

## **TOWN PLANNING IN PALHAE**

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### *Preface*

Palhae state was founded in 698, and collapsed in 926, under the attacks of the Khitan. According to Korean history Palhae was related with the North and South States Period. However, Russian and Chinese scholars has other viewpoints on medieval state, which are located on the present day territories of the Jilin and Heilongjiang of China, Hamgyong province in North Korea, and the Russian Far East. The last both territories were a peripheral area of Palhae, for a better understanding of which should be considered in the central part of city planning and other areas of Palhae.

In Soviet and Russian historiography on this issue focus mainly centered on the study of capitals [Okladnikov, 1957 Boldin, Ivliev, 1997; Stoyakin, 2011], the individual settlements in Manchuria [Shavkunov, 1968, p. 105-108]. Another researchers have focused mainly on the study sites, digs in their countries, but rarely carried out a general study of the monuments located in three states [Kiho Song, 1989; Hakpon Pan, 2002; Yulan Wang, Wang Hunbey, 1994], but they do not cover the whole complex of ancient settlements.

Based on the Chinese annals ("Narrative of the Palhae" ("Xin Tang shu")) we know that in this country, there were five capitals. Except the capitals there were 15 provinces, 62 regions and more than a hundred counties [Boldin, Ivliev, 1997]. It's necessary to give the most complete description of the castle monuments, correlative with each of the administrative units, their characteristics and typology to define what is a city in Palhae, and how its development proceeded.

Researchers have encountered difficulty due to the small amount of information about Palhae's cities in historical annals. Also, previous research didn't cover all the sites located in these three modern countries. But recently archeologists investigated some Palhae's sites and the number of ancient settlements (castles) is increasing. Capitals and other big sites are usually most common, but there have been some reports about these small castles.

There were excavated only a small part among all Palhae settlements (castles) in all 3 countries. It needs to compare them with the Chinese, Koguryo and Mohe architectural tradition to identify the sources that influenced the Palhae urban development. In addition, some of them were rebuilt by Khitan and Jurchen, and we try considering how it could affect on the original appearance of Palhae settlements.

After the analysis of well-known Palhae castles, researches noted their purposes and territorial peculiarities, and studied the architectural traditions of Palhae settlements. Thanks to this we achieved our goal of reconstructing a part of Palhae's culture, especially town planning in Palhae and the town's life in medieval society.

### *Location of the Palhae castle.*

The object of the study is Palhae castle in the amount of 178 sites [Stoyakin, 2011, PI. 25]. Among these, 38 are located in Russia (21%), in North Korea - 26 (15%), most in China - 114 (64%) (Fig. 1).

If we consider the distribution area of Palhae castle monuments on the separate territory, then to North Korea – it's the most northern province, North and South Hamgyong Province. The castles are grouped around a large plain castle along the valleys of several major rivers Namdechon, Mengangchon, Susonchon, not far from the coast of East Sea. The Chonhe castle is located in the county Pukchon, which correlated with the Southern capital of Palhae. Nearby there are a number of large mountain settlements, as Kosan, RENCHOLLI, Angok, Pekunsan. Near Chonjin in Pugori are known a large plain and mountain fortress. In addition Ingeri fortress located in the county Hvejo, a fortress Sonsanni - in Kymchek. But there are exceptions: in the county Orani there are only mountain castles Chibanni, Chanen, Namjin. In addition, there found seven forts Kanmibon, Chansynmok, Norumok, Sokyande, Kviampe, Phalgende, Angedon [Chungol Lee, 1986], which may indicate an important character of the area. As for the whole of Korea, there dominated by mountainous terrain, so respectively, a high percentage of mountain settlements.

As for Palhae castle in the Russian Far East, they are also located in the river valleys. It is a plain settlement Kraskino, Gorbatka, Maryanovka, Koksharovka, Nikolaevka. But over the past decade have been conducted archaeological research in the area of the Sikhote-Alin on the North-East of Maritime province. There are numerous mountain castles. However, not all researchers has the opinion, that there are Palhae's monuments.

Palhae castles in the North-Eastern provinces of China are mainly located in large river basins in Mudanjiang, Heilongjiang, Tumen. It was the center of the Palhae state, the place of four capital and the "Old State", there were major transportation and trade routes. It is therefore natural that in such places there are numerous plain castle, which defended the accesses to the mountain fortress, located on the mountain neks. They were especially numerous nearby the Middle capital.

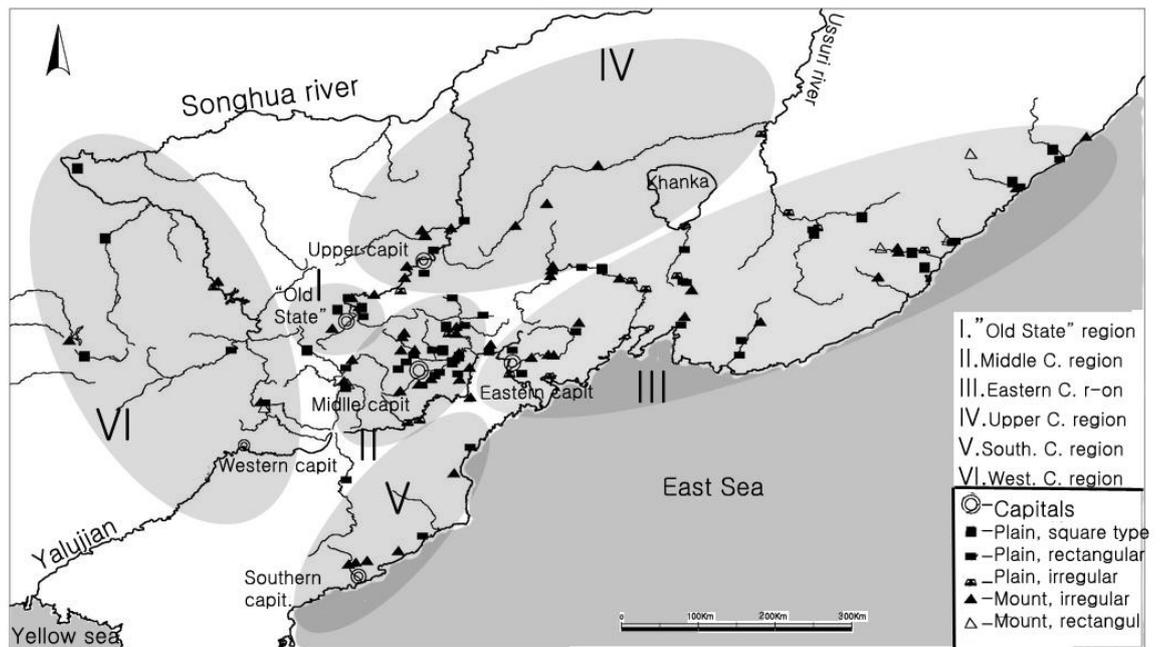


Fig. 1. Location of the Palhae castles

### *The characteristics of the Palhae town*

The main characteristics of the Palhae settlements include the relief, the size (perimeter of the wall), the square, types of form, structure and technology of construction of the wall, the presence of fortifications, gates, inner city.

The relief of Manchuria, with its broad valleys and mountain ridges affected on the character of early medieval urban development of Palhae state. In the Palhae plains settlements (99) was more than the mountain's one (79), but the difference is negligible. Bohai Urbanism differs from both Koguryo and Chinese tradition based on the topographical factor. The first was dominated by the mountain, in the second – the majority was the plains city. Thus, here we see a new tradition for the region. It seems to us, in the Bohai plains fortress had an administrative function, and the mountain - a defensive function.

The perimeter of the Palhae settlements (fortification) is in the range from 64 m to 18.5 km. We can divide them into four groups: a small one's length less than 600 m; a medium – from 600-1200 m, a medium-large – 1200-2500 m; and a large, whose perimeter is equal to more than 2500 m. Sometimes the data are known only for square. According to this parameter the small settlement's square reaches up to 2 ha, medium – 2-10 ha; the medium-large - 10-40 ha; and large's square is 40-100 ha. The exception is the Upper Capital (1750 ha and 18,500 m), where was the capital of Palhae for 160 years. It was a great city, second largest after Chang'an in Northeast Asia at that time. Dimensions of Siguchen and Balyanchen sites (respectively, correlative with the capitals of Central and Eastern Capitals of Palhae) is much smaller (2700-2900 m). Accordingly, their status were below. According to fact that there are a number of fortresses in size larger than the two capitals (fortress Dachenzi, Sandaotun, etc.), they were provincial centers and that status could be equal or even exceed the capital city at certain stages of evolution of the state. At the same time, the area (square) of fortress Chonhe, correlating with the Southern capital of

Palhae, is 25 ha. It confirms its status as less significant compared to other capitals. We believe that the large settlement centers were centers of counties (eg, Kraskino, Gorbatko sites, etc.). But since their amounts are few, it is likely that some medium-sized settlements could also be the center of the county (such as Nikolaevskoe I and Maryanovskoe sites).

It can also suggest function of mountain settlements considering their size. Castles, whose perimeter walls less than 600 m, we assign to the forts. These irregularly shaped fortified settlements were built near rivers, transportation routes. Large and medium-sized settlements were strategic defensive points, constructed along the major roads on the approach to major administrative centers. Here it is worth noting that in the Palhae was a distinguishing defensive system, than in the Koguryo, where large mountain fortress was located near the capital, like the satellite (Kunne and Wandu, Anhakkun and Taeson fortress).

As a result, a small settlement include 52 of the monument (34%), to the middle - 37 (25%), the medium-large - 39 (26%), to large - 24 (15%). Square of settlements varies from 0,1-1750 ha. This may indicate the concentration of administrative and economic functions in the capital (especially Upper Capital), as was the case in China. At the same time most of the monument's square is less than 10 ha. It can show a low level of urbanization, although the rate of urbanization for the region was significant in comparison with previous periods.

Let's consider the parameters of the wall, i.e. width and height. Unfortunately, the preservation of Palhae settlements is unsatisfactory and there is limited information about them. But, according to available data, the height of the majority remaining walls is 1-3 m, and there are small amount of the fortress, whose height above 3 meters. It can be one of the features of Palhae settlements, in contrast to the Chinese cities. For examples, the height of the Palhae capital's walls is 3-5 m. Later, many of the fortresses were rebuilt to a height of 5-10 m (Dahueytun, Chibanni, Nikolaevka are a fortress, whose height is 10-15 m).

The height of the wall is usually depends on the width of the wall. Basically, the width of the Palhae fortresses' walls equal to 4-10 m, on average. Only 5% of the total number of fortresses has 10 meters wide walls. And there are towns, whose width at the base of the wall is 25-30 m. They were rebuilt basically with Jin (Noonang site, a mountain fortress Chuankou). Of course, that the wide walls are more common in plains settlements than the mountain ones, where there was no need to construct a high walls.

The height and width of the wall depend on the strength of its method of construction and construction material. It's necessary to note the absence or fragmentary data on such an important component. So there is some problem to analyze it. However, through the building elements can trace the influence of varying architectural tradition. Basically, the researchers noted sites with earth (66 monument or 37%), stone (38 and 21%) and stone-earth (49 and 27.5%) walls. However, it's necessary to consider the construction of the wall in more detail. We distinguish them on the earthen walls (43 or 24% of the monument), stone (26 or 14%), stone-ground (41 or 23%), mixed construction (25 or 14%), as well as ground (11 or 6%) or with rock-filled earth and rock "face" (8 or 4.5%) (Figure 2). There is a

noticeable variety among the settlements, with a predominance of earth and stone-earthen walls. The last one can be defined as a characteristic of Parhae urban development, as well as the use of stone "face".

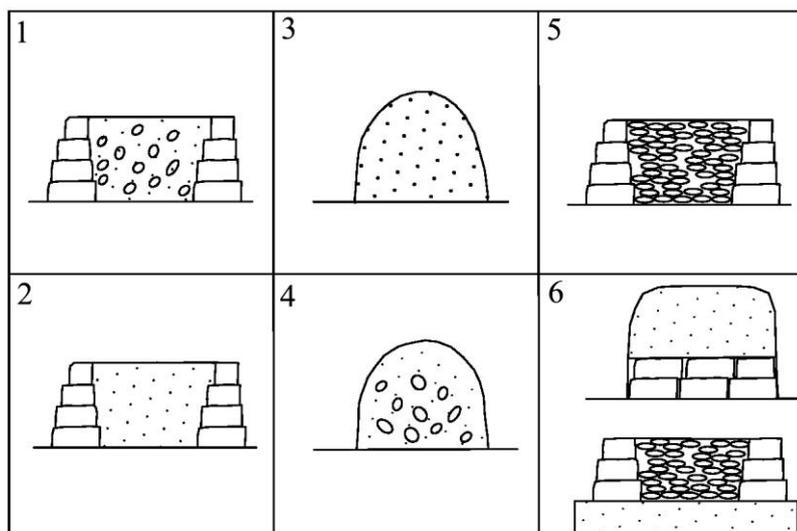


Fig.2. The method and construction material of the Palhae castle's wall: 1. Stone "face"+ stone and earthen fill; 2. Stone "face"+ earthen fill; 3. Earthen walls; 4. Stone-earth; 5. Stone wall; 6. Mixed construction.

Now consider the features of construction methods for each type. Usually to build an earthen castle use method like *hantu* (construction of walls using rammed earth in layers). It's typical for Chinese urban, but if the Chinese cities are characterized by the use of wooden formwork, in the case of the Palhae its hardly detected. The layer thickness was 10 or 15-20 cm for the different towns. A wall was build by just sleeping soil very often. In the one case used unfired bricks (castle Heishi).

The stone walls constructed on a specially prepared basement, and without it. For mountain castles typical to build it on rock. Stones could be prepared, but the commonly used "wild" rock. To increase the strength of masonry placed both along and across the wall. Often the wall is "propped up" by the earthen bank. We are not traced certain proportion of the material in the stone-ground construction, all depends on the features of the territory.

Mixed construction is a various materials in the wall in one fortress. These include the towns, where in addition to the basic material is tracked other material at sector in the walls or base.

There were various plan forms of settlements in the Palhae (Figure 3). Among them are 21 (12%) square (including a diamond-shaped) castles, 54 rectangular (30%) and 87 irregular (49%). The reason of a high percentage of the last ones is a large amount of mountain towns. But there is much such form among plain town located in the Maritime Provinces. Although most of the plain castles had rectangular form, but among them there are different subtypes (including parallelograms, the fortress with a different direction of long and short walls, "U"-shaped, with the ledge). So, particular patterns not observed. The similar situation studied about the capital's sites: though they are rectangular in plan, but the direction of the long sides of the walls is different. If we consider the process of changing form over time, it is

different for each type. Temporary various forms of settlements have been used at one time, dominated, or winding down.

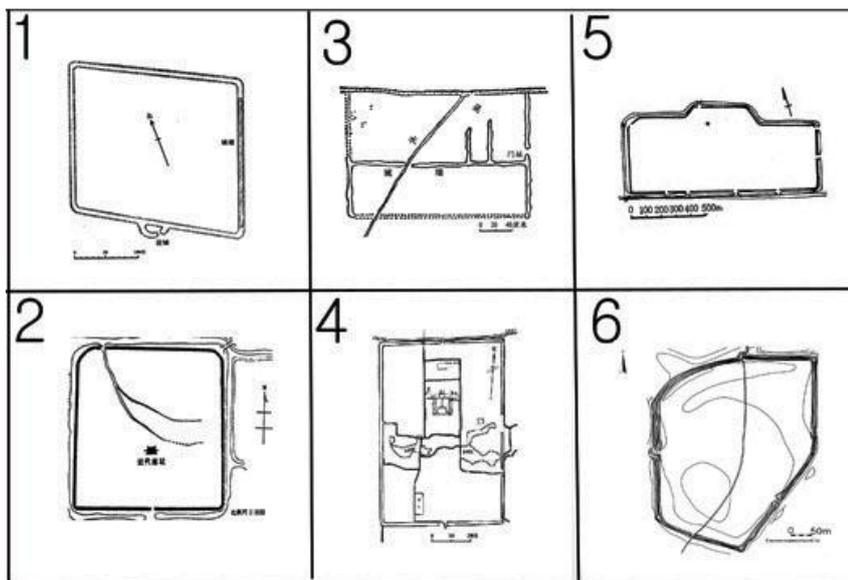


Fig.3. Plan forms of Palhae castle: 1. Diamond-shaped; 2. Square; 3. Rectangular with a long width walls; 4. Rectangular with a short width walls; 5. Rectangular with ledge; 6. Irregular.

We can see which the architectural tradition influenced on the form of the Palhae settlement. For example, in China since ancient times trying to make the quadrangle (especially, square) form building the construction. Huge plains allowed building such facilities. However, Palhae's square castles can be divided into 3 subtypes. The first - where the walls are located on either side of the world (N, S, E, W), the second type - the corners are located on either side of the world, the third type - the settlement of a square shape but with rounded corners. In addition, the Chinese influence founded in copy of a Chang'an - the capital of Tang. Its shape is rectangular, but in the north-east there is a ledge where there was a large park. In the Palhae has two settlement (Upper Capital in Dongjinchon and a large site Dachenzi) with a similar shape, but the ledge is in the middle. Some researchers point to the protective nature of it. Thus, it could be a form of copying the Chinese capital.

If we say about Koguryo, the mountainous terrain influenced on the dominance of the mountain fortress, built in the irregular shape form, relied to the terrain. It is also similar with characteristic of the Mohe's forts. Naturally, the mountain fortress in the Palhae were irregular in shape. With regard to the presence of some irregularly shaped form among plain's castle, it can be explained as features of the landscape, and the fact that, especially on the state's periphery still preserved ancient beliefs (shamanism). This could affect the attempt to avoid building forts, whose walls would converge at a right angle [Korobiy, 2002, p. 100]. Thus, we observe a variety forms of settlements due to the adoption of different architectural styles and diverse landscape.

The gates are an important element of the castle, but we can study only remains that structure because it's destroyed. It was founded the sites disintegrated tiles while excavate on the remains of the gates of the capital, which indicates the presence of the gate tower, such as those that can be detected in

images Tang period. The number of gates on the sites is different, most sites has one or two gates is less than 3 or 4 gates. As an exception, on the Upper capital there are 10 gates, and 5 - on a mountain fortress Sacichen built since the time of Goguryeo. It is believed that the number of gates on the site depends not only on the terrain, but also on social, political, military, etc. So the high status city will be have a lot of gates [Pan Hakpon, 2002, p.118]. Of course, the small settlements has only 1 or 2 gate, it's a typical phenomenon, but also among the big castle we can find such examples. For examples, the Balyanchen has four gates, at a similar status Siguchen has only two, and the Dachenzi - only one gate. A small number of gates make urban life in the big cities not comfortable, but at the same time it is possible to effectively protect one of the weaknesses in defense wall. Palhae settlements characterized by a diverse arrangement of gates on either side of the world. Nevertheless, more than half have only or south direction (including the SW and SE). It's especially relative with plain towns. This is obvious the influence of Chinese architectural thought, especially in terms of *fenshui*. For the mountain settlements gate are usually located on the northern, north-east, or west direction. The width of the gate related with the status of the settlement. For example, the main gate (southern) of the Upper capital was 60 m wide, in other capitals - 15-25 meters, provincial city - in the range 6-9 m, for county-level cities this figure will be even less. In the case of mountain castles, usually the gate's wide is 8-17 m, and Tinyanshan is for as much as 30 m.

Only on 10 sites of Palhae settlement was discovered the inner city. This is usually walled part, located in the center, close to the northern part or next to the fortress wall. However, archaeologist founded large buildings like the palace on a number of settlements (Koksharovka 1, Baomachun site), it may indicate that the inner city could not be surrounded by a wall. We searched that increase of the inner city is close to the increase in the size of a fortress. For Palhae settlements located in the territory of China, the size of the inner city for middle-large fortresses still 100-300 meters, to large - 1,000-1,400 meters. There is exception like Upper capital, perimeter of the inner city (palace city) which is 4500 m. Such a complex could confirm the high status of the settlement.

One of the most controversial issues regarding the Palhae city is problem of an additional fortress's defenses. Chinese researchers claim that *zhab* (defensive wall in front of the gate), front and corner towers were characteristic of the Liao and Jin periods, which was one of their distinguishing features [Yongjin Jong, 1999]. Korean researchers suggest the contrary, that in many Palhae cities there are such defenses, and this can be confirm tradition of continuity features of Koguryo [Kiho Song, 1989].

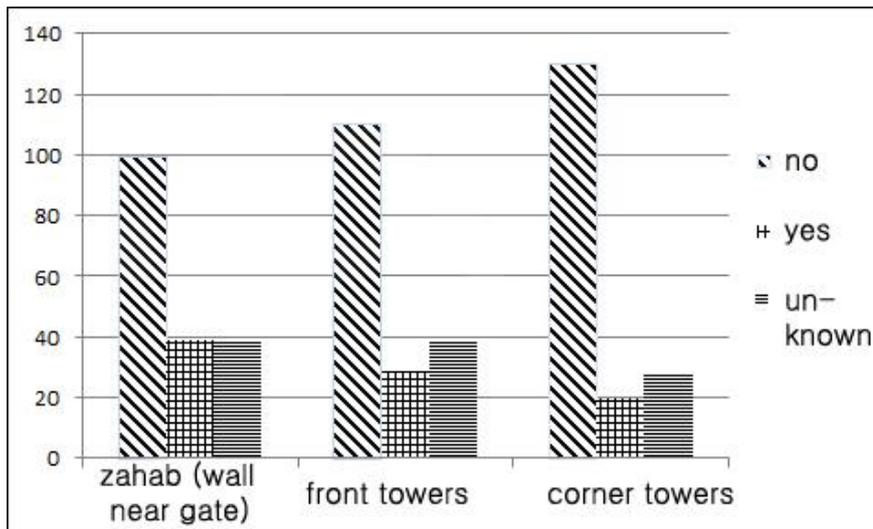


Fig.4. The ratio of defense structure in Palhae castle.

This analysis (Fig. 4) showed that more than half of castles were not defensive structures. And if we assume that those fortresses, which are no more accurate data, these structures are also absent, then the figure will increase to 80-90% of the total. *zahab* and defensive towers were built more often on the plain sites than in mountain castles. The origins of the tradition of building such defensive structures on mountain fortress could be found in Koguryo. If we look on the plains cities, here is dominated by Liao and Jin tradition. Thus, we think that it is rebuilt castle. Nevertheless, there are some exceptions. For example, on the Kraskinsko castle in Russian Far East was built *zahab*, defensive towers, but liao's layer wasn't found, although there is a finding a Khitan vessel. It is believed that over time the trend towards the construction of protective structures in the Palhae disappeared [Pan Hakpon, 2002, p.126]. However, if the settlement in the Maritime region of Russia considered later in time, this hypothesis was not confirmed. Compared with other regions, these protective structures are rare on the sites of the territory of North Korea.

It can be distinguished 4 different type of form of the *zahab*, the most common was a semi-circular form. Among the settlements with such structure can be attributed Inchen, Inchenzi, Nanchenzi, and Tungoulin mountain fortress. The square form of *zahab* had the castles like Bodu and Sumichen, but their shape are close to first one. "L"-shaped structures are on the sites of Kraskinsko and Nicholaevka. As an exception, *zahab* with form like an acute angle can be identified at the mountain fortress Chenzishan. As noted by E.V. Shavkunov, small in size *zahab* appear on the Palhae's castle in the late 8th-early 9th, and in 10-13 centuries They are general in the ancient city located in Manchuria and Inner Mongolia [Shavkunov, 1968, p.107-108]. If we consider that *zahab* on the Khitan towns had a "L" or "U"-shaped, and later in the Jin, they become semi-circular [Ivliev, 1983, p.125-130], we can assume a possible period of rebuilding the Palhae settlement. So there is a problem to study Palhae castle because of that problem.

There is a wide variety among the number of front towers (from 1 to 12-14) at the sites of Palhae. As the Pan Hakpon, they are usually constructed in a semicircle, not a square or rectangular form, and

there are not a certain distance between them, it depended on the castle's size, terrain conditions, and other features [Pan Hakpon, 2002, p.99-100]. If we consider, that the distance between towers were different in the sites of Khitan, while in the Jin Dynasty it becomes a regular [Ivliev, 1983, p.124], we can assume that the settlement Inchenzi which has 12 towers, and the distance between the towers is different, it was rebuilt by Khitan. And the castle Heishi had 13 towers, the distance between them is about 50 m, while on the Usihunhe site distance between them is 30-40 m. A similar situation is observed at the Maryanovka and Nikolaevka sites, it can be proof of the fact that they were rebuilt by the Jurchen.

As for the other castle's structures, on the part of the mountain settlements there located watchtowers, standing on the highest point to survey the surrounding area. Ditches are characterized mainly for plain settlements. However, there are also on a number of mountain settlements, although many of them fortified by wall or on some places even haven't it, because steep mountain slopes were used to reduce costs in the construction of the fortress. Ditches were needed in plain castle of course because of relief and also the low ramparts, their width reaches up to 5-10 m, 1-2 m depth. Often as a moat were used a natural obstacle - the river, bayou, lake. The land from ditches used to build the rampart.

#### *Typology and tradition of Palhae castles.*

Based on Chinese annals, in Palhae there were 5 capitals (Western, Eastern, Upper, Middle, and Southern) and an "Old State", the place where the state was founded. Therefore we can divide all of Palhae's castles into 6 big territories, not dependent on modern boundaries, but rather the territories themselves. As a result, castles in each group might have similar and different features, which will allow us to uncover and pinpoint the distinct characteristics of each region. But in that paper we leave this issue to research it separately in another paper.

Palhae's castles had different complex characteristics including size, square, topography location, form, type of wall structure, and defense constructions. So we divided the sites into 5 types with different administration (plain castle types) and defensive functions (mountain castle types). Especially noted the close relationship between the size of the settlement and its functions.

1 type of settlements - the plain castle, with rectangular form in plan, has the big (or huge) in size, surrounded by an earthen rampart. They function were a major administrative center, such as the capital or center of the province, part of which had the inner city.

2 type settlements - the plain castle, with rectangular, square or irregular form in plan. Their walls was built by soil or soil with stone. They are medium or medium-large in size, were the centers of regions, i.e. refer to the average administrative rank. They were built to control a smaller area than the capital or the province.

3 type of settlements - the plain castle, with rectangular, square or irregular form in plan, the walls are build by soil, stone or soil with stone. They are belonging to small towns in size, were the centers of the counties, i.e. belonged to the lower administrative levels. There are many settlements of this type, with a wide area of distribution, had a lower status than regional.

4 type of settlements - the mountain castle, with irregular form in plan, the walls are build by soil, stone or soil with stone. They are large, medium-large or medium in size, had a defensive function, situated in a strategic location.

5 type of settlements - the mountain castle, with irregular form in plan, the walls are build by soil, stone or soil with stone. Their size was small, like forts. They are protected the surrounding coastal villages or small towns, or were placed in important location points, which are seen from a large area.

The main influence on the urban culture of the Palhae was in fact multicultural society, mixed by Chinese, Koguryo, and Mohe's residents with their different architectural and ideological views and customs, as important as territorial locations.

In the construction of fortresses noted the influence of Chinese architectural thought to building: using the right forms (square and rectangle), the predominance of the southern location of the gate, construction of earthen walls by method like *hantu* (construction of walls using rammed earth in layers), a rare presence of defenses constructions in the wall, copying the image of Tan's capital Chang'an, building the inner city, the location of the palace buildings and their forms.

The influence of Koguryo architectural construction founded in the use of mountain fortresses, building stone or soil-stone wall construction, protective structures on the part of the settlements (corner and the front tower, *zahab* - defensive wall in front of the gate). Nevertheless, in Palhae soil-stone wall construction is often used, which can be attributed to the particular construction of Palhae towns.

Mohe forts characterized by earthen walls, their incompleteness (some parts of the wall haven't walled), prefer more mountain fortresses (forts) [Dyakova, 2005].

There are some difficulties in learning the really architecture of Palhae settlements due to the fact that some of them were rebuilt. So in the Liao and Jin in the rebuilt sites, for the most part, appear front and corner towers, *zahab*, which certainly influenced on the method to built the walls, its construction. Palhae settlement had no special defense structures for the most part, except the wall. But as in much of the monuments has not been investigated wall defense structure, it may appear such exceptions as Kraskinsko castle, where archaeologist found the front tower and *zahab* [Koichi Tamura, 2003].

### *Conclusion*

It should be noted that the full study about Palhae castle, including castles located in 3 states: North-Eastern provinces of China (where was the center of Palhae), Russia and North Korea stands at the beginning. The study of this region need to better understand not only the culture of the Palhae state, but in the process of town planning so far from urban China, and Korea's territory, to study the transport and trade routes, urban life in medieval society. Palhae fortress characterized by a little dominating the plain castles than mountains one, of various forms and different type of construction a wall. There are five types of settlements with certain administrative and military functions. It's studied that urban development in the Palhae close related with China, Koguryo, Mohe architectural and ethno-cultural traditions that have been added at a later time, during the Liao and Jin (*zahab*, defensive towers). Lack of

written sources increases the role of archeology, but it must not only overcome the language barrier, but also reduce the political background to the study of the medieval state because town planning was viewed differently by scholars of Russia, China and Korea. In particular, it's important to providing easy access to the information to all archaeologists, historians.

#### NOTES.

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