보물로 지정된 주택의 특성에 관한 연구

Characteristics of Residential Buildings designated as Korean National Treasures

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제목

한국의 전통문화를 보존, 전승시키는데 도움을 주는 자료를 얻기 위하여 보물로 지정된 주택의 특성을 파악하는데, 본 연구의 목적이 있다. 연구내용은 전국에 보물로 지정된 11개 주택에 대하여 진행는데, 소재지, 외관특성(기단, 기둥, 지붕의 형태), 절연형태를 분석하는 것이다. 연구결과, 보물로 지정된 11개 주택은 모두 조선시대의 주택으로 경북에 9개(81.8%)가 위치하고 있었다. 외관특성으로 기단은 모두 석축기단이나 단 수는 1단부터 9단으로 다양하며, 기둥은 원주나 방주를 사용하고 있으며, 지붕은 팽자지붕(63.6%)이 많았다. 보물로 지정된 주택은 7개가 병방형식으로 지어진 사상지이며, 4개는 사랑채가 동서가 연결되어 있으며 아주 인접해 있었다. 사랑채 부분의 절연형태는 -자형이 10개(90.9%)이며, 1개만이 L자형이었다. 공간구성은 방과 대청이 기본적인 구성으로 부여하는 것이 특징이었다.

주제어: 보물로 지정된 주택, 주택외관특성, 사랑채공간 특성

I. Introduction

Cultural properties that are recognized for their historic and artistic value yield important information to be used for education. The lessons learned from cultural properties become a basis for a knowledge resource which may carry on the spirit of the traditional culture and continue cultural inheritance. Accordingly, cultural assets of national importance should be deemed worthy of special preservation.

There are five different types of Korean cultural properties: national cultural properties, city or province cultural properties, cultural materials, registered cultural properties and non-designated cultural properties. Properties designated by the 'Cultural Properties Protection Act' under the examination of the Cultural Properties Administration are protected, and called national cultural properties.

National cultural properties include the following eight categories: treasures, national treasures, intangible cultural properties, historical sites, scenic sites, historic and scenic sites, natural monuments, and important folklore materials. Residential buildings belong to tangible cultural properties. Among national cultural properties, tangible cultural properties include three categories like treasures, national treasures, and important folklore materials.1)

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1) There are 403 treasures; yet there is no single residential building. Among 951 “important folklore materials,” there are 251 residential buildings (26.39%).
Currently, there exists 118 wooden cultural assets (8.7%) among 1354 treasures; among these, 11 are residential buildings. Namely, only 0.81% of treasures and 9.3% out of all wooden structural treasures are residential buildings. This is extremely few. Unlike other treasures that are stored in museums, these buildings have been used continuously such that they are subject to the ravages of time. The natural aging of wooden structures - and a combination of other forces such as exposure to precipitation, severe weather and fungal growth - has contributed to their becoming progressively deteriorated (Kim, 1999).

There are various merits of conducting research on these residences; residential buildings generally present a comprehensive synopsis of a culture. At present there exist several researches on individual buildings with regard to their socio-cultural background and historic perspective (Kim, 1997; Rhee, et al, 2004). Architectonic investigation has also been documented, using measured drawings in survey activities before designation as national treasures. Yet, research and extensive analysis of the eleven houses as a whole is scarce.

By investigating common characteristics of residential buildings which have been designated Korean National Treasures, this article is intended to array data that may produce an informational base for the preservation and transmission of Korean cultural assets.

II. Research Method

In order to analyze common characteristics, background research of the residences is required. Preliminary work involves a thorough review of published and unpublished library materials. Next, a basic document of each building is obtained from the Cultural Properties Administration website (www.ocp.go.kr). Finally, a cursory reconnaissance survey of each building is conducted to ensure correctness of the collected data.

This research targets all eleven residential buildings presently designated as Korean National Treasures, as indicated in Table 1. In particular, it examines their general features (year built, original and current owner, and location), exterior architectural elements (platform, column, and roof), and spatial characteristics of sarangchae.Basic materials for the analysis had been collected by June 2003. The collected data was analyzed from July to October in 2003.

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Date designated National Treasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treasure No. 165</td>
<td>Olukheon, Kangnung</td>
<td>January 21, 1963</td>
</tr>
<tr>
<td>Treasure No. 209</td>
<td>Dongchundang, Daedeok</td>
<td>January 21, 1963</td>
</tr>
<tr>
<td>Treasure No. 306</td>
<td>Yangpindang, Andong</td>
<td>January 21, 1963</td>
</tr>
<tr>
<td>Treasure No. 411</td>
<td>Mucheomdang</td>
<td>November 14, 1964</td>
</tr>
<tr>
<td>Treasure No. 412</td>
<td>Hyangdan</td>
<td>November 14, 1964</td>
</tr>
<tr>
<td>Treasure No. 413</td>
<td>Dokraedang</td>
<td>November 14, 1964</td>
</tr>
<tr>
<td>Treasure No. 414</td>
<td>Chunghyodang</td>
<td>June 23, 1967</td>
</tr>
<tr>
<td>Treasure No. 450</td>
<td>Andong Eulsung Kim clan Jongtaek</td>
<td>June 23, 1967</td>
</tr>
<tr>
<td>Treasure No. 457</td>
<td>Yecheon Kown clan Jongga byeoldang</td>
<td>June 23, 1967</td>
</tr>
<tr>
<td>Treasure No. 521</td>
<td>Sungyeoldang</td>
<td>July 23, 1970</td>
</tr>
<tr>
<td>Treasure No. 553</td>
<td>Yeon Yi Clan Chunghyodang</td>
<td>August 30, 1971</td>
</tr>
</tbody>
</table>
III. Research results

1. General features

1) Historical overview

The following is a list of the eleven residences designated Korean National Treasures:

Prior to explain the individual buildings, it is necessary to introduce the general layout of the traditional Korean house (Hanok). This varies slightly by region and social class. The upper class house, is especially composed of various types of quarters for its residents, since both males and females have certain duties to perform, and a set of ethics to observe, under the strict ideals of Confucianism. Typically, the house is formed with four different quarters based on social class, sex, and age: sarangchae (an outer quarter for the male resident), haengmangchae (a servants' quarter), anche (an inner quarter for the female residents with children), and sadang (a family shrine). Each quarter is separated by walls with gates; sadang is surrounded by separate walls. The main gate, called sososiulamun, is connected to the sarangchae. Each quarter consists of various ondol (heated floor) rooms with different types of maru (a wooden floor). A unique characteristic of Korean residential buildings is that both maru and ondol are incorporated: ondol is an indoor heating system for winter and maru for the outdoor. There are four different types of maru in function and shape: jokmaru, nummaru, toehmaru, and daechongmaru.

Ojukheon was built by Choi, Chi-un (1390-1440) in Gangneung. The house had been owned by the Gangneung Shin clan, including Shin, Myung-whan (Shin, Saimdang's father) and his son-in-law, Kwon Wha, until it was taken over and extensively repaired by the Gangneung Cultural Heritage Foundation in 1975. The present owner and concierge is Gangneung City. It has been known as the birthplace of Shin, Saimdang (1504-1551) and his son Lee, Yul-gok (1536-1551). To the present, many of their remnants have been exhibited in the house.

Dongchundang was built in 1653 by Song, Jun-gil (1606-1672) whose pen name is 'Dongchundang'. The calligraphy of the hanging board in the house was written by Song, Si-yol (1607-1689), whose pen name is Uam. Dongchundang is the byeoldang, a separate building detached from the main structure (Daejeon City, Tangible Cultural Treasures No. 3) that was originally constructed by Song, I-chang (1561-1627), who is the father of Song, Jun-gil. Later, when the house became run-down, Song, Jun-gil reconstructed the house in the present location. The present owner and concierge is Songyongsang City.

Yangjindang was the Pungsan Ryu's clan house built by Ryu, Un-ryong (1539-1601) whose pen name is Gyeeomgm. The calligraphy of the hanging board in front of the daechong maru illustrates "Ipam-gotaek". Ipam is a pen name of Ryu, Un-ryong's father, Ryu, Jung-young. Gotaek means an old house. Calligraphy inside the daechong maru illustrates "Yangjindang." This is a pen name of Ryu, Young-ho who is the 6th great grandson of Ryu, Un-ryong. The present building was reconstructed when the original building was demolished during Imjimawaen (the Japanese invasion of Korea in 1592). It has been known that the original house was built in the 13th century. The present owner and concierge is Ryu, Sang-bung.

Mucheondang is a component of the Jong-ga of Yi, Eon-jeok (1491-1553) whose pen name is Hoeje. Presently, Yi, Eon-jeok's remains are housed and exhibited in the building. The present owner and concierge is Yi In-sik.

Hyangdan was built by Yi Eon-jeok (1491-1553) for his younger brother when he served as governor of Gyeongsang province. The present owner and concierge is Yi, Moon-whan.

Dongkakdang was built in 1516 as Sarangchae, after Yi Eon-jeok resigned from a government service. The present owner and concierge is Yi, Hae-cheol.

Chungnyodang was the house of Ryu, Seong-ryong (1542-1607). It is comprised of haengmangchae, sarangchae, anche, and sadang. The anche and sarangchae were built by his grandson Ryu, Weon-ji (1598-1674), and expanded and repaired by Ryu, Weon-ji’s own son, Ryu, Ui-ha. The haengmangchae was built by Ryu, Sang-jo (1763-1838), the 8th great-grandson of Ryu, Seong-ryong. The present owner
and concierge is Ryu, Young-ha.

Andong Euisung Kim clan Jongtaek is located near the banks of the Nakdonggang River in North Gyeongsang Province. The house was burned out during Imjinworean but was rebuilt in the 16th century by Kim, Sung-il (1538-1593) whose pen name is Hakbong. The present owner and concierge is Kim, Si-u.

Yecheon Kown clan Jongga byeoldang was built by Kown, O-sang in 1589. A set of wooden printing plates (designated Treasure No. 878) is housed in the bookshelf of the byeoldang. The present owner is Kwon, Suk-in.

Sunryeoldang was a house of General Yi, Sun-mong. It was built in 1433 in the 15th year of King Sejong. Presently, the house is used as a shrine for General Yi. Because he did not have any descendants, the ceremonial rite is performed by Confucian scholars every September. There are thirteen present owners including Yi, Soo-chae.

Yean Yi Clan Chunghyodang was the house of Yi, Hong-in (1528-1594). It was built in the 6th year of King Myungjong. The present owner and concierge is Yi, Sung-jik.

This brief historic overview of the individual buildings indicates that all of the eleven houses designated Korean National Treasures were built in the early and mid-Chosun

[Figure 1] Photographs of individual building: a. Ojukheon; b. Dongchundang; c. Yangjindang; d. Mucheomdang; e. Hyangdang; f. Dokrakdang; g. Chunghyodang; h. Andong Euisung Kim clan Jongtaek; i. Yecheon Kown clan Jongga byeoldang; j. Sunryeoldang; k. Yean Yi Clan Chunghyodang
Dynasty (1392-1910). All are over 400 years old and are representative of upper class homes.

2) Location

The survey of regional distribution for these residences indicates most (81.8%) are located in Gyeongbuk province (Andong, Yeocheon, Gyeongju, and Youngchun), except for Ojukheon (Gangneung) and Dongrakdang (Daedeok). Thus, this survey exhibits uneven distribution across the country. A large number of other national treasures, including traditional buildings and stone structures, are found in the same region.

Among 1354 Korean National Treasures, 359 (26.5%) are located in Seoul, and 254 (18.8%) in Gyeongbuk province. This disparity is due to the number of palace-related buildings (for examples, Kyungbok Palace and the South Gate), classical books, works of calligraphy, ancient documents, pictures, sculptures, crafts, etc. which are kept in Seoul. However, certain

<Table 2> Location and year of construction of dwellings designated as Korean National Treasures

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Year Built</th>
<th>Original / Current Owner</th>
<th>Spatial Function / Plan Typology(saranchae plan typology)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ojukheon</td>
<td>Kangnung, Kwangwon</td>
<td>Early Chosun 1390-1440</td>
<td>Choi, Chi-un / Gangneung City</td>
<td>Byeoldang / &quot;I()&quot; shape layout</td>
</tr>
<tr>
<td>Dongchundang</td>
<td>Daedeok, Daedeon</td>
<td>Mid Chosun the 4th year of King Hyejong, 1653</td>
<td>Song, Jun-gil / Songyong City</td>
<td>Byeoldang / &quot;I()&quot; shape layout</td>
</tr>
<tr>
<td>Yanglindang</td>
<td>Andong, Gyeongbuk</td>
<td>Mid Chosun 1539-1601</td>
<td>Ryu, Un-ryong / Ryu, Sang-bung</td>
<td>Byeoldang / &quot;I()&quot; shape layout</td>
</tr>
<tr>
<td>Mucheomdang</td>
<td>Gyeongju, Gyeongbuk</td>
<td>Early Chosun 1491-1553</td>
<td>Yi, Eun-jeok / Yi, In-sik</td>
<td>Byeoldang / &quot;L(L)&quot; shape layout</td>
</tr>
<tr>
<td>Hyangdan</td>
<td>Gyeongju, Gyeongbuk</td>
<td>Early Chosun 1491-1553</td>
<td>Yi, Eun-jeok / Yi, Moon-whan</td>
<td>Anchae, araeae, saranchae, and haengnangchae / &quot;E(&quot; shape layout</td>
</tr>
<tr>
<td>Dokakdang</td>
<td>Gyeongju, Yeongbuk</td>
<td>Mid Chosun the 11th year of King Jungjong, 1516</td>
<td>Yi, Eun-jeok / Yi, Hae-choel</td>
<td>Byeoldang / &quot;I()&quot; shape layout</td>
</tr>
<tr>
<td>Chunghyodang</td>
<td>Andong, Gyeongbuk</td>
<td>Mid Chosun 1598-1674, 1763-1838</td>
<td>Ryu, Weon-ji / Ryu, Young-ha</td>
<td>Anchae, saranchae, haengnangchae, and sadang / &quot;F(&quot; shape layout</td>
</tr>
<tr>
<td>Andong Eulsung Kim clan Jongtaek</td>
<td>Andong, Gyeongbuk</td>
<td>Early Chosun 1538-1593</td>
<td>Kim, Sung-il / Kim, Si-u</td>
<td>Anchae, saranchae, haengnangchae, and other subsidiary rooms / &quot;E(&quot; shape layout</td>
</tr>
<tr>
<td>Yeocheon Kown clan Jongga byeoldang</td>
<td>Yeocheon, Gyeongbuk</td>
<td>Mid Chosun 1589</td>
<td>Kown, D-sang / Kwon, Suk-in</td>
<td>Anchae and saranchae / &quot;F(&quot; shape layout</td>
</tr>
<tr>
<td>Sungyeoldang</td>
<td>Youngchun, Gyeongbuk</td>
<td>Early Chosun the 15th year of King Sejong, 1433</td>
<td>Yi, Sun-mong / Thirteen owners including Yi, Soo-chae</td>
<td>Byeoldang / &quot;I()&quot; shape layout</td>
</tr>
<tr>
<td>Yeon Yi Clan Chunghyodang</td>
<td>Andong, Gyeongbuk</td>
<td>Early Chosun the 6th year of King Myungjong, 1551</td>
<td>Yi, Hong-in / Yi, Sung-jik</td>
<td>Byeoldang / &quot;I()&quot; shape layout</td>
</tr>
</tbody>
</table>

2) In Seoul, among 359 treasures there are 177 books and documents (49.3%); yet, only 13 wooden buildings are designated National Treasures. In contrast, Gyeongbuk province has 118 wooden buildings which are designated. The ratio of geographical distribution of the buildings is high in this region.
regional characteristics locate the majority of residences in Gyeongbuk province. The geographical situation of the province and strong conservative tendencies of the inhabitants contribute to this condition. Other cultural assets are well-preserved and of high quality in the region.3

Another interesting fact is that three buildings including Muchondang, Hyangdan, and Dongnakdang are related to one individual, Yi Eoon-jeok (1491-1553) and located at Yangdong Folk Village4. This is 16 kilometers northeast of Gyeongju City, where Yi Eoon-jeok's mother's maiden home was located, and where he himself was born.

2. Exterior Architectural Elements

1) Platform

Platforms have been used from the Three Kingdoms period (lasting about 1000 years from the first century B.C.).5 A stone platform (kidan) is placed on the ground, and a wooden structure is raised above it.

The platform is an important element used to heighten the external appearance of a building, to improve ventilation, and to prevent damp rising from the ground. Various construction methods are employed in residential buildings, using two different types of stones: natural stone and artificially trimmed stone. Trimmed stone is further classified according to shape: jungdaesuk, sadosuk, kanjisuk, etc. With regard to how stones are piled-up in tiers, there are two ways: one is an ordered method, and the other disordered.

Although all eleven houses are built with stone platforms, eight buildings use natural stone. According to Ju, Nam-chul (1994, p.206), natural stone was popular in suburban areas; however, trimmed stone was mostly in Seoul. The number of piling layers for platforms varies as: one tier (3 buildings), two tiers (2 buildings), three tiers (2 buildings), four tiers (1 building), six tiers (1 building), and nine tiers (1 building). Therefore, there is no consistency among these buildings (Ju, 1994, p.205).

2) Column

Columns6 distribute the weight of the roof structure to the foundation and serve as framework for walls. The space between columns remains open or closed for doors and windows. In most cases, circular columns (five buildings) and rectangular columns (four buildings) were used in a similar proportion. Two buildings (18.1%) mixed both types. Although circular

![Figure 2] Four different roof types in Korean residential buildings: a. matbae jibung; b. the paipak jibung; c. the ujjangak jibung; d. the soseul jibung

4) There are 6 folk villages which belong to 'Important Folklore Materials,' including Yangdong folk village. There are 3 treasures and 12 wooden buildings designated Important Folklore Materials, and also 15 national cultural properties in Yangdong folk village.
5) Stone platforms (kidan) in traditional Korean architecture is slightly higher than that of Japanese and Chinese examples.
6) There are two different types of column in traditional Korean houses: circular and rectangular. Circular columns include those which are tapered, with entasis, and also parallel-sided; rectangular columns include rectangular, hexagonal, and octagonal columns.
columns are not typical in the traditional house, there are a number of examples in which these are used in front of sanseokche and anchae maru (Hong, 1995, p. 133). In particular, there are also some exceptions in the upper class regional house (Ju, 1994, p. 206).

3) Roof

The beauty of traditional Korean houses derives from rooflines which form three-dimensional curves. The curves of these rooflines form a variety of aesthetics depending on where one looks at the building. Traditional Korean houses differ in character through various roof structures. The wooden structure is covered with tiles, called kiwa, made out of clay. Kira of two different shapes, concave (female) and convex (male), are assembled together above the wooden structure. There are four major roof types for the house including the paljak jibung (a hipped and gabled shaped roof), the matbae jibung (a gabled roof), the uyongak jibung (a hipped roof), and the seomul jibung (a combination of a paljak jibung and a gabled roof). While the matbae jibung is the simplest one and the most common roof type, the paljak jibung is the most beautiful and has a variety of different shapes (Baek and An, 2003, p.179). Thus, the paljak jibung was mostly used for the houses of the elite.

Overall, seven out of eleven buildings (63.6%) have the paljak jibung. Two buildings (18.2%) have the matbae jibung and the other two (18.2%) have the gojeok jibung, which has additional roof structures to the matbae jibung. Herein, there are two distinctive types of roof shape: one is the gojeok jibung in Mucheomdang and Sungjeoldang, the other is a roof that emphasizes a barge board and a gable structure in Hyangdan. An additional roof structure is added on the right end of the matbae jibung in Mucheomdang, but on both sides of the matbae jibung in Sungjeoldang [Figure 2]. Seen from the front, they look

7) There are various roof designs depending on the use of materials including, kiwa jibung (clay tile roof), choga jibung (thatch roof), neosu jibung (wooden shingle plate roof), gulpi jibung (roof with the bark of oak trees), etc.
matbae jibung, but from the side view, they look like the paljak jibung. In fact, the gajeok jibung is a transitional roof shape between matbae jibung and paljak jibung.\(^8\) This is due to the fact that both Mucheondang and Sungryeoldang were built in the earlier period of the Chosun dynasty than others. The roof type of Hyangdan is basically matbae jibung. The structure is unique in the sense that its roof shape reflects the internal spatial hierarchy. That is, the roof structure of the major space like daechung is raised higher than that of the minor space like the kitchen (Ro & Hong, 1999, pp.39-51).

3. Spatial characteristics of sarangchae

1) Spatial functions and plan types

Seven out of eleven buildings (including Ojukheom, Dongchundang, Yangjindang, Mucheondang, Dokrakdang, Chunghyodang, and Yeon Yi Clan Chunghyodan) were built as sarangchae, a certain type of byeoldang for the upper class. It is a multi-purpose room for reading, meeting, and loafing. Six out of seven buildings have an “I” shape layout; only Mucheondang has an L shape layout.

The remaining four buildings have relatively complicated plan typologies. Hyangdan comprises anchae, sarangchae, araeachae, and haengnangchae. They are clustered in a “|||” shape layout as a whole.\(^9\) Sarangchae is attached to the cluster with an “I” shape layout. Chunghyodang\(^10\) consists of anchae, sarangchae, haengnangchae, and sadang. Anceh forms a “\(\vee\)" shape layout, while sarangchae in front right of anchae has an “I” shape layout. Andong Euisung Kim clan Jongtaek\(^11\) is clustered by a “\(\vee\)" shape Anchae, an “I” shape sarangchae, and various separated buildings, forming a "\(\boxup\)" shape overall. Yechoe Kwon clan Jongga byeoldang looks as if a “\(\vee\)" shape anchae is separated from sarangchae, interconnected in the back by a corridor between daechung in the anchae and sarambang (a master’s room) in sarangchae.\(^12\)

When sarangchae are independent buildings, the sarangchae alone is designated a National Treasure. However, when sarangchae are adjacent to other buildings like anchae, haengnangchae, and sadang, the whole cluster is designated. Most of the plan layouts (10 houses) are based on an “I” shape layout. Only one building is based on an “L” shape. This is in accord with Yi, In-bee’s (1973) claim that the sarangchae in the upper class house comprise an “I” or “L” shape layout.

One of the distinct characteristics in houses of the Chosun dynasty is the expansion or separation of sarangchae (Kim, 1998). Given that the master’s quarters seemed extremely small and narrow compared to other quarters in the early period of the Chosun dynasty (Yi, 1991), it used to be a small guest room. Subsequently, it has been developed into the current enlarged and expanded form of sarangchae by separating from anchae due to the strong influence of Confucianism around the 16th century (Kim, 2002). After the 17th century, sarangchae became totally separated as an independent building to serve as public space within a house for social activities (Kim, 1994).

Among eleven buildings, two were built in the 15th century, seven were in the 16th century, and two were built after the 17th century. It shows that byeoldang type of sarangchae was designed earlier than the 17th century.

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8) Visit Cultural Properties Administration website: www.ocp.go.kr
9) The plain layout of Hyangdan is distinctive and different from other upper elite class houses. This is due to the influence of Feng Shui principles. The clustering of the house is formed based on an “I” shape haengnangchae plus a “|||” shape the rest of the house, thus forming a “\(\boxup\)" shape layout as a whole (Ju, 1994).
10) Two buildings of Chunghyodang are designated Korean National Treasures (No. 414), whereas the other 10 National Treasures include only one building.
11) Since Sarangchae in Andong Euisung Kim clan Jongtaek is placed far away from anchae as a separate building, guests can directly enter to Sarangchae.
12) Rather than connecting daechongnam to daechongmaru, a connection between daechongmaru in the anchae and sarambang in sarangchae is a unique example.
century. These buildings also belong to the upper class whose social life was very active during the period. Since the role of sarangchae was considered significant for the upper class, byeoldang-type sarangchae was adopted into the upper class earlier than that of the commoners.

To summarize, a major portion of these buildings function as sarangchae (an outer quarter for the male resident) or as a house that includes sarangchae. They form mostly an "I" shape layout, having daechung and sarangbang (the master's room).

2) Plan layout

All plan layouts in traditional Korean houses are laid out according to the kan system. Kan denotes a basic unit of measurement which refers to the distance between two columns; however, the kan is not defined by an exact measurement. Rather, the dimension varies slightly. The eleven houses are laid out according to the kan. As discussed earlier, these residential buildings are either sarangchae or a house with sarangchae. Thus we focus our analysis of plan layout on sarangchae.

Ojukheon is laid out with 3 kan on the front and 2 kan on the side. From the front, 2 kan on the left is daechong. 1.5 kan on the right is a room (ondol, heated-floor) and the rest 0.5 kan is toetmaru.

Dongchungdang is a typical byeoldang. It is laid out with 3 kan on the front and 2 kan on the side. The house consists of a kan room on the left and two kan daechong on the right.

Yangjindang is laid out with 5 kan on the front and 2 kan on the side. Sarangchae is connected to anchae.

Mucheondang is laid out with 5 kan on the front and 2 kan on the side. There are two rooms either side. Namaru is project in front of a room on the left, and a small 0.5 kan attic is adjacent to a room on the right. Three kan daechong occupies the middle.

Hyangdan is laid out with 4 kan on the front and 2 kan on the side. It is connected to an I shape anchae. From the front, the house consists of a 1 kan room on the left and right, respectively. The middle 2 kan is for daechong. A room on the right from the side view is laid out with 1.5 kan plus 0.5 kan toetmaru.

Dongrukhang is laid out with 4 kan on the front and 2 kan on the side. From the front, the house consists of a 1 kan room on the left and a 3 kan daechong on the right.

Chungnyodang is laid out with 6 kan on the front and 2 kan on the side. From the front, the house consists of two 1 kan rooms on the left, a 2 kan daechong in the middle, and a 2 kan room with daechong on the right.

Andong Euisung Kim clan Jongtaek is laid out with 4 kan on the front and 2 kan on the side. Sarangchae and haengnyangchae are connected by the two-story wooden floor structure where the upper portion is book storage and the lower portion is a storeroom. It is a unique structure, rarely found in any traditional house in the Chosun dynasty. Sarangchae consists of a 3 kan daechong on the left, a 1 kan room on the front right and a small attached room in the back.

Yecheon Kwon clan Jong-ga byeoldang is laid out with 4 kan on the front and 2 kan on the side. Byeoldang is connected to anchae by corridor. The building consists of a 3 kan daechong on the right, and a 1 kan room on the front left as well as on the back.

Sungbyeoldang laid out with 5 kan on the front and 3 kan on the side. From the front, the house consists of a 1 kan room on the left, a 3 kan daechong in the middle, and a 1 kan room on the right. In particular, a 1 kan maru is set in front of each room so that they look 1 kan from the front and 2 kan from the side.

Yeon Yi Clan Chungnyodang is laid out with 3 kan on the front and 2 kan on the side. From the front, the house consists of 2 kan numaru on the left, and a 1 kan room on the right.
Except for Mucheomdang, all buildings are laid out as an "I" shape with rooms and daechong. A two-room type the most popular (6 buildings, 54.5%), followed by one-room type (four buildings, 36.4%), and three-room type (one building, 9.1%), in that order.

A comparative analysis of layouts reveals that there is no kitchen among these buildings. According to Yi, In-hee (1973), sarangchae comprises daechong, sarangbang (a master's room), numaru, taeotmaru, and other subsidiary rooms. Anchae comprises the housewife's sleeping room (anbang), subsidiary rooms, and daechong in the middle. A kitchen, storage rooms for kimchi, firewood, etc. are adjacent to anbang. Various auxiliary rooms are also attached to the kitchen. The kitchen is not typically attached to sarangchae, since the sarangchae is the master's social space and is a component of the upper class house during the Chosun dynasty. In addition, under Confucianism it was prohibited for males to dine with females during the Chosun

![Diagram showing various layouts of sarangchae buildings.](image)

[Figure 3] Eleven spatial layouts of Sarangchae

[Legend: Building outline, -- Partitions, - - Kan divisions, □ room, ■ daechong, and □ toetmaru(numaru)]
dynasty. Generally speaking, meals were served separately to each (Yi, 1995, p.178). As such, sarangchae without kitchen is a typical layout during the period.

Spatial layouts of the eleven buildings are illustrated below according to room, maru, and other subsidiary rooms. Maru typically occupy 2 or 3 times the size of other rooms. The reason is that maru is considered a significant social, family activity space, particularly in the upper class houses. Rooms are attached either left/right or on both sides of maru. This is a typical spatial grammar of Korean traditional houses.

IV. Conclusion

Comparative analysis of these buildings illustrates all eleven residences were built in the Chosun Dynasty; yet the exact year of construction is known for only four buildings. The residences have been well-preserved and are representative of upper class houses of the period. Nine of eleven buildings are located in Gyeongbuk Province. They are of mostly byeol-dang-type sarangchae. Sarangchae was mainly used for social interaction within a house. This means the sarangchae has been embraced as an emblem of the family’s status in society, particularly for the upper class. Accordingly, families oriented design toward the signaling of social power; it is natural that much attention was given to the building’s outward appearance, the use of high quality materials, and design elements which represented their status.

Most of the eleven buildings have a hipped and gabled roof structure (paljak jibung) supported by either circular columns or square columns in a similar proportion. All buildings are also set upon stone platforms (kidan) - yet the number of tiers is irregular. Most of the floor plans rely on an “T” shaped layout. Basic spatial components include room (oandol) and various wooden floors (maru) without the kitchen. The ken-system controlled each component of the buildings.

This research opens us to future research projects: what are common characteristics of traditional houses in other dynasties? Each dynasty prescribes a style that evolved, influenced, or broke from each other. Therefore, it is compelling that a comparative and systematic analysis of residential buildings in each dynasty can be pursued to restore and preserve a rich cultural architectural heritage.

Key Words: Residential Buildings Designated as Korean National Treasures, Exterior Architectural Elements, Spatial characteristics of sarangchae

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13) Wooden floors like daehongmaru in Korea developed since the 15th century, and were adopted as part of the interior design since the 16th century (Baek and An, 2003, p.66).
14) According to Kim (Kim, et al, 1993), sarangchae comprise sarangbang, maru, and the kitchen. He argues that each subsidiary room has been transformed from the three rooms. He also reports that maru at sarangchae are considered significant in daily activities, and differ from anahae in both upper and lower class houses.

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