The chronology of the components of Mireuksa Buddhist Monastery of Baekje in Korea during the 6th-7th century

Kyung-Min Lho

International Heritage Education Center, Korea National University of Cultural Heritage, Buyeo, Republic of Korea

ABSTRACT
This study was carried out with the viewpoint that the areas of Mireuksa Buddhist Monastery were established over time rather than simultaneously. We hypothesized that the irregular features around the corridor are due to temporal differences in the composition of the monastery. We tested this hypothesis by reviewing data from the earliest excavation to the present. Then, we examined the relationship between the connections to determine the chronology of the components of Mireuksa Monastery. Based on this chronology, we compared the characteristics of each extension process with the features of other monasteries in East Asia while analyzing the external and internal architectural influences on Mireuksa Monastery. We determined that there is a high possibility that the irregularities observed emerged due to variations in age across the different monastery areas and revealed that Mireuksa Monastery was constructed over time. Specifically, the central courtyard was constructed first, followed by the lecture hall and three living quarters for monks, one pagoda and one Buddhist hall in the east and west courtyards, and finally, the corridors surrounding these structures.

1. Introduction

Mireuksa Buddhist Monastery 弥勒寺 was the largest monastic complex built by Baekje 百濟 (B.C.18–660),1 which was one of the Three Kingdoms of Korea. It is located in the city of Iksan, North Jeolla Province. Mireuk is the Korean term for Maitreya Bodhisattva 弥勒佛, i.e., the future Buddha, and to enshrine Maitreya, this monastery was built. Mireuksa Monastery represents the importance of Buddhist belief and the importance of Iksan city itself as a religious center during the reign of King Mu 武王 (600–641) (National Research Institute of Cultural Heritage 2010, 65–69). Mireuksa Monastery is significant because it is historical evidence of the development of the exchange of Buddhist architectural techniques among ancient East Asian kingdoms in China, Korea, and Japan.3

According to Samgukyusa 三國遺事,4 Mireuksa Monastery was built by King Mu at the request of his queen.5 Three parallel courtyards, three pagodas, i.e., 탑 and three Buddhist halls, i.e., kŭmdang 金堂, were built first, during the Sabi period (538–660) of Baekje and was continuously expanded from the Unified Silla Dynasty 統一新羅 (676–935) to the Joseon Dynasty 朝鮮 (1392–1910). The discussion regarding the arrangement of Mireuksa Monastery began with the assumption that it was laid out in the form of the Chinese character pin 池 and that each courtyard had the same building number and size (Jiro 1930, 615). Subsequently, many theories regarding the arrangement of the Monastery have emerged. Through an excavation survey conducted between 1980 and 1994 by the National Research Institute of Cultural Heritage (NRICH), the fundamental arrangement of the monastery during the Baekje period, namely, three parallel courtyards, was revealed (National Research Institute of Cultural Heritage 2018, 90–91).

Earlier studies asserted that the components of Mireuksa Monastery were established simultaneously based on the record of Mireuksa Monastery in Samgukyusasa. Because of this early assumption,

CONTACT Kyung-Min Lho mincorea20@nuch.ac.kr International Heritage Education Center, Korea National University of Cultural Heritage, Buyeo 33115, Republic of Korea

1The McCune-Reischauer system of Romanization is generally used throughout this study, with the exceptions of proper nouns, such as Mireuksa, Baekje, Buyeo, etc. and Korean names, such as Lho, Yoon, Chang, etc.

2The history of Baekje, which lasted for 678 years, can be divided into three periods based on the location of the capital. The first period was the Hanseong 漢城 period (B.C. 18–A.D. 475), when the capital was in Hanseong, known as Seoul today. The second period was the Woongjin 崇津 period (475–538), when the capital was in Woongjin, known as Gongju today. Finally, the last period was the Sabi 西海 period (538–660), when the capital was moved to Sabi, known as Buyeo today.

3In 2015, Iksan Mireuksa Monastery was listed as part of a UNESCO World Heritage Site, i.e., the Baekje Historic Areas, together with seven other historic areas located in Gongju, Buyeo and Iksan. The Baekje Historic Areas were designated because they were evidence of religious, cultural, architectural and artistic exchanges among the ancient East Asian Kingdoms in Korea, China and Japan (https://whc.unesco.org/en/list/14777).

4Samgukyusa, also known as Memorabilia of the Three Kingdoms, is a historical record of the Three Kingdoms of Korea (Goguryeo, Baekje, and Silla) compiled by Yi-yeon, a Goryeo monk, during the 7th year of King Chungnyeo(1281).

5... The wife asked the king to build a large monastery here for her, and the king accepted her wishes ... [三國遺事卷第二紀第二武王].

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most studies focused on determining when Mireuksa Monastery was built and analyzing the scale and proportions of its layout (Yoon and Chang 1988, 101–104). However, considering the structure and scale of the monastery, one perspective was that it would have been realistically difficult to construct the entire monastery all at once (Noh 1999, 5–9). In 2001, an excavation of the east side of the west pagoda confirmed that the middle courtyard was built before the west courtyard. Currently, many scholars agree that Mireuksa Monastery’s construction started with a general plan outlining the range of areas, but specific plans were decided on during periods of construction (Bae 2010, 326–327; Lee 2011, 129–130; Jo 2015, 30).

The architecture and art from the Baekje period are well known for their symmetrical and proportional perfection. Examples include the five-story stone pagoda of Jeongnimsa Monastery 定林寺, which is located in Buyeo of South Chungcheong Province, and the crown ornaments of King Muryeong 武陵金製冠飾, which was found in the Royal Tomb of King Muryeong (501–523) in Gongju of South Chungcheong Province. This attention to symmetry and proportionality is also apparent in palace planning and monastery arrangements such as Wanggung-ri Archaeological site 王宮里遺蹟, Gunsu-ri Monastery site 軍守里寺址 and Dongnam-ri Monastery site 東南里寺址. The style later spread to neighboring kingdoms, such as Silla (Korea) and Asuka (Japan), and became the basis of the golden age of Buddhist culture in East Asia (Korean Institute of Architectural History 1996, 149).

The corridors, i.e., hoe-lang 鬲廊, were the most important architectural features for separating the areas in the monastery plan, and the buildings themselves were used as boundaries. Additionally, the corridors played an important role by connecting the main buildings in Mireuksa Monastery. However, there were irregular connections between these corridors and other corridors and the main buildings in Mireuksa Monastery. Given the symmetrical and proportional perfection that characterized Baekje architecture, these connections are assumed to be evidence of the chronological differences among the sections of Mireuksa Monastery. This study was carried out with the viewpoint that the areas of Mireuksa Monastery were constructed over different time periods rather than simultaneously. It was hypothesized that the irregular connections around the corridors are due to temporal differences in the composition of the temple.

The study was conducted as follows. First, we tested the hypothesis by reviewing soil investigation data and photographs of early excavations from excavation reports of the NRICH and analyzed the contents of recent excavations. Then, we examined the chronology of the areas of the temple based on the temporal differences and approximate construction times by focusing on stamped roof tiles, historical records and records found in the sarira reliquary 舍利莊嚴具, which was a container used to hold sarira, i.e., the cremated remains of Buddha, records, and other treasures. This process allowed the construction date of each area to be estimated. Finally, based on this chronology, we compared the characteristics of each extension process with those of other monasteries in East Asia while analyzing the external and internal architectural influences on Mireuksa Monastery.

In this study, the temporal scope was set from the late 6th century to the mid-7th century during the Sabi period of Baekje Kingdom, when the three parallel courtyards were completed. The monastery areas were expanded, and the core area of the monastery was moved due to natural disasters, such as earthquakes and conflagrations, especially the earthquake that occurred in 719, according to Samguk sagi 三國史記. Mireuksa Monastery was in operation until the Joseon Dynasty. Unfortunately, due to the topography, which led to water incursions and drainage problems, the three parallel courtyards from the Sabi period were damaged and lost over time. In this study, we focused on the ruins discovered from the earliest excavation to the present, which can traced to Baekje Kingdom, and assumed that these ruins were arranged symmetrically and continuously, which is also the standard consensus regarding the irregular connections.

2. Analyzing the chronology of the corridors

Based on the assumption that Mireuksa Monastery was symmetrical and continuous, three sections exhibit irregular connections between the corridors and the buildings connected to the corridors (Figure 1).

The first irregular feature (A) is the connection between the south corridor of the middle courtyard and the south corridor of the east and west courtyards. Due to the unique features of ancient architecture in Korea, building groups are arranged continuously for the benefit of the wooden structures and the spatial composition in general. However, according to Mireuksa Monastery Ruins Excavation Investigation Report 1, the rubble stones, which were located beneath the foundation, i.e., gidan 基墊, show that the south corridor of the middle courtyard was placed 15 cm farther north than the south corridor of the east courtyard (National Research Institute of Cultural Heritage 1989, 98). In the autumn in September, an earthquake occurred at Mireuksa Monastery, Kümma-gun. (秋九月, 福金馬郡彌勒寺. 『三國史記』卷第八新羅本紀第八聖德王)

Samguk sagi, also known as the History of the Three Kingdoms, is the oldest chronicle of Korean history and was a historical record of the Three Kingdoms of Korea, namely, Guguryeo, Baekje, and Silla, published by government official Bu Shik Kim in 1145 during the reign of King Injong (1109–1146) of Goryeo. Based on this excavation, the end of the south corridor in the middle courtyard and the ends of the south corridor in the east and west courtyards are not arranged on the same line in most restoration plans presented thus far.
2.1. Middle courtyard and east and west courtyards

Two pieces of evidence confirm the chronology of the middle courtyard and the east and west courtyards. First, a survey was conducted between the west corridor of the middle courtyard and the west pagoda of the west courtyard in 2000 (Buyeo National Research Institute of Cultural Heritage (2001, 28–30) (Figure 2). The results indicate that the embankment of the west corridor of the middle courtyard was established first and that the east side of the west pagoda was embanked afterwards. Considering the embankment method, the corridor of the middle courtyard was planned at the beginning of the temple construction and created during an early stage. In summary, the corridor of the middle courtyard was constructed immediately above the embanked soil, and then, the west and east courtyards were constructed. Second, comparison of the corridor foundations in the middle, east, and west courtyards revealed that the size and shape of the original cornerstones, which have not been moved or relocated since the excavation, differ.\(^9\) As previously mentioned, no other remaining ruins that could help determine the connections between the south corridors in the middle, east, and west courtyards exist, except for the rubble stones of the foundation. Therefore, the hypothesis that the 15 cm difference between the southern corridors in the middle and east courtyards was caused by a difference in the timing of their construction is difficult to verify. However, because the middle courtyard

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\(^9\)The bottom part of the cornerstone in the middle courtyard is wider than the upper part. However, the cornerstone in the east courtyard is carved straight down from the upper part to the lower part (National Research Institute of Cultural Heritage 2018, 96–97).
2.2. North corridor of the east courtyard and the monks’ east living quarters

There are two essential pieces of evidence regarding the chronology of the construction of the north corridor of the east courtyard and the monks’ east living quarters. First, based on photographs of earlier excavations, there is a visual difference between the soil of the foundation of the north corridor of the east courtyard and that of the east living quarters. Additionally, the excavation drawings and photographs of earlier excavations show differences in the rubble stones between the two buildings. Furthermore, the soil from the north corridor of the east courtyard was inserted into the soil of the monks’ east living quarters (Figure 3). Second, most of the circular cornerstones of the east living quarters do not have a pedestal, the exception being one cornerstone located at the section connecting the east living quarters to the north corridor of the east courtyard (Figure 4). This cornerstone is important because it was among the original ruins identified during the early excavation period. The size of this cornerstone is similar to the size of the cornerstones in the corridors of the east courtyard. The circular cornerstone with the circular pedestal located in the monks’ east living quarters is 680 mm wide and 630 mm long, which is within the scope of the cornerstone in the east courtyard. Therefore, we assumed that this cornerstone was placed during the extension process to structurally link the new north corridor of the east courtyard to the existing east living quarters (Table 1).

2.3. Corridor between the lecture hall and the monks’ living quarters

During the initial excavation, the stairway of the lecture hall was found underneath the corridor (Figure 5). Thus, the excavators mentioned the possibility that the corridor was constructed after the lecture hall. Additionally, the irregular direction of the komagi 고막이, a part of the circular cornerstone that had the function of supporting the walls between the columns, supports the argument that these circular
Table 1. Comparison of the circular cornerstones of Mireuksa Monastery.

| Classification     | Cornerstone of the corridor in the middle courtyard | Cornerstone of the corridor in the east courtyard | Cornerstone of the monks’ east living quarters | Cornerstone of the lecture hall |
|--------------------|-----------------------------------------------------|--------------------------------------------------|-----------------------------------------------|--------------------------------|
| size range of the cornerstones | 620–740 mm | 550–720 mm | - | 680–760 mm |
| average width      | 685 mm     | 635 mm     | 680 mm | 705 mm |
| average length     | 680 mm     | 625 mm     | 630 mm | 715 mm |
| size range of the base plate | 420–490 mm | 385–450 mm | - | 430–550 mm |
| average width      | 445 mm     | 420 mm     | 420 mm | 460 mm |
| average length     | 440 mm     | 420 mm     | 420 mm | 465 mm |
| No. measurement    | Middle corridor-north | East corridor-east | Monks’ east living quarters #3 | Lecture hall-outer #3 |

Source: © NRICH

Figure 5. Location of the stairway underneath the corridor (1983). (Source: © NRICH; modified by author).

Figure 6. Irregular directions of the komagi of the circular cornerstones in the lecture hall (2016). (Source: © NRICH; modified by author).

Cornerstones did not exist during the early stage of the temple’s existence. Based on these facts, we investigated four circular cornerstones on the outer east side and three circular cornerstones on the outer west side of the lecture hall and found that these cornerstones had sizes and shapes similar to those of the cornerstones in the middle courtyard (Figure 6). Similar to those of the cornerstones in the middle courtyard, the lengths and widths of the corridor-type cornerstones in the lecture hall ranged from 680–760 mm. It is possible that the relatively large cornerstones were installed in the lecture hall during the extension of the building. This analysis indicates the possibility that these circular cornerstones were originally located in the middle courtyard, but during the temple expansion, they were moved and used to enlarge the lecture hall. Circular cornerstones with a circular pedestal were found between the lecture hall and middle courtyard. Because the sizes of these cornerstones are similar to those of the cornerstones in the middle courtyard and these cornerstones are in good condition, there is a high possibility that the circular cornerstones were moved from their original location, loaded near their new location and relocated. It can be assumed that when the cornerstones in the middle courtyard were relocated, the middle courtyard was defunct, suggesting that the circular cornerstones in the lecture hall and corridor could not have existed during the Baekje period.10

3. Chronology and construction times of the components of Mireuksa Monastery

To estimate the chronology of the whole plan of Mireuksa Temple, the chronology of the middle courtyard and lecture hall were estimated first. Although

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10Duk-Hyang Yun assumed that the middle courtyard was the first to be out of chronological order during the 18th year of King Seongdeok’s reign (719) when an earthquake occurred, which destroyed Mireuksa Monastery. Based on this theory, there is a possibility that the middle courtyard has been out of chronological order since the Unified Silla period, suggesting that the cornerstone in the middle courtyard was possibly used after the Unified Silla period. (Mahan and Baekje Culture Research Center 2003, 445–446).
a soil survey of the middle courtyard and lecture hall was conducted in 2017, the chronology of the two buildings was not determined (Buyeo National Research Institute of Cultural Heritage 2018, 45–46). However, a comprehensive review of the soil layer data from the north corridor of the middle courtyard indicates that the middle courtyard was built before the lecture hall (National Research Institute of Cultural Heritage 1989, 114). Based on this assumption, the chronology of the temple can be divided into three stages (Figure 7).

### 3.1. Middle courtyard

During the first stage, only the middle courtyard, comprising the pagoda, Buddhist hall, and corridors surrounding these buildings, existed. According to the Mireuksa Monastery Ruins Excavation Investigation Report I, stamped roof tiles were found, with the stamps indicating the year when the roof tiles were made according to the Chinese Zodiac. Among these roof tiles, 「chŏngsa 丁巳」 stamped roof tiles (assumed to be made in 597)\(^1\) were excavated near the east corridor of the middle courtyard, lecture hall, monks’ living quarters, etc (Figure 8). The 「chŏngsa 丁巳」 stamped roof tiles and their location lead us to assume that the middle courtyard was constructed before the accession of King Mu, which raises the following question: is it possible that only the middle courtyard existed before the whole layout of Mireuksa Temple was planned? According to the records of Wangheungsa Monastery 王興寺 in Samgyuyusa,\(^2\) in 600, “Wangheungsa Monastery” was also called as “Mireuksa Monastery”, leading to the argument that the records of “Wangheungsa Monastery” are actually the records of “Mireuksa Monastery”. Recently, Wangheungsa Monastery which is located in Buyeo was confirmed to be built in 577 according to the record of the sarira casket,\(^3\) which was excavated in 2007. This

| First stage | Second stage | Third stage |
|-------------|--------------|-------------|
| ~597        | 600–629      | 630–639     | 639–641     |

**Figure 7.** Chronology and construction times of the components of Mireuksa Monastery. (Drawing by author).

| type         | 「chŏngsa 丁巳」 | 「ülch’uk 乙丑」 | 「chŏnggae 丁亥」 | 「kich’uk 己丑」 |
|--------------|----------------|----------------|-----------------|----------------|
| image        | ![Image](image1.png) | ![Image](image2.png) | ![Image](image3.png) | ![Image](image4.png) |
| year         | 597            | 605            | 627             | 629            |
| locations    | east corridor of the middle courtyard, lecture hall, etc. | lecture hall, monks’ east and north living quarters, etc. | monks’ east living quarters, lecture hall, etc. | lecture hall, monks’ east living quarters, etc. |

**Figure 8.** Stamped roof tiles of Mireuksa Monastery. (Source: NRICH 1989; NRICH 1996).

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\(^1\)Da-Un Lee notes that 「chŏngsa 丁巳」 stamped roof tiles were produced in 597 rather than 657 because records in the literature show that 657 was a year characterized by economic and political chaos; thus, it was difficult to produce materials for Buddhist monasteries during this year (Lee 2007, 95).

\(^2\) King Mu succeeded to the throne and built a house on the site of his father’s construction, which was completed decades later, which is also known as Mireuksa Monastery (…武王継統, 父基子構歴數紀而畢成, 其寺亦名弥勒寺…『三國遺事』卷第三興法第三法王禁殺).

\(^3\) On 15 February 0577, the King of Baekje Chang built a monastery for the prince who died…(丁酉年二月十五日營濟王昌為亡王子…『王興寺舍利莊嚴具』).
finding also supports the theory that Mireuksa Monastery actually had a different name and was built before the reign of King Mu in 600 (Bae 2010, 326–327).

### 3.2. Three monks’ living quarters centered around the lecture hall

During the second stage, the lecture hall was constructed beyond the north corridor of the middle courtyard, and in the east, west, and north sides, the monks’ living quarters were constructed. In Samguksgagi during the second year of King Beop (600), Wangheungssa Temple was established, and 30 Buddhist monks were ordained. As previously mentioned, assuming that Wangheungssa Temple was actually Mireuksa Monastery, there were 30 Buddhist monks; thus, we can assume that a large living space and lecture space were needed for these monks. Because most 「Ŭch’ŭk乙丑」stamped roof tiles (605), 「Chŏnghoe丁亥」stamped roof tiles (627), and 「Kich’ŭk己亥」stamped roof tiles (629) were excavated at the lecture hall, monks’ east living quarters and north living quarters, it can be estimated that the lecture hall and monks’ living quarters were completed between 600 and 629, after King Mu took over his father’s legacy, as Samgukyusa mentions.

### 3.3. Completion of the three courtyards

The third stage is divided into two detailed steps. During the first step, on the same horizontal axis as the pagoda and Buddhist hall in the middle courtyard, a relatively small pagoda and Buddhist hall were constructed symmetrically in the east and west courtyards. In the west pagoda, records of the sarira reliquary from the year 639 were found in 2009,14 leading to the assumption that the Buddhist temple and pagoda had already been completed by approximately 639 (Figure 9). Subsequently, the corridors in the east and west courtyards were constructed at the same distance as that between the Buddhist hall and the east and west corridors in the middle courtyard. In the east and west courtyards, traces of equipment, which was presumably used to lift heavy materials to the upper story (Buyeo National Research Institute of Cultural Heritage 2001), were found. Because these traces were located underneath the foundation in the main gate of the east courtyard and near the west side of the east courtyard’s corridor, to build the east and west Buddhist halls and pagodas, a large space and substantial amount of time were required to transport the materials and assemble the wooden structures, resulting in a temporal separation between these initial detailed steps (Figure 10).

### 4. External and internal architectural influences on Mireuksa Monastery

Currently, the difficulties entailed in studying Mireuksa Monastery are as follows. First, the historical record on the construction in Samgukyusa is not consistent with the sarira ruins discovered in 2009 and year of the stamped roof tiles; thus, it is difficult to prove what actually happened; ironically, however, the historical record cannot be ignored in a restoration study of Mireuksa Monastery. Second, the study of the architectural and art history of Baekje during the Ungjin period (475–538) mainly focuses on the influence of the Southern Dynasties (420–589) of China in terms of scale, Buddhist statues, architectural techniques, etc. However, in recent research, the possibility of the

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14... Our Queen of Baekje was the daughter of Chwaw’yŏng (Baekje noble) Sataek Jeokdeok, who benevolence through ages, and with the karma she has received in this present life, she educated people, by being a great supporter of the Buddha’s teaching. She established the monastery using her wealth, and in 9 March 0639, she buried the sari. Hopefully, through the charity of ages and founding upon this act of benevolence, that the longevity of his Great Majesty should stand firm like the mountains and that his reign should be eternal with heaven and earth... (...我百濟王后佐平沙乇積德種善因於礦劫受勝報於今生摟育萬民積梁三載故能護捨財造立伽藍以己來年正月廿九日奉迎合利願使世世供養劫劫無盡用此善根仰資大王陛下 壽與岳齊望於萬載同久... (『盆山踏勒寺址西塔 聖舍利奉安記』)
usage of various scales was raised in the case of Mireuksa Monastery (Tahk 2011, 7–28). Regarding the architectural elements, the possibility of the influence of the Northern Dynasties (386–581) of China has been raised through the remains of the stone pagoda (Cho 2011, 237–238). Third, despite supplemental research investigating excavation sites that lack required information, there are limitations to proceeding with excavations of UNESCO-designated cultural heritage sites. This section focuses on the proportions of the layout of Mireuksa by examining similar cases both domestically and abroad for each step of Mireuksa Monastery’s expansion and the process of extension to understand the augmentation principle missing from the historical records or historical sites.

4.1. Original hall-pagoda layout

According to the Architectural History of Ancient China (中國古代建築史), from the Eastern Jin Dynasty (317–420) of China, one pagoda and hall became the main buildings of the monastery, and monks’ living quarters were located around this hall-pagoda layout, called the dangta 堂塔 layout in Chinese. The hall was a space for lectures on Buddhist scripture and a place for monks’ additional activities. In general, this building did not have Buddha statues, which were placed behind the pagoda, and sometimes functioned as the monks’ living spaces.15 (Figure 11). Similar to Yongningsi Monastery of Northern Wei (386–535) located in Luoyang, Henan Province, where remains have been found, this monastery exhibited the typical Buddhist monastery layout over time in ancient China (Figure 12) (Steinhardt 2019a, 94-95).

It is presumed that this hall-pagoda layout was introduced when a Buddhist monk from the west, Marananta arrived in Baekje from Eastern Jin to spread Buddhism.16 Subsequently, this became the typical monastery layout in Baekje. However, the monastery of Baekje built during the Sabi period does not have a simple layout consisting of a main door, pagoda, and Buddhist hall but instead includes subsidiary buildings, such as the lecture hall and monks’ living quarters, arranged around it, which cannot be simplified to a hall-pagoda layout. Nevertheless, the middle courtyard of Mireuksa Monastery has an architectural layout that resembles that in the historical records of Eastern Jin. The early stage of Mireuksa Monastery shows the

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15 Based on the historical records, Fu Xinian mentioned that Waguansi Monastery (瓦官寺, 364) of Eastern Jin had the hall-pagoda layout, and in 371, when Zhu Fatai (竺法汰) began to live in the monastery, the gate and other attached buildings were expanded around this layout. (Fu 2001, 168).

16 According to Sangukyusa and Sanguksgagi, Marananta of the Gandara region of northern India crossed into Baekje in September 384 through Eastern Jin, China. Additionally, Haedonggoseungjeon (海東高僧傳) says that he began to preach in the palace, which led to the revival of Buddhism. In 385, a monastery was built in the new town of Hansan and ten monks were nurtured.
a room in the back (Yungang Grottoes Research Academy, Shanxi Provincial Institute of Archeology, Datong Municipal Institute of Archaeology 2016, 540). The double-aisle corridor of the middle courtyard of Mireuksa Monastery therefore can also be divided into a corridor in front and a room behind. The dimensions of one unit of the corridor can be calculated as 7.16 m² (3.3 m wide × 2.17 m long) (Figure 13).

Table 2 shows a size comparison of certain living quarters in Northern Wei, Mireuksa Monastery, and Jeongnimsa Monastery and Jeseoks Monastery. If only one unit of the corridor is used as monks’ living quarters, the space is relatively small; however, if two units are combined into one space, i.e., left and right, if there is a corridor in front or in front and behind or if there is no corridor in front, the space can be calculated as 14.32 m², which can be fully utilized as a living space by monks. In support of this hypothesis, remains, such as komagi, prove that walls were located around the outer columns of the corridor, showing the possibility of other uses than as corridors.

Additionally, in the center of the north corridor of the middle courtyard, some columns were placed closer to each other than other columns, possibly forming a back gate, though it is difficult to determine. Whether the space is a part of a door or has a different function is unclear. If only the middle courtyard existed, a back gate would not have been needed. Based on the results of Chinese grotto cave studies, corridors were sometimes used as a space for worship and prayers (Dunhuang Research Institute 2001, 205). Therefore, the corridors of the middle courtyard are also highly likely to have been used for other purposes, such as prayer, daily activities or simply passage.

At that time, the lecture hall was also an essential element of the monastery layout in Baekje; thus, there is a possibility that a small lecture hall existed between the middle courtyard and the present lecture hall site. Asukadera Monastery, which was constructed in 588 during the Asuka period (592–710) in Asuka, Nara Prefecture, Japan, and Yamadadera Monastery, which was constructed in 685 during the Asuka period in Sakurai, Nara Prefecture, Japan, were constructed before and after Mireuksa Monastery, respectively, further illustrating Baekje’s influence on the architecture and site layout. The present lecture hall is located too far from the middle courtyard in terms of the proportions of the monastery layout, and it is assumed that the architectural elements, such as the cornerstones, were constructed later than those in the middle courtyard. However, it is difficult to prove the existence

Figure 11. Spatial diagram of the hall-pagoda layout. (Source: Fu 2001).

possibility that it began as a small, simple temple. If so, the question of how the basic temple space replaced the monks’ living quarters and lecture halls, which were common at other monasteries at the time, emerges.

We attempted to find the answer in the term nangmu 庇廬17 mentioned in Samgukyusa. Nangmu is a Korean term that combines the Chinese characters lang 廊, which means corridor, and wu 廬, which means room. Literally, nangmu can be interpreted as a space where a corridor and room are combined. Starting from this perspective, by comparing the size of the units of monks’ living quarters across different ancient monasteries, we examined the possibility that the corridor might have been used as living quarters during the initial stage when only the middle courtyard existed.

The living quarters of a Buddhist monastery in Northern Wei (386–535), which was found in the western zone above the Yungang Grotto in Datong, Shanxi Province, in 2010, had a corridor in the front and

17... It was said that the three time sermon of Maitreya became the Buddhist image of the monastery, and in each space a Buddhist hall, a pagoda, and nangmu [corridor and monks’ living quarters] was built, and the monastery was called Mireuksa Monastery (…乃法像彌勒三殿塔廬廬各三所創之, 前白塔鑾勒寺…(『三國遺事』卷第二 紀年第二 武王)).
of an initial lecture hall because no remains supporting this thesis have been found. Therefore, we focused on the possibility that the lecture hall did not exist during the initial stage of Mireuksa Monastery. The earliest stamped roof tile found was from 597, three years before King Beop (599–600) established Wangheungsas Monastery, which we are assuming is a different name for Mireuksa Monastery during the second year of his reign in 600. Due to the small time difference, circumstantially, before the lecture hall was constructed, the expansion of Mireuksa Monastery was decided, and the lecture hall was established in its present position.

4.2. External and internal architectural influence on the placement of Mireuksa Monastery

During the second stage, which shows the strong influence of the Southern and Northern Dynasties of China, the monks’ living quarters at Mireuksa Monastery were expanded as the number of monks increased, and for
Table 2. Comparing the area of the monks’ living quarters in Northern Wei and Baekje.

| Monastery sites of Northern Wei in Datong, China (monks’ north living quarters) | Jeongnimsa Monastery site of Baekje in Buyeo, Korea (monks’ east living quarters) | Jeseoksa Monastery site of Baekje in Iksan, Korea (monks’ east living quarters) | Mireuksa Monastery site of Baekje in Iksan, Korea (monks’ east living quarters) |
|---|---|---|---|
| 3.35 m | 6.0 m | 5.4 m | 0.8 m |
| 11.39 m² | 36.0 m² | 29.16 m² | 36.0 m² |

No scale.

Based on remains and outcomes of restoration studies. Source: Yungang Grottoes Research Academy, Shanxi Provincial Institute of Archeology, Datong Municipal Institute of Archaeology 2016; Buyeo National Research Institute of Cultural Heritage 2011, 2013; © NRICH; modified by author

their education and lectures, a lecture hall was built in the center of the living area of the monastery.

By studying historical records from China,18 the Royal Tomb of King Muruyeong,19 and Buddha statues, researchers have revealed an exchange relationship between Liang (502–557) of the Southern Dynasties and Baekje during the Ungjin period (475 ~ 538). Therefore, many studies have attempted to interpret architectural techniques and measurement scales as being influenced by the Southern Dynasties. In 2009, when the sarira reliquary was found during the dismantling of the west stone pagoda, the size of the opening, where the sarira reliquary was enshrined, was 25 cm wide and 25 cm long. These dimensions are assumed to be based on the measurement scale of the Southern Dynasties, leading scholars to believe that the construction of the Mireuksa Monastery was influenced by that of the Southern Dynasties. Additionally, Mireuksa Monastery has one of the main characteristics of the Southern Dynasties, i.e., the arrangement of the middle courtyard.

In Architectural History of Ancient China, Fu Xinian explains that in the Southern Dynasties, the courtyard of the main buildings were called the middle courtyards 中院, and the other courtyards were called branch courtyards 別院. These branch courtyards served residential functions, Buddhist hall functions, pagoda functions, etc. Many monasteries of the Southern Dynasties were expansions based on earlier monasteries from dynasties such as Eastern Wu and Eastern Jin. However, a typical feature of Southern Dynasties monasteries is their free placement due to the limitation of terrain conditions rather than the arrangement of the buildings on a central axis. In contrast, the Northern Dynasties, respecting earlier traditions, placed the pagoda in front and the Buddhist hall behind on the same central axis, and the pagoda was still the central building in the monasteries (Fu 2001, 172–173).

Unfortunately, no traces of Southern Dynasties temple sites have been found to date. However, examination of the remains of other temples of ancient China suggests that the arrangement of Mireuksa Monastery is more similar to that of Northern Dynasties monasteries. In the case of the ruins of the Siyuan Monastery site located in Datong, Shanxi Province, which was a temple of Northern Wei that faced south, it can be observed that the main gate, pagoda, Buddhist hall and monks’ living quarters were located on the same central axis (Figure 14) (The Institute of Archaeology Chinese Academy of Social Sciences 2018, 478–479). In addition, the Buddhist monastery site of Northern Wei located above the Yungang Grotto Cave also faced south, and behind the pagoda, monks’ living quarters were arranged on the east, west and north sides in a layout similar to the layout of the three living quarters of Mireuksa Monastery (Figure 15) (Yungang Grottoes Research Academy, Shanxi Provincial Institute of Archeology, Datong Municipal Institute of Archaeology 2016, 537).

Similarities in architectural structure and techniques between Mireuksa Monastery and Northern Dynasties monasteries are also apparent. The structures of the pedestals and tall cornerstones in the Buddhist halls and the stone pagoda in Mireuksa Monastery are similar to the foundation structures of the wooden pagoda sites of Yongningsi Monastery and the temple site of Zhaojiajucheng in Yecheng, both from the Northern Dynasties (Cho 2011, 133–135). This double

18According to Liangshu 梁書, Baekje sent ambassadors for tribute to Liang of the Southern Dynasties in 534 and 541, requesting Buddhist scriptures, craftsmen and painters, and Liang dispatched them to Baekje. (中大通六年大同七年累遣使獻方物並請涅槃經義毛詩博士並工匠畫師等數並詔之, 『梁書』卷五十四 列傳第四十八諸夷 百濟傳).
19The Tomb of King Muruyeong, i.e., Muryongwangnûng 武王陵, also known as Tomb No.7 of Songan-ri, is an ancient tomb of King Muruyeong and his queen of Baekje, located in Gongju in South Chengcheong Province, South Korea (Kim and Pearson 1977, 302–313).
cornerstone structure has been found only in Buddhist monasteries of Baekje in Iksan, such as the Wanggung-ri Archaeological site and Jeseokska Monastery (帝釋寺 site, where the architectural structure and techniques of the Northern Dynasties are assumed to have been applied during a specific period (Figure 16).

According to the Architectural History of Ancient China, based on the sculptures of grotto caves, the architectural structure of Northern Dynasties can be classified into five types.20 The third type is a clay-wood mixed structure. Wooden columns and brackets surround the outer layer of the building. The central structure is made of mud and supports the wooden structure externally. This structure is similar to that of the monks’ living quarters of Mireuksa Monastery, where columns made of timber standing outside and an earthen wall supporting this wooden frame inside (Figure 17). Supporting the architectural influence of the Northern Dynasties, according to Samguk sagi, there were exchanges with the Northern Dynasties during the reign of the 27th king of Baekje, King Wideok 威德王 (525–598), and according to the historical records of ancient China, King Wideok was proclaimed king by Northern Qi (550–577) of the Northern Dynasties and Sui Dynasty (581–618), which explains the strong relationship between them.21 The architectural influence eventually appeared later during the reign of King Beop (599–600) and King Mu (600–641). Nevertheless, the positioning of the main building on a vertical axis with three-sided monks’ living quarters arranged around the building cannot be considered to have been influenced solely by China. Considering the

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20Fu Xinian classified the architectural structure into five types: (I) four load-bearing walls with wooden truss; (II) eaves in front, load bearing walls behind, wooden truss; (III) timber frame of the outer corridor, load-bearing wall, wooden truss; (IV) all timber frame, load-bearing wooden bracket. (Fu 2001, 288).

21According to Samguk sagi, there are records of sending ambassadors for tribute in the 19th year of King Wideok’s reign (571) to Northern Qi, and the 24th year (577) and 25th year (578) to Northern Zhou of Northern Dynasties (China). According to North History(『北史』) Volume 94, King Wideok was proclaimed king by Northern Qi, and the late Sui Dynasty also proclaimed King Wideok. King Mu and King Euija were proclaimed kings by the Tang Dynasty. (Noh 2010, 37–66).
characteristics of the monastery layout during the Sabi period, in temples of the early and mid-6th century, such as the Gonsu-ri Monastery site and Dongnam-ni Monastery site both located in Buyeo, ritual and ceremonial spaces were highly important. After the middle and late 6th century, in monasteries such as those at the Neungsan-ri Monastery site and Wangheungsa Monastery, both located in Buyeo, it can be observed that the monks’ living space gradually expanded. In the late 6th century, when Mireuksa Monastery was founded, in monasteries, such as Jeongrimsa Monastery, located in Buyeo and Jeseoksa Monastery, located in Iksan, the placement of the three-sided monks’ living quarters around the lecture hall was a typical layout. The Kawaharadera Monastery of the Asuka period, which is a typical ancient monastery in Japan, was also built during the late 6th century (Jung 2010, 148–150). This monastery also has a spatial structure involving monks’ living quarters arranged around a lecture hall, supporting the occurrence of cultural transfer from Baekje to Asuka. These characteristics, such as a lecture hall located on the outskirts of a corridor and a structural connection between the monks’ living quarters and corridor, are similar between the two monasteries (Figure 18).

Thus, the origin of the layout can be found in the Northern and Southern Dynasties of China, but a direct influence can be found in the monastery layout of Baekje. Further evidence supporting this conjecture is the similar proportional distribution of space centered on the lecture hall in the monasteries of Baekje and Asuka. As the number of monks increased, as mentioned above, the space of the lecture hall became more important as scriptural preaching became more important. Considering the overall level of Mireuksa Monastery, the foundation level of the lecture hall was higher than that of the other major buildings, and the lecture hall was also the largest of all the major buildings. The whole width of Mireuksa Monastery and the lecture hall has a 3:4:3 proportional relationship. Similarly, other Baekje-style monasteries, which were mainly influenced by Baekje Kingdom during the 6th and 7th centuries and constructed in the hall-pagoda layout, have a 3:4:3 ratio between the lecture hall and the whole width. These include Horyu-ji Monastery (Ikaruga, Nara Prefecture), Yamada-tera Monastery (Sakurai, Nara Prefecture), and Kawara-tera Monastery (Asuka, Nara Prefecture) in Japan. Another proportion system centered on the lecture hall is 2:6:2; this ratio appears at the Neungsan-ri Monastery site (Buyeo, South Chungcheong Province) and Dongnam-ni Monastery site (Buyeo, South Chungcheong Province) in Korea and Shitenno-ji Monastery (Osaka) and Tachibana-dera Monastery (Asuka, Nara Prefecture) in Japan.
seems to have been commonly applied before Mireuksa Monastery was constructed. Because the width of the lecture hall followed a certain design ratio, we conclude that this ratio was a commonly used formative principle among Baekje-style monasteries (Table 3).

4.3. Three parallel courtyard composition

It is known that the multi-courtyard layout originated in the Southern Dynasties and that this architectural style spread to the Northern Dynasties and then continued during the Sui and Tang Dynasties (Liu 2005, 128).\textsuperscript{22} From an architectural perspective, the monastery arrangement resembling the Chinese character \textit{tu} (凸), which appeared in Mireuksa Monastery, can be found in murals drawn during the Tang Dynasty (618–907) in Dunhuang Mogao Caves 莫高窟 located in Dunhuang, Gansu Province. The murals on the north wall of cave No. 148 depict the residential area of Maitreya Bodhisattva, which has the \textit{tu} (凸) shape. The middle courtyard is large and is located in the center, and on the left and right, the west courtyard and east courtyard form smaller spaces. The west and east courtyards are separated by corridors, and the entrance of each courtyard faces the middle courtyard. In the case of the mural in cave No. 231, the three courtyards are independently arranged. There is a two-story Buddhist hall in the middle courtyard and a Buddhist building in the east and west courtyards, which face the middle courtyard but are smaller. Compared with that of Mireuksa Monastery, the form of the arrangement is similar to that in cave No. 148, but the layout in which the middle courtyard is separated is more similar to that in cave No. 231 (Figure 19). However, the arrangement of Mireuksa Monastery cannot be interpreted as solely due to the influence of the Sui and Tang Dynasties. The concept and shape of the multi-courtyard layout originated in China, but architecturally, Mireuksa Monastery has its own layout characteristics. In contrast to the previous two murals, Mireuksa Monastery is separated from the east and west courtyards through the corridor of the middle courtyard, but the east and west courtyards are not completely separated. Additionally, in contrast to the mural, the three courtyards of Mireuksa Monastery all face south and have a one pagoda-one Buddhist hall layout in each courtyard (National Research Institute of Cultural Heritage 2018, 121–122).

\textsuperscript{22}The excavation of the Buddhist monastery site of Zhaopengcheng revealed that monastery had a multi courtyard layout in which the southwest courtyard and southeast courtyard were surrounded by corridors located on both sides of the pagoda in the center. Qinglongsi Monastery of the Sui-Tang Dynasties has a two-courtyard layout. The west courtyard has a hall-pagoda layout, and the east courtyard has a Buddhist hall in the center.
Table 3. Proportions of lecture halls in ancient monasteries.

| Monastery                     | Layout                                                                 |
|-------------------------------|------------------------------------------------------------------------|
| Mireuksa Monastery, Iksan, Korea | ![Layout Image](image1)                                                |
| Horyuji Monastery, Nara, Japan  | ![Layout Image](image2)                                                |
| Yamada-dera Monastery, Nara, Japan | ![Layout Image](image3)                                               |
| Kawaradera Monastery, Nara, Japan | ![Layout Image](image4)                                               |

(No scale).

*The ratio was determined based on the excavation report for each monastery. (Drawings by author)

No scale.

The ratio was determined based on the excavation report for each monastery. (Drawings by author)

This raises a question regarding why the other monasteries built around the same time as Mireuksa Monastery excavated to date do not have this three hall-three pagoda layout. The layouts of the Buddhist monasteries from that time in of East Asia can be divided into three categories, i.e., the one pagoda-one Buddhist hall layout, the one pagoda-three Buddhist hall layout and the two pagoda-one Buddhist hall layout.\(^2\) When comparing the Mireuksa Monastery with other East Asian monasteries, it is difficult to interpret the layout of the Mireuksa Monastery as simply the result of a repetition of the one pagoda-one Buddhist hall layout. In this study, under the hypothesis that Mireuksa Monastery was constructed between the transition from the one pagoda-three Buddhist hall layout to the two pagoda-one Buddhist hall layout, we analyzed the arrangement of Mireuksa Monastery from the perspective of these two layouts.

The main function of Buddhist halls was and still is to enshrine Buddha statues. As Buddha statues became more important than scripture, the number of Buddhist halls also increased during the 5\(^{th}\) century. The three Buddhist halls or three Buddhas, which symbolize the Buddhist hall in the mural painting in Mogao Cave, can be easily dated to the Sui and Tang Dynasties, showing the generality of the layout. Another representative example is Hwangryongsa Monastery 皇龍寺 from the Silla Dynasty which is located in Gyeongju City in North Gyeongsang Province, Korea. During the second expansion from 584 to 645, a one pagoda-three Buddhist hall layout was completed, which places Hwangryongsa Monastery in a similar era as the construction of Mireuksa Monastery. These Buddhist halls were symbols of the Trikalea Buddhas 三世佛, the Buddhas of the past, present and future. (Yang 2011, 361–362) The arrangement of the three Buddhist halls in Hwangryongsa Monastery is the most similar to that in Mireuksa Monastery, which has three Buddhist halls facing south on the same horizontal axis. Additionally, observing the expansion process in the initial stage and second stage of Hwangryongsa Monastery, the one pagoda-one Buddhist hall layout transformed into a one pagoda-three Buddhist hall layout. The

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\(^2\)Based on historical records and the architectural features of the grotto caves, Wang Guixiang outlined the monastery layout of the Northern and Southern Dynasties, suggesting more types. In this study, the layout type was classified based on ancient monasteries that have been discovered and excavated to date (Wang 2016).

\(^3\)Although the remains of a pagoda and Buddhist hall were not found during the excavation of Hwangryongsa Monastery, according to the historical records of Sangsukagi regarding the completion of the monastery, it is presumed that there was a pagoda, a Buddhist hall, and a lecture hall. There are remains of the corridor connecting the Buddhist hall, dividing the monastery areas. Referring to the size of the main gate and corridors of the initial stage, it is estimated that the size of the pagoda and Buddhist hall in the initial stage were smaller than those of the second stage. It is assumed that these remains were not found because these buildings were demolished during the process of constructing the foundation of the nine-story wooden pagoda and middle Buddhist hall during the second stage. (National Research Institute of Cultural Heritage 1984, 371–373).
expansion process of the monastery arrangement is similar to that of Mireuksa Monastery, reflecting how monasteries were architecturally transformed by changes in Buddhist ideas (Figure 20).

Asukadera Monastery of Japan also has a one-pagoda-three Buddhist hall layout, and one perspective argues that Asukadera was constructed under the influence of Goguryeo (B.C 37–668) because its layout is similar to that of the Jeongneungsa Monastery site in Mujin-ri, Pyongyang, North Korea, and that of the Geungangssa Monastery site in Cheongam-ri, Pyongyang, wherein the three Buddhist halls situated to the east, west and north all face the pagoda. However, according to Niho Shoki, Asukadera Monastery was built under the leadership of Sogano Umako, who promoted Buddhism in Japan in the late 6th century, and was constructed by monks and craftsmen from Baekje. Reflecting upon historical records, the location where the sarira reliquary was found is similar to the west stone pagoda of Mireuksa Monastery, and the roof tiles and Buddhist statues are obviously related to Baekje. Additionally, Bunhwangsa Monastery of Silla, located in Gyeongju, was completed during the third year of Queen Seondeok’s reign in 634. The monastery was arranged according to the one-pagoda-three Buddhist hall layout. Unlike at Hwangryongsa Monastery, the three Buddhist halls were arranged around the pagoda in the shape of the Chinese charter pin 品, more similar to the layout of Goguryeo monasteries and Asukadera Monastery (Lee 2014, 133–135) (Figure 21). Nevertheless, the arrangement of the three Buddhist halls of Bunhwangsa Monastery, with all three buildings facing south, is similar to that of the buildings of Hwangryongsa Monastery and Mireuksa Monastery, which were also constructed during a similar time period.

Therefore, the three Buddhist hall (one pagoda-three Buddhist hall) layout that appeared in Korea and Japan was not influenced by a specific country but reflects the tendency toward the diversification of Buddhist thought and objects of faith at the time, and the Buddhist hall became the main building of the monastery (Steinhardt 2019b, 40). The one pagoda-three Buddhist hall layout can be understood as a universal layout in East Asia that appears in the Sui-Tang Dynasties of China; Goguryeo, Baekje, and Silla of Korea; and Japan (Lee 2017, 55–57). In the case of Mireuksa Monastery, the Buddhist halls were extended on both sides of the existing middle courtyard, which resulted in the appearance of the Trikalea Buddhas. To date, many discussions have been conducted on the Buddhist statues of Mireuksa Monastery. Studies have modeled the appearance of the first, second, and third sermons of Maitreya Buddha in the three Buddhist halls (Lee 2016, 90–91). Considering the temporal differences and the Buddhist thoughts that appeared in the sarira reliquary, there is strong support for the study showing that Sakyamuni Buddha was located in the west Buddhist hall, Maitreya Buddha was located in the middle Buddhist hall, and Prabhutaratana Buddha was located in the east Buddhist hall (Jo 2015, 29–30).

The origin of the double pagoda (two pagoda-one Buddhist hall) layout is known from King Xiaowen of Western Wei (536–550) (Sui-Tang History, 30).
During that period, King Xiaowen and his wife Queen Wenming were called the Two Saints, and socially, people began to pray for the fortune of the two saints by constructing two pagodas, which eventually became a universal layout in the Sui-Tang Dynasties (Fu 2001, 173). Sacheonwangsa Monastery (四天王寺, 679) and Gameunsa Monastery (感恩寺, 682), which were built during the early days of the Unified Silla period, were constructed in this double pagoda layout (Figure 22). After the collapse of Baekje and Goguryeo, the Silla Kingdom and Tang Dynasty were at war from 670 to 676. Whether this layout began during the Unified Silla period immediately after the long war with the Tang Dynasty remains questionable.

We assume that this layout shifted before the collapse of Baekje when Mireuksa Monastery was constructed, which reflects the period covered by the Sui and Tang Dynasties. Supporting this assumption, evidence was recently found at the Hwangboksabsa site in Gyeongju, where excavations are being conducted, showing the possibility that the double pagoda layout began before 652, before the establishment of Unified Silla. According to Samgukyusa, the Hwangboksabsa Monastery was where Monk Uisang entered the Buddhist priesthood. The type of earthenware and lotus-
pattern roof tiles are evidence that Hwangboksa Monastery was built before the Unified Silla period. Based on the excavations, researchers on site assume that a main gate, two wooden pagodas, a Buddhist hall and corridors surrounded these main buildings (Cultural Heritage Administration 2019) (Figure 23).

Additionally, the historical records of Baekje, Sui and Tang during the reign of King Mu support this theory. In the records of Samgukyusa and the records of the sarira reliquary, there is a concept similar to that of “the two saints”, because one record indicates construction of Mireuksa Monastery for the queen and another for the king. When the arrangement of Mireuksa Monastery is considered based on this concept, it is clear that pagodas of different materials were placed in both the east and west courtyards centering on the existing middle courtyard, forming a symmetric relationship between the middle courtyard and the two pagodas.

The principle of the two layouts, i.e., the one pagoda-three Buddhist hall and two pagoda-one Buddhist hall layouts, was a contrasting principle commonly applied to Buddhist monasteries in East Asia at the time of the expansion of Mireuksa Monastery. The Sui-Tang Dynasties, which actively interacted with Baekje at the time, had a considerable influence. However, in the case of Mireuksa Monastery, since the monastery was enlarged centering on the existing middle courtyard, the typical layout principle of Baekje was inherited in the arrangement, resulting in a unique shape in which the one pagoda-one Buddhist hall layout was placed in three courtyards in parallel. Considering the changes in the layout of Buddhist monasteries after the collapse of Baekje Kingdom, after the construction of Hwangryongsa Monastery and Bunhwangsa Monastery in Gyeongju, the layout with three Buddhist halls has not been found; however, the layout with two pagodas centered on one Buddhist hall increased. This suggests that Mireuksa Monastery was built during a layout transition including all three layouts in East Asia, further proving that Mireuksa Monastery was not built all at once but was sequentially expanded around the middle courtyard. The arrangement of Mireuksa Monastery in Samgukyusa was written in the Goryeo Dynasty (918–

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23The number of exchanges with the Sui-Tang Dynasties in Samguksbagi are as follows: four times with the Sui Dynasty during the reign of King Wideok, three times with the Sui Dynasty and seven time with the Tang Dynasty during the reign of King Mu, and eleven times with the Tang Dynasty during the reign of King Euija.
1392) over 600 years after the fall of Baekje may reflect this completed arrangement in the historical record rather than actual fact.

In addition, Mireuksa Monastery was expanded in stages at a certain ratio. The ratio of the horizontal and vertical dimensions of the middle courtyard is 1:1.3(a), and when the lecture hall and the three monks’ living quarters were expanded, the ratio of outskirts of the monks’ east and west living quarters and the southern outskirts of the middle courtyard to the northern outskirts of the monks’ north living quarters were also 1:1.3(b). When the shape of the Chinese character 凸 was completed, the proportion became a 1:1(c) ratio of squares. It can be observed that the outer length of the south courtyard area and the total length of Mireuksa Monastery, which are suggested to have been extended during the Unified Silla period, also increased at a ratio of 1:1.3(d). This preservation of a proportional relationship in the process of extension is also an example showing the sequential construction of Mireuksa Monastery from an architectural perspective (Figure 24).

5. Conclusion

Irregular connections have been found between the corridors of Mireuksa Monastery and the main buildings connected to the corridors. In this study, we hypothesized that these irregular connections arose due to variations in the ages of the different monastery areas. We attempted to prove this hypothesis by reviewing previous excavation data and ruins. The three irregular connections are as follows: the connection between the corridor in the middle courtyard and the east courtyard, the connection between the monks’ east living quarters and the north corridor in the east courtyard, and the corridor connecting the lecture hall and the monks’ living quarters.

Based on an analysis of the three irregular connections, we were able to estimate the chronology of the
components of Mireuksa Monastery. First, the middle courtyard was built. A soil survey conducted in 2000 proved that the west corridor of the middle courtyard was built earlier than the west courtyard area. Furthermore, the symmetrical aspects of Mireuksa Monastery suggest that the east courtyard area was built after the middle courtyard had been completed. The fact that the middle courtyard had no trace of embankments and the results of the comparison of the cornerstones of the three courtyards also support this argument. Second, the lecture hall and the three living quarters for monks surrounding the hall were constructed. A review of other monasteries built during the same period in Baekje and Japan indicates that this monastery arrangement was common. However, the corridor between these two buildings was built after the Baekje period, when the middle courtyard was out of order, suggesting that these buildings are older than the other buildings in Mireuksa’s three courtyards. Finally, the chronology of the north corridor in the east courtyard and the monks’ east living quarters was determined based on photographic data from an earlier excavation and the similarity between a cornerstone connecting the two areas and the cornerstones in the corridor of the monks’ east living quarters, which was built before the north corridor. In addition, during the expansion process of Mireuksa Monastery, to strengthen the timber structure of the connection between the monks’ living quarters and the corridor, this cornerstone was used, leading to an irregular structure.

The arrangement of Mireuksa Monastery began with the hall-pagoda layout originating in Eastern Jin, the expansion method of the Southern Dynasties, the architectural order of the Northern Dynasties, and the double pagoda layout of the Sui-Tang Dynasties. The three parallel courtyard arrangement of Mireuksa Monastery was completed by applying the lecture hall-three sided monks’ living quarters layout and the one pagoda-one Buddhist hall layout, which gradually became typical monastery layouts in the Baekje Kingdom. *Sanggyeusa*, which was written in the Goryeo Dynasty approximately 600 years after the fall of Baekje, is more likely to reflect this arrangement in the historical records than to be true.

This research provides a clearer perspective enhancing our understanding of the temporal changes in the composition of the monastery, which can be used for spatial analyses and for determining methods for the restoration of Mireuksa Monastery in the future. In addition, this study can help us understand the arrangement of temples for which ruins do not currently exist, such those from the Southern Dynasties of China, and the extension principle of ancient monasteries in East Asia through the expansion process of Mireuksa Monastery. However, this study lacks a detailed investigation of architectural elements other than corridors. In future studies, the architectural characteristics of each building group will be studied in detail, and the relationship between the influence of external elements and the expansion process will be examined.

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**Notes on contributor**

*Kyung-Min Lho* is a research professor of the International Heritage Education Center of the Korea National University of Cultural Heritage and a registered architect of KIRA. She received her Ph.D. in architectural theory and history from Tsinghua University, China. She has work experience in designing Korean traditional housing and carrying out historical investigation and restoration projects of ancient temple sites. Her research interests are modern architecture and cities of East Asia, and restoration and utilization of architectural heritage. Lately, she is studying educational methodology for cultural heritage and planning international cultural heritage courses for graduate students and professionals.

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