A GEOGRAPHICAL STUDY ON THE NORTH-SOUTH VARIATION OF KOREAN HOUSE FORM

by

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CHAPTER I

INTRODUCTION

I - 1. Purpose of this study

This study investigates the significance of the north-south regional variations reflected in Korean local house form from a geographical viewpoint.

A house is a construction which encloses a space for the daily home life. It has a function of a climate-controller to keep a safety and suitable atmosphere around a human body as well as clothes (Sato,1973). The adaptation to the climate, therefore, has often been examined to clarify the formal or structural features of the houses in some regions. Korean house form, which is the subject of this study, also have been analyzed from such viewpoints by many scholars.

The Korean Peninsula projects southward from the northeast rim of the Asian Continent at the latitude of 43°N. Compared with Japan along the same latitude, there is no great difference of the summer temperature, although it is considerably colder in Korea. For example, the monthly mean temperature of January is 1.5°C in Yosu (麗水; 34°44′N) and is 1.8°C in Pusan (釜山; 35°06′N), both of which are situated at the southern end of the Korean Peninsula. They are about 3°C lower than that in Tokyo. The temperature of Seoul in January (37°29′N) is -4.9°C, which is as low as that in Sapporo (43°03′N).

Because of the cold winters, Koreans' adjustment to the

climate through house forms and structures attracted Japanese scholars when the features of Korean houses were first introduced to Japan. Their interest was particularly drawn to the ondol, a floor-heating system uniquely developed in Korea, and the structure with little ventilation for heating efficiency of the ondol (Yamagata, 1910; Sekino,1916, 1926; Ogawa,1931).

The Korean Peninsula, however, stretches from north to south with a latitudinal range of 8°40′. When the Cheju Island (済州島) is included, the north-south range is about 10°. Moreover, the northern part of the peninsula adjacent to the Northeastern districts of China is mountainous and influenced by the continental air mass, while the relatively flat southern part is influenced by the maritime air mass and the warm current. Because of these conditions, the north-south difference in temperature is large. The January mean temperature in the mountainous inland regions of the northern provinces, North Hamgyong Province(咸鏡北道) and North Pyong'an Province(平安北道), is more than 20°C lower than that in the coastal regions of the southern provinces, South Kyongsang Province(慶尚南道) and South Cholla Province (全羅南道). The period with the minimum temperature of 0°C or below of the northernmost Korean Peninsular is more than 100 days longer than the southernmost part of the peninsula (Fig.1).

Therefore, the regional differences of the Korean house form have been often explained through the different climatic conditions, especially through the different temperature during winter.

Besides the direct responce to the physical environment

in each region, there has been a growing interest in the cultural diffusion from interior continent or from exterior islands as the northern and southern culture traits have become identified in Korean houses.

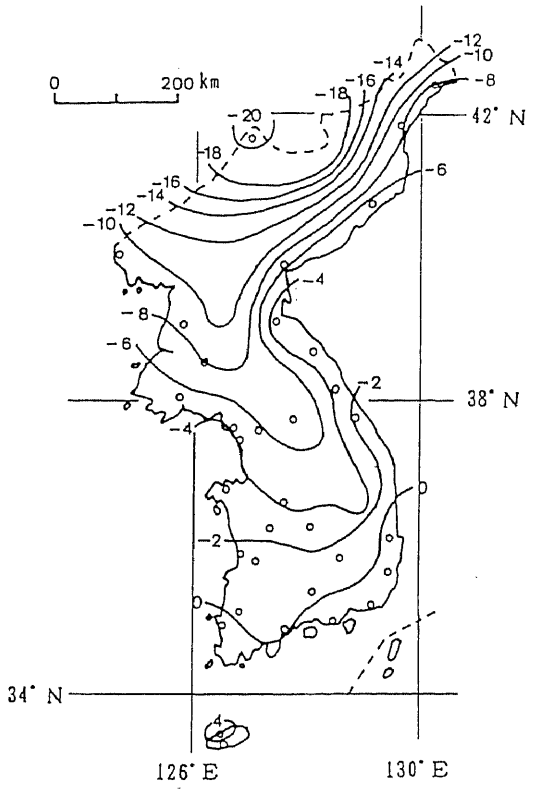
However, in such a region as the Korean Peninsula where various culture traits have been accepted in different times in complex manners, the differences in the way, the degree, and the time of their acceptance can often result in regional differences in house forms. Some elements of different categories,however, can show a formal resemblance on occasion. Therefore, even though their similarities and differences seem to be explained reasonablly from climatic conditions, a careful consideration is necessary for the interpretation of their actual functions, meanings, and origins.

The purpose of this study is to clarify the state and the background of regional differentiations of Korean house forms. It re-examines the validity of the usual explanations which relate the differences with their climatic conditions. This study also discusses if the features of house forms in the southern Korean Peninsula originated from southern regions with warmer climate. For that purpose, this study attempts to make a careful discussion without confusing a formal resemblance with a similarity of functions or meanings.

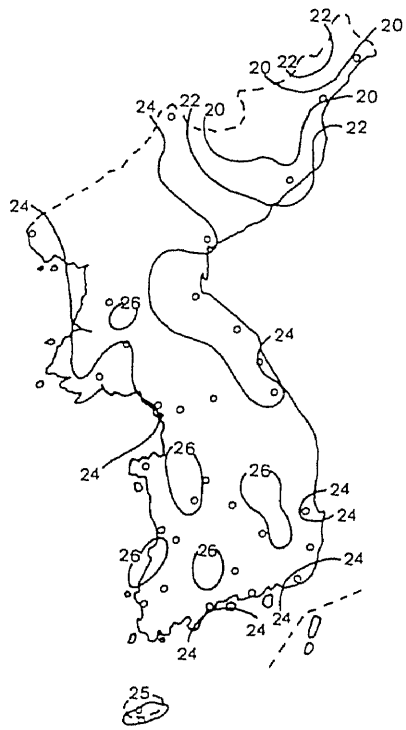
I - 2. Previous stydies and their problems

It is the late 19th century when Japan increased her power in the Korean Peninsula after the victory of the Sino-

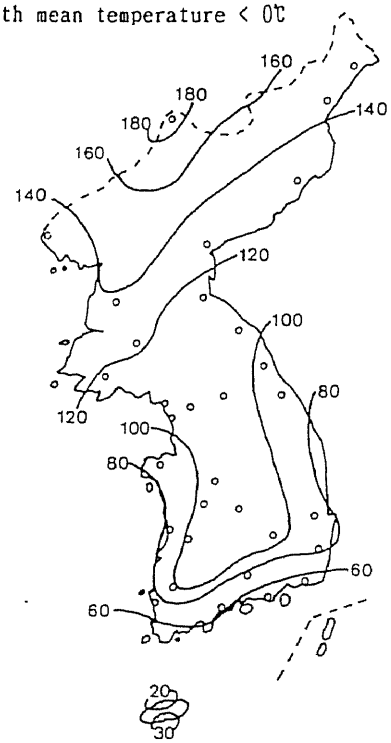
a. January mean temperature (℃)



b. July mean temperature (℃)



c. Annual number of days with mean temperature < 0℃



d. Annual number of days with mean temperature ≥ 30℃

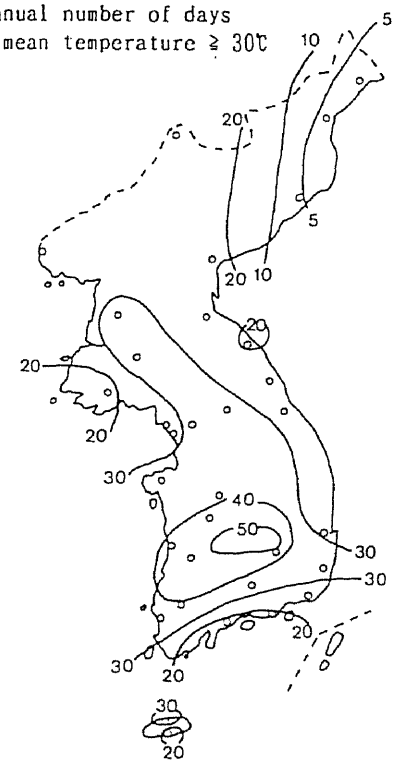


Fig. 1 Temperature in Korea.

Japanese War, that Japanese scholars began to acquire the knowledges of Korean houses and to study them as subjects of scientific researches. In one of the earliest of these reports, Funakoshi(1898) described the structures and decorative designs of the palace architectures and the upper-class residences. He also outlines the landscape of lower class houses.

When the Japanese colonial rule was established after the Japanese annexation of Korea in 1910, the academic interest in Korean houses grew. Many studies of architecture, folklore, geography, and history were carried out through settlement research projects by the Government-General of Korea and through research activities of the Korean Architectural Society (Chosen Kenchikukai)[1]. In those studies, regional differences of house forms were mainly conducted by architecture scholars and geographers.

In geography, Odauchi(1923) reported on the rural farmhouses by economic classes in some regions. The emphases of the descriptions were on floorplans, building arrangements, and the land uses in and around homesteads rather than on structural aspects. He also reported houses and lives of slash-and-burn farmers[2] in mountainous regions ofSouth Hamgyong Province and outlined the change of house forms through their settlement history (Odauchi,1924).

Shima(1937) discussed the relation between the roofs and climate conditions or the proximity to roofing materials from the viewpoint that the house forms should be interpreted with relation to physical environment. Based upon his opinion that the main subject of geographical study should be house buildings themselves but not the way of life

inside the buildings, he chiefly studied outward appearances of houses. He did not describe floorplans or uses of the parts of houses.

Ogawa(1957) made a research of a life and folk implements in one village in South Kyongsang Province. A few drawings of farmhouses of peasants, middle and prosperous classes in the report include Korean names of some rooms and the arrangement of furniture and implements.

The studies by architecture scholars outnumber those of other fields. The earliest of those studies include Funakoshi(1898) and Sekino(1916). We can enumerate Kon (1923),Iwatsuki(1924),Murata(1925a～d),Fujishima (1925a～e), and Nomura(1938) as important studies concerning local or regional characteristics of Korean houses. Among them, Iwatsuki(1924) was the first to present a regional classification of Korean house forms according to the floorplans and had a great influence on later studies. Nomura(1938) also made a classification to modify that of Iwatsuki(1924).

A debate between Murata(1925a～d) and Fujishima(1925c) on the origine and introducing processes of wooden-floor rooms in the southern Korean Peninsula included very suggestive interpretations of some cultural traits from south. This debate began with a question presented by Murata(1925c) against the opinion by Iwatsuki(1924) that a wooden-floor room, taechong (大庁), was one of specific features to southern houses. Murata pointed out the fact that houses with a taechong could not be found necessarily in the southern houses, but it was on the increase at the time when he made his research in that region. Based upon

this fact, he assumed that the mode of taechong had been established at first in the palace buildings and religious buildings in Seoul and Kyonggi Province, a political center of Korea, under the Chinese cultural influences, and then it was accepted into the residential buildings there; moreover, it was diffused further to the south in the form of the imitation of the fashion in the metropolis.

On the contrary, Fujishima(1925c) pointed out that any house had a wooden-floor room in the Cheju Island, and asserted the wooden-floor room, maru, to be originated in the south, although he himself agreed with Murata in the point that the houses did not necessarily had a maru in the south[3)]. He asserted also that there could not be found a wooden-floor room in China except in its southern part. However, it was denied by Murata(1925d). Unfortunately, this debate was closed without enough considerations nor clear conclusions, in spite of its significance.

After World War II, Korean scholars themselves took the initiative. Because of the difficult situation of the north-south division of the Korean Peninsula, we can hardly see any new studies north of the Military Demarcation Line(MDL), while many active studies have been done south of MDL especially since the 1970s.

Noticeable geographical studies have been presented by Lee,Y.T.(1965), who classified the Korean house types according floorplans to follow Iwatsuki(1924) and Nomura (1938). Lee,C.(1975) quantitatively presented the distribution of house types in the central part of Korea. Chang,B.W.(1974a, 1974b, 1975, 1977, 1978, 1980, 1988) classified house types twice, and made a series of case

studies in mountainous and insular regions. The studies by Oh,H.S. (1978) and Chang,B.W.(1985) also very suggestive. Oh,H.S. (1978) reported the house features in the Cheju Island, and estimated that several elements had some similarities with those in the neighboring regions south of Korea. Chang,B.W. (1985) compared Korean house forms with the Japanese ones to present some similarities, especially in the northeastern parts of these two countries. He assumed a cultural influence from Korea to Japan and, on the other hand, some common bases between the culture traits in the Cheju Island and those in the southwestern islands of Japan.

In the field of architecture, Chu,N.C.(1965), Kim,C.K. (1970),Yoon,C.S.(1979) and Cho,S.K.(1979) compared the house types within Korea or those of Korea with those of the other countries including Japan. These studies are significant to identify culture traits and their origin of the Korean houses. Many case studies on the local house types and their changing trends have been recently presented by scholars including Ryu, S.T. & Park,K.R.(1984). Besides them, Kim,H. S.(1973, 1975, 1976, etc.) led many research projects on the Korean traditional houses and settlements to present the detailed and substantial reports.

In the fields of folklore, cultural anthropology and history, noticeable studies include Son,C.T.(1948) on Korean ancient dwellings, Chong,K.W.(1975) about comparisons of the culture traits of Korean local houses with those of the surrounding tribes, and case studies in many regions by Kim,K.O.(1970, 1972, 1976, etc.).

With regards to the relation between regional variations of Korean house forms and the climaic conditions,

most studies agree that houses in the northern Korean Peninsula take protective forms against the cold and snowy winters. By contrast, houses in the southern part cope with hot and humid summers. As for the wooden-floor room, it is generally regarded as the diffusion from the southern part or the introduction of a kind of raised-floor constructions like a pile dwelling originated from the South.

It was grasped first by Iwatsuki(1924) that spatial arrangement and the structure in Korean houses showed a regional difference in relation to latitude, reflecting the north-south difference in temperature. On the other hand, several studies noticed some other factors in specific regions. As to house types in Seoul and Kyonggi Province in the central part, for example, a view that the types could be related to the modes of palace buildings and urban dwellings (Kon,1924; Nomura,1938; etc.). Moreover, it was pointed out that some similarities could be found in the floorplan between the northern part and the Cheju Island (Nomura,1938). It was also supposed that the wooden-floor room, beeing regarded as an element specific to warm regions, was introduced and became established as taechong (大庁) later in houses in the southern Korea (Murata,1925c; Fujishima,1925c; Nomura,1938).

Partly because these points were not fully developed, however, the understandings on the general tendency of the north-south variation in Korean house forms were agreed on the whole in later studies, and the gist of these understandings has been accepted to Korean scholars after World War II. Thus it is reported that the cold-proof features developed particularly in the northeastern Korea as

a compact structure which concentrates various facilities such as a stall and a mortar-shed to the main building (Iwatsuki,1924). A concentrated arrangement of fuel holes of ondol system is also mentioned (Kon,1924). On the other hand, it is often said that a wooden-floor room holds an important position as a living space for summer (Iwatsuki, 1924 ; Fujishima,1925c) and the well-opened or well-ventilated structure is adopted (Lee,Y.T.,1965) in the southern Korea including the Cheju Island.

Today, it is a general view among the Korean scholars that Korean houses are characterized by the double-faced structure with a combination of the ondol room and the wooden-floor room (Shin,Y.F.,1983; Kim,Y.O.,1985; etc.). This view is connected with the understanding that the Korean Peninsula has intermediate characters between continental and maritime regions. Namely, while the ondol system is thought to be originated in the northern continental region, the wooden-floor room is regarded as the element originated in the southern coastal or insular regions. The wooden-floor room was developed into a living space with a raised-floor structure to cope with hot and humid summers in and south of the central part. Besides, a view was recently presented that the kitchen-detatched house, a house with its kitchen in the outbuilding seen in the Cheju Island was one of the southern cultural traits common to the southwestern islands of Japan, the South-eastern Asia and the south insular regions in the Pacific Ocean (Chang,B.W.,1985).

Although these general views are valid in many points, several problems can be found when each case is considered.

It is doubtful whether the wooden-floor room can be regarded self-evidently as following a raised-floor structure in the south. Moreover, all of wooden-floor rooms were not necessarily introduced as a living space for summer and all houses with wooden floor rooms do not necessarily take open structure. Not only about a wooden floor room, it is prone to mislead to connect the formal resemblances with the functional similarities directly. In fact, the annual range of temperature is so large in the northern part adjacent the Asian Continent that the temperature gets high there as well as in the southern part in summer. On the other hand, even the southern part of the Korean Peninsula or the Cheju Island needs some heating systems in winter. Therefore, when a regional variations of house forms are considered from a viewpoint of the climate control, it is necessary to examine how the cold-proof functions and the heat-avoiding functions are combined.

I - 3. Approach

The process of analysis in this study is as follows.

First, the distribution of floorplan types will be grasped through the data collected by the author's field survey as well as through the existing literature to establish a framework of the regional comparison of house form. The reason why the floorplan is considered here is that it is connected with a whole figure of the house and its some protective elements against the cold or the heat occupy a large part in the whole area of the house floor in many cases. As for the floor plans, they are usually less

changeable for a long period of time. Therefore, one can gather the housing tradition in each region from them, and it is favorable, also, that there are available data on them by more or less uniform standard in many regions.

Second, the regional tengency and the actual function which some protective elements against the climatic troubles, incorporated into the floor plan, perform in each region will be investigated. Among those elements, two major types of floorplan,i.e., a double-row plan and a single-row plan, a wooden-floor room, and a stall-equipped plan will be treated. The double-row plan, in which rooms are arranged in two rows under the main roof ridge, has been thought to be suitable for a warm-keeping, while the single-row plan, with no partition parallel to the main roof ridge, has been thought to be well-ventilated. The wooden-floor room, with no special heating system in contrast to the ondol room, is widely known to be used as a living room in summer. The stall-equipped house which prepares a space to keep livestock inside the main building has often been said that the heat from the kitchen range and the fuel hole of the ondol helps to keep the stall warm.

These elements have been thought to show the regional difference in their figures and characters from the north to the south in accordance with temperature conditions, although some exceptinal or contrary cases to the accepted opinions can be found. It is useful to examine the substantial effect of protection against the cold or heat in terms of the structures and the arrangements of some features like openings, partitions, kitchen ranges, and so forth, for understanding in what regions the protective

structures have been developed actually. If the similar tendency is verified to the usual explanations above-mentioned, the exceptions become subjects to be considered as special cases. If there are found many cases deviated from the accepted opinions, however, the regional variation requires an explanation from the different background from the usual one.

Third, the background of the regional difference in the house form in terms of the protective features against the cold or the heat will be considered through examinations of the form and character of the wooden-floor room seen in the historical documents and in the present house in the southern Korean Peninsula and the Cheju Island in comparison with those in the other regions. The introduction processes and the present characters of the wooden-floor room give us good suggestions on the tradition of the raised-floor construction and the people's demand for the protective features against the heat in Korea, while it can be said doubtlessly for the ondol system to have its origin in the north.

Especially in the Cheju Island, where the ondol system was introduced much later than the other regions of Korea, one can analogize the house form before the introduction of the ondol system to some extents.

Further, the phenomena of the diffusion, imitation and conversion of some types of house and their elements will be paid attention in order to grasp the changing tendency of the regional variation in the house form.

As the main objects of analysis in this study, the middle or lower-class farmhouses built in the Korean

traditional form are treated, because those houses are limited to being more or less common in the whole size or in the kinds and the number of the rooms which constitute the floorplan. The upper-class residences, in which people tend to express their authority and status, or the decorative and high-style design, show their individual character rather than the general character in the region in many cases. Therefore, they are restricted to the subsidiary objects. Urban houses and stores are also excepted, because of their insufficiency of the available data to make a regional comparison.

The terms of the upper-class and the middle-class here do not mean the categories in the class system under the Lee Dynasty (李朝), i.e., yangban (両班: the aristocratic class) [4] and chung'in (中人: the intermediate class between yangban and the commoner), and there is no strict distinction between these two. In view of the nature, however, of the middle or the lower-class house being employed for daily life and work by the family member exclusively, its tentative criterion is fixed at five or less ondol rooms in all, or 10 or less compartments including the ondol room, kitchen, storeroom, stall, and so forth in the main building and the accessory buildings.

The term of traditional form implies the style established by the last years of the Lee Dynasty, but there is no concrete discrimination on the chronology nor the construction technics. This term here is used in the sense of old Korean mode which adopted neither the new model recommended administratively through the structural improvement project to the rural settlement nor the western mode in fashion.

The data used in this study are the descriptions and the figures in existing Japanese and Korean literature, in addition to that the author accumulated through his field survey. In the cases where a quantitative analysis is needed particularly, the following reports are used: Kim,H.S. et al.(1970～1985): "General Reports on Korean Folklore" (12 volumes for each provinces and 1 volume for housing life), Kim.H.S.(1978c): "A Report of the Preservative Areas for Folk Village", Kim,H.S.(1979b): "A Report of Nagansong Folk Village", North Kyongsang Province(1979a.b): "A Report of Hahoe Folk Village" and "A Report of Yangdong Folk Village", etc.

In the present territory of the North Korea (the Democratic People's Republic of Korea), it is impossible to make field survey. Therefore, the literature before 1945 and the information through the interview with the residents from the northern part who live now in the South Korea are refered.

All names and territories of provinces, including those in the North Korea, follow the current administrative division by the Republic of Korea[5]. Moreover, for the regional comparison of house forms, the author divides the main land of Korean Peninsula into three sections such as the North Section, the Central Section, and the South Section. Each of these three sections is further divided into east and west subsections. The Cheju Island is treated separately from those sections (Fig.2).

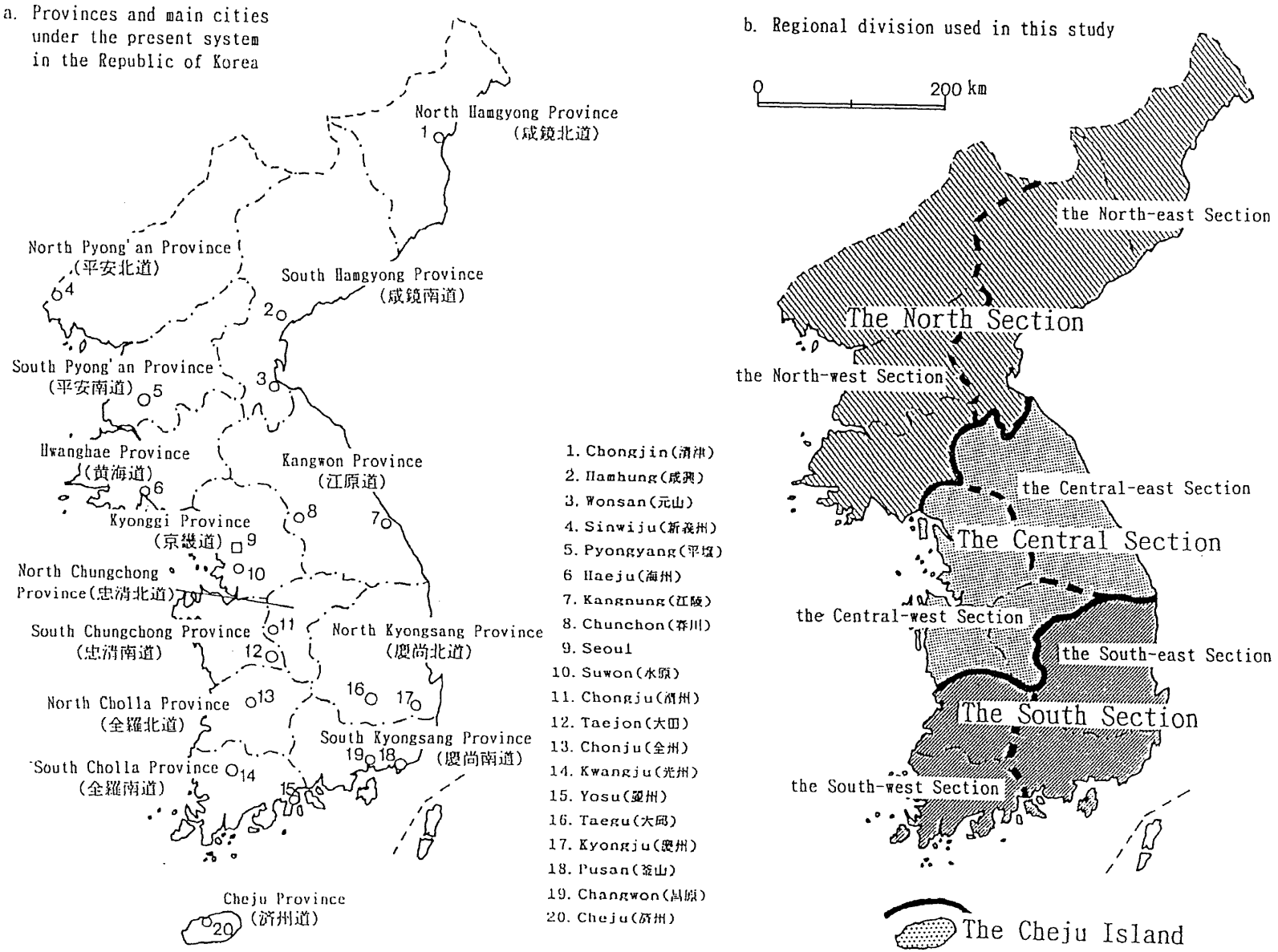


Fig. 2 Regional division of the Korean Peninsula.

CHAPTER II

REGIONAL VARIATION OF FLOORPLAN

II－1. Floorplan types and their distribution

1) Constituents of floorplan

The standard size of the intercolumniation in a typical Korean traditional house is 8 Korean feet (1 Korean foot ≒ 0.303 m), and a quadrilateral section with its each side of this size makes a basic constituent of the floorplan. Both this size of the intercolumniations and the quadrilateral sections are called by the unit of kan (間).

In fact, the real size of the intercolumniation ranges from 6 to 10 feet or more , and the quadrilateral section takes a rectangle shape. One side of the rectangular section is a few feet longer than the side of a typical square section in many cases. In spite of such variety in the real size, however, the whole size of the house is mentioned as " ～ kan house" to indicate the number of the intercolumniations in the frontage or the number of the sections. These two categories of number are often used synonymously because Korean house takes a floorplan with a single-row arrangement of rooms in many cases. Except the case in which one section takes a multiple size of kan simply as "two-kan-taechong" (二間大庁; taechong is a hall-like room with wooden floor), one seldom tells an actual size of each room, different from the case of Japanese house where a number of tatami mats is used to indicate the room size.

These constituents of floorplan can be classified into

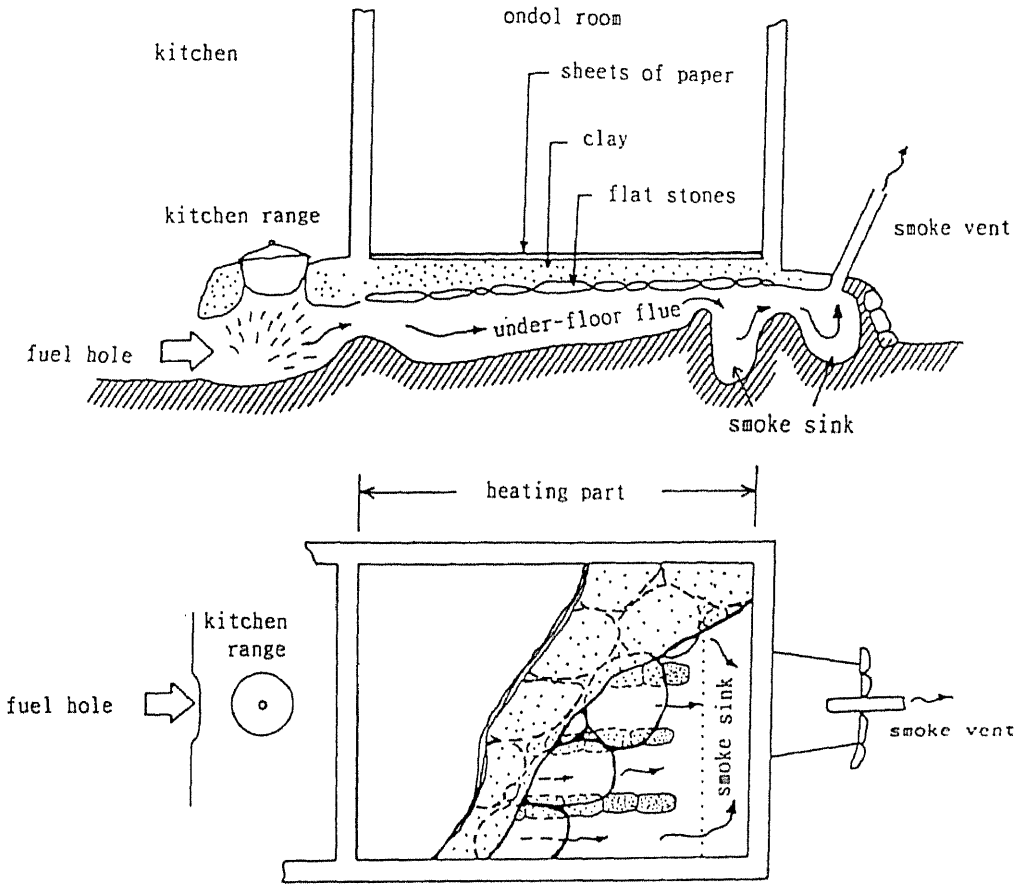
three categories according to the floor structure; a dirt floor, a wooden floor, and an ondol floor.

A dirt floor is used in a place for indoor labor, a stall, a storage shed and so forth, as well as a kitchen. The level of some dirt-floored sections is as high as the yard, while that of other dirt-floored sections is several or dozens centimeters lower than the yard. Except some cases as hut dwellings on a small scale for a single life in the Cheju Island, people do not use it for their living spaces.

An ondol floor, which has been spread all over the Korean Peninsula, is a kind of floor-heating system which heats up the room to make hot smoke penetrate into the underfloor flues (Fig.3-a). In this system, the floor is supported by the foundation wall which encloses the whole underfloor space and by the ridges between the underfloor flues, so that almost no weight of the floor is borne by the structural pillars. This floor, used for all of the bedrooms with few exceptions, makes the most important feature which characterizes the Korean house[6]. Usually, the cooking range in the kitchen serves for the fuel hole of the next ondol room as well. Heatable range from the fuel hole, however, is two kan at the most. Consequently, one has to make more fuel holes separately from the kitchen range, when the ondol rooms increase in number or the wooden-floored room is laid between the ondol rooms to intercept their flues.

A wooden floor takes the form in which floor boards are fit to the horizontal pieces, sleepers and joists, fixed to the pillars (Fig.3-b)[7]. In this style of floor, window can penetrate well through many clinks between the flooring pieces. This wooden floor is used both as a room and as a

a. ondol



b. wooden floor

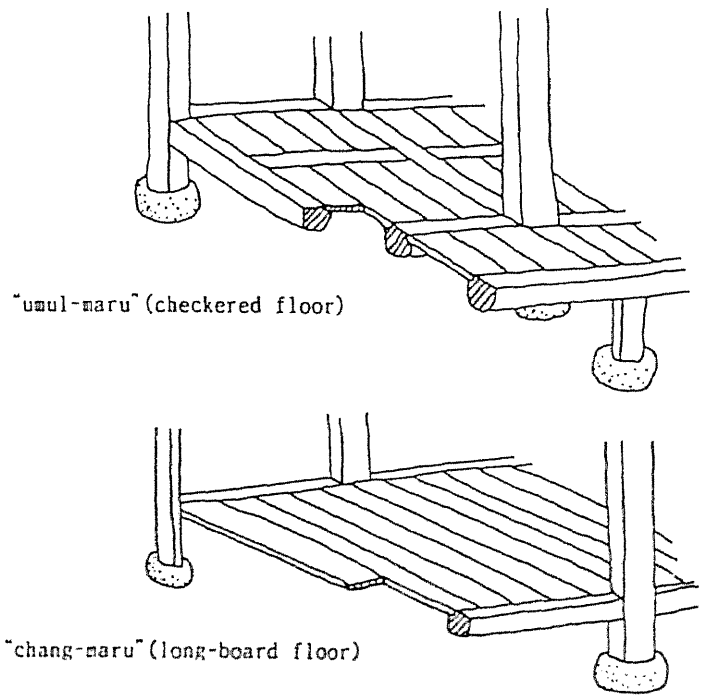


Fig. 3 Floor structures in Korean houses.

verandah. The wooden-floor room serves for various functions such as a ritual hall, a food storage, a living room in summer, and a passage. But the wooden-floor structure is not necessarily indispensable in terms of the space for meal and sleep only, so that one can see many houses which lack this floor originally or convert the original wooden floor into the ondol.

Generally, an average people's house has 2 to 5 ondol rooms, and may add some kinds of dirt- or wooden-floored sections depending on the needs and the economics.
Each room is occupied by specific sex and generation rank, reflecting a traditional family system based on Confucianism. Names and some characteristics of the principal rooms are outlined in Table 1～3.

2) Classifications of floorplan types

As to the regional difference in the floorplan which combines some constituents above-mentioned, Iwatsuki(1924) presented a crassification first[8]. He classified the floorplan into Northern Korea type, Keijo(京城: present Seoul) type, Central Korea type, Western Korea type, and Southern Korea type, in accordance with several indices: (1) a distinction between single-row-plan and double-row-plan, (2) a distinction between I-shaped house and L-shaped house, (3) the presence or absence of a wooden-floor room, called taechong (大庁), (4) the size and the direction of the taechong. In relation to this classification, he assumed the distribution boundaries of these floorplan types in some mountain ranges.

After his study, several scholars tried classifica-

Table 1. Names and uses of the dirt-floored sections

Korean name	meaning and use
puok	a kitchen. cooking; heating of the next ondol room.
chongji	almost same as the above; this term may imply the wider space including not only kitchen but also the space for indoor labor and the entrance; mainly used in the provinces such us Kangwon Province, North and South Cholla Provinces, North and South Kyongsang Provinces and Cheju Province.
pongdang (封堂)	a dirt-floored area of 1 or 2 kan size between two ondol rooms or at the entrance of a chongji; working space, entrance, a hall as substitute of taechong(大庁) in Table 2.
oeyangkan	a stall for livestock, specially cattle.
magu (馬厩)	originally a stall for horses; now the same as the above.
hotkan (虚間)	an open shed; a storeroom with a open front for farm implements, etc.

Table 2. Names and uses of the ondol rooms

Korean name	meaning and use
anbang	a housewife's room; a women's room; an "inner room" in literal translation; usually laid next to the kitchen, having a strong tendency to keep outsiders away.
aretbang	an ondol room close to the fuel hole, with another room, utbang, to the opposite side; a "lower room" in literal translation; synonymous with anbang in the main building.
utbang	an ondol room connected with aretbang, taking the distant position from their fuel hole; an "upper room" in literal translation, but with no relation to the significance or the rank of the room; taking a subsidiary use such as a room for grown children because of its inferiority in the heating condition.
kunbang	a "large room" in literal translation, but with no relation to the actual size of the room; used synonymously with anbang in many cases in the southern Provinces, but it may be used as a room for the eldest woman in the family rather than the housewife.
chagunbang	a "small room" in literal translation; a subsidiary room after kunbang, where the elderlies or the grown children live.
konnonbang	a kind of annex laid in the opposite position to anbang with the other room such as taechong between them; the elderlies and the grown children live here usually.
sarangbang (舍廊房)	a master's study and a reception room for male guests; often laid in the outbuilding; one of the male quarters, while anbang is for female.
chongjukan (鼎厨間)	an ondol part opened to the dirt-floored kitchen with no partition wall between them; used as a living room, a dining room, and a workshop, further as a bedroom on occasion; peculiar to Hamgyong Provinces.

Table 3. Names and uses of the wooden-floored sections and the others

Korean name	meaning and use
taechong (大庁)	a hall-like section with a wooden floor laid in the center of the house for multiple uses such as a ritual hall, a family's common living space in summer, a passage, etc.
anchong	almost synonymous with taechong, but this term is used only for the wooden-floor room in the main building ; having a closed nature compared with taechong.
maru	this term is used in two senses; a generic name for all the wooden-floored structures including a verandah, toenmaru, and a name limited to the secred section and the storeroom with a closed figure and character; the former is a standard term all over the country, while the latter, dominant in the coastal-insular regions in South Cholla Province; a raised dirt floor may be called maru also on occasion.
toenmaru	a wooden-floored verandah attached to the outer wall of the ondol room; used as an entrance and a passage, and a substitute for living room in summer.
kobang (庫房)	a storeroom for household goods, and occasionally for grain; usually ondol-floored, but wooden-floor or raised dirt-floor can be seen in some cases.
tojang	a storeroom adjoining to anbang with almost same use as kobang.

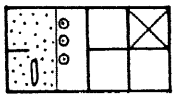
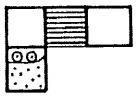
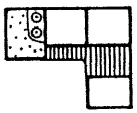
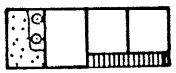
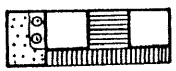
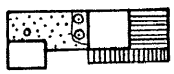
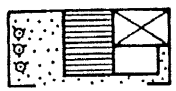
tions from their own viewpoints. Every one of them, however, confirmed the gist of the classification and the distribution pattern presented by Iwatsuki, and confined himself to adding some new types or to modifying partly the classification system and the distribution range of some types as a result (Table 4; Fig.4). Among those scholars in Table 4, however, Nomura(1938) and Kim, C.K.(1970) did not present distribution maps.

In these classifications, except for Chang,B.W.(1980) who used the morphological names, each type was named after the region in which the type was dominant. However, some of these names have proved to disagree with their actual distribution. For example, Kwanbuk (関北) type is distributed not only in Kwanbuk region, i.e.,North and South Hamgyong Provinces (咸鏡南北道) in the North-east Section of the Korean Peninsula, but also in Hwanghae Province (黄海道) in the North-west Section, Kwanso (関西) region (Kim,K.O.,1984). Moreover, the another type from what is called the "Southern type" is proved to be dominant in the coastal and insular region of South Cholla Province (全羅南道)(Chang,B.W.,1980).

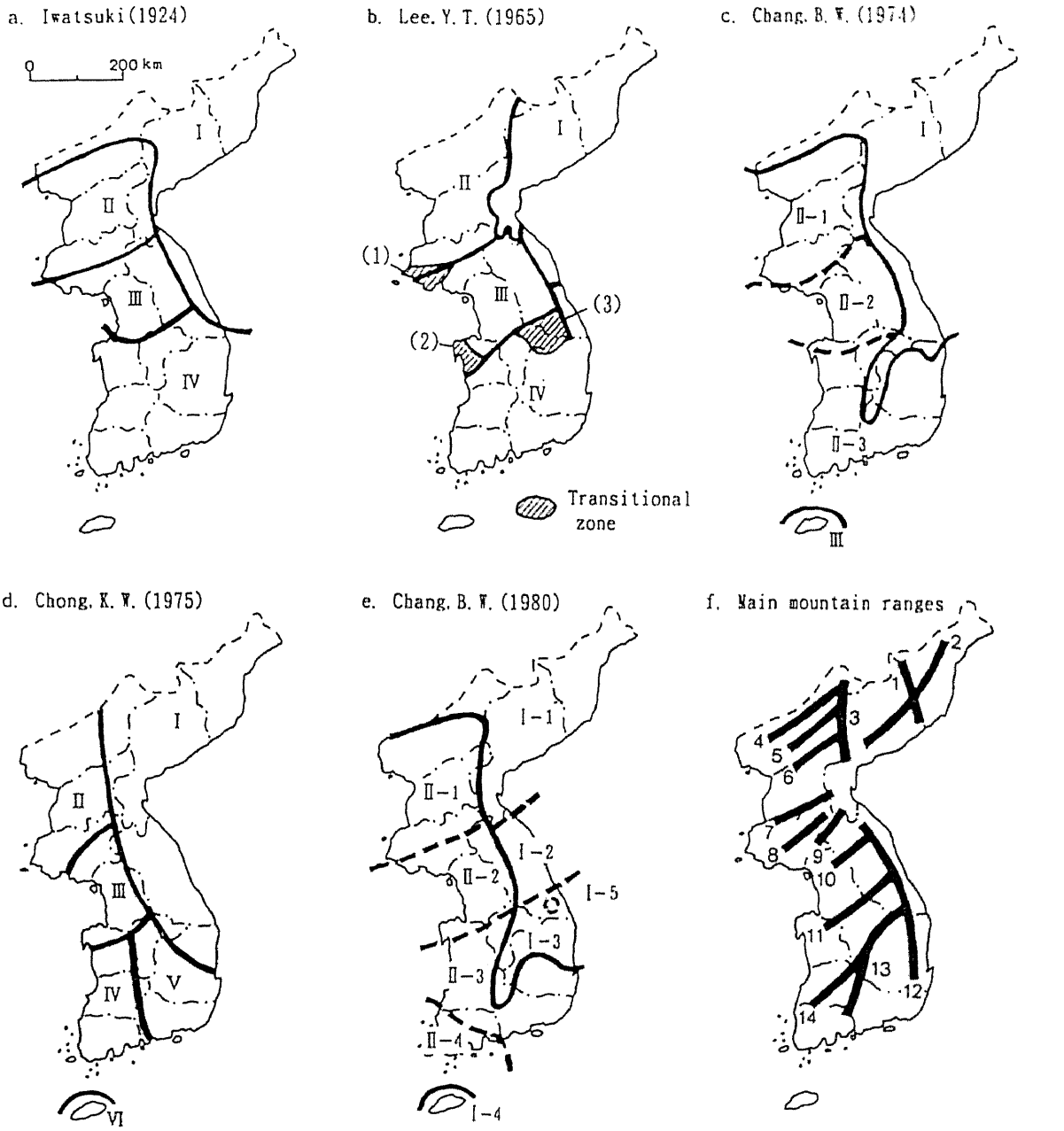
In this study, based on this situation, the morphological name is adopted for each floorplan type rather than the regional name. The floor plan is classified through the following process.

First, it is classified into two major types, double-row-plan type and single-row-plan type, according to whether rooms are arranged in double row or in single row parallel to the main roof ridge. The rare triple-row-plans are treated as variations of the double-row-plan.

Table. 4 Classifications of floorplan in the previous studies

Floorplan	Iwatsuki(1924)	Nomura(1938)	Lee, Y. T. (1965)	Kim, C. K. (1970)	Chong, K. W. (1975)	Chang, B. W. (1974)	Chang, B. W. (1980)
	Northern Korea type	Northern Korea type	Kwanbuk(関北) type	Northern type	Northeastern type	Mountain type	Double-row-room type
	Keijo(京城) type	Urban type	Central type	Seoul type	Southeastern type	Plain type: Central type	Single-row-room type: Bent type (L-shaped type)
	Central Korea type			Central type	Central type		
	Western Korea type	General type: (Western Korea type)	Kwanso(関西) type	Western type	Northwestern type	Plain type: Kwanso(関西) type	Single-row-room type: Rectangular type: II-shaped type
	Southern Korea type	General type: (Southern Korea type)	Southern type	Southern type	Southwestern type	Plain type: Southern type	Single-row-room type: Rectangular type: I-shaped type
	(not-mentioned)						Single-row-room type: Rectangular type: Kitchen-centered type
	(not-mentioned)	Cheju-do(済州島) type	(Southern type)	Cheju-do type	Cheju-do type	Island type	Double-row-room type (Three-room type)

 : ondol  : dirt floor  : wooden floor  : closet, storeroom ⊙ : kitchen range  : manger



a. I : Northern Korea type. II : Western Korea type.
III : Keijo & Central Korea type. IV : Southern Korea type.

b. I : Kwanbuk(関北) type. II : Kwanso(関西) type.
III : Central type. IV : Southern type.
(1) the Ongjin Peninsula.
(2) the coastal region of the Chonsu Bay.
(3) The Chungju & Yongwol Basin.

c. I : Mountain type.
II : Plain type (1. Kwanso-type. 2. Central type.
3. Southern type).
III : Island type.

d. I : Northeastern type. II : Northwestern type.
III : Central type. IV : Southwestern type.
V : Southeastern type. VI : Cheju-do(済州島) type

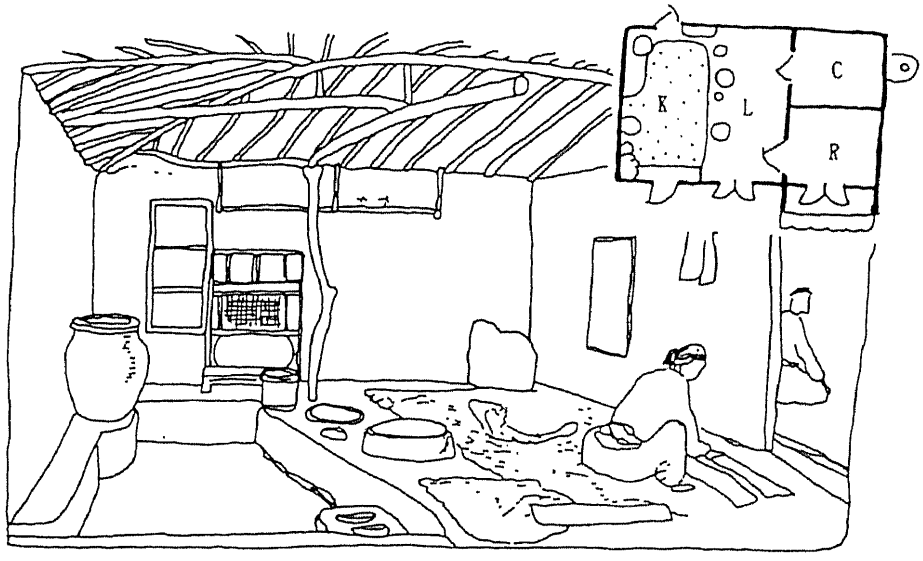
e. I : Double-row-room type (1. Five-room type. 2. L-shaped four-room type. 3. I-shaped four-room type. 4. three-room type. 5. Special type).
II : Single-row-room type (1. II-shaped type. 2. L-shaped type. 3. I-shaped type. 4. Kitchen-centered type).

f. 1: Machollyong(馬天嶺) Range.
2: Hamgyong(咸鏡) Range.
3: Nangnim(狼林) Range.
4: Kangnam(江南) Range.
5: Chogyuryong (狄踰嶺) Range.
6: Myohyang(妙香) Range.
7: Onjin(彦眞) Range.
8: Myorak(滅悪) Range.
9: Masingnyong(馬息嶺) Range.
10: Kwangju(広州) Range.
11: Charyong(車嶺) Range.
12: Taebaek(太白) Range.
13: Sobaek(小白) Range.
14: Noryong(蘆嶺) Range.

Fig. 4 Distribution of Korean house types shown in the previous studies.

Second, the double-row-plan is classified further into four types such as the chongjukan plan, the two-by-two plan, the dirt-floor-fronted plan, and the sangbang-centered plan, to notice the specific features seen in particular regions. The chongjukan plan is characterized by chongjukan (鼎厨間), an ondol-floored living room, laid between the kitcen and the other ondol rooms (Fig.4). It is a peculier feature to houses chiefly in the the North-east Section of the Korean Peninsular. The two-by-two plan lays four rooms in two-by-two squares pattern with cross partitions. This type of floorplan shares many common traits with the chongjukan plan, but the chongjukan space is much reduced to disappear. The dirt-floor-fronted plan lays a dirt-floored section to the fore, while most of Korean houses lay it to the side. The sangbang-centered plan lays a wooden- or dirt-floored living room called sangbang (床房) in the center. This room can be seen only in the Cheju Island. Moreover, the former three types can be classified into two types, rectangular plan and bent plan, according to the position of the stall. The house which arranges a stable inside the dirt-floored section makes a rectangular or I-shaped plan, while the house with a stall projected forward from the dirt-floored section makes a bent or L-shaped plan. The rectangular-shaped house and the bent-shaped house correspond to the Japanese magariya (曲家) and sugoya (直家) houses.

Third, the single-row-plan type is also classified into I-shaped plan and L-shaped plan. U-shaped plan and square-shaped one can be regarded as extended variations of the L-shaped one. These single-row plans are classified further



L: chongjukan(鼎厨間)　R: ondol room　K: kitchen　C: closet

Fig. 5 Sketch of a chongjukan. (after Kon, 1924)

into several types such as the taechong plan, the taechong-less plan, the side-maru plan, and the kitchen-centered plan according to the position of the wooden-floor room and the kitchen.

The basic characteristics of these types are as in Table 5.

3) Distribution of floorplan types

(1) Variations of double-row plan and their distribution

The double-row plan, depth of which is divided into 2 or 3 rows of rooms by parallel partitions to the main roof ridge, shows some variations as in Fig.6.

The primary plan of the chongjukan type is constituted of a dirt-floored kitchen and a chongjukan only with no partition between them. This plan is developed into such plans as shown in Fig.6-a,b. One of the double-row ondol rooms which are connected to the chongjukan may be employed as a storeroom, tojang, in some cases. One room in the back row usually becomes tojang. Moreover, this type of plan may takes an stall-equipped house as well as the other forms of double-row plan. These chongjukan houses has been stated to be distributed in the North-east Section with its western limit along the Nangnim Range(狼林山脈) and partly on the upper Amnok River(鴨緑江). Its southern limit is corresponded to the border between South Hamgyong Province and Kangwon Province.

The two-by-two plan has a four rooms connected to the dirt-floored kitchen without a chongjukan between the kitchen and the rooms. Occasionally, there is a strip of an ondol-floored space where one person can barely lie between

Table 5. Classification of floorplan in this study

floorplan			basic characteritics
double-row plan	chongjukan plan		a floorplan with a ondol section called chongjukan which is opened to the dirt-floored kitchen with no partition; ondol rooms are joined to this chongjukan in double row; stalls are laid in the dirt-floored section in some cases.
	two-by-two plan		rooms are joined to the dirt-floored kitchen, which occupies a half of the whole plan, in two-by-two pattern; one room in the front row is made as a wooden floor room in some cases; generally, a stall is equipped in the main building.
	dirt-floor-fronted plan		a dirt-floorede section is laid in the front part with other rooms behind; stall-equipped form in general
	sangbang-centered plan		a wooden- or dirt-floored room called sangbang is laid in the center of house; a kitchen is laid at the end of the house and an ondol room and a storeroom are at the opposite end to the kitchen; cooking and heating of the ondol room are separated; kitchen — detatched plan can be seen on occasion.
single-row plan	L-shaped plan	taechong plan	L-shaped plan with anbang,taechong and konnonbang arranged in single-row; a kitchen is laid in front of anbang is on the bend of floor plan.
		end-wooden-floor plan	a floorplan with a wooden floor room in its end; a kitchen is laid on the bend.
		taechongless plana	L-shaped plan with no taechong; kitchen is on the vend.
	I-shaped plan	end-wooden-floor plan	I-shaped floorplan with wooden floor room in its end.
		taechong plan	I-shaped plan with taechong between two ondol rooms.
		taechongless plan	I-shaped plan without taechong.
	kitchen-centered plan		two ondol rooms are joined to the kitchen in two directions; wooden-floored storeroom is at the end of the house

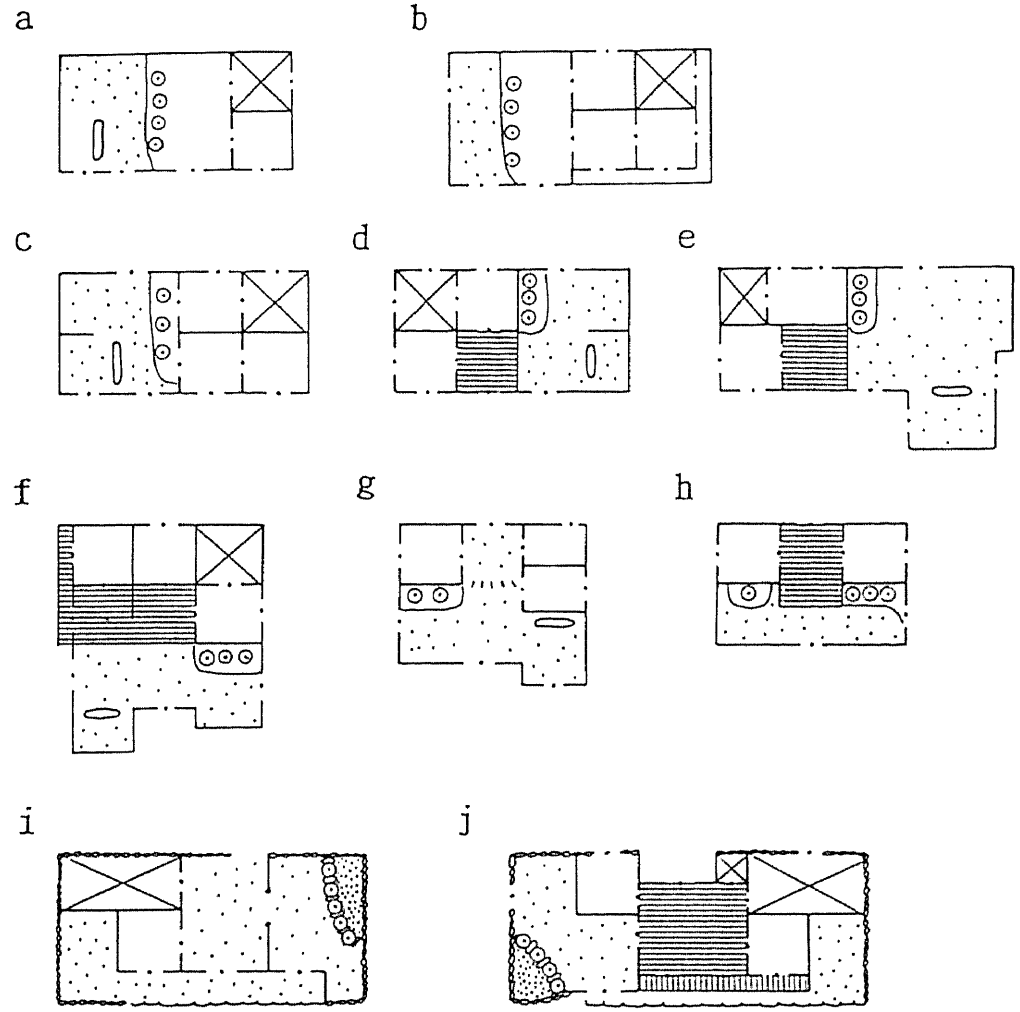
the kitchen range and the wall of the next room. This space can be regarded as a remnant of the chongjukan. Therefore, this type is often treated as a variation of the chongjukan plan. In fact, these two types share many common features. A stall is laid in the main building, being incorporated within the dirt-floored section (Fig.6-c,d) or projecting forward from it (Fig.6-e). In some cases, however, one room near the kitchen may take a wooden floor or a dirt floor, and there can be seen not only a regular cross partition but also a stagger cross one (Fig.6-e). The houses of this type are distributed chiefly in such mountainous regions as the Taebaek Range(太白山脈) and its some brances,including the Sobaek Range(小白山脈) in Kangwon Province and North Kyongsang Province. Among them, the L-shaped stall-equipped houses of this type are distributed in the north of the line which links Kangnung (江陵) and Wonju (原州), and the rectangular-shaped ones are in the south of this line (Chang,B.W.,1980; Cho,S.K.& Chi,H.K.,1986,1987). Moreover, this type of houses was found in some islands along the west coast of Hwanghae Province and Kyonggi Province by Kim,K.O. (1984). He assumed this type to be distributed from Kangwon Province in the east to the Hwanhae Province in the west along the Myolak Range(滅悪山脈) and the Mashingnyong Range (馬息嶺山脈).

The dirt-floor-fronted plan shows several variations. The house, a size of which is 3 kans(間) both in depth and in width, makes the representative type. This type of the floor plan basically consists of six rooms and the dirt-floored part, and has an indoor-stall in many cases. The house floor as a whole takes the square or the bent shape

depending on the position of the stall as in the case of the chongjukan type and the two-by-two squares plan. One or two rooms in the center have a wooden-floor and one is used as a store-room, tojang, and the others are the ondol rooms. The main entrance is made in the gabled side, and the other entrance is in front of the dirt-floored section. This type of houses are distributed in the mountainous region of Samchok(三陟) County, Kangwon Provinces. Chang,B.W.(1974), who reported this type of floorplan first, stated that this type of houses remained only in two villages such as Sin-ri(新里) and Tonghwal-ri(東活里) in Samchok county. He himself called this type of house "the house with the entrance at the gabled side". After that, however, those houses are also found in some other villages in the southern part of Kangwon Province and the northern part of North Kyongsang Province. Kim,H.S.(1981) assumed the distribution of this plan to be extended to the northern border of Kangwon Province.

On the other hand, there are also a few types with a size of 2 kans in depth and 3 kans in width among the dirt-floor-fronted type of floorplans. One section in the center of the back row has a dirt floor in some cases and have a wooden floor in the others. The main entrance of the house is made in front of the dirt-floored section. The distribution of these houses are split to the east and the west, in the northern part of North Kyongsang Province and some islands along the west coast of Hwanghae Province and Kyonggi Province.

These double-row plan houses lessen wall surface of ondol rooms which exposed to the open air, so that the loss



a. chongjukan plan : Chongjin County, South Hamgyong Province (咸鏡南道長津郡) (Odauchi, 1924)
b. chongjukan plan : Hamhung County, South Hamgyong Province (咸鏡南道咸興郡) (Odauchi, 1923)
c. two-by-two plan (I-shaped) : Omok-ri, Wondok-wup, Samchok County, Kangwon Province (江原道三陟郡道德邑梧木里) (the author's survey, 1981)
d. two-by-two plan (I-shaped) : Nulkok-ri, Chipum-myon, Yongdok County, North Kyongsang Province (慶尚北道盈德郡知品面納谷里) (Cho, S. K. & Chi, H. K., 1987)
e. two-by-two plan (L-shaped) : Uam-ri, Kiyang-myon, Yangyang County, Kangwon Province (江原道襄陽郡巽陽面牛岩里) (Cho, S. K. & Chi, H. K., 1987)
f. dirt-floor-fronted plan : Omok-ri, Wondok-wup, Samchok County, Kangwon Province (江原道三陟郡道德邑梧木里) (the author's survey, 1981)
g. dirt-floor-fronted plan : Togul-ri, Yongju-wup, Yongju County, North Hamgyong Province (慶尚北道榮州郡榮州邑土屈里) (Kim, I. C., 1978)
h. dirt-floor-fronted plan : Tokchok-myon, Ongjin-gun, Kyonggi Province:Tokchok-do Is. (京畿道甕津郡德積面; 德積島) (Kim, K. O., 1988)
i. sangbang-centered plan : Songwup-1-ri, Pyoson-myon, South Cheju County, Cheju Province (濟州道南濟州郡表善面城邑一里) (Kim, H. S., 1978 C)
j. sangbang centered plan : Songwup-1-ri, Pyoson-myon, South Cheju County, Cheju Province (濟州道南濟州郡表善面城邑一里) (Kim, H. S., 1978 C)

: ondol
: dirt floor
: wooden floor
: closet or storeroom
: earthen or wooden wall
: kitchen range
: manger
: opening
: stone wall

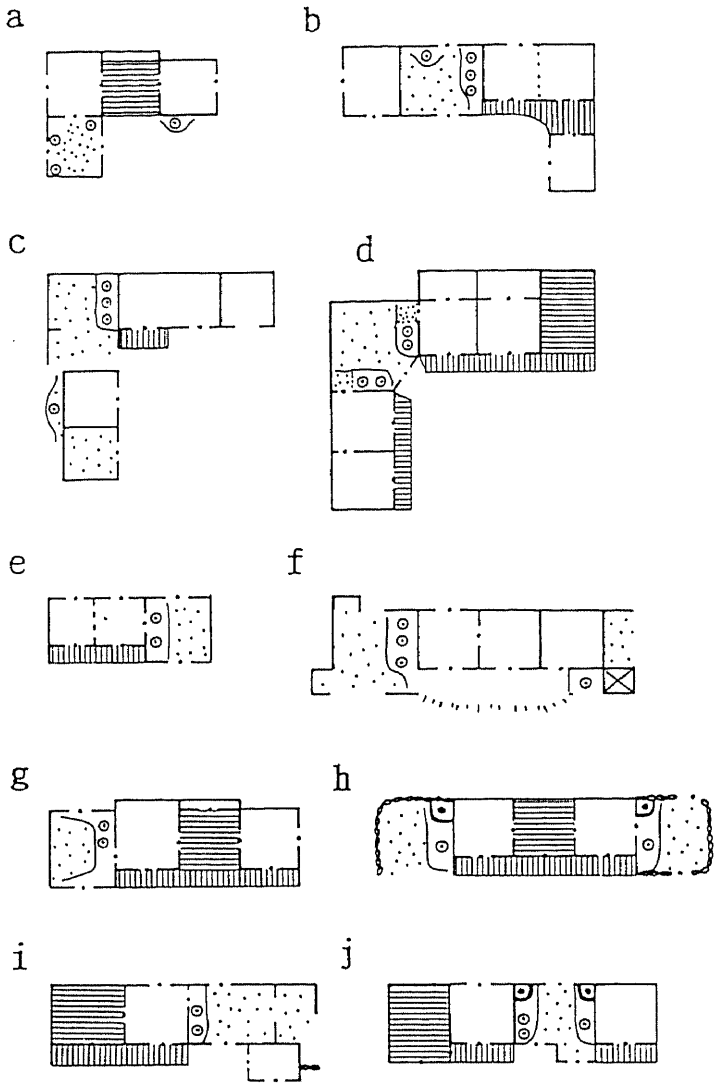
Fig. 6 Variations of the double-row plan.

of indoor warmth is effectively restrained. Moreover, the outdoor heat is late in traveling inside in summer, because solar radiation cannot reach the rooms in the back row, although the rooms there are poorly lighted in winter and ill-ventilated in summer. In general, these double-row plan is ditributed in the North-east Section and some other regions (Fig.8). It is noticeable, however, that houses in the Cheju Island takes a double row plan. The double-row plan house has generally a wooden-floored living room called sanbang in its center, so that the author calls this floorplan "sang-bang-centered plan". As to this double-row plan in the Cheju Island, there are some opinions to identify this floorplan with a variation of I-shaped taechong plan in the South Section, or to distinguish it from the double-row plan in the North-east Section, because the sangbang-centered plan of the Cheju Island does never take two-by-two plan.

Stall-equipped form which keeps livestock in the stall made in the main building is widely seen among the double-row plan houses except the sangbang-centered plan in the Cheju Island, and seen also among the some single-row plan houses such as kitchen-centered plan in the southwestern coastal and insular regions of South Cholla Province and the others which are distributed in the distribution area of double-row plan houses in the mainland.

(2) Variations of single-row plan and their distribution

Many scholars including Iwatsuki (1924) have stated that L-shaped house of single-row plan (Fig.7-a) has been dominant in and around Seoul City, and Lee,C. (1975) verified



a. L-shaped taechoug plan : Kuam-ri, Wansung-myong, Chinchong County, North Chungchong Province (忠清北道鎭川郡万升面旺岩里) (the author's survey, 1976)

b. L-shaped taechong plan : Kuam-ri, Wansung-myon, Chinchong County, North Chungchong Province (忠清北道鎭川郡万升面旺岩里) (the author's survey, 1976)

c. L-shaped taechongless plan : Samsung-ri, Kanam-myon, Yoju County, Kyonggi Province (京畿道驪州郡加南面三承里) (the author's survey, 1976)

d. L-shaped wooden-floor-end plan : location is unknown (Lee, Y. T., 1965)

e. I-shaped taechongless plan : Samhung-ri, Kimgwang-myon, Ansong County, Kyonggi Province (京畿道安城郡金光面三興里) (the author's survey, 1976)

f. I-shaped taechongless plan : Pochon-ri, Wonnam-myon, Wumsong County, North Chungchong Province (忠清北道陰城郡逵南面甫川里) (the author's survey, 1976)

g. I-shaped taechong plan : Yongdae-ri, Hail-myon, Kosong County, South Kyongsang Province (慶尚南道固城郡下一面龍台里) (the author's survey, 1981)

h. I-shaped taechong plan : Sanga-ri, Nam-myon, Namhae County, South Kyongsang Province; Namhae Is. (慶尚南道南海郡南面上加里; 南海島) (the author's survey, 1981)

i. kitchen-centered plan : Shilluk-ri, Chodo-myon, Chindo County, South Cholla Province; Cho-do Is. (全羅南道珍島郡鳥島面新陸里; 鳥島) (the author's survey, 1986)

j. kitchen-centered plan : Hongdo-ri, Huksan-myon, Sinan County, South Cholla Province; Hong-do Is. (全羅南道新安郡黑山面紅島里; 紅島) (the author's survey, 1981)

See Fig. 6 for legend

Fig. 7 Variations of the single-row plan.

it quantative-ly[11]. Southern boundary of the distribution area of this floorplan has been thought to correspond with the Charyong (車嶺) Range lying southwestward from Mt.Odae in the Taebaek (太白) Range to make a northern border of North and South Chungchong Provinces, south of which I-shaped taechong house of single-row plan (Fig.7-g) has been thought to become dominant. In fact, how-ever, a transition between the distributions of L-shaped taechong plan and I-shaped taechong plan is not so clear, and there lies an intermediate zone where I-shaped taechong-less houses of single-row plan becomes majority. In this zone, we can also observe some instances of imitated plan[12] of the L-shaped taechong plan (Fig.7-b) and L-shaped taechongless plan (Fig.7-c).

L-shaped taechong plan can be found also in the south-western part of Kangwon Province and the northern parts of North Chungchong Province and North Kyongsang Province. Moreover, this floorplan increases in number over the Taean (泰安) Peninsula[13] in the northwesten part of South Chungchong Province. In Kyonggi Province, however, we can see I-shaped taechongless houses outnumber the L-shaped taechong houses in some counties such as Ansong (安城) and Yoju (驪州) along the northern foot of the Charyong Range.

Chang,B.W.(1980) assumed the kitchen-centered houses (Fig.7-i,j) were distributed in the southern coastal and insular regions and along the Yongsan River (栄山江) in South Cholla Province. Southern coast of the Korean Peninsula is known typical rias shoreline along which the archipelago spreads[14]. Among those regions, the kitchen-centered plan has been found only in those of South Cholla

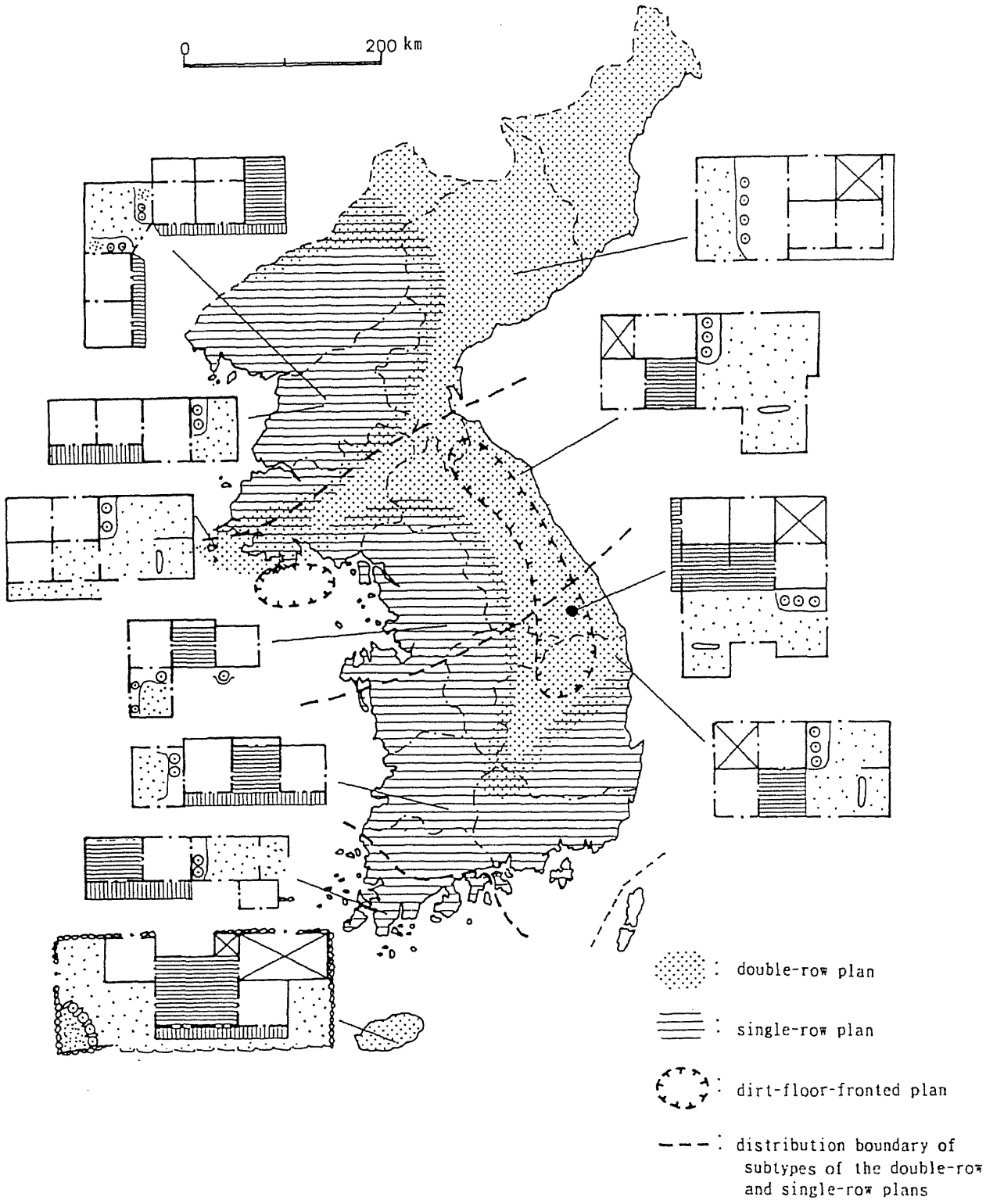
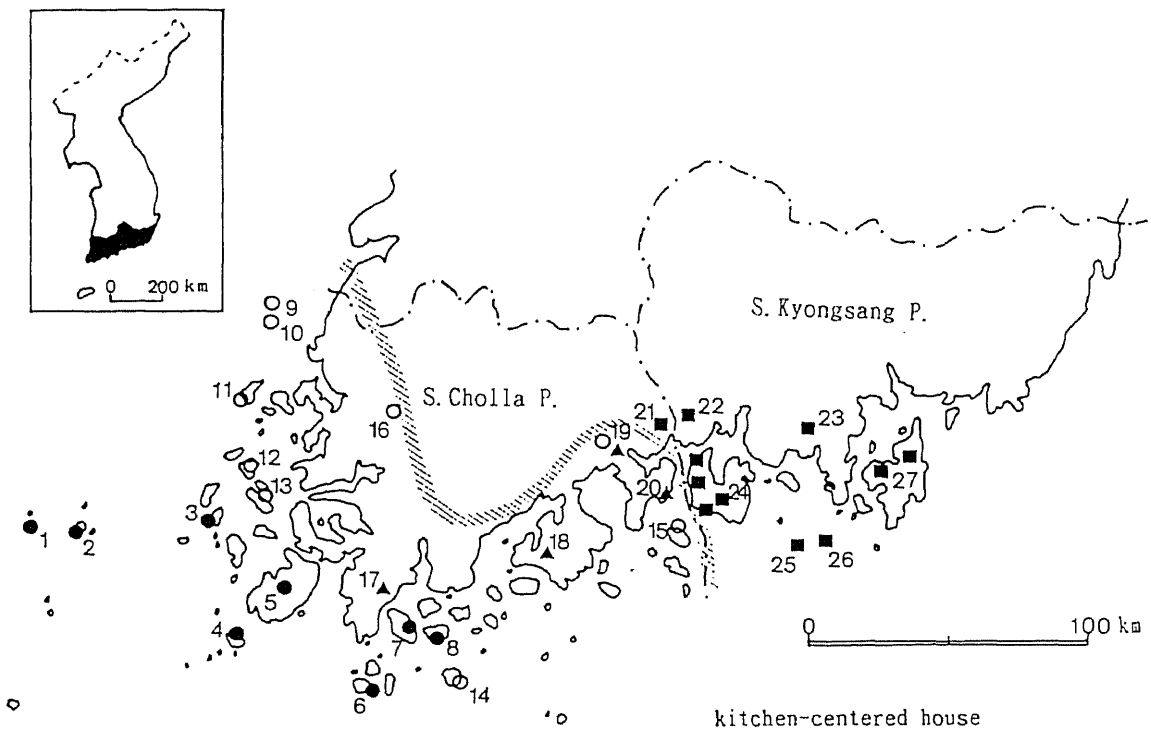


Fig. 8 Distribution of floorplan types in Korea.

source: the existing studies since 1920s and the author's survey



1. Hong-do Is. (紅島), 2. Daehuksan-do Is. (大黑山島),
3. Tocho-do Is. (都草島), 4. Cho-do Is. (鳥島), 5. Chin-do Is. (珍島)
6. Pogil-do Is. (甫吉島), 7. Wan-do Is. (莞島),
8. Shinji-do Is. (薪智島), 9. Taesongman-do Is. (大石莫島),
10. Anma-do Is. (鞍馬島), 11. Imja-do Is. (荏子島),
12. Amtae-do Is. (岩泰島), 13. Anjwa-do Is. (安佐島),
14. Chongsan-do Is. (靑山島), 15. Tolsan-do Is. (突山島),
16. Naju(羅州), 17. Haenam(海南), 18. Kohung(高興),
19. Sungju(昇州), 20. Yochon(麗川), 21. Kwang'yang(光陽),
22. Hadong(河東), 23. Kosong(固城), 24. Namhae-do Is. (南海島),
25. Yokchi-do Is. (欲知島), 26. Yonhwa-do Is. (連花島)
27. Koje-do Is. (巨濟島).
(1~21: South Cholla Province, 22~27: South Kyongsang Province)

(field survey: 1980-86)

Fig. 9 Distribution of the kitchen-centered houses in the southern coastal and insular regions.

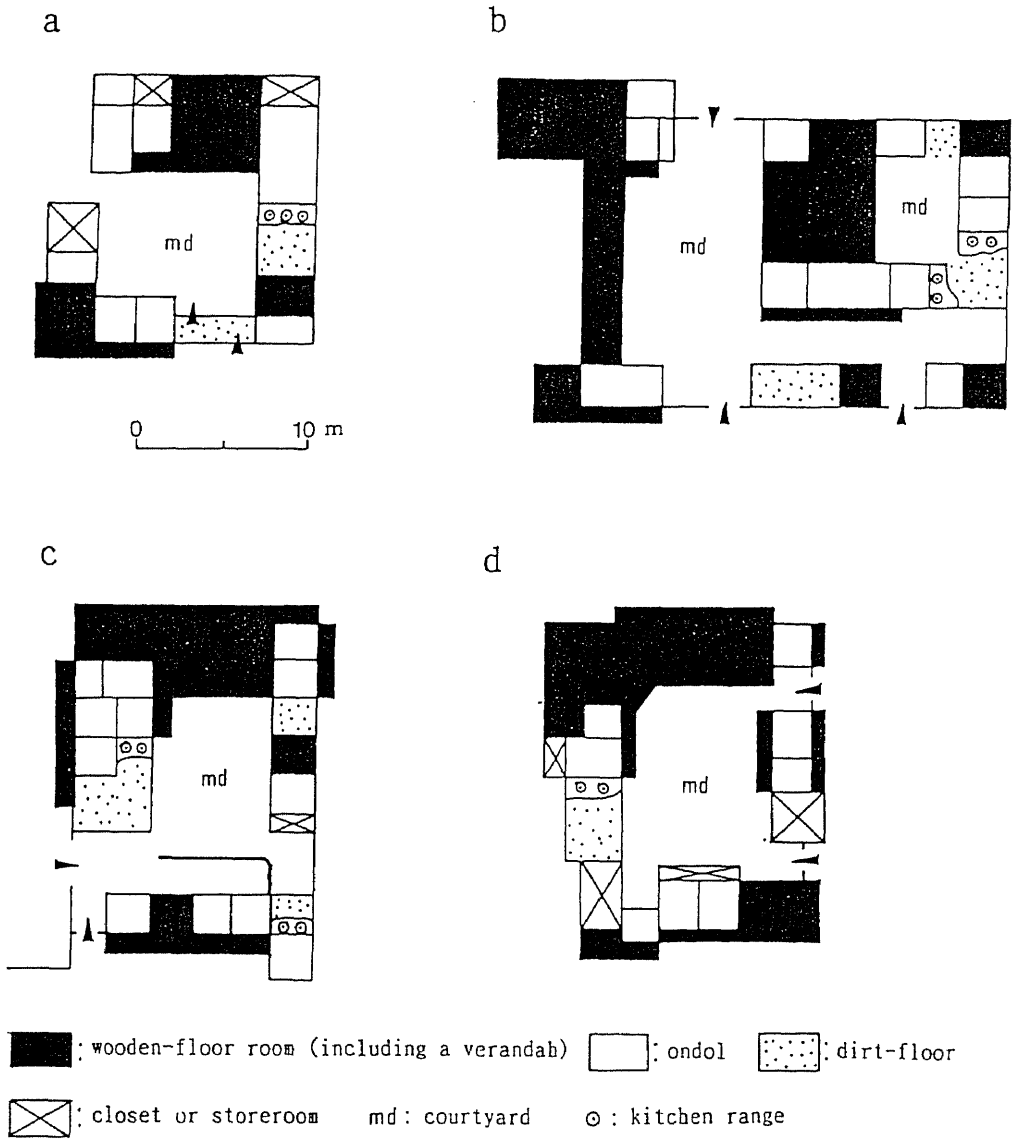
Province, while little investigation has been done on the distribution of this floorplan in South Kyongsang Province so far. The author could observe this floorplan in eight islands from Wan-do (莞島) Island to Hong-do (紅島) Island of South Cholla Province and could know this floorplan to exist the other seven islands west of Tolsan-do (突山島) Island which was the easternmost island in South Cholla Province through the literature and the in interview (Fig.9). In South Kyongsang Province, however, this floorplan could not find as far as the author examined through his field survey in four islands including Namhae-do (南海島) Islnd which is situated close to Tolsan-do Island and the Yochon (麗川) Peninsula in South Cholla Province.The house in Namhae-do Island has basically I-shaped taechong plan or I-shaped taechongless plan with two kitchens on its both ends (Fig.7-h).

(3) Distribution of floorplan with a wooden-floor room

Generally, it has been stated many times until recently that wooden-floor room to be developed in the South Section as a comfortable living room with good ventilation for summer life. For example, Maeng,I.J.(1980) pointed out that taechong, or taechonglike section of wooden floor became larger in the South Section reflecting the hot climate there. Lee,J.W.(1986) assumed that the area of taechong and that of kitchen are in almost inverse proportion. However, most of floorplan types except the chongjukan plan in the North-east Section[15] incorporate one or two kans of wooden floor for two to four ondol rooms. Even in the North-west Section, we can see some instances of

floorplan with a wooden-floor room, although it is laid at the end to avoid separating a row of ondol rooms.

Wooden-floor rooms require special technique and cost in their construction. In the case of the upper-class residence, taechong is made large and many kinds of storerooms, library and raised-floor lounge attached to sarangbang (舍廊房) are also made as wooden floor rooms. Therefore, wooden-floored section occupies a great portion in the whole floor space. This is a common feature to most of the upper-class residences rather than a regional tendency (Fig.10). In the houses of common people, however, wooden-floored section except verandah is only one or two kans in its size. Therefore, the regional tendency of the development of wooden floor appears as its ratio to the whole floor space rather than its size itself (Fig.11).
It is nacessary to examine the function and the introducing process of wooden-floored structure in order to make regional comparison of the development of a living space for hot summer.



a. Choe's residence: Imdang-dong, Kangnung City, Kangwon Province (江原道江陵市林唐洞), (built in the 18th century)
b. Residence of the general head family of Kims of Wuisong: Imha-myon, Andong County, North Kyongsang Province (慶尚北道安東郡臨河面), (built in the 16th century)
c. Old residence of Sr. Tongchun : Hoedok-myon, Daedok County, South Chungchong Province (忠清南道大德郡懷德面), (built in the 17th century)
d. Old residence of Yun, Son-Do: Haenam-wup, Haenam County, South Cholla Province (全羅南道海南郡海南邑), (built in the 17th century)

Fig. 10 Arrangement of a wooden-floor in the upper-class residen

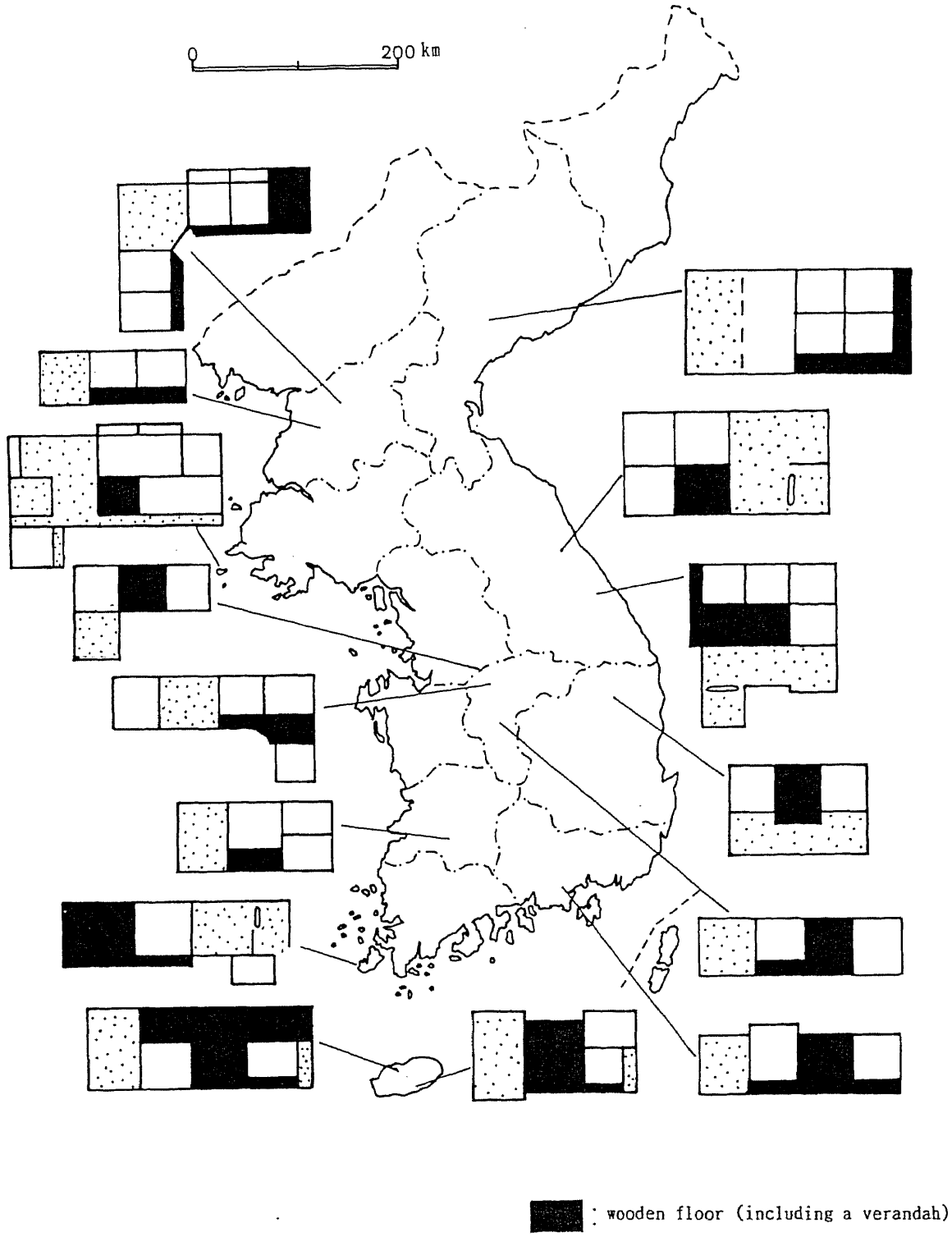


Fig. 11 Regional variation of a wooden-floor arrangement.

CHAPTER III

REGIONAL VARIATIONS OF THE FUNCTIONS OF PROTECTIVE ELEMENTS AGAINST THE COLD AND THE HEAT IN HOUSE FORMS

III - 1. Functions of the wooden-floored structures

1) Functions of the verandah

The wooden-floored section, which constitute the floor plan together with the ondol section and the dirt-floored section, is classified into two categories, a verandah and a room.

The verandah called toenmalu, while is equivalent to Japanese engawa, makes a kind of transitional space to link the inside and the outside of the house. One who is going to enter the room from the outdoors takes off his footwear in front of this verandah, goes up and passes there to enter the room; and when he moves from room to room also, this verandah becomes a convenient passage way for him. In the house with a dirt-floored platform in place of the wooden-floored verandah, one must step down onto the platform and put on his footwear in order to move from room to room. If there is a verandah, however, he is unnecessary to do so. This wooden-floored verandah is a open and well-ventilated place, where one can feel refleshment. Therefore, this verandah is used as a multiple-purpose space for the rest, meal, daily reception of the neibors, and so forth in summer mainly. Besides, it has a function to keep the heat away from the other sections in the house. If a deep verandah is made under the eaves to draw in the front wall of rooms, it

can control the rise of indoor temperature, because the solar radiation and its reflection on the yard can hardly reach the front wall in summer when the solar latitude gets high. Such a function of the verandah can be observed in every region however north or south.

On the other hand, the wooden-floor room proved to differ in its usage according to the floor plan and the region.

2) Functions of a wooden-floor room in the double-row plan

Generally, it has been said that the wooden-floor room were not widely found in the double-row plan houses in the North-east Section. In fact, one cannot find the wooden-floored structures in chongjukan houses of Hamgyong Provinces, except narrow verandah. However, in two-by-two plan houses distributed south of Kangwon Province and at some islands of Hwanghae Province and Kyonggi Province, many cases have been reported that one room near the dirt-floored kitchen of the front row is constructed as a wooden- floor room, which is called simply maru. According to the author's field survey, there are even cases that one room near the dirt-floored kitchen of the back row is constructed as a wooden-floor room.

These wooden-floor rooms in the two-by-two plan have usually an open side to the dirt-floored kitchen without any wall nor door. In some islands of Kyonggi Province, however, all reported cases have a partition wall, only a portion of which is open to the dirt-floored kitchen without door. This type of partition has a common character with that between sangbang and kitchen in the Cheju houses. In many cases,

these wooden-floor rooms had been dirt-floored section called pongdang (封堂) until recently. Although some houses maintain these rooms as the dirt-floor without wooden floor, its ground is a little higher than the neighboring dirt-floored kitchen. One can suppose that the reconstruction of these raised-dirt-floor into the wooden floor was intended in the initial stage, because the hight of the opening to outside is just the same with that of the ondol room. The wooden-floor room incorporated in the two-by-two plan have no ceilings, as in taechong of the single-row plan, and a roof truss is exposed to view. The partition wall of the front yard side are made, in most cases, of wood, but one can also observe the earthen wall in some cases. Doors are generally double-leafed ones. Its floors are much higher than the dirt-floor, more than 60cm in one case for example. A thick stepstone is laid in front of an entry to the wooden-floor room.

These wooden-floor rooms are used, just like in taechong in the Central-west Section, as living rooms in summer, where family members come together for meals, conversations, and taking a rest. They are also employed as workshops for indoor labor. In order to reach the ondol room from the exterior of a house, one must generally go first to the dirt-floored kitchen, and then into this wooden-floor room. When the ondol room facing to the yard is used as a drawing room, sarangbang (舍廊房) for guests, it is possible to reach this room directly from the exterior. However, family members and neighbors go to the ondol room usually through the dirt-floored kitchen and the wooden-floor room, maru. In some cases, this maru is used as a temporary

storeroom for cereals and so forth. However, the closed and exclusive character of storerooms are lacking, because many people frequently enter this room. As far as the author hears, people do not usually regard this maru as a sacred room.

On the contrary, in the dirt-floor-fronted plan distributed in the same areas as the two-by-two plan descrived above, a wooden-floor room in this plan is opened toward the dirt-floored kitchen and, in many cases, are reconstructions of original dirt-floor, pongdang. In case of a 6 kan house with 3 kan by 2 kan plan, one central room of raised-floor section becomes a wooden-floor room, while in case of 9 kan house with 3 kan by 3 kan plan, two rooms can take a wooden floor. When a room facing to the yard becomes a maru, walls of that part are made mostly of wood. In the two-by-two plan and dirt-floor-fronted plan,
there exists a tendency to use earthen wall only for the wall of the ondol room, while the wall of the dirt-floored kitchen and the stall is made of wood.

The height of a wooden floor, compared with a dirt floor, is considerable in the dirt-floor-fronted house, because this type of houses is generally constructed on the surface of gentlly tilted slope and the dirt-floored section occupy the lower part of it. The difference between them in one case of the 9 kan house, is more than 75 cm. This figure is considerable, as floor heights are about 50 cm in other regions except in the Cheju Island. The greater height of floor is probably due to the levelling off the floor for the convenience of indoor movement, rather than due to ventilation and the removal of the humidity under the floor. In

fact, the difference between floor and ground is smaller in the inner part of the house. The space under the floor is closed by the foundation wall, only except the dirt-floor side, so that outdoor winds cannot penetrate directly into this space. In the dirt-floor-fronted house also, threshold at the entrance to the dirt-floored kitchen is considerably high[16]. In mountainous regions, where these dirt-floor-fronted houses are mainly distributed, it is not very important to insist on the ventilation under the floor.

In a section where people get down from the wooden-floor room to the dirt-floored kitchen, a kind of fireplace called hwatu is settled. This is used for the keeping of live charcoal and the cooking of subsidiary articles of diet(Chang,B.W.,1975). Although this hwatu produces warmth to the kitchen and the wooden-floor room, it does not contribute to the heating of ondol. It has rather some common characteristics with Japanese irori, and with a stone brazier called pusop or pongdok in the Cheju houses.

Contrary to the double-row plan of the mainland, a wooden-floor room of the house in the Cheju Island have been interpreted as the same type with a taechong of single-row plan in the mainland, because this wooden-floor room, sangbang, is laid in the center of a house and has ondol rooms on its both side. However, some differences are observed between them, concerning the structure of floor, names, the combination with a kitchen and so forth.

The central room with a wooden floor in the Cheju Island is called sangbang. This name is never used in the mainland. Chang,B.W.(1974) pointed out that the name sambang is also used in some districts of the island and suppose

that this name is older than sangbang. As sam means life, sambang signifies in the literal sence of the word living room.

Although most of sangbang are now wooden-floor rooms, many of them were dirt-floored sections until recently. In sangbang with a dirt floor, dry grasses or straw mats or wooden boards were laid around fireplace, which resemble the Japanese style of dirt-floored dwellings. the height of the wooden floor is very low to make ventilation possible. Therefore, this type of floor aims at the amelioration of living comforts rather than the improvement of ventilation as in the raised-floor construction. In fact, the space under the floor is closed by stones or earth in front of the house, which prevent the penetration of outdoor winds.

Contrary to the two-by-two plan, sangbang is separated by wall from dirt-floored kitchen, but a part of this wall is open and connects directly between these two rooms. It differs greatly from a taechong in the single-row plan. The openings of wall are in some cases furnished and in other cases simply open. Males enter the sangbang usually direct from the exterior, while females enter the room via kitchen. This sangbang is also used as a passage to the ondol room called kudul in the Cheju dialect, and to the storeroom, kopang, which is laid behind the kudul.

Compared with taechong of mainland, differences are observed concerning the functions of sangbang. That is, the arrangement of the altar, and the position and direction of a bow in the Confucian sacrificial rite. In the case of taechong, the taechong and the front yard constitute a unit place for ritual. The altar is put at the innermost part of

taechong. As taechong face to the south, the north side becomes upper seat and people perform a ceremony looking to the north from front yard.

On the contrary, in the Cheju house, the sangbang does not become the upper place at the time of ceremony. The altar is usually set by the wall on the fireplace-side of a main ondol room, kunkudul, and people make bow toward the altar from sangbang. According to the investigation report on the housing life in the villages, Songwup in South Cheju county and Nammun & Ha-dong in North Cheju County, 53 examples took a combination of altar in kunkudul and bow in sangbang. This is the greatest figure among the 66 valid replies. Moreover, there were 8 examples in which altar was set in the secondary ondol room, chagunkudul, and people made bow in sangbang, and were 5 examples in which people made bow in the same room with the altar. Besides them, there were 20 examples in which a place of bow was unknown and the altar was set in kunkudul, while there was no example in which the altar was set in sangbang. Even though the house faces south, people carry out the ceremony to the east or to the west. Therefore, the direction of bow makes a right angle with a line which links sangbang and the front yard. It can be said that sangbang is a self-perfecting space with no requirement to a front yard in the ceremony time, while the taechong in the mainland seems to make a tight combination with a front yard.

In the Cheju Island, one can observe that a storeroom, kopang and a pantry called chetpang are also constructed as a wooden-floor room in some cases. The floor height of these rooms is very low as well as that of sangbang. While

chetpang can be used by women and children at the time of meals and rests, kopang has not a function of living room at all and is only used as a storeroom. In the house with a chetpang, the sangbang is connected not directly with a kitchen, but indirectly via chetpang.

3) Functions of a wooden-floor room in the single-row plan

In the single-row plan, a wooden-floor room is laid either at the center of a house, or at the end of it. The former type is observed in L-shaped or I-shaped taechong house, and the latter is observed in the enlarged plan of the L-shaped or I-shaped taechong-less house, and in the kitcen-centered house. A taechong, laid between two ondol rooms at the center of a house, may be large in the houses of the upper-class residence, with several kan in both width and depth. In the houses of commoners, however, the majority of cases are one or two kan in width and depth.

Normally, in the L-shaped taechong house, the front yard side of taechong is entirely open. Although a paper door, vertical size of which is larger than that of ondol rooms, are attached in the houses of the upper class, the front side of the taechong becomes entirely open too, by opening this door. The rear side is closed by wooden or earthen wall, but in many cases, a part of it is left open in order to ventilate the room. The taechong has usually no ceilings and the roof truss and beams are exposed to view[17]. Under the floor of the room, flues of ondol are not settled. Therefore, outdoor winds can freely penetrate into this space. In farmhouses, there exist cases that the ground under the floor of taechong is dug in order to store seed

potatoes and so forth.

The taechong is a sacred space, which is used to worship a songju, the supreme god among many guardian gods of a homesite. This room, combined with front yard, becomes the place of rituals at the ceremonies of coming of age, marriage, funeral, and ancestral worship. At these occasions, the innermost side of the room, when looking from the front yard, becomes upper seat. In summer, the taechong is employed as a living room and a parlor of the head of a family. It is used also as a passage connecting between anbang, a main ondol room where a housewife lives and konnonbang, a secondary room used by the elderly or children or between outside and inside of the house. In many cases, a grain coffer which has a great value, is settled always at the foot of rear wall of the room. In the families of the upper class which have a great regard for their formalities, the entrance to the room is regulated according to the rank and sex of the family members. These regulations are very weak, however, in the houses of ordinary people, where a taechong is used in many cases as family's living and dining and bedroom in summer.

On the contrary, in the I-shaped taechong house, the functions of the wooden-floor room are regionally differenciated into two types, although the arrangement of rooms is the same. In the first type, the wooden-floor room is used as open space with multiple functions, as in the L-shaped taechong house. In other type, however, the wooden-floor room is employed as the installtion place of homestead god, songju, and also as the storeroom of grains. Even in the houses of middle and lower classes, the wooden-floor

room of the latter type are extremely closed space, the front side of which is invariably covered by wall and door. The door has either papered or wooden leaves. The front door of the taechong is generally higher than that of ondol rooms and its base is very low. As for the door of taechong, in some cases, the height is more than 170 cm and the base is only less than 5 cm from the floor, while in ondol room, the height of doors is mostly about 140 cm and the base of it is settled about 10～20 cm from the floor. These characteristics are also observed in the wooden-floor room in other types of floorplan. The openness of taechong becomes much greater than ondol rooms, if the door is kept open. In fact, however, the door is always closed.

The wooden-floor room of the latter type is not employed, even in summer, for receptions, meals, and sleeping, as the conditions of ventilation and lighting is extremely bad because of its closeness. Many people call this type of room not taechong (大庁), which means literally a kind of hall, but tojang or kwang-maru or simply maru. Tojang and kwang signify a closet or a storeroom[18]. The tendency to employ these names is more marked in the kitcen-centered houses, which are distributed along the coastal and insular regions of South Cholla Province. In the coastal and insular region of South Kyongsang Province, these wooden-floor room are called, in many cases, anchong which means the inner holl. This room, however, functions in a similar way as a closed storeroom.

Misina(1958) and Chang,B.W.(1978) have already pointed out that the word maru means originally not a wooden-floor room as a physical structure, but a place for the

installation of homestead god and the storage of grains[19]. The same answer was obtained according to the author's field survey in the islands of South Cholla Province. In this region, there exists a case in which not only grains but also processed marine products such as salted fish guts and so forth are stored in the maru. The name of maru is also applied to the room of raised-dirt-floor as well as the wooden floor room in this region. This situation implies too that maru is a word that signify not a physical structure, but a function of the room. In Chin-do (珍島), Cho-do(鳥島) and Pogil-do(甫吉島) islands of South Cholla Province, words such as marimun and maremun are inscribed with the Hangul alphabet on the door of maru in order to indicate the room to visitors. Maru and mare signify maru in the dialect of South Cholla Province, and mun means door.

Fig.12 shows the regional differences in the purpose of use concerning the wooden-floor room of single-row plan houses. As its data, the author employs in addition to his own survey the the descriptions and the drawings in previous studies. The wooden-floor room which were clearly indicated to be used as store place and those whose front side were drown to be closed by wall a with small door, are classified as "closed storeroom", while the wooden-floor room with its front side being entirely open in the drawings are regardea as "open living room".

According to this figure, the wooden-floor rooms are used mostly as open space in the region from Kyonggi and Chungchong Provinces to North Kyongsang Province. On the contrary, in the southern coastal and insular regions of South Cholla and South Kyongsang Provinces, there exists a

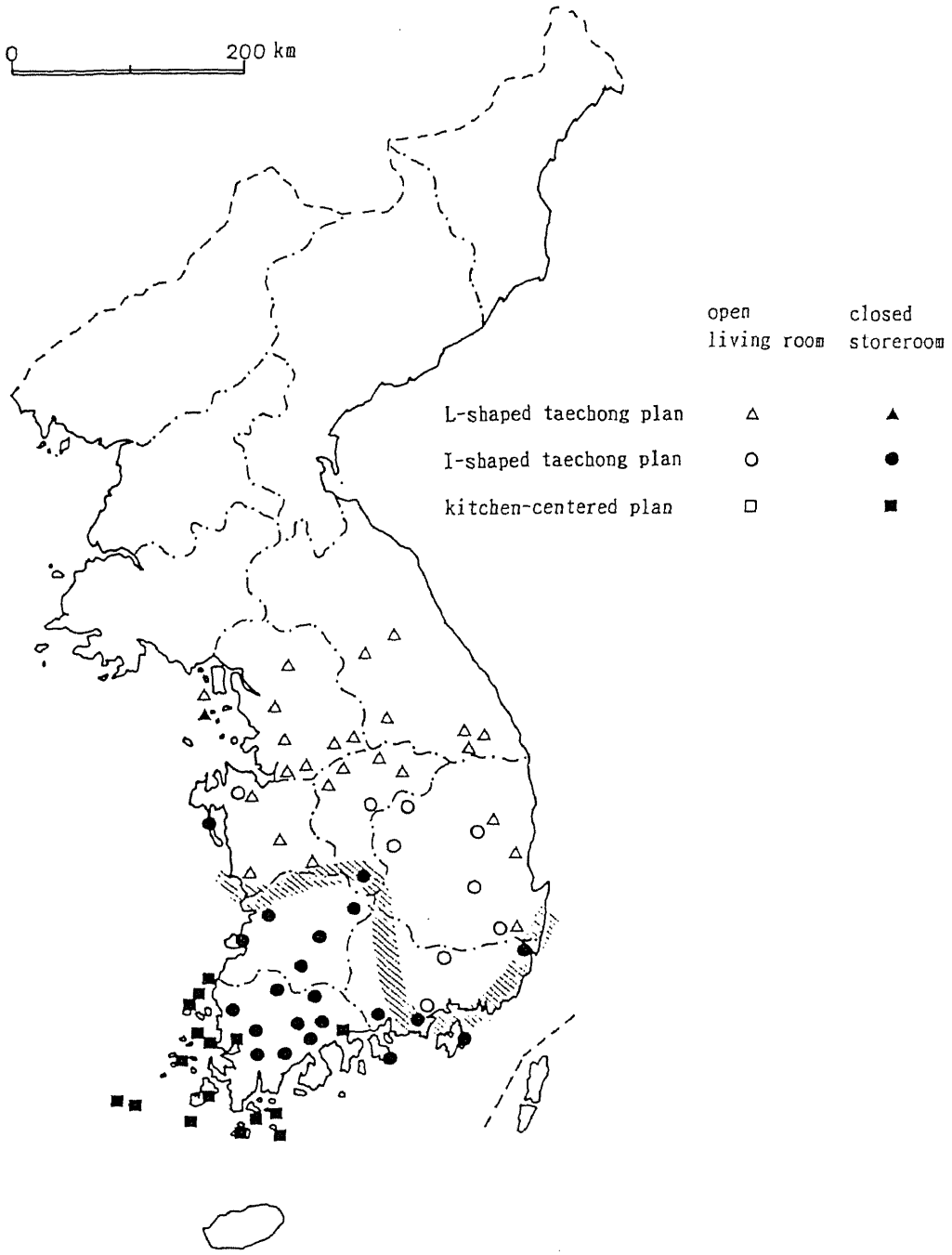


Fig. 12 Use of a wooden-floor room in the single-row plan.

source: Kim, H. S. et al. (1985), Kim, K. O. (1988), etc., and the author's field survey.

strong tendency for the wooden-floor room to be used as a closed storeroom. In the case where the wooden-floor room is employed as a storeroom, a verandah becomes the place for meals, rests, sleeping, and receptions of informal visitors in summer. If there is not wooden-floored verandah, a drainboard or a low bench is settled in front of the entrance to ondol rooms or at the platform with hard-packed dirt-floor under the eaves, thus carrying out the functions of the verandah. In summer days, males of this region also take a nap or talk with neighbors frequently at the center of settlement under big trees called chongja-namu (亭子木). In this way, people of the south where the wooden-floor room is used mostly as a storeroom, make the most of outdoor space in order to compensate the lack of a living room in summer.

Further, in I-shaped taechong house, taechong is frequently reconstructed as additional bedrooms, while in the L-shaped taechong house this phenomenon is seldom seen. In the I-shaped taechong house, each room has its own passage to front yard. Therefore, the existence of taechong is not necessarily indispensable. Moreover, in many cases, the taechong in the I-shaped plan has a tendebcy to separate the rooms on its both sides, while that in the L-shaped plan has a double function, not only to separate but also to connect the rooms on its both sides.

4) Regional variation of the functions of a wooden-floor room

As stated above, the tendency to employ the wooden-floor room as living space in summer is observed more

clearly in the the Central and the North Sections than the Cheju Island. In the South Section, if the wooden-floor room is constructed, it is used as a closed cool room for the purpose of storage. They are never employed as the living space in summer.

As for the wooden-floor room in double-row plan, one can indicate the following three common characteristics. (1) In many cases, a dirt-floored section called pongdang (封堂) is reconstructed to the wooden-floor room. (2) The wooden-floor room has a passage to dirt-floored kitchen and ondol rooms. Among these, only (1) is applicable to a taechong in the single-row plan. (2) and (3) are specific characters observed in the double-row plan, although in the Cheju Island the latter characteristic is seen mainly among women and children.

If one stresses the function of room as the living space connected with the dirt-floored kitchen, regardless of the structure of floor and the dimension of the room, then the chongjukan in the North-east Section, North Hamgyong Provinces belongs to this category,too. Therefore, this type of living rooms is distributed in the North-east Section and the Cheju Island (Fig.13). While the chongjukan, where the iron pots for cooking are settled, have a tendency to be regarded as women's space, sangbang in the Cheju Island, which has a partition wall and door to the kitchen side, especislly the outer half of the room facing to front yard, are regarded in some cases as men's space.

In the two-by-two plan houses, one can observe a wooden-floor room with open side to both dirt-floored kitchen and front yard or only to front yard. The wooden-

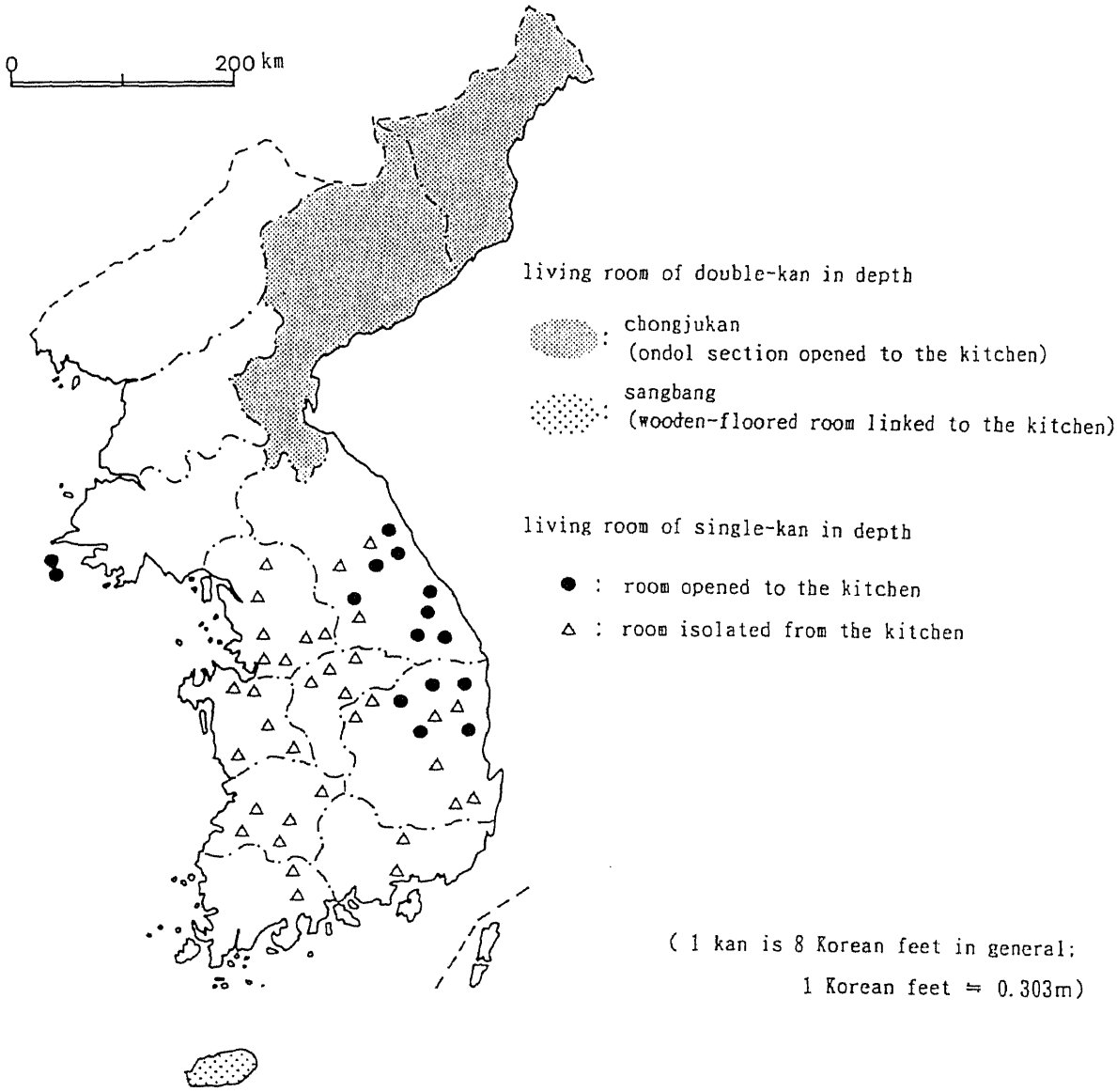


Fig. 13 Position of a living room to a kitchen in the double-row plan.

source: Kim, H. S. et al. (1985), Kim, K. O. (1988), etc., and the author's field survey.

floor room, in this case, has a function as a passage from yard to ondol room near the dirt-floored section of the back row, not via the dirt-floor. So, in this case, the wooden-floor room plays a similar role to a verandah and in some cases, the depth of this wooden-floor room is very small, too. These wooden-floor rooms can be considered as a intermediate type between those in the double-row plan and the single-row plan (Fig.14).

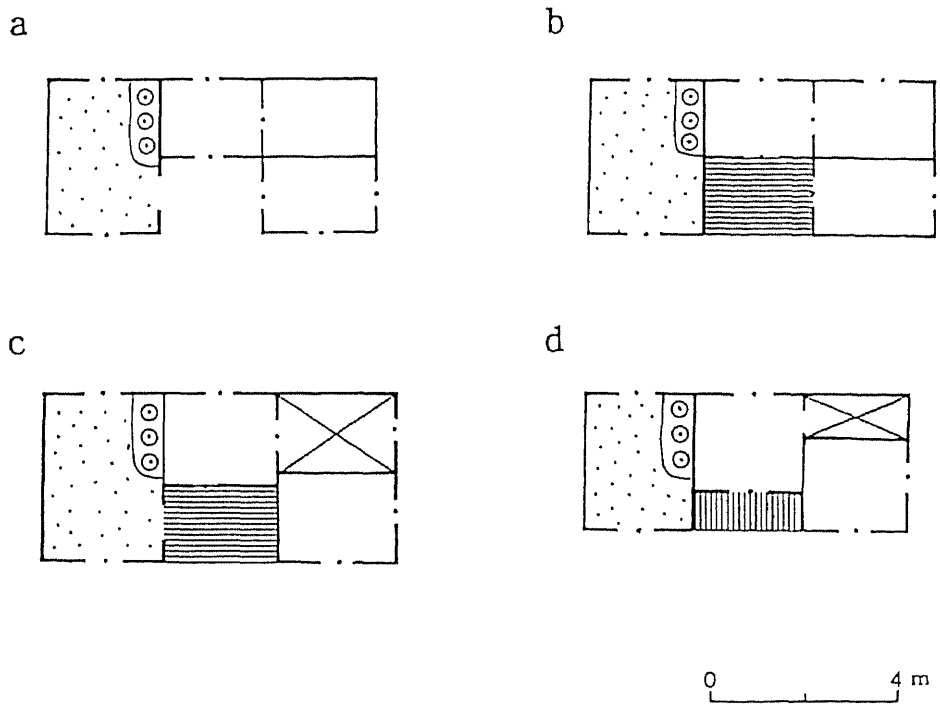
III - 2. Openings of the ondol room

1) Development of heat insulting structure and the necessity of its opening

In this section, another device for the protection against the heat, i.e.openings of the ondol room, is examined in terms of regional tendencies.

An ondol room is the main living space of the Korean house. In order to raise the efficiency of heating, the dimensions of the room are relatively small, with low ceiling and limited area. Materials which have a big thermal capacity, are utilized for wall, ceiling, and roof[23] in order to prevent the loss of heat to outside. These characteristics are favorable in winter, but in summer they may become faults to residents.

Although roof and wall with a big thermal capacity will hinder the penetration of heat from outside in summer[20], absorbed heat in the daytime will be released to inside at night. Consequently, the temperature of rooms at night will be remain uncomfortably high, if the ventilation of rooms is not practiced. Further, the heat of lights or human bodies



a. Unkok-ri, Chong'an-myon, Koesan County, North Chungchong Province (忠清北道槐山郡青安面雲谷里). (Kim, H. S., 1973).
b. Shinmae-ri, Salmi-myon, Chungwon County, North Chungchong Province (忠清北道中原郡沙味面新梅里). (Kim, C. K., 1983)
c. Tundok-ri, Tunnam-myon, Imshil County, North Cholla Province (全羅北道任実郡屯南面屯徳里). (Kim, K. O., 1988)
d. Osan-ri, Sanso-myon, Changsu County, North Cholla Province (全羅北道長水面山西面五山里). (Kim, K. O., 1988)

Fig. 14 Two-by-two plan with a wooden-floor room opened to the front yard.

raises the temperature of rooms because of its small dimensions[21]. In ondol rooms, it is necessary, even in summer, to send hot smoke occasionally into the ondol flues for the purpose of the removal of humidity under the floor, so that its heat must be taken away also as soon as possible.

If the wooden-floor room can be utilized as living space, family can select their living room between the ondol room and the wooden-floor room according to the changes of the seasons. If this solution is impossible, it is necessary to attach openings to the wall of the ondol room, in order to improve the ventilation and lower the temperature inside the rooms.

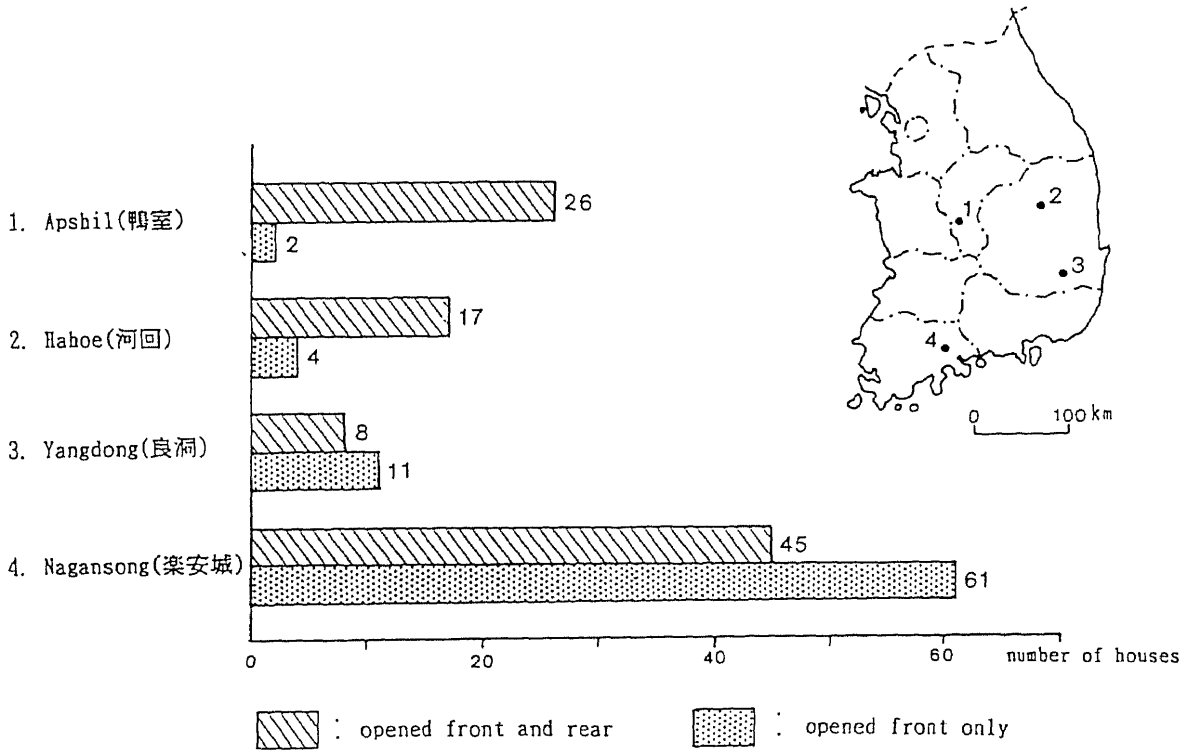
2) Regional differences concerning the development of openings

For the ventilation of rooms, it is most effective to give two openings, one in the front side and the other in the rear. The opening on the wall of the north side, however, becomes a problem in winter, because the dominant wind in that season comes from north. In the houses of the upper class is employed mostly a kind of double door, which is composed of a sliding door and a hinged door, both attached papered leaves. In the houses of ordinary people, however, single door is the great majority, so that opening on the rear side of the room becomes necessarily small in order to prevent the penetration of north wind.

In the single-row plan, we can point out that the ventilation by front and rear openings is not so stressed in the houses in the South Section. This conclusion is the

result of the comparison among several regions concerning the openings of anbang, or kunbang, which is a main place of family life. According to the report on the houses of Apshil Village in Chongwon County, North Chungchong Province (Choe, H.S.et al,1981), there is no house with taechong, and only small-scale I-shaped houses of single-row plan exist. Among 28 houses in total, 26 houses have openings front and rear. On the contrary, the houses with front and rear openings are less than that with only front opening in such regions as Nagansong village in Sungju County, South Cholla Province, and Yangdong Village in Wolsong County, South Kyongsang Province. The author observed these tendency also in Yongmi-ri in Kosong County, and Yongchon-ri in Hadong County, South Kyongsang Province in the South Section. Kim,H.S.(1985) stated that it was a specific feature in the houses of Central Section to have openings not only in front wall but also in rear wall (Fig.15).

On the other hand, the partition wall between front row and back row in the double-row plan makes impossible a passage of wind through rooms. In some cases, doors are attached to this partition wall, but they are generally too small, about 50 cm by 120 cm, to ameliorate the ventilation of rooms. When the function of front row rooms and that of back row rooms are determined respectively as anbang and sarangbang, no door is attached to the partition wall, which acts as separation line between men's space from women's one. Moreover, when back row rooms are used as a closet or storeroom called tojang, it is normal that the end of front row may have relatively better condition for ventilation, if this room has two openings, one on frontwall and the other



1. Mundok-ri, Munwi-myon, Chongwon County, North Chungchong Province; Apshil (忠清北道清原郡文義面文徳里; 鴨室集落)
2. Hahoe-dong, Pungchon-myon, Andong County, North Kyongsang Province; Hahoe (慶尚北道安東郡豊川面河回洞; 河回集落)
3. Yangdong-ri, Kangdong-myon, Wolsong County, North Kyongsang Province; Yangdong (慶尚北道月城郡江東面良洞里; 良洞集落)
4. Songnae-ri, Nagan-myon, Sungju County, South Cholla Province; Nagansong (全羅南道昇州郡楽安面城内里; 楽安城集落)

Fig. 15 Position of opening in the main ondol room.

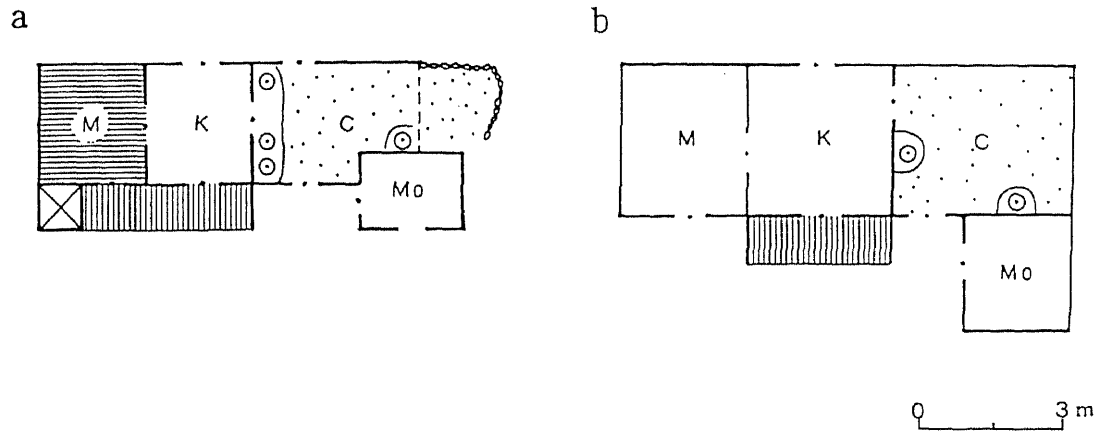
source: Choe, H. S., et al. (1981), North Kyongsang Province (1979a, b), Kim, H. S. (1979b).

on the side wall.

The kitcen-centered plan in the Cheju Island, famous region for strong winds, are low and have very closed nature[22]. Only sangbang in the center of a house has two openings on front and rear side of the room. The rear side of the other rooms, including a kitchen, is entirely closed. Especially, kun-kudul, a main ondol room used as the bedroom of family head in the Cheju house, has its openings only to front side and to the side of sangbang, because there exists a storeroom, kopang, behind this room. Although the penetration of fresh air is possible through these two openings, the efficiency of ventilation is not so good, because the two openings meet at right angles. Moreover, the opening of the front side of the room is not a door but a window (Wakabayashi,1988). Therefore the base of this window is situated too high from the floor to bring fresh air to the lower part of the room[23].

Unfavorable in terms of ventilation is a room, mobang, in the kitcen-centered plan destributed in the southern coastal and insular regions of South Cholla Province. Mobang means a corner room in the literal sense of its name. When this room is laid in front of kitchen, its front wall is easily heated by direct insolation and reflected light from the front yard (Fig.16). Furthermore, its dimensions are very small. it has in some cases only one opening. Even with two openings, one is attached on the kitchen-side wall, so that it is difficult to remove the heated air of the room. In small rooms in this type of floorplan surrounded by wall, temperature can easily raise even by the heat of human body.

Except in the Cheju Island, we can state a genaral



Mo: mobang (corner room)　K : kunbang (main ondol room)
C : chongji(kitchen)　M : maru (storeroom for grain)

a. Shillyuk-ri, Chodo-myon, Chindo County, South Cholla Province
(全羅南道珍島郡鳥島面新陸里), (the author's survey, 1986)
b. Chin-ri, Imja-myon, Sinan County, South Cholla Province
(全羅南道新安郡荏子面鎭里), (Kim, K. O., 1988)

Fig. 16 Position of the room, "mobang" in the kitchen-centered plan.

tendency as follows. In the Central-west Section, where the wooden-floor room with open nature is developed, ondol rooms are relatively better ventilated, too. On the contrary, in the South Section, where the wooden-floor room have a closed nature, other rooms are not nacessarily open to compensate the closedness of the wooden-floor room. Its openings are in many cases very limited in number and small, too.

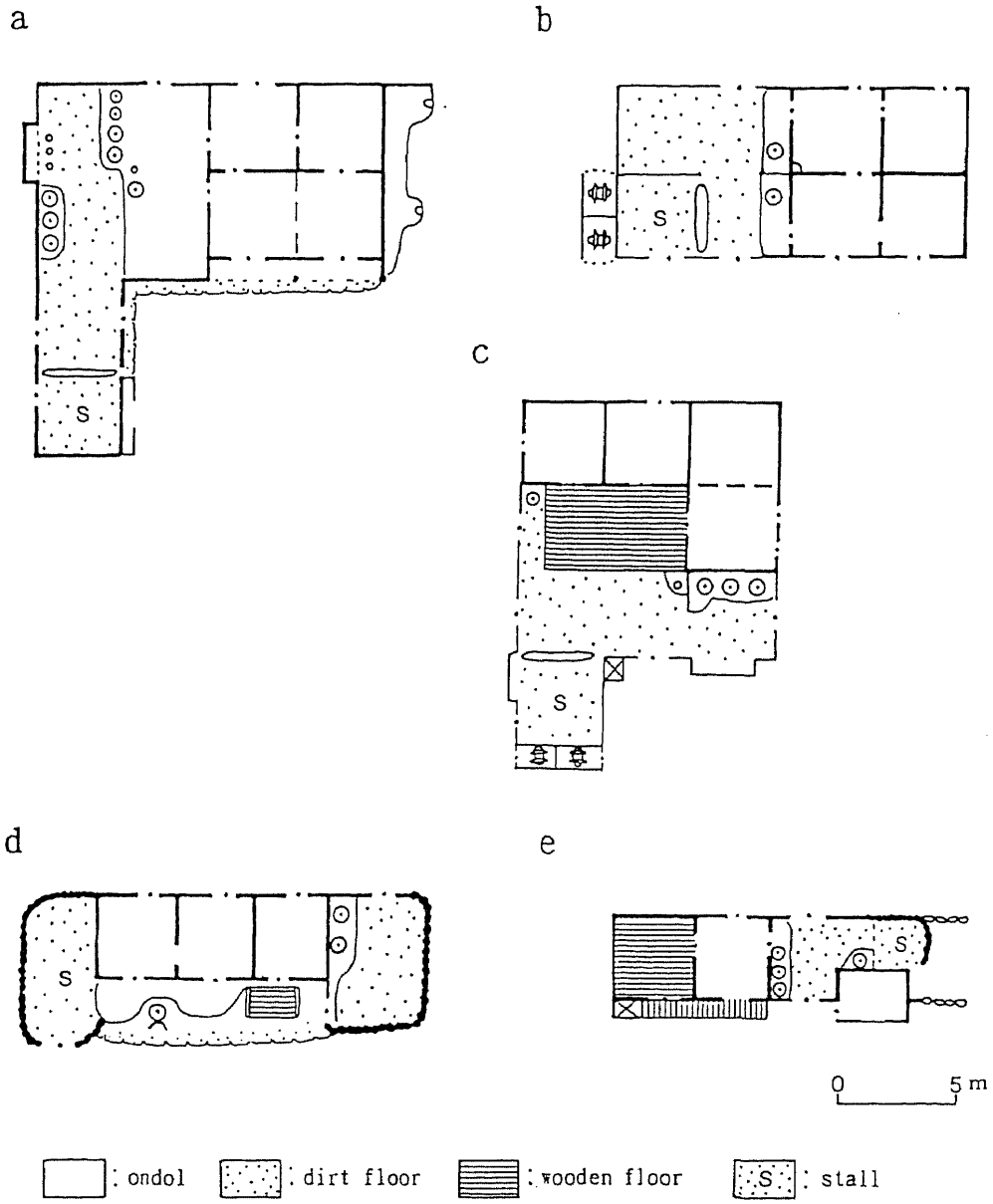
III - 3. Keeping warm in the stall-equiped house

1) Types of the stall-equipped form in double-row plan houses and the keeping warm

In this section, the regional variations of the stall-equipped form in terms of protection against the cold and keeping warm.

In the house of the double-row plan, except the kitcen-centered plan in the Cheju Island, the stall is generally annexed to the dirt-floored kitchen of main building. When the stall is included in the space of the dirt-floored kitchen, the plan of main building takes an I-shaped plan. If it projects foward from the dirt-floored kitchen, then the plan becomes L-shaped one (Fig.17).

Generally, the ground of the stall is lower than that of the dirt-floored kitchen by 5~15 cm, which is relatively shallow compared with that of Japanese farmhouse[24]. The amount of litter is also less abundant. These conditions make the keeping of heat in the stall somewhat inefficient. The litter remains during several days in the stall and then is removed to outside. It is not practiced to add new litter



a. L-shaped chongjukan plan: Pukchong County, South Hamgyong Province (咸鏡南道北青郡) (Kon. 1924)
b. I-shaped two-by-two plan: Omok-ri, Wondok-wup, Samchok County, Kangwon Province (江原道三陟郡遠德邑梧木里) (the author's survey, 1981)
c. dirt-floor-fronted plan: Omok-ri, Wondok-wup, Samchok County, Kangwon Province (江原道三陟郡遠德邑梧木里) (the author's survey, 1981)
d. I-shaped taechongless plan: Chunghyo-dong, Tong-ku, Kwangju Direct City (光州直轄市東区忠孝洞) (the author's survey, 1980)
e. kitchen-centered plan: Shillyuk-ri, Chodo-myon, Chindo County, South Cholla Province (全羅南道珍島郡鳥島面新陸里) (the author's survey, 1986)

Fig. 17 Position of a stall in the main building.

on existing one. The removed litter may be carried to the compost shed, or when it does not exist, is simply scattered on the front yard. In the latter case, cattle is brought on it during the daytime, in order to give their excretions. The litter is then utilized as manure to the farmland.

In many cases, the upper part of the stall is employed as store space by putting boards above 140～150 cm from the ground. Straws to feed and fuel are generally stored on it. The ground of stall is slightly declined to the rear. Behind it, exists a lavatory. In fact, it has the same function as an outside privy, because one cannot go to it directly, but must make a outside detour in order to use it. In this type of lavatory, the excretions of cattle are moved away to the rear, and accumulated in the same spot with human feces. It is therefore convenient to carry out the manure from this type of lavatory.

In terms of the keeping of heat in stall, the relative location to the kitchen ranges is important, because it is a main source of heating. In I-shaped house, the stall is very near to the kitchen ranges, so that with short distance is it possible to feed boiled fodderto cattle. In the I-shaped house, however, the area of the dirt-floored kitchen is necessarily reduced, so space for the indoor labor being limited. Furthermore, the nearness between the kitchen range and the stall produced hygienic problems more easily than in the L-shaped house. In the house of double-row plan, this problems can be partly ameliorated by the separation of uses, thus kitchen ranges of the front row being used for fodder-boiling and that of the back row for cooking.

On the contrary, in the L-shaped house, the heat from

the kitchen range warms up the stall less effectively because of remoteness. Moreover, the keeping of heat is much more difficult, because walls of its three sides are exposed to outside air and in many cases are boarded. This type of stall is rather suitable to the ventilation of it in summer, and also to the protection of living space against bad smells.

In the stall-equipped house with a two-by-two plan, the L-shaped house is distributed in the north of the line connecting betweem Kangnung(江陵) and Wonju(原州) of Kangwon Province, and the I-shaped one is seen in the south of it. In chongjukan house which are seen in the region of further north, the stall-equipped form is not always adopted and the stall is not laid near a fire spot. One can suppose from these observations that the keeping of heat in the stall is not so stressed in the North-east Section, even in the stall-equipped houses. Probably, the importance is rather laid upon getting a wide space for indoor labor.

In Japanese houses of stall-equipped form, the difference of temperature between stall and outside is reported to be no more than 2.0～2.4°C, regardless the existence of fireplace. Also in the modern knowledge about livestock, it is not indispensable to feed boiled fodder to cattle(Tsurufuji,1966). Though it is difficult to compare the Korean houses with that of Japan, because of the great differences concerning the dimensions of houses and the number and the structure of the kitchen ranges. One cannot say yet that the keeping of heat in the stall is specially stressed in cold district, even though a master always keep his cattle with tender mind as a member of his family in the

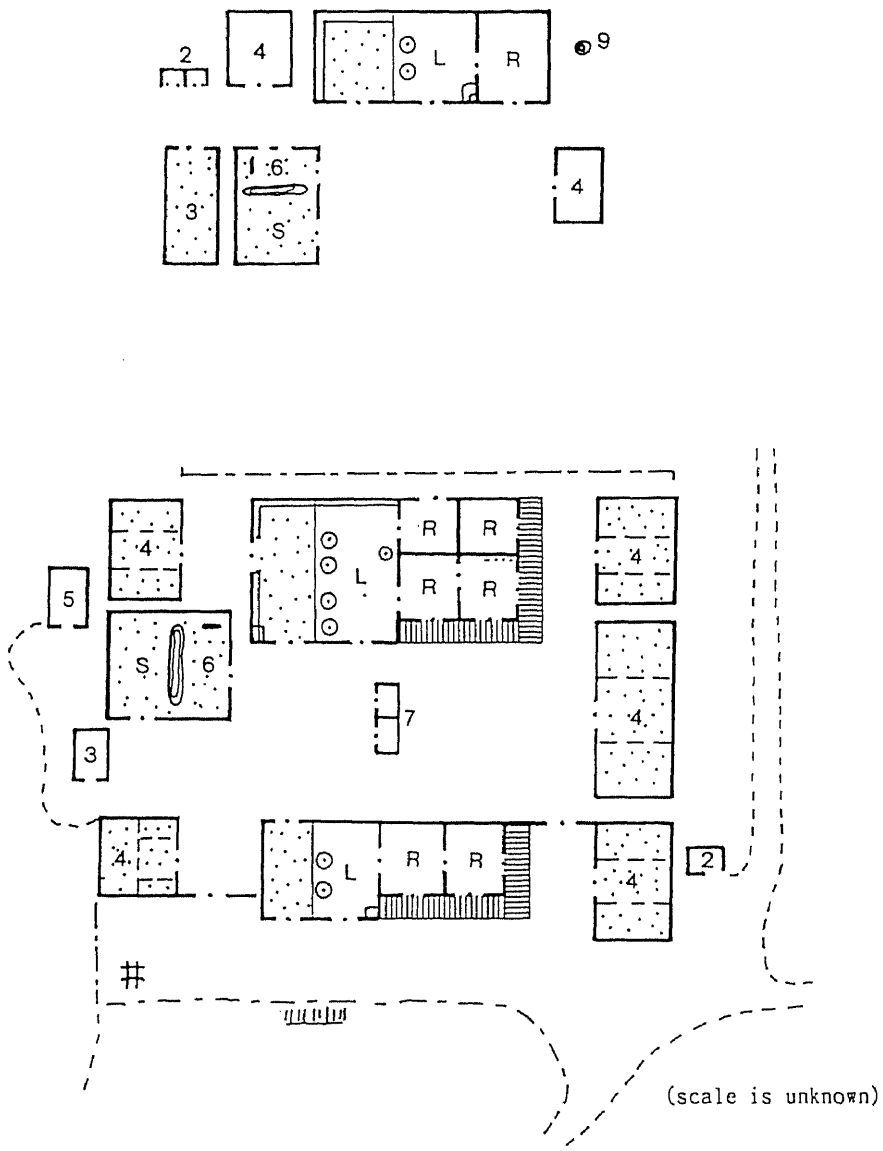
house where he can always look after his valuable cattle.

In fact, as in a sketch by Odauchi(1924), some houses of sedentary slash-and-burn farmers have no stall in the main buildings and make them in the independent buildings. These buildings,however, have no open side where mangers are exposed to the outside winds, there are involved some area of space for care between the manger and the wall (Fig.18).

2) Types of the stall-equipped form in single-row plan houses and the keeping warm

In this section, we will examine the stall-equipped house in South Cholla Province. In terms of the position of stall, two main types can be identified. (1)Stall is laid just adjacent to the kitchen. (2)Stall is located at the opposite end to the kitchen.

The former type is observed in the kitcen-centered house, where fuel holes for ondol rooms are concentrated in the kitchen. In this type, the cooking range is used also for the heating of the main ondol room, kunbang, next to the kitchen, while fodder are prepared at the range for the heating of the secondary ondol room, mobang. The distance of a fire spot is rather shorter than in the double-row plan, and the outside wall of the stall is made of stone and mud, thus having much bigger thermal capacity than wooden wall. This stall, however, has no door and is always open to the outside. Inside the dirt-floored kitchen, adjacent section to the stall is utilized not only as a place for the preparation of cattle fodder, but also as place for taking a bath. In the single-row plan house, the dirt-floored kitchen tends to become a place of single function, cooking, but in



L: chongjukan K: kitchen S: stall or stable
R: ondol room

1: storehouse 2: privy 3: hogpen 4: storehouse
5: compost shed 6: manger 7: grain storage
8: fireplace 9: smoke vent

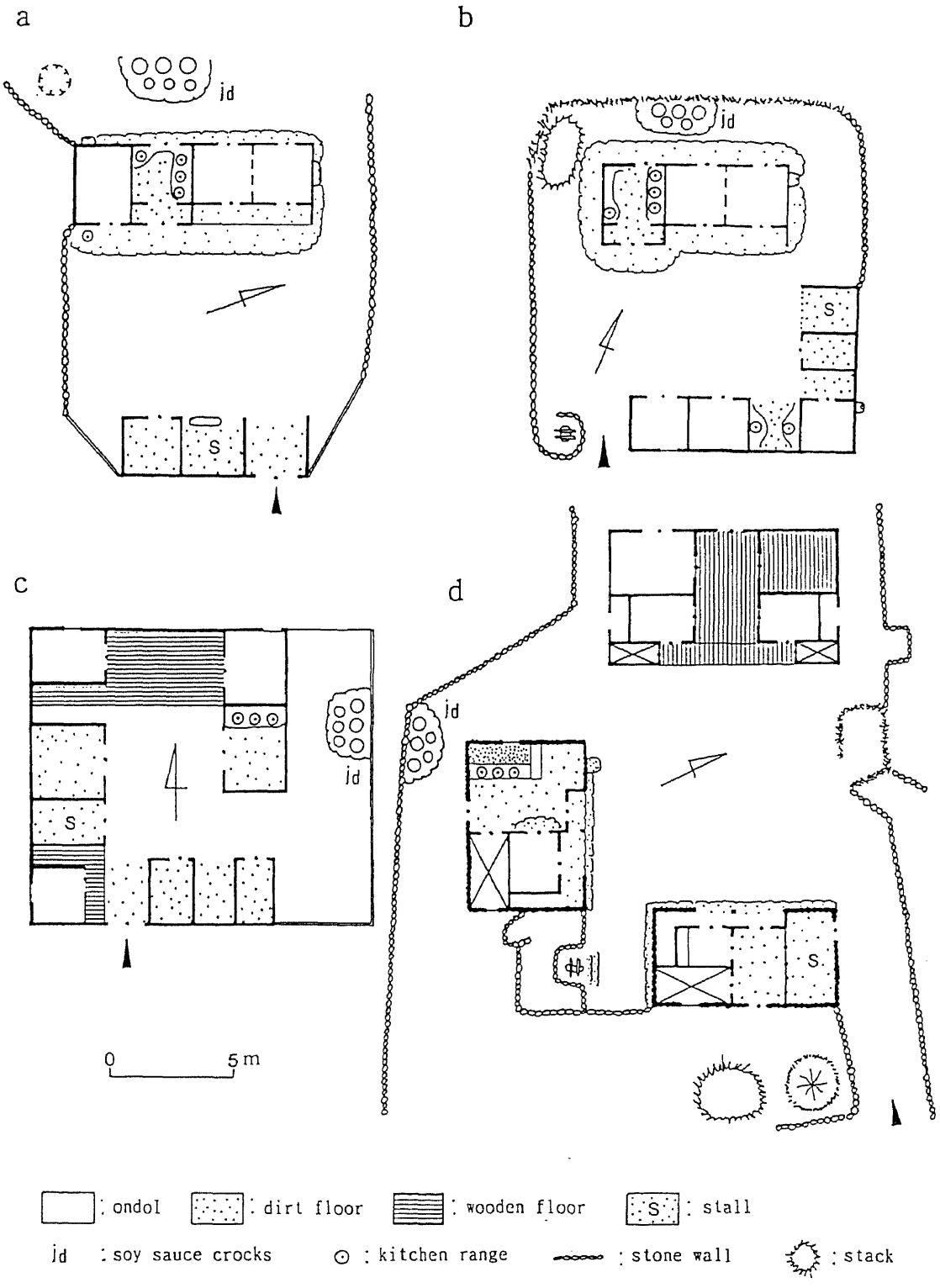
Fig. 18 Chongjukan houses of the sedentary slash-and-burn farmers in South Hamgyong Province. (after Odauchi, 1924)

the dirt-floored kitchen in the kitcen-centered plan has many functions. Generally, the former type of kitchen is called puok, while the latter is called chongji similarly to that in the double-row plan. The latter type of the kitchen shows an intermediate character between those in the double-row plan and the single-row plan.

On the contrary, in the latter type of stall-equipped house, works of the stall are entirely separated from the functions of the kitchen. For the preparation of fodder, fuel hole for the next ondol room is utilized, but its heat seldom reaches to the stall. Also one cannot look at cattle directly from their living space inside the house. In order to practice every kind of works about cattle, one must go through the front yard of the house. Therefore, this type of stall is none other than that in the outbuilding in nature. The advantage of this form is not in the protection of cattle, but rather in the economy of construction.

In this connection, it is interesting to mention the stall in outbuilding, which is entirely separated from the main building. Generally speaking, the single-row plan house in most cases has a stall in the outbuiding. Except a few cases distributed in the region where double-row plan is dominant, the single-row plan house lay a stall in the outbuilding generally. In this case, there are two form of arrangement of stalls. Some of them are laid in the independent stables, and others are in the part of out-buildings. The latter form is widely observed(Fig.15).

Compared with the double-row plan, a marked characteristic of the single-row plan is that each part with its different function can be added to the existing



a. Samhung-ri, Kimgwang-myon, Ansong County, Kyonggi Province (京畿道安城郡金光面三興里). (the author's survey, 1976)
b. Kuam-ri, Wansung-myon, Chinchon County, North Chungchong Province (忠清北道鎮川郡万升面旭岩里). (the author's survey, 1976)
c. Sangdo-ri, Songhae-myon, Kanghwa County, Kyonggi Province (京畿道江華郡松海面上道里). (Chang, B. W., 1980)
d. Songwup-1-ri, Pyoson-myon, South Cheju County, Cheju Province (濟州道南濟州郡表善面城邑一里). (Kin, H. S., 1978b)

Fig. 19 Position of a stall in the outbuilding.

structure, and the house can be gradually expand almost freely. In the house of the double-row plan, each part of it is combined with each other, so that they can be seen as the elements of a integrated whole. On the other hand, in the house of the single-row plan, each room is not connected with each other, at least inside the house. Even to move from one room to the next room, one has to utilize front yard as a passage. If the fuel hole of ondol exist outside of the kitchen, it is employed for the preparation of fodder, and fodder are carried to the stall via front yard. In this case, fuel hole of ondol does not contribute to the heating of the stall at all.

In the Cheju Island, stall is laid in the outbuilding. Arrangement of stall has several types. (1)Stall occupies a part of the subsidiary building in which exist ondol rooms (2)Stall is annexed to storehouse or special building for cooking. (3)Stall occupies a building by itself, and so forth. In the Cheju Island, it is not that several parts are simply added to extend a house, just like the single-row plan in the mainland, but the space of a building is subdivided into several sections. This style is also applied to the outbuildings in the most cases. Consecently, the entrance of a building is of common use, even if it is composed of several parts with different functions. In the Cheju Island, outbuilding with a plan like a terraced houses in which sevaral compartments stand side by side in a single row along the edge of yard, is not as widely observed as in the mainland. The outside wall of stable is made, in most cases, by piling up basalt stones with many gaps.

In the case of Songwup village in the Cheju Island,

There are 39 examples which have stalls. Among them, 5 examples lays stalls in the outbuildings which includes a few ondol rooms, and 2 of them have stalls also in the barns which include no ondol rooms. Moreover, there are 10 stables in the independent buildings, and 26 are combined with storehouses or cooking buildings. Among these 26, 7 examples are combined with the cooking buildings separated from the main buildings. However, the most houses have no manger in the stable, because people have no practice to give boiled fodder to the cattle in the Cheju Island.

3) Regional variations of the floorplan with a stall-equipped form

As described above, stall-equipped house with double-row plan, which is distributed from North Hamgyong Province to Kangwon Province and further to the northen part of North Kyongsang Province, show the regional tendency that as one proceeds toward the south, the dimentions of the dirt-floored part becomes smaller, and stall is laid nearer to the kitchen range. The types of stall arrangement are changed from stall-equipped form to stall-separated form, intermingled partly with a stall-equipped form of single-row plan. On the other hand, in South Cholla Province, stall-equipped houses in which stall is combined with a kitchen are seen in the distribution area of the kitcen-centered house.

In terms of the use of space inside and outside of a house, the shift from stall-equipped house with double-row plan to stall-separated one with single-row plan can be interpreted as the shift of the following direction: from

the first stage where the functions of the dirt-floored section in the main building is very important, through the second stage where a part of the functions of the dirt-floored section is moved to yard, to the third stage where the place of work is almost entirely shifted to yard. Concerning the keeping of heat in the stall-equipped house where a stall is combined with a kitchen, its effects are rather greater in the south part of Kangwon Province, where a part of functions of the dirt-floored section as a workshop is already shifted to yard, and the distance to a fireplace is also short in the stall-equipped house of single-row plan in the southwest part of South Cholla Province, compared with that in double-row plan house. In the stall-equipped houses of single-row plan in South Cholla Province, however, a stall cannot be completely closed from outside with doors, like in double-row plan houses, but always open to the outside. Consequently, it is more natural to suppose that the development of this form of stall-equipped house is rather due to the demands of the economy of construction materials and to the convenience for the preparation of cattle fodder which employ a fuel hole of the ondol room, and for the management of valuable animals of traction rather than the results from the necessity to the protection against the cold. In the kitchen-centered house, we can observe the same tendency that a stall becomes separated from the main buiding, once a outbuilding with an ondol room and its fuel hole is constructed.

CHAPTER IV

BACKGROUND OF THE REGIONAL VARIATION OF THE HOUSE FORM

IV - 1. Tradition of the raised-floor construction in Korea

It seems to be the genarally accepted opinion today that the wooden-floored structure in the Korean house is descended from the raised-floor construction in the southen culture (Kim,K.O.,1988). On this opinion, however, an argument rose in the 1920s. This discussion ended without enough consideration nor clear conclusion, in spite of its significance.

However, even though there were the raised-floor structures in the Korean Peninsula and the Cheju Island in the prehistoric or ancient age, we have few grounds for interpretting those structures to come from the south and the wooden-floored structures in present days to be descended from the ancient raised-floor structures. Among the archeological remains and the historical documents also, we can hardly find the evidence for the raised-floor dwellings or the wooden-floored rooms, compared with the pit dwellings and the ondol system, except some fragmentary descriptions. Therefore, there is much room of argument as to the opinion that the present wooden-floored structure traces its source to the south.

Log house illustrated in the mural paintings of the tumulus of ancient Koguryo(高句麗) excavated in Maxiangou, Jilinsheng (吉林省麻線溝), China, shoes a raised-floor obviously as often referred to. However, it is not clear

whether it is a dwelling house or a storehouse. House-shaped earthenware with raised-floor found in the Silla(新羅)-Kaya(伽耶) region, present South Kyongsang Province, is the same case. Storehouses with raised-floors on the piles can be seen not only in the southern regions but also in the northern regions generally (Watanabe,1984). Many storehouses with the raised floor and the log wall are observed in the Northeastern Eurasia. Moreover, another instance of the house-shaped earthenware which Chu, N.C. (1980) showed as a evidence for the raised-floor structure in the ancient archetecture seems to be a dwelling house. However, it looks more like a little raised floor developed from the dirt floor than the high-raised floor with underfloor draught. As to the documentary literature on the raised-floor dwelling, a sentence, "Sukshinshi people, who go by the name of Umnu, live in nesty dwellings in summer and in pits in winter" (肅慎氏一名悒婁・・・夏則巢居冬則穴処) in "Cinso"(晋書) is often quated. This term of nesty dwelling(巢居) is interpreted generally to be a kind of raised-floor dwelling rather than the tree dwelling (Kim,C.H.,1970; Chu,N.C., 1972). However, Umnu was a tribe who lived in the Littoral Provinces of Siberia, and custom of the seasonal change of dwelling between summer and winter is a trait seen among the tribes with gathering-hunting economy. Although there are known few instances of the summer dwelling built with a raised-floor structure, Nivkhi(Gilyak) people, who make a fishery life on the lower Amur, live in the pit dwelling in winter and in the raised-floor dwelling in summer. Kamchadal, a native tribe in the Kamchatka Peninsula, also use a raised-floor storehouse for a summer dwelling.

In the article of building included in Vol.33 of "Samguk-Sagi"(三国史記)[25], a government-complied history edited in 1145 of Koryo(高麗) period, we can find a mention as to the housing regulation in Silla(365-935), that people were prohibited to use high quality wood for the floor board according to their classes. Moreover, in "Samguk-Yusa"(三国遺事)[26], there is an episode: "The Rev. Pak-pak built a boarded hut (panok:板屋) of 8 feet square to live in. Therefore his hut was called boarded room (panbang:板房). These documents are interpreted to be evidences which indicate the existence of the wooden-floored houses in Silla period. However, no terms directly mean a raised-floor structure itself. Especially as to the latter, it is not clear whether the terms, "boarded hut" and "boarded room", mean a boarded floor or a shingle-roofed hut or a board-sided hut.

Besides, there are two more different interpretations. One interpretation say that these terms were used to emphasize a wooden floor because of its rareness in those days(Kim,C.K.1970), while the other explains that these terms have no spacial sence of emphasis but contrast his boarded hut with a cave where another bonze lived(Chu,N.C.1980). Even though these terms could be interpreted to be a wooden-floored structure, it might be difficult to think that a temporary hut for bonze's ascetism took a raised-floor structure. It might be possible also that the Rev.Pak-pak laid board on a part of the dirt floor as we can see the instance yet in the Cheju Island.

As to Paekche(百済) situated in the southwestern part of the Korean Peninsula, there are few ancient documents and archeological findings. Sentences such as "Paekche people

lives on the raised place avoiding the land humidity" (百濟其民上著地多下濕)[27] in "Hou-wei-shu"(後魏書) and "the foun-dations are so high in many houses that all the people use ladders" (以基多高故須梯升) in "Choson-pu"(朝鮮賦), which are the rare documents to present some information on the Paekche houses, are often quated as evidences for the raised-floored construction in the Paekche period (Yoon, C.S.,1972). However, the former does not include the phrase which indicate a raised-floor structure directly and there can be presented the other interpretation. For example, Lee,M.S.(1980) assumed this sentense to mean a high land or mountain but not a raised-floor dwelling. As to the latter, it is somewhat doubtful to interpret this sentence to be an evidence for the raised-floor structure, because one can interpret it to indicate a hight of the earth mound on which a house was built.

It is thought that the ondol and the wooden-floor were incorporated into the same house together in the Koryo (高麗) period (918-1392) as in the phrase, "...to live in the heated room in winter and in the cool hall..." (・・・冬以燠室 夏以涼庁・・・) in "Kongju Tongjong-Ki" (公州東亭記) included in "Tong Mun Son" (東文選) in the middle period of the Koryo.

Through these historical documents, one may assume the raised-floor construction in Korea to be descended from the northen culture partly, but it seems difficult to conclude that there was a tradition of the raised-floor construction originated to the south only with these data.

IV - 2. Introduction of the wooden-floored stricture in the

South Section and the Cheju Island

Next, the process in which the wooden-floored structure was introduced in houses in the southern coastal and insular regions and the Cheju Island is considered. One can assume those regions to have accepted many of the southern cultural traits much because of their situation.

It is very recent that the documentary literature on the wooden-floored structure appears in the Cheju Island. In "Cheju-Pungtorok" (濟州風土録) by Kim Jong (金浄: 1458-1520), there is no mention of the wooden-floor, although it is mentioned only that people buried stones into the dirt-floor and sleep there after being dried (品官人外無温突掘地為坎填之以石其上以土泥之既乾寝処其上)[31]. We can see this form of dirt floor in the storeroom called kopang in the Cheju house and it called maru, or mari in the Cholla-do dialect, in the houses in the southern coastal and insular regions in Cholla-nam-do Province. Moreover, underfloor structure of the ondol room in the Cheju house, except the flue part, remains a similar figures with this description. On the other hand, "Songho-Sasol" (星湖塞説) writen by Lee Ik(李翼: 1681-1763) in the late Lee Dynasty includes a sentence, "All of the common houses in the Cheju Island take the roof truss of five-beams, make the wooden-floored hall and have no ondol" (濟之俗屋皆五梁架板 為庁事而無煖突).

From this description, the introduction of ondol systemto the houses of ordinary people is supposed at least after the 18th century. Because certain mode of housing had been already established in the Cheju Island at that time, it is difficult to suppose that the introduction of ondol

system has radically transformed the house form there. Therefore, the present structure of the wooden floor may reflect the situation of the time when the ondol system was introduced.

Compared with houses in the mainland, wooden floor itself in sangbang of present house in the Cheju Island has not any specific character, but the height of it from the top surface of the base stage on which house stands shows a marked difference between them.

In Songwup Village in South Cheju County, Cheju Province, floor height of 61 main buildings and 11 outbuildings were measured among 102 houses in total.
The greatest figure of the floor height of main building is 55 cm, and the smallest one is 5 cm, the greatest of outbuildings is 36 cm, and the smallest is 5 cm. The mean height of the 72 houses is 25.9 cm, and the mean figure of 18 main buildings and 6 outbuildings of Nammun-dong and Ha-dong in North Cheju County is 29.7 cm. The mean figure of 96 houses in these two villages becomes 26.8 cm . This figure is 23 cm lower than the mean heught, 49.5 cm, of 103 houses in Nagansong Village in South Cholla Province(Fig.20).

The greatest figure in Nagansong is 72.5 cm, and the smallest is 26 cm. Among its 103 houses, 91 are more than 40 cm, and 34 are more than 55 cm. On the contrary, among 96 houses of two villages in the Cheju Island, only 12 houses are more than 40 cm, and 33 are less than 25 cm. In the most smallest cases, the figure is no more than 15 cm (14 houses among 96). In these cases, the wooden floor is almost at the same level as the ground of the dirt-floored kitchen. So this type floor does not take a raised-floor structure, but

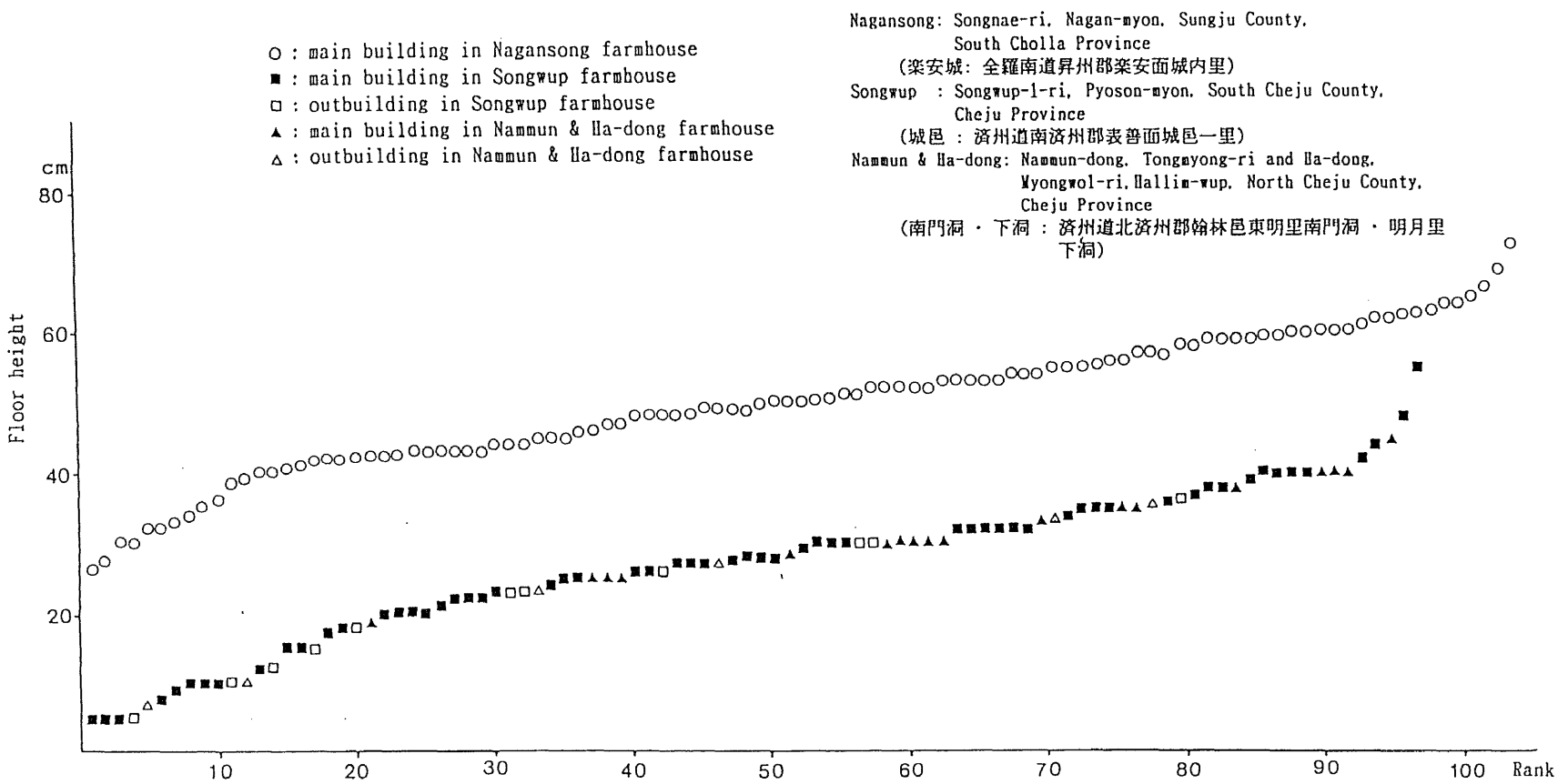


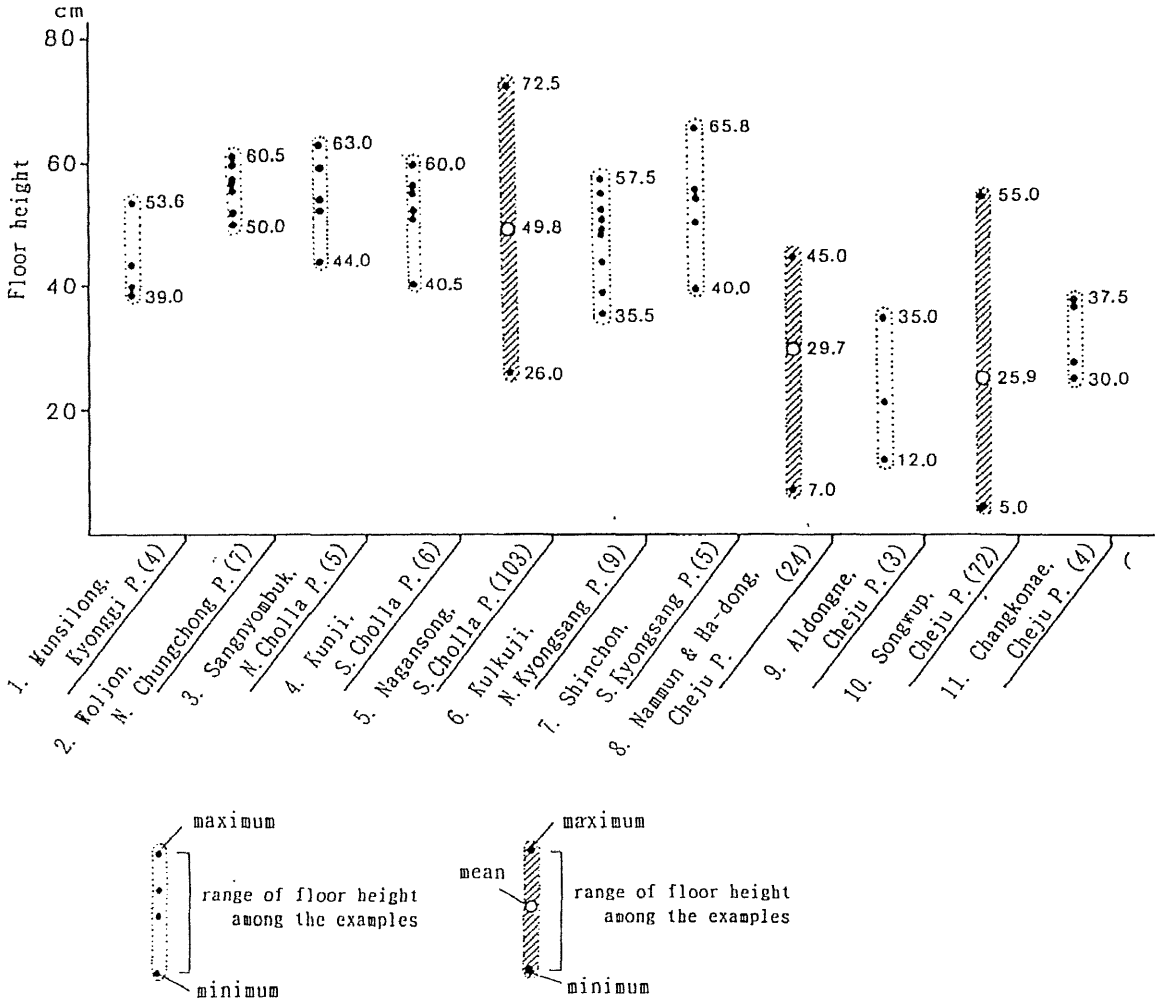
Fig. 20 Floor height in the Cheju Island houses (1).
--- a comparison with houses in Nagansong Village, South Cholla Province ---

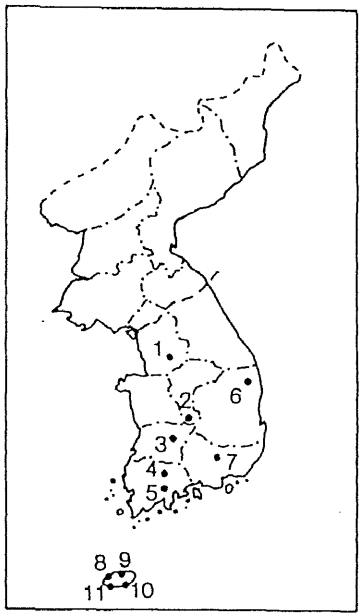
source: Kim, H. S. (1978c, 1979b)

can be considered rather as a variant from a dirt-floor dwelling. Moreover, the external appearance of it lacks also the character of the raised-floor construction, because the space under the verandah is in many cases entirely closed by stone, earth, or cement in order to prevent outside winds from penetrating under the floor.

Compared with houses of any other regions than South Cholla Province, the height of floor in Cheju house is considerably low, too (Fig.21). Although the number of examples is limited, research data from two villages in the Cheju Island show also small figures. Consequently, one cannot suppose that a raised-floor structure is the basic character of Cheju houses. Rather wooden floor in Cheju house is supposed to stem from dirt-floor, transforming a part of it into living room by puuting wooden floor. On the other hand, a taechong in the house of mainland, which cannot be considered to originate in the dirt-floored kitchen by putting wooden floor to it, is supposed to belong to the other line of development.

In connection with a floor structure of the house in the Cheju Island, it is interesting to mention to a form of kitchen-separated house, which is unique in this island. It has no dirt-floored kitchen, and is composed of wooden or dirt-floored living room, sangbang, two ondol rooms on both side of it, and behind these rooms storerooms called kopang. This type of combination, a main building for living space with no dirt-floored kitchen and an outbuilding for cooking, apparently resembles to futamunezukuri (二棟造り) house observed in the southwestern islands of Japan. However, as stated above, the main building of Cheju house can be





1. Munshilong: Munchon-ri, Wonsam-myon, Yong'in County, Kyonggi P. (京畿道龍仁郡遠三面文村里)
2. Woljon: Woljon-ri, Yonghwa-myon, Yongdong County, N. Chungchong P. (忠淸北道永同郡龍化面月田里)
3. Sangnyombuk: Sangnyombuk, Kusin-ri, Songsu-myon, Chinan County, N. Cholla P. (全羅北道鎭安郡聖壽面求臣里上念北)
4. Kunji: Kunji-chon, Chewol-ri, Ip-myon, Koksong County, S. Cholla P. (全羅南道谷城郡立面薺月里梧池村)
5. Nagangsong: See Fig. 21.
6. Kulkuji: Kusan-3-ri, Kunnam-myon, Ulchin County, N. Kyongsang P. (慶尙北道蔚珍郡近南面九山三里)
7. Shinchon: Shinchon, Yangsong-ri, Kaye-myon, Kuilyong County, S. Kyongsang P. (慶尙南道宜寧郡嘉礼面陽成里新村)
8. Nammun & Ha-dong: See Fig. 21.
9. Aldongne: Ha-dong, Chochon-ri, Chochon-myon, North Cheju County, Cheju P. (濟州道北濟州郡朝天面朝天里下洞)
10. Songwup: See Fig. 21.
11. Changkonae: Changchon-ri, Andok-myon, South Cheju County, S. Cheju P. (濟州道南濟州郡安德面倉川里)

See Fig. 20 for the examples of 5, 8, 10.

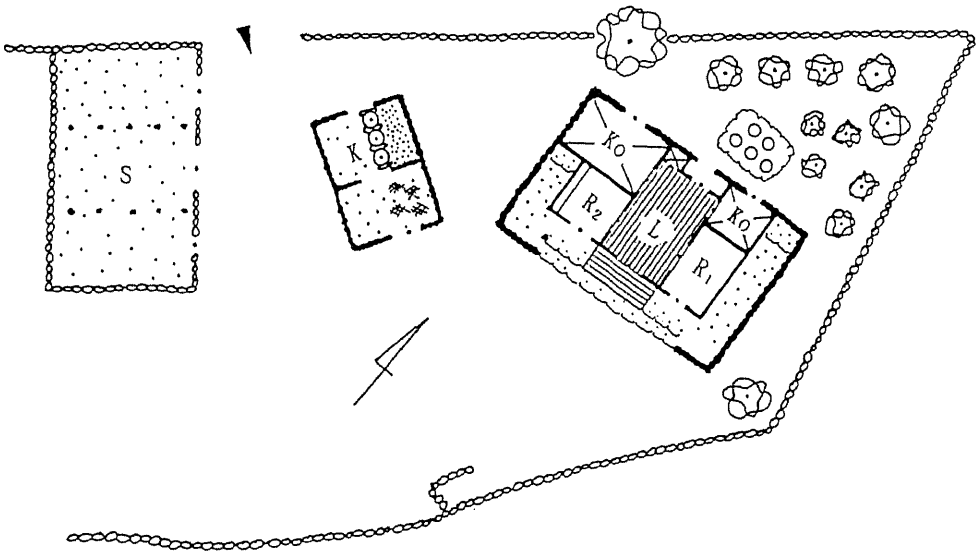
Fig. 21 Floor height in the Cheju Island houses (2).
--- a comparison with houses in other Provinces ---

source: Kim, H. S. (1978c, 1979b) and Kim, H. S. et al. (1985)

regarded as a variant of the dirt-floor dwelling, so that it does not represent southen cultures with a raised-floor dwelling.

About this type of house, detailed survey is not yet carried out, although a few researchers, including Chang, B.W.(1974), have mentioned it. In Songwup village above-mentioned, 44 houses possess respectively a independent building for cooking (about 40 % of all houses), and kitchen of other 13 houses are laid in a detached building which includes a few ondol rooms in it. In total, the majority of the houses in this village separate their cooking space from main buildings. The ratio is, however, considerably variable among the villages in the Cheju Island.

In this kitchen-detached house, there are two types. (1) Main building for living and that for cooking are constructed from the beginning. (2) Kitchen is shifted from the main building to the outbuilding, while the former kitchen of the main building is transformed into ondol room. In the latter case,the main building has always more than 2 kan in width, but the great majority belongs to 3 kan type. In this type of main building, floorplan becomes frequently symmetrical around the central sangbang, because a kitchen located at the end of the building is transformed into an ondol room or storeroom, kopang. In this building, there remains no dirt-floored section, except a narrow space called kulmuk which extends between the wall of ondol room on both side and the outside wall of house. Fuel holes for the ondol rooms are made there. Kitchen is settled in other building, either independently or in combination with barn or stable (Fig.22).



K: chongji (kitchen) L: sangbang (living room)
R_1: kunkudul (main ondol room)
R_2: chagunkudul (secondary ondol room)
Ko: kopang (storeroom) S: stable

Fig. 22 Kitchen-detached house of the sangbang-centered plan in the Cheju Island.
(Songwup-1-ri, Pyoson-myon, South Cheju County, Cheju P.)

source: Kim, H. S. (1978b)

Several scholars have mentioned that this separation between the main building and kitchen is a long tradition and, as an element of southern culture, it has a common character with that in the south eastern islands of japan (Chang,B.W.,1978; Oh,H.S.,1978; Kim,K.O.,1988)[29]. However, this type cannot be supposed as the older form which is going to retreat in favor of single integrated house, just as in Futamune-zukuri(二棟造り) house in Japan. According to interviews with natives of this island, the present houses of this type are, in many cases, only recent products after the World War II[30], resulting from the transformation of dirt-floor into ondol room, although tis type of houses exist, in fact from the past.

Furthermore, these kitchen-detached houses is not observed in certain area of the Cheju Island. According to the interview with natives and existing literature, the distribution of these houses is limited in the east half of the island.

As for the introduction of the wooden-floored structure to the southernmost regions of the Korean Peninsula, there exists a great difference between the east and the west. In the houses of South Kyongsang Province, I-shaped taechong plan and I-shaped taechongless plan are basic, and in the latter, wooden-floor room does not exist. On the contrary, in South Cholla Province, houses take mainly the kitchen-centered plan, having a wooden-floor room called maru on the end of the plan almost without exception. In I-shaped taechong house in South Kyongsang Province, floorplan itself is the same as those observed in the other regions of mainland, but its wooden-floor room is used as a closed

storeroom. Compared with maru in South Cholla Province, the wooden-floored room in South Kyongsang Province have more frequently door of papered leaf, and is called in most cases anchong which means an inner hall.

A wooden-floored room called maru (in dialect, mari or mare) in kitchen-centered houses is a storeroom located apart from the kitchen. Floor level of the room is at the same height as that of ondol room. In some case, there are dirt-floored room with high ground which is called also maru. According to the author's survey in sevaral islands in South Cholla Province, these dirt-floored room with raised ground belong to the more traditional type. The wooden-floor room is said to be the reconstruction of it, if one can afford to do so . The dirt-floored room with high ground is a way to prevent the humidity of ground, and resembles to the floor structure of the storeroom in the house of the Cheju Island.Its transformation into wooden-floor roomis supposed to be a device to make the incide more clean and also to use this room without footwear. The side wall of maru are made of earth and the room is extremely closed. These characters, with silid wooden door, keep the room cool and dark by interrupting isolation and heat from outside, although its ventilation is very poor. These characteristics are kept intact even after the reconstruction to wooden floor.

IV - 3. Introduction of the ondol system into houses in the South Section and the Cheju Island

1) Mode of the ondol system introduced into houses in the South Section and the Cheju Island

As to the origin and the southward diffusion of the ondol system, various opinions have been presented based upon the fragmentary data. It is known well, however, that an ondol-like heating system was used in Koguryo (高句麗) which extended her territory in the northern part of the Korean Peninsula and Manchuria region. It is genarally thought that the ondol system diffused southward, being incorporated into the house of common people mainly rather than the upper class residence, to be reached the southern part of the Korean Peninsula by the last period of Koryo or the early Lee Dynasty, and to be introduced into the Cheju houses much later. It is said that since the 18th century the ondol system became popular, although it had been used in some houses in the 16th century. Through this process of diffusion, the form of the ondol had been transformed largely to show the considerable difference between in the South Section and in the Central-North Sections. As to the underfloor structure, the author could not make enough research yet. He found, however, a noticeable features in the smoke vent form in some islands along the southern coast of the Korean Peninsula. That was very different from those in the other regions.

In the houses of those regions, under-floor smoke is drawn off through a vent hole made in the base stage on which the house is built, without tall smoke pipe, or is led into the flue made in the ground of yard to be exhausted at the small hole dug in a corner of the yard. In some cases, we can observe the smoke vent made inside a kitchen. In

this case, smoke vent is constructed by the kitchen range with earth and stones in a conic shape. The smoke once returns to the kitchen to be exhausted there, and flows out through a hole on the kitchen wall. It is traditionally said that this form of smoke vent became adopted widely in this region because this smoke vent was favorable to keep houses and villages from being discovered by the Japanese pirate raders on board in the old days

Although people explain that this form of smoke vent can promote combustion in the fuel hole to raise a heating effect, it may be thought that this smoke vent can make gentle combustion to economize fuel by controling a suction at the tip of smoke vent. Moreover, this smoke vent can prevent also a back flow of smoke being due to a penetration of outdoor winds.

Today, this form of smoke vent,which makes kitchen very sooty, is regarded as being outdated, and is gradually disappearing. However, the author could verified its existence in some islands of South Cholla Province and South Kyongsang Province(Fig.23). Although the distribution of kitchen-centered plan is restricted to the east of the border of these two Provinces, this form of smoke vent is distributed beyond the border.

In the Cheju Island, ondol system has much less been developed than that in mainland. There are no smoke pipe nor smoke sink. In some cases, ondol flue is laid to merely one third or less of the under-floor space. If the smoke is ill vented, it may penetrate into the under-floor space of sangbang, and leak through the gaps of the floor boards.

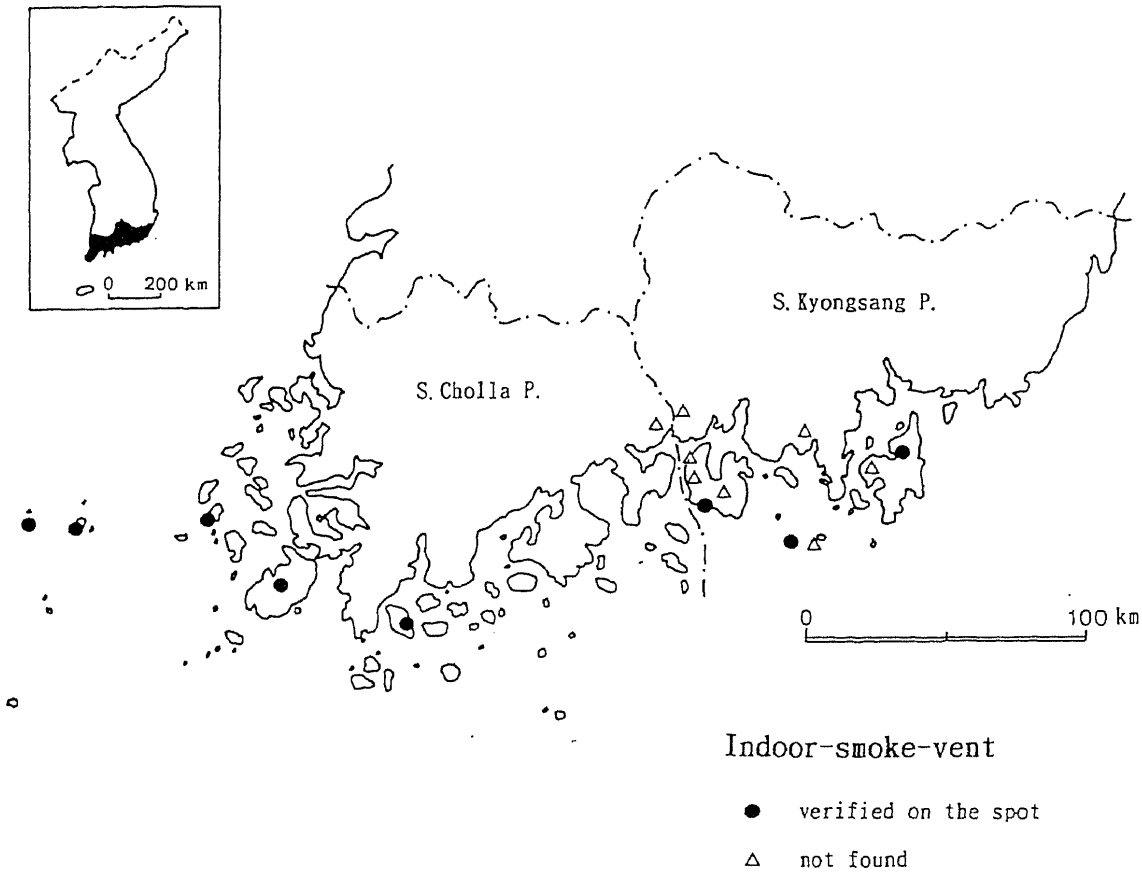


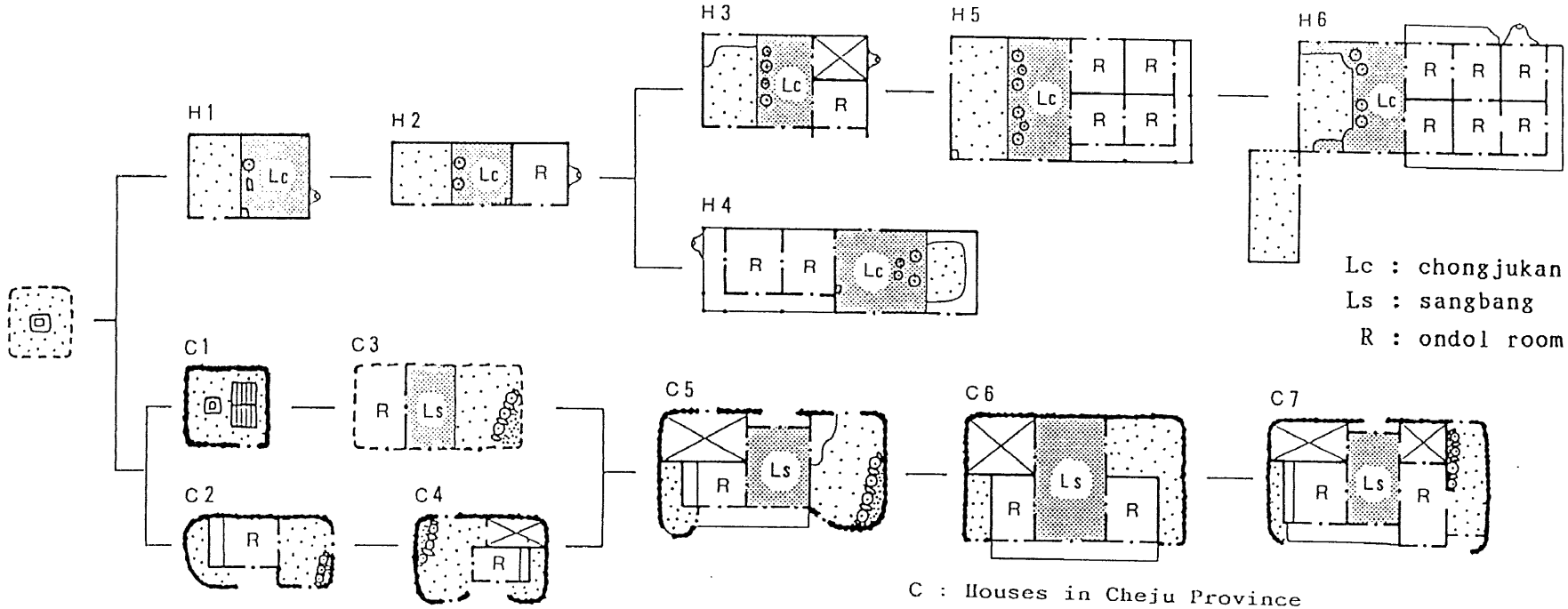
Fig. 23 Distribution of the indoor-smoke-vents in the southern coastal and insular regions.

2) Form of the ondol system and the floorplan formation

In such form of ondol system above-mentioned, a heatablerange of it is limited to one room. Consequently, the house with this form of ondol system takes a plan such as kitchen-centered plan and both-ends- kitchen plan. In the latter case, the fuel hole have to be made separately to each room, even though two ondol rooms stand side by side.

In the Cheju Island, cooking fire in the kitchen range is not used for heating of ondol room. Therefore, the ondol room is laid on the opposite side of the sanbang to the kitchen. The fuel hole of this ondol room also is made on the opposite end of the house to the kitchen, and from there the flue of ondol runs toward sangbang. Therefore, one cannot join one more ondol room next to the other ondol room. When one more room is needed, one must lay it between the sangbang and the kitchen, and make a fuel hole apart from the kitchen range to use different kind of fuels for cooking and for heating. In this stage, two ondol rooms are laid on both sides of sangbang. Therefore, the floor plan seems to be similar to that of the I-shaped taechong house.However, the process of floorplan development is entirely different. It can be said that Cheju house has not been developed into the two-by-two plan, although it shows basically a double-row plan as well as the double-row houses in mainland.

We can observe a special floor plan which has a small-scall bedroom enclosed within a dirt-floor in a small hut with its width of 2 kan or below in the Cheju Island. This type of bedroom seems to be similar to the closed bedroom called "nurigome" in the ancient aristocrat residence or



H : Houses in South Hamgyong Province

H1: Changjin County(長津郡) (Odauchi, 1924)
H2: Changjin County(長津郡) (Odauchi, 1924)
H3: Hamhung-Wup(咸興邑) (Odauchi, 1924)
H4: Changjin County(長津郡) (Odauchi, 1924)
H5: Pumin-ri, Chubuk-myon, Hamung County (Odauchi, 1924)
(咸興郡州北面宮民里)
H6: (location is unknown) (Kon, 1924)

C : Houses in Cheju Province

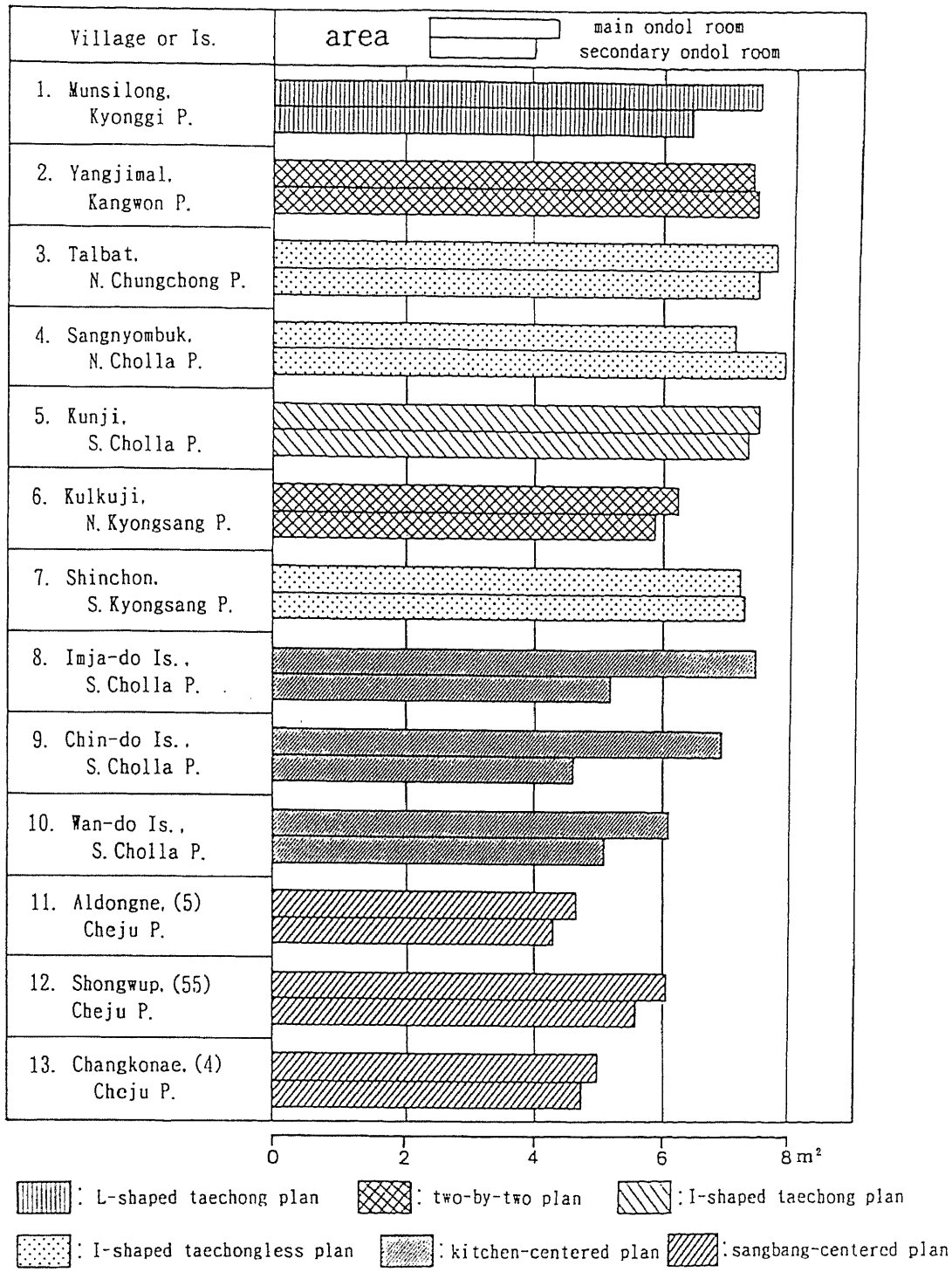
C1: Shinchon-ri, Chochon-myon, North Cheju County
(北濟州郡朝天面新村里) (Kim, K. O., 1988)
C2: Chosu-ri, Hangyong-myon, North Cheju County
(北濟州郡翰京面造水里) (Chang, B. W., 1975)
C3: (fictious)
C4: Songwup-ri, Pyoson-myon, South Cheju County
(南濟州郡表善面城邑里) (Kim, H. S., 1978c)
C5: Songwup-ri, Pyoson-myon, South Cheju County
(南濟州郡表善面城邑里) (Kim, H. S., 1978c)
C6: Tongmyong-ri, Hallim-wup, South Cheju County
(北濟州郡翰林邑東明里) (Kim, H. S., 1978c)
C7: Haga-ri, Aewol-wup, North Cheju County
(北濟州郡涯月邑下加里) (Cho, S. K., 1983)

Fig. 24 Developments of the chongjukan plan in South Hamgyong Province and the sangbang-centered plan in Cheju Province.

that in the farmhouse before early modern in Japan. Although many of them adopt a very simple ondol system recently, some of them merely lay board or dried grass on its dirt-floor. These rooms may be regarded as a remnant of the past when there were not enough bedding nor heating system, so that people warmed themselves to lie around the fire pot set on the sangbang floor or kept warm by their own body temperature and cloths. These small-scale room can be seen in the kitchen-centered house in South Cholla Province(Fig.25). Generally in the South Section and in the Cheju Island, the main ondol room is called kunbang or kunkudul, both of which mean a large room, but not anbang as in the Central Section. On the other hand, the secondary room is called chagunbang or chagunkudul, a small room. In fact, there are some differences in the dimensions of these rooms of the kitchen-centered plan. However, in the other plans, kunbang is not necessarily larger than chagunbang. Although these names show some regional difference (Fig.26), one can hardly find obvious difference in the dimensions of rooms.

IV - 4. Diffusion of the L-shaped taechong plan

Regional destribution of floorplans is not fixed through the time, but also variable by their diffusion. Among several types of floorplan, we can see some types of floorplan have a tendency to diffuse easily according to the needs by residents, and the other types of floorplan tend to be encroached by other plans. L-shaped taechong house with a single-row plan has been regarded as diffusing in the most



2. Yangjimal: Misan-2-ri, Sannam-myon, Inje County, Kangwon Province (江原道麟蹄郡上南面美山2里)
8. Imja-do Is.: Chin-ri, Imja-myon, Shinan county, S. Cholla P. (荏子島: 全羅南道新安郡荏子面領里)
9. Chin-do Is.: Chindo-wup, Chindo County, S. Cholla P. (珍島 : 全羅南道珍島郡珍島邑)
10. Wan-do Is.: Wando-wup, Wando County, S. Cholla P. (莞島 : 全羅南道莞島郡莞邑)

See Fig. 20 & 21 for the locations of 1, 3~7 and 11~13.

1~7: size of the example house with specific plan.
8~10: mean size in each village shown by Kim, K. O. (1988).
11~12: mean size of the examples in each village, numbers of the examples are shown in ( ).

Fig. 25 Sizes of the main and the secondary ondol rooms.

source: Kim, H. S. et al., (1985) and Kim, K. O. (1988)

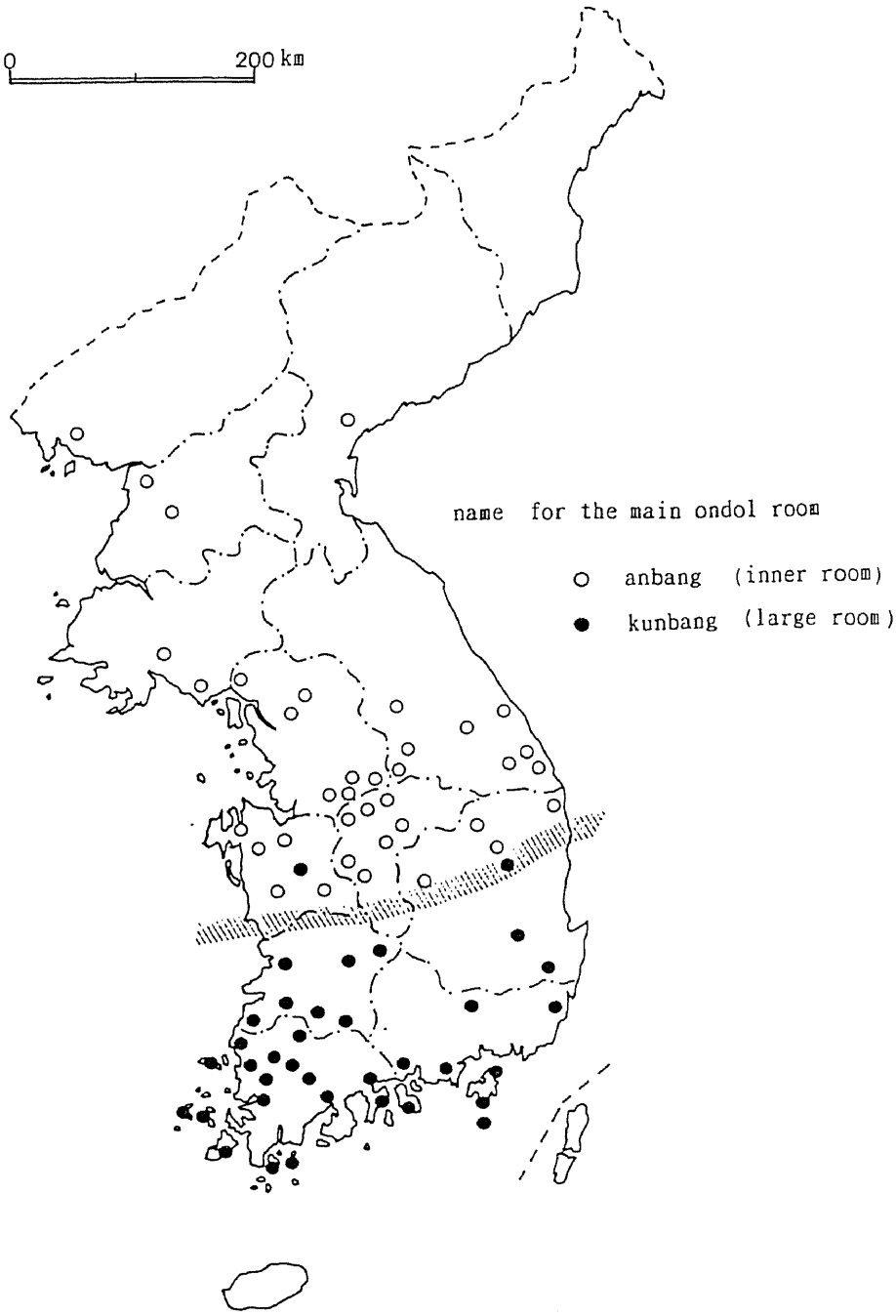


Fig. 26 Regional difference in a name for the main ondol room.

of previous studies.

As to the origin, diffusing process, and their extents and time of diffusion, it has not been clarified well. Some scholors such as Kon(1924) and Nomura(1938), however,assumed that this type of floorplan had been established under the influence of the fractionated allotment in the urban district, where the linear extention of floorplan was tightly restrained. On the other hand, Chang,B.W.(1980) assumed that this plan had been introdyced into houses in the Central Section from the lower Yangtze River in China, and then diffused over Kyonggi Province and the other Provinces. There are many reports on this floorplan in many regions.

We can point out some backgrounds for the diffusion of this floorplan. (1) This plan is favorable to adapt itself to to the allotment of urban district. (2) People have a disposition to be attracted by the mode of the political and cultural center. (3) There exist some other floorplans which have common characteristics in their features with this floorplan in the near region. Among these points, (2) and (3) are important to understand the distribution of this floorplan outside of Seoul and Kyonggi Province. In the age of Lee Dynasty, people who was in official post in Seoul brought the mode in the capital into his homeland through his round trip between Seoul and his homeland, or his homecoming after retirement.

In some rural villages which had produced many high-ranking officials, there exist many large-scale residences developed on the basis of the taechong plan seen mainly in the Central-west Section. Fig.27 shows number of houses of

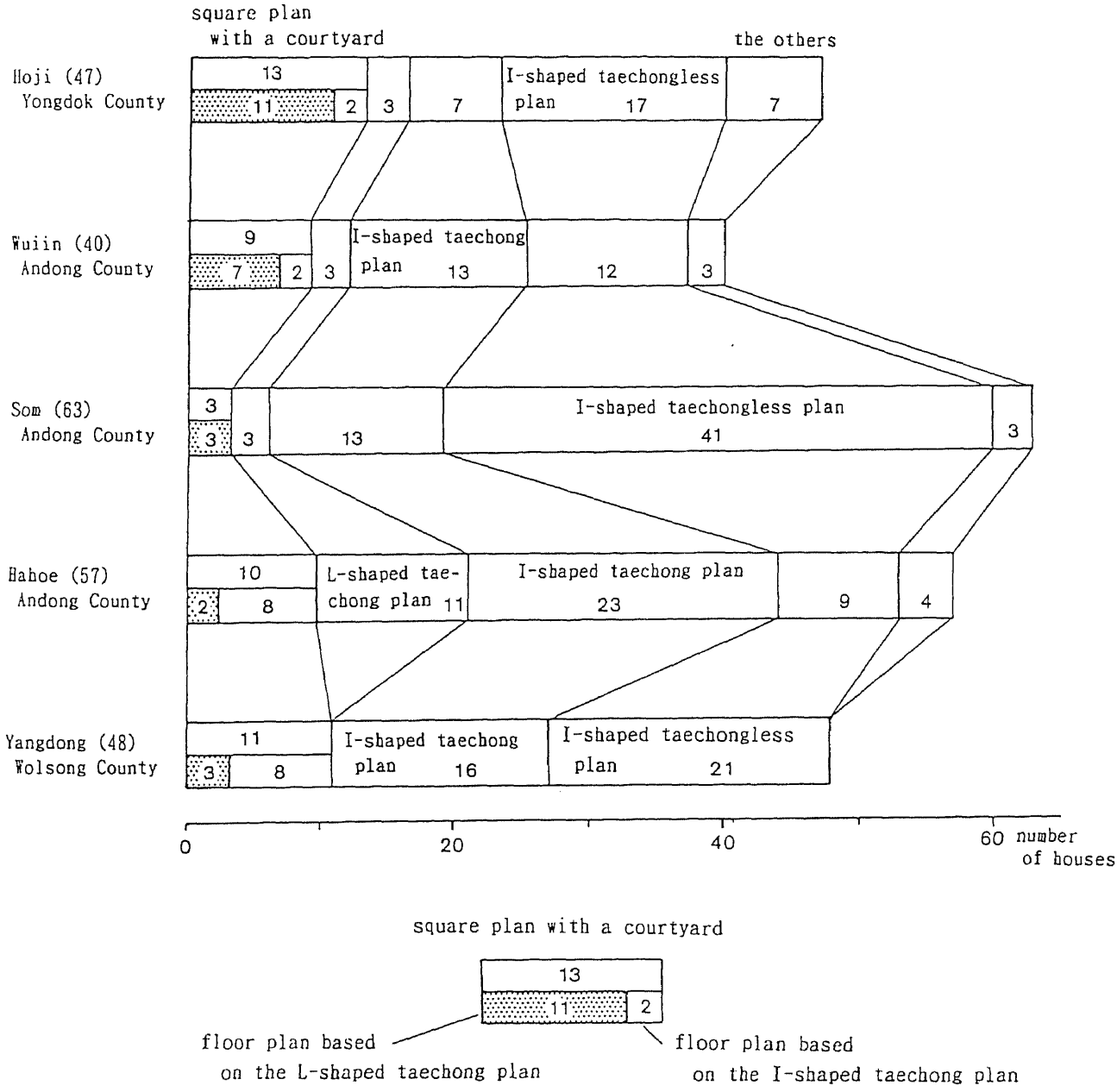


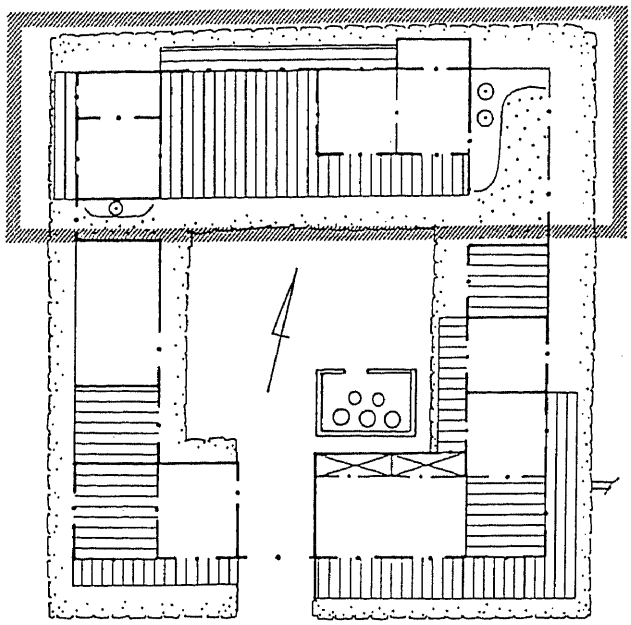
Fig. 27 Floorplan types in five "yangban villages" in North Kyongsang Province.

source: Ulsan Institute of technology(1976), North Kyongsang Province(1979a, b) and Kim, H. S. (1989).

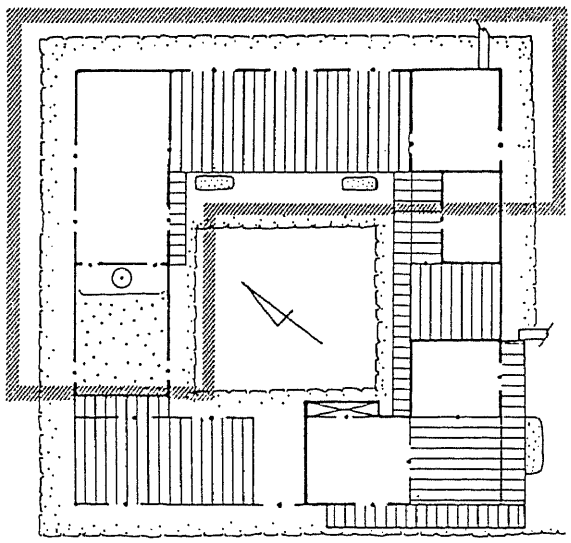
each floorplan type which constitute a whole village in North Kyongsang Province. These were representative yangban village in the Lee Dynasty, and now there are many upper-class residence. Although I-shaped taechongless is dominant in its number, there are some square-shaped houses with closed courtyard which incorporate the basic part of L-shaped plan in them.

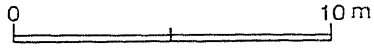
On the other hand, we can see the dirt-floor-fronted house with a double-row plan to be distributed around the area where the L-shaped taechong houses are widely distributed. Arrangement of the basic rooms such as kitchen, anbang, taechong, and konnonbang shows a resemblance to the L-shaped taechong house except for a roof plan. In fact, there are some cases in which central portion of the roof is removed to be a well in order to improve lighting and ventilating condition on the central wooden-floor room.
As a result, a floorplan of this house became a courtyard form with a single-row plan. This newly produced courtyard is not so large as an open yard of the farmstead and this is mere a private space with extremely closed structure to the outer person. However, this form can be seen as one of a bent-shaped taechong house with a single-row plan. There are distributed these dirt-floore-fronted houses and small-scale courtyard houses on the peripheral region of the Central-west Section of the the Korean Peninsula. It may be supposed that these houses make a part of background for the diffusion of the L-shaped taechong plan and the wooden-floor room with an open structure.

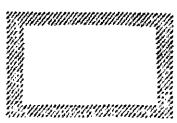
a. Courtyard house with a basic part of I-shaped taechong plan



b. Courtyard house with a basic part of L-shaped taechong plan



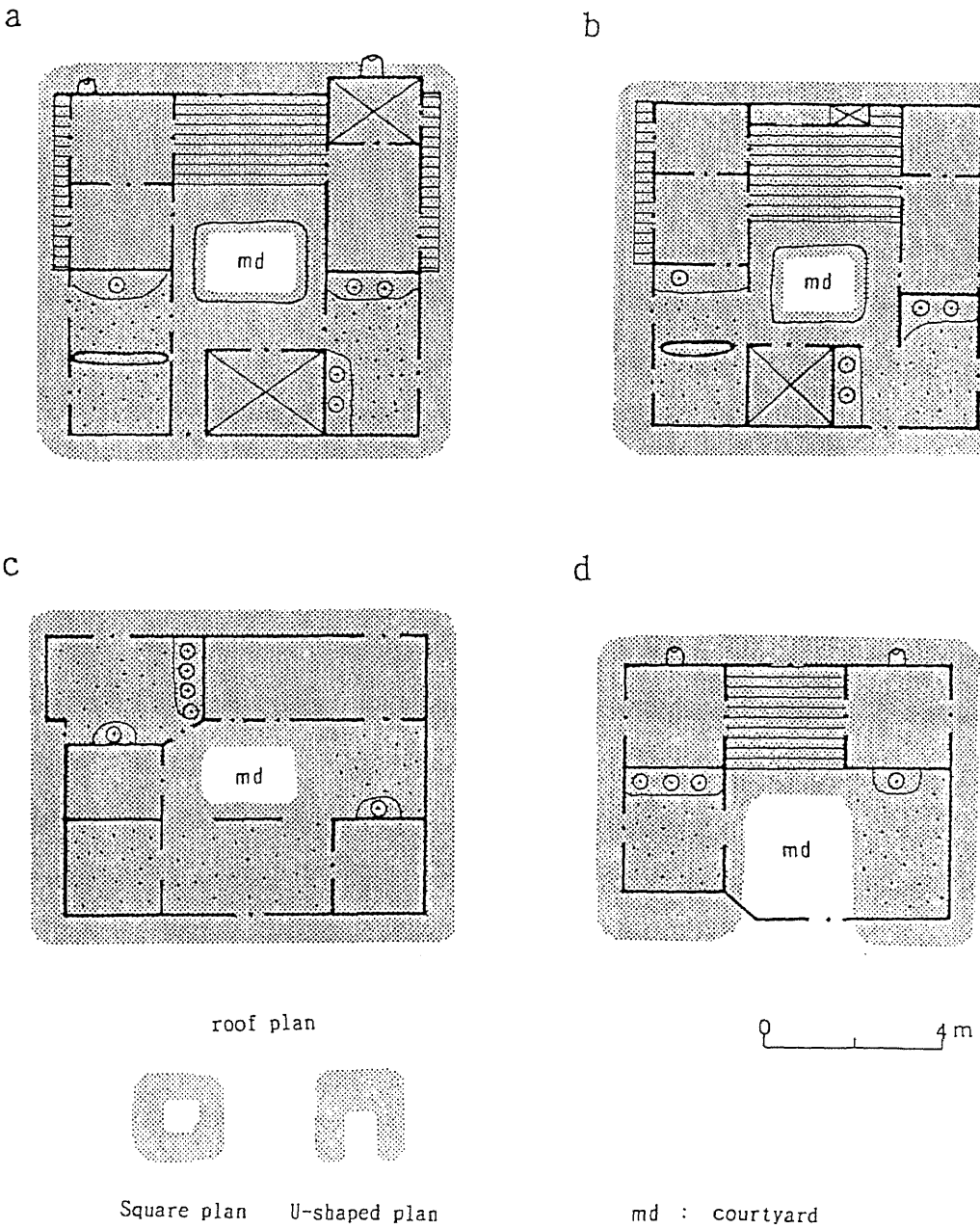




: basic part for family life

Fig. 28 Floorplan of the courtyard house

source: North Kyongsang Province (1978a, b)



a. Kyoga-ri, Kundok-myon, Samchok County, Kangwon Province
(江原道三陟郡近德面交可里) (Suh. K. T., 1987)
b. Kochon-ri, Kiro-myon, Samchok County, Kangwon Province
(江原道三陟郡未老面古川里) (Suh. K. T., 1987)
c. Yongpyong Is., Ongjin County, Kyonggi Province
(京畿道甕津郡; 延坪島) (Kim. K. O., 1988)
d. Pangsan-ri, Sorae-myon, Shihung County, Kyonggi Province
(京畿道始興郡蘇萊面方山里) (Kim. K. O., 1988)

Fig. 29 Square plan and U-shaped plan with a courtyard.

CHAPTER V

CONCLUSION

In this study, the author has attempted to clarify the egional variation and its background of the protective eatures against the cold and the heat in the Korean house orm. It is a traditional understanding that people give a op priority to cold-proof features, including the heating ystem and the closed and compact structure in rooms and ouses, to cope with cold winters in the North Section of he Korean Peninsula, while people in the South Section and he Cheju Island put stress on the open and ventilative tructure such as wooden-floor rooms and raised-floor onstruction for hot summers. Especially, we can see that he present wooden-floored structure is identified self-vidently to the raised-floor construction which belongs to he southern culture in many previous studies.

As to the actual functions and the regional variation f those features, however, some different tendency has been larified as follows.

) A wooden-floor room, which is often mentioned to be a living room in summer, is not used as a living space in the South Section, in fact. It is in the Central-west Section, including Seoul Special City and Kyonggi Province, and the Cheju Island that the wooden-floor room is used as a open living space in summer. The floor height, however, is considerably low in the Cheju Island, so that it is difficult to identify a present wooden-

floor room of the Cheju houses with the original raised-floor construction. In the South Section, a wooden-floor room is used as a closed storeroom and a sacred space where people do not enter unnecessarily.

◎ Openings for ventilation in the ondol room are also developed in the Central-west Section rather than in the South Section and the Cheju Island. Even in the Cheju Island, houses take closed form except a wooden-floor room, sangbang.

◎ The double-row plan houses, which are widely distributed in the North-east Section and the Central-east Section, are dominant also in the Cheju Island. Except for the structure and the efficiency of ondol system, floorplan in the Cheju Island itself seems to be similar to that in the North Section, particularly on the elementary stage in the developing process. Although a floorplan in the Cheju Island looks similar to that in the South Section in some aspects, an arrangement of rooms and a relation between kitchen and other rooms are basically different.

◎ A stall-equipped house, in which a stall is made as a part of the main building, is observed not only in the double-row plan houses except for that of the Cheju Island, but also in the single-row plan houses in South Cholla Province. A stall is laid remote from the fireplace rather in the North-east Section and northern part of the Central-east Section. Moreover, a stall can be separated from the warm main building occasionally in the chongjukan houses of the North-east Section.

From these facts, the author supposes it more reason-

able to explain the north-south variation and its background of the Korean house form as follows.

(1) As for the development of a wooden-floor room as a living room in summer and a ventilation of ondol rooms, the houses in the Central Section precedes those in the Southern Section. We can mention a heating efficiency of ondol system as an instance which shows the north-south variation reflecting the difference in the coldness in winter. However, it is in the Central Section that the protective function against the heat in summer has been developed. It is more possible that the wooden-floored structure in Korea has been diffused from the Central Section to its surroundings rather than from the warm South Section to the Central and the North Sections. This can be thought to be a result of the request for the comfort of the indoor life in summer as well as in winter. On the contrary, people have given stress on the cold-ploof structures for winter life, and prepared generally their life space outdoors in summer in the South Section. A wooden-floored structure introduced into the South Section houses became established as a storeroom but not as a living space for summer. A Wooden-floor room in the Cheju Island house belongs to the different system from a taechong in the mainland house.

(2) A living room of the Cheju Island house has basically common character with that of the North Section. Namely, one side of the dirt-floor is used as a kitchen and a workshop, and the other side is specialized as a sitting space to which small-scale bedroom and closet are

joinedin double row. In the North Section where ondol system was established early, a living space laid in the next of a kitchen became chongjukan of ondol floor and the next bedrooms also adopted ondol system. The kitchen ranges made on the end of chongjukan serve as fuel holes for all ondol sections and the hot smake is send from these kitchen range in one direction.

(3) In the house of the Cheju Island, into which the ondol system was introduced much later, ondol room was prone to be made at the opposite end to the kitchen, because the peculiar form of kitchen and wooden-floor room different from that in the mainland houses has been already established when ondol system was introduced there. The ondol system which was introduced into the Cheju Island could not make a two-by-two plan of ondol rooms in the next of the wooden-floored sangbang, so that the secondary ondol room, if it is made, has to be laid between the kitchen and the sangbang apart from the main ondol room. Therefore, we can see a floorplan with a wooden-floored room between two ondol rooms like a I-shaped taechong plan. However, this sangbang-centered plan in the Cheju Island did not show the same form with a taechong plan of the South Section houses from the begining.

(4) It is a position of range for boiling a fodder that has a great influence on the arrangement of stall in Korean farm houses. Stall-equipped house does not necessarily take a suitable form for keeping warm. In double-row plan houses, the preference is given for the space of workshop rather than for keeping warm in the stall. The

north-south difference become clear in the former than in the latter. The space of dirt-floored section gets smaller and the workshop is provided outdoors in the south. In the stall-equipped house of a single-row plan, the kitchen-centered plan which concentrates all of fuel holes inside the kitchen lays a stall next to the kitchen. However, the stall gets detached from the main building, if a fuel hole is made also in the out-building.

(5) The author assumes that house of a protective form against the cold in winter had been dominant all over Korea including the Cheju Island, but was divided its distribution into north and south regions through the diffusion of the mode of the Central Section and a single-row plan and have made various development in each region to form the present north-south variation. In general, it seems possible to explain this variation by the difference in the time of the introduction of ondol system and its heating efficiency, even though the influence of the southern culture including a raised-floor structure is not supposed.

NOTES

1) This association published many fruits mainly in architectural studies on its journal, Chosen-to Kenchiku (Korea and Architecture).
2) Farmers who carried on slash-and-cultivation drifting in the mountainous region in Korea. In spite of the profibit by the LeeDynasty government and the Government General of Korea, They increased in number to devastate the forest at that time. However, they settled down gradually and became extinct by the late 1970s.
3) The points of Fujishima's opinion are as follows: (1)the Korean house, which had been a dirt-floored dwelling basically in ancient times, accepted the ondol system from the north and wooden-floored structure from the south, especially Japan; (2)the wooden-floored structure diffused northward to Seoul and Kyonggi-do region to be established as a taechong there, while the ondol system was given a priority over the wooden-floored structure as a protective feature against the cold even in the southern part where the economic level was rather low; (3)contemporary wooden-floor room was introduced into the house as a result of its secondary spread in recent years; and (4)in the Cheju Island, the wooden-floor room used from early times became a sangbang to take the same form with taechong above-mentioned and had kept its form so far, adapting to the climate there.
4) The highest class which could produce bureucraty under the class system in the Koryo (高麗; 918-1392) and Lee Dynasty (1392-1910). Yangban families got privileged,

having Kwago (科挙) which is the classical examination system for the governmantal service to themselves, and became fixed their status based on their kinship. After getting posts in the Central Government, they kept close connection with their homeland in many cases.

5) In the Democratic People's Republic of Korea, Chagang Province (慈江道) and Ryanggang Province (両江道) Province were newly establised, and former Hwanghae Province was divided into North and South.

6) Although the heating system of ondol has been diversified through the separation of the ondol flue and cooking range, the introduction of the hot-water heating by oil-fired boiler and so forth, ondol itself is adopted yet even in the modern apartment house without exception.

7) While in Japanese architecture, floor boards are laid on joistings which are supported by sleepers and posts, in Korean architecture, sleepers and joistings appear on the same surface with the floor boards. There are some forms of flooring such as "umulmaru" and "changmaru" according to the pattern of floorboards and other horizontal pieces. In general, the former is thought to be superior and is often seen in the old upper-class residence.

8) The data which Iwatsuki(1924) used in his study are known to be gathered by Park,K.Y., an assistant engineer in the department of architecture of the Government-General of Korea. Park,K.Y. himself wrote some papers on Korean architecture.

9) Some Korean scholors have been expressed dissents by

reason that the name of "general type" is prone to be confused with the common type of Korean house types.

10) The western boundary of the distribution of two-by-two plan has been generally thought to be situated on the Nangnim Range (狼林山脈) running between Hamgyong and Pyong'an Provinces in the North Section. On the contrary, Kim,K.O.(1984) pointed out that this floorplan was distributed also in the Hwanghae Province and some islands of Kyonggi Province, based upon some literature published in North Korea after the Korean War and his own field survey.

11) Lee,C.(1975) made survey on 4,000 houses in Seoul Special City, south of the Military Demarcation line in Kyonggi and Kangwon Provinces, and in the northern part of North and South Chungchong Provinces to clarify the dominance of L-shaped houses in the Central Section by the ratio of each floorplan type in each sheet of 92 topographic maps.

12) In this floorplan, which is established on the matrix of the I-shaped taechongless plan, a verandah in the front of ondol rooms is enlarged to form a taechonglike space with another ondol room in its front, so that the anbang faces to the south, while the taechong faces to the south genarally in the original L-shaped taechong plan. Although some scholars distinguish this type of floor-plan from the original L-shaped taechong plan (Iwatsuki,1924; Kim,C.K.,1970; etc.) the author does not make such a distinction in this study.

13) Although Lee,Y.T.(1965) regarded the Central type with L-shaped plan as being driven out by the penetration of

the Southern type with I-shaped plan in the Taean (泰安) Peninsula near the Chonsu (浅水) Bay in South Chungchong Province, the author observed a lot of L-shaped houses there. Moreover, we can see that L-shaped houses are regarded as considerably popular by the people in this region, because a word of kopejip, in which a meaning of kope is unknown and jip means a house, is in daily use for the L-shaped house as a dialect there.

14) According to the Korea National Geographical Survey Institute (1980), there are distributed 2310 islands in the area of sea along the southern coast of the Korean Peninsula. 1891 islands of them belong to South Cholla Province and the others belong to South Kyongsang Province, in which 419 islands of South Cholla Province and 135 islands of South Kyongsang Province are inhabited. In these islands, a communication with the outhside has been restrained by their topography, and the damage by the Korean War (1950～1953) and the influence by the Semaul (New Community) Movement were relatively small. Therefore, many houses yet retain their old figure very well.

15) Among sixteen examples of chongjukan plan of various sizes which have been reported so far, there is no floorplan with a wooden-floor room except a verandah.

16) There was about 45cm gap between the top of the threshold and the level of dirt floor in a dirt-floor-fronted house which the author surveyed in Tonghwal-ri village of Samchok county, Kangwon Province.

17) A ridge beam above the taechong, on which the date of a framework raising ceremony is written, becomes a place

to enshrine a guardian god of the house.

18) Tojang, or tojangbang, means originally a women's room, boudoir (Chang,K.I.,1985; etc).

19) In these studies, it is pointed out that a section called maru or maro in the tent floor of the northern Tungus and the Orochon has a similar character to Korean maru.

20) A roof is covered with tiles or thatch on the thick layer of earth which is laid over the lath and the rafters, and the ceiling is also covered with earth. These roof and ceiling can serve as the insulating structures as well as the earthen wall. The wall of such materials as log, adobe and stone also has a similar effect of insulation.

21) According to the author's experience in the single-row plan house in Hadong County in 1981, South Kyongsang Province, the indoor temperature at twenty-one o'clock was above 34°C in the ondol room, only front door of which was opend, in July.

22) Lee,Y.T.(1965) pointed out that the Cheju Island houses had many openings on their walls, while the size of each opening was small. As far as the author examined on some floor plans shown in the literature, however, the openings were small in number but large in size.

23) Lee,Y.T.(1965) pointed out that the base of opening of the ondol room is made higer in the northern regions and remarkably lower in the southern regions in Korea. However, it is not clear that the opening in the northern house is used as an entrance or a window as in the Cheju Island.

24) Through the development projects of rural settlements which were carried on in 1930s under the Japanese colonial rule, Japanese advisers encouraged to dig down the floor and to increase the litter of the stall in some regions (Yahiro,I.,1935).

25) A government-compiled history of three kingdoms, Shilla (新羅), Koguryo (高句麗) and Paekche (百済), in ancient Korea. Kim, Pu-Sik (金富軾: 1075～1151) who was a descendant of a ditinguished family in Shilla took place in the compilation, so that the description of Shilla held the most volumes.

26) A private-compiled history in the Koryo (高麗) period, with its center on the history of Shilla. Illyon (一然), a high priest in Koryo, compiled this book and his pupil supplemented it. Many Buddhist narrative, as well as a history of each dynasty, are included in it.

27) Lee,M.S.(1980) interpreted this phrase as high land rather than the raised-floor construction.

28) Kim,H.S.(1978c) assumed this kitchen-detatched house in the Cheju Island to be formed through the New Life Movement which was carried on by Japanese colonizers in 1930s. It seems certain, however, that this form of house can dates back to the days before the Japanese Annexation of Korea (1910) at least, according to the comments by several Korean residents in Japan who come from the Cheju Island.

29) Kim,H.S.(1973) mentioned two points, the rise of the request for cleanliness consequent upon the improvement of the way of life, and the deteriolation of fuel quality, as reasons for a rapid progress of detachment

of kitchen from the main building. As for the sanitary condition of the traditional kitchen in the Cheju Island, Lee,Y.T.(1965) intro-duced the opinion by Kang, W.S.(1956) that many old women had eye trouble because of the irritation of smoke in the kitchen, in addition to that of seawater during their long diver lives.

30) Kim,K.O.(1988) supposed the former to be an old form, to compare the wooden-floored maru with the dirt-floored one of the houses in the southern coastal and insular regions of South Cholla Province. The point of his opinion is as follows. The wooden-floored maru was incorporated into the houses in those regions as a suitable structure for a closet of wet fishing gear in the times when fishing was the main occupation there. After that, the necessity to make a wooden floor declined and the dirt-floored maru increased in number, as a weight of the agriculture increased and maru was diverted to the storeroom for farm products. It is hard, however, to think that wet fishing gear was put in a room of closed structure. It seems more probable that a wooden floor became popular behind a dirt-floor in maru, because of expensiveness of the timber. We can see many instances in which a pongdang (封堂), a section of raised dirt-floor between anbang and konnonbang, was converted into a wooden-floored taechong (大庁). In the Cheju Island, fishermen put their wet fishing net on the board of 1.2～2m high, with pillars on its four corners, built on the beach (Kim,K.O.,1988). On the photograph, this board looks very open and well-ventilated, because it has no wall on its sides and only straw mat covers

the fishing net on the board. This is more suitable form for keeping a fishing net. There is little necessity to put the wet fishing gear in the closed indoor space.

31) Kim, Sang-Hon (金尚憲, 1601) quated this paragraph and mentioned that he observed the same situation at that time in his book, "Namcharok" (南槎録) (Wakabayashi, 1988).

32) In the Cheju Island, people use dried dung of horses and cattle as a fuel for ondol heating, while they use straw of barley and millet, cogon, brushwood and so forth for cooking.These two kinds of fuels are stored separately.

33) Kim,C.K.(1970) stated that the smale-scale house in the Cheju Island may lack a wooden-floored sangbang in its center to form a two-by-two plan like a floorplan of the Northern type, judging from the double-row arrangement of ondol rooms and closets. However, this explanation does not correspond with the facts. All of rooms and closets have the entrances on their sangbang-side walls, so that people must pass the sangbang to enter those compartments, and they cannot move directly between one compartment in the front row and that in the back row. There is no instance of two-by-two plan lacking a ssangbang in its center in a lot of reports on the Cheju Island houses.

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■ JAPANESE SUMMARY ■

朝鮮半島の民家形態の南北的差異に関する地理学的研究

本研究は、従来、気候条件への対応という面から説明されることの多かった朝鮮半島の民家形態の南北的差異について、実際の防寒・防暑的機能を再検討しながら、考察したものである。

従来の通説では、同半島の北部において、冬季の酷寒に対処するため、保温にすぐれた内厩式の畜舎配置や複列型の間取りなど、凝集的・閉鎖的な民家形態が発達するとされてきた。一方、南部では、寒気に対する備えはさほどではなく、夏季の生活に適した分散的・開放的な形態をとり、通風に富む板間を重視しているとの説明が一般的である。とくに、南部地方の民家形態については、南方文化的・温暖地的特徴が自明の前提として強調されるきらいがあった。

しかし、各地の民家形態を、防寒・防暑的機能の実態に留意しながら検討したところ、地方的に以下のような傾向があきらかになった。

- 南部地方において夏季の生活空間として重視されるという板間は、南部の実際の民家では居住用に用いられていない。これを開放的な夏季の生活空間として重用しているのは、ソウル・京畿道をはじめとした中部地方と済州島である。ただし、済州島の板間は、高床構造というより、土間から発展したごく低いものであり、床下の通風はほとんど考慮されていない。
- 板間以外の部分の通風をはかる開口部も、南部地方より、むしろ中部地方に発達する。南部の海岸島嶼地方では、部屋の容積を小さくし、開口部もあまり発達させていない。済州島の民家も中央の板間以外は、密閉的な構造をとっている。

・ 北部に卓越する複列型間取りは、済州島にもみられる。オンドル機構の発達の度合いを別にすれば、両地方の間取りは、間取り拡大の初期段階において、構成要素・配置とも強い類似性を示す。済州島民家の間取りは南部地方のものとも共通性が指摘されているが、部屋の接続順序、厨房と居間の関係などから、別系統のものと考えられる。

・ 主屋の一部に畜舎を設ける内厩式民家は、済州島以外の複列型民家に広くみられるが、南西部の全羅南道にも単列型の内厩式民家が存在している。複列型民家における内厩式畜舎配置は、むしろ北部ほど火元から遠ざけており、一部では外厩式にしたものもある。

これらのことを考慮すると、朝鮮半島における民家形態の南北的差異については、以下のように整理した方が理解しやすいものと考えられる。

(1) まず、板間の利用やオンドル房の通風に関しては、南部よりも中部が先行した。寒気の差を反映して南北方向の推移を示すものには、オンドルの暖房性能があるが、防暑的機能が最も発達しているのは、中部地方の民家である。朝鮮半島における板間の様式は、温暖な南部から次第に中部以北へ及んだというよりは、中部から周辺へ拡散した可能性が強い。これは首都の都市住宅の様式にならい、夏季にも屋内の生活の快適さを求めたものと考えられる。南部では、冬季の生活に備えることが優先され、夏季の生活空間は戸外に求める農村的な生活様式が普通であった。南部に導入された板間は、生活空間としてでなく、収納庫として定着した。また、済州島の板間は、本土の大庁とは系統を異にする。

(2) 済州島民家の広間は、基本的に北部のものと共通する。すなわち、土間の片側を厨房兼作業空間とし、残りの部分を起居空間として分化させた。さらにこれに小さい寝間と収納用の納戸を接続させる形

に発展した。その後、北部には早くからオンドルの様式が成立し、土間に接した広間部分はオンドル設備を施した鼎厨間となり、それに接する寝間も順次オンドル化されていった。厨房のかまどで全オンドル房の送熱するため、オンドル房の接続方向はかまどから一方向になる。

(3) これに対して、オンドルが遅れて導入された済州島では、すでに本土とは異なった厨房と板間の様式が確立されており、オンドルを取り入れやすかったのは、厨房と反対側の端にあった寝間であった。済州島民家に導入されたオンドルの様式では、床房の横に田字型のオンドル房群を接続させることはできないため、オンドル房を増設する場合は、厨房側に置かざるをえない。したがって、本土民家の大庁と同様、二つのオンドル房にはさまれた形で板間を配置する間取りが成立したものであり、当初から、済州島の中央床房型と南部地方の大庁型が共通した間取りとして成立していたわけではない。

(4) 朝鮮半島の民家の畜舎配置に重要な意味をもっているのは、飼料調理用のかまどの配置である。内厩式の畜舎配置は必ずしも保温を重視した形態をとっていない。複列型民家では、かまどと畜舎の連絡さえ確保されれば、畜舎内の保温というより、作業空間の確保に意が用いられる。南北で差が生ずるのは、畜舎の保温効率よりは、土間面積の大小である。南部ほど土間が狭小になり、さらには、作業空間を屋外に求めるように推移する。単列型の内厩式民家の場合、焚き口を厨房に集中させた中央厨房型では、厨房に畜舎が接続されるが、焚き口が厨房の外に分散されれば、外厩式に転換する。

(5) 本来、済州島を含む朝鮮半島全域を通じて、冬季への備えを優先させた住居様式がみられたが、中部地方の様式の拡散と、より単純な構造の単列型民家の拡散により、分布域が隔てられ、その後、それぞれの地域で独自の変化をとげて、今日のような地方的差異を示す

ようになったものと思われる。全体として、朝鮮半島の民家形態の南北的差異は、南方からの伝播要素の導入を想定しなくとも、北方からの伝播要素であるオンドルの導入時期と暖房性能の違い、それにソウルを中心とした中央の文化の拡散によって説明が可能である。