Spatial Structure and Scope of the Wolseong Castle

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Introduction

Located in the central area of the Gyeongju basin, Wolseong Castle (Historic Site No. 16) is a historical relic which once served as the site of Silla's royal palace. The structure was constructed during the 22nd year of king Pasa (101), and was employed as the royal palace of Silla until the latter's collapse.[1] According to historical records, Silla featured not only Wolseong Castle, but also Geumseong, and Manwolseong Castles. While the ruins of Geumseong and Manwolseong Castles have yet to be found, many theories have been advanced in terms of the possible location of these two castles. Meanwhile, in the case of Wolseong Castle, relics related to the palace, including the *Wolji* (Moon Pond, *Anapji*), moat around the site of the ruins, and roof tiles bearing the inscription '在城 (*jaeseong*)' denoting the presence of a royal palace, have in fact been located. As a result, little doubt exists as to actual the location of this particular castle.

Previous studies on Wolseong Castle have for the most part focused on Silla's capital system and castle walls. In addition, the urban planning which was carried out centering on Wolseong Castle as the capital of Silla has also been analyzed.[2] Moreover, the analysis of the remains and relics

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excavated from Wolseong Moat has helped to facilitate the recreate what Wolseong Castle must have looked like at the time.[3] The Gyeongju National Research Institute of Cultural Heritage recently published the Report on the Geographical Survey of Wolseong Castle and the Report on the Excavation of the Wolseong Moat II.[4] The revived level of interest in Wolseong Castle has also been spurred on in large part by the holding of academic symposiums on the subject.[5] Recent studies have for the most part attempted to understand the emergence of earthen castles and changes wrought to the central area believed to house such structures as the royal palace that were occasioned by the wider changes taking place within the residential community and in terms production facilities.[6] However, the failure to conduct any excavations of the interior of Wolseong Castle has meant that no studies have been carried out on the spatial arrangement or characteristics of palace buildings believed to have been established within Wolseong Castle. In other words, no analysis of the overall structure of the Silla palace have to date been conducted. Fortunately, the Gyeongju National Research Institute of Cultural Heritage conducted a comprehensive geophysical survey of the interior of Wolseong Castle from 2007 to 2008, a development which has resulted in establishing the basis for the fostering of a better understanding of the spatial arrangement and structure of palace buildings situated inside Wolseong Castle.

This study, which is based on the results of this geophysical survey of the interior of Wolseong Castle[7] and of changes wrought to the Silla palaces located outside of Wolseong Castle[8] previously released by this author, attempts to theoretically approach the spatial structure of the interior of Wolseong Castle and of the scope of Silla palaces, a scope which was expanded after the unification of the three kingdoms. This study is expected to contribute to a broadening and deepening of the studies conducted on the Silla capital.

Structure of the Castle Walls and Interior Facilities

Castle Walls and Gates

The Report on Geographical Survey of Wolseong Castle notes that, with the exception of the section where the structure merged with Muncheon Stream, the castle walls were made out of mounds of earth. It has been estimated that the Wolseong area featured a series of hills prior to the construction of the castle. Such assertions are supported by the discovery of the vestiges of hills in the areas adjacent to Wolseong. Moreover, natural sedimentary layers composed of pebbles and sand formed by ancient streams have also been discovered on the side of the land within Wolseong which has collapsed.[9]

Meanwhile, the author's observations of the section which was ripped apart by floods situated south-east of Wolseong Castle revealed the presence of an artificial cover that runs up until the halfway point of the castle wall, and the formation of a layer of natural soil situated well below where the current castle wall is situated. To this end, it is believed that when the Wolseong Castle was first constructed, the castle area was located on a moderately inclined hill, thus meaning that the earthwork-type castle walls were built near the edge of this hill during the early stages. Thereafter, the earth generated by digging the pond-type moat was used to heighten the castle walls.

In terms of investigations of the castle walls, records show that a certain segment of the southwestern wall was cut out in 1915, or during the Japanese colonial era, by an archeologist named Torii Ryuzo. Thereafter, a segment of the castle's eastern wall was cut out by the Gyeongju Royal Tomb Excavation & Research Team in 1980 in order to conduct a fragmentary analysis. Although the actual contents of the studies carried out by Torii Ryuzo remain unknown, a look at the photos which were taken in conjunction with these efforts reveals the presence of numerous river stones which were used as the foundation stone beds (*jeoksimseok*) located inside of the castle wall. Meanwhile, a latter research revealed

that the main structure of the castle wall had in fact been constructed by mixing these river stones with clay 45 cm underground.[10] In 1991, a part of the foundation of the castle wall was examined as part of the investigation of the manmade stone channel located to the east of Wolseong Castle. This particular investigation revealed that the foundation of the castle wall had been protected by mixing river stones of 20 cm in diameter with clay.[11]

The conclusion can thus be reached, based on these studies conducted on the castle walls as part of geographical observations and excavations, that while the majority of the castle walls consisted of artificially created mounds of earth, natural cliffs were also employed in the areas adjacent to the Muncheon Stream. The foundation of the castle wall was strengthened using a mixture of river stones and clay. On the upper part of the wall, battlements built out of stone materials were installed.[12]

Based on the foundation, it has been estimated that the wall was some 18 m tall at its highest point, and 10 m at its lowest. Moreover, based on the examinations conducted of the fragments of the entrance to Wolseong castle and of the castle walls, the structure has been estimated to have had 11 gates. Considering that the stones used to make battlements were scattered along the floor atop the castle wall, it has been estimated that the height of the castle wall were not much changed.[13]

According to historical documents, Wolseong Castle featured numerous gates, including Gwijeong Gate, Go Gate, Hyeondeok Gate, and Mupyeong Gate. However, the exact location of these gates has yet to be identified. The existence of records stating that the Gwijeong Gate was the western gate of Wolseong Castle, and King Gyeongdeok mounted the tower of Gwijeong Gate to meet the monk Chungdamsa,[14] would seem to imply that not only was Gwijeong Gate one of the main facilities of Wolseong Castle, but that it also had a gate tower. Based on the site of the ruins of the *Dongmunji* (Eastern Gate) and entrance facilities located in the eastern parts of the castle, a rough sketch of the structure of this castle gate emerges. While the *Dongmunji* was square-shaped (6.7 m on each side), the adjoining building consisted of one room in front and two on

the side. A mixture of rectangular and broken stones was used to build the foundation of the gate. Moreover, the foundation of a fence built using refined river stones of some 1.4 m in width has been found to the right and left sides of the gate.[15] Meanwhile, entrance facilities were found to the east in a site where the castle wall exhibited a small incline. In order to be able to cross the channel which snaked along the foundation of the castle wall, the width of the channel was narrowed, with the building with two rooms in the front and one on the side playing the role of a bridge.[16]

The conclusion can thus be reached that Wolseong Castle featured two kinds of gates: the large two-story gates such as Gwijeong Gate and smaller ones such as the *Dongmunji*. Existing records seem to indicate that Gwijeong Gate was in fact the busiest of the castle's various gates. To this end, one finds entries in the relevant historical records which state that An Gil from Mujinju entered to the palace through this gate,[17] and that it was also through this gate that the monk Chungdamsa traveled to meet the king. As such, Gwijeong Gate can be perceived to have served as one of the main entrances of Wolseong Castle. Meanwhile, it is believed that the *Dongmunji* and the entrance facility situated in the eastern part of Wolseong Castle were built at the same time as the *Wolji* (Moon Pond, Palace of the Crown Prince). Thus, the smallish size of these structures can be explained by the fact that they were used solely to access the *Wolji*.

Interior Facilities

Although the general belief has been that no archeological studies of the interior of Wolseong Castle were ever conducted, an exploration of the eastern part of Wolseong Castle was in fact conducted by the Gyeongju Royal Tomb Excavation & Research Team in 1979 as part of their investigation of the *Dongmunji*. The participants of this excavation & research team reportedly uncovered many roof tile pieces, including roof-end tiles under the top soil. However, as a result of political circumstances the excavation was brought to a sudden halt. Some of the relics which were collected at this time, all of which were roof-end tiles

and flat roof tile pieces produced after the onset of Unified Silla, have been housed in the Gyeongju National Research Institute of Cultural Heritage.[18] Thereafter, the conducting of excavations inside Wolseong Castle was considered taboo, a situation which has resulted in the site remaining relatively untouched since then. This state of affairs has emerged as one of the main reasons why the study of Silla palaces has remained at the rudimentary stage.

It was under such circumstances that non-destructive tests were recently conducted throughout the site where Wolseong Castle once stood, an exercise which wielded clear signs of the presence of buried objects.[19] The buried objects identified as the result of these radar tests were discovered in fourteen sections, four of which have been revealed to hold large-scale clearly arranged ruins.

The general characteristics of these buried ruins can be identified as the following. Above all, based on the depth of *yugu* (remnants of a structure or area from which information about ancient architecture can be gleaned) and the direction of the central axis, the conclusion has been reached that four overlapping structures were built in these four sections.[20] Meanwhile, a look at the overall spatial arrangement shows that rather than arranging the main buildings of the palace in a symmetrical manner centering on the central main hall (*jeongjeon*) like Goguryeo and Balhae did, both of which built their palaces in plains, Silla arranged the various buildings of the palace in a separate manner along a hilly plain which extended widely to the east and west but was rather narrow in the south and north. Each building was rectangular in shape and separated from the other buildings by a fence or corridor. Although there were also some large-scale buildings, various small square-shaped buildings of less than 10 meters built in close quarters are also evident. More to the point, the characteristics of the four sections for which a clearer understanding of the manner in which the buried ruins were arranged can be ascertained can be summarized as follows.

First, many structures were found in Section 14 located in the southeastern side of Wolseong Castle (current site of the Gyeongju National Museum).

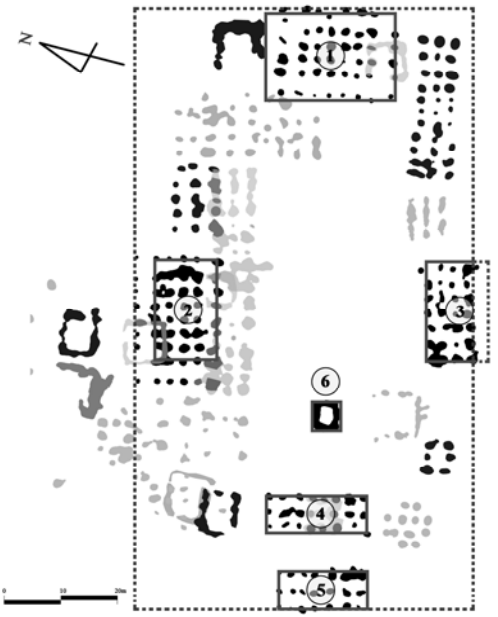
The area spans some 107 m from east to west and 57 m from south to north. The central axis of this section moves from east-west (S-14°-E). Three structures (*yugu* ①,④,⑤) and one unidentified *yugu* (⑥) were arranged along this east-west central axis. Meanwhile, two structures (*yugu* ②,③) were established to the south and north of the middle area of this central axis. A corridor-style structure can be seen spanning from *yugu* ① to *yugu* ④. Special attention should be drawn to the fact that a large central hall was established in the center of Section 14. While an octagonal-shaped structure believed to be a *munji* (gate ruin) sits to the right of *yugu* ④ a square-shaped structure was established to the left of *yugu* ④. The characteristics of unidentified remain ⑥ are as of yet unknown.

To be more specific, we can imagine that structure ② and ③ were arranged in a "品" shape, with structure ① serving as the center. While ⑥ was located in front of these three structures, a gate stood in the front of ⑥ (west side).

In this regard, special attention must be paid to Jeon Deok-jae's assertions that Namdang must have been located within this Section 14.[21] Jeon has countered the theories that Dodang and Namdang should be regarded as being one and the same, and that Namdang was in fact established south of the palace, thus implying that Namdang = Dodang = Dodangsan,[22] by pointing out that Dodangsan should actually be regarded as meaning 'south of Wolseong' and not 'south of the palace'. Supporting the theory that Namdang was subsequently reorganized as Pyeonguijeon,[23] Jeon pointed out that Namdang was a term which actually referred to the area within the Wolseong Castle that lay south of the royal palace, and more specifically to the area southeast (Section 14) of Wolseong Castle. Furthermore, numerous references to the structure of Namdang can be found in historical records. These include the record found in the <*Nihon shoki* (日本書紀, Chronicles of Japan)> which states that the cranial bones of Seowang were buried under the stairs of the Bukcheong,[24] and the entries in the <*Samguk sagi*> which recount how a royal banquet was carried out at Namdang during the reign of the king

Nulji,[25] and how King Jinpyeong traveled directly to Namdang to question convicts.[26] Based on these records, Jeon surmised that Namdang featured buildings named Namcheong and Bukcheong which were arranged in a symmetrical manner along an east-west axis; a large courtyard in which royal banquets could be staged and criminals held; a royal pavilion located east of the courtyard, and a gate to the west. It is very interesting to note that Jeon Deok-jae's perception of the structure of Namdang is generally consistent with the results of the non-destructive radar tests conducted in this area.

<Figure 1> The Result of the Radar Tests of Wolseong Castle (Section 14)



Let us now look at Section 9 located in the southern part of the modern-day *Seokbinggo* (traditional ice storage structure). The most outstanding *yugu* in Section 9 is a square-shaped remnant spanning some

10 m on each side. The central axis of this *yugu* stands at N-7˚-W. Within this large *yugu*, five structures can be found in the north and another six in front of these five buildings, the latter of which are arranged in a horizontal manner. The presence of an additional two *yugu* results in Section 9 generally exhibiting a "∏"-type arrangement. Although it is currently impossible to ascertain the types of materials from which the *yugu* in Section 9 are made, the fact that the density of this section is much greater than in the surrounding area lends itself to the conclusion that this must in fact be the foundation of an earthen wall or fence (*panchuk*) or a foundation stone bed (*jeoksimseok*). Similar kinds of *yugu* were also found in Sections 3 and 6, both of which lie west of Section 9. However, while the *yugu* found in Sections 3 and 6 exhibit a '凵' shape-density, in that the middle area is empty, the *yugu* found in Section 9 exhibits a density that is identical throughout the overall area.

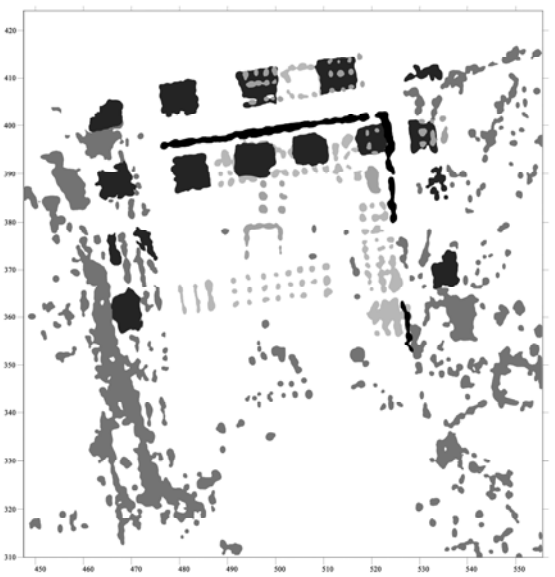
It has been estimated that pavilions such as *Myeonghaknu*, *Wolsangnu*, *Mangeunnu*, *Cheongyangnu*, and *Goru* located within the royal palace during Unified Silla are somehow related to these *yugu* in Section 9. However, considering the geographical conditions and the width of the plain lands in this section, and the fact that it is the most outstanding location within the Wolseong Castle, the possibility cannot be ruled out that the above mentioned overall square-shaped *yugu* was in fact one solitary building.

Several foundation stones of structures can be seen partially overlapping this square-shaped *yugu*. Generally speaking, these overlapping parts exhibit a '匚'-shape arrangement. As the central axis of these overlapping structures is consistent with that of the south-north stone lane located to the left, we can regard that these two groups of structures belonged to the same building complex. That being the case, by adding the structures to the left and right of this central axis, a "凵"-shape arrangement would then be exhibited.

Meanwhile, a 17 m wide and 86 m long *yugu* spanning from north to south was identified in the western reaches of Section 9, or what is presently the southern part of the *Seokbinggo*. This is believed to have

been a road running from north to south that was connected to the road in the northern area of Wolseong Castle that linked together Moats 4 and 5. In addition, the overall geographic conditions in the area have led some to advance that a *Munji* (gate ruins) must have been situated in the area where the *Seokbinggo* is now located. This road is also estimated to have been connected to the east-west road that started from the southern part of Section 9.

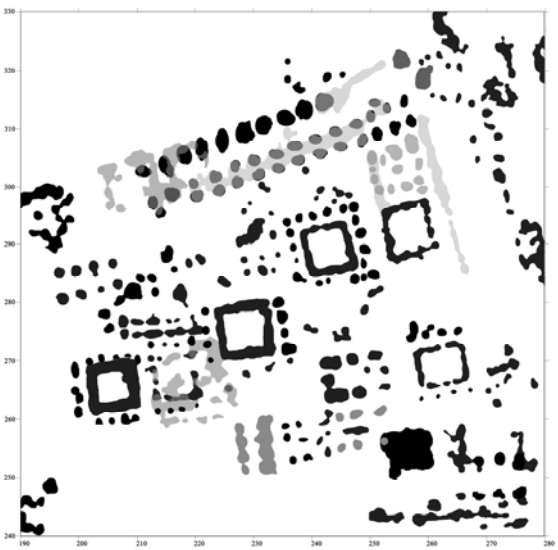
<Figure 2> The Result of the Radar Tests of Wolseong Castle (Section 9)



Section 3 is located east of what is Wolseong's main entrance in the north. Many unique types of structures have been identified as surrounding a '口'-shaped buried object spanning approximately 9 m on each side. While this central '口'-shaped buried structure is regarded as the outline of the internal cornerstone structure against which heavier stones were piled up, the foundation stone bed of the structures surrounding this '口'-shaped structure is regarded as the external cornerstone structure. Based

on these estimations, it has been surmised that buildings ①~④ must be arranged in two lines situated to the east and west of the central building ⑤. Although many other foundation stones have been identified, the exact nature of these structures has yet to be ascertained. In the north, lines of corridor-type inner foundation stone beds can be seen running from east to west, and many small-scale building sites have been found south of these corridor-type inner foundation stone beds. A similar type of building complex was also found in Section 6. However, these structures differ from those of Section 3 in that there is no cornerstone structure that sits outside of the '口'-shaped building.

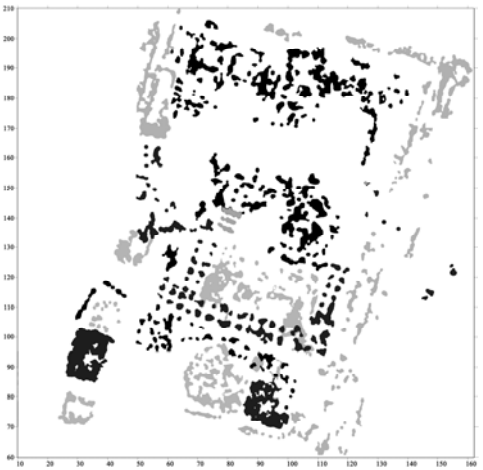
<Figure 3> The Result of the Radar Tests of Wolseong Castle (Section 3)



Section 2 is located in the western area of Wolseong. In this particular section, a rectangular-shaped palace site that spans 87 m from east to west and 136 m from south to north has been identified. In the southeastern side of this rectangular-shaped site, a large building that spans 56 m from

east to west and 31 m from south-north has been found on the same axis as the above-mentioned palace site (N-19˚-E). This structure is by far the largest of the various remnants of buildings which have so far been uncovered through these radar tests. While a cluster of buried objects was uncovered within the overall area occupied by this palace, such objects were especially prevalent in the northern, central and southern parts of the site. Meanwhile, the remains depicted in green were also found in the southwestern side of the palace site. Given the presence of this cluster of rectangular and circular-shaped objects in this particular area, It is highly possible that these two sets of remains may in fact be related *yugu*. High density remains have been identified in the southern part of the palace site. This is believed to be either the foundation of an earthen wall or fence (*panchuk*) or a foundation stone bed similar to those believed to have been found in Section 9. The fact that the largest palace building inside of Wolseong was found in this section, and that another large-scale building complex was also found in this area, has led many to conclude that important facilities were located in Section 2.

<Figure 4> The Result of the Radar Tests of Wolseong Castle (Section 2)



Furthermore, geographical observations and radar tests also revealed the existence of two lotus ponds.[27] One of these ponds was located in the southwest region of Wolseong, or what is now regarded as the eastern half of Section 2. The ground features deep craters and numerous wetland plants were found to thrive in the area. This area, which resembles a "凵" in shape, spans some 40 m from east to west and 50 m from south to north. The other pond, which was identified as a result of a radar test, was located to the south of what is now the *Seokbinggo* (west of Section 9). Its shape closely resembles that of an inverse triangle spanning some 23 m on each side. As the ruin becomes gradually deeper as one moves towards the center, the conclusion has been reached that this was in fact a pond. Historical records state that Silla constructed a large-scale pond within the royal palace. Given the size of these two ponds, there is a very strong likelihood that the former pond was the one constructed during the reign of King Gyeongdeok

Construction and Abolishment of Pond-type Moat

The pond-type moat can be said to have had a significant influence on the functions of Wolseong as a capital Castle and on the scope of the royal palace. More to the point, while the construction of this pond-type moat was accompanied by the destruction of a broad range of remains around Wolseong that had been established during previous eras, the closure of this moat inevitably brought about the expansion of the scope of the capital city. Wolseong is believed to have featured three kinds of moats: a natural moat that made use of the Muncheon Stream which flowed south of Wolseong; a pond-type moat created by digging holes along the foundation of the castle wall and constructing a revetment out of river stones; and the stone-made moat established by filling up a pond-type moat with dirt and piling refined granite on top.

In this regard, the pond-type moat has been identified as having been created by connecting separate ponds along the foundation of the castle

wall in such a manner that Wolseong was thereby surrounded on three sides, with the notable exception being the area south of the castle. This kind of moat structure, which has yet to be found at other relic sites, is believed to have been the result of the area's geographical features. More to the point, it has been surmised that the marked difference in elevation that existed between the eastern and western parts of Wolseong rendered it all but impossible to control water levels with a channel-type moat.[28] The revetment of this pond-type moat consisted of two or three layers, each of which featured river stones of 20-30 cm in size. The sediment from the revetment consists of a bluish gray sand layer at the bottom, a mud layer, a yellowish brown clay layer, and a brownish gray clay layer at the top. In this regard, as the characteristics of stagnant water result in mud being stuck inside of the moat, the mud layer has been used to estimate the period in which this moat existed.[29] To this end, based on an analysis of the remains excavated from this mud layer, this pond-type moat is believed to have been in place at sometime during the late 5th century - mid 7th century.[30]

This chronological interpretation is supported by the wooden tablets excavated from the mud layer of the pond-type moat. On one of these wooden tablets, the Chinese characters, "…道使 (*Dosa*)…" were discovered. In this regard, *dosa* (道使) has been identified as referring to the position of the local administrator who was dispatched to the lowest administrative units (*seongchon*) during the mid-ancient period of Silla. The earliest known reference to such *dosa* occurs in conjunction with the initial dispatch of local governors during the 6th year of King Gijung (505), or before the establishment of the Stele of Naengsu-ri in Youngil in 503. As mention is made of the dispatch of *dosa* in this particular stele, the conclusion can be reached that the *dosa* were in fact dispatched to certain areas before the local governors. Therefore, the origin of these *dosa* can be traced as far back as the 5th century. Considering that the term *dosa* was also inscribed on the wooden tablets excavated from Iseong Fortress established during the 7th century, it has been surmised that the term *dosa* was in fact used to refer to local administrators from the early 5th century

to the 7th century.[31] For his part, Lee Yong-hyeon, who analyzed the wooden tablets excavated from the Wolseong Castle, has advanced that a look at wooden tablets Nos.1, 12, 23 proves that the term *dosa* was widely used during the 6th-7th centuries.[32]

Attempts to identify the period in which this pond-type moat existed by linking archeological findings to historical records pertaining to the repair of Wolseong Castle must inevitably begin with one which states that Wolseong was repaired in 487, and that the king moved back to Wolseong in January of the following year.[33] While opinions may in fact differ as to the likelihood that Wolseong was in fact repaired in a mere four months, after which the king is said to have returned to Wolseong Castle from Myeonghwalseong Fortress,[34] it is generally accepted that a large-scale repair project was in fact conducted at Wolseong Castle at this time, and that it was during this period that this pond-type moat was constructed.

The closure of the pond-type moat was closely related to the expansion of the royal capital. As mentioned above, the pond-type moat was closed during the 7th century, an assertion that is supported by a look at the record pertaining to the reconstruction of the palace that occurred during the 19th year of King Munmu (679) found in the *Silla bongi* section of the <*Samguk sagi*>.[35] Although the relevant record refers only to the 'royal palace (*gunggweol*)', the fact that Wolseong had clearly been established as the royal capital castle of Silla at this time, as well as the inclusion of the expression '創造東宮 始定內外諸門額號 (Construction of the Crown Prince's Palace and Naming of all the Gates)' in the relevant record,[36] has been taken by most experts to mean that the 'royal palace (*gunggweol*)' being referred to was Wolseong. This was also a period in which many large-scale buildings were constructed within the capital. In this regard, the implementation of such large-scale construction projects within the royal capital, as well as the reconstruction of the royal palace, is believed to have been designed to highlight the power of the state and the royal authority. Thus, the pond-type moat was filled during this period in order to overcome the spatial limitations of the royal palace, with new

buildings being constructed on the reclaimed land. In actuality, many of the roof tiles on which the characters '儀鳳四年皆土 (completed in the 4th Year of Uibong)' was written were excavated from a building site dating from the Unified Silla period which was found in the upper part of the mud layer of the pond-type moat located in the northern section of Wolseong.

The construction of the pond-type moat resulted in numerous *yugu* from the Bronze Age to the Three Kingdoms Era being located in the Wolseong area being scattered. For instance, the digging up of the natural waterway which flowed from east to west and ran between Wolseong and the *Cheomseongdae* (stone astronomical observatory) as part of the project to construct the pond-type moat that ran along the foundation of Wolseong Castle resulted in many of the *yugu* from previous periods being destroyed. The construction of this pond-type moat not only altered the functions of the castle, but also brought about important changes to the external appearance of Wolseong. From a functional standpoint, the moat strengthened the royal authority by separating the royal palace from the regular residential area within the royal capital, and helped to establish a final line of defense that effectively impeded invasions. Meanwhile, from a physical standpoint, as the soil dug up as part of the construction of the pond-type moat was piled up on top of the earthwork-type castle wall which had been built during an earlier era, the erection of this moat effectively resulted in the heightening of the castle walls.[37]

Expansion of the Royal Palace and the Scope Thereof

The decision to destroy the pond-type moat that served as the royal capital's final line of defense line was rooted in Wolseong's inherent spatial limitations. Put differently, this decision can also be construed as a sign of Silla's decreasing fear of foreign invasion in the aftermath of its completion of the conquest of the Korean peninsula. As part of efforts to exhibit the greatness of the unified kingdom of Silla, King Munmu

implemented a massive construction project that involved not only the reconstruction of the royal palace, but also of the entire royal capital area. It was as part of these efforts that the *Wolji* (Moon Pond, Palace of the Crown Prince) was constructed, and that the pond-type moat was filled to create a stone moat in the eastern part of Wolseong adjacent to the *Wolji*. As such, while the marked drop in the fear of foreign invasion in the aftermath of the unification of the three kingdoms rendered the pond-type moat redundant, it therefore it became necessary to construct a stone moat that featured a landscape similar to that of the *Wolji.*

The construction of the *Wolji* and destruction of the pond-type moat had a great impact on the flow of water. The majority of the water which had flowed into the pond-type moat situated in the eastern part of Wolseong was rerouted to the *Wolji*, before going through the stone channel situated in the northern part of Wolseong which was uncovered between the northern part of Wolseong and the *Cheomseongdae*. It eventually flowed into Muncheon Stream after having gone through the drainage system located in the area north of Woljeong Bridge. Some of the water which flowed into the eastern part of Wolseong was rerouted to the stone moat located in the eastern section of Wolseong, where it followed the stone channel constructed on the reclaimed area that had once been home to the pond-type moat before eventually being drawn off to the lower part of the stone moat (Moat 5). Meanwhile, a stone bridge was constructed over the stone channel that divided Wolseong and the *Cheomseongdae* in the northern part of Wolseong. A road was developed in the north that followed this stone bridge, and an extended corridor-style building spanning from east to west direction was constructed that followed the outline of the revetment of this stone channel.

A look at the relics excavated from the stone moat, stone channel, stone bridge, drainage system, and related building site reveals that all of these were constructed during the same period as the *Wolji*, and as part of the same undertaking that involved the construction of facilities inside of the royal palace. The scale of the construction conducted during this period can be estimated based on the roof tiles on which the Chinese characters,

'儀鳳四年皆土 (completed in the 4th Year of Uibong)' are inscribed. Such roof tiles were excavated from building sites throughout Wolseong.[38] The scope of the expansion of the royal capital which was carried out during this period can be estimated through a comparison with *yugu* from previous periods.

Based on the excavations of Ancient Tomb No. 27, the Ancient Tomb Complex at *Cheomseong*-ro, 106-3 Hwangnam-dong area,[39] and 807-4 in the Inwang-dong area,[40] it can be surmised that the northern border of the royal capital was in fact an east-west axis which was linked to the area south of Ancient Tomb No. 27. A gourd-shaped twin tomb, Ancient Tomb No. 27 is believed to be a wooden chamber with stone mound tomb. As such wooden chamber with stone mound tombs have also been excavated from the 106-3 Hwangnam-dong area and 807-4 Inwang-dong area, it is estimated that these tombs were established sometime during the 5th century. Such a conclusion is based on the fact that these ancient tombs had already been established prior to the expansion of the royal palace that the author believes took place during the 4th year of Uibong of the Tang dynasty (679) and that the royal palace would not have been allowed to impede on the territory occupied by these tombs. Meanwhile, although this particular record was prepared at the end of the Goryeo era, Jeong Mong-ju argued that the *Cheomseongdae* was located within Wolseong.[41] Considering the layout of the building complex (north of Gyerim) excavated to the west of this road linking the front of *Cheomseongdae* to Wolseong's north gate, we can surmise that these buildings must in fact have been used as a palace or government building, and not residential buildings.[42] As such, the northern border of the royal palace ran along the area between the *Cheomseongdae* and Ancient Tomb No. 27, and the royal palace was linked to the area north of modern-day *Anapji*.

The western border of the royal capital is believed to have been a north-south axis that was connected to the area east of Ancient Tombs No. 30 (Tomb of King Namul), 28, and 29. By somewhat expanding this axis southwards, a link can be created to the south-north axis of Woljeong

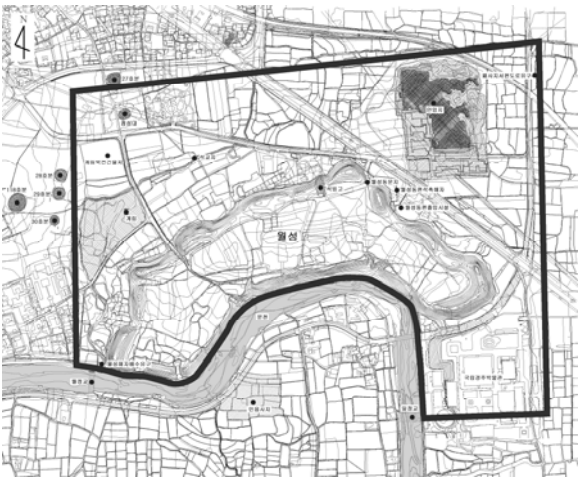
Bridge. Moreover, as all three of these ancient tombs are corridor-style stone chamber tombs, it is believed that these were in fact established on the outskirts of the castle after the royal palace was expanded. That being the case, we can imagine that there existed facilities which separated these tombs from the western end of the royal palace. While no such *yugu* have to date been uncovered, the top layer of these tomb areas was nevertheless found to be one level higher than that of the building complex to the east.

Muncheon Stream is believed to have acted as the southern border of the royal palace. This stream can also be linked to the central axis consisting of the Iljeong and Woljeong Bridges built over Namcheon Stream. In this case, the area inside of these two connected zones could possibly be regarded as having been the royal capital zone. However, under this scenario, Inyongsa Temple, which was clearly established prior to 679, would automatically have to be included within the royal capital zone. Meanwhile, during the construction of what is now the Gyeongju National Museum, a large-scale building complex consistent with the east-west central axis of Iljeong Bridge was discovered near *Anapji*.[43] Moreover, the recent discovery of roof tiles in which it is inscribed '南宮之印' during an excavation conducted inside of the Museum makes it clear that this area was in fact inside of the royal palace.[44] As such, while Muncheon Stream can be regarded as having been the southern border of the royal capital, the eastern part of this southern border did not at this time run all the way to the Woljeong Bridge area, but rather ended at Iljeong Bridge.

The estimation of the eastern border of the royal palace requires that special attention be paid to the remains of a road running from south-north that were discovered to the west of the Hwangnyong Temple site. As mentioned above, the remains of a large-scale building complex and pond, as well as roof tiles on which the characters '儀鳳四年皆土 (completed in the 4th Year of Uibong)' were inscribed, have been excavated from the site of what is now the Gyeongju National Museum. In this regard, all of these findings have been consistent with the period in which the royal palace is believed to have been expanded. Although the

exact period in which this road west of the Hwangnyong Temple site was constructed has not yet been ascertained,[45] the road was found to have been repaired on at least one occasion. In this regard, the repairs carried out on the lower reaches of this road appear to have been related to the expansion of the royal palace believed to have been carried out during the 4th year of Uibong of the Tang dynasty. Thus we can surmise that this road served as both an important path which ran northwards along the eastern edge of the royal palace and as the eastern border of the royal palace.

<Figure 5> The Scope of Silla's Royal Palace during its Heyday



Conclusion

According to historical records, Wolseong, which was established by King Pasa in 101 AD, served as the royal palace of Silla until the dynasty's collapse. Wolseong subsequently became the driving force behind the statelet of Saro's integration of surrounding statelets and the emergence of Silla and Unified Silla. To this end, many elements regarded

as being symbolic of Silla's royal power and rule over the Korean peninsula, as well as several facilities used to protect these rulers, were established in Wolseong.

However, with the notable exception that the castle wall was built to protect the internal facilities; the moats were established around the castle wall; and that King Munmu constructed the *Wolji*, very little is known about Wolseong. Although the excavations of the Wolseong area which have been carried out to date have to some extent helped to facilitate the task of restoring the features of the royal capital and broadened the level of knowledge about the royal palace, the internal structure of the castle has to date been estimated based on such elements as the names of buildings contained in historical documents, and the foundation stones discovered on the ground surface.

In this regards, the results of the radar tests conducted by the Gyeongju National Research Institute of Cultural Heritage can be perceived as groundbreaking in terms of the study of the internal structure of Wolseong. This study sought to analyze the four sections in which vestiges of buried objects were clearly uncovered as a result of the radar tests. It also sought to estimate the scope of Silla's royal palace during its heyday based on the remnants (*yugu*) discovered during the excavation of the Wolseong area.

The main findings of this study can be summarized as follows. To begin with, the buried remnants (*yugu*) found inside of Wolseong were revealed to have been built in overlapping fashion on four occasions. Based on the relevant areas' spatial arrangements, it has been surmised that these buried objects in fact exhibited a tendency to be clustered together. Each of these areas formed an independent space that was surrounded by corridors and fences. In addition, several small-scale structures of less than 10 m in circumference were also found in clusters that formed independent spaces.

The scope of the royal palace in the aftermath of the expansion that resulted in the destruction of the pond-type moat can be regarded as having been as follows: while the northern border was the east-west axis connected to the area south of Ancient Tomb No. 27 that included the

Cheomseongdae, the eastern border consisted of an axis which connected the remains of the road found to the west of the Hwangnyong Temple site with the road uncovered at the site of what is now the Gyeongju National Museum. Meanwhile, the western border was the south-north axis connecting the area east of Ancient Tombs No. 28, 29 and 30, and the southern border was the Namcheon Stream axis that includes the site of what is now the Gyeongju National Museum.

Keywords : Wolseong Castle, spatial structure and scope, the scope of Silla palaces, geophysical radar survey

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Notes :

1 The administrative address of Wolseong Castle is 387-1, Inwang-dong, Gyeongju City. The structure straddles 890 m from east to west, and some 260 m from north to south. It is 2,340 m in circumference and boasts a total area of 193,845 m^2.

2. Fujishima Gaijiro, 1930, *Chosen Kenchiku Shiron* (*朝鮮建築史論*); Min Deok-sik, 1986, "Analysis of the Urban Design and Management of the Silla Capital (*Silla wanggyeongui dosi seolgyewa unyeonge gwanhan gochal*)", *Baeksan hakbo*, vol. 33; 1987, "Analysis of the Defense System of the Capital of Silla (*Silla wanggyeongui bangbie gwanhan gochal*)", *Sahak yeongu*, vol. 39; 1989, "Urban Planning in Silla I, II (*Silla wanggyeongui dosi gyehoeke gwanhan sigo I*, *II*)", *Sachong*, vol. 35 and 36; Yun Mu-byeong, 1987, "Silla's Defense System (*Sillaui bangje*)", *Collection of Essays to Celebrate the 90th Birthday of Lee Byeong-do* (*Dugye lee byeongdo baksa gusun ginyeom nonchong*); 1972, "Preservation of Gyeongju as a Historical city (*Yeoksa dosi gyeongjuui bojone daehan josa*)", *Preservation of Korea's Cultural Heritage* (*Munhwajae bojone gwanhan yeongu*); Park Bang-ryong, 1985, "The Capital and Castle Site of Silla (*Sillaui doseong*

seongji)", *Hanguksaron*, vol. 15.

3 Lee Sang-jun, 1997, "Study of the Changes Wrought to Silla's Wolseong Castle (*Silla wolseongui byeoncheon gwajeonge daehan sogo*)", *Journal of Yeongnam Archeological Studies* (*Yeongnam gogohak*), vol. 21; Kim Nak-jung, 1998, "Characteristics and Transformation of Silla's Wolseong Castle (*Silla wolseongui seonggyeokgwa byeoncheone daehan yeongu*)", Master's Thesis, Seoul National University.

4 Gyeongju National Research Institute of Cultural Heritage, 2004, *Report on* the *Excavation of the Wolseong Moat II* (*Wolseong haeja balgul josa bogoseo II*).

5 Gyeongju National Research Institute of Cultural Heritage, 2007, *The Past*, *Present*, *and Future of Wolseong Castle in Gyeongju* (*Gyeongju wolseongui eojewa oneul*, *geurigo mirae*), Collection of Essays Presented during the Related Academic Symposium.

6 Lee Jae-heung, 2009, "Changes in Silla during the 4th-5th Centuries as Viewed from the Relics Found in the Gyeongju and Gyeongsan Areas (*Gyeonjuwa gyeongsan jiyeokui jungsim jigu yujeokeuro bon sillaui byeonmo*)", *Journal of Korean Archeological Studies* (*Hanguk gogohakbo*), vol.70.

7 Gyeongju National Research Institute of Cultural Heritage, 2008, Wolseong Castle: Silla's 1000 Year-old Palace (*Cheonnyeon gungseung silla wolseong*), Exhibition Catalog vol. 3; Oh Hyeon-deok, 2007, "Mid-term Report on the Geophysical Survey Conducted within the Interior of Gyeongju's Wolseong Castle (*Gyeongju wolseong naebuui jiha mulli tamsa junggan bogo*)", *The Past*, *Present*, *and Future of Wolseong Castle in Gyeongju* (*Gyeongju wolseong eojewa oneul*, *geurigo mirae*), Collection of Essays Presented during the Related Academic Symposium.

8 Lee Sang-jun, 1997, "Study of the Changes Wrought to Silla's Wolseong Castle (*Silla wolseong byeoncheon gwajeonge daehan sogo*)", *Journal of Yeongnam Archeological Studies* (*Yeongnam gogohak*), vol. 21.

9 Gyeongju National Research Institute of Cultural Heritage, 2004, *Report on the Geographical Survey of Wolseong Castle* (*Wolseong jipyo josa bogoseo*).

10 Gyeongju National Research Institute of Cultural Heritage, 2008, Wolseong Castle: Silla's 1000 Year-old Palace (*Cheonnyeon gungseung silla wolseong*), Exhibition Catalog vol. 3, p. 25.

11 Gyeongju National Research Institute of Cultural Heritage, 2004, *Report on*

the Excavation of the Wolseong Moat II (*Wolseong haeja balgul josa bogoseo II*), Photos, p. 66.

12 Parts of the battlements were uncovered during the excavation of the Eastern Gate of Wolseong Castle in 1980. The battlements were constructed in a refined manner, using river stones. Each battlement was approximately 1.4 m wide (Jang Gyeong-ho, 1984, "The Palace Architecture of Unified Silla (*Tongil silla sidaeui gungjeon geonchuk*)", *Journal of Ancient Art* (*Gogo misul*), vol. 162 and 163 (Double Issue)).

13 Gyeongju National Research Institute of Cultural Heritage, 2004, *Report on the Geographical Survey of Wolseong Castle* (*Wolseong jipyeo josa bogoseo*).

14 <*Samguk yusa*>, Book II, Wonder 2, King Gyeongdeok, Chungdamsa, and Pyohun daedeok.

15 Jang Gyeong-ho, 1984, "Palace Architecture of Unified Silla (*Tongil silla sidaeui gungjeon geonchuk*)", *Journal of Ancient Art* (*Gogo misul*), vol. 162 and 163 (Double Issue).

16 In the Report on the Geographical Survey of Wolseong Castle, this place was identified as Munji 1 (Gyeongju National Research Institute of Cultural Heritage, 2004, *Report on the Geographical Survey of Wolseong Castle* (*Wolseong jipyo josa bogoseo*).

17 <*Samguk yusa*>, Book II, Wonder 2, Munhowang, Beopmin (King Munmu).

18 The exploration conducted at that time was focused on the exterior of Wolseong Castle. During this exercise, a part of a stone moat was discovered near the foundation of the castle wall. As a result of this discovery, an excavation was launched throughout the area regarded as the exterior of Wolseong Castle in 1984 to prove the existence of this moat which surrounded the castle.

19 The National Research Institute of Cultural Heritage's use of non-destructive radar tests in various areas of the Wolseong Castle since 2004 has wielded tangible results in the form of the discovery of buried ruins. The exploration of Wolseong Castle was conducted by the Gyeongju National Research Institute of Cultural Heritage as part of the mandate it received from the city of Gyeongju to carry out a project entitled "Conduct of Basic Academic Research Designed to Promote the Comprehensive Study and Preservation of Wolseong Castle." The exploration was conducted by Oh Hyeon-deok and Shin Jong-woo from the National Research Institute of Cultural Heritage's Division of Archaeological Studies. These two researchers also had a hand in

the preparation of the present study.

20 Of course, the depth of a *yugu* does not serve as an exact predicator of its age.

21 Jeon Deok-jae, 2007, "The Capital and Royal Palace of Silla (*Sillaui wanggyeonggwa wanggung*)", *The Past*, *Present*, *and Future of Wolseong Castle in Gyeongju* (*Gyeongju wolseongui eojewa oneul*, *geurigo mirae*), Gyeongju National Research Institute of Cultural Heritage, Collection of Essays Presented during the Related Academic Symposium.

22 Kwon O-chan, 1980, *Light of Silla* (*Sillaui bit*), Gyeongju City.

23 Lee Byeong-do, 1976, "Analysis of Ancient Namdang (*Godae namdanggo*)", *Korean Ancient History* (*Hanguk godaesa yeongu*), Bakyeongsa.

24 <*Nihon shoki*>, vol. 19, 15th year of Emperor Kimmei, December.

25 <*Samguk sagi*>, *Silla bongi*, 7th year of King Nulji.

26 <*Samguk sagi*>, *Silla bongi*, 7th year of King Jinpyeong.

27 Gyeongju National Research Institute of Cultural Heritage, 2004, *Report on the Geographical Survey of Wolseong Castle* (*Wolseong jipyo josa bogoseo*).

28 There is an 18 m difference in elevation between the highest point of the Castle in the east and lowest point in the west.

29 The conclusion can of course not be reached that the internal structure of the moat was composed solely of the mud layer. However, the fact that the yellowish brown clay and brownish gray clay layer situated at the top are believed to have been formed as a result of the reclamation of the moat renders it difficult to use either to precisely estimate the period in which the moat existed or its size. To this end, the most logical solution is to analyze the characteristics of the moat based on the materials excavated from the mud layer.

30 Lee Sang-jun, 1997, "Study of the Changes Wrought to Silla's Wolseong Castle (*Silla wolseongui byeoncheon gwajeonge daehan sogo*)", *Journal of Yeongnam Archeological Studies* (*Yeongnam gogohak*), vol. 21.

31 Despite the differences in the administrative units used by Silla, Baekje, and Goguryeo, the latter two also used the term *dosa* to refer to a local administrator. Thus, we can surmise that Silla was in fact influenced by the administrative systems of Baekje and Goguryeo. The *dosa* were known as *hyeollyeong* or *sosu* after the *seongchon* unit was abandoned in favor of *hyeon* (prefecture) during the Unified Silla era (Lee Sang-jun, *ibid*).

32 Lee Yong-hyeon, 2006, "Analysis of Wooden Tablets (*Mokkannyu gochal*)", *Report on the Excavation of the Wolseong Moat II* (*Wolseong haeja balgul*

josa bogoseo II), Gyeongju National Research Institute of Cultural Heritage.

33 秋七月 葺月城 (<*Samguk sagi*>, *Silla bongi*, Chapter 3, King Soji); 春正月 王移居月城 (<*Samguk sagi*>, *Silla bongi*, Chapter 3, King Soji).

34 According to the relevant record, the repair of Wolseong was begun in September 487 and the king moved from Myeonghwalseong Fortress to Wolseong Castle in January of the following year. Thus, based on this record, the only conclusion that can be reached is that the repair of Wolseong was completed in a mere four months. However, the fact that it took one year and six months to repair the Myeonghwalseong Fortress in order to be able to use as a temporary royal capital castle makes it very implausible that the reconstruction of Wolseong Castle was completed in four months. Therefore, the relevant records should be understood to describe the point in time in which the reconstruction of Wolseong Castle was completed. Moreover, based on this interpretation of the record, the king would have stayed in Myeonghwalseong Fortress for 13 years while Wolseong Castle was being reconstructed.

35 重修宮闕 頗極壯麗 (<*Samguk sagi*>, *Silla bongi*, King Munmu).

36 <*Samguk sagi*>, August, 19th year of King Munmu.

37 Based on the results of the tests conducted on the excavated moat, it has been ascertained that the castle walls were in fact built higher in parts where the moat had been constructed in a more profound and wider manner, or put differently, where a lot of soil had been dug up.

38 The Chinese characters, '儀鳳四年皆土' can be interpreted as referring to the subjugation of the entire territory by completing the unification of the three kingdoms or to a large-scale construction project which was conducted throughout the royal capital.

39 Jang Jeong-nam, *Report on the Excavation Carried out in Cheomseong-ro, 106-3 Hwangnam-dong Area* (*Gyeongju Hwangnam-dong 106-3 beonji balgul josa bogoseo*), Gyeongju National Research Institute of Cultural Heritage.

40 Nam Si-jin, "Excavation of the 807-4 Inwang-dong area (Inwang-dong 807-4 *beonji balgul josa bogoseo*)", *Report on the Excavation of the Wolseong Moat II* (*Wolseong haeja balgul josa bogoseo II*), Gyeongju National Research Institute of Cultural Heritage.

41 Jeong Mong-ju, 瞻星臺兀月城中 玉笛聲含萬古風 文物已隧羅代盡 鳴呼山水古今同, *Miscellaneous Records of the Eastern Capital* (*Donggyeong*

japki), vol. 2 Gojeok.

42 This building complex was composed of a central building (three rooms established in an east-west direction and two in a south-north direction) in the north, and three corridor-style buildings to the left and right of this central building. This layout is similar to that found at Japan's Naniwa Palace (652-686), in the Imperial court of Fujiwara Palace (694-710), and with regards to the building complex, or *houdouin*, at Heijo Palace (early 8th century) (Kaneko Hiroyuki, 1994, "Fujiwara Palace", *Ancient City Culture and Archeology* (*古代都市文化と考古學*), Yuzankaku).
The discovery of roof tiles in which it is inscribed '儀鳳四年 (completed in the 4th Year of Uibong)' in this building complex has led many to conclude that this building complex was constructed sometime around 679.

43 Jeong Yang-mo and Kang U-bang, "The First and Second Investigations of the Silla Remnants Uncovered at the Current Site of the Gyeongju National Museum (*Sinchuk gyeongju bakmulgwan silla sidae yugu je 1·2 cha josa*)", *Museum Newsletter* (*Bakmulgwan sinmun*), Issue No 43 and 45, National Museum of Korea.

44 Lee Han-sang, 2005, "The Investigation of Royal Palace Relics in the Southeastern Part of Wolseong in Gyeongju (*Gyeongju wolseong dongnamjjok wanggung yujeok josaui seonggwa*)", *Collection of Essays Presented as Part of the Academic Conference Conducted during the Silla Culture Festival* (*Silla munhwaje haksul nonmunjip*), vol. 26.

45 The remains of a road were excavated to the east of a modern road during an investigation of the relics of temples of Unified Silla located to the west of the Hwangnyongsa Temple site. The road was built out of yellowish brown clay mixed with pebbles, and was some 7 m wide. The ditch to the east of the road was filled in using two layers of river stones.

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〈국문초록〉

월성의 공간구조 및 범위 연구

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기록에 의하면 월성은 A.D.101년 파사니사금이 축조한 이래 신라가 패망할 때까지 왕성이었다. 사로국에서 주변국을 병합하여 신라, 통일신라로 나아가는 힘의 원동력이 바로 이곳에서부터 나왔다. 때문에 월성에는 왕의 권위와 통일된 영토를 통치하기 위한 상징적 시설물이 들어차 있었고, 이를 보호하기 위한 시설도 건설되었을 것이다.

그러나 우리는 월성에 대해 아는 것은 내부 시설물을 보호하기 위해 성벽을 쌓았고, 성벽 주변에 해자를 둘렀다거나 문무왕이 월지를 만들었다는 정도이다. 최근 들어 월성주변 지역 발굴을 통해 주변일대의 당시 모습은 어느 정도 이해의 폭이 넓어졌다고는 하나, 성벽의 내부구조는 기록에 보이는 전각의 이름이나 지표상에 보이는 초석 등 유물로 유추하고 있다.

그런 의미에서 국립경주문화재연구소가 실시한 레이더탐사 결과는 월성내부 구조 연구에 있어 획기적인 자료임이 분명하다.

본고는 전체 탐사데이터 중 매장체의 흔적이 가장 뚜렷한 4개 지역을 시론적으로 분석해 보았고, 더불어 지금까지 월성주변 발굴에서 드러난 유구를 중심으로 최성기 신라 궁궐의 범위를 획정해 본 것이다.

이를 통해 우선 내부 매장유구는 크게 4차례 중복이 이루어졌으며, 매장체는 중심축선과 평면상의 배치양상으로 볼 때 지역별로 그룹화 한 경향이 있고 각 그룹별로 회랑이나 궁장이 둘러져 하나의 독립된 공간을 형성하고 있었음을 알 수 있었다. 또 10m 내외의 소형 구조물이 많이 확인되며 이 구조물도 여러 개가 모여 하나의 독립된 공간을 형성함을 알 수 있다.

연못형해자의 폐기와 맞물려 확대된 궁궐의 범위는 북쪽으로 첨성대를 포함하여 27호분 남편을 동서로 연결하는 축선으로 판단하였고, 동쪽은 황룡사지 서편 도로유구와 국립경주박물관에서 확인된 도로를 연결한 축선, 그리고 서쪽은 28호, 29호, 30호분 동편을 남북으로 연결하는 선, 남쪽은 남천을 경계로 하고 현 국립경주박물관을 포함한 축선 정도로 이해된다.

주제어: 월성(月城), 공간구조, 궁궐의 범위, 지중(地中) 레이더탐사