above this central squares ceiling, fanning out the entire structure, not simply at the corners as in the Indian style. At the periphery of the underside of the roof are two types of exposed rafters, the base rafters (*jidaruki*) and flying rafters (*hiendaruki*) beyond them. Together they form the visible lower roof and mask the hidden roof pitched at a steeper angle above them. A third type of rafter, the tail rafter (*odaruki*), is cantilevered into the brackets themselves. The rafters of the pent roof do not radiate, but are instead parallel, as in the Japanese style. Zen style bracket complexes, however, were also arranged between the pillar in line with those on top. The measurement of the bays, which depended upon the intervals between these bracket complexes, was those controlled. The incline of the lower tail rafters changes where they support the upper ones. The composition of the bracket system is an astonishing demonstration of structural dexterity a rich decorative effect.

In Japanese style, when the bracket complexes were simple, an open-beam ceiling was made in the core of the temple building (*hisashi*), but when the bracket complexes included tail rafters, the *hisashi* also had a ceiling to hide the bracket arrangement. In the Zen style, a ceiling was not installed even when bracket complexes included tail rafters. The exposed rafters and the manner in which they were joined to the purlin are clearly visible. Another method was to place a bearing block to the rear of the lower tail rafter to grip the upper one, again allowing the complicated construction to be seen. When simple bracket complexes were used throughout the main part, a smooth board dragon ceiling was applied.

The relationship among the arrangement of the rafters, the width of the bays and the bracket complexes followed the thickness of the rafters and the measurement of the interval between them. It will be recalled that, in general, the bracket complexes became relatively small in Zen style but the rafters could not be made proportionately thin because there was a correlation between their size and strength. In spite of the relationship, for the most part, building which exhibited a predilection toward the system of arranging six rafters over the length of a bracket arm with three bearing blocks, otherwise called 6-on-1 type.

In Japanese style architecture, bracket complexes are piled up, carrying long continuos bracket tie beams (*tôshihijiki*). The extension of the brackets to the sides is limited, and their length does not exceed that of the 3-on-1 type. The bracket and bearing block system was used to indicate and status of a building. When a building was required to communicate high status and importance outwardly, bracket systems of varying complexity were used where the wall purlins and transverse beams joined the pillar.

Space does not permit a detailed discussion of the individual shapes of brackets and bearing blocks in Zen style, which are distinguished by a subtle and elegant beauty. Perhaps of greater concern is the complexity of the whole structure.

9. Conclusion

The Zen style has different it is compared to Japanese style (*Wayô*) architecture, for instance the arrangement plan and the details of the bracketing complex, but many Zen sect independent temples have mixed both two styles of architecture. Generally, between the Zen style and the Japanese style can live together which the religious borrowed from China, but the architecture of the buildings is always combined in different style.

The architecture of the bracket complex in the Zen monastery temples in Kyoto is different in arrangement style of each temple. The main buildings of the Zen monasteries reveal the spirits about both Zen style and Japanese style that used in the buildings. However, the bracket complex has function as a part to complete structure of buildings and to make more attractive in detail.

The bracket complex of the Zen temples with the Zen style architecture has the buildings upper roof, which is more complicated than the lower roof. Thus, if a three-stepped bracket arrangement is used, the tail rafters (*odaruki*) are inserted on two steps. The tail rafters extend to the interior and are visible. The inner ends of the upper tail rafters are set on bearing blocks (*masu*) to support the middle purlin, and the lower tail rafters have bearing blocks that support the upper tail rafters. The incline of the lower tail rafters changes where they support the upper ones.

The implication can be conclude that the bracket complexes style is not limited to the particular characteristics observable in extant Zen sect buildings, but was remarkably heterogeneous. Diverse and idiosyncratic techniques were introduce, and through the typically Japanese process of selecting, assimilating and adapting aspects that appealed to them and eliminating those which were not to their taste, there develop a distinctive style.

Notes

(1) The founder of Rinzai sect of Zen Buddhism in Japan.

(2) Shogun is an abbreviation of *Seiyi tai shogun*, or Commander-in-Chief of the Armies that fight the Barbarians. This title was first conferred on Yoritomo of the Minamoto family, who destroyed the Tairas. The long succession of military regents of Japan, after this date, were called Shoguns, and of them, the Minamotos reigned in Kamakura, the Ashikagas in Kyoto, and the Tokugawas in Yedo (Tokio).

(3) These bone fragments from Buddha are called "*shari*" hence the name "*shariden*" ("temple of the *shari*"). Legend has it that the Buddha's bones were divided up, among eight temples in India and were later divided again into 80.000 pieces. Engaku-ji's "*shari*" was brought from China in a small crystal vessel made in the shape of a tower and given as a gift to the Shogun of the time, Minamoto Sanetomo (1192-1219) and in 1285 it was enshrined at the Engaku-ji, then one of the official temples of the Shogunate.

(4) Scholars do not know exactly when the *shariden* was built, but by comparing it to other Zen style buildings they guess it was erected around 1407.

(5) In the medieval age, Rinzai sect temples in Kyôto, such as Nanzen-ji, Tenryû-ji, Kennin-ji, Tôfuku-ji. And Manju-ji became the center of *gozan* group. They were called '*sorin*'. While Daitoku-ji and Myôshin-ji temples belonged to the '*rinka*' group of Rinzai sect temples.

Acknowledgment

The author would like to thank to Professor Hyuga Susumu from the Laboratory of Japanese History of Architecture, at the Department of Architecture, Faculty of Engineering and Design. Kyoto Institute of Technology for his valuable advice and material support throughout all the development of this study.

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