

THE PRECERAMIC PERIOD IN SOUTHEAST ASIA  
- ISSUES, PROBLEMS AND FUTURE DIRECTIONS

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This paper discusses the outstanding issues in Southeast Asian archaeology during the preceramic period. The discussion of these issues is based on a survey of archaeological research that has been done in this region, of sites from the late Upper Pleistocene and dated from approximately 40,000 years ago. This survey is included as an appendix to this paper. References will, however, be made to the sites and reports quoted in the appendix. The final section of this paper will discuss some recommendations for future research work in this region.

#### ISSUES AND PROBLEMS

Outstanding issues in research on early man and his culture in Southeast Asia arise partly out of the nature of the finds, and the methodological approaches used, especially in determining temporal relationships. This is mainly because in Southeast Asia, Palaeolithic artifacts especially, have until recently, rarely been found in situ or in primary context sites but rather in secondary context sites. Often artifacts were river-transported over distances from their original places of manufacture and/or use, before being deposited on river beds or terraces, which are secondary context sites. Thus, the relationship between artifact and river sediments is of a secondary nature not due to human activity but to fluvial processes. This may be further complicated by any secondary processes the sediments might have been subjected to, which might have caused a mixing of artifacts belonging to different peoples or times. Thus, it is not only difficult to ascertain the temporal relationship between the deposit and the artifact, and association between artifacts in a level, but also it is not always possible to equate stratigraphical succession with cultural sequence. Prior to the use of chronometric dating, faunal

remains associated with the sequences were used to date artifacts and cultures. The reliability of bio-stratigraphic correlation involves a large margin of error. Questions arise about the contemporaneity of the fossil with the artifact, as well as the nature of their association.

Suggestions have since been made for a change of focus in the methodology in Southeast Asian Palaeolithic archaeology (Bartstra 1974, Paddayya 1978). Previously, artifacts have been dated through a dubious game involving geomorphological events and stratigraphical units, and with the help of vertebrate faunas (Bartstra 1974 abstract). Bartstra suggests chronometric dating and thorough studies of terrace formations as a device for clarifying cultural sequences. Paddayya (1978) believes that only a systematic excavation of primary context sites could provide a sound Palaeolithic sequence. Earlier, Heekeren (1972) had expressed doubts that early finds would manifest themselves in primary sites in Indonesia. However, Palaeolithic research in Indonesia is gradually moving towards a greater use of scientific evidence as seen in recent research on terrace formations (Bartstra 1976), palaeontological studies (Jacob 1976), and chronometric dating (Jacob 1972), often resulting in reassessment of past findings.

The methodological weakness discussed here is responsible for three separate issues, namely,

- a. Local and regional sequences of culture.
- b. Definition of archaeological ages and cultures.
- c. Classification of lithic artifacts.

Each issue, however, has its own additional set of problems which will now be discussed under the headings which follow.

a. Local and Regional Sequences of Palaeolithic Cultures

The sequence of Palaeolithic cultures have generally been built on correlation of artifacts with the stratigraphical succession of terraces. When artifacts similar to those found at a "type" site are discovered in other areas, they are often referred to as belonging to the same industry (although not necessarily contemporaneous) e.g., Gombong and Parigi in West Java are known as Patjitanian sites (Heekeren 1972). Local sequences have also been compared on the basis of geological sequence (Movius 1944). As mentioned earlier, because artifacts have been mostly collected from the surface of secondary context sites which had undergone complex sediment formations, we have to be cautious in reading these sequences. Also, on present evidence there appears to be little ecological change through the Palaeolithic. Paddayya (1978) hopes to see a new era in Indian Palaeolithic research in which archaeologists search for primary sites to solve the problem of cultural sequence, and systematically excavate them to obtain more varied and reliable data on the development of Palaeolithic cultures. In Southeast Asia, the West Mouth was one of the first of such primary sites discovered.

Attempts made to reconstruct and structure the development of prehistoric cultures in the area are faced with problems. The two important outlines of Southeast Asian prehistory are those of Heine-Geldern (1932) and Solheim (1969). Heine-Geldern's framework adopted a typological approach patterned after what was known of the European sequence then. He correlated pebble tools with the Lower and Middle Palaeolithic; flake and blade artifacts with the Upper Palaeolithic; microlithic artifacts with the Mesolithic and ground stone artifacts with the Neolithic. His outline was developed within a culture-historical/diffusionist framework and he tried to relate prehistoric stages of cultural development with the

ethnographic distribution of language, race, and culture, as known then. His framework was beset with problems, basically because it ran contrary to archaeological findings e.g., pebble and flake artifacts have been found associated with each other from Palaeolithic to Neolithic times.

Given the problems of fit in Heine-Geldern's framework and the new archaeological data of the 1960s in Southeast Asia, Solheim (1969) developed a new framework of Southeast Asian prehistory. This framework provided a much needed structure as a general guide to cultural development in the area. Solheim recognized five stages of development:

1. Lithic period (before 40,000 B.C.).
2. Lignic period (from 40,000 B.C. to 8,000 B.C.).
3. Crystalline period (Early Hoabinhian to Middle Hoabinhian, from 2,000 B.C. to 8,000 B.C. at the latest and including the domestication of plants).
4. Extensionistic (Late Hoabinhian, horticulture and metallurgy, from 2,200 years ago to 2,000 B.C.).
5. Conflicting Empires (beginning around 2,200 years ago).

Solheim's reconstruction of the cultural and chronological sequence of development in Southeast Asia gives a broad overall impression of the general trend or sequence. It is to be expected that there would be local deviations from any general outline such as that formulated by Solheim. The critical question is how much deviation? The extent of deviation or exception to the general outline will determine the usefulness and faithfulness of the general framework.

b. Definition of Archaeological Ages and Cultures

Southeast Asian archaeology is now at a stage where the use of European derived terminology can be reconsidered as more archaeological data are gathered. Concepts of "Lower", "Middle", and "Upper Palaeolithic" have been used to organize cultures during the Pleistocene epoch. This is because research on early man and his culture was first conducted by Western scientists at the turn of the century. Given their orientation and the open and uncharted field of Southeast Asian archaeology at that time, it was only natural that these scientists should apply terminologies they were familiar with to what they found in Southeast Asia. Hence, we have in the literature European archaeological ages -- Palaeolithic, Mesolithic and Neolithic. These were terms found satisfactory for European archaeology at that time, as they were derived after decades of discourse which began in the early 19th century (Daniel 1943, 1976). However, they were not necessarily appropriate for describing cultural material from Southeast Asia.

In the past, sites or assemblages were referred to as belonging to the Palaeolithic, Mesolithic or Neolithic periods, but with little discussion of their definition (e.g., Tweedie 1953). Later, Heekeren (1972) attempted to define his use of these ages, as he correlated the major recent geological epochs to the archaeological ages, e.g., Pleistocene to the Palaeolithic, Holocene to the Neolithic. There has also been the use of the terms Early, Middle, and Late Stone Age in reference to the archaeological ages in Southeast Asia (Allchin 1966). The term "Epi-Palaeolithic" has been introduced for sites with a Palaeolithic character that existed in the Holocene (Marschall 1974:79). Heekeren (1975:51) also used this term and Solheim (1975a:22) would accept it for now. The fundamental concept

of the Palaeolithic, however, has not been abandoned in Southeast Asian prehistory. As for the Mesolithic, Solheim (1969:129) believes that it does not manifest itself in the data.

Further issues are those of classification of cultures within these archaeological ages, and the stages of cultural development in the area. The classifications that have been proposed are open to objections relating to the insecure basis of the data used, the methods of analysis and/or that they have not been defined sharply enough to avoid confusion in usage. One example is the Anyathian (Movius 1943), which was defined on the basis of (1) surface collection, (2) a portion of the collection (only pebble tools), (3) too few samples to define a phase (e.g., 16 artifacts to define Late Anyathian 1, and 23 Early Anyathian 1), and (4) dating according to geological age of the river terrace. The same objections could be leveled against the classification of other Palaeolithic cultures, such as the Patjitanian and the Fengnoin. The biased nature of the collections, the insecure relationship between artifacts and river terrace, a possible mixing of artifacts in river terraces, and the observation that in Southeast Asia there is little apparent change among artifacts through time, reduces the confidence level of such a classification.

The "Hoabinhian"<sup>1</sup> has been used in various ways, denoting a cultural stage, an archaeological culture as well as a technological complex (Solheim 1969, 1970a, 1975b). Matthews sees the Hoabinhian as an archaeological culture, Dunn (1970) as a tradition and Gorman (1970) as a techno-complex because he doubts "whether the sites are the remains of a single cultural group" (Gorman 1970:81). When defined as a techno-complex, the term Hoabinhian has been expanded to include Australia as a "province" (Glover 1973, Hayden

1977) and a time span beginning in the Upper Pleistocene. The definition and the sequence of the Hoabinhian is too broad to be useful and all-encompassing under the umbrella of a techno-complex. The use of the term needs to be clearly defined and less broadly focussed. It should represent either a stage in cultural development or an archaeological culture or a technological level if it is to reflect a meaningful archaeological entity. Since the lithic remains from the preceramic Southeast Asia do not all fall within the description of Hoabinhian technology (as characterized by the presence of unifacially flaked oval pebble tools), it is not within the scope of this paper to redefine the concept of the Hoabinhian. Suffice it to say that in order to clarify and sharpen the concept, we would need a thorough study of the remains from several local sequences.

The development of cultures in Southeast Asia has also been distinguished according to characteristic features of the lithic assemblages. Movius (1944) made a preliminary distinction between the chopper-chopping tool tradition of Southeast Asia and the hand-axe tradition of South Asia and Europe during the Palaeolithic. Recently, hand-axes have been found in several sites in Vietnam and Philippines for the period prior to that of our focus (Boriskovski 1971, von Koenigswald 1958, Solheim 1969). Besides hand-axes, flake and blades have been used as a possible feature of cultures, Solheim (1970a:151) attempts to add flakes and blades as a characteristic feature of the Hoabinhian assemblage, but discovers two important deviations in insular Southeast Asia -- Tabon Cave and the West Mouth. Tabon Cave has flakes and blades but no Hoabinhian-type pebble artifacts. The West Mouth has flakes but no blades and only one pebble comes close to a Hoabinhian pebble artifact and this was associated with ceramics at 12". Other deviations can now be cited. The following sites have flakes and blades

but no Boabnhian pebble artifacts -- Runding, Toge, Soki, Uai Bobo 2, Pintu'.<sup>2</sup> Thus, the relationship between blades, flakes and Hoabnhian type pebble tools becomes not only a complex issue, but an issue that will not resolve problems related to cultural development and regional sequence. These can be more profitably discussed in relation to the total sequence at various sites, with less reliance being placed on single artifact types.

The use of single artifact types has been responsible for the hypothesis that cultural development in the mainland has followed a slightly different path from that in insular Southeast Asia. It has been suggested that two traditions co-existed around 50,000 years ago -- a chopper-chopping tool tradition on the mainland and a flake tradition in insular Southeast Asia, the relationship between the two remaining unclear (Solheim 1969:128). The chopper-chopping tool tradition was said to have evolved into the Hoabnhian while the flake tradition continued in insular Southeast Asia. An important component of the later Hoabnhian is cordmarked pottery. In insular Southeast Asia, this surface decoration is not dominant; plain pottery dominates. In the West Mouth, for instance, cordmarked sherds formed only a small percentage of its ceramic collection.<sup>3</sup> The question of a difference in cultural development between mainland and insular Southeast Asia would be better answered through a study of total assemblages derived from stratified sites. Thus, underlying all these issues on cultural development and cultural classification is the need for data on local sequences and lithic classification.

### c. Classification of Lithic Artifacts

In Palaeolithic archaeology of Southeast Asia, classification of stone artifacts has for the most part been based on selected portions of the collections. In the past,

emphasis was placed on pebble tools. The most influential of these classifications was provided by Movius (1944). He emphasized pebble tools in his description and analysis, and others after him have used his scheme very closely and often neglected to analyze the larger proportion of flakes present in the collections (Solheim 1975a). The classification of stone tools from Sai Yok also emphasized pebble tools (Heekeren and Knuth 1967). Recently, interest has shifted to the analysis of flake tools as well (Sorenson 1974). In Southeast Asia where pebble tools persist with little change through time, it is especially important to analyze and define the total collection of artifacts in order to understand the development of lithic tradition and cultural sequence. For the preceramic period, stone artifacts are our strongest clue to past activities.

#### FUTURE DIRECTIONS IN THE ARCHAEOLOGY OF SOUTHEAST ASIA - SOME SUGGESTIONS

This discussion of the issues facing prehistoric research in Southeast Asia, provides us with an agenda for a future, systematic and structured research program. The research horizon, thus sketched, we have now to gear ourselves to the specifics of such a program.

Such a program should be directed towards constructing a regional framework based on a number of local sequences. As mentioned earlier, regional frameworks have been constructed before, but not from a correlation of enough or firm local sequences. Present reports on local sequences for the most part, show a general lack of complete frequency records of artifacts recovered and an unevenness in quality and analysis of data. Any attempt to synthesise the data and build a regional framework would fail to provide sound and accurate results. More complete data also holds the key in providing researchers with the basis to decide on

suitable terms and definitions with which to organise cultures, specifically, archaeological ages and the classification of cultures. A regional framework based on sound data, can then through providing us information on the contemporaneity of events through time and space, be the foundation of other studies, such as of processes of culture change. Knowledge of the local sequence, therefore, may be regarded as the most critical data underlying the questions of a regional sequence. It is the basic unit, the basic building block in the construction of a regional sequence.

More specifically, there is a need to shift the previous emphasis of correlating geomorphological events with stratigraphical units and fauna, to an emphasis on chronometric datings, stratigraphy and terrace formations. Weaknesses in methodology of past excavations should be overcome in present and future work. In order that sites should be more securely anchored in space and time, the search should continue for primary context sites where artifacts can be found in its actual stratigraphical and cultural contexts.

Such a program should orient itself towards more collaboration among the region's archaeologists. Each part of Southeast Asia holds a piece of the jig saw to the total puzzle. The region shares a common Pleistocene past. Cooperation is therefore needed for the synthesis and correlation of local sequences derived from different parts of the region. The need for comparability of results, the cross checking of interpretations and conclusions, mandate that ASEAN archaeologists should make a beginning towards providing an operational framework for archaeologists from the region to meet and work together in their common enterprise of understanding our past.

Preceramic Late Upper Pleistocene Sites

This section surveys the material remains and findings on all preceramic sites beginning approximately around 40,000 B.P. (Table 1). Given the absence of chronometric dating for a large number of the sites, it is not possible to arrange the sites in an exact chronological order. However, it is generally possible to present them in a geological sequence, distinguishing those attributed to the late Upper Pleistocene from those attributed to the Holocene. For convenient reference, these sites may be further distinguished according to their geographical locations within modern political boundaries as well as by the larger distinction between mainland and insular Southeast Asia, important for observation of cultural orientations. No attempt will be made to present these sites and assemblages in a culture-historic classification, as the data are insufficient for such purposes.

a. Late Upper Pleistocene

Sites of this period on mainland Southeast Asia have been found in Vietnam, Cambodia, and Laos. In insular Southeast Asia, they have been found on the islands of Borneo, Palawan and Timor. The sites in each of these countries are summarized below, and also in Table 1.

Vietnam. Only brief descriptions of these finds are available in western literature. They are all from cave sites in North Vietnam. The caves of Thung Lang, Hang Mun, Keo Leng and those in the province of Quang-binh have been attributed to a late Upper Pleistocene period from 40,000 B.C. to the end of the Pleistocene (Davidson 1975). Like the West Mouth, the sites here revealed evidence of Homo sapiens. Mandibles and teeth of Homo sapiens were found but the estimate of 40,000 B.C. and a late upper Pleistocene epoch was based solely on the



TABLE 1: Distribution of late Upper Pleistocene and Holocene  
Preceramic Sites in Mainland and Insular Southeast Asia

	<u>Location</u>	<u>Late Upper Pleistocene</u>	<u>Holocene</u>
Mainland Southeast Asia	Thailand		Sai Yok, Spirit Cave
	Cambodia	East Cambodian Sites	Laang Spean
	Laos	Tam Hang	
	Vietnam	Thung-lang, Hang Mun, Keoleng Quang-binh	Tchong Doi, Yen Luong
	Philippines	Tabon	Tabon, Pintu <sup>1</sup> , Basey
Insular Southeast Asia	Borneo	West Mouth	West Mouth, Madai
	Timor	Uai Bobo 2	
	Sumatra		Northeast Coast Sites
	Flores		Punding, Soki, Toge
	Bali		Goa Selonding

association with pebble tools and is therefore unreliable.

Laos. Fromaget (1940) attributed the lowest levels of artifact bearing deposit from late Upper Pleistocene epoch. The basis for this attribution was not made explicit. He found coarsely made tools of sandstone and schist in these levels. The preceramic deposit continued into the Holocene, and the artifacts from these levels were described as of the Hoabinbian tradition.

Philippines. Several sites have yielded "late Pleistocene (about 50,000 to 20,000 years ago) artifacts" (Beyer 1948:80 in Fox 1970:43). These sites are in the provinces of Batangas, Bulacan and Rizal in Luzon and the artifacts collected are surface finds. The only stratified late Pleistocene site is the Tabon cave in the Quezon area of Palawan. In fact, it is the only other late Upper Pleistocene site in Southeast Asia that has a sequence which may be as long as that of the West Mouth, Niah, Saravak. Fox (1970:24) has estimated that the site could be 45,000-50,000 years old, based on "rough 'depth-and-age' equation of the rate of deposition of the guano and human debris". But, the earliest chronometric date from the lowest levels of the excavations is  $30,500 \pm 1100$  at 121 cm. At the other end of the scale, the surface level to approximately 25 cm. has been estimated to be approximately 8,900-9,500 years old or possibly more recent. Until further Tabon excavations are reported it may be said that the cave was inhabited for at least 20,000 years.<sup>1</sup>

The excavated remains are almost entirely comprised of chert flakes produced by direct percussion. These come from "six areas and levels in the cave and four of these have been dated by C-14 determinations" (Fox 1970:22). The artifacts from each area are collectively known as a Flake Assemblage, and they are designated Flake Assemblages I-A, I-B, II, III,

IV, and V. The only published classification of the lithic material is that of a sample of chert artifacts (337 pieces) in one assemblage -- Flake Assemblage III (Fox 1970:35 Table IV). These artifacts were found at the same cultural level in an area 7x3 meters in size. A detailed study of the Flake Assemblages from Tabon cave which involves "thousands of pieces of chert will be presented in a final site report" (Fox 1970:31). The artifacts from Assemblage III were classified into unaltered lumps of chert (2%), cores (22%), waste flakes (53%), primary flakes or potential tools (6%), flake tools (16%), and flake tools with secondary retouching (1%). Fox observes there is no evidence of core preparation, utilized flakes do not have distinct and recurring forms and secondary retouch on flakes might have been used "simply to re-edge tools dulled by use, not to achieve preconceived forms" (Fox 1970:33). This lithic tradition has been given the name Tabonian.

Fox found remains of Homo sapiens (Tabon Man) in a disturbed part of the cave and identified and provisionally related them to either Flake Assemblage II or III, but more probably III. There were remains of at least three individuals, which have been tentatively dated to 22,000-24,000 years ago. Food debris has been found only in very small quantities and only in certain Flake Assemblages. Animal bones have been recovered from Flake Assemblage I-A, III and IV, and they are in the process of being identified. Except for pig and an extinct deer, there were surprisingly few bones of larger animals present. No bone tools or marine shells have thus far been found.

The Tabon cave sequence extends into the Holocene, and it is thought more appropriate to discuss the Holocene at Tabon cave here immediately following the late Upper Pleistocene

at Tabon cave. Flake Assemblage I-A and the upper portion of Flake Assemblage I-B represent the Holocene presence of human occupation at the cave. Flake Assemblage I-A yielded the first large numbers of animal bones and teeth found in Tabon cave. There are at present no descriptions of the artifacts found in Flake Assemblage I-A and I-B.

Borneo. The West Mouth site sequence extends from the late Upper Pleistocene into the Holocene and as with the Tabon Cave site, the Holocene will be discussed immediately following the Upper Pleistocene.

The West Mouth was first excavated by T. Harrisson whose analysis of the material provided the basis for his "Niah area Phaseology (Table 2). A later study of all the materials excavated from Niah (T. Harrisson's excavations and a later excavation) produced a different sequence. The later excavation and the 1977 study of the total excavated material resulted in a sequence as shown in Table 3. A comparison of the 2 sequences is attempted in Table 4.

Timor. Only one site may be attributed to a preceramic occupation. Uai Bobo 2, at its lowest levels, yielded utilized flakes (Glover 1971). This level has been called Horizon I. From a hearth that contained bone and seed cases, Glover obtained a date of  $13,400 \pm 520$ . Levels above Horizon I are ceramic levels.

#### b. Holocene

Distributed over a large part of mainland and insular Southeast Asia are preceramic sites which date from the Holocene epoch. These sites are found on mainland Southeast Asia in Thailand, Cambodia, Laos, and Vietnam and also on the islands of Palawan, Samar, Luzon, Borneo, Sumatra, Flores and Bali.

Thailand. Two sites here, Sai Yok and Spirit Cave, have preceramic levels. In the cave shelter at Sai Yok, situated

TABLE 2: T. Harrison's "REVISED NIAH AREA PHASEOLOGY"  
(From T. Harrison 1970)

Phase	Main Material Characteristics	Approximate Significant Start Date At Niah (In Round Figures)
1. Early Stone	Tiny "chip flakes"?	?
2. Early Stone	Large flakes and chopper tools	ca. 40,000 B.C.+
3. Early Stone	Quartzite flakes	ca. 30,000 B.C.
4. Intermediate ("Mesolithic")	Advanced flakes; edgework pebble tools	ca. 10,000 B.C.
5. Neolithic	"Round axe"	ca. 4,000 B.C.?

TABLE 3: Cultural Sequence at the West Mouth, Niah,  
(as obtained from this study)

<u>Tradition</u>	<u>Phase</u>	<u>Culture Stratig. Units</u>	<u>Assemblage Characteristics</u>
Ceramic	Niah V	Unit 5 (0-24")	Introduction of ceramics and a decreasing use of pebble and flake artifacts. Significant increase in charred and ironstone.
Preceramic	Niah IV	Unit 4 (24"-48")	Increase in all artifacts and the ending of the two earliest flake types.
	Niah III	Unit 3 (48"-72")	Pebble implements and distinct flake types - pointed flake and semi-lunar flake.
	Niah II	Unit 2 (72"-84")	Pebble tools and indistinguishable flake artifacts.
	Niah I	Unit 1 below 84"	Flake artifacts of indistinguishable types.

TABLE 4: Comparison of the Sequence

T. Harrison			1977 Study	
Phase	Depth	Proposed Starting Date	Phase	Depth
IV	? c. 48"	10,000 19,000	IV	24"-48"
III	c. 72"	30,000	III	48"-72"
II	c. 100"	40,000	II	72"-84"
I	? 128"	more than 40,000 y.a.	I	Below 84"

on the banks of Kvae Noi, a tributary of the Meklong River, Heekeren and Knuth (1967:105) found "three major stratigraphic layers ... corresponding to three phases of history of the site". They called the lowest layer preceramic, and based on the fauna, regarded it to be of post-glacial age. They proposed a tentative date of 8,000-10,000 B.C. In addition to pebble tools, the preceramic collection included boulder-flake tools, some microblades, and a few bones and shells implements. A large number of the flakes were reported as showing no signs of secondary retouching or edge chipping from use, or of being flake blanks. The excavators considered these to be waste products. Only pebble tools were classified into types. Based on shape and technique of manufacture, three categories of pebble tools were recognized, namely, Massive High-domed Tools (2 types), Choppers (2 types), and Hoabinhian (12 types) pebble tools. The excavators noted that the Levallois technique and true bifacial hand-axes were not present in the collection. The tools here were most often made of quartzite (easily available in the gravel banks of the Kvae Noi) and flaked on one surface only to produce a straight cutting edge. Interestingly, the original shape of the pebble had directly affected the form and size of the finished tool" (Heekeren and Knuth 1967:23). The excavators also noted that throughout the whole deposit, "there was an extraordinary slow rate of technical development in tool manufacture and that pebble tools of the simplest and crudest type continued to be found in the more recent layers ... suggesting that the industry went through an uninterrupted period of hardly any change" (Heekeren and Knuth 1967:107).

Apart from stone artifacts, bone awls and simple bone points were found sporadically and were confined to the upper part of the preceramic horizon, where bladelets were also found. Some shells were worked as tools but their

occurrence in the preceramic horizon was not reported. Little is known of the faunal remains and they have been described as scarce. From what was recovered, the fauna is known to be post-Pleistocene and to consist of abundant mussel shell together with some deer, buffalo, muntjac, pig, rhinoceros, tiger, black bear, serow, snake, lizard and porcupine. Scarcity of faunal remains was also observed in Tabon cave, Palawan, a preceramic site, discussed earlier. The West Mouth, on the contrary, appears to be the only preceramic site rich in faunal remains.

Spirit Cave, a site in Mae Hongson province in north-west Thailand, "produced a well-defined stratigraphic sequence divisible into at least five soil horizons and two cultural levels" (Gorman 1970:101). The site was occupied from about 12,000 years B.P. to 7,500 years B.P. If we consider the Pleistocene-Holocene boundary at approximately 12,000 B.P. then Spirit Cave falls within the Holocene epoch. The preceramic levels here comprised the lower part of Cultural Level I (layers 4, 3, 2a). However, since the description of Cultural Level I (layers 4, 3, 2a and 2) includes remains from a layer with ceramics (layer 2), it is not always possible to identify the material from just the preceramic layers 4, 3, and 2a. It was noted that the lithic artifacts from the lowest layers continued into layer 1, the only difference being the addition of new lithic types (flaked and polished quadrangular adzes, and small ground and polished slate knives). Generally, tools of coarse grain quartzite (available in the nearby Khong stream) were found throughout the deposit.

The stone artifacts were divided into three categories -- large unifacially worked pebble cores, grinding stones and retouched and utilized flakes. The retouched and utilized flakes form the bulk of the collection and a statistical study of their macroscopic and microscopic attributes is being

undertaken (Gorman 1970). Small calcite blades pressure flaked from large calcite fragments were also found among the lithic artifacts. Faunal remains suggest a large range of species that roamed several micro-environments including cave, woodland, and riverine. Of the thirteen varieties of plants recovered, seven varieties were found in the preceramic layers 4, 3, and 2a. Layer 2 witnessed the first appearance of ceramics together with additional lithic types and edge grinding in knives and adzes, the addition of "foreign elements into the continuing Hoabinhian expression" (Gorman 1970:102). Gorman suggests that this could indicate either a technological transformation occurring elsewhere in Southeast Asia within the Hoabinhian techno-complex, or diffusion of entirely new and unrelated cultural elements into the Hoabinhian area.

Cambodia. Located on a limestone hill in the province of Battambang is Laang Spean, a site excavated from 1965-68 (Mourer 1970, 1977). The lower layers (layers 6, 5, and 4) constitute the preceramic levels of this site. Stone artifacts and faunal remains were excavated from these levels. Flake artifacts were found in the preceramic layers 6, 5, and 4, while the large worked pebble tools appeared only from layer 4 upwards. The total collection comprised 90.9% waste flakes (7,725 pieces), 8.7% flakes (743 pieces) and 0.4% pebble tools (34 pieces). Unifacial flaking was observed, but polishing and grinding were not present. Hornfels, chert, and flint were the raw materials utilized for the artifacts. No bone tools were found.

Mourer (1977) described the lithic industry here as a homogeneous industry showing little change throughout the deposit, which he dates from approximately 5,000 B.P. to the 9th century A.D. Ceramics made their appearance sometime after 5,000 B.P.

Vietnam. Among the cave sites in the Hoa Binh region that Colani excavated, Tchong Doi and Yen Luong rock shelters contained no pottery. The presence of the preceramic at any of the other sites other than Sao Dong, that Colani (1927, 1929a, 1929b, 1930) excavated cannot be ascertained, given the general absence of reference to the stratification. On the basis of a post-Pleistocene fauna Colani (1927) suggests that the sites in the Hoa Binh region are of Holocene age. The point at which pottery appeared at Sao Dong or any of the other sites has not been reported, and so our only references to the preceramic in Vietnam during the Holocene are the preceramic sites of Tchong Doi and Yen Luong. There is no indication of the number of artifacts found but we do know that edge ground tools were not among them. Matthews (1966:86) reports that the artifacts were flaked with a minimum of retouch.

Samar (Philippines). In 1968 and 1971, Futterer (1974) excavated sites along the Basey River. Based on stratification from a distinctive cluster of sites, he recognized four cultural layers. The two lower layers were preceramic. A wide variety of faunal remains and a lithic industry of small, almost amorphous chalcedony flakes were recovered. A date of  $10,500 \pm 160$  has been given for the earliest occupation.

Luzon (Philippines). Between 1968 and 1970, Peterson (1974) excavated Pintu' rock shelter located in the western foothills of the Sierra Madre Range in eastern Luzon. The two lowest layers yielded flakes and blades and no pottery. In the overlying levels the lithic assemblage changed into a Hoabinhian type assemblage with amorphous flakes associated with pottery. The earliest date of occupation is  $3,996 \pm 240$ .

Borneo. Harrisson made a very brief mention of Madai cave, a preceramic site with a date of 10,800 B.P. This site, on the northeastern coastal plain of Sabah, yielded flake tools, which have been described as resembling those from New Guinea (Shutler and Kess 1969). In its ceramic levels, both the stone artifacts and ceramics differ from those at the West Mouth and are said to show influence from Sulawesi (T. Harrisson 1970:21). The West Mouth during the Holocene was discussed earlier together with the Upper Pleistocene sequence.

Sumatra (Indonesia). Large open sites on the northeast coast of Sumatra facing Peninsular Malaysia have been attributed to the Hoabinhian. These are kitchen midden sites, which extend inland for as much as 130 kilometers, (Heekeren 1972). They are built up of debris due to human activity -- mostly shells, some scattered animal bones, remains of crab, tortoise, fish, pestles and mortars and unifacially flaked oval pebbles. No radiocarbon dates are available but the sites have been attributed a post-Pleistocene age.

For example, in 1924, J.H. Neuman collected pebble tools from the surface of Batu Kenong, and in 1927, L.C. Heyting found pebble tools (also surface collection) in the Upper Serdang region. Since these are surface collections that do not bear stratigraphical information or chronometric dating, we can only tentatively regard them as representing preceramic sites in the Holocene.

Bali (Indonesia). A trial pit 4x1 meter at Goa Selonding revealed at 70 cm., a layer containing bone scrapers, pointed deer antler, teeth of pig, deer and rodents, together with much charcoal (Soejono 1962). Nothing beyond this preliminary work has been reported. It is a site that the excavator considers to be of great importance.

Flores (Indonesia). In 1952, Heekeren (1955-57) excavated Runding Cave and Soki Cave in West Flores. He considered these caves to contain traces of flake cultures of the Epi-Palaeolithic, i.e., the Palaeolithic culture of the Holocene. Both caves yielded stone arrow-heads, as well as microliths and bladelets. Although ceramic sherds were found on the surface, Heekeren (1955-57:457) believed that "they have no connection whatsoever with the flake culture". Flakes and chipped artifacts were of fine-grained stone (from chalcedony, chert and jasper to obsidian). Heekeren (1955-57:456) noted that these were "materials on which beautiful trimming is possible" but most of the artifacts here were poorly finished, and "must have been used as they were when struck from the core". Others had marks of secondary transverse flaking on the upper part only. Detouch at the margin is rare. In addition to stone artifacts, bone points and awls, shell scrapers and points were also present, and these were described as poorly made.

The excavations of the late Upper Pleistocene and Holocene preceramic sites described above have utilized various approaches in analyzing and reporting the excavated remains. In most cases the first appearance of ceramics in the deposit is noted, and the material remains from all levels are reported, making it possible to distinguish the preceramic levels from the ceramic levels. Reports on several additional sites, are not explicit enough to make this distinction.

Vietnam. A larger number of the sites from Hoa Binh province including the two preceramic sites mentioned above, do not provide the stratigraphic position of ceramics in the deposit (Matthews 1966). Hence we do not know if these Hoa Binh sites contained any preceramic debris.

Burma. The Padah-lin site has been attributed to the "early Neolithic, comparable to the Hoa Binh and Bacsonian cultures of Indochina" (Thaw 1971:131). According to the excavator, the Neolithic features of the site include edge ground tools and completely ground tools associated with chipped implements, an extant fauna and a few pieces of cord-marked pottery. If the position of the cord-marked pottery were known, then perhaps some part of Padah-lin would fall within our discussion.

Indonesia. The Toalean sites, first reported by F. and P. Sarasin in 1905, and later investigated by van Stein Callenfels (1938) and Heekeren (1957) are problem sites in Indonesia prehistory (Mulvaney and Soejono 1971). Heekeren (1957) concluded that these sites contained three periods of occupation, Lower, Middle, and Upper Toalean, the first of which was preceramic. Recently, however, Mulvaney and Soejono (1970, 1971), based on their fieldwork in the sites and a reexamination of the artifacts, have concluded that the alleged sequence "seems unduly simplistic and evolutionary in character" (Mulvaney and Soejono 1971:32).\*

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\* Parts of this paper have been excerpted from my thesis "The West Mouth, Niah, in the prehistory of Southeast Asia" Ph.D. Dissertation, Yale University, 1978.

Footnotes

1. Cultural classification for late Upper Pleistocene and Holocene in Southeast Asia saw its beginnings in 1932, when the area was given a local cultural terminology, substituting "Hoabinhian" for the Mesolithic. The definition was based on Colani's excavations in Vietnam (Colani 1927, 1929a, 1929b, 1930). Matthews (1966:86) describes the Hoabinhian as proposed and defined by the First Congress of Prehistorians of Far East meeting in Hanoi in 1932. The Hoabinhian culture was divided into three sub-stages. Matthews (1966:94) regards the Hoabinhian as "a Mesolithic culture in that it exhibited no evidence of agriculture. The rather inadequate faunal data would seem to indicate a post-Pleistocene date".
2. Hoabinhian pebble artifacts did appear in Pintu' but only in the ceramic levels.
3. This is discussed in my "The West Mouth, Niah, in the Prehistory of Southeast Asia" Ph.D. dissertation, Yale University, 1978.
4. The cave was used as a cemetery approximately 200-500 B.C. (Fox 1970:44).

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