

JENDERAM HILIR AND THE MID-HOLOCENE PREHISTORY OF THE WEST COAST PLAIN OF PENINSULAR MALAYSIA

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ABSTRACT

Jenderam Hilir is an open site in the Langat valley, Selangor, about 43 km inland from the present coast. It is located about 500 metres from the left bank of the Langat River, less than a kilometre downstream from the confluence of the Langat and Semenyih rivers. The site was excavated by a team from the National Museum in 1977 and 1979. The author participated in both excavations, which were conducted at two localities in the as yet un-mined areas of the Tit Nam Hoong open-cast hydraulic tin mine. Prehistoric cultural remains recovered from the Jenderam Hilir excavations, as well as loose finds collected by the tin mine workers during the course of mining in the area, comprised one complete cord-marked bowl, nine nearly whole vessels, and over 130 kg of potsherds of plain, cord-marked and black-burnished pottery, including 135 legs of tripod vessels. Also recovered were many ground and polished stone artifacts, and more than 44 pieces of heavy grinding and pounding stones. The results of some of my analyses of the Jenderam Hilir materials have been presented elsewhere (Leong 1977, 1987, 1990). This paper discusses a set of radiocarbon dates recently obtained for the site and the light these dates throw on the question of prehistoric human occupation in western peninsular Malaysia.

BACKGROUND TO THE DISCUSSION

The presence of humans in post-Pleistocene Peninsular Malaysia prior to the advent of metal has been documented by numerous finds of ground stone artifacts and a fairly large variety of earthenware pottery, the majority of which are cord-marked on their outside surfaces. These pre-metal assemblages are often described as "Neolithic" in the literature. To date there are well over a hundred known sites of this type in Peninsular Malaysia. Many of these are actually mere find-spots (mostly surface finds) rather than true sites. Their widespread occurrences in the peninsula are themselves suggestive of their importance in the history of this region.

Scattered accounts of such Neolithic finds have been made since the late nineteenth century, but it was not until the publication of Evans' *Papers on the Ethnology and Archaeology of the Malay Peninsula* (1927) and Tweedie's writings on the Malayan Neolithic (1949 and 1953) that a clearer picture of these so-called Neolithic cultures became available. By then several important sites were known, and small scale excavations were conducted at some of them, mostly cave and rockshelter sites. The discovery of the famous cemetery at Gua Cha in Upper Kelantan by Noone (1939) in the late thirties and the excavation of the site by Sieveking (1954) in the fifties added much to our knowledge. Some twenty-one extended burials with grave goods were uncovered, providing for the first time invaluable information on the kinds of assemblages, especially pottery and ground stone artifacts, found in each burial. The discovery of yet another burial site at Bukit Tengku Lembu in Perlis (Williams-Hunt 1952) further expanded knowledge of the artifactual repertoire of the Peninsular Malaysian Neolithic, particularly on the range of vessel forms (Peacock 1959; Sieveking 1962).

Despite all these discoveries, little is actually known of the culture(s) represented by these finds. None of the sites so far have yielded clear evidence of significant economic development beyond hunting, gathering and fishing. Nor do we find any evidence suggesting permanent settlement. Yet assemblages of ground/polished stone tools and the associated earthenwares, especially cord-marked pottery, continued to be designated as "Neolithic". Until the early 1960s no absolute dates were available for any of these sites. Tweedie (1953:63), writing in the 1950s, for instance, was only able to suggest an approximate date between 2500 BC and 1500 BC for the beginning of the Malayan Neolithic. The occupation at Gua Cha was ascribed a similar date by Sieveking (1954:104). Although a radiocarbon date was obtained in 1960 from Gua Harimau in Perak the publication of this date was not accompanied by any special comment.

It was not until Dunn's Gua Kecil excavations in Pahang in 1962 that detailed consideration of chronology really began (Dunn 1964, 1966). A radiocarbon date of 4800±800 BP (GX-0418) on a bone collagen sample was obtained by Dunn from Gua Kecil III, the layer which Dunn had interpreted to represent "the beginning of the Malayan Neolithic occupation and the end of the Hoabinhian stone tool-use at the site" (1966:466). His interpretation that a switch from a hunting-gathering to a flourishing Neolithic agricultural economy had occurred in the upper levels (Gua Kecil III) of the site was based on indirect evidence drawn from his quantitative analysis of the Gua Kecil material. Dunn further suggested that a similar situation might well have occurred at Gua Cha, a site where both Hoabinhian and Neolithic remains have also been uncovered. However, Dunn's interpretations, while initially finding some support (in Peacock 1971), are now less favourably received by others (Bellwood 1985:168-171). Dates from the 1979 excavations at Gua Cha by Adi Haji Taha (1983:35; 1985) had shown that there was little overlap in the stratigraphy there between the Hoabinhian and Neolithic.

Dunn considered the Gua Kecil date to be consistent with the date of 3450±150 BP (BM-43) from Gua Harimau. Bellwood (1985:265), however, suspects this single radiocarbon date for the Neolithic at Gua Kecil to be too early. A radiocarbon

determination (ANU-2217) recently obtained by Adi Taha from Gua Cha has shown that the Neolithic occupation there only occurred around 3020 ± 230 BP. On the evidence available so far in Peninsular Malaysia, it is therefore unlikely that the groups responsible for these Hoabinhian-type assemblages had, during the later stages of their cultural development, evolved on their own any kind of early agriculture which subsequently led to the emergence of the full Neolithic in this region.

In the past, several writers have pointed to the relatively close parallels that existed between the Peninsular Malaysian Neolithic pottery, especially from Gua Cha and Bukit Tengku Lembu, and the Neolithic pottery from western Thailand referred to as the "Ban Kao culture" (Sørensen and Hatting 1967; Bellwood 1979, 1985). In conjunction with his discussion of the Gua Cha material, Bellwood has suggested that the techniques of horticulture and pottery-making were of southern Thai inspiration and that these were probably adopted around 1000 BC, based on the above-mentioned radiocarbon date (ANU-2217) from the site (Bellwood and Adi 1981:313; Bellwood 1985:168).

With this scenario in mind, are we then to regard comparable assemblages found elsewhere in Peninsular Malaysia as equally late cultural manifestations? Were there any earlier pre-metal ceramic cultures? While we may have some grounds to suspect the validity of Dunn's bone collagen date from Gua Kecil, what about the Gua Harimau date, obtained from charcoal from a hearth associated with cord-marked pottery and polished stone adzes (Williams-Hunt 1952:184)? This, too, is only a single date available from the site. Another possible pre-metal ceramic assemblage that may predate the Gua Cha group is that from Gua Berhala in Bukit Kepelu, Perlis. Tripod pottery rather similar to that found at Ban Kao in west-central Thailand and dated to 3720 ± 140 BP (Sørensen and Hatting 1967:111) has been recorded at this site (Peacock 1959), but again the chronological status of the Gua Berhala material remains uncertain since no absolute dates are available. It is with such questions in mind that we now turn to the Jenderam Hilir data.

RADIOCARBON DATES FROM JENDERAM HILIR

When the Jenderam Hilir site was first excavated there was nothing outstanding in its artifactual repertoire compared to what was already known from the Peninsular Malaysian record for the Neolithic. The importance of the site, however, lies in the fact that this is one of the very few instances in Peninsular Malaysia that an open Neolithic site has been located; the other was the site excavated by Evans (1931) at Nyong on the right bank of the Tembeling River in Pahang. An account by a tin mine worker of his encounter (during the course of his work at the gravel pump) with a whole pile of pots, of which he, unfortunately, saved only one for curiosity's sake, served only to fire expectations further for the Jenderam Hilir site. But our excavations, unlike those conducted at Ban Kao, yielded neither burials nor the kitchen refuse that one normally expects to find at a prehistoric settlement. Buried under well over 5 meters of river alluvium, much of which is sandy, few organic remains have survived.

Several radiocarbon dates were obtained from wooden artifacts and ancient wood collected in the Langat alluvium in various parts of the tin mine by a then post-graduate geology student (Batchelor 1978). These, however, are apparently materials from much later periods, since they date from the mid-first millennium BC to the early centuries of our present era. They correspond roughly to dates obtained from some samples submitted by myself for radiocarbon dating. My samples were also from wooden artifacts. They include two loose finds recovered from the river alluvium in the mine, and a boat paddle from Locus JHI excavated from its upper layers from a depth of 4.7 metres below the present ground surface.

For some time, therefore, it was not possible to date the Neolithic occupation at Jenderam Hilir satisfactorily. Batchelor, who made a study of some of the loose finds collected from the mine, had earlier attempted to ascribe a tentative date for this Neolithic occupation. His date was based on broad geological correlations with the Holocene high sea-level. According to Batchelor (1978:56 and 46) the site "lay very close to the sea...was first settled by sea-faring immigrants about 6000 BP...[and] has been occupied, at least discontinuously, over a period of 6000 years, from early Neolithic to the present day." This relative dating of the Neolithic at Jenderam Hilir, however, is apparently too early. There is no evidence from elsewhere in Peninsular Malaysia to suggest Neolithic occupations occurring prior to the mid-Holocene. There is also no evidence from the actual excavations at Jenderam Hilir that the site was located close to the sea during the period in question. My pollen analysis of samples extracted from soils excavated from both JH Locus I and II (from layers containing the Neolithic remains) found no pollens of plants typical of either a coastal or mangrove type vegetation.

The first breakthrough concerning the problem of providing a chronological framework for the Neolithic occupation of the site came in late 1977 (after our excavations of JH Locus I) when I recognized some of the objects brought to me by a tin worker. Among this batch of potsherds were a few cord-marked legs of tripod vessels. Subsequently, more tripod legs were found, including some in our excavations at JH Locus II excavated in 1979 (Leong 1980:75). The presence of this distinctive vessel form at Jenderam Hilir allowed a reasonable date estimate to be made for the Neolithic occupation of the site by extrapolation from the absolute dates obtained for the Ban Kao tripod vessels. This dating estimate was later confirmed by a radiocarbon date from a charcoal sample excavated from JH Locus II. The charcoal piece was excavated from a depth of nearly 7 metres below the present ground surface. The date obtained, 3650±60 BP (SUA-2401), matches fairly closely with the 3720±140 BP date (K-838) obtained by Sorensen (Sørensen and Hatting 1967:111) for the Early Neolithic subphase at Ban Kao.

One problem, however, remains for the dating of the Neolithic settlement of Jenderam Hilir. My sedimentological study of the deposits at the site has shown that the environment of deposition at both JH Locus I and Locus II was a fluvial point bar deposit. I have already pointed out (Leong 1990) that the Neolithic settlement was probably located quite close to the river bank which was subsequently eroded and the material redeposited a little distance away. This was surmised from the presence of many

clay chunks and mud balls found embedded in the layer, and the fact that nearly whole pottery vessels had been recovered. In view of these considerations, the 3650 ± 60 BP date for the site remains likely, but not convincingly established.

Corroboration for this radiocarbon date, however, was obtained recently from charred pottery samples from Jenderam Hilir dated by accelerator mass spectrometry at the Oxford University Radiocarbon Accelerator Unit. These samples comprised a leg of a tripod vessel and two cord-marked potsherds. The date obtained for the tripod leg (OXA-1932) is 3660 ± 80 BP, which is remarkably close to the date obtained from the above-mentioned conventional sample. Equally significant are the other two AMS dates obtained from the two samples of cord-marked (but non-tripod) potsherds; 3090 ± 60 BP (OXA-1933) and 3010 ± 70 BP (OXA-1934). These radiocarbon dates are only slightly later than the Ban Kao radiocarbon date (K-842) of 3310 ± 140 BP ascribed by Sørensen (Sørensen and Hatting 1967:111) to the Late Neolithic subphase of his site. They suggest that, as in the case of Ban Kao, more than a single phase of Neolithic occupation occurred at Jenderam Hilir.

There can be little doubt that these AMS dates, obtained directly from the artifacts themselves rather than from associated materials found within the layer, now afford fairly reliable evidence for constructing a chronology for the Neolithic occupations at Jenderam Hilir. The early Neolithic phase in which tripod pottery was represented commenced at sometime between 2183 and 1935 Cal BC (calibrated at one sigma range by the CALIB programme; Stuiver and Reimer 1986).

In an earlier paper (Leong 1990) I drew attention to the presence of a tripod pottery complex in the western part of Peninsular Malaysia. To date, eight sites are known to have yielded tripods of a type similar to those found at Jenderam Hilir. The legs of these tripod vessels are hollow and of slender conical shape. They are always pierced with diametrically opposite holes, so air can escape during firing. These tripod legs are invariably cord-marked on the outside surfaces, although in some cases the cord-marking is faint. Tripods with burnished legs which occur at Ban Kao have so far not been found in the Malaysian sites. Nor are found some of the vessel shapes of the tripods featured at Ban Kao, although our Malaysian tripod pottery collection is at present still small and rather fragmentary. These may be just regional differences, but it is also likely that the reason here is temporal.

According to our radiocarbon dates, the Jenderam Hilir tripod pottery complex is younger than that at Ban Kao by some 70 years or more. These data seem to indicate that the tripod pottery was apparently in vogue for quite some time in the peninsular region of Mainland Southeast Asia comprising present day Peninsular Thailand and the Kanchanaburi sites of Ban Kao and Sai Yok, together with Peninsular Malaysia. The Malaysian tripod pottery complex probably belongs to the younger end of this regional Southeast Asian pottery horizon.

Tripod pottery reported recently from south Thailand (Suchitta 1984, Srisuchat 1987, Anderson 1988) appears to be more closely comparable with the Malaysian specimens. Radiocarbon dates have been obtained from some of these sites, for example, from

Buang Beb in Surat Thani province (Srisuchat 1987:104). But these dates are older by a very wide margin than both the Ban Kao and Jenderam Hilir dates. It is likely that the samples from which the dates were taken came from a deposit that also contained materials from earlier (Hoabinhian?) occupations. These southern Thai tripod sites are probably contemporaneous with the Peninsular Malaysian sites.

THE WEST COAST PLAIN DURING THE LATE MID-HOLOCENE: SOME CONCLUSIONS

A picture of the Neolithic in Peninsular Malaysia is beginning to emerge. By about the late third and early second millennia BC parts of this region were already settled by people who made tripod pottery. The sites where their pottery has been found are all located in the western part of Peninsular Malaysia west of the Main Range. The narrow stretch of lowlands (averaging about 32 km at the widest) bordered by the Straits of Melaka to the west and the Main Range to the east is known as the West Coast Plain. The sites which have produced tripod pottery are Gua Bintong, Bukit Cangkul, and Gua Gergasi in the state of Perlis; Gua Berhala, Gua Pasir, and Gua Taufan in Bukit Kepelu near Koding in Kedah; Gua Baik in Perak; and Jenderam Hilir in Selangor (Fig. 1). The open site at Jenderam Hilir may be considered as a settlement site of these people, while the other sites, which are caves or shelters, are not habitation sites. It is interesting to note that these cave sites in Perlis and Kedah are all located within or in close proximity to the fertile Perlis plain. The latter is one of the country's leading rice-growing areas in modern times.

The tripod pottery people in these areas probably lived in the plain near these limestone outcrops. Their choice of such locations was probably connected with their subsistence economy. The Jenderam Hilir site on the banks of the river Langat is likewise well located to exploit the fertile alluvial soil of the Langat valley. Pollen analysis of soil samples from the site has yielded high counts for fern spores, suggesting that an open environment was present at that time. Although there is as yet no direct evidence for agriculture at any of the tripod pottery sites, it is not unreasonable to infer from these site locations that the tripod pottery people were probably early farming communities.

The Thai data, too, may help elucidate this question. Most of the tripod pottery sites found in Thailand are cave sites, such as Sai Yok, Na Ching, Sing Khon Cave, Pak Om, Buang Beb, Sya Cave, and Khao Hin Tok. However, finding these artifacts in cave and rock-shelter sites does not necessarily mean that the depositors of these remains were cave dwellers. These caves could have been frequented for various reasons, especially burial. We know, for example, that caves near the Ban Kao settlement were also found to contain some Ban Kao type finds (Pookajorn 1990:21-22). It is interesting to note that the Neolithic settlement at Ban Kao is located on a river terrace with suitable lands for cultivation. Tripod pottery has been found on the surface in open areas in Krabi province. Suitable agricultural lands are found also in the vicinity of the Na Ching and Buang Beb sites.

Bearing all this in mind, it is likely that the habitation sites of these tripod pottery groups were actually located out in the open in the surrounding lowlands, and we have yet

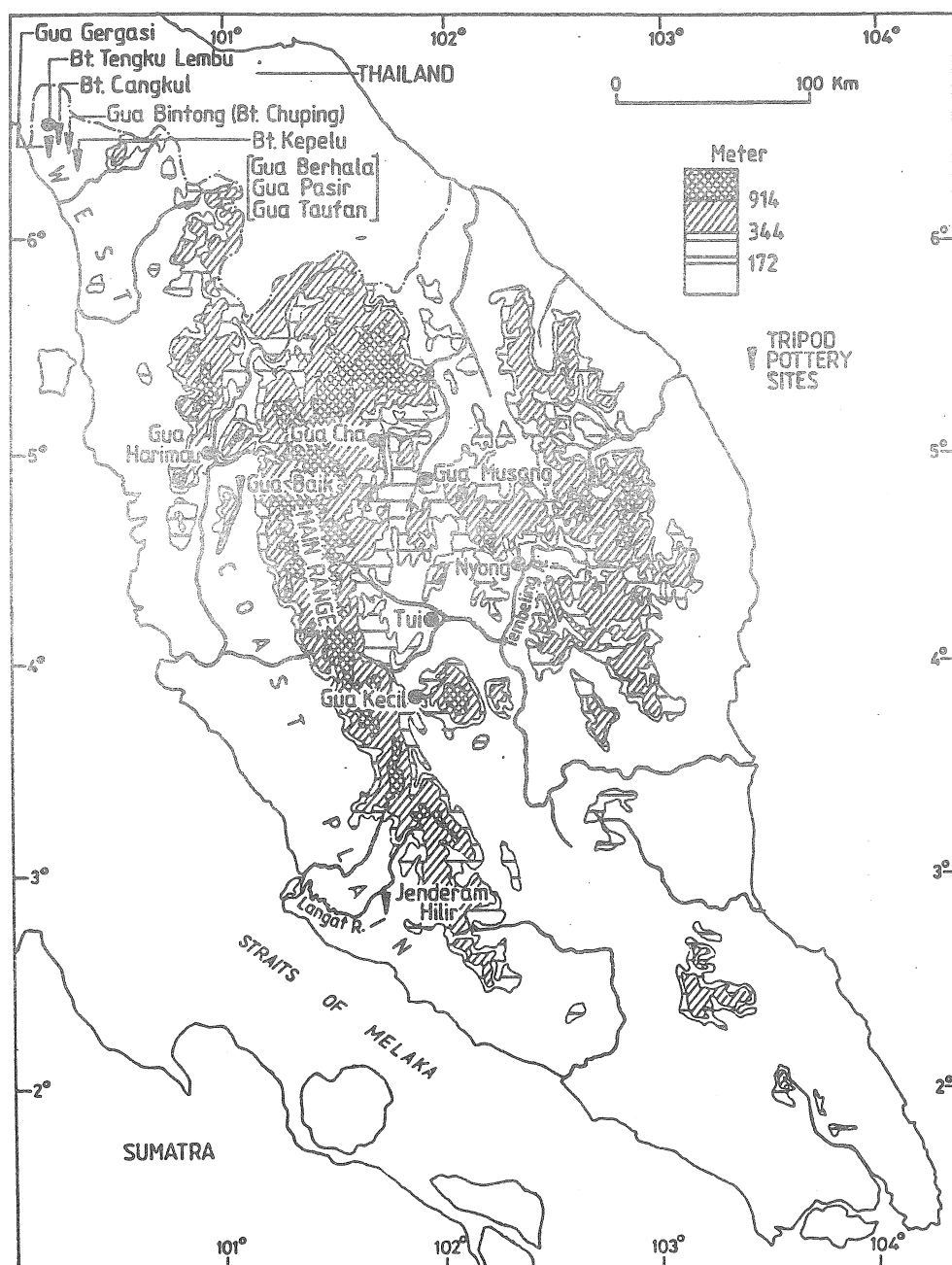


FIGURE 1: TRIPOD POTTERY SITES AND OTHERS IN PENINSULAR MALAYSIA

to find them. Sedentary life was present by this time, attested by the large cemetery site discovered at Ban Kao. My study of the Jenderam Hilir materials has similarly indicated some degree of permanence in the settlement pattern of these tripod pottery people (Leong 1990). Pottery was manufactured locally; X-ray fluorescence analysis of tripod legs from the site and those from Bukit Cangkul and Gua Berhala have shown that the Jenderam Hilir specimens were made from clay found within the Jenderam area itself, and that the clay used was different from that of the Bukit Cangkul and Gua Berhala tripods. This early Neolithic settlement at Jenderam Hilir was relatively small compared to that found at Ban Kao, and probably of shorter duration. Finds of more than 135 nearly complete legs of these tripod vessels suggest that there were at least 45 such pots at the site - if this is anything to go by in terms of indication of the size of the community involved.

On present evidence it appears that most of the tripod pottery sites are located in the north of Peninsular Malaysia in the Perlis and Kedah states. While this may be true, we should also consider the fact that it is easier to find cave sites than open sites. The Neolithic settlement at Jenderam Hilir was buried a few metres under the Langat river alluvium, and it was only by chance, through tin mining, that the site was discovered. I believe this was not just an isolated settlement in the Langat valley, especially if shifting cultivation was practised by these people (Leong 1990).

Some six hundred years later, the Jenderam Hilir area was again settled by a Neolithic group. Tripod pottery was no longer present, but vessels were still cord-marked. The AMS dated potsherds all had cord-markings on their outside surfaces. Since the majority of the Jenderam Hilir pottery and stone artefacts are loose finds collected from the tin mine, it is not possible to establish with certainty which artefacts may be ascribed to this late Neolithic phase. The Gua Cha Neolithic burials, and the assemblages found by Williams-Hunt at Gua Harimau and Bukit Tengku Lembu, however, do give us a fairly good picture of the material culture of the late Neolithic peoples in Peninsular Malaysia. On grounds of typological comparison with these assemblages, some of the lithic artefacts from Jenderam Hilir which may be assigned to this late Neolithic phase include a stone bark-cloth beater, beaked adzes, stone bracelets, and many ground stone knives often referred to as the "Tembeling knives" (Tweedie 1953:37). The pottery of this late Neolithic phase appears to be less heavy or thick compared to that of the tripod pottery phase. The paste is also less gritty. Some of the vessels published by Williams-Hunt from Gua Harimau, and some from Sai Yok (Heekeren and Knuth 1967) and the Ban Kao Late Neolithic subphase (Sørensen and Hatting 1967) likewise give us a good picture of the types of vessel shapes and surface decorations of the ceramic wares of this period.

In the light of these two younger Jenderam Hilir AMS dates, the Gua Cha radiocarbon date of 3020±230 BP (ANU-2217) now takes on special significance. All fall within a similar time and the Jenderam Hilir ground stone artifacts of this period are similar to the range that has been found in the Gua Cha burials. Many of the pottery types are likewise comparable in terms of surface decoration and vessel forms. Some dissimilarities have also been noted.

The Neolithic date earlier obtained for Gua Harimau¹ of 3450±150 BP (BM-43) is also not inconsistent with these Jenderam Hilir AMS dates. The date appears to be just slightly later than the Jenderam Hilir early Neolithic Phase (which has tripod pottery) but is much earlier, by about 400 years, than its late Neolithic Phase. At the same time it is slightly older than the Ban Kao Late Neolithic, by only 140 years. It is apparent that some time during the mid-second millennium BC these late Neolithic cultures were becoming widespread in peninsular and mainland Southeast Asia. In Peninsular Malaysia, Neolithic occupations were now much more widespread and no longer limited to the western part of the region. Although Gua Harimau in Upper Perak still lies within the western part of the peninsula, it is located quite close to the Main Range. Gua Cha in Upper Kelantan, of course, is found right over the other side of the Main Range. The site at Nyong in the Tembeling Valley in Pahang may probably be assigned to the late Neolithic Phase as well. This is again a riverine settlement site. Stone bracelets, "Tembeling" knives, and a stone bark-cloth beater have been found at this site together with ground stone adzes and cord-marked pottery (Evans 1931). Similar types of ground stone artefacts are known to have been found as surface finds from various parts of the Tembeling Valley and other areas in Pahang, for example at Tui near the Main Range (Tweedie 1953).

We know little of the relationship between these late Neolithic cultures and the earlier Tripod Pottery Culture. Some general similarities in the techniques of surface finish have already been noted, but we do not know why tripod vessels ceased to be used. One interesting point to note, however, is the fact that some of the late Neolithic sites are in the same locations as their Tripod Pottery predecessors, as at Ban Kao, Sai Yok, Buang Beb² and Jenderam Hilir. While it may be argued that caves are natural topographic features that have always attracted the attention of human groups throughout the ages, the case is quite different for open sites like Ban Kao and Jenderam Hilir. In such places, especially in lowland rain-forest, I believe it takes more than chance for a site to be reoccupied after a long period. Were these early and late Neolithic groups who had set up their settlements in and around the same general localities at Jenderam Hilir related? The archaeological record we have at hand is silent on this question. We do, however, know from ethnology that even among nomadic groups each band would normally move within a well-defined area. Others like the Senoi, an aboriginal group who once practised shifting cultivation in the mountains and foothills of the Main Range, were known to move their settlements after about three to eight years and they always moved within a well-defined territory (Dentan 1964). Were these late Neolithic groups descended from the Tripod Pottery groups, those shifting cultivators who had earlier made their homes in the Langat Valley?

FOOTNOTES

1 Mention must be made at this point of another radiocarbon date of 4920±270 BP (Zolkurnian Hasan 1989) obtained from the 1987 excavations at Gua Harimau. I suspect this date is rather too early for the Neolithic at this site. According to the report (Zolkurnian Hasan 1989:43), much guano digging has taken place in the recent past in this cave.

2 Buang Beb also produced a stone bark-cloth beater rather similar to those from Gua Cha, Nyong and Jenderam Hilir. This type of find may be ascribed to the late Neolithic.

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