Early trade and Exchange in Southeast Asia: evidence from the Bang Pakong Valley, Thailand

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Abstract: *Archaeological perspectives of the transition from prehistory to history in Eastern Thailand were still previously relatively poorly understood. Archaeological sites in the east, known only Khok-Phanom-Di and Nong-Nor which were renowned prehistoric shell mound sites in Eastern Thailand and in the historical record were often mentioned as Sri Mahosot, as well as the ancient city of the Dvaravati. Documented transition from Late Prehistory to Early History was missing due to a lack of research. The prehistoric communities were not only located on coastal areas but were also located in caves, under scarp sheds, and on hills surrounded by mangrove forests. The transition from Late Prehistory to Early History in Eastern Thailand can be proved by a relationship between people and things to sustain life, leaving artifacts. Therefore, this paper presents Prehistoric trade and exchange system which adapted to the habitat change and allowed access to raw materials.*

Index Terms— *Archaeological, Prehistory, Bang Pakong Valley, early trade.*

I. INTRODUCTION

This network exchange was similar to sub-markets and the transfer of knowledge as prehistoric communities interacted with one another. This was an important archaeological perspective when the Indian culture spread to Suvarnabhumi around 7 B.C. by traders who came from India to ancient ports. These people had brought culture, religion and political systems to local peoples. These prehistoric people integrated into the Dvaravati culture leaving their traditional territories to become a part of larger community, including Muang Prarot, Sri Mahosot, Dong Lakorn etc.

The most-ancient prehistoric communities in *Eastern Thailand* were found to settle in the caves and high cliff shelters.The evidence is noticed by flakes of Hoabinhnian found in Khao Cha-ang caves, Bor Thong District, Cholburi Province, which were possibly from Middle Stone Age or in the period of 10,000-5,000 years ago.

Moreover, other evidence was also discovered which were human skeletons, animal bones, and earthenware. Early stone tools were the Flakes. Later, these were developed to become polished stone tools. Other artefacts discovered were utensils and ornaments made from animal bones and shells, for example, those which were found in archaeological sites in the Khao Cha-ang caves, Khao-Kaew cave, etc.

These communities settled on the foothill plains and started to spread in the New Stone Age (4,000 – 3,500 years ago) and continually developed until the Metal Age. It was found that some communities were in the same age of coastal communities, for example, Khok-Phanom-Di. Some communities were newer but might have mutual relationships with one another. Archaeological evidences to support this thesis have been discovered in Khok Makok and the archaeological site of Wang Ri, Sa Keo Province. These might have relation to the archaeological site of Khao Chakan and might have continual development into historic urban society.

The coastal area of Thailand started to appear around 10,000 years ago. It was the end of Ice Age caused the coastal area of Thailand to be developed and the sea level to change [1]. Sea level has gradually grown higher in the last 9,000 years ago and reached the highest level in the last 6,000 years ago. The level was 4-5 meters higher than the current level. This higher level of water flew into the land especially in the low land area around the Gulf of Thailand, for example, the plain in central region spreading to the north of Ayutthaya located

about 70 kilometers from the coast of Chaophraya estuary at present and spreading into the lowland area which was once the land both in the east and the west. [2]

Later, the sea level which was once high gradually lowered again, resulting in the collection of sediments forming into several features indicating the change in the coastal area. According to the geological examination of soil layers and the study of satellite imagery of LANDSAT TM Band 4 [3], the lower plain area of the Chaophraya was in the low land area which was once under the sea. Several rivers flowed through the plain before flowing into the sea. The connective area from the sea as shown in the image was in dark color emphasizing on the edge of low land which was once the coast (as shown with white dashed line). The ancient cities were in the upper positions around the area which was under the sea. The ancient coast of the east region in the area of Bang Pakong river basin was the Old marine terrace occurring from the reduction of sea level in the Holocene Epoch (around 4,444years ago) For the coastal area from the plain of central region to Nakhonnayok Province, it was the form occurring from the precipitation of the main rivers until becoming the Marine terrace [4].

The study of ancient communities since the prehistory of the *Dvaravati* period essentially required the knowledge and understanding of the changes of the ancient coastline. The change in sea level before reaching the current level 4,444 years ago was an important factor in settlement or migration. For example, when the coast retreated a lot, the communities were far from the sources of food. This forced them to find a new and suitable place for living.

In the area of Bang Pakong river basin, it was found that there were a lot of prehistoric communities. These communities mainly depended on marine resources with evidence found in Nong-Nor and Khok-Phanom-Di. Moreover, it was found that the contemporary ancient communities located on the mound in the area of Phanasnikhom and Panthong, Cholburi did not live far from one another, for example, Khok-Raka, Khok-Phutsa and to the north in the area of Bang Pakong river basin. Traces of prehistoric communities are found in the area of ChacherngsaoProvince, for example, the Bangphaidam Community which is evidenced as representing a dependence on marine resources or having some relationship with the communities of Khok-Phanom-Di. These prehistoric communities also built networks for exchanging goods between the goods produced from marine resources and the things they were lacking from different environs. This exchange might have been with the communities living on the high land located or exchanging with other communities further away.

According to the features of discovered antiques such as stone axes, it can be assumed that prehistoric communities at Khao Cha-ang Krom Klong had relationships with the communities living on the mounds in the coastal plain. Earthenware was exchanged with the stone utensils. According to the features of the discovered earthenware, it might be the same earthenware found frequently in every soil layer of Khok-Phanom-Di in the same form (A3)[5]. A lot of earthenware found in the first to the last soil layer representing the popularity and demand of this form of earthenware which was not limited solely to local communities. It might be exchanged with resources from forest or stone tools from the archaeological sites located on the high land as these were what the communities living on the coastal area lacked. The archaeological site of Khao Cha-ang Krom Klong were located only 55 kilometers far from the southeast point of Khok-Phanom-Di.

Apart from the exchange of goods among the communities living in the area of Bang Pakong river basin, the prehistoric communities living far away in the east also developed relationships with the communities living in similar terrain. They might have learnt to form earthenware which was different from the sttyles transferred from the coastal communities, for example, archaeological site of Ban Klongbon located on Nong Takong Sub-district, Pong Namron District, Chanthaburi on the latitude of 400400031north and longitude of 4404400401east [5] in the hill plains. Most tools found in the archaeological site of Ban Klongbon were polished stone tools with a uni-lateral bevel with tapered and curved handles. It should be noted that these polished stone tools were hardly used. 23 polished stones tools were discovered, with 2 of them being polished stone axes made from fine igneous rock such as andesite, andesitic tuffs, Rhyolite,etc.

A lot of cracked pieces of earthenware were found here. Most of them were Earthenware shaped with of round bottoms with a wide-open top. These artefacts were discovered in the same pattern of scratches, stamps, and sticks similar to those were found in Khao Kaew Cave and prehistoric archeological sites in the eastern

plains. Moreover, there was also a relationship with the communities living in Cambodia when comparing the pattern and the decoration of earthenware, it was found that it was similar to the archeological site of Laang Spean, Cambodia, located 38 kilometers from Phra Tabong and only 40 kilometers far from the archeological site of Ban Klongbon. The terrain of archeological site of Laang Spean was a cave located on limestone 50 meters high from the surrounding plain. The cave was a large hall which can be reached by several entries. It was discovered in 0611by Ceciel and Roland Mourer. Archeological evidence found there included rock-cracking tools, large rock-knocking tools, cracked-pieces of earthenware, animal bones, tortoiseshell, Mallus, double-shells clams, and small pebbles. According to the discovery of 1soil layers, the rock-cracking tools were continually found but no polished stone tool was found. When comparing the charcoal found in the soil layers to identify its age by using the radiocarbon method (C-14)the lowest soil layer was about 4, 094 B.C. or 1, 094years ago. Therefore, the archeological site of Laang Spean was considered to be in the oldest New Stone Age site in Cambodia.

II. METHODOLOGY

The study uses historical document evidence. Archaeological excavation report Satellite images of the Military Map Department And land to randomly check and collect 40 points in 15 districts around the area of Bang Pakong Vallay. And also using in-depth interview in combination of synthetic research and qualitative research to examine data and interpret the results in descriptive approach.

III. RESULTS AND DISCUSSION

Manufacturing sites of stone tools

Stone tools were the most important tools necessary for the survival of human in the prehistoric era. These tools were found in prehistoric archeological sites around the world. However, the forms would be depending on the type of stone used. This was because each archeological site was located in areas with different natural resources.

The oldest archeological evidence might be the rock-knocking tools found in caves and high lands, for example, the cave in Khao Cha-ang caves, Bor Thong District, Cholburi Province, Khao Kaew Cave, Pong Namron District, etc. Among the communities found using of rock-knocking tools, there was the development polished stone tools and the earthenware containers [6]. Although the exact age had not been identified by using the scientific method, the form can be classified within the culture of Hoabinhian (which spread widely in this region). Thus, it was assumed that there had been the settlement in the eastern area between 6,000 – 10,000 years ago.

The archeological site of Ban Khao Pherm was located in Khao Pherm Sub-district, Ban Na District, Nakhornnayok Province. Its geographical position is on the longitude of 340000041north and longitude of 40000**0**401east. A lot of polished stone axes were found, made from andesite, chert, and Rhyolite. Moreover, thestone bangles, Whetstones, bronze axes and celadon in the formof bottles or vases coated in brown from the furnace source of Ban Koh Noi, Pa Yang, Sukhothai. The four-handle jugs coated in brown and bottles were found from the furnace source of Noi River, Singhburi. The hard jars with the trace of elephant stamp around the upper part from the furnace occurred from a source in Ban Bang Poon, Suphanburi.

This evidence found from the exploration on the archeological site of Ban Khao Pherm were similar to those which were found in the archeological site of Ban Huaykruad also located in Khao Pherm Sub-district. The archeological site of Ban Huaykruad was located 24 kilometers far from the north of the archeological site of Ban Khao Pherm. A lot of polished stone axes were found in this area as well.

Studying the above geological map, it was found that the area which was Nakhornnayok nowadays was the source of igneous rock in the types of Rhyolite, andesite, which is very suitable for making stone tools. Besides, Nakhornnayok was on the linkage route between Si Mohosot in the east of the central plain which was the center of several important cultures in the historic period. These antiques were found both from the prehistoric and historic periods from important furnace sources, for example, the furnace source of Noi River, Singhburi

and the furnace source of Ban Bang Poon, Suphanburi. This could be another route for land carriage of goods as well.

Regarding the archeological site of Ban Huaykruad, Ban Na District, Nakhornnayok Province, archeological evidence were found in the forms of flakes, hammers, whetstones and disc shape shell beads in the diameter of 0.4 cm. Moreover, the source or raw materials was found to include rhyolite, andesite, chart, and tuff. Cracking stones were quartzite) which might be gained from the area of Khao Keaw; a large source of quartz located 7 kilometers from the west of Huaykruad.

Furthermore, in the nearby area along the canal of Ban Na, archeological evidence was found in the sand banks as well, composed of 200 polished stone axes and 2 bronze axes. The polished stone tools were of 2 types; edgeless and with edged which found during the sand sucking.

According to the archeological evidence found alongside the canal of Ban Na, more than 200 stone axes were found, including a mould used in their construction. It can be assumed that the archeological site of Ban Huaykruad might be the manufacturing source of tools and moulds to be delivered to nearby communities, for example, Ban Khao Pherm, Ban Na District, Nakhornnayok Province, Ban Nongsai, Wiharndaeng District, Saraburi province. Or it might be the manufacturing source of stone tools for the communities of Beung Phai Dam, Bang Namprieaw, Chacherngsao due to Ban Huaykruad being nearby. The site might have been a temporary place for the manufacturing of tools or utensils to be used in the communities as no trace of living was found.

In the shelter of Khao Keaw Cave, Nong Takong Sub-district, Pong Namron District, Chanthaburi, many stone-cracking tools were found indicating that this might have been another place for manufacturing of stone tools. The stone-craking tools found in Khao Keaw Cave were partly compared to the classification of cracking-stone tools of Dr. H.R. Van Heekeren and Count Eigil Knuth who classified the cracking-stone tools at Sai Yoke, Kanchanaburi as mentioned above. The tools were also compared to the nearby source of Khao Keaw which was the Laang Spean source in the area of Phra Tabong, Cambodia, located 40 kilometers from the east. The age of the artifacts was identified at 6,240 + 70 years ago, it can be deduced that the cracking-stone tools found in Khao Keaw might be in the same age. The features of cracking-stone tools found in the far sources were able to be classified as the same type, representing the spread of culture from one area to others. It could be noticed that the communities which could create early culture were the communities along trade routes. In the prehistoric period, these communities can be identified as a route for the passing of migration. Most of them were in areas with water sources and were located close to the ocean, for example, the prehistoric communities in Kanchanaburi, Ratchaburi, and Lopburi which were centres of receiving and transferring culture.

The stones used for making stone tools were different depending on each source with local or native stones were mainly being used. Most of them were river terrace pebbles which were round or square in several sizes, which consisted of a lot of types of stones in the area of water source or the cracked stones fallen down to the foothills. All of them were the components of stone layers and sediments in the Quaternary Period. The pebbles หิน used for making stone tools mostly found in Thailand were hard, strong and sticky stones. They could be found in such areas and other sources located far away, for example, chert, Quartz, quartzite, rhyolite, Gneiss, Schist, fine sandstones, slate, limestone, etc.

Regarding the prehistoric communities in Eastern Thailand, it was found that in all sources, the stone tools were found to be made of *Pebble,* Ryorite, Andesite, chert, and Tuff. When studying the geological conditions of the area supplementary with the discovered archeological evidences, it could be seen that the prehistoric communities early existing in Eastern Thailand were located in the areas with resources suitable for making the stone tools utilizing both cracking and polished stones.

According to the geological map of Cholburi Province (left), the area in purple colour (PTr) was the area with Tuff, chert, and volcanic sandstones while the area in blue colour (JK) was the area with round pebbles and white arkosic sandstone. In such position, it was also the location of Cha Arng Mountain Range which was the archeological site where the oldest polished axes of the east were found. If the communities settling on high land had relationships with the communities settling in low land in the areas of Khok-Phanom-Di and coastal communities on the mound areas of Phanasnikhom and Bor Thong Districts in the manufacturing and exchange

of stone tools, the distance was approximately 90 kilometers. Therefore, there might be other communities to participate in these activities which were the communities settling in the foothill areas. Later, the tools were transferred to the coastal communities.

Due to the lack of stone tools and utensils, although the community of Khok-Phanom-Di could create tools from marine animal's bones as a replacement, eventually large marine mammals was more difficult to be find. This could be noticed from the Cultural Zone C of Khok-Phanom-Di. The evidences were found in the types of shell, fishbone, and claws of a crab. The marine evidences become less and eventually stopped. However, more bones of land animals were found in conjunction with antiques in the types of polished stone axes, stone bangles, and earthenware. This might represent the change in the way of lifestyle and the hunting of wildlife. Some communities migrated to other lands, for example, Khok Raka, Khok Phutsa, and Khok Kee Non. This was for the convenience in finding food from forest and the exchange of goods with the communities making stone tools that had settled in the foothills.

IV. CONCLUSIONS

According to the study of prehistoric archeological sites in Eastern Thailand, regardless of the type of culture and environ it inhabited, each community was lacking in certain goods. This was the starting point of a "network of goods exchange" in the prehistoric age. Considering the age of settlement, can be concluded that ancient communities were previously located far from one another, for example, the community of Khao Cha-ang, Bor Thong District, Cholburi Province, and the community of Khok-Phanom-Di, Phanasnikhom District, Cholburi Province. However, in the surrounding area of these two communities, the communities with mutual culture were found to gradually spread due to a linkage of exchange networks.

The tools, utensils, ornaments, or even beliefs, were all like goods passing through middlemen. This resulted in the contact with the communities surrounding the foothill which were the groups conveniently to be contacted both for the communities on the high land and those on the low land. In other words, some communities on the high land wanted to change their habitation to be more convenient and closer to water and food sources. They learned the survival technique from people from different culture. However, some groups still lived in the previous sources.

Having an "exchanging place" for essential things was like a small market system throughout the routes located throughout communities. These could make prehistoric communities in the late period gradually leave their previous location to gather with other large communities..

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