

Figure 1 The location of the prehistoric sites mentioned in the text 1. Khok Phanom Di, 2. Nong Nor, 3. Ban Kao, 4. Tha Kae, 5. Phu Noi, 6. Khao Wong Prachan, 7. Khok Charoen, 8. Ban Non Wat, 9. Ban Nong Sakae Si, 10. Samrong Sen, 11. Ban Chiang, 12. Ban Na Di, 13. Non Nok Tha, 14. Phung Nguyen, 15. Lung Hoa, 16. Shifodong, 17. Sri Thep





THE OPPOSED HUMAN FIGURE AT KHOK PHANOM DI

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Abstract

Several authorities have noted the widespread distribution of incised and impressed pottery vessels associated with the earliest rice-farming communities of Thailand. This paper explores the origins of agriculture in the context of a particular motif in the form of a stylized human figure. This motif, it is argued, links a series of sites in Central and Northeast Thailand, and suggests a shared tradition of symbolic decoration that dates from the late third millennium.

Introduction

The history of prehistoric enquiry in Thailand over the past thirty years has tended to concentrate upon specific sites, at the expense of detailed comparisons between a series of sites to identify patterns and relationships. In this paper, an attempt will be made to follow a particular motif impressed onto Neolithic pottery vessels, in order to identify links between widely-separated sites and beyond, to a general perspective on the introduction of rice farming into Thailand. The pattern in question involved what looks like a highly-stylised human figure. On occasion, it appears in opposing pairs, but in some cases, it is seen as a series of like images in a frieze. The site generating this initiative is known as Khok Phanom Di.

Khok Phanom Di is a prehistoric settlement, located in the lower reaches of the Bang Pakong River that is, in many respects, unique (Fig. 1). Extending over five hectares, its cultural layers, which reach a depth of at least 8.5 m and probably over 12 m in parts of the site, accumulated rapidly between about 2000 and 1500 BC. It began as an estuarine settlement of maritime hunter-gatherer-fishers, but the initial population interacted with intrusive rice cultivators in its hinterland. A succession of human burials that extended over 17–20 generations has revealed both subtle and deep-seated changes, while the biological data evidence transitions from marine to freshwater, back to marine and finally, to dry land conditions. Each was accompanied by modifications to the subsistence base. While salinity would





Figure 2 The interior of a vessel from Khok Phanom Di burial 11, showing the stylized human figure motif

have discouraged rice cultivation, the rise of freshwater conditions saw the manufacture of granite hoes and shell harvesting knives probably linked with agriculture.

Rachanie Thosarat and I excavated an area of 10 by 10 m of Khok Phanom Di in 1984–5 (Higham and Bannanurag 1991, Higham and Thosarat 1993, 2004). The ensuing 19 years have involved a series of specialist studies (Thompson 1996, Tayles 1999, Vincent 2004), all of which make possible a review of this site's prehistoric past. As each specialist report has been completed, so our understanding of Khok Phanom Di has matured and been refined. Nevertheless, we have barely scratched the surface of this remarkable settlement, and anticipate that our interpretations will in due course require enlargement and modifications.

Early in our investigations at the site, we recovered from the eleventh of our 154 burials, a complete ceramic vessel decorated with incised designs in the form of what looks like a human figure (Fig. 2). This comes from the 7th mortuary phase, and dates in the vicinity of 1500 BC. Other vessels also have incised designs infilled with impressions, that are usually either cord marked or shell impressed. This paper will pursue the issue of such decoration in general, and the human motif in particular, as a means of identifying how the half a millennium of occupation at this site meshes with our growing understanding of Thai and South-East Asian prehistory beyond the confines of the Bang Pakong valley.

Prior to our excavations, there had been three investigations of Khok Phanom Di (Suchitta 1980, Noksakul 1981, Pisnupong 1984). The model we took to Khok

Phanom Di in 1984 was much influenced by their findings, particularly a series of radiocarbon dates obtained by Noksakul, dates which now appear either too early or too late, and are archaeologically unacceptable. Our model centred on the possibility that the coastal tracts of Southeast Asia, to a background of stresses caused by rapid environmental change, witnessed a local transition to rice cultivation. At that juncture, the broad scale migrations into the area long since proposed by Heine Geldern (1932), and sustained by Sørensen's interpretation of Ban Kao (Sørensen and Hatting 1967), were largely discredited. Indeed, the pendulum of opinion was then swinging towards local transitions to rice cultivation within early contexts.

This trend was stimulated by research at three sites, Spirit Cave, Non Nok Tha and Ban Chiang (Solheim 1968, Bayard 1971, Gorman 1972, Gorman and Charoenwongsa 1976). Gorman (1977) provided the clearest statement in favour of indigenous origins for the transition to agriculture when he formulated a model which placed this development in the piedmont area of Thailand. In the context of the available data, his proposal was plausible, for he argued that the initial settlement of Non Nok Tha and Ban Chiang took place by about 4500 BC while similar agricultural communities in the Yangzi Valley involved the Qujialing culture, were thought to date to the third millennium BC. The transition, as Gorman stressed, was hypothetical and designed for testing in the lower piedmont annual swamp-lands, where hunter-foragers might have expanded their area of settlement from the surrounding uplands. This proposal was tested, and found to be wanting: no transitional sites were found (Penny 1984).

When we began our research at Khok Phanom Di, we were firmly on the side of such a local transition to rice cultivation in South-East Asia, rather than an expansionary movement from the north. In view of Noksakul's early dates (Noksakul 1981), and recognizing the biological vigour of marine, and in particular estuarine habitats, we first formulated a model which saw Khok Phanom Di as a sedentary hunter-gatherer community which tapped into the marine eco-system. Such sedentism fostered population growth and settlement fission which involved the filling of the available coastal tract by new settlements. Once filled, social circumscription encouraged expansion into marginal zones behind the seashore, which would have included seasonal freshwater swamps. It was in such areas that rice would have been incorporated into the diet and in due course, cultivated. This process could then have stimulated further population growth and expansion into the hinterland where we knew of agricultural settlements, such as Non Pa Wai and Ban Kao, dating from the late third millennium BC.

The second model identified stress within communities such as Khok Phanom Di as the sea level fluctuated. Sites might have been distanced from the shore, reducing the predictability of coastal resources and encouraging rice cultivation as an adaptive strategy to offset the effect of a deteriorating habitat. This

would have seen a transition from a coastal foraging subsistence base to one incorporating rice cultivation. Both alternatives took account of occupation spanning several millennia, as indicated by the radiocarbon dates from earlier excavations, and the depth of the cultural deposits.

However, research in the Yangzi Valley since our excavations at Khok Phanom Di have identified a cultural sequence from hunting and gathering to rice cultivation. The latter led to the establishment of farming villages at sites such as Bashidang and Pengtoushan, within the period 8000–6000 BC.

The sequence at Khok Phanom Di

The cultural sequence we identified at Khok Phanom Di incorporates eight phases. Cross cutting these, there are seven mortuary phases and four ceramic periods. The chronology is based on corrected radiocarbon determinations.

Phase 1. Layers 10:25 to 11:2, date, c 2000–1900 BC. The low-lying site was located near salt flats and the inner margin of the mangrove, but the latter half saw an increase in shellfish found just above the reach of high spring tides and a drop in the incidence of seeds representing saline salt flats. Subsistence included much fishing, shellfish collecting, and exploiting mangrove crabs. Rice was found, but there is no artefactual evidence for local cultivation. Rice is also present as a ceramic temper in rare exotic potsherds. No dog bones were found in layers belonging to this phase. Close parallels are found between the material culture and that recovered from Nong Nor, a second coastal hunter-gatherer site located 14 kilometres to the south, and dated a few centuries earlier than phase 1 (Higham and Thosarat 1998).

Phase 2. Layer 10:24–10:2, c 1900–1750 BC, mortuary phases 1, 2 and 3A. This period saw ceramic period 2. According to strontium isotope analysis on human teeth, both men and women in Mortuary Phase 1 (MP 1) were born and raised in an environment different from Khok Phanom Di before settling there (Bentley 2004). The inhabitants made pottery vessels and decorated them with a lustrous burnish and complex incised and impressed designs. They suffered from anaemia, and there was very high infant mortality. Men had strong upper bodies, and their dental wear differed from that seen in women. The dead were interred in clusters probably within wooden structures. A few individuals were buried with rich and varied grave goods, but there is no evidence for one burial cluster being consistently more wealthy than another. Reliance on a marine diet obtained through hunting, fishing and collecting continued.

Phase 3. Layers 7:2–10:1, c 1750–1650 BC, Mortuary Phases 3B and 4. During the early part of this phase, strontium isotope analyses reveal that several women came to Khok Phanom Di from a different environment. There were a

series of significant changes in both the environment and the material culture. Hoes and rice harvesting knives were in use, while freshwater shellfish became more abundant than those of the landward mangrove swamps. It is likely that rice agriculture was undertaken. Fishhooks ceased to be found, net weights became rare, and men ceased to be so physically robust in their upper bodies. Infant mortality was reduced, but more child burials were found. Tooth wear reflects a less abrasive diet. Burials were markedly poorer, with little evidence for shell jewellery. As MP4 progressed, so we find no further evidence for the arrival of immigrants from a different habitat.

Phase 4. Layers 6.6 to 7.1, c 1650–1600 BC, Mortuary Phase 5. This brief phase saw the interment of four exceptionally rich graves. The burial goods included the first major infusion of exotic shell ornaments, fashioned in the main from tridacna. Ivory, slate and slaty shale were also found with some frequency. Shell harvesting knives, however, ceased to be encountered and shellfish of the mangrove forests became more abundant at the expense of those adapted to freshwater.

Phase 5. Layer 6, c 1600–1500 BC, Mortuary Phase 6. This phase saw a reduction in the number of freshwater shellfish and a rise in the frequency of species adapted to mangroves. No more shell harvesting knives nor stone hoes were found. *Suaeda maritima*, a plant of salt flats, re-established itself. The burials reveal two groups, a rich one within a square mortuary structure, and a poorer one in which graves were set out in a row contained, probably, within a wooden building. A child burial in the former group was found with a large shell disc by the head. Exotic slate and tridacna shell items continued to be found. Pottery making implements continued to be associated with women.

Phase 6. Layer 5, Mortuary phase 7. date, c 1500 BC. During this phase, there was a decline in the frequency of mangrove species of shell, but they were still present in significant numbers. No harvesting knives were found, but one hoe was present. Slate, tridacna shell and ivory were obtained, probably through exchange. There were few burials. It was during this phase, that the vessel with human-like figures was interred.

Phase 7. Layer 4, date, post 1500 BC. There may have been a period of abandonment between phases 6 and 7, but there is no stratigraphic evidence for this. The area excavated was no longer used as a cemetery. The inhabitants still had access to marine resources, made pottery vessels and obtained exotic goods. We see an increase in the quantity of shale and ivory, but a reduction in the amount of tridacna. The faunal spectrum includes the bones of some small mammals and bovinds which are compatible with a drier, more forested habitat.

Phase 8. Layers 2–3, date, post 1500 BC. The area excavated was used to manufacture pottery vessels, and there is evidence of working ivory and antler. Net

weights were again common, and woodland fauna increased. Marine species of shellfish were no longer found or became very rare. No more tridacna was recovered, but shale was abundant.

Khok Phanom Di in its broader context

The period between about 2100 and 1300 is a vital one in Thai prehistory. It was during this period, that we encounter a range of village settlements in the tributaries of the major rivers of Central and Northeast Thailand in which the dead were inhumed in dedicated cemeteries. They were found, usually in an extended supine position, associated with a range of mortuary offerings. Rice remains attest the establishment of farming, while domestic dogs, pigs and cattle evidence stock raising. Are there any indications that these Neolithic farming communities were in contact with the coastal hunter-gatherers of Khok Phanom Di? This question is best approached by seeking sites contemporary with Khok Phanom Di during cultural phases 1–2, and investigating evidence for exchange both of goods and ideas, and even the movement of people.

Much research has been undertaken in the prehistory of the Khao Wong Prachan Valley and its environs north of Lopburi (Fig. 1). Reports of the excavation at Tha Kae evidence settlement during the Neolithic period. Excavations were undertaken in 1980, under the direction of Surapol Natapintu, in 1983 by Rachanie Thosarat and more recently by Roberto Ciarla (1992). The cultural sequence has been divided into three distinct phases of which the earliest is Neolithic. Twenty-one inhumation burials were found. They have in common a north-south orientation, and the placement of pottery vessels beyond the head and feet and, in one case, under the knee. Other offerings include shell beads, bangles and earrings, a bone point and polished stone adze. It is the pottery vessels which attract most attention, for we encounter not only a profusion of forms, but also of motifs. The latter were incised on the surface of the vessel, and highlighted by being surrounded by cord marking, or receiving impressions within the confines of the incised lines (Siripanish 1985). There are C and S shaped patterns, stylised snakes and interesting and harmonious opposition of like motifs. One of these is similar to the human figure from Khok Phanom Di (Fig. 3). Hanwong (1985) has described the artefacts from Tha Kae, and noted the presence of marlstone and turtle carapace bangles, and the central cores removed from tridacna shell to create bangles. The site was thus a centre for the manufacture of shell ornaments. Tha Kae is just the sort of community with which the inhabitants of Khok Phanom Di would have traded, and obtained their dogs and the notion of cultivating rice. Unfortunately, we do not have any radiocarbon dates for this site, but these earliest layers probably belong within the period 2500–1500 BC.

Rispoli (1992) has identified vessels similar to those of Tha Kae at Non Pa Wai early period and Khok Charoen. Again, some Tha Kae vessels bear parallel incised lines accentuated by impressed decoration. The latter includes shell impressions, and these strike a chord with some of the mortuary vessels from Khok Phanom Di. At Non Pa Wai, examples are found in the early phase of occupation, dated to the second half of the third millennium BC. The early period cemetery at Non Pa Wai is likely to prove of considerable significance to this issue, although at present we have little published information on the details of the material culture. It is, however, evident that this was a Neolithic cemetery, established in all probability by rice cultivators. The two available radiocarbon dates indicate establishment before cultural phase 1 at Khok Phanom Di, but slightly later than the occupation of Nong Nor during phase 1.

Excavations at Huai Yai by Natapintu (1988) have yielded a material culture similar to that of early contexts at Ban Tha Kae. The burials were accompanied by pottery decorated with curvilinear designs, marine shell ornaments and H-shaped beads which match those found at Khok Phanom Di during Mortuary Phase 6. Natapintu (1988) has also exposed an area of 3 by 5 m at Phu Noi, 30 km to the north of the valley, and found a concentration of 32 burials. Grave goods include marine shell ornaments as well as items made from turtle carapace, ivory and exotic stone. Again, no radiocarbon dates are available, and the

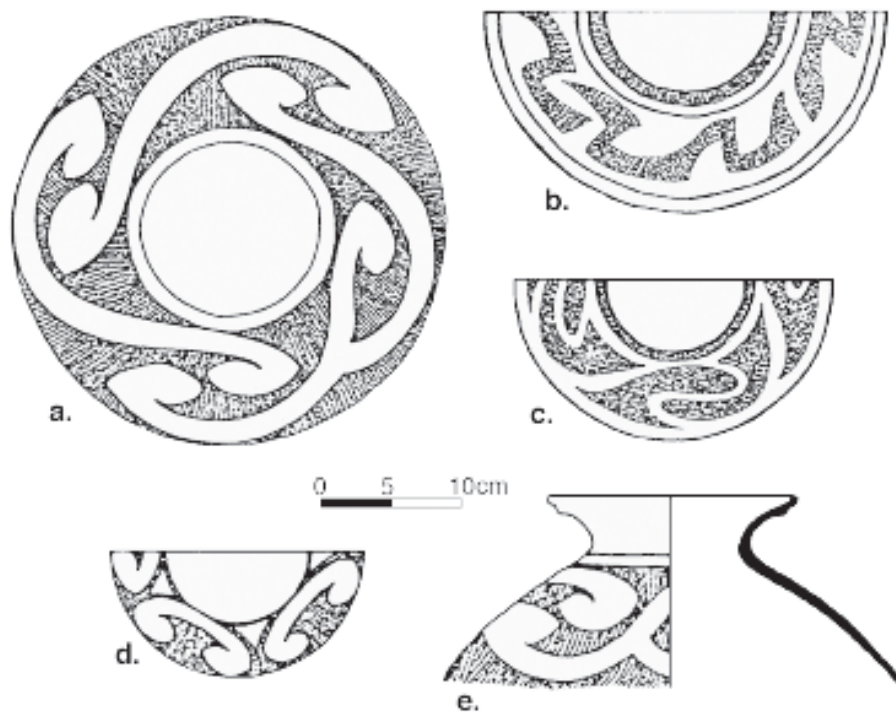


Figure 3 Neolithic pottery vessels from Tha Kae, Lopburi Province

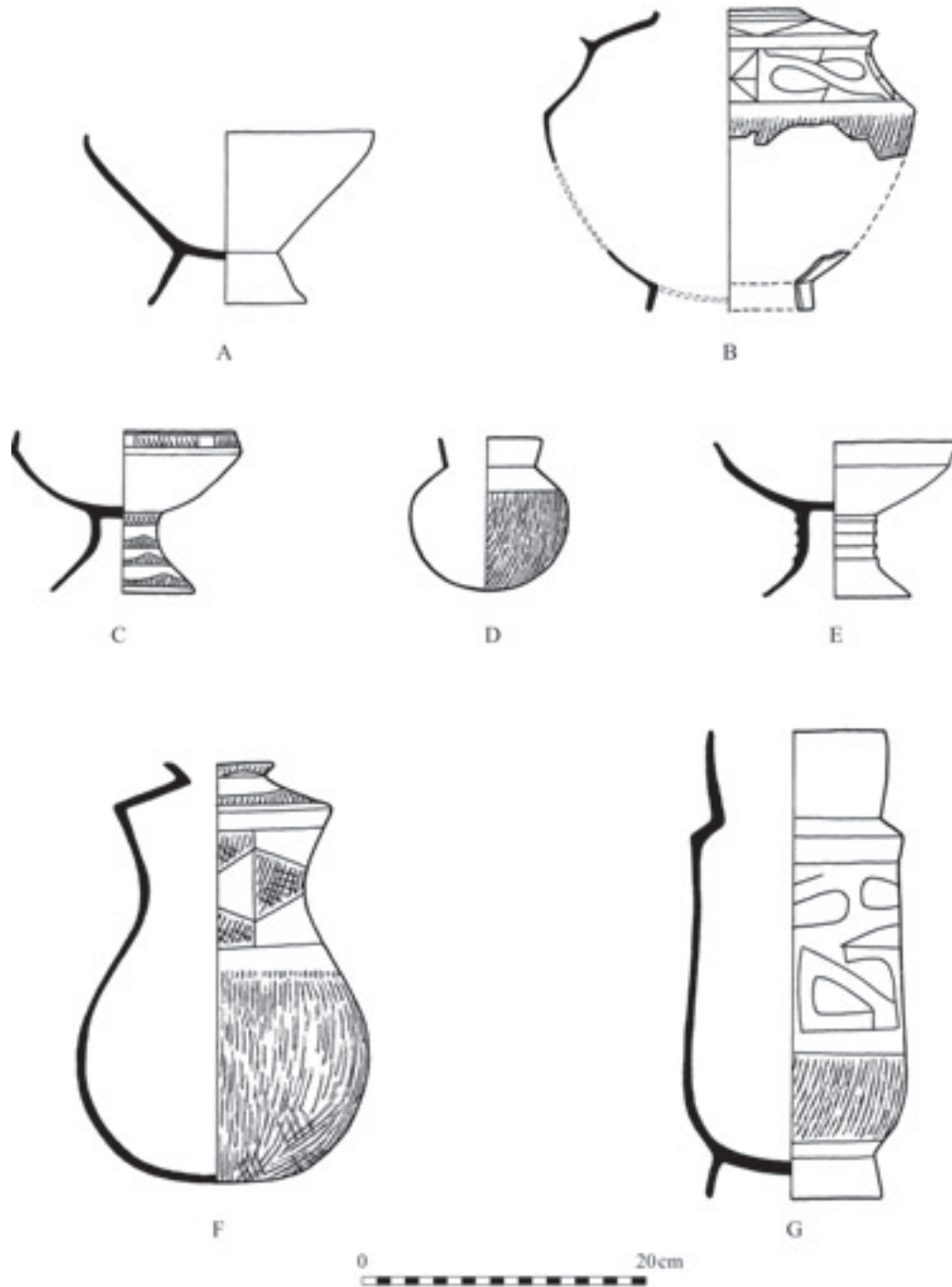


Figure 4 Pottery vessels from the site of Khok Charoen



principal relevance of this site is the further demonstration of exchange between inland and coastal communities during the second millennium BC. Further evidence for exchange has been identified in 2004 at the site of Ban Nong Sakae Si, near Sri Thep in Petchabun province. There, a number of I-shaped beads typical of Mortuary Phase 5 at Khok Phanom Di have been identified.

Khok Charoen

Khok Charoen, located 100 km north-east of Tha Kae, was excavated in four seasons between 1966–70, and the material from the first two has been considered by Ho (1984). An area of 320 square metres was excavated to an average depth of 1.1 m, and 44 inhumation graves were revealed. Ho (1984) has suggested that the inhabitants had “some knowledge of rice cultivation”. The date of occupation is not known with assurance, but there are two thermoluminescent dates which suggest that it falls within the period 1400–800 BC, and Ho (1984) ascribes them to the early Metal Age, but a review of the material recovered strongly suggests that it is a Neolithic site. Ho (1984) has divided the mortuary vessels into 14 forms, ranging from vessels with ring feet or pedestals, and others which were round-based. Decoration includes overall burnishing, as well as zones of red slip and cordmarking. Some rare forms, include patterns demarcated by incised lines infilled with stamped or impressed surfaces.

There are some vague similarities in the incised or impressed designs with those seen at Khok Phanom Di, including semicircles with shell edge impressions, repeating shell impressed triangles, lenticular shapes filled with stamp impressions and, wavy line and straight line enclosing impressions. Particular attention, however, is drawn to a large, decorated vessel (Fig. 4). The incised and impressed decoration on the shoulder incorporates opposing human figures closely matched at Khok Phanom Di and identical to the vessel recently identified in the vicinity of Sri Thep (Fig. 5). The shell jewellery includes shell disc beads and a shell disc head ornament like those from burial 15 at Khok Phanom Di. Khok Charoen has yielded a moderate quantity of trochus bangles and rings, and there are also two conus shell rings.

THE KHORAT PLATEAU

Ban Non Wat

Ban Non Wat is a large moated site in the upper Mun Valley. Excavations by the author and Rachanie Thosarat in 2002–4, have revealed a long sequence,



Figure 5 A Neolithic pottery vessel from the area of Sab Champa



Figure 6 A Neolithic burial from Ban Non Wat, Nakhon Ratchasima Province, comprising an adult man in a large mortuary vessel



covering the Neolithic to the Early Historic periods. The initial occupation by a Neolithic community has been radiocarbon dated by several determinations, between 2100–1400 BC, thus making it a contemporary of Khok Phanom Di. It is too soon after the excavations to be able to make definitive statements about the subsistence economy, save that domestic pigs, cattle and dogs were raised, and that there was much fishing and shellfish collecting. Rice grains have been found in the burials, which were interred either within lidded mortuary jars or as extended supine inhumations. One adult male was found in a seated, crouched position within a large lidded mortuary jar (Fig. 6). A smaller but otherwise identical vessel was found to contain the remains of an infant. The inhumation burials were associated with grave goods including pig bones, bivalve shellfish and ceramic vessels, some of which reached a considerable size. These, as with the mortuary jars, were embellished with incised curvilinear designs infilled with impressed designs or red pigment, and enhanced by burnishing. The resulting vessels reveal a remarkable similarity to those from Khok Phanom Di. We were, however, intrigued to encounter in 2004 a vessel decorated with the same opposed human motif as the pot interred with burial 11 at Khok Phanom Di (Fig. 7). A painted motif from another vessel at Ban Non Wat bore the same design. To confirm contact with coastal communities, one individual wore two pierced cowrie shells at the left ear (Fig. 8). The favoured technique for applying decoration to pottery vessels during the Neolithic was very similar to that seen at Khok Phanom Di at least from Mortuary Phase 5. The relevance of this site, the first major exposure of Neolithic settlement in the Mun Valley, lies in this similarity of mortuary tradition with Khok Phanom Di, and evidence for long-distance trade contact between such new Neolithic settlements in the interior, and those able to trade in shells taken from clean, coralline seas.

Non Nok Tha

Ho (1984) has suggested that four of her pot forms from Khok Charoen are paralleled at Non Nok Tha. In Bayard's (1977) review of the latter sample, we encounter six classes, which include large round-based vessels, footed globular pots, cups, footed bowls, round-based bowls and jars. The last named includes unusual bases in the form of an elephant or a frog. This provides a very close match with a vessel from Phu Noi in Central Thailand, where such a cup is borne by a bovid (Charoenwongsa 1987). The presence of zoned areas of red slipping and polishing combined with other areas bearing cord-marked impressions suggests closer similarities between these two sites than of either with the ceramic tradition seen at Khok Phanom Di. One variety, rare and early at Non Nok Tha, has a zone of incised and impressed designs just below the neck.



Figure 7 A Neolithic pottery vessel from Ban Non Wat, showing the human figure motif impressed on the base



Figure 8 The cranium of a Neolithic burial from Ban Non Wat, showing cowrie shell ear ornaments





Ban Chiang, like Non Nok Tha, remains unpublished and the chronology is controversial. There have been many excavations, those arousing most publicity taking place in 1974 and 1975 (Gorman and Charoenwongsa 1976, White 1982). The area excavated was limited by modern structures, and only hints of the layout of the cemetery are available. The earlier graves uncovered during the 1974 season include the incised and impressed designs in which parallel lines were infilled with impressions. To judge from the few available illustrations, the impressions were made with the edge of a bivalve shell. Motifs include spirals and meanders. Neither these, nor the forms of the vessels, provide parallels with the material from Khok Phanom Di.

Samrong Sen

Some of the pottery from the Cambodian site of Samrong Sen falls within the South-East Asian tradition of incised and impressed decoration, but the illustrated artefacts from this site also reveal some close similarities with material from Khok Phanom Di (Mansuy 1923). These include the form of some adzes. Among a wide variety of shell ornaments, including some fashioned from tridacna shell we find a pierced disc virtually identical with that from burial 15 at Khok Phanom Di. A specific parallel is seen in the worked fish vertebra in which grinding has produced two parallel ridges. Samrong Sen has not been properly excavated or published, so its date is not known with any precision. The single radiocarbon date is 1749–1253 BC.

BAC BO AND YUNNAN

The prehistoric sequence in Bac Bo, northern Vietnam, provides parallels with that in Central Thailand and the Khorat Plateau. There was a long tradition of coastal foragers adept at making pottery vessels and polishing their adzes. We do not have any data on the possible adoption of rice cultivation in these coastal cultures, but large stone hoes were found at some sites. During the late third millennium BC, a new settlement form, the inland riverine agricultural village, appears in the archaeological record. Many novel artefact forms and a new mortuary ritual involving deep, ledged graves made their appearance in these Phung Nguyen sites. Pottery decoration provides tantalising similarities with that seen in the Mekong Valley. The mortuary ritual of the Phung Nguyen culture contrasts with that seen in the earlier coastal sites. At Lung Hoa, Hoang Xuan Chinh (1968) has excavated 12 inhumation graves up to 5.2 m deep which incorporate ledges and extended inhumation burials. Offerings include pottery vessels, and stone brace-

lets, beads, earrings and adzes. This method of burial has its closest parallels in sites located in southern China, as in the graves of the Fubin culture of Lingnan.

These direct our attention to Yunnan, a nodal region from which settlement could have spread by degrees south to the middle and lower reaches of the Mekong, Red and Chao Phraya rivers.

Baiyangcun is a site which provides much critical information (Yunnan Provincial Museum 1981). It is located close to the Lancang and upper reaches of the Red River, in a position which would have beckoned any expansionary settlement of rice cultivators originating in the Yangzi Valley. There is a stratigraphic sequence 5.35m deep, incorporating the remains of houses and an inhumation cemetery with at least 34 burials. The dead were inhumed, with the head orientated to the north or east. Infants were interred in jars. The mortuary plan suggests the possibility that the dead were grouped. Pottery from the occupation layers—unusually, there were no grave goods with the dead—includes sherds decorated with incised lines filled with impressions highly reminiscent of the decoration seen in early contexts in Bac Bo and the Khorat Plateau sites. The single radiocarbon date is 2462–2014 BC. If a true reflection of the age of this site, it would be crucial in providing a cultural milieu from which the agricultural expansion to the south could have originated. Dadunzi is a second site in this region (YPM 1977). It too has revealed house plans and a cemetery in an excavated area of almost 500m. The superposition of houses, which followed a north-south axis, suggest long-term occupation by a group which, according to the excavators, cultivated rice and maintained domestic stock. Once again, we encounter pottery vessels ornamented with incised bands infilled or highlighted by impressed decoration. The radiocarbon date is 1684–1261 BC. Shifodong is a massive cave commanding a tributary of the Lancang River near the China-Burmese border. The ceramics from this site again reveal parallels with those from Neolithic sites in Thailand and Vietnam.

The evidence from Yunnan sustains the hypothesis that the Phung Nguyen, Khorat Plateau and Central Thai inland settlements could have involved an intrusive movement of rice cultivators down the main river valleys from the north.

The Austroasiatic language family

The study of historic linguistics provides a means of testing and refining the model that rice cultivation in the Yangzi Valley stimulated expansionary movement to into South-East Asia. Cognate words deeply embedded in languages spread over a wide area can be used to reconstruct aspects of shared cultural behaviour and even common origins. In the case of mainland South-East Asia, the Austroasiatic (AA) family is central to the aims of this essay.

Many Austroasiatic languages are spoken from Yunnan to peninsular Thailand, and from Vietnam to Eastern India (Fig. 9). They include Mon, Khmer and Vietnamese. The western group, known as Munda, is distributed through eastern and central India. For almost a century, AA has been linked in various ways with other language families. Schmidt (1906) was foremost in suggesting that AA and Austronesian (AN) languages have a common ancestor in the phylum he named Austric. This linkage was not widely supported until Reid (1994) found evidence in the Nancowry language of the Nicobar islands, for a link based not so much on cognates, but on morphemes in which conservative AN structures survived in AA languages due probably to the remote island location. The notion that the Munda languages were intrusive to India was suggested by Heine-Geldern (1932), who further linked their arrival from South-East Asia with the distribution the polished shouldered adze type, and the spread of agriculture.

Any consideration of this possible link between AA languages and the spread of agriculture should most logically commence by considering cognate words for rice cultivation across the broad spectrum of AA languages. Gordon Luce has provided a pioneering analysis of the implications of the distribution of AA languages for the spread of rice cultivation (Luce 1985). He began by considering a number of cognates linking the widely-scattered speakers of AA. The word for 'dog', for example, is likely to be important. There is, in South-East Asia, no native wolf from which to derive the domesticated dog. Yet the cranial characteristics of the prehistoric dog reveal beyond doubt a lupine ancestry. Cognates for the word 'dog' are present over the entire area of AA language distribution, even into Central India. The initial results of the analysis of DNA from prehistoric and Chinese dogs show promising relationships. The word for 'child' is virtually identical between Kurku in Central India, and Bahnar on the eastern seaboard of Vietnam 'Fish' is another important word for any expansionary group of farmers in Southeast and South Asia. The word for 'fish' is cognate across the area of AA languages, linking small islands of speakers. But perhaps the key words in the vocabulary, are those for rice in its various forms. Luce (1985) has considered the word for husked rice. In Old Mon, it is *sno*, Old Khmer *ranko*, Danaw *ko*, in the P'u-man language of Yunnan it is '*n-k'u*' and in Khasi, it is *khaw*. The word for rice plant in Sakai is *ba'ba'* or *ba'*, in Stieng, Biat, Gar and Bahnar it is *ba*, in Khasi it becomes *kba* and in Mundari, it is *baba*. Luce concluded with these words: "What can be the cause of this startling diffusion? I can only think of one adequate explanation: wet rice cultivation" (Luce 1985:3). At a time when archaeological research had hardly begun, he suggested that rice cultivation began in the Red River Valley, whence agriculturalists moved upstream to Yunnan, across to the headwaters of the Brahmaputra and so into India. As will be seen, his first idea has been largely sustained by further linguistic research, but his archaeological correlates need drastic revision.

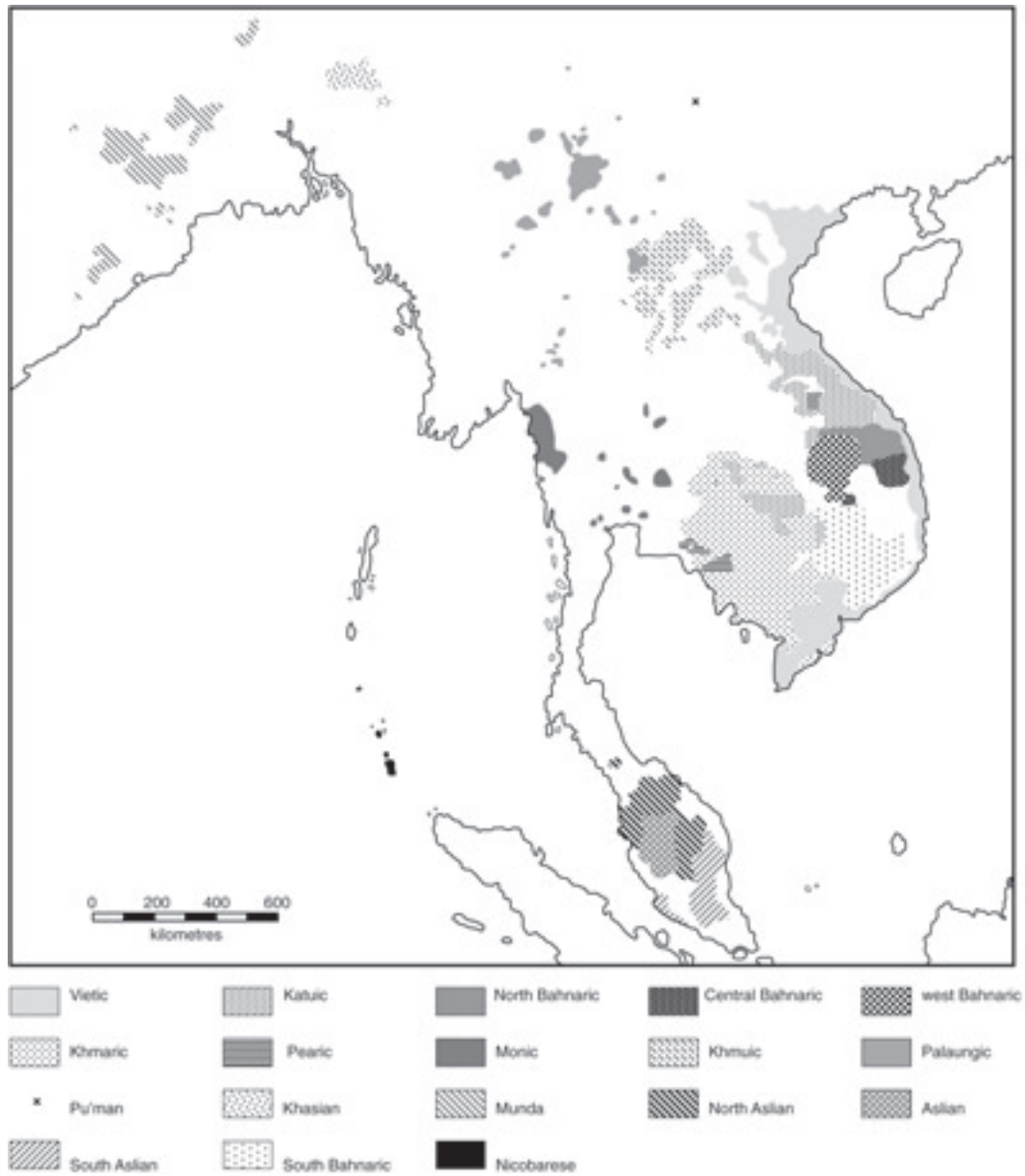


Figure 9 The distribution of Austro-Asiatic languages in Southeast Asia

Thus, Zide and Zide (1976) have considered the proto-Munda vocabulary, and compared the reconstructed words with those found in other AA languages in South-East Asia. Their results reveal that, on the basis of the reconstructed proto-Munda word list, the Munda were more advanced agriculturally than archaeologists had previously thought. Whereas it was widely assumed that the more advanced Munda, speaking Sora, Mundari or Santali, received their knowledge of agriculture from intrusive Indo-Aryan speakers, the linguistic evidence revealed that they would have been rice farmers from their arrival in eastern India. Indeed, the reconstruction of plant names provides a dimension to Munda prehistory not available so far from archaeology. 'Bamboo' and 'bamboo shoot' have cognates between Sora and Gorum in Munda, and in Old Mon.

There are proto-Munda names for rice, uncooked husked rice, which have cognates in Mon-Khmer (MK), Lawa, Rumi and Khmu. Lawa is spoken in the Ping River valley of northern Thailand, and Khmu speakers are found in upland Laos. The north Munda form has cognates in Kharia, Mon-Khmer, Khasi and Semang. The word for 'pestle' might be cognate in Kurku and Mon, Khmer and Proto MK, while alcohol and inebriation have widespread AA cognates. There is also a reconstructable word for 'dog' with cognate forms in Mon-Khmer. The Munda word for bull seems to have been borrowed from Indo-Aryan, whereas there is a possible cognate for cow with Proto-Munda and Mon-Khmer. Zide and Zide have concluded that at least 3500 years ago at a conservative estimate, the proto-Munda speakers practiced subsistence agriculture, cultivating rice, millet and at least three legumes. They also used husking pestles and mortars which go back to Proto AA. But they developed some cultigens or plant resources in India, for there are no AA cognates for mango or turmeric.

This situation is supported by Mahdi (1998), who has found that the Proto AA word for rice can be reconstructed in Munda, Mon-Khmer, Palaung-Wa, Viet-Muong, Old Mon and Lamet. Pejros and Shnirelman (1998) have also deployed linguistic evidence in suggesting that neither AA nor AN proto languages reveal evidence for a tropical origin, but rather point to inland beginnings north of the tropical zone of eastern Eurasia. They identify the middle Yangzi Valley as a likely homeland, and feel that proto Austric began to divide in the ninth to eighth millennia BC. AA represented by Munda and Mon-Khmer, split from each other by the end of the fifth millennium BC. By the end of the fourth millennium, Mon-Khmer began to divide into Khmer, Bahnaric and Viet-Muong.

The linguistic evidence summarised above is compatible with an original Austric macro-family being present in the middle Yangzi Valley from which at least AA and AN languages originated and spread, the former largely by land, and the latter by sea. Linguists seem to agree that a considerable time depth is necessary to account for the differences between Munda and Mon-Khmer languages,

and rather less for the divergence between the individual languages of the latter division.

Robert Blust (1996) followed Reid's conclusion on the validity of Austric by proposing, purely on linguistic evidence, that the distribution of AA languages in South and South-East Asia results from a series of intrusive movements which took advantage of riverine routes of expansion. From a source in the upper Yangzi valley, he suggested that proto-Munda speakers followed the course of the Brahmaputra River into India, while speakers of proto Mon-Khmer followed the Irrawaddy into Burma, the Chao Phraya and Mekong into Thailand and Cambodia, and the Red River into Vietnam.

One vital factor in reviewing the implications of new archaeological and linguistic evidence, is the nature of the communities in Thailand that represent the first farmers. In the case of Ban Non Wat, one is struck by the extreme sophistication of the ceramic industry. The pottery vessels are of outstanding quality and size, including one large enough to house the body of a large man. There was likewise, a widespread and, it seems, swift establishment of such settlements over a wide area, each incorporating new agricultural techniques and the raising of domestic stock. There is no known site revealing a local transition to this Neolithic period from the context of indigenous hunter-gatherers. Not long after the establishment of the first farming villages, we cease to find evidence in much of South-East Asia for hunter-gatherers in sites that had been frequented for millennia.

What happened? Khok Phanom Di allows a glimpse into at least one instance of interaction between hunter-gatherers and intrusive farmers.

The first settlers of Khok Phanom Di are seen as the descendants of local coastal hunter-gatherers who chose an ideal habitat for subsistence and exchange purposes. They were able to develop exchange relations with intrusive agriculturalists, which brought in exotic stone and rice, in return for, among other items, marine shell jewellery and ceramic vessels. The results of the strontium isotope analyses have identified two periods when individuals raised elsewhere came to be interred in the site. The first, predictably, was with first settlement. The second came with mortuary phase 3B. This was a period of change in many aspects of both the environment and material culture. Women in particular entered Khok Phanom Di from elsewhere, and it is considered highly likely that they were familiar with rice cultivation, and had their own preferences for the manufacture of ceramic vessels.

We can thus follow the fortunes of the community through the generations, as environmental change first brought conditions suited to rice, and then returned to a more saline habitat which made rice cultivation marginal or impossible. The inhabitants developed the appropriate hoes and harvesting knives, only to cease using them with deteriorating conditions. The change in the environment took place contemporaneously with the growth of exchange in exotic goods, and with it, the

rise of certain individuals to positions of great social prestige. It was during this period that the community appears to have been more internally settled, with no further evidence for the introduction of women from a different environment. One particular advantage lay in their access to marine resources. The wealth of the Khok Phanom Di community can be illustrated by the quantity of shell disc beads recovered. The total found in the entire Ban Kao cemetery, for example, is 0.6 per cent of those associated with burial 15 at Khok Phanom Di. The 60 graves at Ban Na Di provided 12,440 such beads, 10.3 per cent of the number from burial 15. The equivalent figure for Khok Charoen is 1.8 per cent.

When reviewing this hypothesis, one is influenced by the many parallels in material culture between early Khok Phanom Di and the hunter-gatherers of Nong Nor. Their ancestral sites must surely lie under the waters of the Gulf of Siam, drowned by the rising Holocene sea. Again, there were further similarities between the ceramics and shell ornaments found from Mortuary Phase 3B and those from inland agricultural settlements such as Khok Charoen and Ban Non Wat. It is suggested that a coastal hunter-gatherer community entered into intense social relationships with rice farmers then infiltrating and settling the hinterland, relationships that included the interchange of goods, ideas and individuals.

With the intrusion of agriculturalists ultimately from the area of the Yangzi Valley, the hunter-gatherers of Khok Phanom Di entered into a new web of social relationships which brought females into the community, and with them the exotic dog, a knowledge of rice and its potential as a cultigen, and new opportunities for the exchange of artefacts fashioned from the local shellfish and clay. They also brought mental templates of preferred motifs to place on their ceramic vessels, including one that represents opposed human figures, a motif that so intrigued us in 1985, when we unearthed burial 11 at Khok Phanom Di.

References

- Bentley, R.A., 2004. Characterising human mobility by strontium analysis of the skeletons. In Higham, C.F.W. and R. Thosarat, *The Excavation of Khok Phanom Di*, Volume VII, *Summary and Conclusions*, 159–166. The Society of Antiquaries of London.
- Blust, R., 1996. Beyond the Austronesian homeland: the Austric hypothesis and its implications for archaeology. In Goodenough, W., editor, *Prehistoric Settlement of the Pacific. Transactions of the American Philosophical Society* 86(5), Philadelphia.

- Charoenwongsa, P., 1987. (editor). *Archaeology of the Four Regions* (in Thai). Bangkok.
- Ciarla, R., 1992. The Thai-Italian Lopburi regional archaeological project, a preliminary report. In Glover, I.C., editor, *Southeast Asian Archaeology, 1990*, pages 111–28. Centre for South-East Asian Studies, University of Hull.
- Gorman, C.F., 1972. Excavations at Spirit Cave, North Thailand: some interim impressions. *Asian Perspectives*, 13:79–107.
- Gorman, C.F., 1977. *A priori* models and Thai prehistory: a reconsideration of the beginnings of agriculture in Southeast Asia. In Reed, C., editor, *Origins of Agriculture*, pages 322–55. The Hague.
- Gorman, C.F. and Charoenwongsa, P., 1976. Ban Chiang: a mosaic of impressions from the first two years. *Expedition*, 8:14–26.
- Heine-Geldern, R., 1932. Urheimat und fruhesten wanderungen der Austronesier. *Anthropos*, 27:543–619.
- Higham, C.F.W. and Bannanurag, R., 1990. *The Excavation of Khok Phanom Di, a Prehistoric Site in Central Thailand*. Volume I: *The Excavation, Chronology and Human Burials*. The Society of Antiquaries, London.
- Higham, C.F.W. and Bannanurag, R., editors, 1991. *The Excavation of Khok Phanom Di*. Volume II: *The Biological Remains Part 1*. The Society of Antiquaries, London.
- Higham, C.F.W. and Thosarat, R., editors, 1993., *Khok Phanom Di*. Volume III: *The Material Culture Part 1*. The Society of Antiquaries of London, London.
- Higham, C.F.W. and Thosarat, R., editors, 1998. *The Excavation of Nong Nor, a Prehistoric Site in Central Thailand*. Studies in Prehistoric Anthropology no. 18, Department of Anthropology, Otago University, Dunedin.
- Higham, C.F.W. and Thosarat, R., 2004. *Khok Phanom Di*. Volume VII: *Summary and Conclusions*. The Society of Antiquaries of London, London.
- Ho, C.-M., 1984. *The Pottery of Kok Charoen and its Farther Context*. PhD thesis, University of London.
- Hoang Xuan Chinh, 1968. *Bao Cao Khai Quat Dot Di Chi Lung Hoa* (in Vietnamese). Nha Xuat Ban Khoa Hoc Xa Hoi, Ha Noi.
- Hoang Xuan Chinh, 1968. *Bao Cao Khai Quat Dot Di Chi Lung Hoa* (in Vietnamese). Nha Xuat Ban Khoa Hoc Xa Hoi, Ha Noi.
- Luce, G.H., 1985. *Phases of Pre-Pagan Burma*. Oxford University Press, Oxford.
- Mahdi, W., 1998. Linguistic data on transmission of Southeast Asian cultigens to India and Sri Lanka. Blench, R. and Spriggs, M., editors, *Archaeology and Language II. Correlating Archaeological and Linguistic Hypotheses*, pages 390–415. London.

- Noksakul, D., 1981. A Study of the culture and the Environment of an Ancient Community at Khok Phanom Di, Changwat Chonburi (in Thai). Master's thesis, Silpakon University.
- Pejros, I. and Shnirelman, V., 1998. Rice in Southeast Asia: a regional interdisciplinary approach. Blench, R. and Spriggs, M., editors, *Archaeology and Language II. Correlating Archaeological and Linguistic Hypotheses*, pages 379–89. London.
- Penny, J., 1984. Fish in the water and rice in the paddy: contributions to studies of the Southeast Asian Iron Age. In Bayard, D.T., editor, *Southeast Asian Archaeology at the XV Pacific Science Congress*, pages 152–60. Otago University Studies in Prehistoric Anthropology 16, Dunedin.
- Pisnupong, P., 1984. *A Preliminary Report on the Excavation of Khok Phanom Di* (in Thai). Bangkok, The Fine Arts Department.
- Reid, L.A., 1993. Morphological evidence for Austric. *Oceanic Linguistics*, 33:323–44.
- Rispoli, F., 1992. Preliminary report on the pottery from Tha Kae, Lopburi, Central Thailand. In Glover, I.C., editor, *Southeast Asian Archaeology, 1990*, pages 129–42. Hull.
- Mansuy, H., 1923. Contribution a l'étude de la préhistoire de l'Indochine. Résultats de nouvelles recherches effectuées dans le gisement préhistorique de Samrong Sen (Cambodge) *Mémoires du Service Géologique de Indo-Chine*, 10:1.
- Schmidt, W., 1906. *Die Mon-Khmer Völker: ein Bindeglied Zwischen Völkern Zentralasiens und Austronesiens*. Archiv der Anthropologie (Braunschweig) n.s. 5, 59–109.
- Siripanish, S., 1985. *An Analytical Study on Pottery from the Excavation of Ban Tha Kae, Muang District, Lopburi Province* (in Thai). Master's thesis, Silpakon University.
- Solheim, W.G.II., 1968. Early bronze in Northeastern Thailand. *Current Anthropology*, 9(1):59–62.
- Solheim, W.G.II., 1969. Review of Archaeological Excavations in Thailand. Volume 2, Ban Kao, part 1. by P. Sørensen and T. Hatting. *Asian Perspectives*, 12:127–30.
- Sørensen, P. and Hatting, T., 1967. *Archaeological Investigations in Thailand. Volume II, Ban Kao, Part 1: The Archaeological Materials from the Burials*. Copenhagen.
- Suchitta, P., 1980. *Past and Present Use of the Khok Phanom Di Mound. An Anthropological-Archaeological Assessment* (in Thai). Bangkok, Silpakon University.

- Tayles, N.G., 1999. *The Excavation of Khok Phanom Di: A Prehistoric Site in Central Thailand. Volume V: The People.* Society of Antiquaries of London, Research Report LXI, London.
- Thompson, GB. 1996. *The Excavation of Khok Phanom Di, a Prehistoric Site in Central Thailand. Volume IV: Subsistence and Environment: the Botanical Evidence. The Biological Remains (Part II),* edited by C.F.W. Higham and R. Thosarat. Research Report of the Society of Antiquaries of London LIII. London.
- Vincent, B.A., 2004. *The Excavation of Khok Phanom Di: A Prehistoric Site in Central Thailand. Volume VI: The Pottery, other Ceramic Materials and their Cultural Role (The Material Culture, Part II).* Society of Antiquaries of London, Research Report LXX, London.
- White, J. C., 1982. *Ban Chiang. The Discovery of a Lost Bronze Age.* Philadelphia.
- YPM, 1977. The Neolithic site of Ta-Tun-Tzu in Yuan-Mo County, Yunnan Province (in Chinese). *Kaogu Xuebao*, 1977:43–72.
- YPM, 1981. The Baiyangcun site at Binchuan County, Yunnan Province (in Chinese). *Kaogu Xuebao*, 1981:349–68.
- Zide, A.R.K. and Zide, N.H., 1976. Proto-Munda cultural vocabulary: evidence for early agriculture. In Jenner, P. N., Thompson, L. C., and Starosta, S., editors, *Austro-Asiatic Studies* part II, pages 1295–334. Oceanic Linguistics Special Publication 13, Honolulu.