

ANCIENT JETTY AT SUNGAI BATU COMPLEX, BUJANG VALLEY, KEDAH

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Abstract

The archaeological project in Sungai Batu discovered more than 90 mounds (sites) that may contain monumental archaeological findings. SB2B and SB2D are two of those sites unearthed nearby ancient river which connected to the Sungai Batu riverine network. The findings in those two sites include brick structure with possible floor features, potsherds, beads, stone tools and iron slags. Based on the radiocarbon dating on charcoal sample, the site dated from the 5th CE. These sites might have been a remnant of an ancient jetty used to load and unload trade commodities that may include iron ores. These sites can be used as an evidence of the existence of an upriver-downriver economical interaction. The discovery of these two river jetties may affirm the complexity of the Site of Sungai Batu not only as a centre for religious and production activities, but also the exchange of commodity, namely the iron based trade. This paper discusses the result of preliminary research done on those two sites, in terms of forms and its functions, and relation to the history of Sungai Batu.

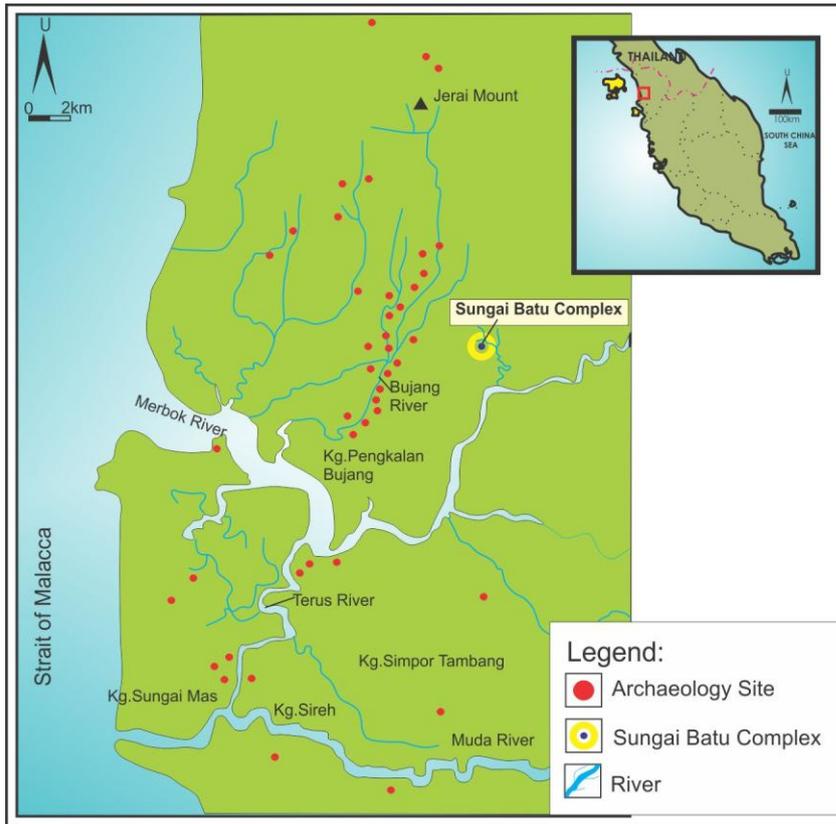
Key words: Bujang Valley, Sungai Batu Complex, structure, jetty, feeder point

INTRODUCTION

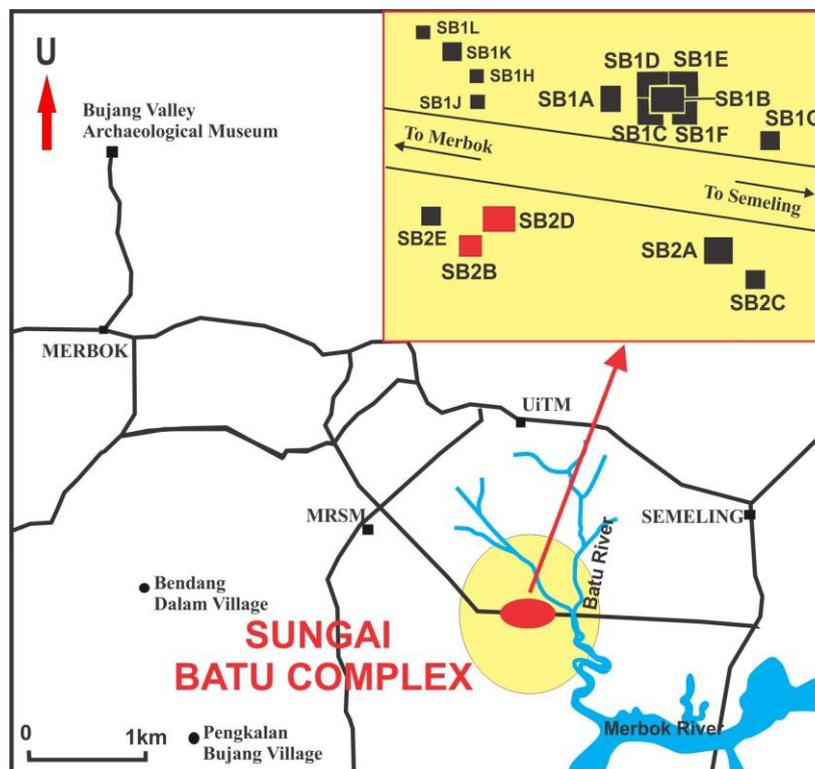
The archaeological researches were conducted at SB2B and SB2D Site. These sites were located at Sungai Batu Complex, Bujang Valley (Map 1 & 2). The SB2B Site was excavated since 17th Mei 2009 while SB2D on 12th December 2009. There were 193 trenches with each sized of 1x1 metre² at SB2B meanwhile 425 trenches at SB2D were excavated. The excavation revealed architecture structure from brick, roof tiles and the possible use of timber log as pillar based on the finding of pillar base. Based on the location and the architecture condition, these structures were assuming as the jetty river. Radiocarbon dating result from charcoal sample showed it was used back on 5th CE. This suggests that these jetties have connection with iron smelting activities that have occurred since the first CE.

ARCHITECTURAL STRUCTURE ON THE RIVERBANK

There are several terms used for the structures built near the river bank or on the river. These structures were known as a bridge, dock or habitat improvement (Giri, ___), function as a means to link the landmass and water to facilitate the related activities. This includes structures like jetty, port or terminal.



Map 1: The Sungai Batu location at Kedah



Map 2: Location of SB2B and SB2D Site at Sungai Batu Complex

According to de Kerchove (Gaur and Vora, 2007), a 'jetty' can be described as:

'An engineering structure projecting into the water, of the nature of a pier, dike, embankment, constructed of timber, earth, stone or a combination there of'

while 'port' as:

'A place for the loading and unloading of vessels recognized and supervised for maritime purposes by the public authorities'

Besides Sungai Batu Complex, there are other areas around the Bujang Valley where similar structures close to the river could be found. These structures were associated with religious activity, as reported by previous researcher such as Wales (1940), Lamb (1960), Adi (1983), Nik Hassan (1984) and Allen (1988). Although there was no structure like pier or port found nearby, Sungai Mas and Pengkalan Bujang revealed an evidence of trade activity (Mohd Supian, 2002). The Malay word 'pengkalan', could be literally translated as 'harbour' or 'port'.

In other part of Southeast Asia, ancient structures near the rivers were discovered in Cambodia and Vietnam. For instance, the Oc-Eo sites which is under the Funan influence, and located on both part of the country, revealed a structure with brick elements that was used to link the land and water across the Mekong River. Oc-Eo plays a role as an important port from the first until the 7th century, controlling the trade in the east and west (Jacq-Hergoualc'h, 2002). This was proved by the discovery of Roman gold medal made in 152 AD, the statue of Buddha from Wei Dynasty in China as well as Sanskrit gold ornaments from India (Gloslier, 2007). According to Mallaret (Wheatly, 1983), the culture there began in the 2nd century until the 7th century and reached its zenith in the mid-fifth century to the 6th century.

The excavations carried out in Ur at Euphrates River also discovered brick structures that identified as a port and was among the oldest remains port structures in the world (Gaur & Vora, 2007). Studies conducted in the Probandar area, which is related to trading activities since the glory of Harappan civilization discovered the ancient structure known as the jetty (Gaur *et al.*, 2004). There are also remains of the port structures in Lothal and Kuntasi which were related to the Indus Civilization (Gaur & Vora, 2007).

Nevertheless, this type of structure could face a threat of damages due to its location which is near to the water, causing it to be easily swept away by strong current (Wales, 1940). Such structures could also be destroyed by modern structure which was built on top of it (Gaur *et al.*, 2004). In addition, there is also part of the structure that has been reused (Gaur & Vora, 2007).

ARCHITECTURAL STRUCTURE OF SITE SB2B AND SB2D

Excavation conducted shows that structure on both site are located at the edge of the ancient Sungai Batu (Photo 1). These structures act as an intermediate between the

landmass and water. The discovery of these functions was the first in the Bujang Valley.



Photo1: The site location (blue canvas) nearby the ancient Sungai Batu

SB2B is bounded by geographical coordinate of N 5° 41' 41.43", E 100° 27' 7.59" and 13 metres above sea level. This brick structure was built by a simple design with approximate wide of 5 x 11 m. The brick on this site can be classified by three sizes, small 16 x 10 x 5 cm, medium 25 x 16.5 x 5.5 cm and large 29 x 19 X7 cm. Different range of brick size suggests that there were specialization in the production of bricks (Stark, 2006).

There are four main features in this architecture which is wall, floor, step and the roof (Photo 2). The wall is a feature with the highest brick layer on site. According Encarta Dictionary, wall means 'a vertical structure forming an inside partition or an outside surface of a building'. This wall was located at the east end of the structure and consists of six layers of brick in the middle (Photo 3). This number of brick decrease towards each side, from four to only two layers. This 5 m structure wall was built on north-south orientation. Due to gravitational force, the middle part of brick was seen levelled with the rest of features, even though it was built with 6 layers of brick.

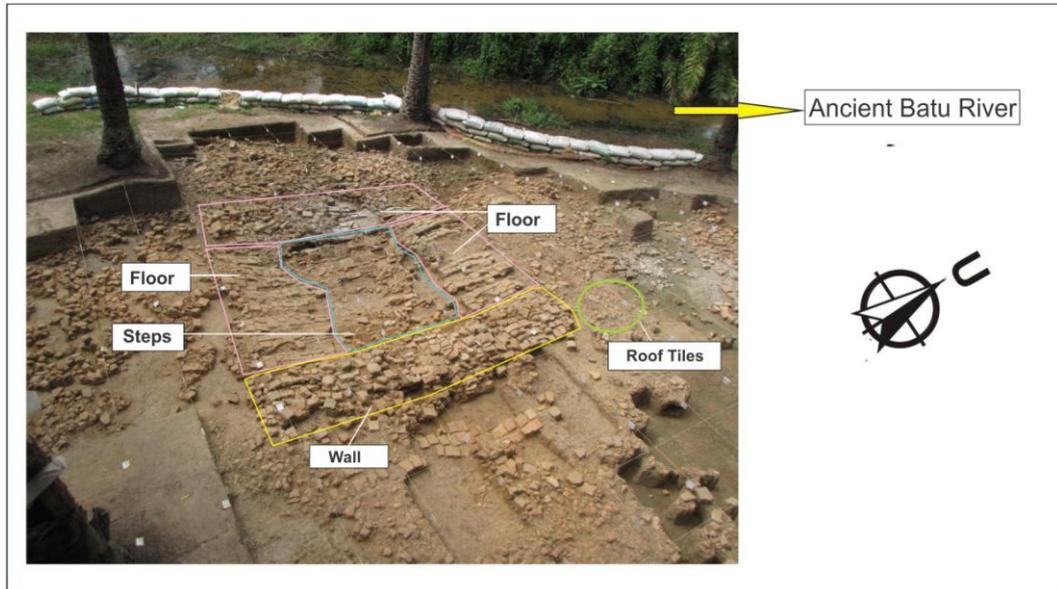


Photo 2: The picture shows four main structures at SB2B Site, which include wall, floor, step and roof

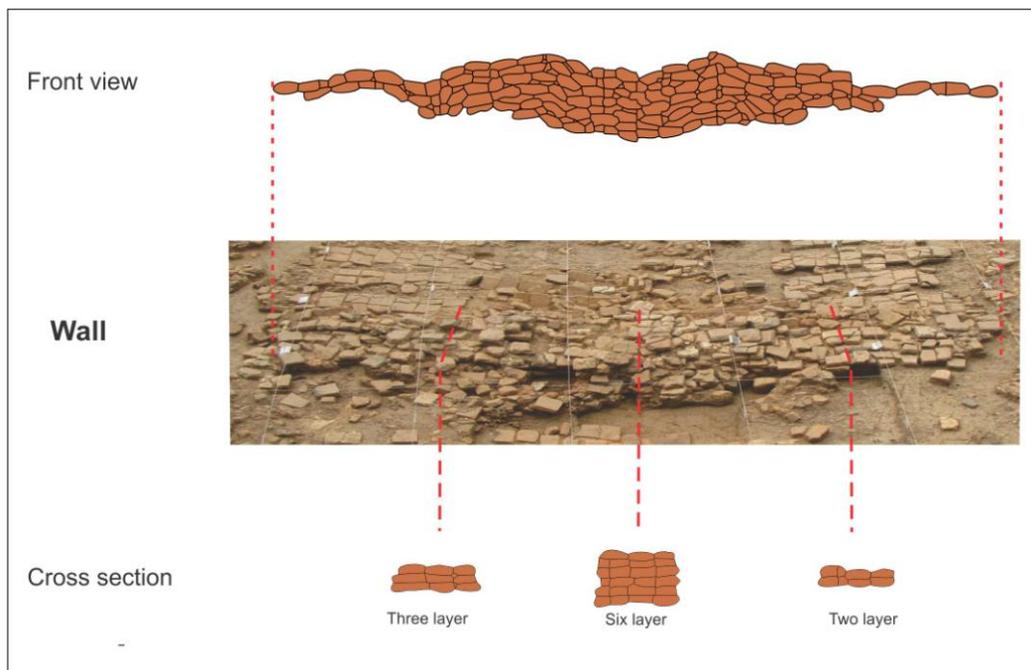


Photo 3: Front view and cross section that shows the wall consists of different layers of brick

The second feature of this site is the floor that located at north and south of the site (Photo 4). The feature was composed by medium-sized bricks which were arranged closely on east-west orientation. There was a small gap between each row that might serve as a water passage. On the south part, there are 11 lines of single layered brick, while there are only 9 lines in the northern part. The 5th and 6th lines on this part are missing. However, it is presumed that the number of brick lines were same on both sides. Another feature, which is the step, is located in between of the two floors.

There are 9 steps built on this site. The feature consists of brick which has the same size of brick floor, arranged with north-south orientation (Photo 5). At the centre of each of these steps, there were pair of brick that was placed horizontally on east-west orientation that may used to strengthen these structures.



Photo 4: Structure of the floor in the SB2B Site

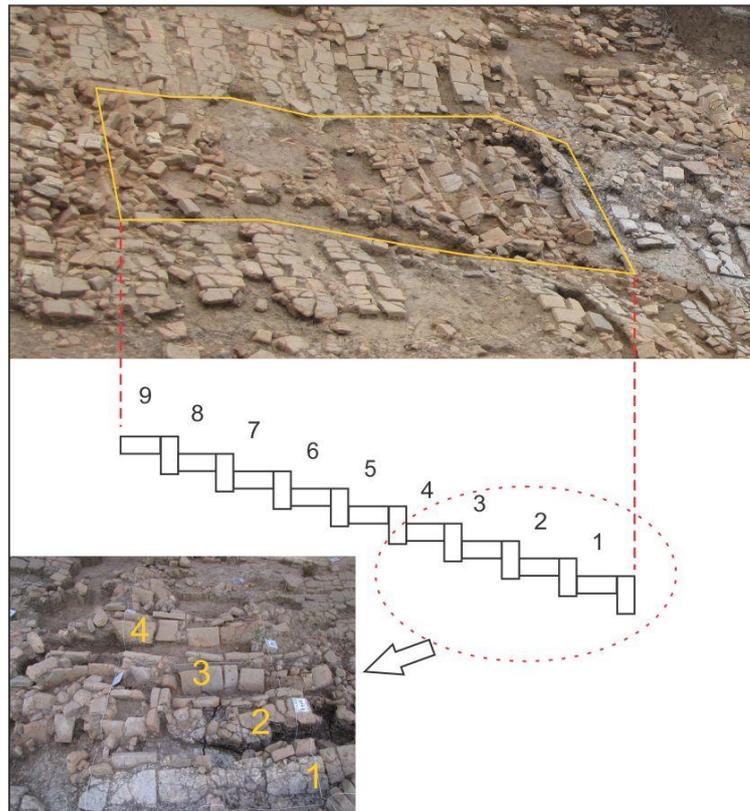


Photo 5: Nine steps at site SB2B (top) and the drawing of the order. Small picture shows four steps that still remain on the site

The discovery of the roof tiles scattered around the site indicated that the structure was covered with a roof. This is rare discovery given that not every ancient structure that was found in the Bujang Valley has a roof tiles (Photo 6). The roof was built with pillars to support it. This is evidenced by the discovery of brick pillar base on site (Photo 7). The absence of these pillars suggested that they were made of organic material which decayed easily due to environmental factors or destroyed by insect activities such as termites. This roof structure indicates important functions, other than as a shelter from rain and shine.



Photo 6: The position fragments of roof tiles while the small picture shows a perforated roof tiles



Photo 7: Artefacts from the brick that could possibly identified as a pillar base on SB2B

SB2D is located north of SB2B. Similar to SB2B, this site was made of brick and consists of three main structures which are wall, floor and roof (Photo 8). Vertically, the wall is consists of 12 layers of brick (Photo 9). It extends 5 metres from north to south and was made of 3 rows of brick structure. Although these structures were already collapsed, their arrangements were still clear.

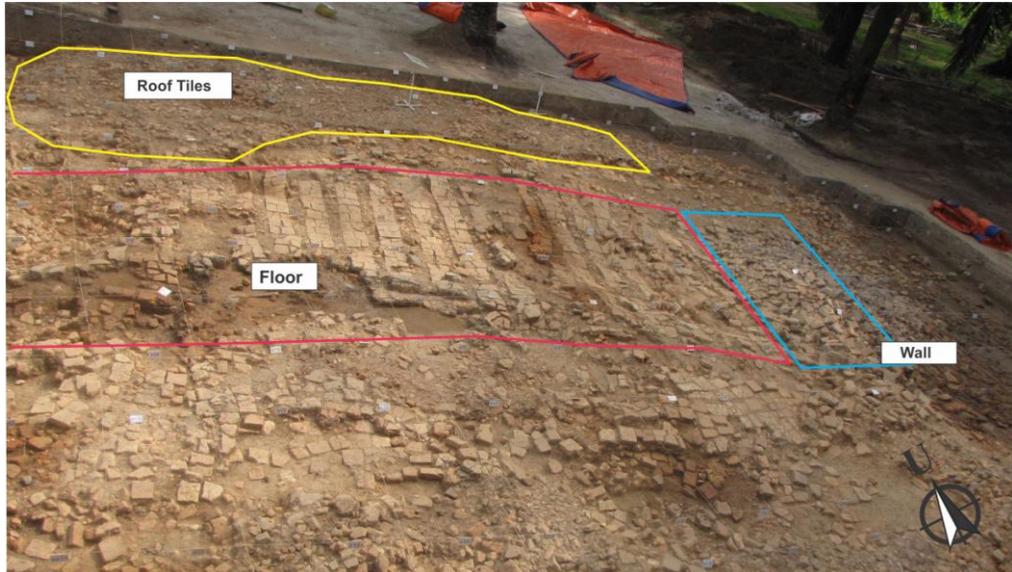


Photo 8: Aerial view of SB2D. Floor structure was the dominant features on site. There were walls in the east and the lining of roof tiles in the north



Photo 9: The layers of the wall at the SB2D Site



Photo 10: The composition floor on SB2D site

This structure was found with a roof tiles, found scattered around the site (Photo 11). The distribution of roof tiles was concentrated in the north. Some of the roof tiles have hole which help to strengthen the position while being tied. There was also a pillar base to support the roof structure found at this site (Photo12).



Photo 11: Fragments of the roof tiles at SB2D which were associated with brick



Photo 12: A possible pillar base at SB2D, made from brick

FINDINGS OF SB2B AND SB2D

Various types of artefacts were found during excavation. These include the potsherds, ceramic, finger-marked brick, brick with animal print, brick with resin, brick with iron and brick with polished edge and beads. In addition, there were also stone tools, tuyere fragments, iron and slags, hematite, magnetite, spindle whorl and anchor pole (Table 1).

NO.	ARTEFACT	SB2B SITE	SB2D SITE
		N/(%)	N/(%)
1	Pottery	69 (67.9)	109 (80.1)
2	Brick with finger-marked	1 (1.0)	-
3	Brick with resin	5 (4.9)	-
4	Brick with iron	1 (1.0)	-
5	Brick with animal foot print	2 (2.0)	1 (0.7)
6	Brick with polished edge	-	1 (0.7)
7	Bead	1 (1.0)	1 (0.7)
8	Stone tool	2 (2.0)	-
9	Tuyere	1 (1.0)	2 (1.5)
10	Iron slag	16 (15.7)	17 (12.5)
11	Hematite	3 (2.9)	2 (1.5)
12	Iron artefact	1 (1.0)	1 (0.7)
13	Spindle whorl	-	1 (0.7)
14	Anchor pole	-	1 (0.7)

Table 1: Quantity (N) and percentage of artefacts found in SB2B and SB2D

To date, a total of 69 potsherds found at SB2B and the total of 109 potsherds, consisting of various parts were found in SB2D (Photo 13). These parts include pottery rim, body, neck, base, foot, knob and the spout. However, these potsherds do not represent a complete or nearly complete pottery.

Among these bricks, some were found bearing a finger mark (1 brick), resin residue (5 bricks) and brick with iron (1 brick). All of these were found in SB2B. A total of 3 pieces of brick with animal foot print were discovered; two at SB2B, and another one at the site SB2D. A brick with polished edge was found at the SB2D. Brick with finger mark was known as a protector to the site (Shwe, 2006), while brick with footprints indicates that these bricks were made in the open areas.

There were 2 beads found, each at site SB2B and SB2D. Bead found at SB2B was made from carnelian material with a diameter 17.0 mm, with red and orange lines across it (Photo 14). A spindle whorl was also found in the SB2D Site (Photo 15). It is made from slate rock with convex side and flat surface (Figure 4). There were two incise lines at the convex surface of this 30.6 mm diameter spindle whorl. Similar artefact was also found at Prohear Sites in Cambodia (Reinecke *et al.*, 2009).



Photo 13: Pottery



Photo 14: Bead from carnelian



Photo 15: Spindle whorl

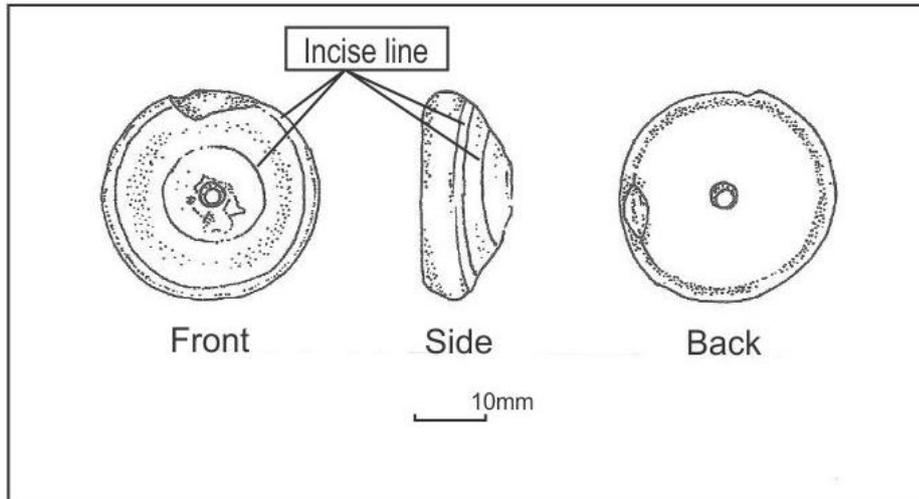


Fig. 1: Spindle whorl with two incised line

There were two stone tools found at the SB2B made from granite and sandstone. Moreover, there was a tuyere fragments found at SD2B Site and 2 more were found at the SB2D. These artefacts were usually found in iron smelting site that serves as a distributor of air (blower). The discovery of the fragments on this site shows that it is associated with iron smelting activities, also found 200 metres away from the site. Iron and iron slag that has been found substantiate these findings. At SB2D, a log was also found in the western corner of site which measured approximately 169 cm in length. This artefact might be used as anchor pole, located adjacent to the edge of floor structure (Photo 16).

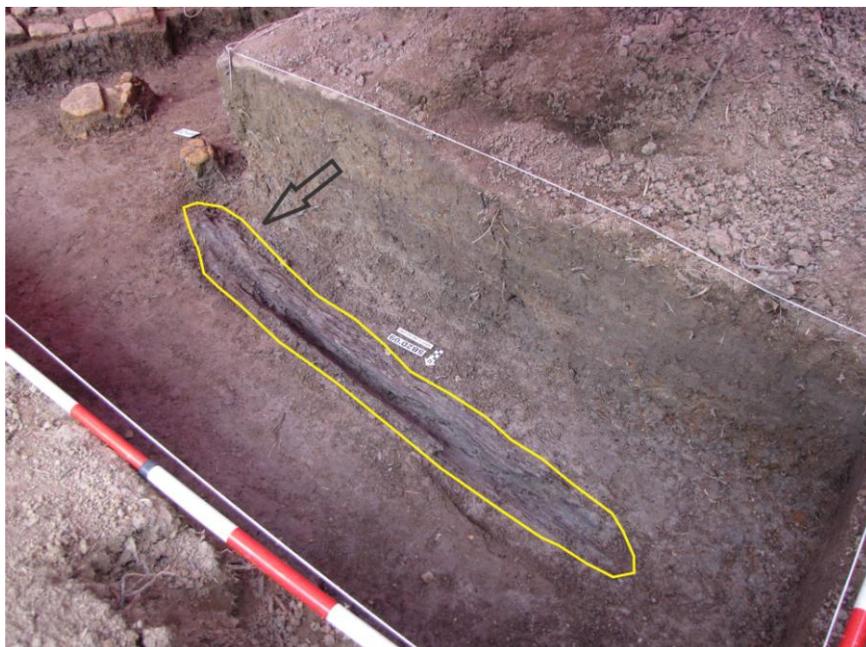


Photo 16: A log possible as anchor pole found at the last floor structure

DATING

A total of six charcoal and four bricks samples were taken from SB2B for dating purposes. For SB2D, five charcoal samples and three brick samples from different layers of selected trench have been sent for the same purpose. Radiocarbon dating of charcoal samples was conducted at the Beta Analytic Inc., United States, and analysis of brick sample analysis was performed at the Korea Basic Science Institute, South Korea. To this date, only charcoal samples from SB2D have yielded the dating of the site, from 420 AD to 870 AD (Table 2).

Beta	Trench	Spit (cm)	Calibration	
			BP	AD
277032	a19	28	1290 +/- 50 BP	650
277030	ae18	51	1110 +/- 40 BP	870
277031	e14	63	1330 +/- 40 BP	640
277034	aa25	73	1580 +/- 40 BP	420
277029	ag18	93	1160 +/- 40 BP	770

Table 2: Radiocarbon dating of SB2D Site

ROLE AND IMPORTANCE OF SB2B AND SB2D SITE AT SUNGAI BATU COMPLEX

The drainage system at Bujang Valley once played an important role in the course of its civilization. Allen (1991) who conducted a study in the area revealed 86 from 87 sites which can be associated with river or sea. The same important role could also be perceived in Sungai Batu Complex. The headstream of this ancient river is in Mount Jerai, known as the landmark of the Bujang Valley. At that time, this landmark had guided traders and sailor from all over the region especially for trading.

The arrival of the traders had made a significant impact to Bujang Valley based on a variety of artefact that was found. This was supported by the evidenced at the site such as Pengkalan Bujang, Kampung Sireh, Kampung Sungai Mas and Simpor Tambang which located near the river (Allen, 1991). The river systems are vital in the creation of sites in the Bujang Valley, including sites at Sungai Batu. Although the role of Sungai Batu Complex is not as a trading site as mentioned above, but the position of the site that was strategically located on the banks of ancient rivers connects the remote areas and Merbuk River estuary that flows into the Strait of Malacca.

Sungai Batu Complex functioned as a feeder point before the goods being taken to the port located at the mouth of the river near the sea. This concept was proposed by Bronson (1977). According to this model (Fig. 2), 'A' was a major centre which located at the mouth of the river that front the sea, followed by the 'B' and 'C' which is the second and third feeder points located in primary and secondary river junction. Meanwhile, 'D' was located farther upstream in the role of this system. 'E' and 'F' worked as the supplier, while 'X' is the overseas centre which was consumers to the products of 'A'.

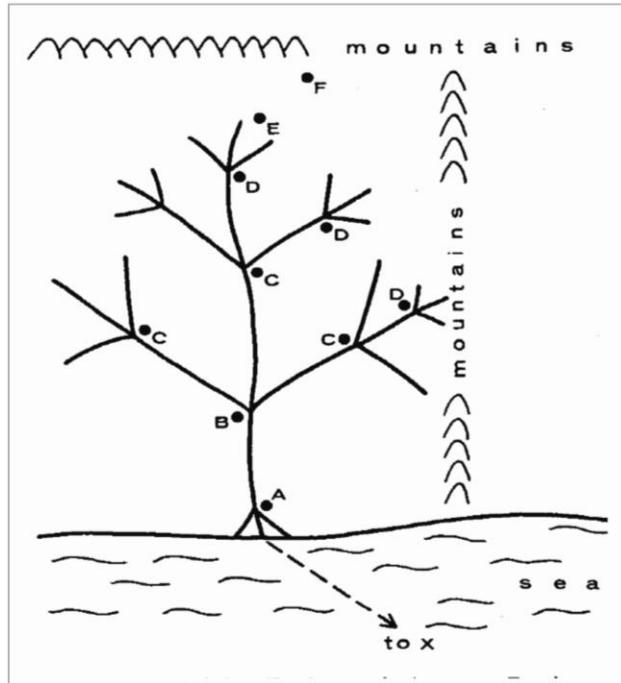


Fig. 2: Bronson's Model (Bronson, 1977)

In this context, SB2B and SB2D can be categorized as 'C' as the feeder points located on the secondary river junction. Primary river junction was the Batu River which flows to the Merbuk River. The position of the drain which was located on the western side of both sites was proved by the drilling result (Report of Department of Minerals and Geology, 2009). A layer of mud that shows that the site was once watery area was found at the SB1A site which having the same function as the sites discusses (Zolkurnian *et al.*, 2010).

Although Allen (1988) described that the site at Sungai Batu (in which she referred as Site 71 to 73) was not a trade centre, yet with the discovery of iron smelting site (Naizatul Akma, 2009) proves the SB2B and SB2D functioned as an iron accumulation point. The iron was collected before it was exported. It was also used to carry goods up and down in this area. These include the iron ore which found near site and surrounding areas at Mount Jerai (Syed Sheikh Almashoor, 1974; Bean, 1969; Bradford, 1972).

Apart from metals, forest products were also known as one of the trade goods (J. Kathirithamby-Wells, 1990). Forest products were collected as the area was a rich resource area (Dunn, 1975). The discovery of carnelian beads and Guangdong ceramic is one example of the involvement of foreign relations with the site in Sungai Batu Complex.

SUMMARY

Studies on the site indicate that there was an architectural structure at Sungai Batu Complex which located near the ancient Sungai Batu. The brick structures were an important building at that time. Their location near the river makes it function as a

feeder point of metal-based industries and forest products. In addition, this site was an intermediate between the remote areas with the coastal. Constructions of this structure facilitate the communication of this place with wider area. This can be proved by the discovery of artefacts such as beads, spindle whorl and potsherds. These structures also signify the technological development of architecture by the ancient Sungai Batu Complex society in the early period.

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