

# PROBLEMS IN THE STONE AGE OF THAILAND

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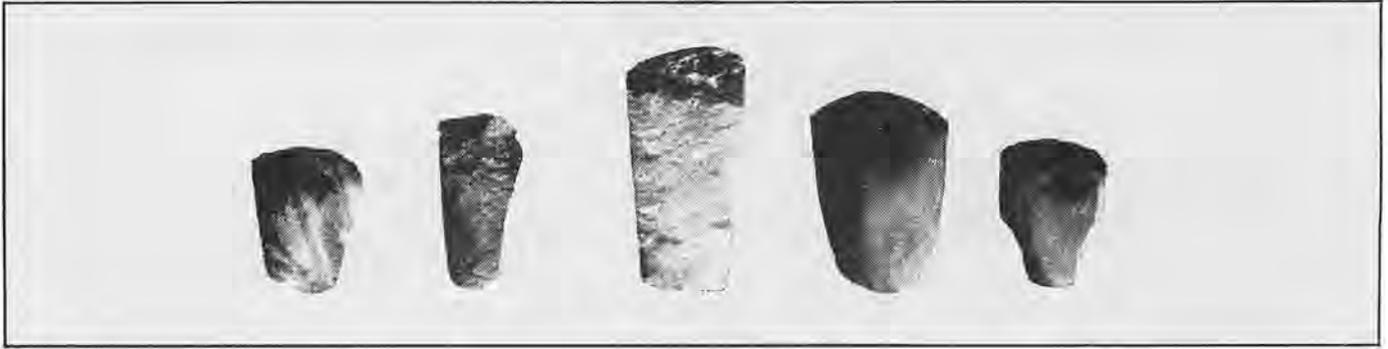
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Thai prehistory is facing both a difficult and exciting moment. Exciting because of the amount of new research and associated discoveries, and difficult because of the challenges involved in adjusting the existing framework of data. Recent years have seen a considerable increase in the amount of work on the stone age in Thailand: with the discovery of new sites and material the old picture of a relatively static lithic technology spanning the Pleistocene and early Holocene must be reviewed. Discoveries elsewhere in Southeast Asia make the need for review all the more urgent.

The original stone age sequence of Thailand began with the 'Fingnoian' discovered by van Heekeren during WWII (van Heekeren 1948) and subsequently re-investigated by Heider (1957, 1960). Prior to these discoveries occasional surface finds had been noted (Evans 1931). The Fingnoian was a pebble-tool industry as characterised by Movius' chopper-chopping tool categories (Movius 1944, 1948). It derived from gravel deposits along the Meklong River in Kanchanaburi Province in Western Thailand. It was this set of discoveries that prompted the Thai-Danish expedition to the same region which identified sites spanning the early and middle Holocene (and possi-

bly the late Pleistocene). Amongst the sites found were Ban Kao Neolithic site and Sai Yok cave, a Mesolithic site yielding material resembling the Hoabinhian industries of elsewhere in Southeast Asia. Several other sites contained similar materials (van Heekeren & Knuth 1967). Whilst the Fingnoian was based on surface finds and assigned a Middle Pleistocene age, the excavations at Sai Yok produced a large number of pebble-tools in situ and in an early Holocene context. Given the similarity in the lithic technology, the lack of formal tool types and concentration upon pebble tools (the latter at least more by the authors than the populations of prehistory), it was assumed that a continuous tradition existed in Thailand spanning from the Middle Pleistocene until the metal age in the middle Holocene. This view was re-inforced by Pleistocene dates for the earliest Hoabinhian levels at Ongbah and Spirit Caves. This picture also matched that for other areas such as Burma and the Malay Peninsula where similarly early pebble-tool industries, the Anyathian and the Tampanian respectively, had been identified preceding the formation of Hoabinhian middens (Movius 1948; Sieveking 1958). Additional finds of the pebble-tool based Pacitanian (formerly Pajitanian) in Java confirmed that both the regional Southeast Asian and individual coun-





*JSS, April 1964, p. 82a.*

*Polished stone adzes from Ban Kao. Scale 1:4*

tries sequence followed this pattern. Neolithic assemblages such as those excavated in the upper layers of Hoabinhian caves and at Ban Kao showed that the polished axes and adzes which were used to characterise the Neolithic were essentially superimposed onto a lithic tradition that continued the technology of the Hoabinhian and earlier industries. It is, however, this sequence that is now questioned both regionally and within individual countries. The regional developments will be outlined first, before specific Thai issues are discussed.

## Recent developments in the stone age of Southeast Asia

The Movius scheme, which focussed on the larger pebble-tool element (despite the greater frequency of flakes in the available collections), has been re-examined both on the basis of the original collections and on new material from better established contexts (Bartstra 1978a, 1982, 1985; Bartstra et al. 1988; Bartstra & Basoeki 1989; Harrisson 1975; Hutterer 1977, 1985; Majid & Tjia 1988). The Pacitanian of Java, an important component of the Movius scheme, has been systematically re-examined by Bartstra and co-workers and is demonstrated to be a late Pleistocene industry and possibly even partly Holocene in date. The nature of its typology and technology is now better described than before (Bartstra 1976, 1978b) and includes some well-made bifacial tools, which resemble Acheulean handaxes. This latter point is made not to infer any cultural links but rather to illustrate that some refinement does occur in Southeast Asian stone-working techniques (Reynolds 1984).

Also important is the work of Majid, both at Niah Cave in Sarawak (1982), which documented the importance of the flake element in the sequence discovered there, and at Kota Tampan, the type site for the Tampanian industry (Majid & Tjia 1988; Sieveking 1958; Walker & Sieveking 1962). New excavations at the site show Tampanian implements lying on a gravel but surrounded by and intermingled with a volcanic ash

which is dated to c. 30,000 years B.P. by a sample taken from elsewhere. Thus, the Tampanian, like the Pacitanian, would appear to be a late Pleistocene industry.

The Middle Pleistocene age for the Anyathian in Burma, which was dated, as were the Pacitanian and the Tampanian, by correlations between terrace height and glacial sequence, now requires investigation.

These discoveries and revisions in dating do not change the sequence but merely result in a reduction of its length. Other finds in Southeast Asia, however, also suggest greater variability in the late Pleistocene industries of the region than was hitherto suspected.

On the Southeast Asian mainland, work in Vietnam has revealed a complex pattern of lithic variability. Firstly, the Ngoum industry named after the rockshelter site of Ngoum, Vo Nhai district, Bac Thai Province, which was excavated by Tan in 1981 (Tan 1985). Underlying layers of Hoabinhian and Sonvian assemblages are two layers (layers 4 & 5) which contained an industry based on quartz and rhyolite. The tools were mostly on flakes and included scrapers and points. Amorphous flakes, however, some utilised, dominate the assemblage. Some pebble-tools do occur, as do a number of blades and some blade tools. There are no dates for layers 4 & 5, but layer 3 yielded *Pongo* sp. bones which gave ages of 23,000±200 years B.P. (Bln-2692/I) and 23,100±300 B.P. (Bln-2692.II). The age of the Ngoum industry is assumed to be about 27,000 B.P. and the pollen for layer 5 resembles that of a horizon in the North Vietnamese Plain which is dated to the middle part of the Upper Pleistocene. One kilometre away a similar industry was recovered at Mieng Ho Cave in 1972 but stratigraphic context there is unsure. Predating the Ngoum industry in Vietnam is the material from the site of Tham Khuong excavated by Tan in 1974. There, in deposits about 1.5 m deep, three cultural layers yielded a pebble-tool industry which included Hoabinhian elements but is termed the 'Sonvi industry'. Typologically, it resembles Kota Tampan in Malaysia. A good series of pebble-tools, predominantly unifacial, were recovered. The Sonvi industry is characterised by pebble-tools flaked only along the edges with

cortex preserved on both faces. Hoabinhian tool types such as Sumatraliths and short axes are generally absent. The Sonvi culture is, then, a pebble-tool based tradition contemporary with Kota Tampan which it resembles typologically, and which at a variety of sites in Vietnam lasts until c. 18,500 B.P. when it is replaced by the Hoabinhian at Ngoum and Xom Trai. At other sites the Sonvi lasts until much later, e. g. at Con Moong where the Sonvian is replaced by the Hoabinhian at 11-12,000 B.P. The Hoabinhian in Vietnam is a well-dated Pleistocene and early Holocene industry, in contrast to the rest of Southeast Asia where it appears to be predominantly Holocene in date. The Hoabinhian is characterised by pebble-tools particularly of Sumatralith and short-axis types. It can include some edge-ground axes (e. g. as at Ngoum layer 2) and some recognise a chronological succession of developments within it (these will be discussed further in the context of the Thai sequence). Contemporary with the Hoabinhian is the Bacsonian; it contains many Hoabinhian types but has greater numbers of ground and polished axes. It is generally regarded as a local variant of a broader Hoabinhian tradition occurring in the Northeast of Vietnam, near the Chinese border, whilst the Hoabinhian proper continues in the region Southwest of Hanoi. The earliest dated site is Soi Nhu which has C14 dates ranging between 14-12,000 years B.P., while close by is the site of Halung which contains similar material but is dated to 6,000 B.P. At about this period (Mid-Holocene), true Neolithic sites such as Dabut and Caibeo appear.

So, recent work in Vietnam has documented a relatively large number of Pleistocene sites and diversity amongst the industries contained within them. This diversity includes a flake industry from Ngoum Cave and regionally based lithic variability which contrasts the static tradition assumed for Southeast Asia as a whole.

Island Southeast Asia has never fitted particularly well into the old picture because of a lack of Hoabinhian sites (apart from those on the north coast of Sumatra), the occurrence of flake and blade industries in the early Holocene, and the flake-rich industries of Niah Cave, Sarawak, Malaysia (Majid 1982) and Tabon Cave, Palawan, Philippines (Fox 1970). Further sophistication in the industries of this area has been discovered through the excavations of Glover at Leang Burung 2, which has yielded a very rich assemblage including flakes, blades and the use of Levallois technique. Well-made flake tools also occurred (Glover 1978). In Sabah, excavations at Tinkayu in the Madal-Baturong region have recovered large bifacially worked flakes and also small bifacial lanceolate knives made on local tabular cherts. Associated with these well-made tools were large pebble-tools and horsehoof cores. One of the localities excavated was a workshop for manufacturing the lanceolate knives. These localities are related to the formation and subsequent stand of a palaeo-lake between 28-17,000 years B.P. Nearby is the shelter site of Hagop Bilo which lacks the bifacial elements and contains a typical pebble and flake industry including some long blade based knives with phytolith gloss on some tool edges. This site dates between 17-12,000 years B.P. (Bellwood 1984).

So, it can be seen that the image of the Southeast Asian region as one of limited lithic variability and lacking in development becomes inadequate to explain the emerging pattern both regionally and at a local level.

## Recent Developments in Thailand

### (1) Early Palaeolithic.

Since the Fingnoian was described and given a Middle Pleistocene age in the 1940's, little reliably recorded material could be assigned to it until the mid-1970's when new finds were made in Northern Thailand (van Heekeren 1948; Heider 1960; Loofs-Wissowa 1980; Sørensen 1976). The new finds were a large series of pebble tools collected from the surface and test excavations along the highest river terraces in the intermontane basins of Lampang and Phrae. The initial discoveries were made between September 1972 and March 1974 by Sørensen and his co-workers (Sørensen 1976), and the work appears to be continuing (Loofs-Wissowa 1980; Sørensen 1988). A new typology was devised for this material, and principal tool types were choppers, scrapers, and hand-adzes. Raw materials used include quartzite and quartzitic sandstones. The site of Mae Tha was one such site and is dated to greater than 700,000 years ago on the basis of palaeomagnetic and fission track data on an associated basalt. An age nearer to 1 Myrs is reported. The site of PSIII in the Phrae valley is dated by a series of indirect arguments to between 0.56 and 0.69 Myrs. A total of over 3,000 pieces were collected. The work in this region was continued by Pope (Pope et al. 1980, 1986) and discovered a number of other localities in the same area as Sørensen. The amount of material at these localities, however, was much less; attention was centred on dating the artefacts. Three cores were found on the surface of a laterised gravel which underlies the Lampang Basalt. This basalt shows a palaeomagnetic profile that changes from reversed to normal polarity and has potassium-argon dates of  $0.8 \pm 0.3$  Myrs and  $0.6 \pm 0.2$  Myrs. This situation resembles that reported by Sørensen (1976). Additionally, three pieces were recovered from a rockshelter at Kao Pah Nam which also contained traces of a possible hearth. The shelter is not directly dated, but contains typologically similar pieces to the surface finds. So, in contrast to the Fingnoian finds of Kanchanaburi, these finds have well recorded contexts and are associated with a stratigraphy that has direct dating evidence. Thus, instead of an assumed Middle Pleistocene age for the Fingnoian, the Northern Thailand material (termed Lannathian by Sørensen 1988) is demonstrably Early and Middle Pleistocene in age and the collections of Sørensen are large enough to permit typological investigations. The original Fingnoian must be placed on one side until better evidence for it is available and the earliest dated artefacts in Thailand are now the Lampang pebble-tool industries collected by Sørensen and Pope.

A series of new discoveries at Sung Noen, Nakhorn Ratchasima Province, in Northeastern Thailand serves to raise questions about the Anyathian in Burma. The new discoveries are a surface collection of pebble-tools, flakes and even re-

touched tools (including flake scrapers) made on petrified wood (Subhavan, Pramankij & Sangvichien 1984). These surface finds compare well to the Fingnoian from Kanchanaburi and to the Burmese Anyathian. They have been ascribed a Palaeolithic date but some Thai workers remain sceptical. If their provenience and dating can be confirmed they represent an important new facet of the early stone age in Thailand.

## (2) Late Palaeolithic.

The early Palaeolithic finds are, however, rather isolated as little comparable material exists elsewhere in mainland Southeast Asia and no other Palaeolithic assemblages can be reliably dated to before the start of the last glacial, some 105,000 years ago. One set of discoveries that may radically alter the perception of the Thai Palaeolithic as a chopper-chopping tool tradition, however, has been made (Anderson 1987, 1988). At the site of Lang Rongrien in Krabi Province, Southern Thailand, a series of excavations uncovered a Hoabinhian layer which was underlain by another three levels containing cultural material. Although the sample sizes for the collected assemblages are small (13, 21 and 14 pieces respectively), they are significant in that they show a predominance of flakes and flakebased tools. The raw material used is chert. Most tools are irregular and resemble material from Niah Cave, Sarawak (Majid 1982). The Pleistocene material from Lang Rongrien dates to between  $27,350 \pm 570$  —  $32,180 \pm 1330$  for layer 8 (the uppermost Pleistocene layer) and  $37,000 \pm 1780$  for layer 9. The lowest layer is undated. If these small samples are representative of the industries from which they are derived, they are important in showing the existence of a flake-based industry preceding the Hoabinhian in Thailand, in a similar way to the Ngoum industry in Vietnam at about the same date. This would be a very important feature for the Thai Pleistocene sequence but must await confirmation through larger area excavations and samples at Lang Rongrien, or the discovery of similar assemblages at other sites. As it stands, it could be a product of intra-site variation (it is not clear how patterned sites in Southeast Asia are in terms of differential distribution of material over a horizontal surface), of the availability of local chert, a functional variant, or numerous other possibilities. It will be most interesting to discover the significance of the Lang Rongrien assemblages in the future.

## (3) Hoabinhian

This assemblage type was first defined in 1932 after many excavations in Vietnam and subsequent finds in Peninsular Malaya. The Thai-Danish expedition identified many such sites in Kanchanaburi Province in Western Thailand in the 1960's (van Heekeren & Knuth 1967) and many more are now known through most of Thailand. The Hoabinhian is characterised by predominantly unifacial pebble-tools, especially Sumatraliths, short axes, hammerstones, discs and numbers of bone tools (Pookajorn 1984). Three sub-stages have been recognised within it:

- (i) Flaked tools only; these are large and crude.
- (ii) Flaked tools continue but diminish in size and improve in refinement; some 'proto-neoliths' occur.
- (iii) Smaller tools dominate; some retouched flake tools occur and 'protoneoliths' are absent.

The work of Gorman at Spirit Cave (Gorman 1970) raised many questions as to the status of the Hoabinhian—whether it showed evidence of agriculture and domestication, how early it appeared in Thailand, etc. (Gorman 1970; Pookajorn 1984; White & Gorman 1979; Yen 1977). The most systematic research into the Hoabinhian in Thailand is that undertaken by Pookajorn (1984, 1985). This research includes the excavation of a series of cave sites in Kanchanaburi Province, technological and functional analysis of the stone tools and the use of ethnographic comparative studies. This work has highlighted many problems with the Hoabinhian—what is its nature, how to describe the tools, what is the technology employed, what was the function of the tools, and what is the relationship between the Hoabinhian and the Neolithic with which it is partly contemporary? Several workers have discussed the technology of the Hoabinhian (Pookajorn 1985; Reynolds in press; White & Gorman 1979). The question of the function of the pebble tools has been studied, and has confirmed that there was a major wood-working component to Hoabinhian industries (Bannanurag 1988).

In reports of the excavations at Sai Yok Cave in Kanchanaburi (van Heekeren & Knuth 1967), a series of microblades and blade-like chert flakes were recovered and variously described as coming from the Mesolithic (Hoabinhian) layers and as being in a separate horizon within the Mesolithic sequence. It is not clear from these reports whether there were a large number of microblades (at least 34 noted on section drawings) but an association of microblades with pebble-tools is also noted occurring in Laos in an industry which included polyhedral cores. Whilst none of the Sai Yok microblades were retouched, they all showed indications of utilisation. Such pieces may occur in other Hoabinhian assemblages and this is an aspect of the Thai Hoabinhian that requires further attention. The difficulty in isolating the Hoabinhian as a distinct entity from the Neolithic or a 'Mesolithic' or Pleistocene pebble-tool culture remains (Charoenwongsa 1988). The whole question of the utility of the Hoabinhian as a category requires investigation both at a national and a regional level. This is particularly the case as there appears to be chronological overlap between the three substages of the Hoabinhian, of the Hoabinhian with an assemblage termed Hoabinhian with pottery, and of both these industries with the Neolithic. It is quite likely that the Hoabinhian represents only a particular facet of a more complexly organised society where certain extractive tasks are performed by small groups in 'Hoabinhian localities' while occupation in the lowlands and larger valley floors involves forest clearance and swidden. As the population increased the 'Hoabinhian' facet of the economy becomes less desirable and is reduced, but retained as a safeguard against crop failure. This

may involve separate ethnic groups or subdivisions within a single ethnic group. This would appear to be a potentially classic study of 'centre and periphery' interactions in an archaeological context.

#### (4) The Middle Holocene (8-4,000 years B.P.).

At this moment, the industries of the Middle Holocene are extremely difficult to categorise; in addition to the Hoabinhian, the Hoabinhian with pottery, and Neolithic chronological and typological confusion, a new set of discoveries have been made which complicate the picture still further. Surface surveys in Mae Hong Son, Nan and Uttaradit Provinces in Northern Thailand have recovered spreads of worked material along the tops of low hills (Prisanchit 1988). Within these spreads of worked material occur concentrations of stone debris, flakes and occasional finished tools including plain and shouldered axes, partially ground axes, and bifacially flaked axes. These 'sites' appear to be large workshops for the production of the more refined stone tools of the Neolithic. The researcher has suggested that because of their size, production for exchange is likely to have occurred (Prisanchit 1988). The raw materials used at these 'sites' is of good quality. A 'site' resembling these finds in Northern Thailand is Don Noi in Kanchanaburi Province (Bronson & Natapintu 1988). At Don Noi a fine white chalcedony was worked preferentially. The 'site' covers some five hectares and so is substantial for a site of its age. The material recovered from the 'site' comprises large numbers of chalcedony and jasper flakes and many potsherds.

The 'site' has not been excavated yet but was surveyed and no identifiably late-dating artefacts were seen. The collected potsherds match both the form and fabric of pottery from the Neolithic site of Ban Kao (also in Kanchanaburi Province). The stone material from Don Noi is distinct from other Neolithic localities and includes flaked adzes made on cores and utilised core fragments, in addition to many utilised amorphous flakes. Some of the core and adze fragments show signs of silica gloss. The discoverers of this 'site' suggest that this large scatter type of site (including those of Northern Thailand) may represent a specific phase of Thai prehistory (Bronson & Natapintu 1988), but this cannot be confirmed until the industries of the Middle Holocene are more effectively dated and systematised.

## Conclusions

In conclusion then, the stone age sequence of Thailand is currently under serious critical review, more work particularly on context and chronology is required to reconstruct a new sequence, and research particularly into the period for which no sites have yet been discovered, the late Middle Pleistocene and early Upper Pleistocene, is urgently needed. Further investigations into the Lang Rongrien assemblage form may confirm a Palaeolithic flake tradition in Thailand, while the problems of the Hoabinhian will have to be tackled regionally as well as nationally in Thailand itself. The Middle Holocene industries now need excavated and dated samples and systematic typological and technological study.

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