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## Abstract

This study analyzes the values reflected in the evolution of the threshold, a term that encompasses boundary and entrance structures as well as the entrance sequence (circulation patterns) in Korean residential architecture (*hanok*). Most sources used in this study were acquired through searches in physical libraries and on the web as well as over the course of a two-month field study (June and July 2011) and a short trip (May 2012) to Korea. The threshold space of *hanok* was studied in the context of three different time periods: “traditional *hanok*,” built before the nineteenth century, “urban *hanok*,” built from the early to mid-twentieth century, and the most recent “*hanok* revival projects,” from 1980 to the present. In this, the concept of *kan / gan* (칸 / 간, 間) has guided my research. This term carries meaning beyond its accepted understanding as a traditional measurement in *hanok* construction, to imply the time-dimensions of spatial experience as one passes through the layered thresholds in Korean architecture. In this study, the threshold is understood in an expanded context to include the boundary structures and the circulation experience of the house. This study finds that the conventional concepts and sensitivities of the traditional threshold components continue to exist in Korean architecture, i.e., the dual existence of opposing characteristics, such as formal/informal, inside/outside, etc. The functions of the threshold have been modified, however: privacy, safety, security, and efficiency have been reinforced as a result of changes in the lifestyles of urbanized and modernized Koreans. The recent “*hanok* revival” trend has stirred up a collective effort to put traditional values in a global perspective and has generated a new appreciation of the physical forms and spirit of the traditional *hanok* threshold.

Key words: threshold components, *munjibang*, *kan / gan* (칸 / 간, 間), boundary, circulation, entrance structures, traditional *hanok*, urban *hanok*, *hanok* revival movements

## Introduction

We experience built space through the movements of our bodies and their interaction with the physicality of objects.

Architectural design can be described as the design of spatial movements (circulation) that can be controlled and directed by walls and passageways. How circulation is resolved in the floor plan is at the core of architectural design. Circulation paths are created through the placement of openings and obstructions—i.e., wall divisions and spaces. Clear passageways may be desirable in some areas while some means of obstruction is deemed necessary in others.

In the design of spatial movement, the threshold functions as a means of obstruction to counterbalance the implication of passageways as open and inviting. The threshold may represent an individual marker defining the circulation, as it gives the literal distinction of standing “in” or “out.” It compels one to slow down and even hesitate. The antagonistic notions of the threshold provide the dual symbolism of the doorway—both blocking and opening.

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**Figure 1.**  
 Threshold in Namsan-gol Hanok Village, Seoul (left), and Bulguk-sa Temple, Gyeongju (right). Source: Photographed by the author, May 2012 (left) and July 2011 (right).

For instance, the threshold components in the front gate define the point of division between the interior and exterior, thus the point of entering or departing. The threshold also represents the boundary between two opposing spaces, the home as a safe place is put up against the street as the source of potential danger. Because ideas about boundary are essential in defining what “home” means, analyzing the threshold in its typology, structures and symbolism in a certain culture may reveal the invisible and unspoken history of the people of particular regions. Often, one can sense the significance of the boundary from the taboos and customs existing around a threshold space. Taboos often represent the social values that relate to a people’s understanding of their homes and the relationship of those homes to the world outside.

My initial research started with my interest and curiosity in the *munjibang* as a doorsill in Korean architecture, but the cultural and psychological weight has guided the direction of this study much further, leading to an understanding of the threshold in its more comprehensive English definition as the key concept of this study.

According to a major Korean-English dictionary, *munjibang* is defined as a “doorsill” or “threshold.”<sup>1</sup> Definitions of “threshold” in English dictionaries helped further accommodate the cultural and architectural aspects of the subject in the broader context, as opposed to the common definition of threshold as “a block of wood that marks the entrance,” an understanding that has been shared by the Western and Eastern worlds with some differences in its cultural implications. These two terms (*munjibang* in Korean and threshold in English) are almost identical in their basic definitions, but the latter is more inclusive in its dictionary definitions.

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<sup>1</sup> *Minjung's Essence Korean-English Dictionary*, 4<sup>th</sup> edition (Paju-si: Minjung Seorim, 2011), s.v. “munjibang.”

Various Western reference works, including *Webster's Dictionary*, *The Oxford Dictionary of Folklore*, *The McGraw-Hill Dictionary of Architecture and Construction*, and *The Dream Encyclopedia*, offer a much broader range of definitions of threshold.

**1. *Webster's Dictionary* <sup>3</sup>**

**“threshold” n.**

- a. a piece of wood or stone placed beneath a door; a doorsill
- b. an entrance or a doorway.
- c. the place or point of beginning; starting point, the outset.
- d. the point that must be exceeded to begin producing a given effect or result or to elicit a response.

**2. *The Oxford Dictionary of Folklore* <sup>4</sup>**

**“threshold” n.**

Symbolically, a ‘threshold’ marks the boundary between a household and ‘the outer world’ and hence between belonging and not-belonging, and between safety and danger.

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<sup>3</sup> Jacqueline Simpson and Steve Roud, *A Dictionary of English Folklore* (New York: Oxford University Press, 2005), s.v. “threshold.”

<sup>4</sup> Jacqueline Simpson and Steve Roud, *A Dictionary of English Folklore* (New York: Oxford University Press, 2005), s.v. “threshold.”

### 3. *The McGraw-Hill Dictionary of Architecture & Construction* <sup>5</sup>

#### **“threshold” n.**

A strip fastened to the floor beneath a door, usually required to cover the joint where two types of floor material meet; may provide weather protection at exterior doors.

### 4. *The Dream Encyclopedia* <sup>6</sup>

#### **“threshold” n.**

A symbol for passing from one state or condition to the next, indicating a transition in some aspect of the dreamer's life.

All of the definitions above are relevant to the study of *munjibang* in Korean architecture. In particular, the definition from *The Oxford Dictionary of Folklore*, “symbolic boundary between a household and the outer world; the division between belonging and not belonging and between safety and danger,” seems to describe my own experience of *munjibang* growing up in Korea. I feel that expanding the interpretation of the *munjibang* is necessary and appropriate for an in-depth study of the ingrained significance of the layered aspects of threshold in Korean architecture.

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<sup>5</sup> Cyril Harris. *Dictionary of Architecture and Construction Fourth Edition* (Seoul: McGraw-Hill, 2006), s.v. “threshold.”

<sup>6</sup> James Lewis. *Dream Encyclopedia* (Canton, MI: Visible Ink Press, 2009), s.v. “threshold.”

This study compares a number of facets of the threshold as found in traditional and contemporary Korean residential architecture (defined as *hanok*), in an attempt to recognize the values that structure Korean culture.

The following are the three main ideas discussed in this study.

1. The expanded definitions of the *munjibang* and the threshold, including “the layered boundaries” and the “circulation” or “passing through the series of boundaries,” in Korean architecture.
2. The system of *kan*, “the measurement system used in *hanok* construction,” as well as definitions of the term “*kan*” (sometimes pronounced *gan*) are discussed in relation to the threshold in *hanok*.
3. The timeline for the evolution of lifestyles that are manifested in the Korean threshold space are divided as follows:
  - a. traditional *hanok* houses built before the nineteenth century;
  - b. urban *hanok*, built from the early to mid-twentieth century;
  - and
  - c. the current *hanok* revival trend that started around the 1980s

The goal of this dissertation is to study the threshold concept and its value in Korean architecture in the context of the fast-paced contemporary life in which that concept is quickly disappearing, and to re-evaluate its significance in the contemporary context. The conceptual and interpretive analysis of *hanok*'s invisible components will be extremely valuable for reinforcing the functional and physical aspects of traditions. It is hoped that such interpretive research will go hand-in-hand with efforts at preserving the physical aspects of *hanok* towards a meaningful revival of *hanok* traditions in the contemporary environment.

Chapter One is devoted to general information on Korea and Korean architecture as a sort of preface to the discussion of the threshold in Korean architecture; a brief examination of Korea's geological and historical environments, as well as the structural aspects of *hanok*, are included. Also included in this chapter is the introduction of the phenomenological aspect of the *hanok* space, which may be directly related to the threshold phenomena of *hanok* space.



The following two chapters discuss the threshold in residential *hanok* in the central areas of Korea with occasional references to other regional varieties. Chapter Two focuses on the main subject of the threshold in traditional *hanok* buildings, and Chapter Three examines the evolution of the threshold in modern and contemporary *hanok*. A glossary of Korean architectural and *hanok* construction terminology as well as an appendix on the urban history of Seoul are also included.

Most sources used in this study were found through the library and web research, and supplemented by a field study in Korea during the months of June and July 2011. Photographs from the author's field study, as well as found images, are used as visual references throughout. Most mechanical CAD images and sketches were drawn by the author based on various sources.

## Chapter 1

### Context of *Hanok*, Korean Architecture

The literal meaning of *hanok* is “Korean house.” More commonly, the term *hanok* is used to describe Korean traditional houses, with consideration given to the positioning of the house in relation to its surroundings, namely its geological, topographical and climatic environment. Korean *hanok* structures differ depending on the natural, social, and cultural environments of their specific region.<sup>7</sup>

The term *hanok* began to be used in the late nineteenth and early twentieth centuries to represent Korea’s traditional architecture, as opposed to Western-style architecture. There have been efforts to find a better term to represent Korea’s historic architectural tradition. However, *hanok* continues to be the most commonly used term among scholars and professionals of Korean architecture. A number of contemporary scholars have begun reexamining the *hanok* not simply for its value as “old architecture” but for the ecological values inherent in its traditional / vernacular approaches and their potential to provide alternative

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<sup>7</sup> Kim Hanyeop, “*Hanok*, ‘Traditional Korean House’,” <http://sziakim01.blogspot.com/2010/05/cults-hanok-traditional-korean-house.html> (accessed January 2012).

solutions to current and future architectural and environmental issues.

Professor Kim Dogyeong, for instance, proposes a more future-oriented definition of *hanok* as buildings that were “cultivated” based on Korean architectural techniques and wisdom developed over time.<sup>8</sup> His understanding suggests the ever-changing organic character of Korean architecture, and also presents a more flexible interpretation of *hanok* that is inclusive of the future possibilities of *hanok* evolution.

With this discussion of the term in mind, *hanok* is defined in this study as structures built with techniques and using systems established in Korea in response to specific regional environments. Though evolutionary changes are naturally to be expected, it is reasonable to assume that some *hanok* elements have and will be maintained consistently throughout the course of that evolution. This dissertation will investigate how traditional forms and concepts of *hanok* threshold persist in modern and contemporary Korean culture. Among many types of architectural structures, residential *hanok* houses are included as the primary focus of this study.

Bernard Rudofsky declared that, “Vernacular architecture ... is nearly immutable,

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<sup>8</sup> Kim Dogyeong, “*Hanok bojon gwa baljeon jeongchaek ui hyeonhwang gwa baljeon banghyang* (‘Preservation and direction of the future development of *hanok*’)” (paper presented at the Gukga Ingwon Wiwonhoe Symposium (‘National Human Right Committee Symposium’), Seoul, March 15, 2010). Appears in “*Hanok toronhoe Jaryojip*” (‘*Hanok* symposium reference book’) (unpublished).

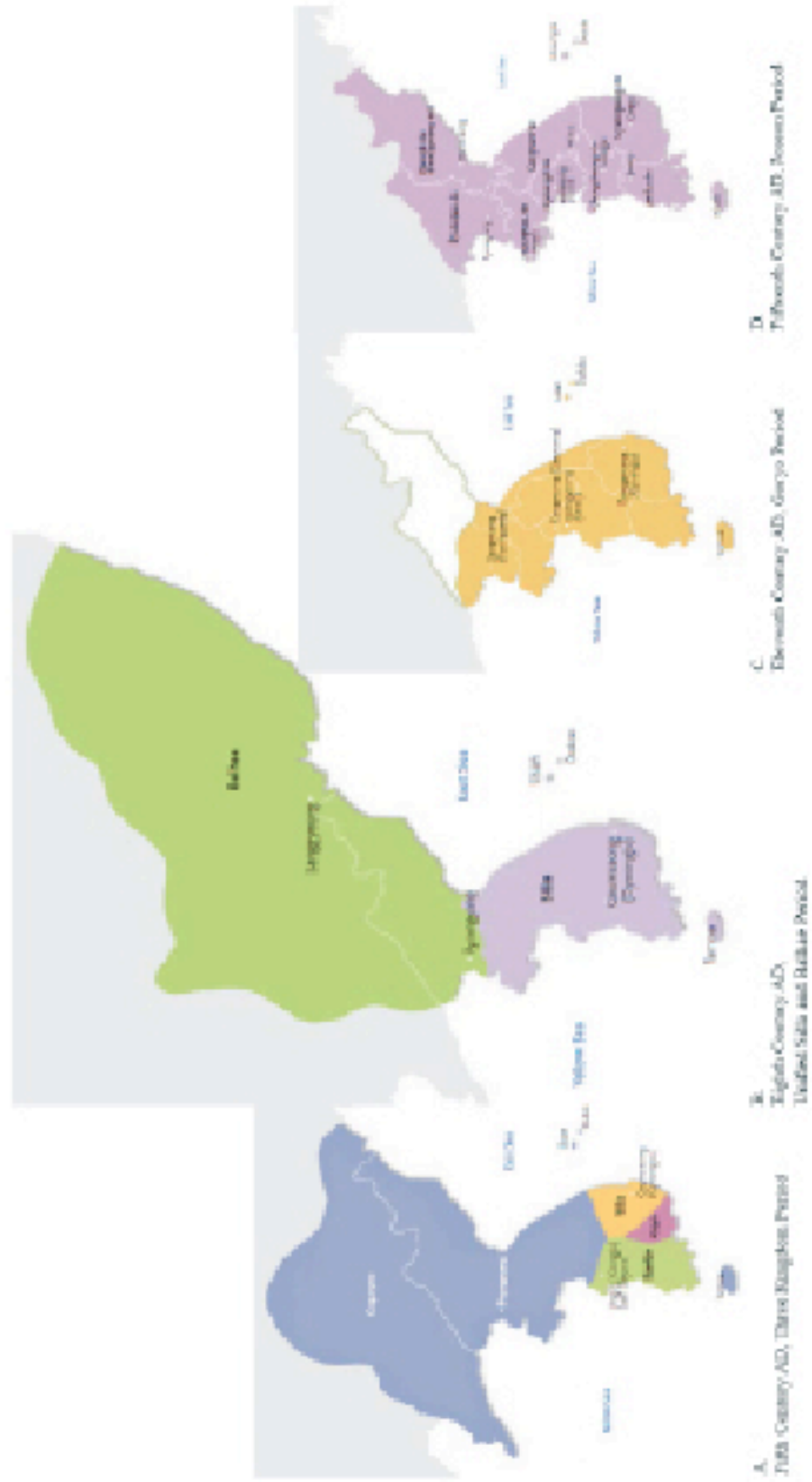
indeed un-improvable, since it serves its purpose to perfection.”<sup>9</sup> What he means by this is that vernacular architecture fully integrates the architectural needs of its inhabitants with the material limits of their environment. Residential *hanok* contain traits from both vernacular and traditional architecture, reflecting the complex nature of its local environment. From the contemporary standpoint, *hanok* provides humble answers to numerous ecological and environmental problems that the world currently faces.

### **1.1. Historical Background**

As with most traditional architecture, *hanok* has never been a static phenomenon. *Hanok* has changed and evolved continuously over time based on people’s needs or their deeply rooted notions of the ideal house and home. Most existing residential *hanok* homes were built during the late Joseon period (late seventeenth to early twentieth centuries). Unfortunately, there are very few physical examples of Korean architecture before that time. Studies of structures predating the late Joseon period must rely upon written records, tomb murals, and artifacts stretching back to Korea’s ancient history. The following series of maps depict Korean territory from the fifth century CE during the Three Kingdoms Period up to the Joseon era in the fifteenth century.

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<sup>9</sup> Bernard Rudofsky, *Architecture Without Architects* (Albuquerque, NM: University of New Mexico Press, 1987), 5.



**Figure 1.** Historical Map of Korea, Maps managed from the source, Korea.net, <http://www.korea.net/english/View/Korea/Korea-at-a-Glance/History>

The map of the Korean peninsula in the fifth century CE (Figure 2A) shows the three kingdoms of ancient Korea (ca. 57 BCE-668 CE) in relation to neighboring regions. These ancient three kingdoms of Korea were Goguryeo, Baekje, and Silla, and they existed as separate states on the peninsula from roughly 57 BCE to 668 CE (Silla unified most of the peninsula in 668 ushering in the so-called Unified Silla period between 668-935 CE, though the state of Balhae dominated much of the old Goguryeo territory in the far north). In Korea of the fifth century CE, Goguryeo was a major power, expanding its territories into what is today China and the Russian Maritime Provinces, while Baekje was in retreat before Goguryeo expansion.

Both Goguryeo (37 BCE-668 CE) and Baekje (18 BCE-660 CE) developed a style of architecture that may be considered an early form of *hanok*. In its section dealing with Goryeo (i.e., Goguryeo), the *Xin Tangshu* (New History of Tang) records that the houses there were built with raised wooden floors and used an *ondol* heating system during the winter. Tomb paintings from this period (fourth to fifth Century CE) also reveal the architectural types and the forms of the time: palaces, administrative structures and temples were built with tiled roofs, while commoners' houses were built of timber and with thatched roofs. Supporting these records are excavated metal wood-crafting tools.<sup>10</sup>

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<sup>10</sup> Yun Jangseop, *Han'guk ui geonchuk* ('Korean architecture'), 88-89.



**Figure 3.**

The eastern wall of the Anak Tomb III (Hwanghae-do province, North Korea) belonging to the Goguryeo kingdom, with murals depicting the architectural details of the time (357 CE). Source: Yun Jangseop, *Han'guk ui geonchuksa* ('History of Korean architecture'), 88-89.



**Figure 4.**

Mural showing a kitchen scene from the eastern wall of the Anak III Tomb. Source: Lee Sungsi, "The History and Culture of Goguryo" United Nations Educational, Scientific and Cultural Organization (UNESCO), September 2005, 12.

These mural paintings from the Anak III Tomb depict the *hanok* in its early form and show some of its distinguishing characteristics already established at this early date (ca. 357 CE). Figure 3 shows the tomb's eastern wall elevation with its series of murals depicting wooden buildings, a grain mill, meat market, vehicle garage, animal pen, and stable, as well as residential houses. The second wall from the left (Figure 4) shows a kitchen where a woman is cooking using an *agungi* fireplace, part of a home's *ondol* (under-floor heating system). Among

other characteristics of the *hanok*, the *ondol* was established during the Goguryeo period and later popularized during the Joseon period (1392-1898).

One of the oldest sources to describe houses on the Korean peninsula is the Chinese *Jiu Tangshu* ('Old History of Tang'), a history of China's Tang dynasty completed in 940-945 CE. The *Jiu Tangshu* records briefly that Goguryeo "... houses were built following the shape of the mountains in Korea ... Commoners' dwellings had thatched roofs while temples, palaces and official structures had tiled roofs since 372 CE, when Buddhism was accepted in Goguryeo."<sup>11</sup> This passage indicates the establishment of the formal and visual structure of the *hanok* by the tenth century.

The form of Goguryeo period architecture was also recorded in the *Samguk sagi*, an historical record of Korea's three ancient kingdoms, which was compiled between 1122-1146 in the Goryeo period.<sup>12</sup> That history's section on architecture lists the scales and styles of homes based upon social class, including those homes' structural elements: the *gidan* (foundation), *dugong* (decorative wooden column heads), gate, and walls, as well as the restrictions placed on interior

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<sup>11</sup> *Jiu Tangshu* (Korean, *Gu Dangseo*) refers to the first official history of China's Tang Dynasty (618-907 CE). The history was completed in 940-945 CE, and later revised during the Song Dynasty and retitled the *Xin Tangshu* (New History of Tang). See Nancy Shatzman Steinhardt, *Chinese Imperial City Planning* (Honolulu, HI: University of Hawai'i Press, 1990).

<sup>12</sup> The *Samguk sagi* (History of the Three Kingdoms) is an historical record of the three ancient kingdoms of Korea: Goguryeo, Baekje, and Silla. Its compilation was ordered by Goryeo's King Injong (r. 1122-1146 CE) and undertaken by the government official and historian Kim Busik and a team of scholars. It was completed in 1145. It is known in Korea as the oldest existing Korean history. See Sin Hyeongsik, *Samguk sagi yeon'gu* ('A study of the Samguk sagi') (Seoul: Hyeonam-sa, 2001).



design based on social class.<sup>13</sup>



**Figures 5,6,7.**

House-shaped earthenware from Silla period tombs. Figures 5 (left) and 6 (center) show the tiled roofs that had been established by the Silla period. Figures 5 and 7 (right) have raised floors (early *maru* structures), one of the major characteristics of *hanok*, and which were also established by this time.

Source: Jo Jeongho, “*Busan Gadong eseo Samguk sidae jip togi balgul* (‘House-shaped earthenware from the Three Kingdoms period excavated in Busan Gadong’),” *Yeonhap News*, January 17, 2012, <http://luckcrow.egloos.com/2267653> (accessed July 1, 2012).

Silla, which was a rising power in the fifth century CE (see Figure 2), eventually unified the three kingdoms in the seventh century. Silla’s capital was located in the south-western city of Gyeongju in today’s South Gyeongsang-do province. A number of surviving tomb murals and house-shaped stoneware from the Silla capital region show the roof shapes and the raised floor structure established during the Silla and Unified Silla periods (ca. 57 BCE-935 CE).

Buddhism, first introduced to the Korean peninsula in 372 CE during the Three Kingdoms Period, was highly promoted during the Goryeo dynasty (918-1392 CE). During this time, Buddhist architecture emerged in the central area of Korea: the Gungnak Hall of Bongjeong-sa Temple in Andong, built at the end of the twelfth century, is the oldest existing wooden structure in the country and

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<sup>13</sup> Yun Jangseop, *Han’guk ui geonchuk* (‘Korean architecture’), 236.

expresses the typical architectural characteristics of the early period of Goryeo (see Chapter 1.3.1.).

Geomancy was the guiding principle in the selection of locations for towns and building sites during the Goryeo era. According to the tenets of geomancy, terrain and landscape could be interpreted so as to secure prosperity and well-being for the present and future. Through the influence of Confucianism, the refined aristocratic canon of taste of the Goryeo period was succeeded by a taste for simplicity and humble beauty that characterized the steadiness of architecture of the Joseon period (1392-1898).<sup>14</sup>

	KOREA	CHINA	JAPAN
Neolithic Period	Go-Joseon (2333 BC-108 BC)	Xia (Neolithic Culture-21st-17th Century B.C.) Shang (17th-11th Century BC-1025 BC) Eastern Zhou Dynasty (1025 B.C.- 722 B.C.) Zhou Dynasty (770 BC. - 256 B.C.) Start of the Chun-Qiu Period (722 B.C.)	Jomon Culture (ca. 14,500-300)    Yayoi Culture (300 BCE - 250 BC)
BC	HanSagun (109 BC- 313 AD)	Western Han Dynasty (206 B.C. - 9 A.D.)	
AD	Three Kingdoms (BC 57-935 AD) Shilla (BC 57 - 935 AD) Goguryo (BC 37 - 688 AD) Baekje (BC 18 - 660 AD)	Xin (9 - 24 AD) Eastern Han (24 AD-220 AD) Three Kingdoms (220 - 280 AD) Western Jin (280 - 316 AD) Eastern Jin (316-439) Northern and Southern Dynasties (440-589) Sui Dynasty (581- 618)	Tomb Period (ca. 250-552)     Asuka (552-710)
	Bai-hae (698-926) Hu Baekje (900-936) Goryeo (918-1395)	Tang Dynasty (618 - 907) Five Dynasties (907-960) Song Dynasty (960-1279) Yuan Dynasty (1279-1368)	Nara (710-794) Heian Period (794-1185) Kamakura Period (1185-1333) Ashikaga Period (1336-1600)
	Joseon (1392-1898) Daehan Jeguk (1898-1948)	Ming Dynasty (1368-1644) Qing Dynasty (1644-1911)	Tokugawa Period (1600-1868)
Modern Period	Republic of Korea (since 1948)	Republic of China (1911-1949) People's Republic of China (since 1949 AD)	Modern Japan (since 1868)

**Figure 8.**

The Chronology of Korea in the context of the history of neighboring China and Japan. Source: organized based on Kim Wangjik, *Algi swiun Han'guk geonchuk yongeo sajeon* (Korean dictionary of architectural terms) (Paju: Doseo Chulpan Dongnyeok, 2011), 458-461.

<sup>14</sup> Yun Jangseop, *Han'guk ui geonchuk* ('Korean architecture'), 374.

## **1.2. Geography, Climate, and Population**

The Korean Peninsula is located between latitudes 33°N (Jeju Island, South Korea) and 43°N (Rajin, North Korea), and longitudes 124°E and 131°E, an area of roughly 220,000 square kilometers. Seoul (37°N and 127°30'E) is at a similar latitude as San Francisco and Washington, D.C. Present-day North Korea shares land borders with the People's Republic of China and Russia to its north. To the Korean Peninsula's west are the Yellow Sea and the Korea Bay, while to its east lies Japan across the Sea of Japan (East Sea of Korea).

Situated within the cordilleran belt that stretches across the northern Pacific Rim, the entire Korean peninsula rests on a granite foundation. The western and southern landscape is a low, hilly terrain with gradual slopes, while the peninsula's south and west coasts are characterized by their jagged, irregular coastlines dotted with thousands of small islands. Most of the 3,479 islands that surround the peninsula are actually the tops of ancient ridges and mountains.

The following map (Figure 9) shows the major mountains and rivers of Korea. Five major rivers and a relatively large number of minor streams flow westward to the Yellow Sea and south to the Korea Strait after passing through the western and southern slopes of the peninsula.



**Figure 9.**

Map of the major rivers and mountain ranges of the Korean Peninsula.

Source: Drawn by the author based on the map available at <http://mappery.com/Korea-Map> (accessed July 10, 2012).

Nearly seventy-five percent of the country is characterized by hills and rugged mountains with two principal mountain ranges attaining altitudes of up to 1500 meters (5000 feet): the craggy, steep terrain of the Nangnim Mountain range in the north and the Taebaek mountain range in the south create a ragged granite spine running from north to south that forms Korea's geological backbone.

Branching out from these two spinal ranges are a number of smaller mountain ranges that run parallel to each other in a generally northeast-to-southwest direction. Granite rocky pinnacles and narrow canyons are common, and the streams that flow eastward are short and straight and move rapidly toward the ocean. Korea's eastern coast, where the Taebaek mountain range rises from the East Sea, is a nearly unbroken shoreline of cliffs and ridges.<sup>15</sup>

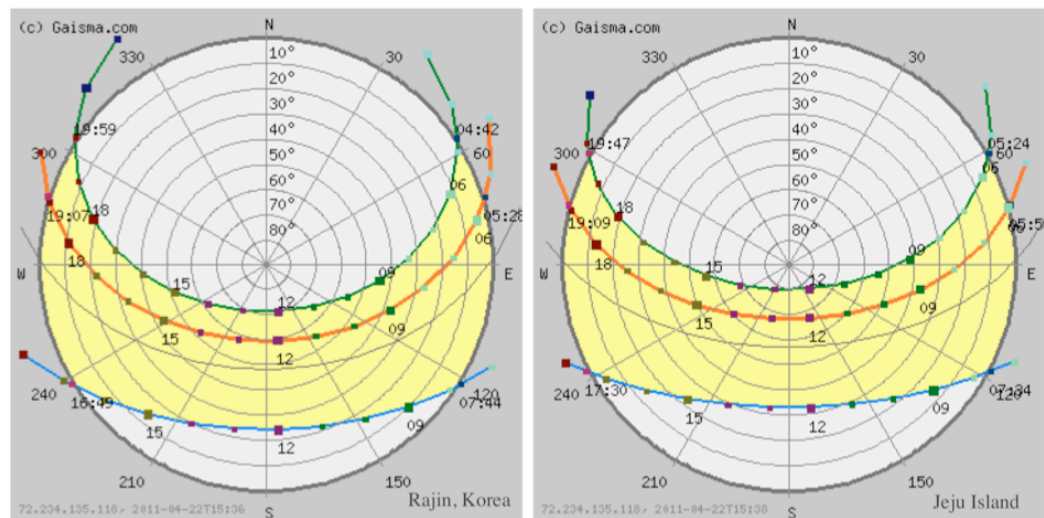
Korea has a humid, East Asian monsoonal climate, with four distinct seasons of about equal length. Korea has a fairly severe winter, which extends from December to March, while spring, lasting from April to June, is usually pleasant and warm. The summer months of July and August are hot and humid, with temperatures reaching to 90° and higher. The autumn is sunny and warm into late October and then turns cooler in November. Once or twice a year, during the summer and early autumn, there are heavy rains and the occasional typhoon. The climate for the peninsula's individual regions is largely defined by latitudinal location and topographical configuration.

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<sup>15</sup> Hyeongock Hong, at al. *Hanoak: Traditional Korean Homes* (Seoul: Hollym, 1999), 10-13.

In Rajin, located in the far north of the Korean Peninsula (See Figure 9), daylight for the summer solstice extends from 4:42 a.m. to 6:59 p.m. (15 hours), and between 7:44 a.m. and 4:49 p.m. (9 hours) during the winter solstice. The sun angle at noon on the summer solstice is about 70 degrees and 25 degrees on the winter solstice.

Jeju Island in the far south of the Korean Peninsula has daylight on the summer solstice from 5:24 a.m. to 7:47 p.m. (15 hours), and between 7:34 a.m. and 5:30 p.m. (10 hours) on the winter solstice. At noon on the summer solstice the sun angle is about 80 degrees, and 33 degrees on the winter solstice.



**Figure 10.**

Sun path diagrams for Rajin (left) and Jeju Island (right). Source: Extracted by the author from the University of Oregon Solar Radiation Monitoring Laboratory formula, <http://solardot.uoregon.edu/PolarSunChartProgram.html> (accessed October 10, 2011).

In Korea, geomancy, a body of traditional principles used in selecting the location of towns and building sites, places a high value on the existing natural environment in architectural design and town planning. Environmental

information, including terrain, wind, and sunlight, is also crucial in understanding the flexible threshold characteristics in Korean architecture.

Korea's current population is roughly 24 million in the North and 47.5 million in the South. Seoul, the capital of South Korea, is home to more than 10 million people and about a quarter of the South Korean population. Urban development is dense and cities tend to grow upward rather than sprawling outward, thus the population is concentrated in the lowland areas.<sup>16</sup> During the mid to late twentieth century, overall population more than doubled in Korea, and grew almost six-fold in Seoul, and population growth was directly related to urban development.

	Population in Korea	urban population	Population in Seoul
1949	20,188,000		1,693,000
1955	21,526,000	28.5%	1,575,000
1960	24,989,000	29.1%	2,445,000
1966	28,181,000	28.8%	3,471,000
1970	31,465,000	41.2%	5,525,000
1975	34,706,000	48.4%	6,890,000
1980	37,436,000	57.3%	8,364,000
1985	40,448,000	65.4%	9,646,000
1990	43,411,000	74.4%	10,613,000
1995	44,609,000	85.7%	10,231,000
2000	46,136,000	88.3%	10,321,000
2005	47,279,000		9,763,000
2010	48,580,000		9,631,000

**Figure 11.**

Changing Population of Seoul (1949-2010). Due to the Korean War (1950-1953), statistics for 1950 were unavailable, and so data for 1949 was used instead. Source: Yi Haeun and An Jaeseop, "Urbanization and Its Impact on Seoul Korea," Forum on Urbanizing World and Human Habitat II, Columbia University, New York, June 4-6, 2001, 83; and Statistics Korea, "Statistics Korea 2010," 12, 26. <http://kostat.go.kr>

<sup>16</sup> Sin Yeonghun et al., *Uri geonchuk 100-nyeon* ('A century of architecture in Korea') (Seoul: Hyeonam-Sa, 2001), 284-292.

### 1.3. Religious and Ideological Influences

Nationally promoted religions and ideologies as well as native folk beliefs together influenced architectural developments in Korea. Seen from the larger perspective of *hanok* development, all three main philosophies of East Asia, Confucianism, Buddhism and Daoism, have influenced the shaping of Korean architecture: there are similarities and overlapped ideas among the three, and even the differences became unified in the course of their coexistence in Korea for over one thousand years.<sup>17</sup>

The social ideals that existed in the collective unconsciousness of one era can be found expressed through that era's architectural trends, even though the philosophical ideology inherent in the architecture can be easily obscured by structural characteristics, such as design aesthetics and craftsmanship. As blogger Jo Jeonhwan has written, "Existing old *hanok* houses, which survived the extremely difficult history of modern Korea, stand for the old spiritual power: the house is built not only on physical ground but also on the people's collective spiritual and intellectual culture (*minsim*) that overcame the challenge from the political-social power ... In the tiny room of the *Dosan Seowon*, where the honorable scholar and teacher Toegye contemplated the great universe, we can feel how every detail of the house was designed and implemented with great

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<sup>17</sup> Im Seokjae, "Jipdan muuisik hyeongtae ui sasang gwa cheolhaki seumyeodeun geonchuk ('Architecture that reflects a collective unconsciousness, idealism and philosophy')," entry posted March 27, 2011, <http://blog.daum.net/kcphilips/12358178> (accessed October 20, 2012).



care.”<sup>18</sup> Jo appreciates the scholarly spirit that guided the architectural culture of the Joseon period, believing that the holistic combination of three axes—nature, society, and the cultural spirit—created the authentic nature of residential *hanok* of the Joseon period.

### 1.3.1. Buddhism

Buddhism, introduced to the Korean peninsula in the fourth century, influenced more than the shaping of temples; for over 1500 years it influenced the form of residential and official buildings as well. Decorative elements in *hanok* can be traced back to Buddhist traditions of the Goryeo period, as opposed to the simple and humble elements that characterized Korean architecture’s Confucian elements. However, the major Buddhist influence on Korean architecture was its concept of space, reflected in the spatial sensitivity of *hanok*, notably its inside/outside character.

“Emptying the room is the same concept as forming space in the room, and uselessness is, in effect, great utility.”<sup>19</sup>

Im Seokjae has brought up the Buddhist concept of *buri* (‘non-duality’) to explain the flexibility of *hanok* space: emptying and forming are identical concepts. The threshold space, such as central courtyard or *maru* space, offered great flexibility

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<sup>18</sup> Jo Jeonhwan, “BIM *gwa hanok ui insik jeonhwan* (BIM (Building Information Modeling) and re-examination of *hanok*),” entry posted May 11, 2011, <http://xn--950b94cs3ir9h.com/zbxe/16532> (accessed July 18, 2012).

<sup>19</sup> Yim Seock Jae, *The Traditional Space*, The Spirit of Korean Cultural Roots 6 (Seoul: Ewha Womans University Press, 2005), 79-89.

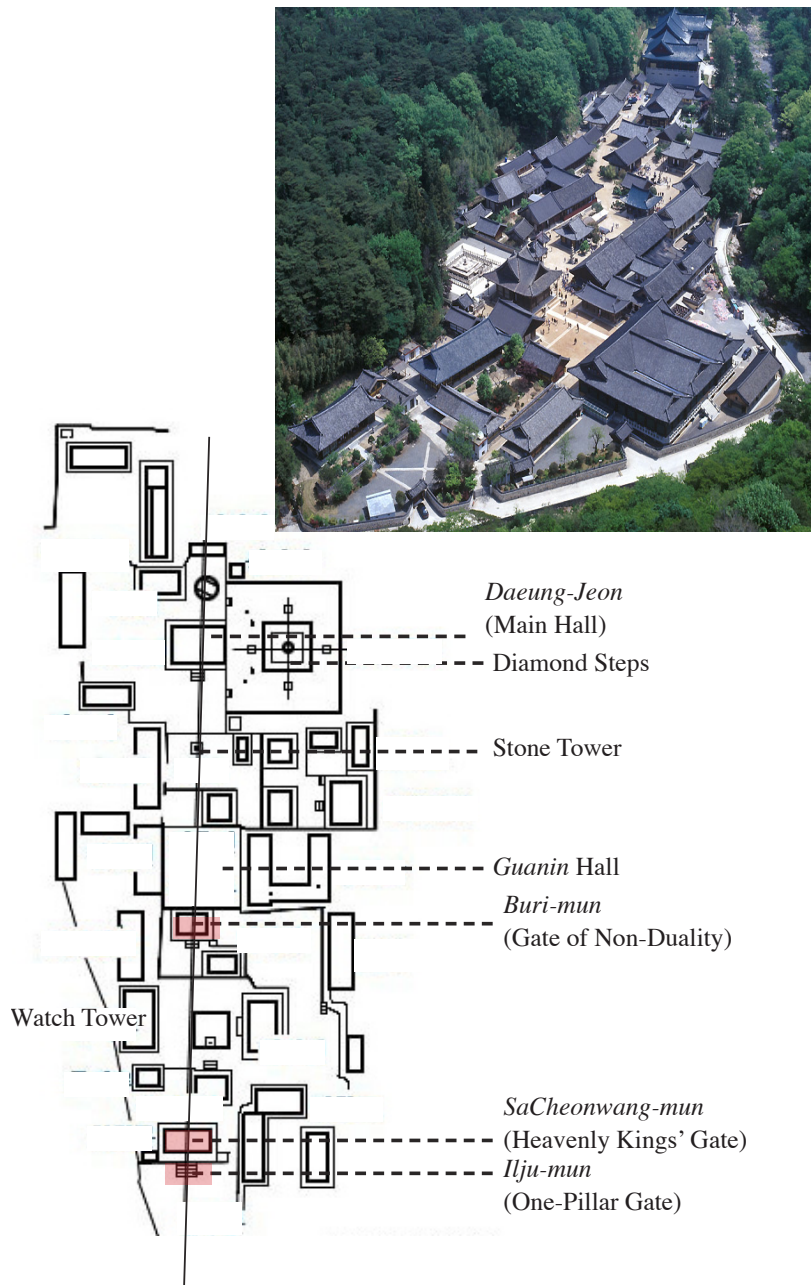
as both interior and exterior space.

The act of entering a Buddhist temple is a symbolic and ritualistic experience. Highly ritualistic “solid-void patterns” in passageways or entering sequences in Buddhist temple structures have also influenced the entrance patterns of *hanok*. For instance, entering through the first gate symbolizes entering into the “inside” of Buddha’s world, and yet it is still outside of the second gate, and the second gate is yet another passage toward the exterior of the third gate (*huri-mun*). As the name *huri-mun* (‘the gate of non-duality’) implies, the third gate symbolizes the entrance into the space where the person and the Buddha become one, while still constituting another “outside” space that leads to the main building of the temple.

The entrance sequence (circulation path) of Tongdo-sa Temple starts with a bridge called the Ilsa-gyo (‘One Mind Bridge’), followed by three main gates. The first gate, *Ilju-mun* (‘Single-legged gate’) symbolizes the boundary between the secular and spiritual worlds. The following gate, *Sacheonwang-mun* (‘Gate of the four heavenly kings’), houses four giant figures who watch over the four cardinal directions of the world. The third gate leading to the main hall is the *Buri-mun* (‘Gate of non-duality’), and passing through this final gate symbolizes the arrival in the new realm where there is no distinction between the Buddha and human beings.<sup>20</sup>

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<sup>20</sup> Tongdo-sa Temple (its name means ‘Salvation of the world through the mastery of truth’), is the head temple of the Jogye Order of Korean Buddhism. It was



**Figure 12.**

Diagram showing the spatial sequence (left) along with an aerial view (above right) of Tongdo-sa Temple. Source: Tongdo-sa Temple Homepage, [http://tour.yangsan.go.kr/01famous/03\\_01.php?pT\\_idx=13](http://tour.yangsan.go.kr/01famous/03_01.php?pT_idx=13) (accessed July 20, 2012).

built in 646 CE during the Silla period and is located in Yangsan, South Gyeongsang province in South Korea. The temple is composed of a total of 65 buildings that are surrounded by a series of outdoor *madang* (courtyards and various yard spaces), bridges and, most importantly, three major gates, the *Ilju-mun*, *Sacheonwang-mun*, and the *Buri-mun*. Tongdo-sa Temple Homepage: [http://tour.yangsan.go.kr/01famous/03\\_01.php?pT\\_idx=13](http://tour.yangsan.go.kr/01famous/03_01.php?pT_idx=13) (accessed July 10, 2012).

The entering sequence created by a series of gates in the *hanok* house, along with their symbolic and ritualistic aspects of those gates, resembles that found in Buddhist temples. In a traditional *yangban hanok* (a *hanok* belonging to a member of the traditional aristocratic class, or *yangban*), each building compound would have a *madang* courtyard either surrounded by or adjacent to each *chae*-buildings, i.e., *an-madang* surrounded by the *an-chae* (women's quarters), or a *sarang-madang* adjacent to the *sarang-chae* (men's quarters). Buildings (solid) are surrounded by *madang* courtyards (void), and the courtyards and adjacent yard areas become enclosed again (solid) by walls and fences. The layered sequence of buildings (solids) and courtyards (void) resembles the ritualistic experience of entering into a Buddhist temple.

### **1.3.2. Confucianism**

While Buddhism influenced the spatial sensitivity of *hanok*, especially its inside/outside character, the influence of Confucianism is prominent in the *hanok*'s *chae*-structure, which reflects the Confucian ideal of a proper balance between the social and physical worlds.

Confucian moral precepts and ideas of social harmony permeated the intellectual life of Korea for centuries, and played a pivotal role in molding Korean culture as we know it today. In spite of modernization, traditional Confucian ideals regarding family structure and the individual's emotional dependence on the

family remain vital.

These Confucian principles, especially its rigid hierarchical view of human relationships, affected the form of residential architecture in the Joseon period. The rigid class system and the gender separation affected the hierarchical divisions of space within the household. Most buildings were built on stone *gidan* on a sloped site, which allowed the spatial hierarchy in the placement of the home's buildings. The structural layout also reflected the hierarchical order of family members based on gender and age, i.e., *an-chae* (women's quarters), *sarang-chae* (men's quarter), and *haengnang-chae* (servants' quarter).<sup>21</sup> These *chae*-buildings exist as independent structures, and yet, are organically connected as parts of the same household.

*Maru* and *madang* are also considered Confucian spaces, where most of a family's ceremonial events, such as ancestral rituals, weddings, and holiday celebrations, took place.

Another salient aspect of Korea's Confucian tradition can be described as the "we-culture," where collective identity, ideas and customs have prominence, much more important than individual ones. The tendency towards collective identity may be rooted in the fact that the traditional villages were based on blood-ties, and also based on agricultural

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<sup>21</sup> Ju Namcheol, *Han'guk geonchukmi* ('Aesthetics of Korean architecture') (Seoul: Iljisa, 1995), 15-16.

production. Building a house was considered a community event, a collaborative effort of the home's owners and the other villagers, as is often depicted in Korean literature.

“... After my father moved the trees that he collected into the house, they were piled up to dry in the shade ... he called a renowned carpenter from the Sunchang area and also asked for help from another carpenter in a neighboring village. That was the start of building this house ... I can vividly recall how carpenters examined the wood in many directions, by rolling them this way and that way, with one of his eyes closed. Other villagers borrowed some tools from the carpenters to build troughs for pigs and cows and a fodder ... This house that I live in was completed by the helping hands and warm hearts of the people of this village. Hence this house is not mine but a house for the people in this village...”<sup>22</sup>

In such a cultural context, the threshold does not constitute a strong division between the home's interior and exterior, implying a transparent threshold relationship between the *hanok* house and the neighboring street and surrounding village environment beyond.

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<sup>22</sup> Kim Yongtaik, “Gwanran-Heon, The house made of Soil, Wood and Grass,” *SPACE* 517 (December 2010), 8-11.

### 1.3.3. Daoism and Geomancy

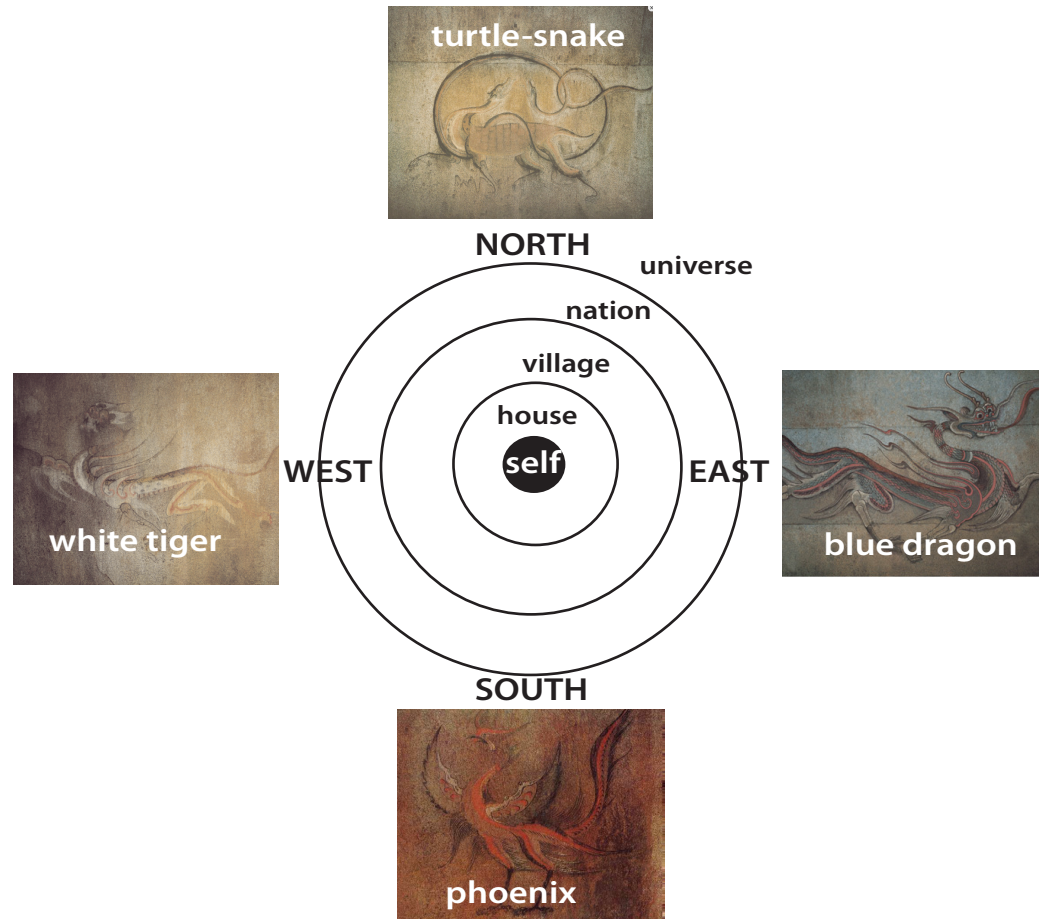
Along with Buddhism and Confucianism, Daoism also played an important role in the development of Korean architecture. Traditional “naturalism” originating in Daoism and *pungsu* (a Korean version of geomancy) continued to play an important role in the shaping of *hanok* space even after Confucian ideas came to dominate around the fourteenth century.<sup>23</sup> Even Confucian scholars who built *Seowon* (private Confucian academies and shrines) exhibited strong beliefs in both *pungsu* (Korean geomancy) and Daoist naturalism. The acceptance of the “natural way of life” is well reflected in the building process of *hanok*, including the selection of the site and building materials. The spirit of the place was respected, and the desire to live closer to nature seemed to go beyond reasonable practicality: utopian ideals for the “home” were couched in Daoist “Naturalism.”

Korean geomancy, or *pungsu*, which literally means ‘wind and water,’ was first imported from China. The main concepts of Korean geomancy, believed to have been developed in the late tenth century by the great meditation master Doseon-guksa, are based on Daoism, especially the concept of *yin* and *yang*. *Pungsu* can be defined as a theoretical system that evaluates various features of the site to be connected to human conditions. Compared to Chinese *feng shui*,

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<sup>23</sup> Ham Seongho, “Yetjip ilggi (‘Reading an old house’),” *Dong-a Ilbo*, April 23, 2012.

Korean geomancy places greater emphasis on the spiritual energies from the mountain ranges and the rivers and their effects on the fates of families, communities and even the nation as a whole.<sup>24</sup>



**Figure 13.**

Geomancy diagram; redrawn by the author based on various sources, including the illustration of four imaginary animals from the so-called “Sa-sin-do” (‘four-spirits painting’) mural found in the Goguryeo royal tombs. Source: Sam Y. Park, *An Introduction to Korean Architecture* (Seoul: Jungwoo Sa Publishing Co., 1991), 206, 208-209, 229.

<sup>24</sup> Sin Pyeong, *Pungsu yangtaek tongron: Han’gugin pungsu jiri* (‘Theory of pungsu-jiri in Korean architecture’) (Seoul: Gwaneum-sa, 2006), 65.



In Korean geomancy, the individual human being is understood as a “micro-universe” and nature as the “macro-universe,” with the house existing in between nature and the self. The concentric diagram below illustrates the philosophical perception of the self in relation to the universe in old Korea according to *pungsu* theory.

This relationship has been almost literally manifested in the intimate relationship of *hanok* and its natural environment: *hanok* functions as the vehicle that brings nature closer to those who inhabit the house. It is also believed that any topographical configuration generates invisible forces of *gi* (good or ill spirits), and hence, the best site would have a balance of forces from the mountain and the water (river).<sup>25</sup>

Fearsome imaginative animals represent the four cardinal directions from the center: Turtle-snake (north), Phoenix (south), Blue Dragon (east) and White Tiger (west).

Considering Korea’s mountainous topography and the seasonal climate changes, responding to the surrounding environment must have been the most important aspect of *hanok* residential planning. In Korea, geomancy traditionally played a key role in selecting the site, the direction and the layout of a house including as well such visual aspects as “sight plans,” both from inside and from the street: the

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<sup>25</sup> Kim Dogyeong, “*Hanok* bojon gwa baljeon jeongchaek ui hyeonhwang gwa baljeon banghyang.”

distance and direction in line with mountains and fields as well as the location of water were the determining elements. The *pungsu* guidelines that embrace the surrounding natural environment resulted in the highly ecological and aesthetic aspects of *hanok*: *pungsu* can be interpreted as the general guidelines for the building planning in consideration of such effects as wind from the mountain, exposure to the sunlight, air circulation aspect of the site as well as the views from the indoor space.

A number of Joseon period manuscripts that theorize on *pungsu* ideas still exist, with the *Sallim gyeongje*, by Hong Manseon (1643-1715), and the *Imwon gyeongje ji*, by Seo Yugu (1764-1845), the most frequently referenced by contemporary scholars. Notwithstanding that both these authors were prominent Joseon Confucian scholars, they promoted Daoist *pungsu* ideas in their writings.

The first of sixteen chapters of the agricultural handbook *Sallim gyeongje* concerns architecture, including full instructions on the building of residential houses, from site selection and building the foundation to detailed construction methods. Among its guidance are twenty-four comprehensive rules regarding gate location, including: a main gate facing northeast is inauspicious; multiple gates should not stand on the same axis nor directly face one another; the gate should

not be blocked by large trees, especially willows or green bamboo, etc.<sup>26</sup> Hong also emphasizes the importance of the relationship between the gate to the adjacent street and alleyways: curved alleyways in front of the house/front gate bring in auspicious *gi* ('energy').<sup>27</sup> Even though the reasoning behind such instructions is not fully articulated, these extensive instructions nevertheless indicate the significance of the gates, doors and the entryways in the Joseon-period *hanok*.

*Imwon gyeongjeji* is an early nineteenth century agricultural encyclopedia written by Seo Yugu. It also promotes the idea of "natural architecture," i.e., building and living close to the natural environment. Understandably, as a Confucian scholar, Seo abjured commercialism in architecture: he warned about selecting a site based on commercial interests or building over-sized homes. He also opposed artificial landscape arrangements around the house, implying the principle concept of an ideal "natural" garden in the Joseon period. Unlike Chinese or Japanese gardens, where a highly controlled sense of "nature" was appreciated, "untouched" nature was much more valued in the natural garden of the Joseon period. This traditional concept of the Korean garden also implies an intimate relationship between *hanok*

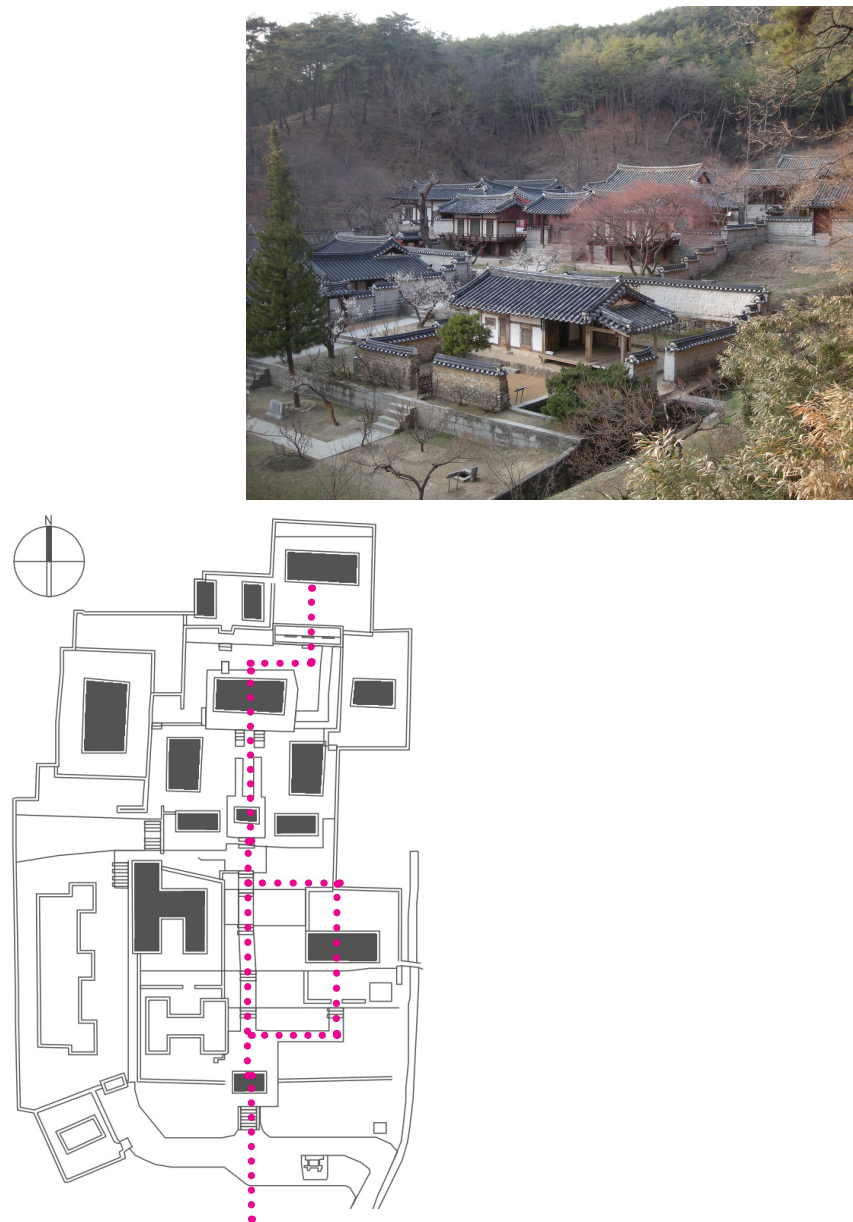
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<sup>26</sup> Yang Byeongi. *Han'guk jeontong jogyeong* ('Traditional Landscape Architecture of Korea') (Seoul: Jogyeong Doseo Chulpan, 1994), 17.

<sup>27</sup> Kim Won, "Introduction," in *Mun: Han'guk geonchuk ui gonggan gwa tongno* ('Doors and gates: space and pathways in Korean architecture'), ed. Yi Gyeongjae, 7-8 (Seoul: Yeolhwadang, 1987).

and its “natural” environment.

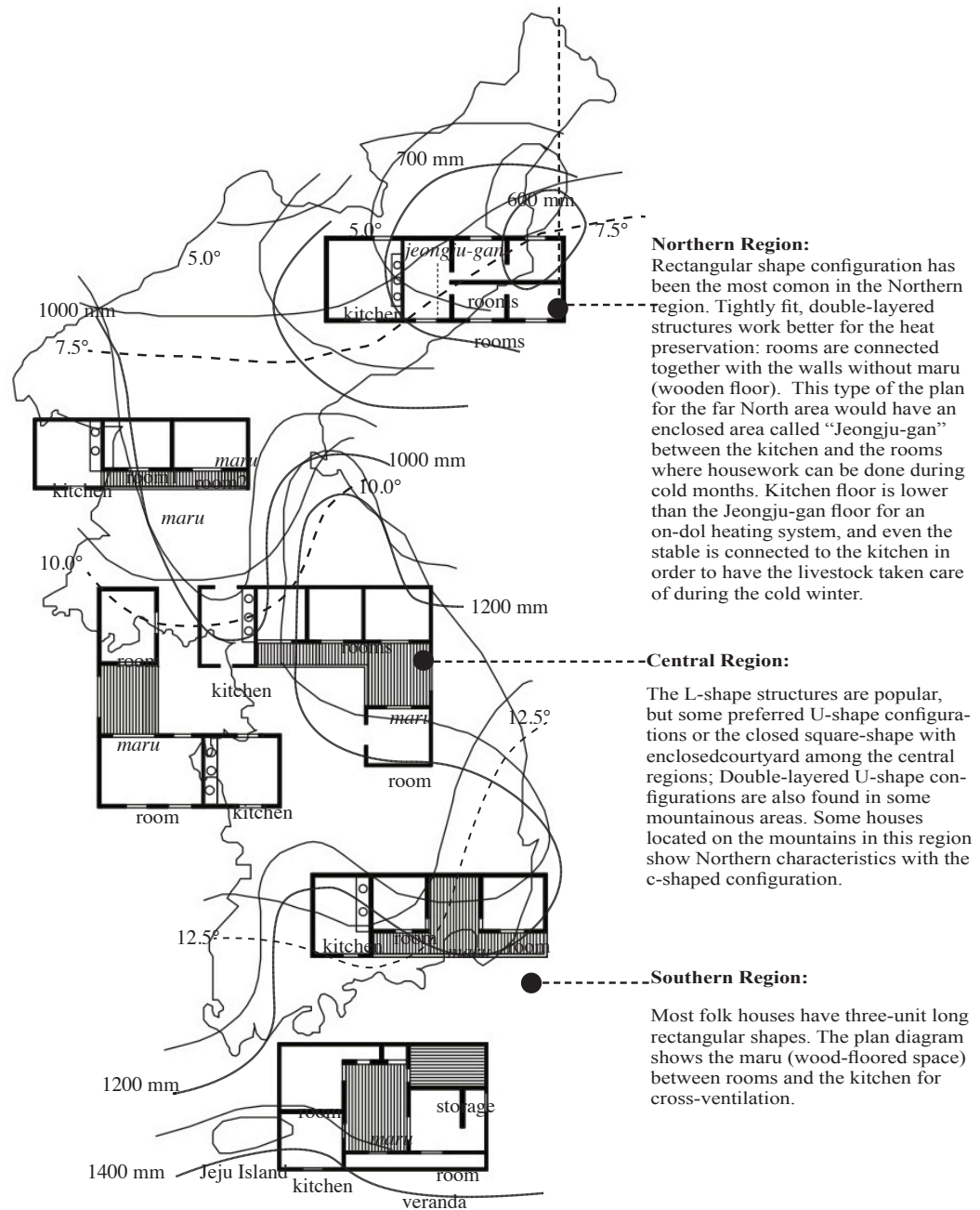
Figure 15 shows specific regional models of *hanok*. Overall, the *hanok* structure is open and flexible, thus revealing its intimate “inside/outside” characteristics.



**Figure 14.**

Dosan Seowon, Andong, South Korea.

Source: Photographs from Sohn Jeongmi, *Sin Hanok, Jeontong eseo Hyeondaero* (‘New Hanok, from the tradition to the Contemporary’) (Gimpo: Hanmunhwasa, 2011), 104, 118. Site plan drawn by the author.



**Figure 15.**

*Hanok* plans based on regional climate, with numbers indicating the average annual temperature and precipitation. This diagram created by the author with map, images and texts based on the following sources: Hong Hyeongock, et al. *Hanok: Traditional Korean Homes* (Seoul: Hollym, 1999), 12. Sam Y. Park, *An Introduction to Korean Architecture* (Seoul: Jungwoo Sa, 1991), 28, 56, 74, 77, 79, 89. Han Dongsu, "Uri nara jeontong gaok ('Traditional residences of Korea')," lectures available on youtube.com, <http://kr.blog.yahoo.com/khs6804/2053> (accessed January 20, 2012).

In general, altering a site's natural topography was not considered auspicious.<sup>28</sup> When houses were built on sloped land, for instance, specific site conditions were accommodated rather than trying to change the existing topography. As *hanok* consists of several *chae*-buildings with surrounding open courtyards, different heights on the home site contributed to its spatial hierarchy: the most important building were situated on the site's higher ground while the less important ones were placed on the lower ground. Accordingly, overall structures would have a hierarchical spatial order with an asymmetrical balance depending on the specific site conditions.

Seo also affirmed the importance of site selection based on geomancy and yin-yang theory.<sup>29</sup> According to Seo, the entire organization of *hanok* is rooted in an understanding of the natural environment of Korea that goes well beyond merely a visual response to that environment. *Hanok* in each region, while maintaining the prominent inside/outside characteristics, has developed particular plan structures in response to site conditions, including the range of temperatures and sun angles.

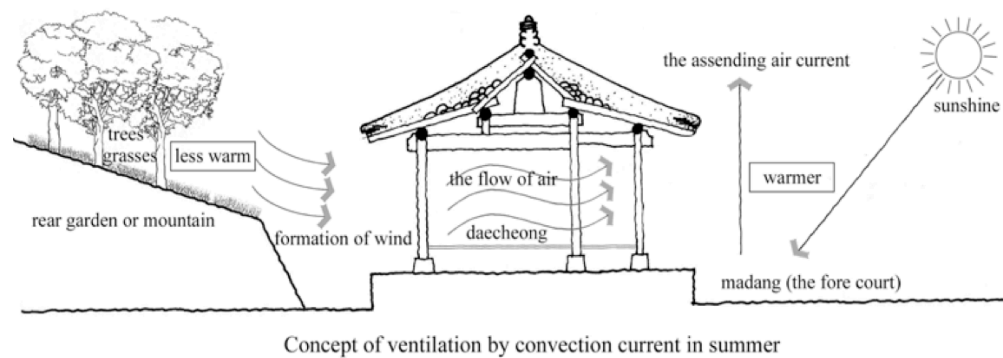
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<sup>28</sup> Yun Jangseop, *Han'guk ui geonchuk*, 18.

<sup>29</sup> Seo Yugu was an established Korean scholar of the late eighteenth and first half of the nineteenth centuries. His handwritten manuscript, *Imwon gyeongje ji*, used quotes from some 900 different period sources in its promotion of the "practical studies" (Silhak) movement. He criticized the then overly idealistic Confucian ethical standards, positing that the ideal life could be fulfilled when cultural and economic (materialistic) stability was achieved and balanced. Bluemarine, "Review of *Sansu gane jipeul jitgo* (A house built in nature) by An Daehoe", entry posted March 7, 2006, (accessed October 10, 2012) <http://blog.naver.com/PostView.nhn?blogId=bleumarine&logNo=10002322665>

Among the *pungsu* ideas concerned with the site selection of *hanok*, “theory of *baesan-imsu* (‘mountain to the back, water to the front’)” reflects the ecological considerations of ensuring adequate ventilation and limiting the exposure to sunlight that are so important in residential structures: traditionally, the ideal house would face south towards the water and with its back against the mountain to the north.

Figure 16 illustrates the natural ventilation induced by this arrangement.



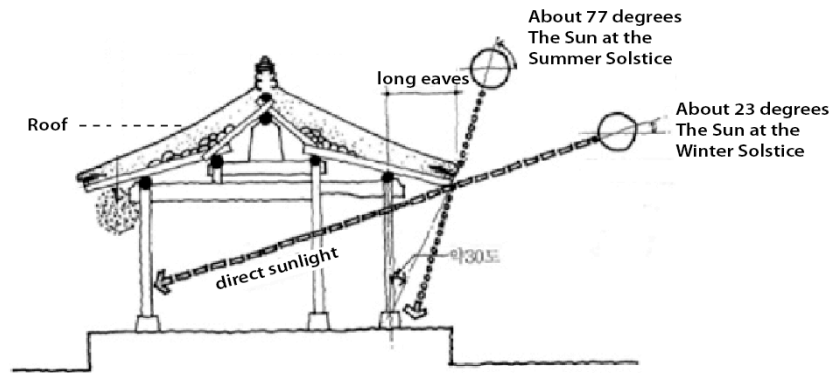
**Figure 16.**

“*Baesan-imsu*” (‘mountain to the back, water to the front’) theory and passive heat control.

Source: Kim Dogyeong, “*Hanok seolgye wa sigong ui gibeop gwa jeokyeong*” (‘Techniques and application of hanok design and construction’), *Geunchuk yeoksa yeon’gu* (‘Korean architectural studies’) 17(6) (December 2008), 133.

The south-facing front *madang* (front courtyard) is heated from the direct sunlight, and ascending air currents would induce natural ventilation by drawing the cooler air (breeze) from the rear-garden through the indoor space (*daecheong*-

*maru*) and towards the front courtyard. The cooled air from the rear garden again pushes up the hot air, and the process of ventilation continues.



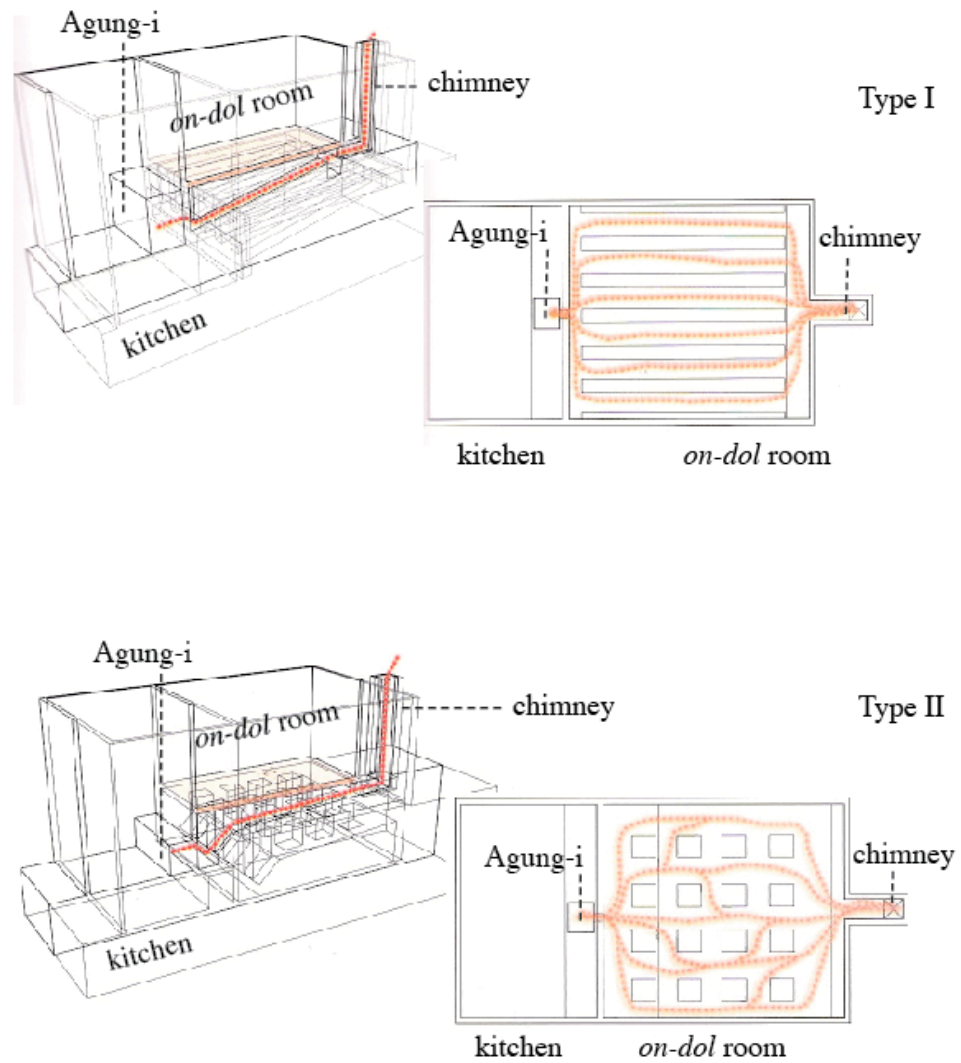
**Figure 17.**

Sun angles (in Seoul) and the length of building eaves. Source: Kim Dogyeong, “*Hanok seolgye wa sigong ui gibeop gwa jeokyeong*,” 133.

The figure above illustrates the length of the eaves helps control the amount of direct sunlight entering the indoor space. In Seoul, the sun’s angle at the summer solstice is about 77 degrees, and 28 degrees at the winter solstice. During the winter months, the sunlight enters deep into the room and warms the house while the long and deep eaves block the sun’s rays during the summer so that the sunlight reaches only up to the tip of *maru* space, leaving the indoor space cooler

Considering the severe cold of a Korean winter, and the intense heat of its summer, *hanok* were built to respond to both weather conditions: raised wood-floored rooms (*maru*) for the summer and an under-floor heating system (*ondol*) for the winter.





**Figure 18.**

Two variations of the ondol heating system. Source: Kiel Moe, *Thermally Active Surfaces in Architecture* (New York: Princeton Architectural Press, 2010), 54-55.

The raised floor space gives a visual lift to the overall form of the house, and is also considered one of the energy efficient features of *hanok* homes: the *maru* space promotes passive ventilation during the summer, and helps to reduce humidity and heat. (See Chapter 2.2.2. for more information on the *maru* space.) The *ondol* heating system uses a direct heat transfer method from wood smoke to the underside of a thick masonry floor. It is a form of central heating using conduction, radiation, and convection for thermal comfort.

The main components of the traditional *ondol* are a firebox or stove (*agungi*) in an adjoining room (typically the kitchen), a raised masonry floor with horizontal smoke passages below, and a vertical chimney on the opposite exterior providing a draft. Clay materials are excellent in preserving heat and also function as natural insulation.<sup>30</sup>

As seen above, from the larger perspective of *hanok* development, all three East Asian philosophies (Confucianism, Buddhism and Daoism) have influenced the shaping of Korean architecture. *Hanok* homes endured, along with the Korean people, through the long and difficult history of Korea, and stand not only upon physical ground but also upon that intangible ground of the people's collective wisdom, which has driven the authentic nature of residential *hanok*.

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<sup>30</sup> Kiel Moe, *Thermally Active Surfaces in Architecture* (New York: Princeton Architectural Press, 2010), 54-55.

#### 1.4. Cultural and Phenomenological Perception of *Hanok*

A phenomenological approach to the study of the threshold in *hanok* seems especially useful in exploring the relationship between *hanok* and its natural surroundings. Phenomenology is the study of structures of consciousness as experienced from the first-person point of view. It begins with the experiences of the individual, understanding that those experiences arise from social and historical conditions.

Phenomenology studies the structure of various types of experience ranging from perception, thought, memory, imagination, emotion, and desire, to bodily awareness, embodied action, and social and linguistic activities.<sup>31</sup> As Pallasmaa has emphasized, all human sensors are required in the experience of architecture. Vision alone is inadequate. His belief that the task of architecture is to be engaged with fundamental existential questions suggests the importance of historical and cultural traditions unique to individual regions.<sup>32</sup>

People have emotional links to their homes, links often rooted in culture. The sacredness of *munjibang* is one aspect of the intense emotional links between *hanok* and the Korean people. While there are cultural aspects to these links, they

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<sup>31</sup> The *Stanford Encyclopedia of Philosophy* defines phenomenology as “the study of structures of consciousness as experienced from the first-person point of view.” Literally, phenomenology is the study of the ways we experience things, and thus the meanings that things have in our experience.

Stanford Encyclopedia of Philosophy, <http://plato.stanford.edu/entries/phenomenology/>

<sup>32</sup> Juhani Pallasmaa, *Polemics: The Eyes of the Skin: Architecture and the Senses* (London: Academy Group, Ltd., 1996), 10-11.

are at the same time deeply personal. The most vivid memory of *hanok* from my childhood includes the sounds and smells of nature and human activities that I experienced when I closed my eyes – the sound of wind passing through the *munpungji*<sup>33</sup>, summer bugs, the passing of a night train, the smell of a summer storm or of the kitchen early in the morning, the tactile experience of sitting on the cool wooden floors, and the list goes on. Remembering my childhood home, the sensory experiences have left a much deeper impact than the visual or structural experiences of the house.

#### **1.4.1. The Phenomenological Relationship of *Hanok* to the Environment**

Due to Korea's geographical location between China and Japan, there are many shared aspects in the cultures of Korea and its two immediate neighbors. Despite their shared traits, however, notable differences in their architectural traditions can be found. One of the most distinctive differences may be the relationship of the house to the site: Korean architecture is particularly characterized by its intimate relationship to surrounding nature, which may be singled out as of the strongest characteristics distinguishing Korean architecture from the architectural traditions of China and Japan.

In the study of *hanok* from the phenomenological perspective, the importance of

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<sup>33</sup> *Munpungji* is a strip of hanji paper pasted along the lengths of the doors in order to fill the gap between the door and the door frame. *Munpungji* vibrates and whistles when the wind blows.

the *hanok*'s threshold cannot be overemphasized: the boundary between the house and the surrounding environment was the most important aspect of the residential structure in Korea due to the geological and climatic conditions of the Korean Peninsula.

The *Jiu Tangshu*'s ('Old History of Tang') description of houses in Korea as built following the "shape of the mountains," is early evidence of how the visual structures of the *hanok* strongly reflect their surrounding natural environment, notably the mountainous geographical character and the East Asian climate pattern throughout the Korean Peninsula. The intimate relationship of *hanok* to its surrounding nature situates the *hanok*'s architectural experience in relationship to nature.

#### **1.4.2. Materials: Wood, Paper, and Clay**

A major part of the visual as well as other sensory elements (i.e., smell and touch) in the spatial experience of the *hanok* come from the materials of which the *hanok* is made. Traditionally, natural local materials were used in *hanok* construction, which were not only important in the spatial experience of *hanok*, but also contributed to the experience of *hanok* as an extension of the natural environment, accentuating its characteristics of "inside/outside" space (threshold space). Living in a *hanok* can be compared to a very direct way of living in the world: where

indoor and outdoor space are experienced simultaneously, and through which one can establish a subjective reality. Essential materials in *hanok* construction include *hanji* paper, wood, clay, and stones.

#### **a. Wood**

One of the major structural elements in *hanok* is wood. The most frequently used variety was pine, native to and locally available in Korea. Especially good quality *geumgangsong* ('diamond pine') and *hongsong* ('red pine') were especially valued for their strength and longevity. However, in Korea most pine trees grow in gnarled and twisted patterns, and so curved pine is often found in the formation of *hanok* details, such as columns, rafters, and *munjibang*.

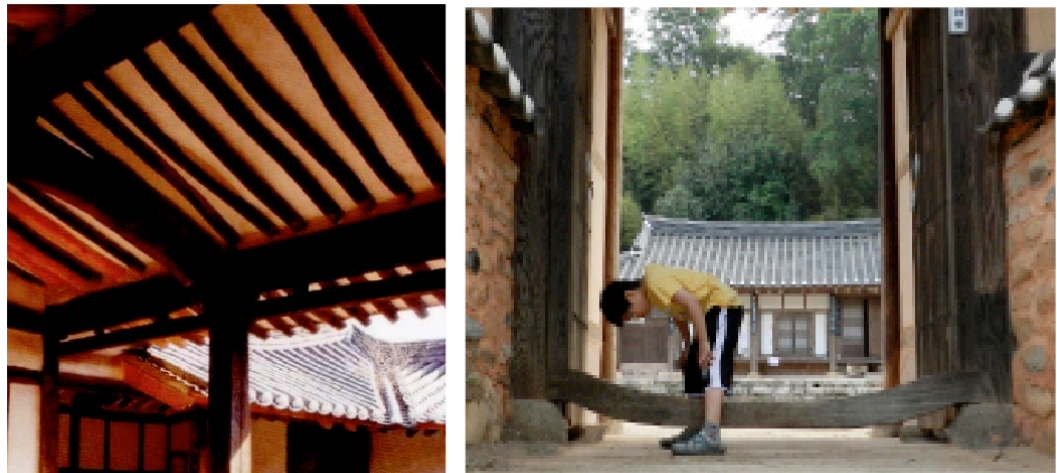


**Figure 19.**

The twisted shapes of Korean pine trees. Source: photographed by Bae Bien-U, Korea Foundation:

<http://newsletter.kf.or.kr/english/contents.asp?vol=162&lang=English&no=2067>  
(accessed Oct 27, 2012).

The visual impact of naturally curved timber used in the architectural structure can be both odd and stunning. Many examples of these architectural details appear to be intentional: aesthetic elements rooted in Daoist naturalism that go far beyond any practical needs.



**Figure 20.**

Twisted wood structural elements in *hanok* (left). Source: Yim Seokjae, *The Traditional Space*, The Spirit of Korean Cultural Roots 6 (Seoul: Ewha Womans University Press, 2005), 68. Yi Yonguk House, Boseong (right). Source: Photographed by the author.

### **b. Hanji Paper**

Paper has been used to cover the doors and windows as well as the walls of the *hanok* house for a very long time. *Hanji* paper is used especially for the doors and windows, which largely function as thin membranes dividing the indoor space from the outdoor environment. The thin, translucent Korean *hanji* paper materials allows outdoor elements, such as light, wind, smell, and sounds to pass through its mulberry fibers and into the indoor space, which reinforces the interactive inside/outside character of the *hanok* house, which has often been

likened to a living “organism” that breathes and interacts with its environment.

*Hanji* is made from the inner bark of the mulberry, also known in Korea as *dak*, and is the most common material for covering the wooden lattice frames of windows. One side of *hanji* is flat and shiny, while the other side is covered with short fuzzy fibers. The shiny side is pasted to the lattice pattern from the inside (so that the patterns are visible from the outside), and the fuzzy fibers keep the warm air in the room from escaping.<sup>34</sup>

Regular doors and windows were made with patterned wooden frames and *hanji*, and took up large portions of the wall space. The density of the wooden patterns and the weight of the paper used would vary depending on the climate for the specific location. The thickness and the weight of paper materials help to control the indoor environment: windows generally have a single layer of paper to allow the sunlight and breeze in, while partition doors between rooms would have several layers of paper pasted on both sides of the door to create a continuous finish with the walls. At times, thin loose silk, instead of *hanji* paper, was also used to create a *sachang* layer to prevent insects from entering while still letting in the breeze.

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<sup>34</sup> Hong Hyeongock, et al. *Hanoak: Traditional Korean Homes* (Seoul: Hollym, 1999), 117.



### c. Clay

The stone or mud foundation for a house is called *gidan*. The *gidan* is built raised from the ground, and mud, stone, or ceramic tiles have been used. Natural stones were used for commoners' houses, while the *gidan* of upper-class mansions, temples, and palaces used more refined carved stones. Temple buildings from the Silla period also indicate the use of stone columns between stone blocks to strengthen the foundation.

Clay materials were also used in the forming of interior and exterior walls, as well as the *ondol* floors. The heated floor is one of the most tactile experiences of living in a *hanok* house, especially during cold winter weather. The clay brick walls have high performance in passive heating and cooling and clay materials can also absorb and store solar heat gains, leading to a more balanced indoor climate. The porosity of clay bricks also allows them to absorb moisture from the air when the relative humidity is high and to return the moisture when the indoor air becomes drier.

All together, the local natural materials, found in such things as the clay walls, wooden structure, and the papered doors, had a significant effect on the indoor climate affecting the *hanok* occupants' comfort and sense of well-being. The acoustics, thermal comfort, air circulation, smells and tactile qualities of such materials help create the distinct experience that is life in a *hanok* space.

### 1.4.3. Personalized measurement system

In addition to the materials used in *hanok* construction, another important element in the spatial experience of the *hanok* home is the relative dimensions of the space, which both articulate and connect human activities.

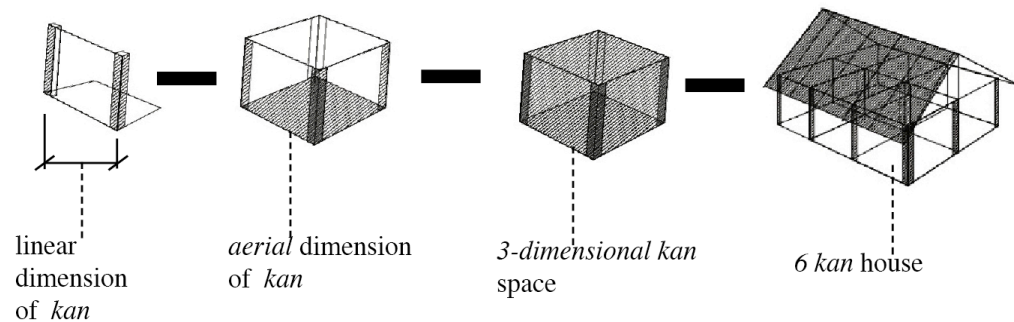
The *kan* is a flexible unit of measurement that was widely used in East Asian countries, including Korea (it is called *jian* in China and *ken* in Japan). As a spatial unit, *kan* does not refer to a fixed uniform space or length. The *kan* unit for the wooden *hanok* structure can range from six to ten *ja* (18-30 centimeters). One *ja* (or *cheok*) in turn refers to a length ten times the span of an adult's hand (or *chi*), while one tenth of *chi* is a *pun*.<sup>35</sup> Architectural measurement based on the human body reflects the human elements tied to the building of *hanok* houses.

Construction measurements became systemized by the late Joseon period, and yet the system still maintained some flexibility based on the human scale.

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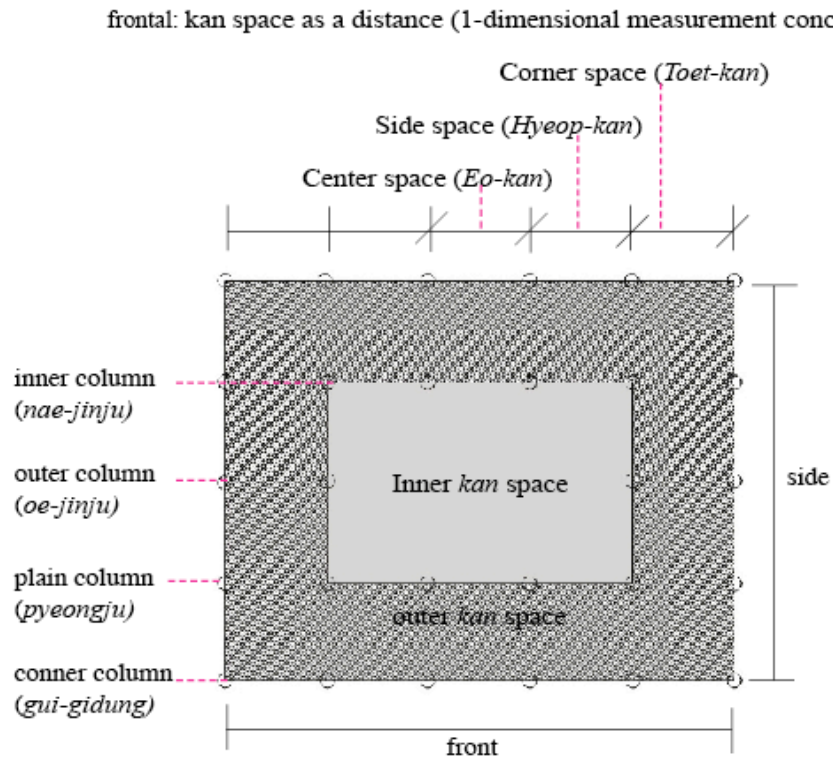
<sup>35</sup> The *cheok-gwan* measurement system was introduced from China and continued to be used in Korea until it was legally abolished in 1961. In 1905, the metric system and the United States customary units were also introduced and used together with the *cheok-gwan* system, and it was at this time that the unit length *cheok* was finally settled to be equal to 0.303-meters. In 1961, however, a new law in Korea legalized the metric system only, and the old system of *cheok-gwan* ceased to be used. Seo Ho-chul, "The Process of the Metric System's Acceptance in Korea and Its International Context," *The Review of Korean Studies* 11(3) (September 2008): 37-59.

The *kan* system used in Korean architecture is somewhat similar to the *kan* measurement used in other East Asian cultures, though adjusted to the people and lifestyles of Korea. The dimensions of *hanok* construction are usually measured by the number of *kan* spaces, for example, 3 *kan* x 2 *kan* = a 6 *kan* house, etc. In this case, the word *kan* may be translated into the more architectural concept of “bay”.



**Figure 21.**  
Various dimensions of *kan* (images drawn by the author).

Buildings that required deeper space would be layered with additional columns, and inner *kan* space (*nae-jinju*) and outer *kan* spaces (*oe-jinju*) are referred to accordingly. Usually, the longer side faces the front, and the front central space is called *eo-kan*, the side space *hyeop-kan*, and the corner space *toet-kan*.



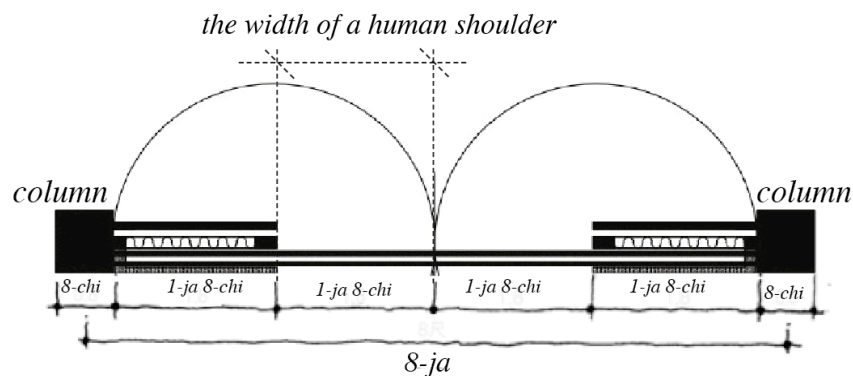
**Figure 23.**

Double-layered 20-kan space, outer 20-kan(4 kan x 5 kan) space with 6-kan (2 kan x 3 kan) inner space. Source: Drawn by the author based on Kim Wangjik, *Algi swiun Han'guk geonchuk yongeo sajeon* (Korean dictionary of architectural terms) (Paju-si: Doseo Chulpan Dongnyeok, 2011), 89.

*Kan* dimensions varied depending on the time period, but a standard 1-*kan* room generally took up an 8 *ja* x 8 *ja* space (approximately 2.4 meters x 2.4 meters), which comprised space for a single sitting person (3 *ja* x 3 *ja* x 3 *ja*) along with “in-between space” where people could move around. So, a 1-*kan* room represented the ideal minimum space for a single person to live comfortably.

Flexibility in the distances between columns may have had a close relationship to the dimensions of available wood. More importantly, however, construction measurements were based on human dimensions and the activities to be conducted in the living space of the *hanok*.

Figure 24 shows the measurement for the *hanji* doors for a standard middle-class residential *hanok*. For a bedroom (with *ondol*), the columns would be placed 8-*ja* apart. Considering the column diameter is about 8-*chi*, the space between two columns would be about 7-*ja* and 2-*chi*, which is the width for four *changho* doors.



**Figure 24.**

Measurements for the entrance (doors), based on the human scale.

Source: Redrawn by the author based on Kim Dogyeong, “*Hanok seolgye wa sigong ui gibeop gwa jeokyeong* (‘Techniques and application of hanok design and construction’),” *Geunchuk yeoksa yeon’gu* (‘Korean architectural studies’) 17(6) (December 2008), 135.

The width of each door would be about 1-*ja* and 8-*chi*, which equals the span of an adult’s shoulders. Generally a pair of doors would be considered the standard opening for people passing in and out. The human scale is also applied to ceiling heights, *meureom*, railings, and

the heights of *maru* structures.<sup>36</sup>

Ceiling heights also reflected the space's human activities: the *ondol* bedroom had lower ceilings of seven and a half *ja* (the height of a seated adult plus the height of a standing adult) and the kitchen and the *daecheong maru*, which usually had exposed beams with plastered surfaces instead of covered ceilings, were ten *ja* high (two times the average human height, which was appropriate for standing activities).<sup>37</sup>

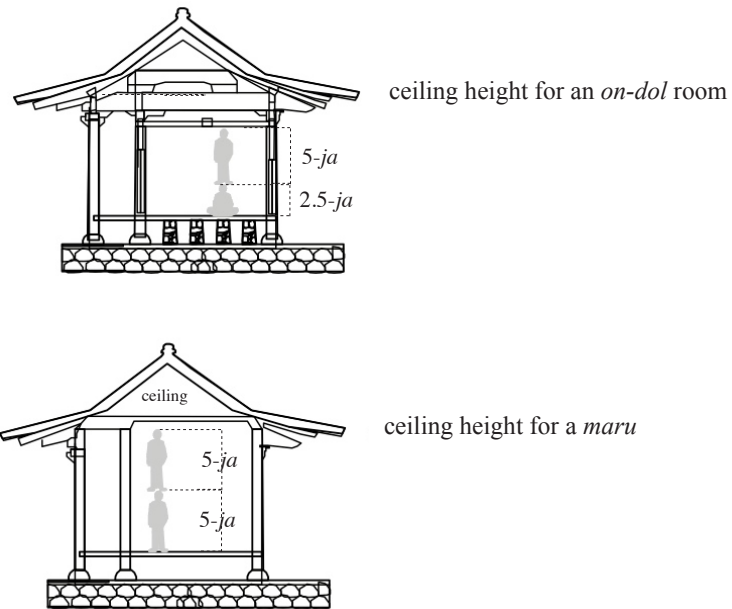
In the context of human experience, the lower ceiling of an *ondol* room means better heat preservation, and thus makes the room feel more intimate and personable. The high ceilings of the *daecheong maru* help the *maru* space appear open and wider, and cooler during the summer through easy ventilation. (see Figure 25)

The height of the *meureom* (the base structure for the windows) is about one *ja* and 5-8 *chi* (45-55 centimeters), which is the height of the adult elbows when in a seated position, and the height of the *meureom* from the exterior ground is about at the eye level of a person standing outside. The *hanok* is built on the *gidan*, a stone or mud foundation, and the *gidan*'s width (along with the *meureom*'s height) limited the view from the street for the sake of privacy. (see Figure 26)

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<sup>36</sup> Sin Yeonghun, *Hanok ui Joyeong* ('Hanok principles') (Seoul: Geochi-dang, 1987), 27.

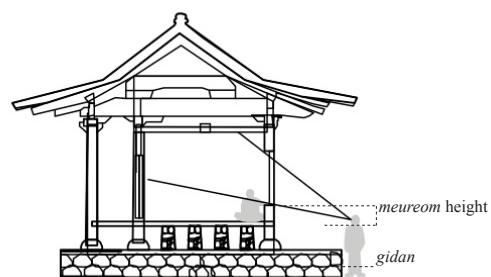
<sup>37</sup> Sin Yeonghun, *Hanok ui Joyeong*, 103.



**Figure 25**

Ceiling height of an *ondol* bedroom (top) and *daecheong maru* (bottom)

Source: Drawn by the author



**Figure 26**

Height for the *meoreum* and the foundation (*gidan*).

Source: Drawn by the author

The shape and size of columns was also flexible, and determined by the *kan* dimensions between two columns. Such variations might have been needed for physical as well as visual balance. The human elements in the flexible *kan* measurement system also included the political aspects of the specific time period. Generally, the elite *yangban* class would have larger houses with larger *kan* dimensions.

The *Samguk Sagi* listed the maximum “total length dimensions” allowed for a home based upon social class during the Silla period. In the Joseon period, however, the “number of *kan* space” formed the basis of such regulations. Joseon’s constitutional law, the Gyeongguk Daejeon (promulgated in 1484), listed the allowable dimensions of *kan* and the overall size of the house based on the owner’s social rank: the maximum size for of a home belonging to the highest-ranking *yangban* class member was limited to 99-*kan*, 50-*kan* for lesser princes and princesses, and 10-*kan* for commoners.

The length of the *kan*-dimensions also became more specific. The standard *kan* space for a commoner’s house meant a *kan* of 6.5 *ja* and a column of 6.5 *chi* diameter, while the standard for a *yangban* house was a *kan* of 8 *ja* and columns of 8.5 *chi* in diameter.<sup>38</sup>

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<sup>38</sup> Yun Jangseop, *Han’guk geonchuksa* (‘History of Korean architecture’) (Seoul: Seoul National University Press, 2008), 236.



## **Chapter 2.**

### **Thresholds in Traditional *Hanok***

The marking of one's own territory is one of the key features of human behavior, and the "rite of entry", passing through a particular series of boundary structures, has long been celebrated, with more ritualized formalities on some occasions and more subtle and poetic rituals on others. Different cultures articulate the act of entry in different ways. I find the idea of threshold in *hanok* to be both one of "boundary" and "entry sequence" and closely related to the concept of *kan*, an ancient spatial measurement system used in the construction of traditional *hanok* houses. *Kan*, as the basic building module in the system of boundaries, was introduced briefly in Chapter One, and explained further in the Chapter 2.1.1.

## 2.1. Circulation as the Threshold

*Kan* is a spatial unit that implies both the space and the spatial experience, and in this study, it is compared to the two distinctive meanings that the threshold implies: the “boundary” and the “circulation patterns (passing through a series of boundaries that comprise the *hanok* house).”

### 2.1.1. Hypothesis of *Kan*

The word *kan* (間, 칸), read alternately as *gan* (간), carries the meanings:

1. a unit of length (180 cm)
2. “between” or “among” (in a relationship), i.e., between brothers, etc.
3. for; during; in; (in time)
4. between; among; (in space)
5. either...or...

The *Minjung Korean-English Dictionary*<sup>39</sup> defines the term *kan/gan* as a unit of measurement used in *hanok* construction (definition 1 above;

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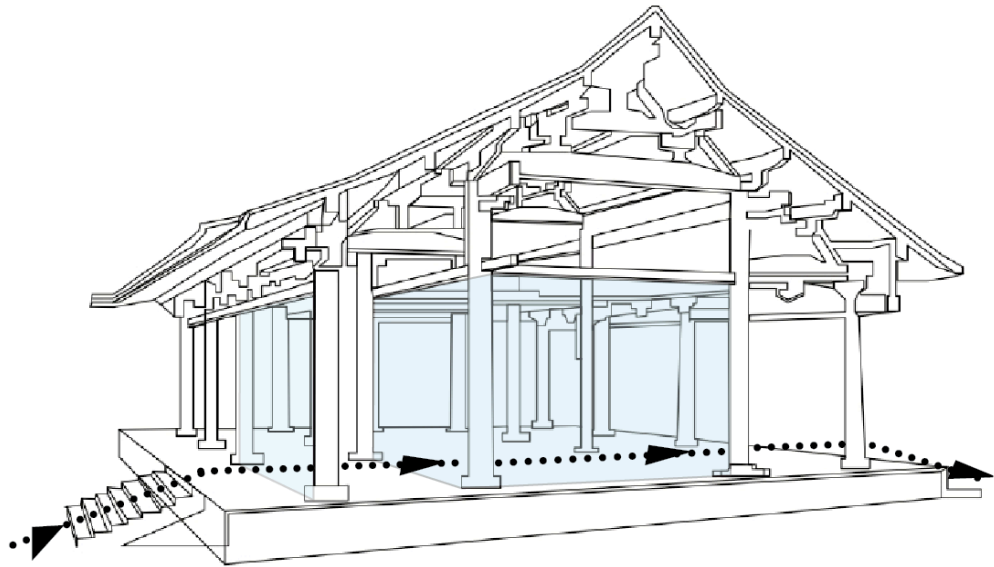
<sup>39</sup> *Minjung's Essence Korean-English Dictionary*, 4<sup>th</sup> ed., s.v. “kan” and “gan.”

also, see Section 1.4.3.). Additionally, it is also defined as “between,” with multiple concepts referring to the time, space and also human relationships, in which cases it is pronounced as *gan*.

Among these understandings of the word, the most relevant to the threshold concepts may be *kan/gan*’s space and time-related implications (definitions 3 and 4 above), which may be directly linked to the two distinctive traits of the threshold in this study: i.e., its boundary and the circulation patterns (the space exists between interior and exterior and the time span/intervals of entering from outside to inside).

This literal interpretation of the concept of *kan* helps to expand the threshold concept beyond the physical boundary divisions to the time-involved “entering experience,” or passing through a series of layered *kan* divisions in a *hanok*. The multiple definitions of *kan/gan* prompted the expanded experiential dimension of “circulation patterns” of the *hanok* threshold, and also helped to define the threshold characteristics of *hanok*.

What is equally interesting is that *kan/gan* also refers to human relationships (definition 2 above), which indirectly points to the human facets of the *hanok* threshold.



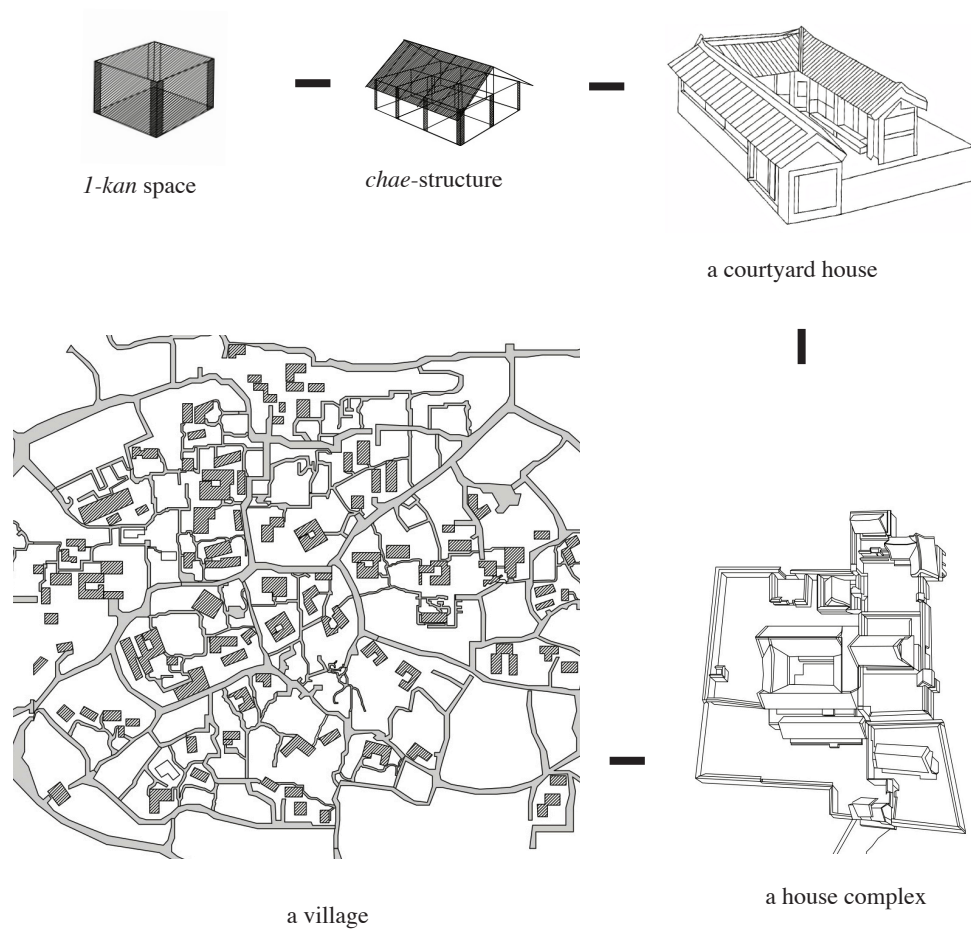
**Figure 22.**

Circulation paths over *kan* divisions.

Source: Drawn by the author based on Sam Y. Park, *An Introduction to Korean Architecture*, vol. 2 (Seoul: Jungwoo Sa Publishing Co., 1991), 33, 138.

The time implication of the term *kan* can be also found in the neighboring Asian cultures. The Chinese ideogram, and Japanese *kanji*, for *kan* (間) is composed of the ideogram for door (門) combined with that for day or time (日), and the dictionary meanings of *kan* (間) include the spatial as well as the time intervals.

*Munjibang* refers to the division of space in Korean architecture, and coincides with the *kan* unit divisions: the size of *hanok* rooms and the scale of *hanok* houses were expressed using the number of *kan* units, i.e., “1-*kan* sized room” or “99-*kan* house”, etc.



**Figure 27.**

Expanding *kan* unit. Source: Drawn by the author using various references including Kim Wangjik, *Algi swiun Han'guk geonchuk yongeo sajeon* ('Korean dictionary of architectural terms') (Paju-si: Doseo Chulpan Dongnyeok, 2011), 88.

Traditionally, *kan* referred to:

- a. the linear length between two columns (one-dimensional reading);
- b. the two-dimensional surface area created by four columns; or
- c. the three-dimensional cubic space (i.e., *mungan-chae*) created by four columns

A number of *kan* unit spaces can be added to form a room/hall, a *chae*-compound, and then a courtyard house. Houses with streets between them form a village. The community is thus structured by a unit of measurement, which is itself focused on the construction of the house. (see Figure 27)

Beyond the generally accepted readings of *kan* dimensions, one more dimension is added in this study: the four-dimensional time sequence of “entering” experience (or passing a series of *kans* or thresholds). The *kan*’s capacity in the measurement was expanded beyond the physical dimension to the “time and action” dimensions based on the Chinese ideogram for *Kan* (間), which is composed of the ideograms for “door” (門) and “day” or “time” (日).<sup>40</sup>

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<sup>40</sup> Cantonese and Japanese dictionaries’ definitions of *kan/gan* also include both its time and space concepts, i.e., an interval; between; a while; during, etc.

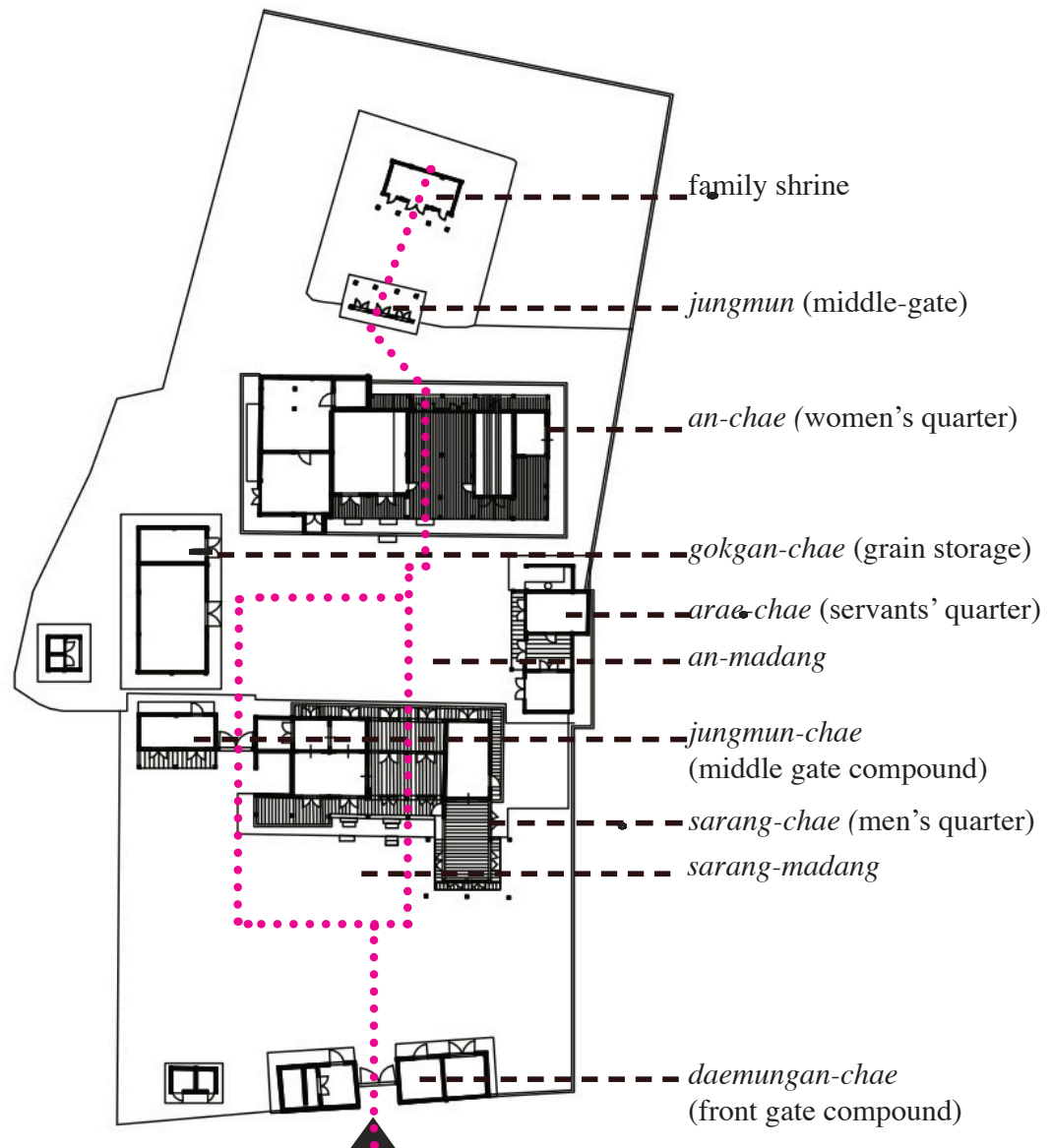
### 2.1.2. “Solid-Void” Circulation Patterns

This time dimension of *kan* alludes to the experience of entering into the Korean *hanok* home. The circulation pattern within the *hanok* space can be defined as “the pattern of passing through the home’s layered boundary thresholds.”

Entering a traditional *hanok* resembles a ritualistic experience: involving circulation patterns through alternating covered (solid) and open (void) space. This is much more prominent in the *yangban hanok* for the elite class, which consist of multiple building structures and adjacent courtyards. The open courtyard space leads one into an enclosed space (the *chae*-building), compounds that divide the *hanok* by social group and function.

In a traditional *yangban hanok*, each compound within the home has its *madang* courtyard that is either surrounded by or adjacent to its corresponding *chae*-building. The sequence of layers resembles the idea of *yin* and *yang*, the positive and negative relationship cycle. Entering a house involves passing through layers of boundaries, which resemble the ritualistic experience of going through contrasting indoor and outdoor light, views, and added sensory experiences to a seemingly mundane everyday space. The natural environment becomes a crucial part of the entering sequence as it forms part of the solid-void layers. These “solid-void” patterns can be seen in many Joseon *yangban hanok* houses.

The Jeongon House (built between 1569-1641), which is considered the prototype of the Joseon *yangban hanok*, shows the multiple-*chae* (compounds) structure. (see Figure 28)



**Figure 28.**

Jeongon house, plan and diagram drawn by the author based on *Han'guk ui gotaek* ('Old houses of Korea') (accessed January 20, 2012).

<http://www.bing.com/images/search?q=정운+고택&view=detail&id=23536CAE1866A40DBCADCE1C14BF485F1BA0FF96>



Jeoneon house consists of the *mungan-chae* (front gate compound), *sarang-chae* (men's quarters), *jungmun-chae* (middle gate compound, or the male servants' quarters), *an-chae* (women's quarters), *arae-chae* (women servants' quarters), *gokgan-chae* (grain storage) and *sadang* (family shrine).<sup>41</sup>

The entering sequence of the Jeongon House also shows strong solid-void patterns. The sequence from the front gate to the *sadang* involves an alternating sequence of solid (covered space) and void (open space), a sequence that marks the move towards the family as the counterpoint to the universe.

The entrance sequence for the Jeongon house is as follows:

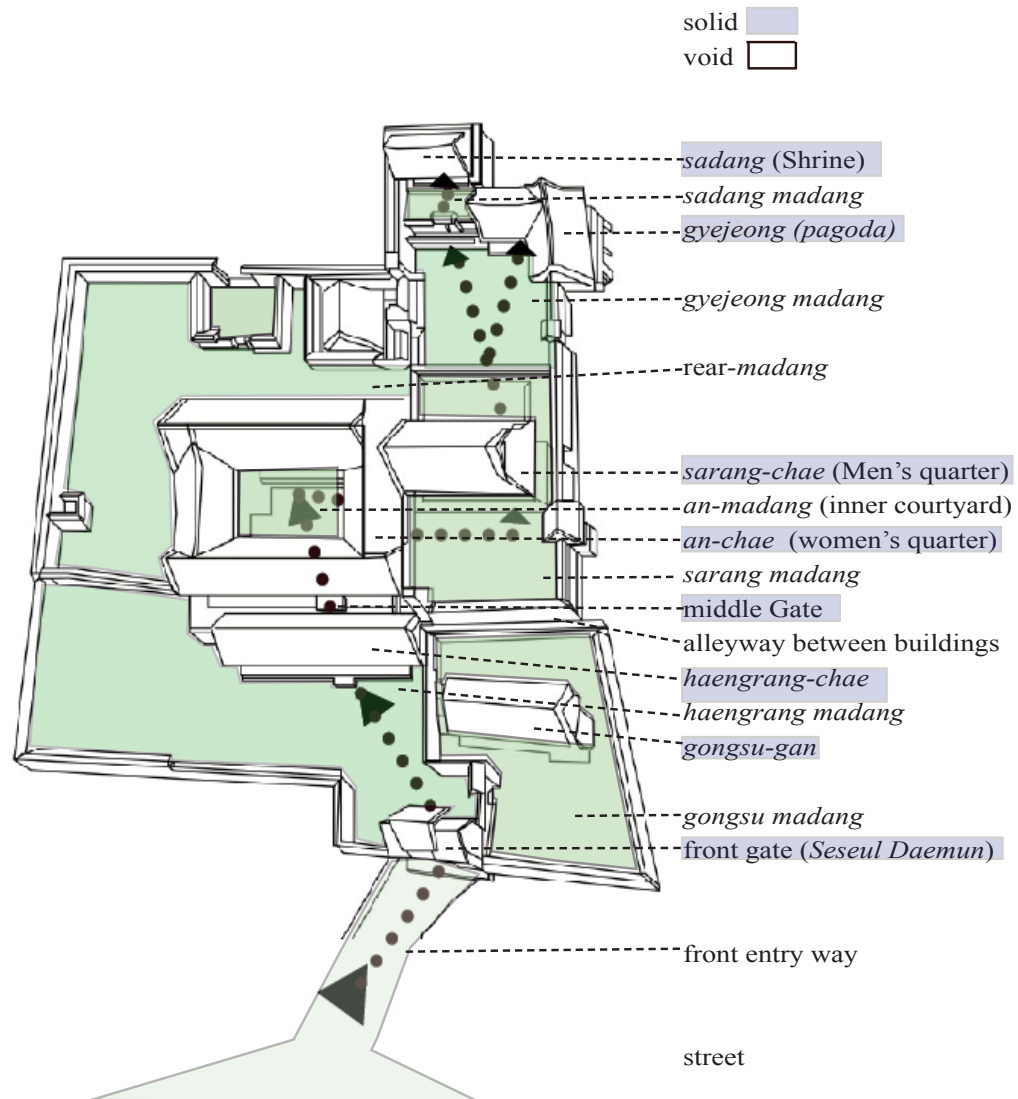
- street (void) - gate/*mungan-chae* (solid) - *sarang madang* (void)
- *Jungmun-chae* (solid) - *an-madang* (void) - *an-chae* (solid)
- *duit-madang* (void) - *sadang* (solid).

Yi Eonjeok's House, one of a few Joseon *yangban* houses in Gyeongju, shows even more elaborate solid-void patterns: passing through the front gate there are then separate entryways for the *an-chae* and the *sarang-chae*, and a more strict division between the compounds, with fences surrounding each.

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<sup>41</sup> The Jeongon House shows the combined characteristics of the Northern and Southern styles. *Han 'guk ui gotaek* ('Old houses of Korea')  
<http://www.bing.com/images/search?q=경운+고택&view=detail&id=23536CAE1866A40DBCADCE1C14BF485F1BA0FF96> (accessed date, January 20, 2012).

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**Figure 29:**

Solid (covered space)-void (open space) patterns in the Yi Eonjeok House, Gyeongju, South Gyeongsang-do province. Source: diagram and plan, Redrawn by the author based on Kim Seoksu and Choi Hyoseung, "Dongnakdang ilgwak ui johyeong gwa guseong e gwanhan yeon'gu ('A Study on the spatial configuration of the Dongnakdang')," *Daehan geonchuk hakhoeji nonmunjip* ('Korean architectural society forum') 19(11) (Dec. 1984), 101.

### 2.1.3. Circulation Threshold Components

The entering a *hanok* house consists of passing through a series of threshold layers: the outermost wall, *mungan-chae*, and gates; the raised foundation, or *gidan*, and *daet-dol*; and the *munjibang* and *meoreum*. These thresholds as architectural elements hold functional as well as symbolic significance.

#### a. Walls, *Mungan-chae*, and Gates

The primary function of the gate in *hanok* homes was not for security or privacy: typical village scenes in old Korea often include houses with low fences and open gates towards the street. One common feature of *hanok* walls is their height: often no higher than the eye level of the average person. The relationship between the house and the neighboring streets would be rather transparent. Even the gates in the *mungan-chae* ('front gate compound') for the *yangban elite* class are not much different than those of commoner homes in this regard.



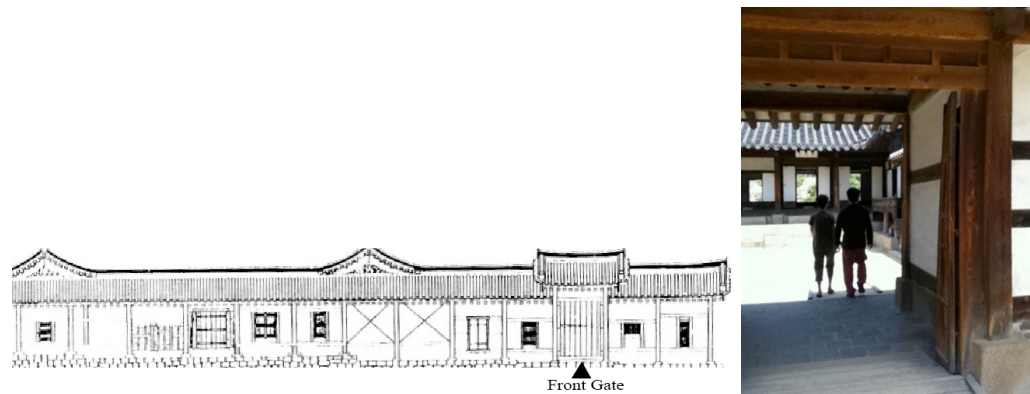
**Figure 30.**

Walls made from dried branches (left) and stones (right).

Source: Sam Y. Park, *An Introduction to Korean Architecture*, vol.1 (Seoul: Jungwoo

Sa Publishing Co., 1991), 46, 47.

Typical traditional *hanok* houses have more than one gate: besides the front gate that connects the street and the front courtyard, the middle gates (*jung-mun*) and small gates connect *chae*-buildings and courtyards within the home. The axial relationships of the gates have been important for practical reasons: for the views, ventilation, and spiritual beliefs. Often the site topography was also important in determining these axial relationships.



**Figure 31.**

The *Mungan-chae* compound, as exterior boundary and three-dimensional threshold space, Source: (left) Sam Y. Park, *An Introduction to Korean Architecture* (Seoul: Jungwoo Sa, 1991), 97; (right) Yeongyeongdang House, photographed by the author, July 2011.

The *mungan-chae* refers to the entrance compound buildings in the *yangban* hanok, generally used as the servants' living quarters or the storage. A one-*kan* cubic space traversing the *mungan-chae* building is where the front gate is installed. This “three-dimensional threshold” connects the inside and outside of the home.

The *munjibang* under the front gate marks the significance of the entrance. The height of the *munjibang* often expressed the authority of the master of the house,

and symbolic signs and plaques were also placed as a way to call in the good spirit and ward off the evil ones. The threshold's function is extended beyond human visitors. *Geum-jul* (sacred or forbidden strings)<sup>42</sup> would be hung across the gate as a way to announce the arrival of the newest member of the family or the illness of family members. This was also meant to prohibit strangers from visiting the house, as a way to keep the house quiet and hygienic, essential conditions for a newborn or sick patient.

The following images show the classic forms of *munjibang*. These images correspond to the most common definition of “threshold” as an object, piece of wood or stone placed beneath a door or a doorsill, and which marks the boundary between spaces. The image on the far left is the basic form of *munjibang*, while the two images to the right show variations in the form of a curved *wolbang*.



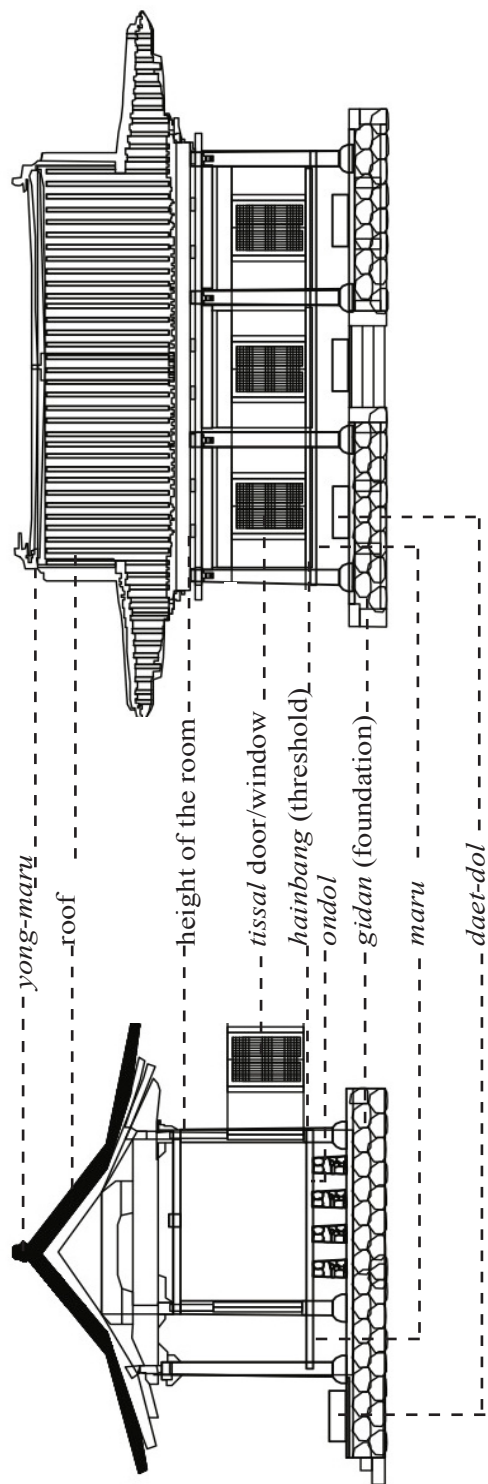
**Figure 32.**

Munjibang variations: plain (straight) *munjibang* (left), and the curved *wolbang* (middle and right). Source: photographed by the author, July 2011

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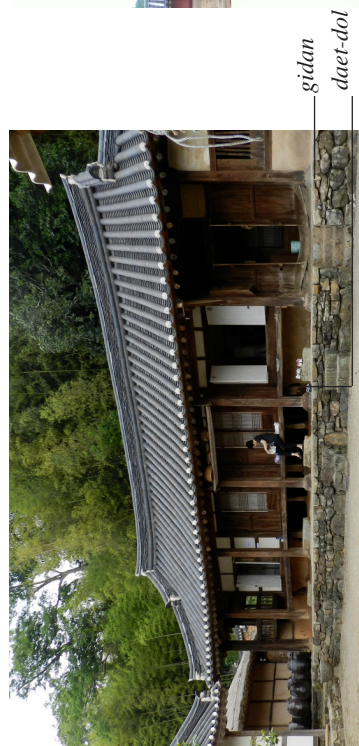
<sup>42</sup> Han'guk jeongchaek bangsongwon, Geum-chul jeonsi. [http://ehistory.korea.kr/page/pop/photo\\_pop.jsp?photo\\_PhotoSrcGBN=FP&photo\\_PhotoID=0&detl\\_PhotoDTL=5597](http://ehistory.korea.kr/page/pop/photo_pop.jsp?photo_PhotoSrcGBN=FP&photo_PhotoID=0&detl_PhotoDTL=5597) (accessed October 10, 2012).





**Figure 33:**

Structural elements in a hanok: Source: Drawn by the author based on Han Hyeonsub, Hanguk Jeontong Mokjo Geonchukdojip ('Collection of Drawings from Korean Traditional Wooden Architecture', Seoul: Ilji Sa, 1991), 37, 122.



**Figure 34:**

Hanok gidan ('raised foundation') and daet-dol ('stepping stone'), as seen at the Yi Yongwuk House (left) and Changdeok Palace (right).

### **b. *Gidan* and *Daet-dol***

Once a person has passed the gate structures, stepping up from *madang* courtyard to the *gidan* ('raised foundation'), and removing the shoes at the *daet-dol* ('stepping-stone') is the next important step to entering the interior space. As the *gidan* foundation for each *chae*-building has a different height, even within the same household the circulation path can involve much movement up and down as one passes from one space to the next.

### **c. *Munjibang* and *Meoreum***

Due to its raised floor, the threshold (lower door jamb, part of the lower beams called *habang* or *hainbang*; see Figures 33 and 35) may be the most delicate and yet most important structural element in the *hanok*.<sup>43</sup> Differentiated from the *munjibang*, the structure under the window is called the *meureum*, which allows for added decorative features. Both interior *munjibang* and *meureum* block the cold air during the winter.<sup>44</sup>

The threshold (a strip of wood) may have carried much greater psychological weight than its physical presence and appearance implies. It reflects the importance of the door/entrance and the sacredness of a private space that limits the accessibility of others. Many cultures believe that stepping on a threshold can

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<sup>43</sup> Considering the main materials of wood and clay, the traditional *hanok* threshold may have been much more delicate than that in modern *hanok* architecture. The traditional taboo of "not stepping on the *munjibang*" may have originated out of practical precautions.

<sup>44</sup> Kim Wangjik, *Algi swiun Han'guk geonchuk yongeo sajeon* (Korean dictionary of architectural terms) (Paju: Doseo Chulpun Dongnyeok, 2011), 208.

bring bad luck. Most people in Korea may also remember being taught that it was not proper to stand or sit on the *munjibang*.

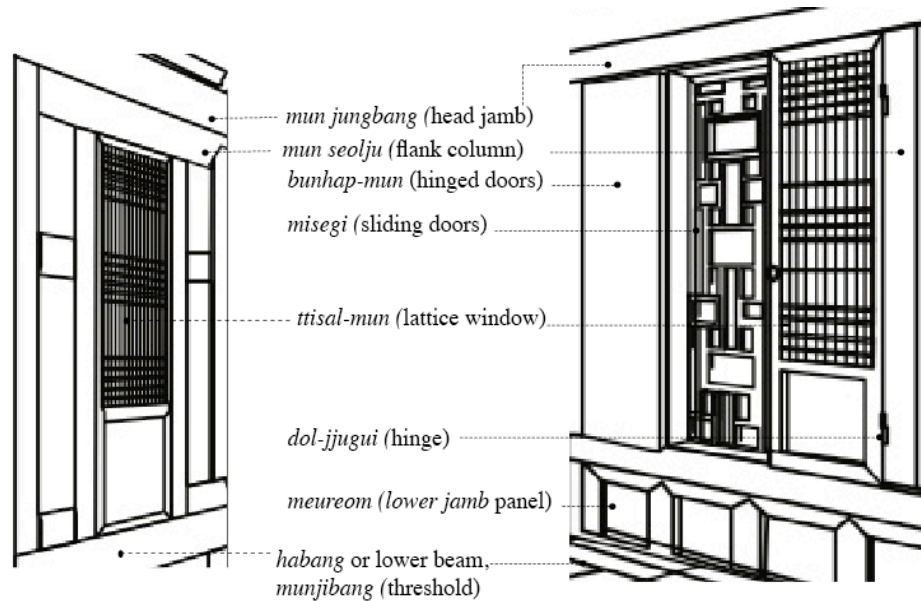


Figure 35.  
Structural elements in the *munjibang* (left) and the *meureom* (right).  
Source: redrawn by the author based on Kim Wangjik, *Algi swiun Han'guk geonchuk yongeo sajeon* (Korean dictionary of architectural terms) (Paju: Doseo Chulpan Dongnyeok, 2011), 208-209, 231-232, 238.

While the physical division between the street and the house, and the division within the indoor spaces, may be transparent in *hanok*, there exist invisible customs, including taboos, upon entering the house and passing through doorways. The threshold is believed to divide not only the physical spaces but also extended to spiritual and psychological ones. My personal interviews on *munjibang* stories, conducted during my visit to Korea in the summer of 2011, indicate that the subject of *munjibang* still stirs interest and curiosity among young people in Korea.<sup>46</sup>

<sup>46</sup> Interviews with Min Juwon, Chae Ukjin, and Bak Minyeong, Seoul, July 2011.



## 2.2. “Boundary” Thresholds in *Hanok*

The threshold as the “boundary” shielding the indoor space and residents from outside threats was one of the most important issues in building the residential house. Due to the climatic conditions of Korea (see Chapter One), having both open and wrapped boundary characters was a crucial element of *hanok* houses as a response to substantial temperature changes between the summer and winter seasons: walls that are left open during the summer would be tightly closed and would “wrap” the house during the winter. The transformation from a “winter house” to a “summer house,” or vice versa, becomes possible with a number of components in *hanok*. Two distinct boundary components exist in *hanok* that separate the inside space from the outside.

The first component would be its “skin” properties. Layered doors and windows would function as walls to protect the interior space from exterior conditions. Doors and windows are not strictly differentiated in *hanok*, as windows are called *chang-mun* (literally, ‘window-door’).<sup>47</sup>

The second component would be a series of spaces that possess “inside/outside” characters to function as buffer zones between the indoor and outdoor spaces: *maru* (wooden floor), *madang* (‘courtyard’) and *huwon* (‘rear garden’) would be included in this second category of threshold boundaries.

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<sup>47</sup> Kim Wangjik, *Algi swiun Han'guk geonchuk yongeo sajeon* (Korean dictionary of architectural terms) (Paju-si: Doseo Chulpan Dongnyeok, 2011), 233.

### 2.2.1. Skin (Boundary) Properties

“Without windows and doors, it is no exaggeration to say that the *hanok* is nothing but pillars,” wrote Jeong Minja in *Areumjigi hanok jinneun iyagi* (Story of building a hanok).<sup>48</sup> Doors and windows are the elements directly related to the seasonal transition of the *hanok* home.



**Figure 36.**

Papered doors and windows function as walls in a *hanok*, with doors and windows closed during the winter and open during the summer. Namsan *Hanok* Maeul, Seoul.

Source: Photographed by the author, July 2011 and May 2012.

Doors and windows occupy much of the wall space in a *hanok*, allowing for the two aforementioned open and wrapped characters. This threshold of *hanok* space can transform easily, especially with its lightweight materials, such as *hanji* paper

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<sup>48</sup> Jeong Minja, *Areumjigi hanok jinneun iyagi* (Story of building a hanok) (Seoul: Jungang M&B, 2003).

on a wooden frame. The doors and windows make it possible for the same house to retain both openness and a layered quality at the same time.

*Hanok* doors and windows are installed in a layered mode. Layers of doors and windows would be installed tightly in places to preserve the indoor temperature during the winter months. During the summer months, the windows and doors would be left open and excess doors would be folded, lifted, and suspended by *geolsoe* (iron hinges or metal hooks) beams. The doors between rooms can also be suspended in the same way in order to open up the space for large gatherings.<sup>49</sup>



**Figure 37.**

Photograph of a *hanok*'s layered doors. Sources: (Left) Redrawn by the author based on Kim Dogyeong, "*Hanok seolgye wa sigong ui gibeop gwa jeokyeong*" *Geunchuk yeoksa yeon'gu* 17(6) (December 2008), 135; (right) Yim Seokjae, *The Traditional Space* (Seoul: Ewha Womans University Press, 2005) 12.

<sup>49</sup> Chung Ki-jun, "Hanok Case Study," in *Korea Style*, by Marcia Iwatate et al., 138 (Boston, MA: Tuttle publishing, 2006), and Hanok Cultural Center (Hanok Munhwawon), "Jip iyagi" (Story of a house), <http://www.hanok.org/housestory01.htm> (accessed October 20, 2012).

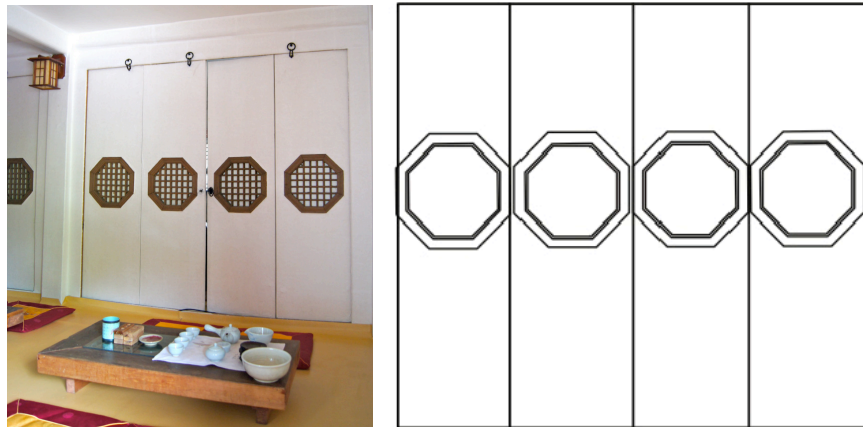
Figure 37 above illustrates the layered doors and windows of the *hanok*. These include:

1. Outside layers (*deot-mun*) provide security and protection against the weather: *hanji*-papered doors (*ttisal-mun*) or wooden-paneled doors (*panjang-mun*) being the two most common types. *Panjang-mun* are usually used between the *maru* and the backyard.
2. A set of sliding doors (*midaji*) would be the next layer within the *deot-mun*. They usually slide on both upper and lower wood tracking made from the same material as the wooden *maru* floor.
3. Inside of the *midaji*, the *sa-chang* uses loose silk skin (instead of *hanji*) to keep out insects while letting in the breeze.
4. Inside of the *sa-chang* comes the *gap-chang*, the innermost door layer, which has thick walls giving added privacy and protection from cold air. Heavy paper is pasted on both sides of the doors and, at times, brush paintings are pasted for decorative purposes. *Gap-chang* is pushed into the *duggeop-daji* ('wall pockets') and hidden from sight while not in use.

The doors, called *bunhap-mun*, are covered with double layers of heavier wallpaper, and usually have a *bulbalgi-chang* (literal translation is 'light-penetrating window') at about eye level. The *bulbalgi-chang* is a rectangular, hexagonal, or octagonal frame with a single-layer of mulberry paper pasted on for light penetration. These doors provide efficient heat protection and privacy while letting in the light.<sup>50</sup>

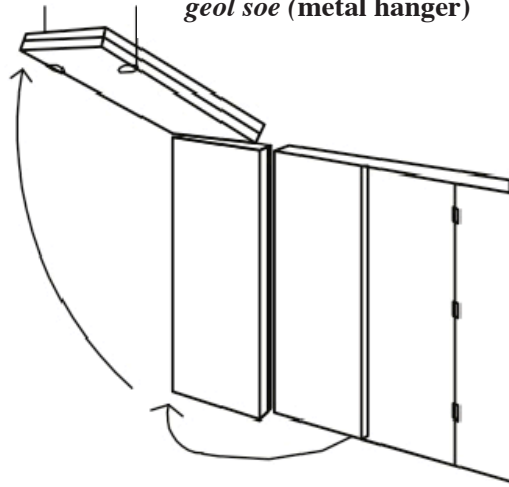
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<sup>50</sup> Hanok Cultural Center (Hanok Munhwawon), "Jip iyagi (Story of a house)," <http://www.hanok.org/housestory01.htm> (accessed October 20, 2012).



*bulbalgi bunhap-mun*

*geol soe (metal hanger)*



**Figure 38:**

Structure of the *bulbalgi bunhap-mun*.

Source: Drawn by the author based on Digital Architecture 2007, “Jeontong geonchuk algi (‘Learning about traditional architecture’),” [http://www.digital-architecture.or.kr/dac2007/web/w312/web/lecture\\_3.htm](http://www.digital-architecture.or.kr/dac2007/web/w312/web/lecture_3.htm) (accessed October 20, 2012).

*Bunhap-mun* hinge on the above beams and are lifted up in order to open up the space when needed for certain occasions. The following photographs illustrate the process of folding and securing the *bunhap-mun* on overhead metal hangers, called *geolsoe*.



1



2



3



4



5

**Figure 39:**  
Bunhap-mun of the sarang-chae  
(‘men’s quarters’) of the Yi Yon-  
guk House, Boseong, South Jeolla  
province. Source: photographed  
by the author, June 2011.

### 2.2.2. Boundary Space

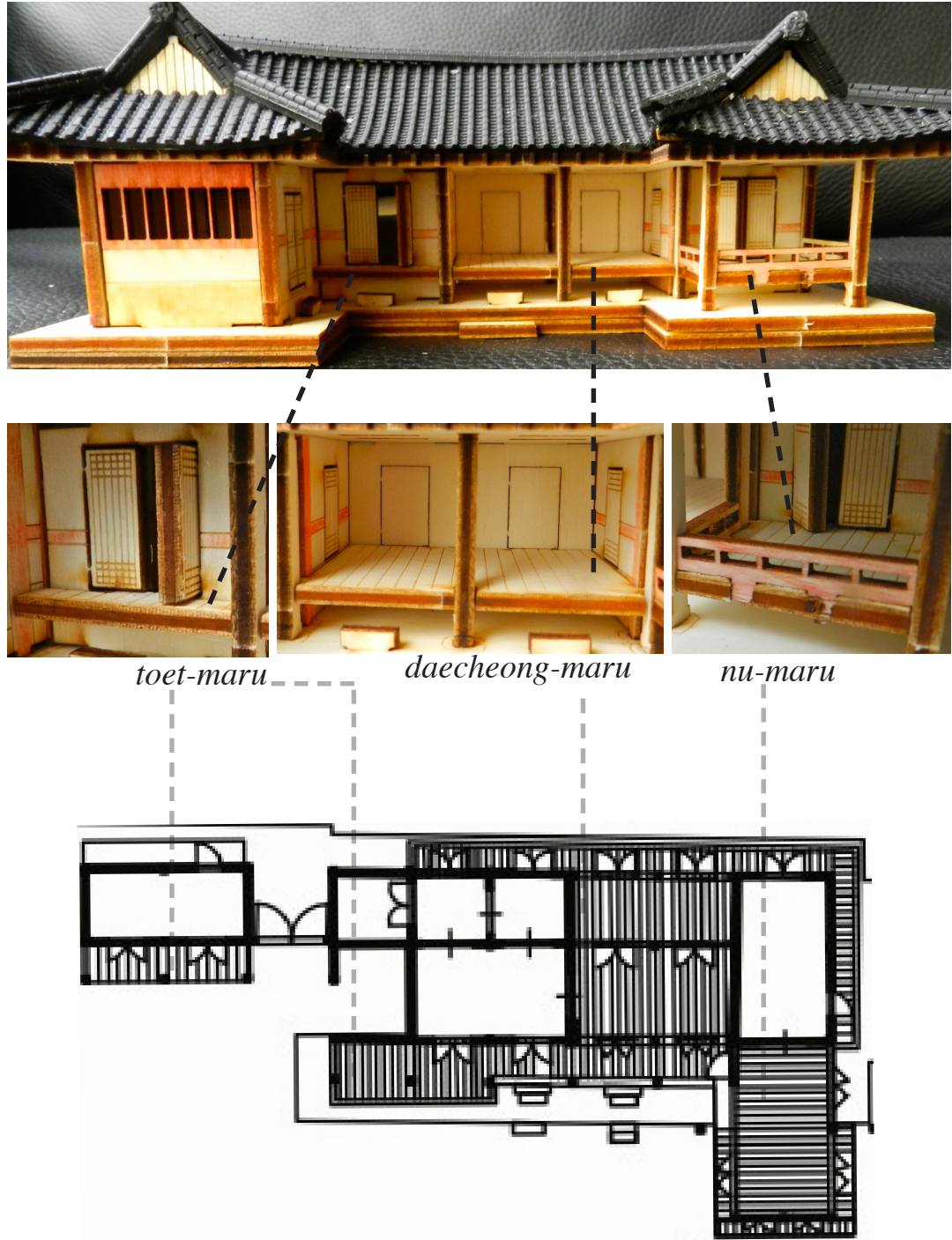
In the boundary between the house and the environment of a traditional *hanok* are found a series of “transitional” spaces. Beyond the skin boundaries, such as doors and windows (see Chapter 2.2.1.), these transitional spaces exist as additional layers. *Maru* (wooden-floored rooms or spaces) connect the indoor space to the outdoor environment visually, physically, and spiritually. The *madang* (‘courtyard’) and *huwon* (‘rear garden’) are also categorized in this study as boundary spaces that connect the exterior to the interior space. *Maru*, *madang*, and *huwon* are the significant boundary components that contribute to the “inside/outside” characteristics in *hanok*, by blurring the division between the figure and ground relationship. As buffer zones between the house and the environment, these spaces are home to psychological thresholds.

#### a. *Maru*

Raised wood-floored spaces called *maru* function as a transitional space, connecting home’s interior and, and physically and visually linking the house to its environment. The *maru* spaces are located between bedrooms or between outdoor and indoor spaces. Depending on their location, the *maru* space is categorized as *daecheong-maru* (central space between bedrooms), *toet-maru* (narrow space between two columns), or *nu-maru* (jutting out from the main bedroom).

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**Figure 40 (top):**

The toet-maru, daecheong-maru, and nu-maru

Source: Model assembled and photographed by the author.

**Figure 41 (bottom)**

The inside/outside character of maru space, daecheong-maru, toet-maru, and nu-maru, in the sarang-chae compound of the Yi Yonguk house, Boseong (drawn by the author).



A *daecheong-maru* (Figures 40 and 41) is located at the center of the indoor space and functions as an important connective space for all indoor circulation. A *maru* space also connects the indoor and outdoor spaces by taking in the views from the courtyard, and also brings in the sunlight, air, smells, sounds and views from nature. At times it may even become an extended courtyard space by connecting to activities taking place in the courtyard.

The small wooden floor located between two columns under the eave is called the *toet-maru* (Figures 40 and 41), and a versatile area that physically extends outward to the surrounding *madang* ('courtyard') or to the outdoor area is the open veranda-like *nu-maru*.

#### **b. *Madang and Huwon***

Contemporary architect Jo Jeonggu believes that the typical *hanok* house is the *madang-jip*, ('courtyard house'). Inner courtyards are the crucial element giving traditional *hanok* its visual and physical characteristics. Traditional *hanok* houses have a series of *madang* spaces that integrate the indoor dwelling space with the environment visually and physically. Various family activities take place, especially during holidays and busy farming seasons. Straw mats and wooden beds would be placed out in the courtyard, and the *madang* immediately becomes the extension of the indoor space. A small house would have one or two multi-purpose courtyards while larger houses would have additional courtyards. The *jongga* (the house of the clan patriarch) would have at least six courts, each

hosting different functions connected to the extended family.



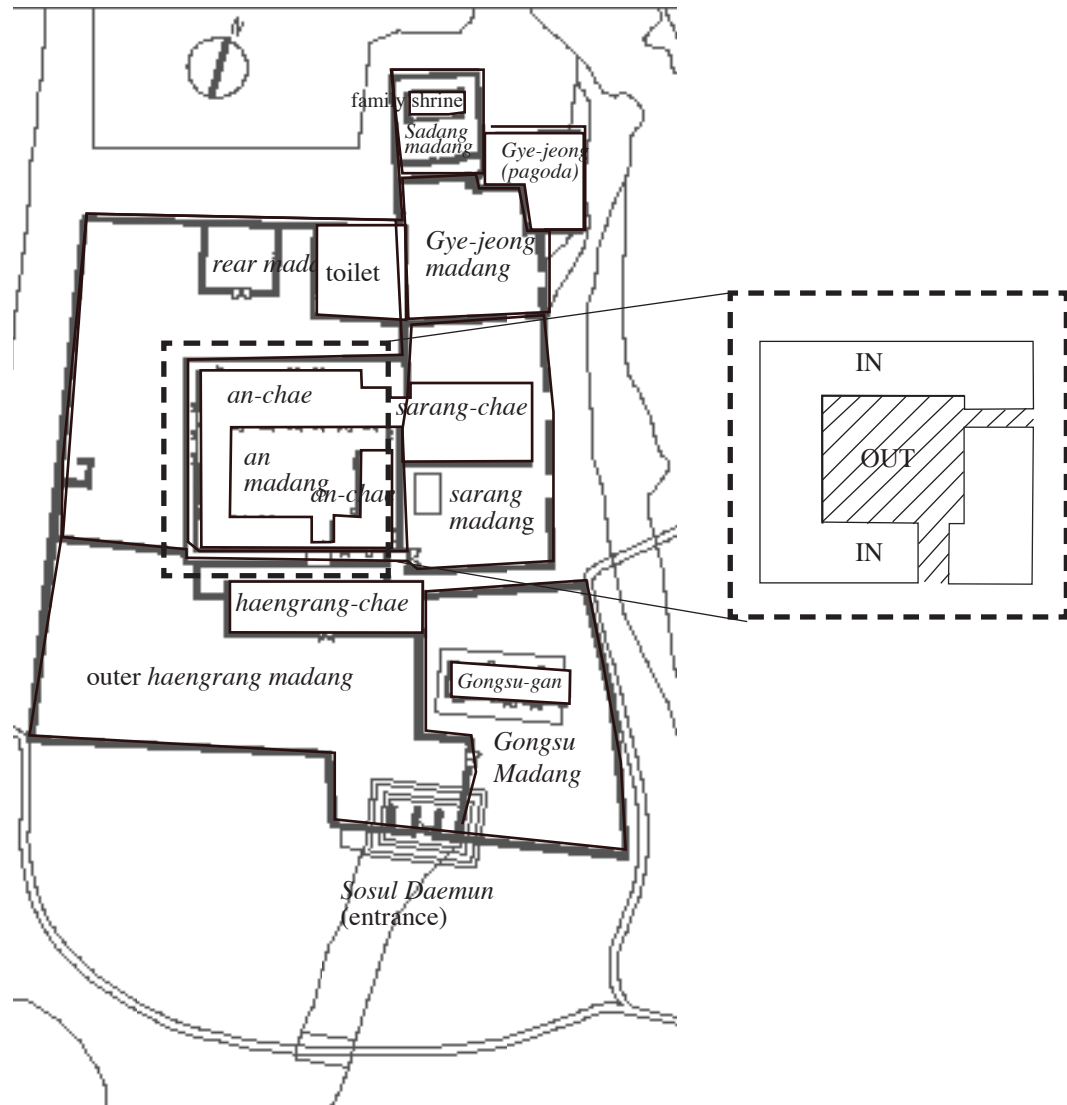
**Figure 42.**

Madang surrounded by buildings, Yi Eonjeon House, Gyeongju. Source: Kim Seoksu and Choe Hyoseung, “Dongnakdang ilgwak ui johyeong gwa guseong e gwanhan yeon’gu (‘A Study on the spatial configuration of the Dongnakdang’),” *Daehan geonchuk hakhoeji nonmunjip* (‘Korean architectural society forum’) 19(11) (Dec. 1984), 105.

The *madang*, cradled between the indoor space and nature, would be named after the building compound immediately adjacent to it. For instance, the typical women’s quarters (*an-chae*) is built around a central courtyard, and this central courtyard is called the *an-madang*. Likewise, *sarang-madang* would be found in front of the men’s quarters (*sarang-chae*) and the *haengnang-madang* (work area) would be adjacent to the servants’ quarters (*haengnang-chae*), the *gobang-madang* (kitchen prep area) would be behind the kitchen, and the *jesa-madang* (ceremonial courtyard) would be found in front of the *sadang* (family shrine).<sup>51</sup>

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<sup>51</sup> Andong ui goga, “Gotaek iyagi (Story of old hanok),” <http://www.gotaek.kr/coding/sub2/sub2.asp> (accessed September 10, 2012).



**Figure 43:**

Yi Eonjeok House (1532); its madang sequence in green (left) and an-madang (right).

Source: Redrawn by the author based on Kim Seoksu and Choe Hyoseung, "Dong-nakdang ilgwak ui johyeong gwa guseong e gwanhan yeon'gu ('A Study on the spatial configuration of the Dongnakdang')," Daehan geonchuk hakhoeji nonmunjip ('Korean architectural society forum') 19(11) (Dec. 1984), 101

Yi Eunjeok's House (Figure 45), located in Gyeongju city, South Gyeongsang province, shows the layered structure of traditional *hanok*. The *an-chae* is situated at the center, surrounded by a wall, which separates it from the adjacent *sarang-chae* to the east and the rear *madang* to the west. The *an-madang* is shaped and activated by the built environment surrounding it. The house and nature meet as equals in the *an-madang*, which is enclosed by the square-shaped *an-chae* structure



**Figure 44.**

The rear garden (*huwon*) seen through the pavilion at the Yi Eunjeok House, Gyeongju. Source: Kim Seoksu and Choe Hyoseung, “Dongnakdang ilgwak ui johyeong gwa guseong e gwanhan yeon’gu (‘A Study on the spatial configuration of the Dongnakdang’),” *Daehan geonchuk hakhoeji nonmunjip* (‘Korean architectural society forum’) 19(11) (Dec. 1984), 105

The *huwon* (‘rear garden’) is another transitional boundary space where the built environment (the house) communicates with the natural environment. The boundary (threshold) between the two becomes vague as the air carries into the home the sounds of summer bugs or the smell of the trees and the earth. Korean gardens were also influenced by Daoist ideas that emphasized the simple way of

life.<sup>52</sup> In the *huwon*, an unmodified natural landscape was cherished. In his *Imwon gyeongje ji*, Seo Yugu (1764-1845) advised one not to manipulate the existing natural growth of trees and the natural rocks around the house in order to preserve nature “un-touched.”<sup>53</sup>

The *madang* and *huwon* also enhance the ecological performance of the *hanok* (see Figure 16). The courtyard (*madang*) helps to bring in natural light, wind, air, and the surrounding views into the indoor space. The inner courtyard (*madang*) might have a sole pine tree or bamboo implanted in the dirt ground, and often with fine white sand sprinkled at its base. The sunlight is reflected on the *madang*, and through the translucent *hanji* doors, the softened indirect light illuminates the indoor space. The intimate relationship of *hanok* with its natural surroundings places the *hanok*’s architectural experience in relation to nature. The boundary between the house and the surrounding environment was the most important aspect of the traditional residential structure in Korea. The threshold characteristics of *hanok* generated people’s emotional attachments to their homes, ties related to the phenomenological experience: the sensory along with the visual experiences of nature are an integral part of the *hanok* experience.

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<sup>52</sup> The literal meaning of the word *Dao*, or *Tao*, is “way” or “road”: the order and harmony found in the universe is considered to be the “proper attitude to life.” In contrast to Confucianism, which advocates action, the Daoist “way” can be viewed as one of inaction, passivity and calm. The key concepts of Daoism are action-less action, simple living, cosmic energy, and the way of winds and waters. The central concept of Korean Daoism is seclusion, which includes also the meaning of transcendence of worldly pain and difficulties. Yang Byeongi, *Han’guk jeontong jogyeong* (‘Traditional landscape architecture of Korea’) (Seoul: Jogyeong Doseo Chulpan, 1994), 17, 21, 75.

<sup>53</sup> Areumdaum, “Seo Yugu *Imwon gyeongje ji beonyeokbon cheotseon* (‘First edition of the translated *Imwon gyeongje ji* of Seo Yugu’),” entry posted August 1, 2005, <http://jsm0123.egloos.com/8662046> (accessed October 18, 2012).

### **Chapter 3.**

#### **Threshold in Transition**

During the twentieth century, *hanok* structures and indoor circulation underwent major transformations, which can be understood in the context of larger changes occurring in Korean society at the time. The threshold characteristic of *hanok* also has a major evolution in the beginning of the 20<sup>th</sup> century. A number of factors prompted the changes to the *hanok* threshold system, all related to changing lifestyles in the context of an urbanizing and globalizing contemporary Korea.<sup>54</sup>

As the city of Seoul was the physical and spiritual center of modern Korea, at this time it was also the immediate backdrop for *hanok* development. Most of Seoul's major avenues were established in the early to mid-Joseon period, but the smaller streets were reconstructed into a grid system in the course of the twentieth century. Changes in

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<sup>54</sup> Oral Interviews with working architects in Seoul during the months of June and July 2011: O Donghui (a.k.a. Oh Donghee, Gansam), Chae Ukjin (Kim Won Architects), Min Juwon and Bak Youngmin graciously responded regarding the concept of the “threshold”

Seoul's street patterns played a major role in the creation of later *hanok* structures by commercial developers.

One Korean architect, Jo Jeonggu, has fond recollections of the small alleyways from his childhood home: "My childhood home was in the corner of a small *golmok-gil* ('alleyway'), which we shared with five other houses. This street was built around the 1950s or 60s. The next street to the north was built in the 1930s, and another one had existed since the Joseon period. This neighborhood was composed of a patchwork of streets dating to various time periods."<sup>55</sup>

The changes in the street patterns were a direct result of Korean governmental urban planning policies of the early twentieth century (see the appendix for a history of Seoul's structure).

The term "urban *hanok*" refers to residential *hanok* structures that have been adapted to the urban environment of the early twentieth century. The modification of traditional *hanok* into urban *hanok* represents one Korean response to the consequences of early modernization, i.e., rising population and urban housing shortages, the transformation of urban streets, as well as the mass acceptance of Western lifestyles. These urban *hanok* are the beginning of the evolution of the traditional

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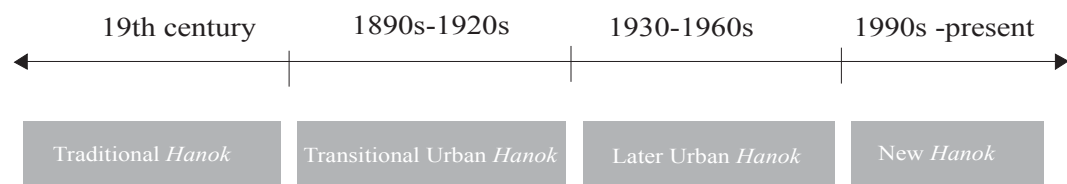
<sup>55</sup> Jo Jeonggu, "Seodaemun *hanok uri jip iyagi* ('Story of my *hanok* house in Seodaemun')," *Jungang Ilbo* (Korea Central Daily), July 4, 2012.

*hanok* that took place at this time.

The threshold phenomenon of *hanok* has been noteworthy in *hanok*'s twentieth century evolution, not only in the earlier urban *hanok* development but also in the more recent *hanok* revival projects. As part of research efforts into the “new *hanok*,” the strengths and weaknesses (or pre-modern characteristics) of *hanok*, which I find closely related to threshold issues, were de-constructed and re-evaluated, and the findings applied to *hanok* revival projects. Among them, four examples are introduced in this chapter (see Chapter 3.2.2.).

The following three periods of *hanok* development during the twentieth century are studied here:

1. early “transitional” urban *hanok*  
(late nineteenth century–early twentieth century),
2. later “commercial” urban *hanok*  
(early to mid-twentieth century), and
3. the most recent “new” *hanok* revival projects  
(1990 to the present).





### 3.1. Circulation Patterns in Urban *Hanok*

Urban *hanok* houses set a precedent for the adaption of traditional *hanok* houses to the new (urban) environment: they were built in dense formation between the newly developed, grid-pattern urban streets, and in so doing establishing a new house-street relationship in modern Seoul.

As shown in Figure 45 above, houses in traditional Hahoe village show multiple *chae*-structures, with house entryways maintaining an adequate distance from the street. By contrast, the Gahoe-dong area of Seoul during the 1960s reveals an urbanized street environment where the entryway from the street to the individual house became much more direct and abrupt.

Earlier urban *hanok* houses show transitional characteristics from the nineteenth century “traditional” *hanok* to the “later” urban *hanok* houses built by commercial developers, which first appeared in the 1930s. Most of earlier urban *hanok* houses were destroyed during the Korean War, but similar types of *hanok* houses were re-constructed to help solve the urban housing problem during the post-war period until the 1960s.



**Figure 45.**

Relationship of the entryway to the streets: traditional Hahoe village, South Gyeongsang province (left) and the Gahoe-dong area of Seoul in the 1960s (right). Source: (left) redrawn based on Sam Y. Park, *An Introduction to Korean Architecture*, 92; (right) Jeon Namil, *Han'guk jugeo ui gonggansa* (Paju-si: Dol Begae, 2010), 57.

The most noticeable changes in urban *hanok* houses had to do with the relationship between the entrance gate (*mungan-chae*) and the adjacent streets and in the home's indoor circulation patterns.

### **a. Boundary and entry patterns**

One of the most prominent original features found in urban *hanok* is the boundary and entry connections with the street: the boundary structures are strengthened while the traditional transparency between the street and the indoor space disappeared. In urban *hanok*, the entryway from the street of is short and direct.

In the context of the urban environment, the traditional entrance/gate structure, or *mungan-chae* (a covered cubic space), has survived and even been strengthened (for security reasons). However, the gate's location and orientation were also determined by the way the house was connected to the street. Each house would be oriented based on its connection to the adjacent street, and an orientation in a direction traditionally considered inauspicious was in many cases unavoidable. The realities of an urban setting made it more difficult for the *hanok* to be oriented properly in relationship to its natural setting.

As entry sequences became direct and short, the layered “yin-yang” entry sequence patterns in the traditional *hanok* gave way to the practical goals connected with modern efficiency. The street environment and the meaning of neighborhood interaction were also affected by this urban context. There were no longer neighborhoods in the traditional sense.

## **b. Indoor Circulation Patterns**

The changes in lifestyles, social orders, and gender roles, as well as shrinking family sizes during the early twentieth century in modern Seoul, were strongly reflected in the indoor boundary and circulation patterns of urban *hanok*.

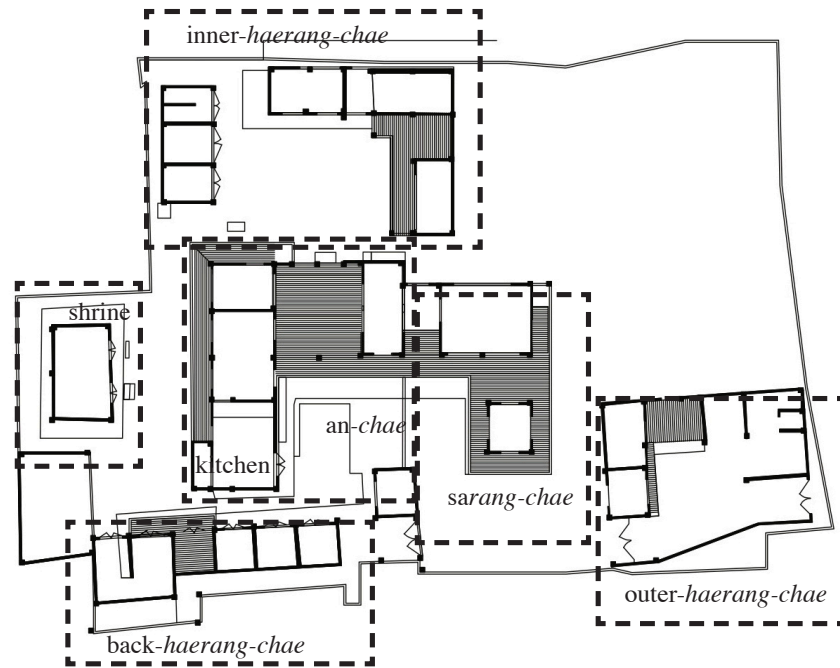
Above all, efficiency of circulation was sought in the planning of the urban *hanok* structures: traditional gender and class-specific “*chae*-structures” have been replaced by much more condensed single-unit structures. Multiple *chae*-buildings were consolidated into a single rectangular structure enclosing a central courtyard. The open *daecheong-maru* (open central room with wooden floor) would be enclosed with glass sliding doors. In later designs, the enclosed and centralized *daecheong-maru* would eventually become the Western style “living room.” The bathroom and the kitchen were also brought into the semi-indoor space for efficiency.

### 3.1.1. “Transitional” Urban *Hanok* (1900s-1920s)

In the early twentieth century, individual *hanok* houses in Seoul went through changes specific to their residents’ situations. Compared to late urban *hanok* houses, the Han residence of Gahoe-dong in Seoul and the Min Hyeonggi residence of Gye-dong, both built in 1920s, show characteristics that are “transitional.” Both the Han and Min residences have much more compact layouts than traditional *hanok* houses, reflecting the transitional conditions of the time period.

In the Min Hyeonggi residence (Figure 46), the *an-chae* and *sarang-chae* are connected via a rectangular *maru* placed in between them, and yet, their two courtyards, the *an-madang* and *sarang-madang*, are separated by a wall, as in traditional *yangban hanok*.

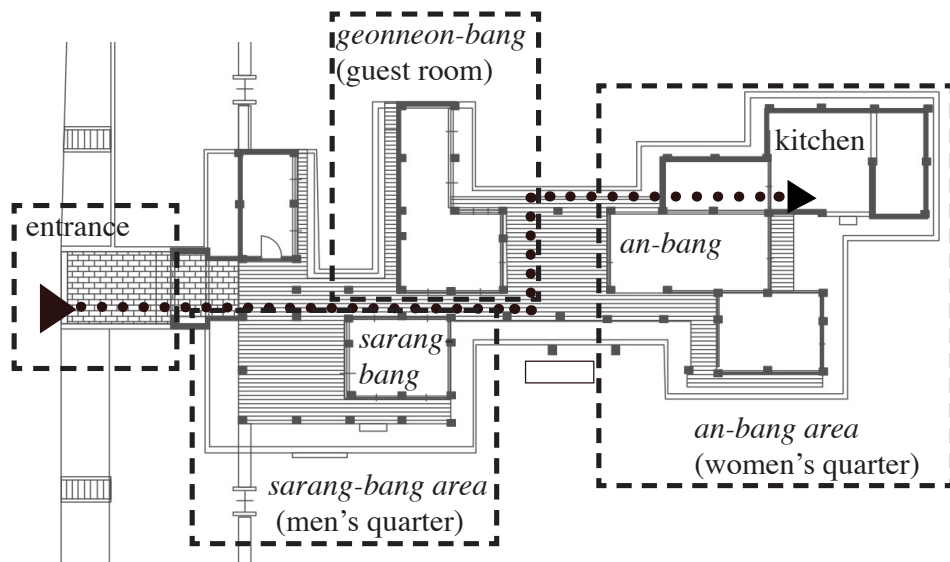
In the Han residence (Figure 47), the *an-chae* and *sarang-chae* are connected under the same roof, and yet there is a general division between the *sarang-chae* area (men’s quarters) near the front gate, and *an-chae* area (women’s quarters) in the back. The home’s indoor circulation is highly centralized, following a long and narrow central corridor starting from the entrance to the *sarang-bang*, *an-bang*, and then the kitchen. The boundary of the indoor plan is still very open and the *daecheong-maru* plays the conventional role as threshold space.



**Figure 46:**

Plan of the Min Hyeonggi Residence, Gye-dong, Seoul.

Source: Drawn by the author from Jeon Namil, *Han'guk jugo ui gonggansa* (Paju-si: Dol Begae, 2010), 72.



**Figure 47:**

Plan of the Han Residence, Gahoe-dong, Seoul. Source: Redrawn by the author from Jeon Namil, *Han'guk jugo ui gonggansa* (Paju-si: Dol Begae, 2010), 71.

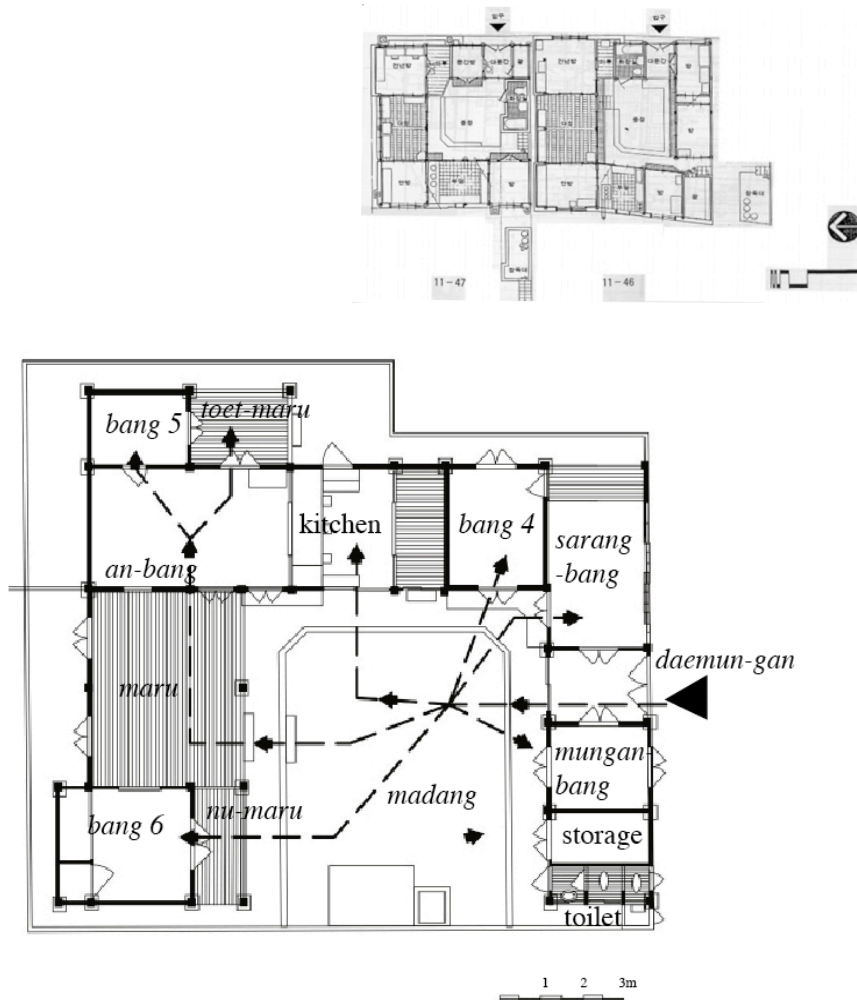
In the Han residence (Figure 47), the kitchen and the bathroom were also brought into the indoor space. Through the shortened indoor circulation pattern, the efficiency of household activities was improved. The Han residence displays the transitional characteristics of a *hanok* built between the traditional and later urban *hanok* periods.

These “transitional” urban *hanok* houses have much more compact structures compared to the traditional *hanok*. As a result, the boundary between the interior and exterior is more defined, and also those features that were traditionally located outside the home have moved inside. This trend becomes much more pronounced in the later phase of urban *hanok* development.

### **3.1.2. Later “Commercial” Urban *Hanok* (1930s-1960s)**

Most *hanok* houses in Seoul were constructed in the 1930s and 1940s, and are described here as “later” urban *hanok*. Later urban *hanok* constitute the major step in the “*hanok* evolution” initiated by commercial developers. The concept of a Housing market was a new paradigm during this period, a sharp contrast to the traditional construction paradigm where houses were built for specific families, typically with the help of neighbors. Nevertheless, some architects believe that the urban *hanok* to be an outstanding example of the

traditional characteristics of *hanok* successfully adapted to the urban environment.<sup>56</sup>



**Figure 48.**

Plan of an urban *hanok* built in the 1930s (left) and circulation patterns in an urban *hanok* (right). Source: Redrawn by the author based on Jang Giin, *Han'guk geonchuk daegye sajeon* ('Korean architectural dictionary') (Seoul: Boseongak, 1998)

The plan structures and the entry sequence have changed in the later urban *hanok* built during the 1930s-60s. The indoor plan structure became introverted with the *madang* courtyard as the center of the

<sup>56</sup> Kim Hyeri, "Dosi ui haengganeul ingneun geonchukga Hwang Dujin (Hwang Dujin: the architect who reads the urban street)," Cine 21, February 24, 2006, [http://www.cine21.com/news/view/mag\\_id/36782](http://www.cine21.com/news/view/mag_id/36782), (accessed, July 20, 2012).



indoor circulation, and the *daemun-gan* ('gate structure'), *haengnang-chae*, bathroom and the storage spaces were arranged towards the street as the boundary structure.<sup>57</sup> With their distinctive format being a compact single-structure surrounding a central courtyard, the traditional threshold elements of *madang* and *maru* remained intact.

The traditional inside/outside characteristics survived in the pre-modern *hanok* and the more recent *hanok* revival projects, thanks to the continual existence of threshold spaces, i.e., as an important threshold space in urban *hanok*, *madang* courtyard provided an outdoor space within a compact urban residence, and urban families were able to sense the seasonal changes as an essential part of the daily life even within this enclosed space.<sup>58</sup>

These traditional threshold characteristics are important to the people of Korea as such features are closely related to the people's collective memory of the *hanok* houses that have shaped the concept of ideal homes of Korean people over the last few thousand years. Further, ecological benefits from the "inside/outside" characteristics of the threshold space (see Chapter 1.3) may be another worthy reason to continue the progressive direction of *hanok* development.

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<sup>57</sup> Jeon Namil, *Han'guk jugeo ui gonggansa* (Paju-si: Dol Begae, 2010), 101.

<sup>58</sup> Seo Hwasuk, "Interview with Jo Jeonggu," *Han'guk Ilbo*, October 30, 2011, <http://news.hankooki.com/lpage/culture/201110/h2011103021421186330.htm> (accessed July 20, 2012).

### 3.2. New Sensitivity in Contemporary *Hanok* Thresholds

From the 1970s to the 1990s, practice of *hanok* design as living architecture practically ceased, and there were no particular activities in *hanok* residential development. *Hanok* underwent two rather extreme transformations during this period: existing residential *hanok* buildings were either vacated and preserved as historic properties that represented archetypal “Joseon architecture,” or were demolished in order to make space for large-scale developments. As a result, only a small number of *hanok* houses have survived as lived-in houses.

High-rise apartment buildings rapidly replaced the disappearing residential *hanok* during this time, accommodating the new spatial sensitivity favored by the general public: the individual’s privacy became increasingly central in the new apartment designs, as contrast to the traditional “we-culture” of old Korea as reflected in traditional *hanok* structures: in many cases, these two contrasting values may have coexisted in the process.

In terms of living space, the symbolic and hierarchical order of gender and class separation of the traditional *hanok* structures all but disappeared: the open/spacious indoor plans became increasingly preferred, while the function of the *anbang*, which was traditionally

distinguished as ‘the room for the lady of the house,’ has become one of the private spaces, the master bedroom, separated from the kitchen. The spatial relationship between the rooms /spaces became neutral, freed from the traditionally organic links, depending on the individual family structures.<sup>59</sup>

Finally, more value was placed on the comforts of individual members and the efficiency of indoor circulation patterns using modern construction materials and technology. Compared to the earlier 1970s era apartment models, the more recent models show fewer numbers but in larger-scale bedrooms to accommodate the Western-style furniture, such as beds, tables and chairs, in place of the traditional beddings on the floor. This indicates that the flexibility of *hanok* rooms has been replaced by Western-style rooms with pre-fixed functions (i.e., bedrooms, living rooms, dining rooms, etc.).

The increased popularity and awareness of Western architectural and cultural standards, e.g., that ADA regulations for private and public buildings ought to be adapted into plan designs, are additional values affecting the general trend in Korean architecture. At the front gates in almost all the public places, even the traditional building structures, the ADA features such as railings and wheelchair accesses were easily observed. A contemporary architect, Bak Minyeong, also shared with

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<sup>59</sup> Jeon Namil, *Han'guk jugeo ui gonggansa* (Paju-si: Dol Begae, 2010), 341.

me her design concepts for an elderly home in Seoul, said that she prefers not to have *munjibang* ('doorsill') between the rooms in that particular plan in consideration of the need for her client.<sup>60</sup>



**Figure 49.**

The adoption of Western ADA standards for public buildings and the threshold: railings and wheelchair access at Namsan-gol, Hanok Village, Seoul.

Source: Photographed by the author, May 2012.

Despite all the changes in Korea, *hanok* began to receive renewed attention after being ignored for decades. Along with the *hanok* revival trend of the 1990s, contemporary *hanok* modification efforts have emerged: academic research symposiums as well as independent efforts in “*hanok* revival” are frequently reviewed and published in the press.

As part of its administrative efforts, the Seoul City Government has also introduced various measures since 2001, including a ban on real

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<sup>60</sup> Interview with Bak Minyeong, Seoul, July 2011.

estate development in the traditional *hanok* neighborhood areas and grants to restore old *hanok* houses. These actions were meant to preserve the “traditional *hanok* neighborhoods” in the central districts of Seoul, including Jongno-gu, Seongbuk-gu, and Dongdaemun-gu. (see Figure 50)

Besides the preservation of old *hanok* houses, there have been added efforts to develop new *hanok* concepts, which are introduced here as part of this study of the *hanok* threshold (see Chapter 3.2.2).



**Figure 50.** Map showing the preserved “*hanok* neighborhoods” (in blue) of the central districts of Seoul. Source: Blue layer by the author based on the map of Seoul, [www.Mappi.net](http://www.Mappi.net) : Seoul

Both strengths and weaknesses that exist in traditional *hanok* were recognized and analyzed as a pragmatic way to understand *hanok* in a broader context, even though one of the *hanok* professionals has stated that weaknesses and strengths are two sides of the same coin. Visual expressive qualities and ecological and nature-friendly aspects of *hanok* have been often brought up as strengths of *hanok*, and inefficient interior circulation patterns and the difficulties in indoor temperature control are pointed out as weaknesses.<sup>61</sup>

This study also finds that these seemingly oppositional concepts of strengths and weaknesses of *hanok* are simultaneously related to threshold issues: the layered system of doors/windows (visual and ecological benefits) and the indoor circulations were discussed in Chapter Two as part of the discussion of the *hanok* threshold.

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<sup>61</sup> Kim Dogyeong, “*Hanok toronhoe jaryojip (Hanok Symposium Reference Book)*,” Gukga In’gwon Wiwonhoe Symposium (National Human Right Committee Symposium), Seoul, March 15, 2010.

### 3.2.1. Thresholds Strengths and Weaknesses of *Hanok*

Scrutinizing all aspects of *hanok* from cultural and historical contexts and “de-constructing” fundamental elements out of the familiar context of traditional Korean architecture would positively help to attain fresh perspectives on residential *hanok*. Threshold components are continue to be important from the modern perspective in a number of ways, and these components are considered strengths and others weaknesses.

Among their strengths one cites the following:

First, threshold components are an important visual aspect of *hanok*: layers of lattice doors with various patterns that consists of much of the wall space function as major aesthetic components in *hanok* houses.

The repeated structures of the doors and windows as well as their spatial organization of the threshold spaces add the visual rhythm and balance to even the most modest residential *hanok* houses. Even when doors and windows are removed, layered space demarcated by a series of *munjibang* also presents a strong visual and spatial impact, besides the outdoor views brought into the indoor space. Besides its aesthetic values, the ecological value of layered doors and windows, which function as flexible and interactive membranes, can be considered another important strength found in *hanok*'s threshold system. The flexible layering system, density of the lattice patterns, and the various

thicknesses of paper also help to control the amount of penetrating sunlight and air, providing passive cooling and heating (see Chapter Two). The *hanok* boundary space, *madang* and *maru*, also function as the added protective spatial layers.

And yet, “circulation” prototypes in *hanok* are often referred to as one of *hanok*’s most critical weaknesses. Multiple building structures, multiple floor heights, as well as its layered doors and windows contribute to the inefficiencies in the *hanok*’s spatial connection and the circulation patterns: *maru* floors are raised for ventilation; the kitchen floor is lower than the courtyard in order to accommodate the *ondol* fireplace for the home’s heating system; multiple building compounds on *gidan* foundation of varying heights.

Besides the discussion of *hanok* threshold as strengths or the weaknesses, the threshold elements directly enriches the phenomenological aspects of *hanok* space. The threshold components allow the surrounding natural environment enter freely, such as breeze, sunlight, sounds, smells and other sensory elements of outdoor views: threshold space, whether that refers to the conceptual *munjiban* space over the doorsill or the physical *maru* / *madang* space, is where the gradual interior to exterior or exterior to interior transition occurs.



### 3.2.2. Revival of Threshold

Discussed as strengths and weaknesses, *hanok*'s threshold issues provided core concepts for many *hanok* revival projects. Here four projects are introduced as examples: the large-scale development project (hotel and condominium) examined here was based on the inherent “strengths” of *hanok* threshold components, while some ideas from *pungsu* (geomancy) were also adopted in determining the orientation for these development projects; the latter two projects are based on a reinterpretation of the “weaknesses” or “pre-modern characteristics” of *hanok* thresholds: inefficient circulation patterns and the *kan* system of measurement, which do not conform well with modern building practices. Seung Hyosang and Jo Byeongsu view the “inefficient” and “pre-modern” nature of *hanok* living from new perspectives.

**a. *Hanok* Hotel Ra Gung (Jo Jeonggu)**

The Korean architect Jo Jeonggu is known for his numerous *hanok* projects, including the renovation of old *hanok* homes as well as completely original design projects, sometimes known as “*sin hanok* (‘new *hanok*’)” projects. His work on more than thirty *hanok* renovation projects in the Bukchon area of northern Seoul gave birth to that area’s “Bukchon *Hanok* Village,” now a popular tourist destination. Jo emphasizes that “less is more,” both in his renovations and original projects. In his contemporary *hanok* projects, which include hotels, galleries and libraries, he strives to retain old forms and conditions as much as possible.

He doesn’t believe that a *hanok* must be a traditional wooden structure, but does believe in the importance of *madang* courtyard along with other threshold components of *hanok*. He declares that true “*hanok*-ness” comes from the courtyard, which he describes as “a piece of nature in the middle of the urban house.”<sup>62</sup>

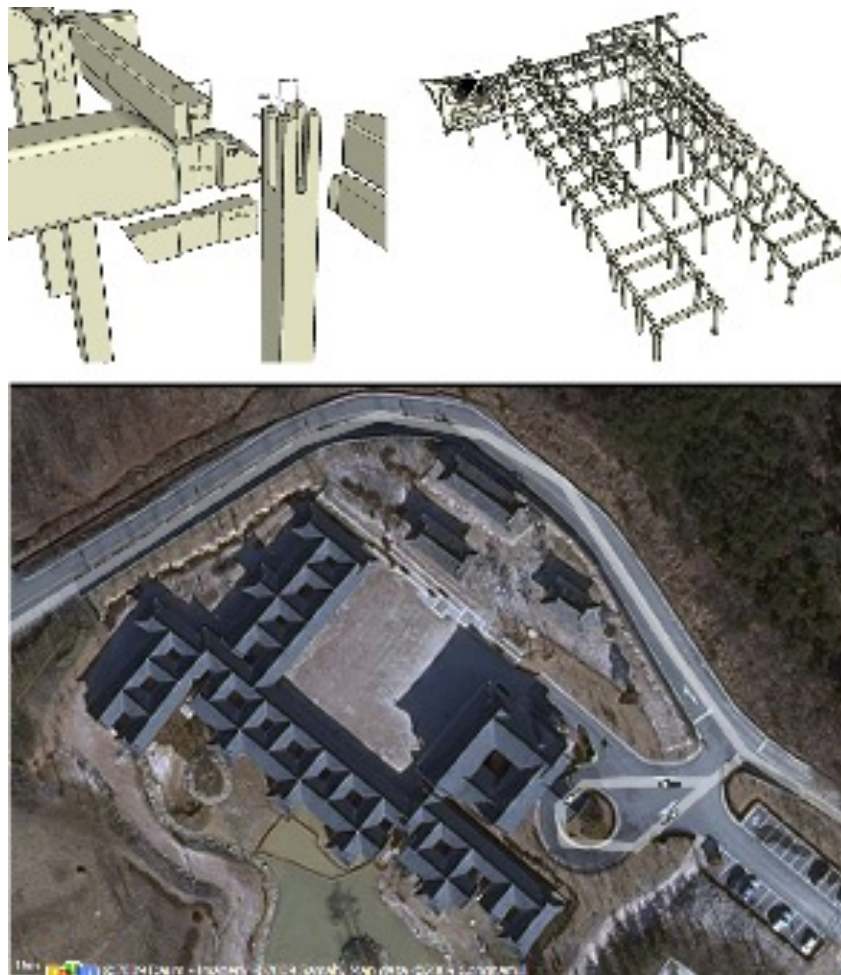
One of Jo’s projects, the Hotel Ra Gung, features aesthetic qualities of the traditional *hanok* space with open threshold characteristics. Many features in this large-scale project in Gyeongju, the ancient capital of

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<sup>62</sup> Yi Eunju and Kim Hyeongeun, “The man behind hanok revival,” *Joongang Ilbo*, November 22, 2009.

the Silla Kingdom, demonstrate the “strengths” of the *hanok* threshold components.

One of the most important threshold elements, the *kan* measurement system, was adapted in the overall design, which is clearly visible from the aerial view of the hotel complex (Figure 51).



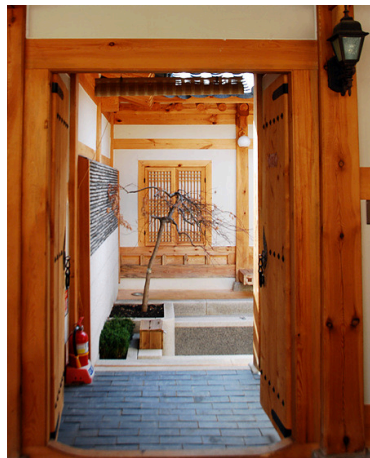
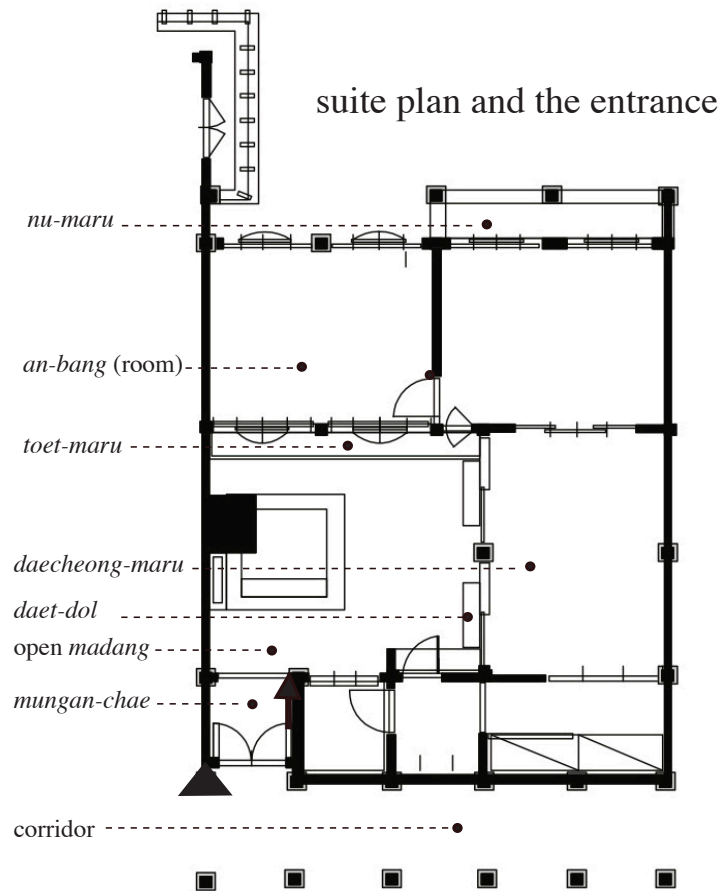
**Figure 51.**

Structural drawing of the hotel using the *kan* module system (top) and an aerial view of the Hotel Ra Gung (bottom).

Source: Clayarch Gimhae Museum, “Contemporary Hanok” exhibition catalog.

Besides the modular kan system, other threshold elements, including lattice doors and windows, *madang* and *maru* spaces, as well as entrance structures, are also featured as important visual and physical components: the inside/outside aspects of *hanok* are expressed in the open courtyard and *nu-maru* found in individual suites as well as the overall site plan; the ecological benefits of the natural ventilation to be derived from open *maru/madang* space, as well as layered doors and windows, was also considered.

“Solid–void” circulation patterns in traditional *hanok* were also adapted as a valuable aspect of the project: a long corridor connects individual guest suites (see Figure 53), and the entrance sequence resembles that found in urban *hanok* residential houses from the early twentieth century. From the hotel’s front gate corridor, an individual gate and the suite *mungan-chaе* lead to a central courtyard, where one steps up on the *gidan* and to the raised *maru* space of the bedroom. The above “courtyard-style suite” was designed after 1930s urban *hanok*. Entering the suite recalls the experience of a visit to relatives in the rural village.



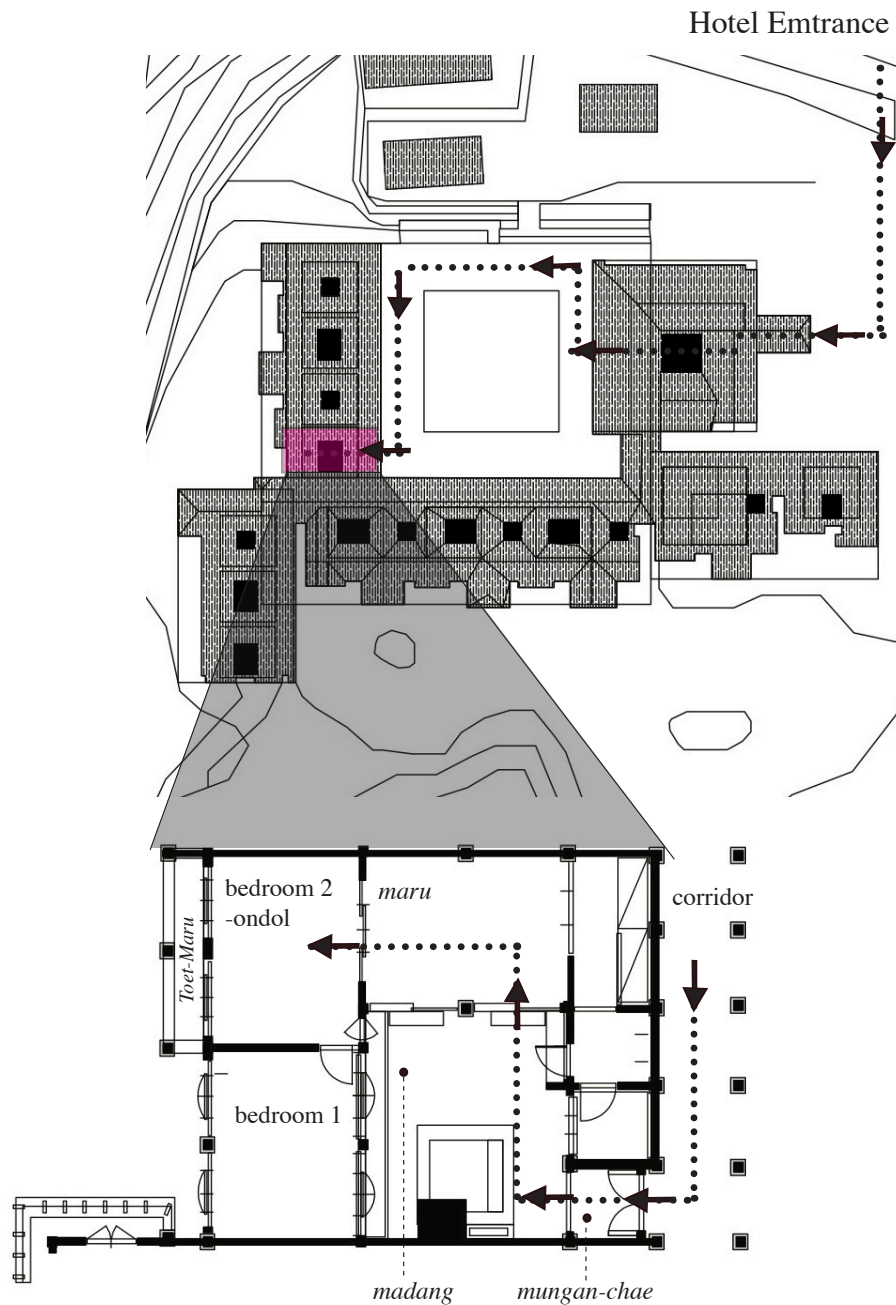
madang, seen through  
the suite entrance



corridor connecting  
individual suites

**Figure 52.**

Hotel Ra Gung, a “courtyard style” suite plan (right), and the suite entrance and corridor (left). Source: Photographs from *Sin Hanok, Jeontong eseo Hyeondaero* (‘New Hanok, from the tradition to the Contemporary’) (Sohn Jeongmi, Gimpo: Hanmunhwasa, 2011) 68, 69: Plan drawn by the author based on the same source.



**Figure 53.**

The Circulation Pattern at the Hotel Ra Gung:

The site plan (top) and the floorplan of a suite at the Hotel Ra Gung (bottom).

Source: Drawn by the author based on *Sin Hanok, Jeontong eseo Hyeondaero* ('New Hanok, from the tradition to the Contemporary') (Sohn Jeongmi, Gimpo: Hanmunhwasa, 2011) 63, 69

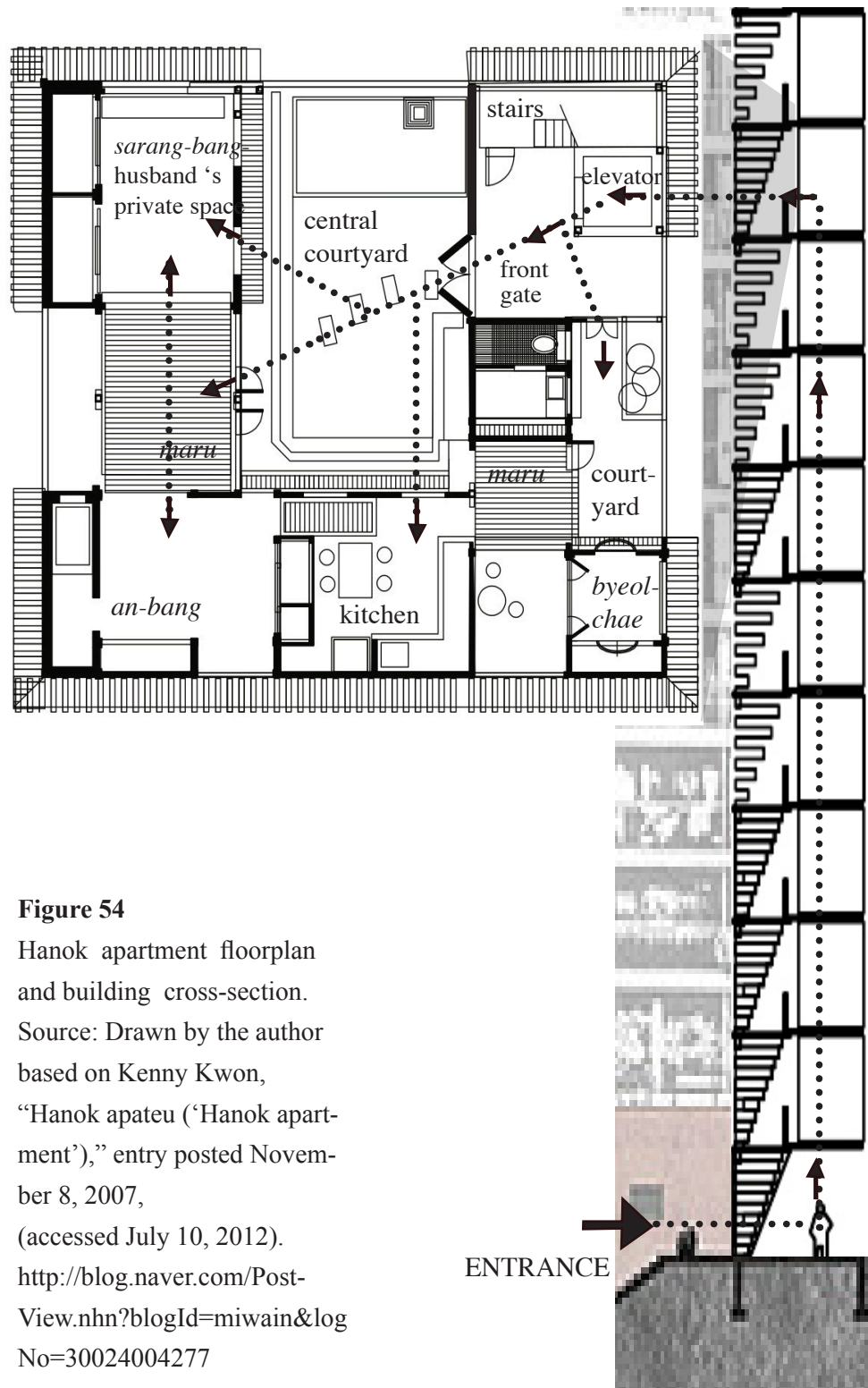
### ***b. Hanok Apartments (Hwang Dujin)***

Hwang Dujin is another architect responsible for notable *hanok* revival projects, especially in the Bukchon area of Seoul. Hwang sees the value of combining traditional *hanok* aesthetics with modern modifications, while other *hanok* professionals are alert to the *hanok* modification trends, arguing that a special case ought to be made for careful and more restrictive preservation regulations in the historic Bukchon neighborhood.

In consideration of the fact that owning a *hanok* is beyond the reach of most Koreans due to its cost and limited land availability, Hwang proposed a “*hanok* apartment” complex. Hwang adapted the 1930s urban residential *hanok* plans and stacked them vertically to create his concept of a *hanok* apartment complex. As mixed-use development projects, this one-unit-per-floor design can be built on small urban lots with commercial developments on the street levels and residential units on the upper floors.<sup>63</sup>

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<sup>63</sup> Hwang Jeongil, “Apateureul hanok euro gaejo (‘*Hanok* apartment’),” entry posted March 31, 2012, [http://blog.daum.net/blog/ArticleCateList.do?blogid=0BcQQ&CATEGORYID=34&dispkind=B2201#ajax\\_history\\_home](http://blog.daum.net/blog/ArticleCateList.do?blogid=0BcQQ&CATEGORYID=34&dispkind=B2201#ajax_history_home) (accessed October 15, 2012).





The key features of the threshold elements in his *hanok* apartment design include prominent visual threshold features, i.e., suspended *hanji*-papered doors and windows (*bunhap mun*), and inside/outside space (*madang* and *maru*).



**Figure 55.**

*Hanok* apartment interior view. Source: Kenny Kwon, “*Hanok* apateu (‘Hanok apartment’),” entry posted November 8, 2007, (accessed July 10, 2012). <http://blog.naver.com/PostView.nhn?blogId=miwain&logNo=30024004277>

Also notable in the proposal is the reconciliation of contrasting values: an apartment development aimed at efficient land use and its suitability for the independent urban lifestyle, while at the same time accommodating the traditional *hanok* ideal: living closer to nature.

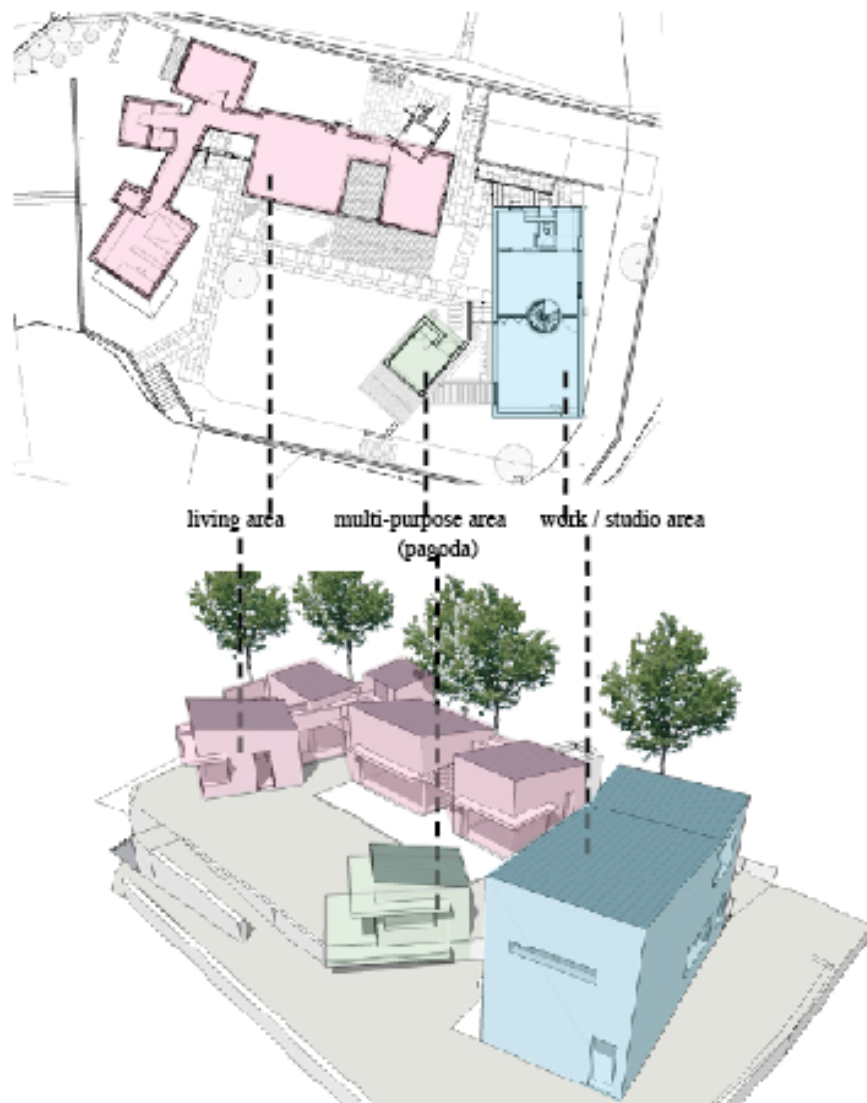
Traditional entrance structures (*mungan-chae*) are also a primary concept in his proposed designs. The entrance gate is especially important in the traditional *hanok* as the “face” of the house and the people who live within. By contrast, the front gate in the *hanok* apartment may be much different from the traditional *mungan-chae* (entrance court or the larger “gate complex”).<sup>64</sup> Due to the vertical organization of the apartment structure, the gate becomes highly secured and distant from the street, and the private elevators further reinforce the private and isolated urban lifestyle. The single-unit-per-floor set-up in effect eliminated neighbor-to-neighbor interaction, which, though it may emphasize the self-sufficient apartment lifestyle, not only discourages such human interaction but inhibits shared values and the development of “neighborly spirit.”

Hwang is also aware of the ecological benefits of traditional *hanok*. In fact, he sees modernized *hanok* as nothing less than part of a new vision of sustainability for the city. As there is only one unit per floor, with all sides open, plan directions can be determined based on the optimal heating and cooling conditions so as to reduce energy consumption. The use of basic natural materials in *hanok* construction further bolsters *hanok*’s green aspect.

### **c. Toecheon House (Seung Hyosang)**

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<sup>64</sup> The *munganchae* can be a simple gate structure composed of the gate and its frame, or it can comprise a more elaborate gate complex, with a house-like layout to include rooms and such.



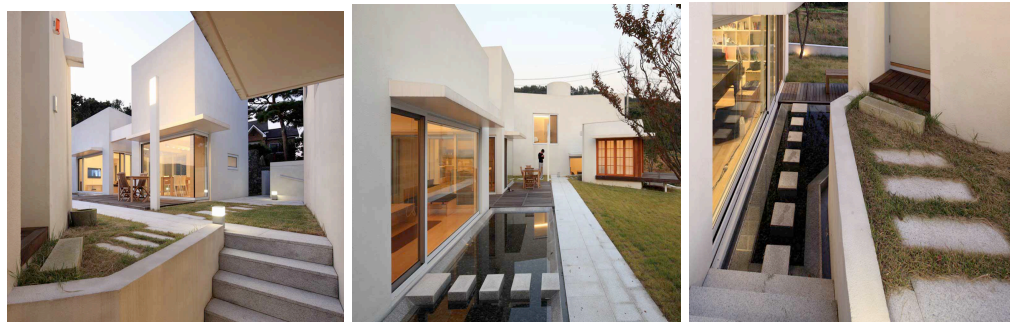
**Figure 56.**

Toecheon House, the site plan (left) and the aerial view (right). Source: Gouen-sori, “Jipi byeonhandha (‘The house is changing’),” *Joseon Ilbo*, January 13, 2012.

The design concepts for the Toecheon House project are based on *hanok*’s “weaknesses”, as discussed earlier (see Chapter 3.2.1.). In this project, the “inefficient circulation patterns” and the “pre-modern character” of *hanok* space are reinterpreted from a new perspective.

This building resembles a minimalistic modern building in its appearance, but by being surrounded by nature, the village context of the traditional *hanok* is conveyed. *Madang*, *maru*, entrance structures, as well as alternating solid-void circulation patterns are important design components of this project.

The Toecheon House is located in Gwangju, Gyeonggi-do province, and was designed for a professional jazz pianist, Bak Juno. From the outside, the house looks like a typical modern building, composed of seven minimalistic “boxes” in three separate functional units. The living unit is composed of five-boxes, where bedrooms and the kitchen are internally connected. A pagoda-like, single-box unit functions as a multi-purpose room, and the last rectangular box is the music studio unit for the owner.



**Figure 57.**

Circulation pathways in the Toecheon house. Source: Sorabol Blog, “*Seung Hyosangi seolgyehan Toecheon jutaek* (‘Toecheon House designed by Seung Hyosang’),” entry posted April 13, 2012, <http://blog.daum.net/sss2115/17049085> (accessed October 10, 2012).

Notable in this design is the adaptation of the traditional *hanok*'s "passive and active" circulation patterns. Individual boxes (buildings) are independent and spaced with outdoor pathways between them. Moving from one room to another in the house may require passing alternately through indoor and outdoor spaces.

Most rooms in the Toecheon house are also creatively flexible in their usages, which is in opposition to most modern rooms with designated functions as indicated by their furniture and layout. These multi-purpose rooms can be used as guest rooms, studies, or family rooms, something Seung refers to as "creative functions," a concept borrowed from the traditional *hanok*.

Seung's concern for the "flexibility of space" echoes Hwang Dujin's criticisms of most apartment designs that target the "standardized/idealistic" family model (i.e., a married couple with two children), without much consideration for the changing nature of family cycles (or life cycles), alternative lifestyles, or the aging process of individual members.<sup>65</sup> This criticism can serve as plain reminder that the family is not built for the house, but the house for the family.

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<sup>65</sup> Kim Hyeri, "Dosi ui haengganeul ingneun geonchukga Hwang Dujin ('Hwang Dujin: the architect who reads the urban street')," *Cine 21*, February 24, 2006, [http://www.cine21.com/news/view/mag\\_id/36782](http://www.cine21.com/news/view/mag_id/36782), (accessed, July 20, 2012).

The architectural philosophy of the architect Seung Hyosang is focused on building the “healthy home.” Seung argues that too much physical comfort can translate into a lack of physical activity, whereas a “pleasantly un-comfortable” lifestyle can induce wisdom and creativity through the physical movement from space to space.<sup>66</sup> The slogan of “pursuing the beauty of anti-efficiency and anti-comfort” emerged as a counter-reaction to modern ideas of extreme comfort and efficiency as the highest values for homes. Seung experiments with this concept of “inefficiency” in his residential house designs. Seung intentionally stretched the indoor and outdoor circulation paths in order to promote movement and physical activity in the home, believing that active movement induces a creative spirit and ultimately wisdom. He finds significant wisdom in the *hanok*’s inefficient circulation patterns, an “inefficiency” that induced the Korean people inhabiting them to be creative and physically active.<sup>67</sup>

Seung’s attempts at designing a somewhat inefficient and yet meaningful space emphasize the phenomenological perspective of architectural design. Finding the beauty in the time and effort spent in a daily space doing simple activities, activities as simple and everyday

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<sup>66</sup> Gouen-sori, “Jipi byeonhanda (‘The house is changing’),” *Joseon Ilbo*, January 13, 2012.

<sup>67</sup> Soo-Jeong Choi, “The Division of Architecture on the Ansan campus holds an exhibition on ideal cities,” *Weekly Hanyang* (Hanyang University), no date, [http://www.hanyang.ac.kr/week/2003/200304/e3\\_sub1.html](http://www.hanyang.ac.kr/week/2003/200304/e3_sub1.html) (accessed September 20, 2012).

as moving from one room to another, may help revive a humanistic appreciation for our living space.

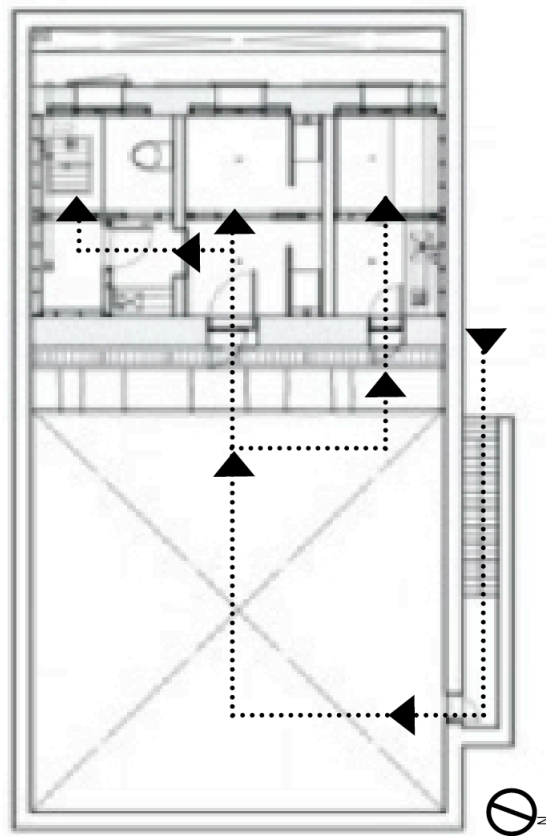
**d. Earth House (Jo Byeongsu, a.k.a. Cho Byeongsu):  
the adaptation of the “human scale” and the concept of “inside/outside”**

The key concept of the Earth House (*ttangjip*) of Jo Byeongsu is the spatial sense of the intimate “human scale” (i.e., *kan*). Jo finds new values buried in the old architectural measurement system of *kan*, a system that carries rather “negative” connotations today as being a pre-modern system of measurement. The “one-kan space” also implies a tiny and minimally equipped room/space. Jo’s Earth House has adapted the rather austere qualities of the daily life and *hanok* traditions of old Korea.

Jo’s Earth House is also based on *hanok*’s “passive-active” spatial relationship and the light quality of old *hanok* houses. The compact space (one-*kan* room) that is based on human dimensions, and which unified the “solid and void” spatial relationship, strongly suggests in its design the traditional threshold concept.

Figure 59 shows an underground house consisting of six tiny, unadorned rooms and a 23 x 23 foot courtyard. Jo describes the house as a place for self-reflection, exploring Daoist ideas about negative and

positive space, and the question of just how much (or how little) space we need in order to live comfortably.<sup>68</sup> This six-*kan* house, formed by a double layer of three-*kan* structures, is made up of two one-*kan* sized small bedrooms in the middle, a bathroom and a maintenance room (one-*kan* each) on the left, and the kitchen and the study (also one-*kan* each) to the right.<sup>69</sup>



**Figure 58.**

The home's circulation plan.

Source: Golden Motive Blog, "Yun Dongju *ui haneul gwa ttang gwa byeol gwa sireul girineun jip* ('A House for Poet Yun Dong-ju, his Sky, Earth, Stars, and Poetry')

<sup>68</sup> Winifrie Bird, "Underground House in Seoul," Dwell People, March 25, 2010 <http://www.dwell.com/articles/profiles-byoung-cho.html> (accessed Nov. 1, 2012)

<sup>69</sup> Kim Yuna, "Jo Byeongsu *ttangjip* ('Jo Byeongsu's Earth House')," entry posted August 3, 2011, <http://blog.naver.com/PostView.nhn?blogId=baboo310&logNo=110114893750&parentCategoryNo=21&viewDate=&currentPage=1&listtype=0> (accessed September 20, 2012).



” entry posted June 23, 2011, <http://m.blog.daum.net/kdk99/17951806> (accessed September 20, 2012).

The Earth House was built only with soil excavated from the site. It has been described as one of Jo’s most lyrical works and as such, appropriately dedicated to the late Korean poet, Yun Dongju. The space is beautifully expressed in this line from a poem, “... his affection for the autumn in a square sky with a blue wind and the smell of earth.”<sup>70</sup>



**Figure 59.**

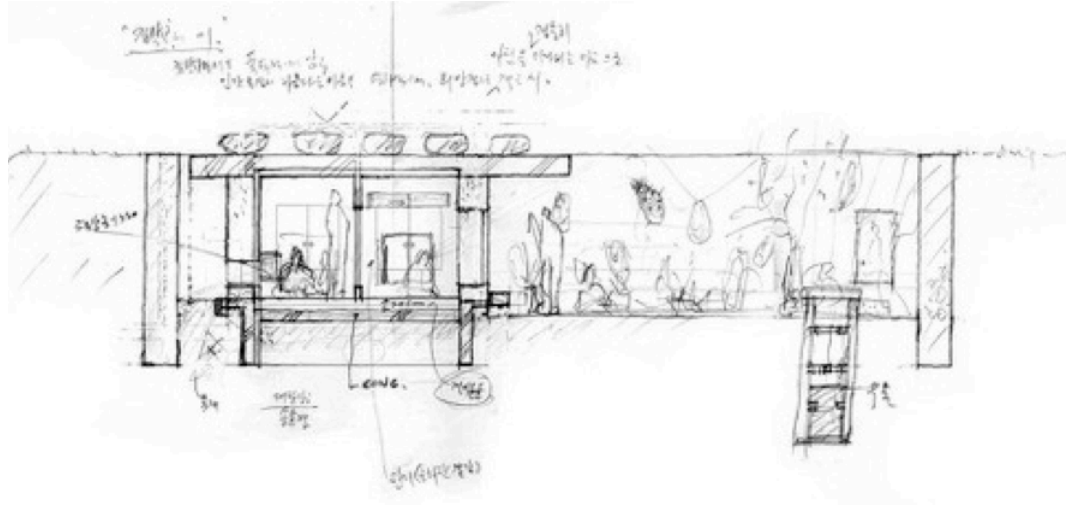
View looking down into the Earth House

Source: Golden Motive Blog, “Yun Dongju *ui haneul gwa ttang gwa byeol gwa sireul girineun jip*” entry posted June 23, 2011, <http://m.blog.daum.net/kdk99/17951806>

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<sup>70</sup> Golden Motive Blog, “Yun Dongju *ui haneul gwa ttang gwa byeol gwa sireul girineun jip* (‘A House for Poet Yun Dong-ju, his Sky, Earth, Stars, and Poetry’),” entry posted June 23, 2011, <http://m.blog.daum.net/kdk99/17951806> (accessed September 20, 2012).

(accessed September 20, 2012).



**Figure 60.**

The architect's concept sketch of the Earth House (*Ttangjip*).

Source: Samului Kal, "Geonchukga Jo Byeongsu ui Ttangjip II ('Architect Jo Byeongsu's Earth House II')," entry posted August 8, 2011, [http://blog.daum.net/\\_blog/BlogTypeView.do?blogid=08flx&articleno=15860835#ajax\\_history\\_home](http://blog.daum.net/_blog/BlogTypeView.do?blogid=08flx&articleno=15860835#ajax_history_home) (accessed November 1, 2012)

The threshold between the Earth House and its surrounding natural environment is extremely transparent: the solid and the void are almost unified in this house. The *madang* (void) becomes "solid" by being surrounded by the square walls and that are in turn part of the larger void (ground) and solid (matter) at the same time.



**Figure 61.**

Light qualities in the Earth House.

Source: Kim Yuna Blog, "Gorae sanyang, Jo Byeongsu's Ttangjip."

Another striking characteristic of the Earth House seems to be the quality of the light that is amplified by the minimal dimensions of the home's interior space. From the indoor space, the outdoor light feels extremely bright. The contrast dramatizes the light as well as the dark. Subtle as it is, the light contrast functions to create a transparent division of indoor and outdoor space.

### **3.2.3. Circulation patterns observed**

The following Figure 60 shows the key differences in the circulation patterns through the history of *hanok* development. The entering sequence in the traditional house from the front gate, or *mungan-chae*, to the *madang* courtyard to the *maru*, has been replaced by new sequences. Built in the 1600s, the Jeong-On House (A) is considered the prototype of the Joseon *yangban hanok* that consisted of multiple *chae*-structures. The entering sequence from the front gate to the *sadang* (family shrine) involves an alternating sequence of solid (covered space) and void (open space).

The late nineteenth century “transitional” urban *hanok* house (B) has

much more compact structures compared to the traditional *hanok*, and the boundary between the inside and outside becomes more defined and the entering sequence more centralized.

The structural layout and entry sequence in the later urban *hanok* (C) has become more compact and direct, an adaption to its urban environment.

However, traditional threshold elements of *madang* and *maru* survived throughout the modernization process. Thanks to these threshold spaces, the “inside/outside” characteristic of *hanok* has also survived.

One recent *hanok* revival project, Hwang Dujin’s *hanok* apartment design (D) adopted the plan design of the later urban *hanok* from the 1930s. Similarly, the entering sequence/circulation is compact and the threshold space (*madang* and *maru*) and the traditional entrance structures (*mungan-chae*) remain intact. And yet, due to the vertical organization of the apartment structure, the alternating “solid-void” patterns have been removed, and the implication is that the entering sequence becomes secured, private, and somewhat isolated.



**Figure 62**

Comparison of Circulation Patterns, Plans redrawn by the author based on various sources, including Jeon, Hanguk Jugeo ui Gonggansa, 69, 112, Hanguk ui Gotaek ('Old Houses in Korea') <http://www.bing.com/images/search?q=+&view=detail&id=23536CAE1866A40DBCADCE1C14BF485F1BA0FF96> (accessed, January 15, 2012), and Kenny Kwon, "Hanok aptateu ('Hanok Apartment'), entry posted November 8, 2007. (accessed July 10, 2012). <http://blog.naver.com/Postview.nhn?blogId=miwain&logNo=30024004277>



## Summary and Conclusion

History is an on-going evolution of a people's communal consciousness and values. This process can be viewed in a culture's architectural trends, that may change or remain relatively unchanged over time. This study looked into the physical and conceptual aspects of the *hanok* threshold, which is defined here as the “boundary” and the “circulation pattern” in Korean residential architecture. In its expanded definitions, the boundary threshold in *hanok* includes both the door/wall membranes and the *maru* / *madang* space, while the circulation pattern refers to the sequence of passageway through these thresholds.



**Figure 63.**

The layered *munjibang* that stands as points of spatial transformation without the presence of physical doors or walls. Source: Yi Gyeongjae, *Mun: Han'guk geonchuk ui gonggan gwa tongno* (Seoul: Yulhwadang, 1987), 136.

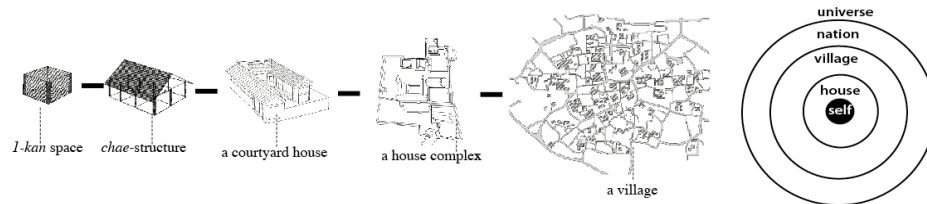
### **The concept of *kan***

The major discovery from this research has been the value of the *kan* measurement system, a flexible modular unit used in *hanok* construction, and its relationship to the threshold components in the *hanok* structure. The system of *kan* (or *gan*) is directly related to *hanok*'s layered and transparent threshold system. The flexible nature of the *kan* system applies not only to its dimensional connotation (the linear distance, square dimensions, or the cubic volumetric dimensions), but also to the numeric scales that each *kan* represents: the scale of the *kan* module accommodates and incorporates variable human factors and environmental components in *hanok* construction: the “one-*kan* space” may represent different sizes depending on the region, social class, and family situation of the home's occupants. In determining the *kan*-measurements in *hanok* construction, the lengths of locally available wood (for columns and beams) and other materials, types of anticipated usages for the space constructed, and the occupants' social ranks were considered.

Based on this study, the *kan* and the threshold concepts may be considered one of the most important architectural traits of *hanok* to have survived through the entire course of *hanok* evolution. In fact,

some contemporary architects have found new value in *kan*-related spatial concepts (as was discussed in Chapter Three). The “one-*kan* space,” though it can conjure up images of the tiny and austere quality of the traditional living space, can also offer much wisdom to the architectural environment of our own day. Correspondingly, while staying in a tiny “one-room” space in Seoul during the summer of 2011, ideas on the “minimum space required for living” fascinated me. The traditional wisdom and the humble respect for the untouched natural environment are other lesson that can be learned from the traditional concept of *kan*.

The one-*kan* space, which is referenced to human elements, is the modular unit wherewith architectural structures are built up, and by extension, community structures, such as a neighborhoods, villages and even the nation develop. The following diagram illustrates the understanding of humanity as part of nature and the larger universe, and the function of the *hanok* house as the medium connecting the self and the surrounding natural environment.





**Figure 64.**

*Kan* module (humanity) as part of nature and the larger universe.

Source: Drawn by the author

This relationship explains the strong organic quality and the human elements inherent in traditional *hanok* space with *kan* being the modular unit of that hanok space.

This idea is also related to the inside/outside characteristics in *hanok*, whereby the indoor space is an extension of the outdoor natural space. Considering this indoor-outdoor relationship of *hanok* space, the *munjibang* carried a built-in psychological significance beyond its physical presence as spatial divider: whether the doors and windows (as the wall divisions) are present or not, the solemn existence of division remains with the humble presence of *munjibang*. The transformation of space between the interior and exterior occurs through the perceptual recognition of the “invisible walls” over the *munjibang*.

Also discussed in the text (see Chapter 1.3.3) are the important ecological aspects of *hanok* derived from the transparent and layered characteristics of threshold membranes as well as layered threshold spaces (*madang* and *maru*).

## Phenomenological Quality of Threshold Components

The phenomenological experience generated by the *hanok* threshold can be summed up by the words of the Daoist master Laozi:

”Architecture is not four walls and a roof;  
it is also the air that remains within, the space that these enclose.”<sup>71</sup>

*Kan* and the threshold components are significant characteristic of *hanok* space, and a number of elements innate to the culture and the environment of Korea generated the phenomenological characteristics of *hanok* space. Among them, the Korean people’s understanding of “home” as cultivated over the course of the country’s long history may be the most significant element to have shaped the characteristics of *hanok* space. As discussed in Chapter One, the three main religious and philosophical belief systems that co-existed in Korea influenced the people of Korea and their architecture. Confucian ideas on human social relationships, as well as the Buddhist sense of space, influenced the characteristics of the *hanok* threshold and imbued it with elements of humanistic and organic traditions: the spatial divisions between the *chae*-structures resemble human relationships; compounds are

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<sup>71</sup> Cesar Portela, “Light and Architecture” (Paper presented at the Conference StarLight: a Common Heritage, StarLight Initiative, Instituto de Astrofísica de Canarias (IAC), Canary Island, Spain 2007, 111.

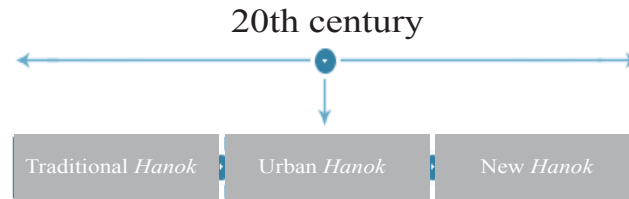
physically divided and yet organically connected. The naturalistic sensibility of *hanok* space (or the phenomenological experience of *hanok*) has strong ties to the Daoist traditions of Korea.

More directly influencing the shaping of *hanok* space may be the geological and climatic environment of Korea, while *hanok*'s site-friendly aspects contributed to the phenomenological experience of the *hanok* space. Not only the shapes of the land and the climatic conditions are accommodated in the spatial structures of *hanok*; even the construction materials of *hanok* contributes to the visual and other sensory experiences of *hanok* space, the tactile properties of *hanok* materials are especially important linking the indoor space with the outside environment.

Notably, translucent threshold membranes (*hanji*-papered doors and windows) create an intimate inside/outside relationship with the surrounding environment by allowing in the sensory elements of light, sound, smell, and other aspects of nature, and may reinforce the “psychological perception” and the poetic means of division in the *hanok* space. The light quality is an additional element that easily transforms the space, and creates subjective impressions. Alternating indoor and outdoor lighting between the layered structures also adds an element of “sacredness” to the entrance experience, making that

experience rather ritualistic.

### The Twentieth century evolution of the threshold in *hanok*



The threshold characteristics of *hanok* underwent a major evolution at the beginning of the twentieth century. A number of factors prompted these changes to the *hanok* threshold system, all related to changing Korean lifestyles in the context of an urbanizing and globalizing contemporary Korea (see Chapter Three).

Urbanization was a significant factor behind the changes in residential architecture in modern and contemporary Korea. Population increases and land shortages have constituted the major impact on residential housing developments. Urban housing development has grown vertically, and the negative effects of vertical growth can be numerous. Among them are changes in traditional threshold concepts.

New standards related to “human factors” have also resulted in the disappearance of *munjibang* and changes to the threshold space. These new human factors include the acceptance of international architectural

standards in the social context, such as ADA regulations, as well as changes in the role of women and in housework patterns in the context of the family. The fast-paced modern lifestyle and new spatial and stylistic sensitivity accepted by the general public are also brought up as other causes.

Some contemporary Korean architects accept the changes of *hanok* as part of the natural course of architectural evolution. However, full respect for the traditional threshold space also exists. The values of urban *hanok* (1930s-1960s), which preserved the traditional *hanok* construction methods while responding to period urban density, are often discussed and cited by contemporary architects in Korea as a fine example of adapting traditional values to modern usage: urban *hanok* retained most of *hanok*'s traditional threshold characteristics, such as the entrance gate structure (*mungan-chae*) and the threshold spaces (*madamg and maru*). These threshold elements were crucial for the urban family to remain connected to their environment, even though the home's layered and transparent aspects were significantly reduced in the midst of a densely populated urban environment.

In recent *hanok* revival projects, these threshold characteristics of *hanok* space have been brought up time and time again as important aspects of "*hanok*-ness."

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## Conclusion

This study concluded that these threshold traits represent the major features of *hanok* and that the *hanok* threshold's layered aspects and the multiple building composition of the *hanok* reinforce the inside/outside characteristic of the *hanok* space. Also included as added layers are the “human factors and ecological aspects” that characterize the traditional *hanok* threshold. The layered threshold components also generate the flexible and organic characteristics (phenomenological aspects) of *hanok* space, which reflect a number of elements that are innate to the culture and environment of Korea.

This study also concluded that the layered threshold system in *hanok* has survived as the main characteristic of *hanok* throughout its evolution. However, the elements of privacy, security, and efficiency were reinforced in the course of its twentieth century evolution, as reflected in the changing nature of boundary threshold components as well as circulation patterns. This trend in the pursuit of efficiency, privacy and comfort continues to be important, but there are burgeoning new efforts in the form of *hanok* revival projects to re-examine these traditional architectural values and their potential applicability to modern *hanok*. Considering the alarming number of

apartments and condominiums in contemporary South Korea, the current “*hanok* revival” trend seems futuristic but promising. “*Hanok* revival,” or “*sin hanok*,” movements have prompted a renewed interest in old architecture as well as the old ways of life in Korea.

According to the above, examining traditional Korean values based on a global perspective will generate new understanding of the physical forms and metaphysical strength of Korea’s traditional architecture, and the significance and the values of the *hanok* threshold concepts are worthy of re-assessment and revival in the contemporary environment

## **Appendix**

### **Seoul: Changes in the City Structure**

The history of Seoul can be traced as far back as the ancient Baekje period (traditional dates 18 BCE-660 CE), when that kingdom's capital city, Wirye-seong, was founded in modern day Seoul south of the Han River. However, it is that period between the foundation of the Joseon dynasty (1392) to the present that has the most relevance to this study.

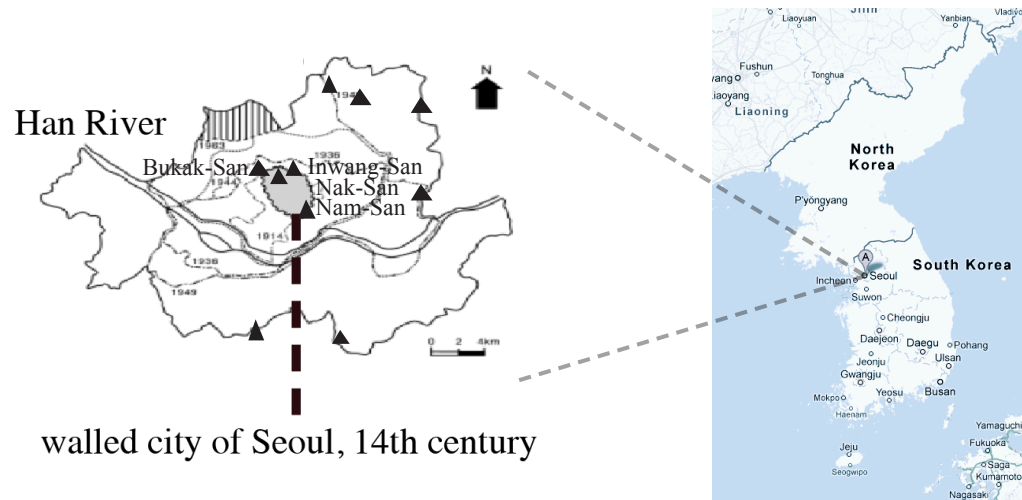
#### **a. Joseon Period (1392-1896)**

Seoul became the center of national importance with the rise of the Joseon Kingdom at the end of the fourteenth century. When it was declared the new capital of the Joseon kingdom in 1394, Seoul was a fortified city encircled by a wall about eighteen kilometers in circumference.

The city's massive wall, a twenty-foot (6.1 meter) high circular stone fortress, connected the four inner mountains of Seoul: Bukak-san, Tarak-san (or Nak-san), Inwang-san and Mongmyeok-san (now known as Nam-san). By 1405, the Joseon dynasty had begun city planning efforts and laid out the city districts. As seen in the map, "Suseon Jeondo" ("Comprehensive Map of the Capital," by the cartographer



Kim Jeongho, created ca. 1824-1834), most of the existing major streets in central Seoul were laid out during this time (fifteenth century).



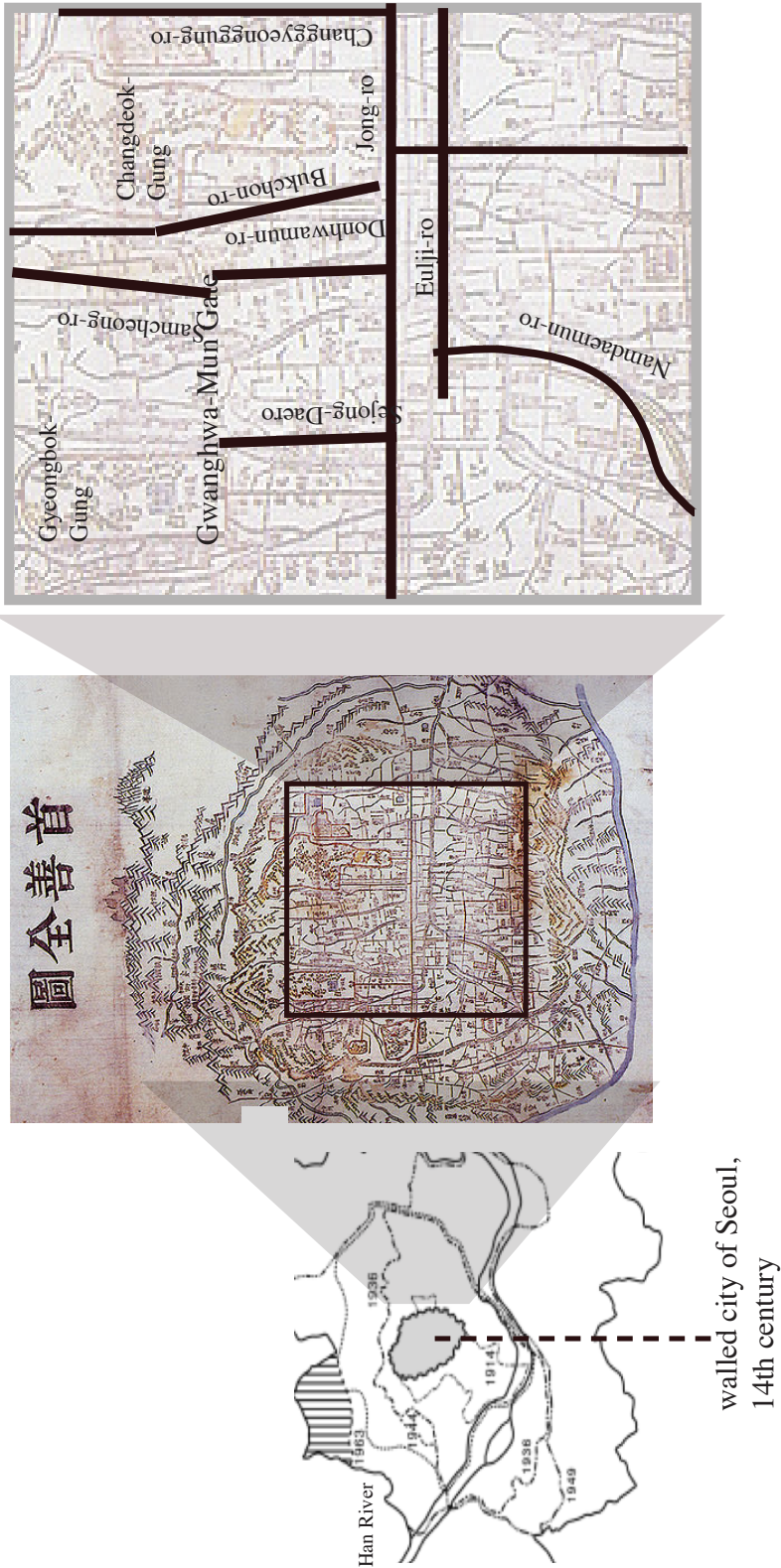
**Figure 65.**

The walled city of Seoul in the fourteenth century. Source: Redrawn by the author based on Google Maps and Seoul Metropolitan Government, *The Seoul Urban Master Plan toward 2011* (Seoul: Seoul Metropolitan Government, 1997), 109.

But the city's wall, as well as Confucian principles that dominated Joseon society, limited the physical growth of the city. Throughout much of the early history of Joseon, academic learning was valued over commerce and manufacturing, and as a result, Seoul grew to be a center of education but lacked sufficient economic support. Seoul remained limited within its wall for centuries, all the way to the beginning of the twentieth century.<sup>72</sup>

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<sup>72</sup> Yunsun Susie Chung, "Seoul, Korea: Its Concept of Culture and Nature in Heritage Planning," *International Journal of Heritage Studies* 2(11) (2005), 95-111.



**Figure 66.**

A woodblock print of the "Suseon Jeondo" (printed 1846-1849) of Kim Jeongho (middle), and the major roads of the capital (right). Road overlay by the author.

Source: Maps of the World, <http://thumb.egloos.net>, accessed February 10, 2010.

The city wall remained Seoul's boundary until the late Joseon period. Seoul's urban landscape, however, has transformed dramatically since its conception in the fourteenth century.

#### **b. Modern Seoul (1897 - 1966)**

Since the early twentieth century, Seoul's urban landscape has grown far beyond the old city walls. In 1897, the Joseon government instituted modern road improvement projects aimed at widening and cleaning the city roads and also began the construction of Tapgol Park, also known as Pagoda Park. In 1910, Korea was annexed by Japan, and the project of changing the cityscape of Seoul was undertaken with the primary aim of increasing the efficiency of the Japanese colonial administration.<sup>73</sup>

The period from 1945 to 1960 can be characterized as a recovery phase, first from Japanese colonialism (1910-1945) and then from the Korean War (1950-1953) that followed soon after Korea's liberation. The restoration of damaged buildings and promotion of new public housing projects were the first priority for the post-Korean War South Korean government. Increased urban population and land shortages in the city were the major problems faced during the time period.

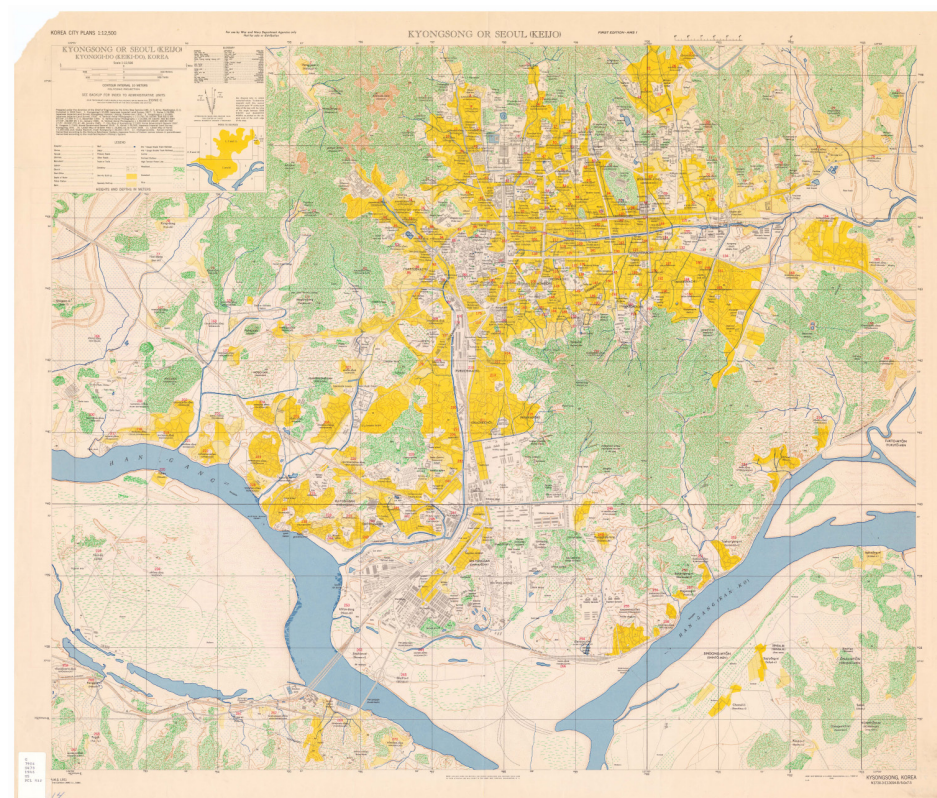
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<sup>73</sup> KoReaHolic Blog, "Modernization of Seoul compelled by the Japanese Colonial Regime" (based on research by Prof. Jeong-Mok Sohn on Seoul city planning during the Japanese colonial era to the modern period of Korea), <http://eurekakorea.blogspot.com/> (accessed October 10, 2012).





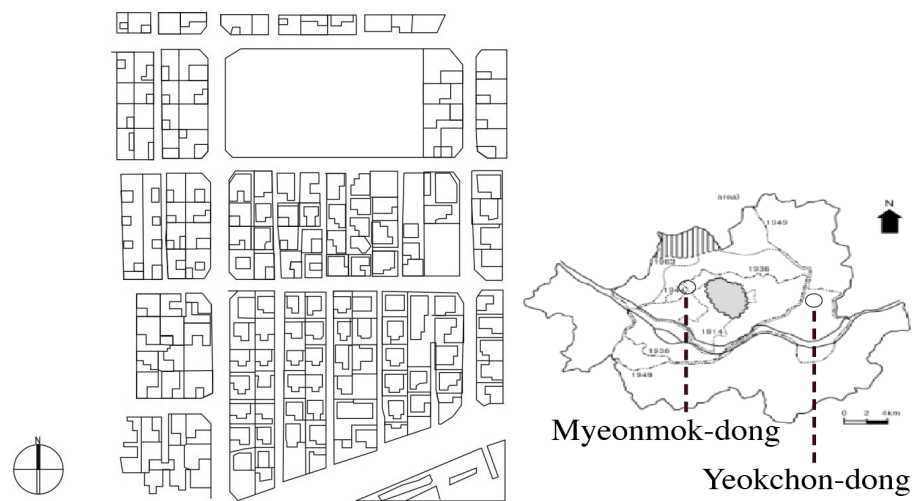
**Figure 67.**  
City map of Seoul (1910), offset print  
Source: Yun Hyeongdu Collection.



**Figure 68.**  
Map of Seoul (1946), (right).  
Source: Yunsun Susie Chung, "Seoul, Korea: Its Concept of Culture and Nature in Heritage Planning," *International Journal of Heritage Studies* 2(11) (2005), 110.

In the course of the 1960s, public housing plan designs were adopted, and concrete modern apartment buildings and inexpensive and distasteful “*Saemaeul* housing” soon replaced the *hanok* houses in urban and agricultural areas alike during.<sup>74</sup>

The following street maps show the 1960s’ urban street patterns of the Yeokchon-dong (left) and Myeonmok-dong (right) areas of Seoul: for the maximum use of the land, the modern grid patterns with layered streets and alleyways were adopted. The current Google map photos show that similar street patterns continue to exist in these areas.



**Figure 69.**

Seoul urban map drawings from the 1960s, Myeonmok-dong (left). Source: Redrawn by the author based on Jeon Han’guk jugeo ui gonggansa. Map of Seoul (left). Seoul Metropolitan Government (right), *The Seoul Urban Master Plan toward 2011* (Seoul: Seoul Metropolitan Government, 1997).

<sup>74</sup> The *Saemaeul undong* (‘New Village Movement’) was a political initiative launched in 1970 to modernize the rural South Korean economy. The idea was based on traditional elements of Korean communalism called *Hyangyak* and *Dure*, which provided rules for self-governing and cooperation in traditional Korean communities. The movement focused on improving basic living conditions and environments, and building rural infrastructure, but as a result, most *hanok* houses with thatched roofs were replaced by cheaply built industrial residential housing. Sin Yeonghun et al., *Uri geonchuk 100-nyeon* (‘A century of architecture in Korea’), 293-296.

From the 1970s on, the Western lifestyles and the western building styles called *yangok* (‘Western-style house’), in contrast to the term *hanok*, became widely accepted, and houses with small front courtyards (*ap-madang*) instead of the central courtyard along with the Western-style balconies became the popular models. These *yangok* houses typically had centralized indoor plans without a *maru* space. Eventually, these single-family houses grew larger and taller to provide the protocol for multi-family urban residence, and the construction of multi-family public housing, apartments or condominiums, also started to be popular starting in the 1960s.

### **c. The Late Twentieth Century**

Due to a lack of legislation, there were no new master plans for urban planning within Seoul between 1896 and 1966. The first modern planning effort dates to 1966, at which date a basic land use and transportation network was introduced, and the construction of major arterial roads into the city was proposed. In 1971, the National Land Development Plan was finalized to influence residential land use models: the ‘green belt’ was also installed to increase “green space” in the city and to slow urban sprawl. It was designed to accommodate the growing population while limiting the city’s physical extension.<sup>75</sup>

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<sup>75</sup> Anne Brown, “Seoul Urban Planning and Structure,” 2010.  
[http://www.macalester.edu/courses/geog261/Brown\\_Seoul/urbanplan.html](http://www.macalester.edu/courses/geog261/Brown_Seoul/urbanplan.html) (accessed July 2012)

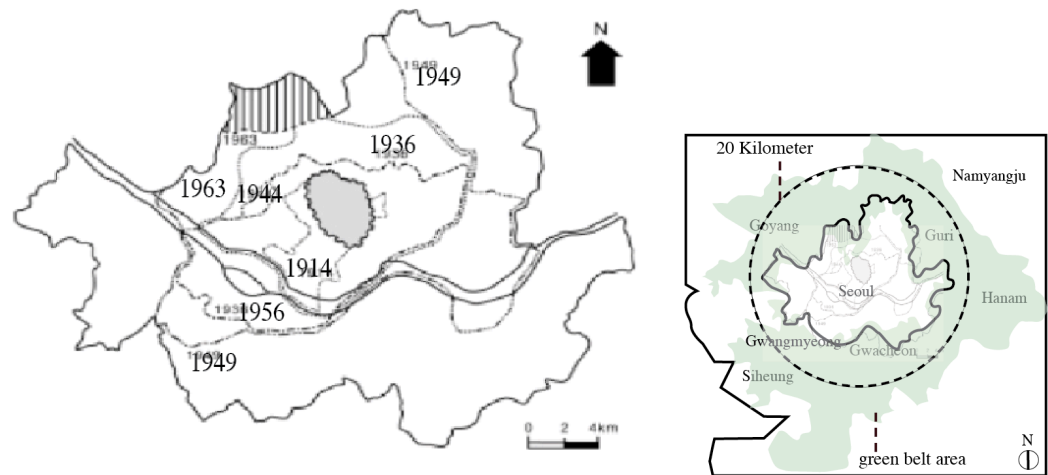
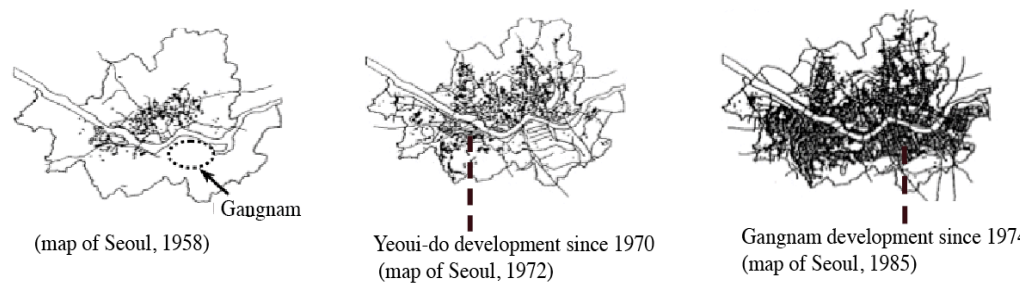


Figure 70.  
The expansion of Seoul (left) and a map of Seoul with the “Green Belts” (1973) (right).  
Source: Redrawn by the author from Jeon Jaeho, “*Geurin belteu haeje tonghan ‘bogeum jari jutaek’ hwakdae ganeunghalkka*,” Daum Real Estate Site, (accessed October 20, 2012). <http://realestate.daum.net/news/detail/all/MD20090817182331128.daum?page=1>

In 1974, the city developed one of its most influential plans, the concept of multiple cores, which emphasized an effective transportation system and efficient land use. Decreasing residential areas in the central part of the city has resulted in the emergence of residential sub-centers that developed in response to the introduction of high-rise apartment buildings and accompanying commercial development: two of the largest sub-centers, Yoido and Yeong-dong have emerged as secondary central business districts.<sup>76</sup> In addition to these centers, the government planned five new towns in the Seoul metropolitan area in an attempt to address housing shortages. These towns are built just beyond the green belt within twenty kilometers of downtown. These towns incorporate urban ideals

<sup>76</sup> Sin Yeonghun et al., *Uri geonchuk 100-nyeon* (‘A century of architecture in Korea’), 288.

such as open space, bikeways, and pedestrian facilities. They have provided a large number of housing; however, they have also created transportation issues as the majority of the populations living in these new towns work in downtown Seoul. The 1980s saw a surge in the construction of high rises and skyscrapers in Seoul. These new buildings were especially prevalent south of the Han River and were mainly constructed using post-modern architecture. The development of these new housing projects was often accompanied by the introduction of Western-style grid layouts, changing the urban framework of the city. In preparation for the 1988 Olympics, the city underwent a facelift and experienced a massive investment in public infrastructure.<sup>77</sup>



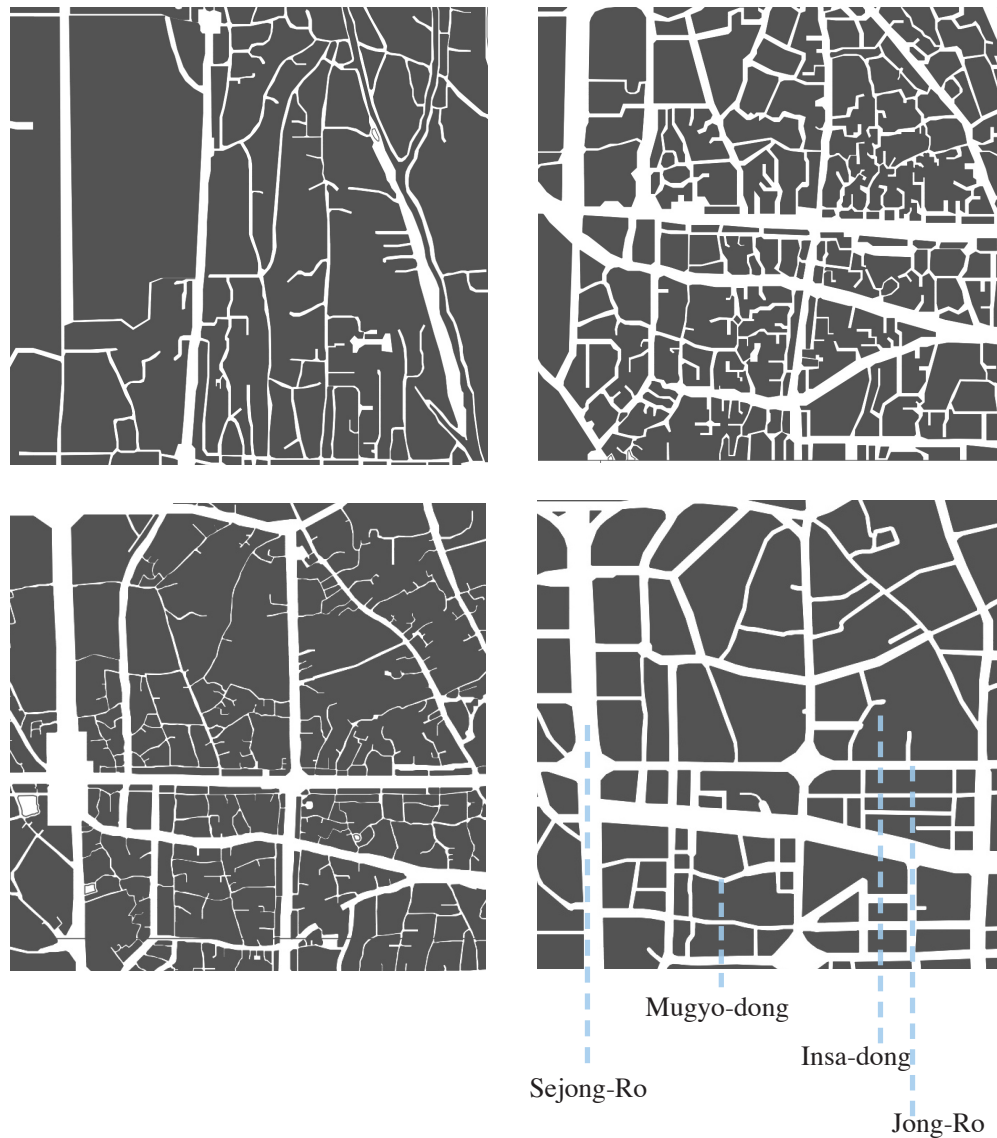
**Figure 71.**

Maps showing the physical expansion of the city of Seoul between 1958 and 1985.  
Source: Seoul Metropolitan Government, *The Seoul Urban Master Planning Toward 2011*, 109.

The mass development of high-rise apartment buildings has altered the street patterns significantly. Changing the existing topography for large condominium projects negatively affects the ecology of our environment, as warned by the traditional *pungsu* ideas.

<sup>77</sup> Sin Yeonghun et al., *Uri geonchuk 100-nyeon* ('A century of architecture in Korea'), 335-339.





**Figure 69.**

Streets in central Seoul, 1735, 1910, 1946 and 2012 (left to right): the central district of Seoul (Sejong-ro, Insa-dong, and Mugyo-dong areas) has maintained its main boulevard intact with only minor changes in the alleyways. Source: Drawn by the author based on Royal Asiatic Society (1735); Siga-do (street map) of Seoul and Yongsan (1910); Army Map Service, Washington, D.C. (1946), and the Google Map (2012).

#### d. Current Street and Building Relationship

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Streets of Seoul display both planned and organic urban street patterns.<sup>78</sup> Many streets, especially the “*hanok* neighborhood districts” in the central part of the city (Insa-dong and Mugyo-dong areas), still carry the old characteristics of the early twentieth century that are very intimate with the neighboring houses.

The maps for the same business district of central Seoul (Figure 58) illustrate the changes in the street patterns over the last century. While major streets remain almost the same, the structure of small alleyways shows the transformation.

Following are the observations on the old neighborhoods of Bukchon area (Insa-dong) in Seoul, where many old *hanok* houses have turned into commercial properties. However, these “old *hanok* neighborhood” areas, including the Bukchon area, still seem to represent the urban street conditions of the early twentieth century when early urban *hanok* houses were developed upon.

1990-2000 was a decade devoted towards urban housing renewal, such as *jaegeonchuk* (revitalization) process, which replaced existing four to five story flats built in the 1970s using little foresight and cheap materials. Economic drivers additionally influenced the construction of new buildings as profitable real estate drove the rising demand for apartment living.

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<sup>78</sup> Sin Yeongyun, *Areumjigi, Heritage Tomorrow Project 2* (Seoul: Areumjigi, 2011), 15.

## **GLOSSARY**

- an-chae***: women's quarters
- agungi***: a firebox or stove used in Korea's under-floor heating system, *ondol*; the *agungi* stove is installed facing the targeted room so that it functions to cook food and heat the room at the same time (see also *ondol*)
- arae-chae***: servants' quarters (see also *haengnang-chae*)
- baesan imsu***: the literal meaning of *baesan-imsu* is 'mountain at the back and stream to the front,' describing the best geographical setting for a residence based on the tenets of geomancy (*pungsu jiri*); this type of site also has many practical benefits, with the rear mountains protecting the house from the cold northwest wind during winter and the nearby water a source for farming and daily needs
- bunhap mun***: doors that can be lifted up and hinged on the ceiling beams in order to open up an indoor space; *bun-hap mun* generally have a 'bulbalgi-chang' in the middle, at about the eye level to let in the light
- chang-mun***: windows in Korean houses (literally 'window-door')
- choheon***: a type of monocycle vehicle used by members of the Joseon elite (see Figure 70)



**Figure 73:** A *choheon*.  
Source: Photographed by the author (July 2011)

*daet-dol*: a stepping stone placed before the wooden floor.

*daemun-chae*: the middle entrance compound located between the front courtyard and the inner courtyard of the *yangban* house; the structure is similar to the front *mungan-chae* unit, but the middle gate is usually smaller than the front gate

*doet-mun*: hinged wooden-panel doors (or windows) facing the exterior to provide security or protection against cold

*dol jeogui*: metal hinges on the ceiling beams used to secure the *bun-hap mun* in their open position

*dong-sal*: the short, horizontal member of the grid pattern on the rice papered-doors in *hanok* (see also *jang-sal*)

*duggeop daji*: a hollowed wall pocket into which the series of windows,

including the *midaji*

(or *misegi*, *maen-jangji*), *sa-chang* and *gap-chang*, could be slid

out of sight during the day

***dugong***: decorative and structural wooden pieces at the top of column

***gap-chang***: a thick-walled window that blocks outdoor air and light and provides extra privacy to a room's occupants; as part of the layered window structures, the *gap-chang* is installed inside of the *sa-chang*

***geolsoe***: metal hooks on the overhead beams that secure and hold up the *bun-hap mun*

***geum-jul***: a sacred straw rope that is believed to ward off evil spirits; the *geum-jul* is draped at the door / entrance to mark a sacred areas; it is also draped at the door to announce the birth of a child: straw ropes are braided with pine leaves and red peppers for a boy and black soot/wood charcoal for a girl

***gi***: energy or spirit

***gidan***: stone or mud foundation built up off the ground; mud or stone or ceramic tile were used; while natural stones were used for commoners' houses, more refined carved stones could be used for the homes of the elite; evidence of Silla period architecture reveals that at that time stone columns were sometimes placed between the foundation's stone blocks in order to strengthen it

***gokgan-chae***: the storage unit in a *hanok* complex

***golmok-gil:*** small alleyways

***haengnang-chae:*** servants' quarters

***hanji (or dak):*** a traditional Korean paper (also known in Korea as *dak*); *hanji* is made from the inner bark of the mulberry tree, a tree native to Korea that grows on its rocky mountainsides, and known for its long fibers so that paper made from it is strong yet light and translucent; *hanji* is the most commonly used material for covering the wooden lattice frames and structures of windows in traditional Korean homes

***hanok:*** a term used to designate Korea's traditional architecture, *hanok* was originally used in the late nineteenth and early twentieth centuries as a term of juxtaposition to Western-style architecture, or *yang-ok*; though there have been efforts to find a more appropriate term to represent the architectural tradition of Korea, *hanok* is still preferred by scholars and laymen alike

***huwon:*** rear garden

***ilgak daemun:*** a one-*kan* wide gate built between two posts

***jang-sal:*** the vertical members of the grid pattern (*titi-sal*) lattice doors, where the longer *jang-sal* and the shorter *dong-sal*, form perpendicular intersections; the grid pattern (*titi-sal*) of lattice doors is one of the most common patterns found in traditional Korean houses (see also *dong-sal*)

***madang:*** the courtyard in *hanok*

***maru:*** an open wooden floor that stands in between the home's inside and outside

(see Figure 40); there are various types, including:

-*dae-cheong maru*, the central wooden floor that functions as a connective space for the overall circulation between the rooms of a home

-*nu-maru*: a veranda-like space that protrudes out into the surrounding area

-*toet-maru*: a narrow wooden floor located between two columns under the eaves

***meoreum:*** a tall *munjibang* under the window; it functions to protect the indoor warmth gotten from the under-floor heating system; the height of the *meoreum* reflects ergonomic considerations, i.e., the average height of a seated person.



**Figure 74:** *meoreum*. Source: Photographed by the author (July 2011)

***midaji:*** sliding doors and windows that form part of a traditional home's

layered window structure

***mungan-chae*** (or ***daemun-chae***): the entrance gate structure

***munjibang***: the threshold or doorsill; a block of wood that marks the entrance;  
the term *munjibang* in the Korean context is limited to this  
physical block of wood

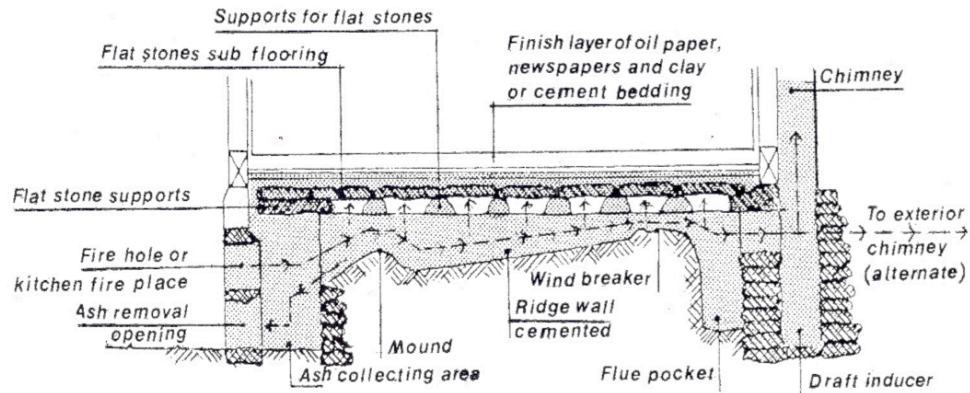


**Figure 75.** Exterior (left) and interior (right) *munjibang*.  
Source: Photographed by the author (July 2011)

***munpungji***: a strip of *hanji* paper pasted along the length of the door in order to fill the gap between the door and the frame; the *munpungji* can vibrate and whistle when the wind blows

***ondol*** (or ***gudeul***): the traditional under-floor heating system of Korea, which uses direct heat transfer from wood smoke to the underside of a thick masonry floor; it is a form of central heating using conduction, radiation and convection for thermal comfort; lighted in the morning and evening while cooking, it heated the room to a pleasant temperature during the cold season; the main components of the traditional *ondol* are a stove (*agungi*) in the kitchen, a raised masonry floor with horizontal smoke passages below, and a vertical chimney on the opposite exterior to provide a draft





**Figure 76.** The *ondol*, Korea's thermally active floor system. Source: Sam Y. Park, *An Introduction to Korean Architecture*, 42.

**pungsu:** Korean geomancy, literally the study of the patterns of wind and water; in Korean geomancy, the individual human being is understood as a micro-universe, and nature as the macro-universe, with the house existing between nature and the human being; *pungsu* has been one of Korea's most influential folk beliefs dating back to the fourth century, when a distinctive geomancer and Buddhist monk named Doseon established his unique *pungsu* theory for Korea

**sa-chang:** one of the layers of windows, which is covered by a thin membrane of loose silk, instead of *hanji*, to allow in the summer breeze while keeping out insects

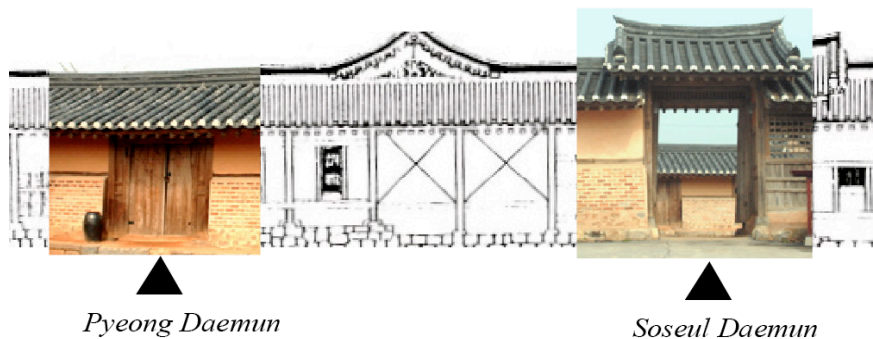
**sadang:** family shrine

**sarang-chae:** men's quarters

***Silhak*:** a social reform movement led by Confucian scholars during Korea's late Joseon period (late seventeenth-early nineteenth centuries); *sil* means 'practical', and *hak* means 'studies'; Silhak developed in response to the increasingly metaphysical nature of Neo-Confucianism (*Seongni-hak*) that began to seem increasingly disconnected from the rapidly changing agricultural, industrial, and political realms of Korea during the late Joseon; Silhak's followers demanded reforms to the rigid Confucian social structure and land system, promoted Korea's own national identity and culture, as well as the study of science, and advocated technological exchanges with foreign countries; the Silhak movement is credited with having helped create modern Korea.

***soseul dae-mun*:** gate with a raised roof structure

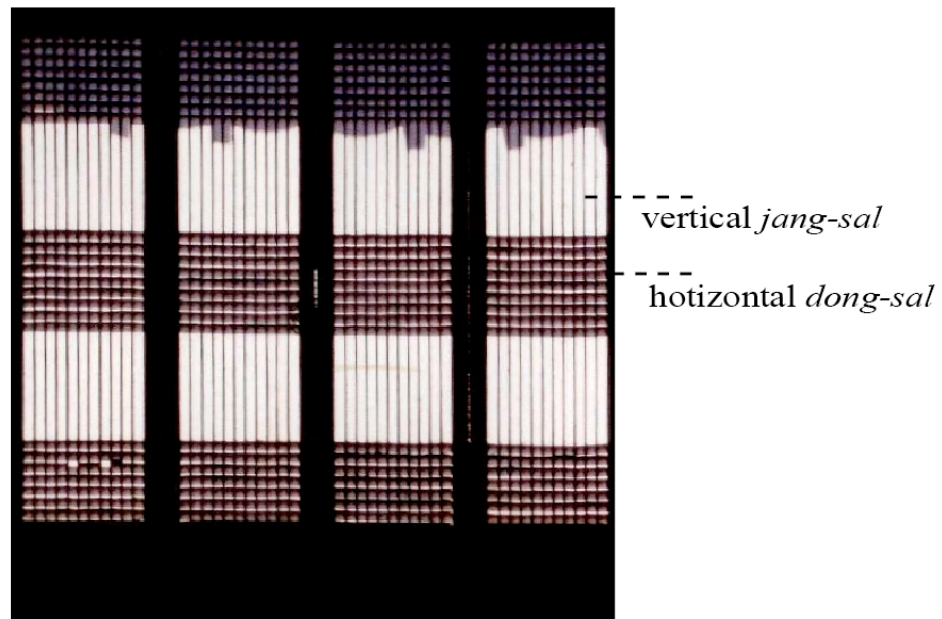
(compare to the *pyeong-daemun* ('plain gate'))



**Figures 77:** A *soseul dae-mun* (right) and *pyeong dae-mun* (left).  
Source: Photographed and drawn by the author.

***titi-sal*:** the wooden lattice frames of doors and windows; *titi-sal* ('grid

pattern') is one of the most common patterns found in residential *hanok*; the *tti-sal* pattern consists of *jang-sal* (long vertical elements) and *dong-sal* (shorter horizontal elements) that together form perpendicular intersections; different numbers of short *dong-sals* can give variations in patterns; the most popular pattern was the combination of three at the top, five in the middle and three at the bottom, with an alternative combination being five on the top, seven in the middle, and five at the bottom



**Figure 78.** Lattice doors with a *tti-sal* pattern (here a 7-9-7 *dong-sal* combination).

Source: Yim Seokjae, *The Traditional Space*, The Spirit of Korean Cultural Roots 6 (Seoul: Ewha Womans University Press, 2005), 67.

**wolbang:** a curved form of *munjibang*

**Yangban:** the elite class of Korea's Joseon period (1392-1898)

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