

A study on the Aspects of Environmental Adaptation of the Housing Space in a Farming Village in Transition to a Fishing Village: Focused on Kisong-myon, Uljin-gun

Chung, Jae Kug, Kwan-Dong University

1. Introduction

All private houses are usually planned to be well adapted to the given natural surroundings. For example, the traditional houses in Kangwondo have been composed of two contrasting floor structures of *ondo*(heated floor) and *maru*(wood-floored hall with an empty space beneath for ventilation).

Many residential researches in relation to the environment have been conducted on the changes of the living space in many types of villages, such as farming, fishing, and mountain villages in Korea. However, the studies on the relationship between the environmental change and the residential space haven't been so brisk yet.

This study is to compare the characteristics of the housing changes in a fishing village which underwent the social transition from farming to fishing during the Japanese colonial period. At that time, the people in the farming lands around the eastern coast began to be engaged in fishery for economic profits. A survey was conducted on the original housing structures of the farming village. Then, the transitional features of the fishing villages has been compared. In this comparative survey, the specific features of two different villages show the residential prototypes marvellously adapted to each local environment and provide a fundamental data for the related future study.

The field survey has been conducted on the 21 private houses of the total 261, built before 1945, with little changes of the floor plans and structures. Especially, an intensive study on 5 houses shows some special features of new architectural plans and structures even during the transitional period.

2. Local Situation and Feature

The houses to be surveyed are located around the UlJin airport, ranging from PongSan-ri and KuSan-ri, LoSong-myon, UlJin-gun to ChongMyong-ri. They are sprawled along the National Road 7 near the coast where low mountains stretch

along north-south direction. The mountains rise high like a cliff in the direction of the eastern seashore and decline low into the side of the inner lands. The houses around both sides of the national road consist of the hillside villages of ChongMyong-ri. The residences along the eastern coast are administratively included in PongSan-ri, a fishing village. Below PongSan-ri is located a fishing port of KuSan-ri, where the embankment of the fishery-processing plant, built in the Japanese period, still remains intact. The village roads along the coast run southward to the conjunction of the national road 7 at KuSan-ri.

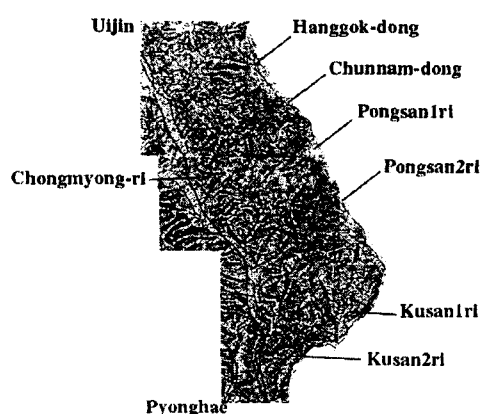


Fig. 1 A Brief Map of Villages Surveyed

2-1 Residence of Kim, Yong Jin (Fig.2)

It is the oldest in the village, built 130~150 years ago, well preserved as in the original conditions. Only the roof was changed into slates. It is 2-kan in the flank and 4-kan in the front with a Sangbang(main room), a floor, a porch, and a stable in the front line and a Dojang room(warehouse), a Kunbang(main living hall), and a kitchen(2-kan) in the back line.

The front external wall of the floor room is covered with panel boards. There is a wooden door in the center of it. In the kitchen, there is an earthen wall protruded about 50cm from the wall of the main living room to the side of the firewood furnace. The wall keeps out the smoke from the kitchen.

In the center of the wall, 20cm high above the floor, there hangs an Udungbul light, 22cm wide and 16cm long. There is a brazier on the floor right below the Udungbul light. There are also the fireplace implements placed on the circular groove at the end of the floor. There is a plastered Gomipanja made of panels(9 x 45 cm) on the floor ceiling. There used to be a storing shelf of the daily stuffs over the single hinged door of the living hall, but these days there remains only a wooden groove. The Kunbang room is a kind of a main living space of the household. The Sangbang room is a reception hall for the men in the house. The

Dojang room is the place where rice and other grains are stored with no heating system. In the kitchen, there are 3 furnaces. There is a log stairway toward the storing space on the upper part of the stable.

This house shows the two-line arrangement and floor type, often found in the Ondol(heated floor) heating system in HamKyong-province. It shows the living conditions of the agriculture-centered village before fishery was introduced. It is considerably old in the Korean history. This house reflects the wealth of the owner when compared with the other small-size residences with crude timbers used.

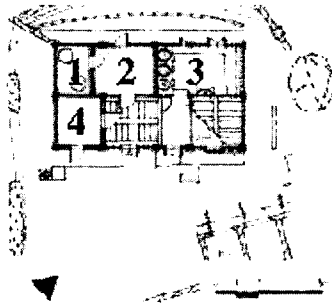


Fig 2 Plane figure of YJ Kim's house



Picture 1 Udungbul light and wide window of YJ Kim's house

2-2 Residence of Kim, Yong Kyong (Fig.3)

This house is located in the mountain area near the national road 7. Before the renovation movement 40 years ago, there were a floor in front of the Kunbang, a kitchen and a stable in the right, and a Sangbang and a Dojang in the left. Afterwards, the stable was moved out to the courtyard and renovated as a Jungbang(a room of servants). At that time the entrance door between the floor and the stable toward the kitchen was closed and removed to the backside of the kitchen, that is, to the side of the house. Presently access to the kitchen is made through the gable. The front narrow porch was newly built and the straw-thatched

roof was changed into the tin roof. The basis is 78cm wide and the column is 240cm high from the basis to the lying plank on the column. The eave is 224cm high from the basis.

There is a room for the master of the house to the left of the main house on the 1-1.2m high embankment, which was used as a study room with a porch floor in the front.

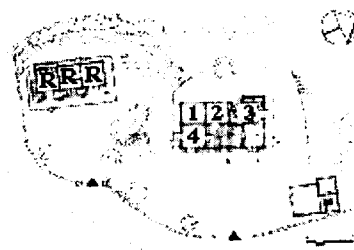


Fig 3 Plane figure of YK Kim's house

2-3 Residence of Kwon, Sang Ki (Fig 4)

There are a Sangbang, a Kunbang, and a kitchen in this house. At the connected house in the shape of the Korean letter "ㄷ", eaves to eaves with the main house, there are also a detached room, a storehouse, and a stable. It was built 70 years ago, whose paper wooden windows were changed into sliding glass windows. In the past, tent-shape straw wind breakers, called Pung(windbreaker), were hung in the front of the windows, but nowadays replaced by vinyl-type covers. Pung was hung like a straw tent to protect the windows from the rain and wind. In case of special needs, it was hooked up for use with the pegs stuck in the court yard.

30 years ago, there was a partitioning wall between the storehouse and the stable in the detached house. Now it was replaced by a storing attic on the upper part of the storehouse. The wall between the main house and the detached house was finished in cement mortar on the earthen wall. The eave is 178cm high and its column is 185cm high.



Picture 2 Before and after the windbreark, SK Kwon's House

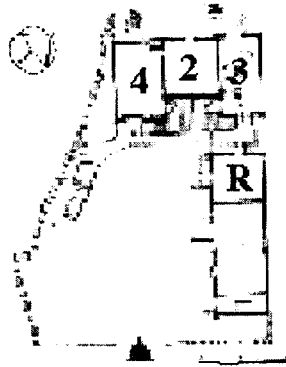


Fig 4 Plane figure of SK Kwon's House

2-4 Residence of Yun, Song Chan (Fig. 5)

It is a 50 years old house behind the new western-style house near the road. While most houses in the village have a Sangbang, a Kunbang, and a kitchen, it has another detached room connected to the kitchen. The room has been renovated for the children's use to meet the needs of more storing space and economic convenience. An access to the room is made through the parallel door renovated recently. The floor open to each room is planely levelled off as found in the modern houses. The column is 200cm high now, but it is gradually getting built higher.

It was built just before the western houses were introduced to the village. Since then, brick houses and concrete structures are coming into being. This house has 12cm-diameter square columns on the foundations of natural stone and a long floor in the frontal part. There are several rooms right behind the floor. The kitchen is renovated into a briquette-heated Ondol system and is sunken 4cm below the plane yard.

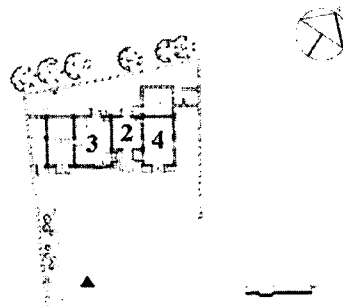


Fig 5 Plane figure of SC Yun's House

2-5 An, Pun Rye's House (Fig 6)

In consideration of the two preceding households who lived here before An's family, this house seems to have been built 80-100 years before. An, Pun Rye, the present owner of this house, moved in 7 days after their daughter, Mrs. Kim, Jin Ok was born, aged 58 now.

This is called a Tamjip house, which is made of the mixed clay in the pre-fabricated wooden frames to make a wall. The wall has become thicker and thicker with the replastered clay to make up for the portion torn apart. There remain two more Tamjip houses including Kwon, Tong Su's house here. It is a winged house with the length of 4 kan in the front and 2 kan in the side. The Kunbang room has a floor in the front. The Sangbang room has a Tojang room and a lady's private sitting room at the backside. It has the traditional structure of Maksali(rough living), which has a roughly-founded basis on natural stones. There is cement mortar finished on the basis on which other corner stones of amber are placed. Then, the columns of 13-16cm thick rectangular timbers are erected on them. The roof is trussed with 3 ridge beams. The posts to support the Chongdori are erected 1-kan inside the wall at the end of both sides of the roof. This structure is similar to that of Okumjip house whose ceilings of Tojang, Sangbang, and Kunbang are slanted with the height of 90-180 cm. The 5cm thick rafters are placed regularly 30 cms apart and are extruded with the wallpapers on them. The windows and doors(approximately 60cm wide and 85cm high) are vertically distributed every 7 cm away with the mullioned windows which are 1-1.5cm thick and 5cm wide. The stylobate is 40cm high and the eave is 210cm high. The eave pole is 164cm high from the stylobate. A vegetable plot is in the backyard.

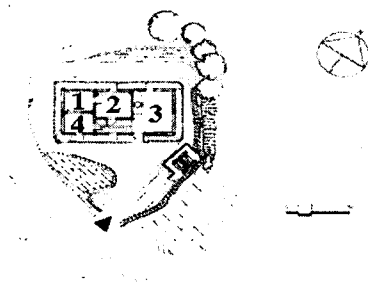


Fig 6 Plane figure of PR An's house



Picture 3 The ceiling inside PR An's house

3. Overview

The survey shows the following features in the farming and fishing villages.

Table 1 The Column height of the surveyed houses

<i>Residence</i>	<i>location</i>	<i>Year</i>	<i>Ceiling Height</i>	<i>Column size</i>
<i>Kwon, Ung San</i>	<i>FV</i>	<i>1920</i>	<i>170cm</i>	<i>Each 12cm</i>
<i>Kwon,Hwa Chun</i>	<i>FV</i>	<i>1910</i>	<i>172cm</i>	<i>12cm</i>
<i>Kim, Yong Jin Yi,</i>	<i>FV</i>	<i>1850</i>	<i>203cm</i>	<i>20cm</i>
<i>Kang U</i>	<i>FV</i>	<i>1930</i>	<i>176cm</i>	<i>12cm</i>
<i>Kim, Tae cUk</i>	<i>FV</i>	<i>1930</i>	<i>220cm</i>	<i>12cm</i>
<i>Yi, Sang Hong An,</i>	<i>FV</i>	<i>1930</i>	<i>175cm</i>	<i>12cm</i>
<i>Pun Rye</i>	<i>FV</i>	<i>1900-1920</i>	<i>164cm</i>	<i>13cm</i>
<i>Kwon, Tong Su</i>	<i>FV</i>	<i>1900</i>	<i>175cm</i>	<i>12cm</i>
<i>Yi, Kyong Do</i>	<i>FV</i>	<i>1930</i>	<i>165cm</i>	<i>12cm</i>
<i>Kim, Sang Dok</i>	<i>FV</i>	<i>1950</i>	<i>178cm</i>	<i>12cm</i>
<i>Kim YongKyong</i>	<i>MV</i>	<i>1900</i>	<i>240cm</i>	<i>13cm</i>
<i>Han, ChangHui</i>	<i>MV</i>	<i>1900</i>	<i>230cm</i>	<i>11cm</i>
<i>Choe, Yonggil</i>	<i>MV</i>	<i>1890</i>	<i>210cm</i>	<i>12cm</i>
<i>Yi, Man Guk</i>	<i>FV</i>	<i>1900</i>	<i>185cm</i>	<i>12cm</i>
<i>Choe, Manchul</i>	<i>FV</i>	<i>1820</i>	<i>190cm</i>	<i>15cm</i>
<i>An, Sung Pok</i>	<i>FV</i>	<i>1880</i>	<i>167cm</i>	<i>12cm</i>
<i>Pak, Yu Bong</i>	<i>MV</i>	<i>1900</i>	<i>215cm</i>	<i>17cm</i>
<i>Kwon, Sang Gi</i>	<i>FV</i>	<i>1930</i>	<i>185cm</i>	<i>12cm</i>
<i>Son, Du Sik</i>	<i>FV</i>	<i>1930</i>	<i>210cm(repaired in 1960)</i>	<i>12cm</i>
<i>Yun, Song Chan</i>	<i>FV</i>	<i>1950</i>	<i>200cm</i>	<i>12cm</i>
<i>Kwon, Song Il</i>	<i>FV</i>	<i>1950</i>	<i>190cm</i>	<i>12cm</i>

FV:Fishing village
MV:Farming village

1) The table of the column height measured in the fishing and mountain villages shows that the heights in the fishing village tend to be lower to stand against the strong sea wind than those in the mountain area with mild wind. The lowest was measured as 165-7cm high as shown in the residences of An, Bun Ye, An, Sung Bok, and Yi, Kyong Do. All the others are between 170 and 180cm high. The later the house was built, the higher it was. The residences of Yun, Song Chan and Kwon, Song Il, built 50 years ago, show the column of 190-200cm high. Meanwhile, the farming houses are 40-65 cm higher in average than the fishing houses, almost up to 230-240 cm high. *

*Chung, jae Kug, "A Survey of the Cultural Relics around the Ulsan Airport" Traditional Architecture(Kangnung National University, Korea), 1998

2) As shown in Table 2, there have been many changes in floor type as time goes by. The type A plan is found in the oldest residences in the fishing village

and in most mountain areas. The fishing village began to show the same style only from the Japanese colonial age, since most of the villagers had been engaged in farming before the period. In other words, through the age of transition, the original plan in this village was gradually replaced by Type B or C.

This transition might be the direct outcome of the occupational influence. However, the economic poverty during the colonial period probably induced the construction of the small-size houses.

Type B and C have the similar plans, but Type C has more spacious rooms to satisfy the increasing needs of more storing space. As a result, Sang Bang as a Master's room was divided into DoJang Bang. And, the increase of family numbers needed extra rooms. Judging from the storing customs of clothes and rice in the DoJangBang at that time, the former reason is more convincing. Type B is most frequently found in the fishing village. Half a century ago, there appeared an annexation to the side of the house in preparation for additional family numbers and modern living conditions, as found in the residence of Yun, Song Chan.

Rather than the traditional double-line formation, the expansion of Kan(room space) was introduced into these houses. Since then, there came many changes in the use of construction materials. Brick houses and concrete houses with different types of floor plans came into construction.

Type D is the house of single-line formation, scattered all around the country. It is even found in the fishing villages where there is a relatively mild weather on behalf of warm sea currents.

Table 2 Plan changes of the surveyed houses

Type	Floor plan	Year		
		1850	1900	1950
A		● Kim, Yong Jin ● Choi, Man Chul	● Kim, Yong Kyung ● Han, Chang Hye	
B			● Ahn, Sung Bok ● Kwon, Dong So ● Choi, Yong Gil ● Lee, Man Kug ● Lee, Sang Hong ● Kwon, Yong San	● Lee, Kang Woo ● Kim, Tae Wook ● Kim, Sang Dug ● Yoon, Sung Chae
C			● Ahn, Bum Iei ● Park, Yoo Bong	
D				● Lee, Kyung Do

1. Dojang (ware house) 2. Kunbang (main living room) 3. kitchen
4. Sangbang (living room) 5. floor 6. stable R : room

3) Environmental changes caused the people in the fishing village to need some new living space and facilities. A new lifestyle, changed from farming to fishing, also came to need more storing space. The old stable came to be used as a new warehouse. The space under the eaves was utilized as another storing place. More annexed houses were built to store the fishing gears and to secure more living space. In other words, the storing space was restricted to the stables and farming tool shacks in the early days of transition. However, in the later days more storing space was expanded to keep safe the fishing nets and gears in handy places.

4) The wind breaker, called Pung, was established in the frontal part of the house in order to stand against the sea rain and wind. In Chejudo, There is a wind-breaking spatial zone, called Nang Gan, in front of Sangbang room. In this fishing area, here is a wind-breaking straw screen to cut off the head-long wind. In the old days, straw was the favorite material for the windbreaker. It is far superior to vinyl in sense of the wind-defending potentiality, even though vinyl can break the strong wind perfectly. Complete wind-breaking can cause a gust of wind around the breaker, then increase the wind pressure around the house, might bring forth minor damages to the structures near the house, and sometimes cause the stormy wind to smash the inside of the house.* The straw wind breaker can be also used as a sunlight screen against the strong light reflected on the sea surface in the summer. It also increases the visibility inside the house through the diffused reflection and lowers the heavy load of air-conditioning. It helps the resident to stay cool inside the shade and stay away from the glare of the strong sunshine at noon.

*Penwarden, A.D, Grigg, P.E.and Rayment,R:Measurement of wind drag on people standing in a wind tunnel, Building and Environment, V.13. 2. 1987.

4. Conclusion

This comparative study on the residential features of the two different villages (fishing and farming) shows what kinds of environmental changes they underwent in the transitional period as follows:

First, since the fishing villages are located near the coast, the houses in the villages tend to be more effectively adapted to the natural environments. In the fishing villages, the people set up the wind-breaking straw tent (called PungMak) hanging from the eave in order to stand against stormy rain and snowstorm. The straw windbreaker also helps the residents feel pleasant by cutting the diffused reflections of the low-latitude sunshine.

Second, the strong wind in the seashore causes the height of eave to be 40-65cm lower than that of the farming village. The former has the height of

165-180cm in average while the latter has 230-240cm. As the modern architectural technology increases the human adaptability to the environment in the villages, the eaves of the houses were located higher, even up to 190-200cm high in the fifties.

Third, the floor plan in the farming land has shown the tendency to stay unchanged while the floor plan of the transitional fishing village has shown the disappearance of the winged house, Ondol-heated, as found in HamKyongdo. The residences in the fishing area have a Sangbang, a Kungbang, and a kitchen. They usually have another room attached to the Sangbang or the kitchen for the life's convenience.

Fourth, the people in the fishing village need more storing space for their fishing implements than in the farming village. In the early part of the transition, they utilized a stable and a shed as a new warehouse of fishery. At the end of the transition, more storing space, such as the space under the eave, came to be utilized and naturally resulted in building more rooms.

This study was conducted on the specific residences in the relatively small area: Therefore, a wider range of survey would be required for more general residential features of the farming and fishing villages.

references

- Anderson, R. "Determination of Ventilation Difficiency Based upon Short Term Tests," Proceeding of 9th AIVC Conference, Great Britain (London, 1988).
- Chung, Jae Kug. "A Survey on the Land Cultural Relics around Ulsan Airport," *Traditional Architecture*, the Museum of Kangnung National Univ., Kangnung, 1998.
- _____. "The History and Cultural Relics of Tae-baek in Kang Won Province," *Traditional Architecture*, the Museum of Kwandong Univ., 1997.
- _____. "The History and Cultural Relics of Jeongson in Kang Won Province," *Traditional Architecture*, the Museum of Kangnung National Univ., 1996.
- _____. "The History and Cultural Relics of Kang nung in Kang Won Province," *Traditional Architecture*, the Museum of Kangnung National Univ., 1995.
- _____. "The History and Cultural Relics of Sam-chok in Kang Won Province," *Traditional Architecture*, the Museum of Kangnung National Univ., 1995.