

THE "NEW LOOK" OF SOUTHEAST ASIAN PREHISTORY *

by

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New data, from excavations made since July 1964 in Taiwan and northern Thailand, strongly support the need for a new interpretation of the prehistory of Southeast Asia. These data have been supported by further data from excavations in the Philippines, Sarawak, North Vietnam, eastern Indonesia, and northern Australia. If these new data had been found before the Second World War in the manner of archaeological work being done in Southeast Asia at that time they would not have suggested that a new interpretation was needed. It is as much the new methods and techniques of archaeology in gathering and analyzing these data as the data themselves which are leading to a new interpretation of Southeast Asian prehistory.

Before 1950 the archaeologists working in the field in Southeast Asia paid only lip service to stratigraphic excavation. They reported that sites in which they excavated were not stratified or that they were badly disturbed and that therefore, it was impossible to work out the stratigraphy. Since 1950 various methods of much improved stratigraphic excavation have come into use in Southeast Asia and we now know that most sites are stratified even though it may be difficult to excavate in such a way that the stratigraphy can be closely followed. With the better stratigraphic information that results from the newer excavations we know much better what artifacts are associated with each other and which artifacts are found earlier than others and which come later. Along with the greater care in excavation which gives us a more certain sequence of events, new methods of absolute dating have become available to the archaeologist, such as Carbon-14 dating and thermoluminescence dating as two examples. With these, and other methods, we are able to find out roughly what was happening at a particular time in one area of Southeast Asia and know whether related happenings took place earlier or later in some other area in Southeast Asia or in India or China.

* Presented at the 5th Conference on Asian History, IAHA'71, Manila, Philippines, 28 May 1971.

Before the Second World War, excavations were primarily decided upon in a rather accidental nature. Accidental finds, when reported to the existing archaeological service, if they were sufficiently exciting, led to an excavation. This resulted in excavations either in areas easily accessible to the archaeologist or in a scattered fashion over relatively wide territory. This way there tended to be considerably more work done relatively close to the headquarters of the archaeologist than at a distance. Since the Second World War, there has been a tendency to work in a small area, explore this area extensively and within the area work intensively on a small number of excavations. This is best illustrated with the excavations in the neighborhood of Tabon Cave in Palawan, Philippines, and in the Niah Caves in the Fourth Division of Sarawak. As a result of a number of excavations in a small area it has been possible to build up a long sequence and to get some idea of what happened over this long period of time to one or more cultures or groups of people living in this particular area.

New techniques of analysis have also been developed in the laboratory for use once the materials have been excavated and brought back to the home base. Previous to 1950 the great majority of the analyses that had been done in Southeast Asia was concerned with stone tools, and this primarily with their form. Since 1950 there has been much attention paid to pottery. Studies made of present day pottery manufacture and the distribution of the methods of manufacture have given us clues of value for the reconstruction of prehistoric pottery and its manufacture, its distribution, and suggestions for working from the excavated pottery to the people who made this pottery. Only in the last few years archaeologists have been developing techniques of examining edge damage of stone tools. With a microscopic examination of the working edge of stone artifacts it is possible to hypothesize what uses they were put to and, in many cases, it has led us to realize that stones we were previously throwing away were used. We now recognize that much of the material that was recovered in excavations previous to the Second World War which would have been of great importance in reconstructing the life of the people who had lived in these archaeological sites was thrown away without ever being examined. While these discoveries do not invalidate the work that was done before the Second World War, it means that we

must find sites similar to those excavated before the War and make new excavations with new and much more complete analysis of the total collection. The results of these analyses will be considerably different from the results which had been achieved before.

The combination of the new data from relatively circumscribed areas, and the new techniques in recovering these data from the sites and in analyzing and dating these data are requiring a different interpretation than before of the prehistory of Southeast Asia. Also, the world is in a different cultural situation than it was before the Second World War resulting in a different way of looking at these data. Much of the reason for the reconstruction which was made of the data available by the beginning of the Second World War was the general colonial philosophy that was unconsciously held by all archaeologists in Southeast Asia, whether European or local. This was not a new or distinct philosophy but very much a part of the Victorian Age which was the peak of the colonial empire period.

Archaeological beginnings, over a hundred years ago now, took place in western Europe and many of the ideas associated with the reconstruction of world prehistory were based on the first excavations and the reconstruction of European prehistory. The prehistorians, without realizing the damage they were doing, took it for granted that what they found in western Europe and the Middle East would be found in much the same relationships in the rest of the world. In Europe, over the forty or fifty years of archaeology done before the First World War, the different cultural manifestations and sequences were based primarily on the stone working which was found in the archaeological sites. It was felt that there was a continuous improvement in stone working from the very crude and large stone tools of the Early Palaeolithic to the smaller and much better made stone tools of the Late Palaeolithic and the microliths, very small, geometric stone tools of the Mesolithic. The stone flaking found in the Late Palaeolithic of western Europe was, some of it, impressively beautiful and there was a general feeling that there was a one-to-one correlation between the fineness of the stone work and the progressiveness of the cultures doing the stone work. As very rough sequences of cultures were worked out in Southeast Asia during the

1920s and 1930s, it became apparent that there had been relatively little change in the stone working techniques in Southeast Asia and that, compared to the stone work of the Middle East and Europe, the stone working during the later Palaeolithic in Southeast Asia was extremely crude. It was, therefore, felt that there had been little cultural advance in Southeast Asia and because the methods for stone working found in the Middle East and in Europe were not present in Southeast Asia, it was felt that Southeast Asian peoples were isolated from the advances of the west and that the general cultural level of Southeast Asia lagged far behind the cultural level of the west.

During the 17th, 18th, and 19th centuries in Southeast Asia the European scholars who followed their governments into the countries of Southeast Asia quickly came to recognize the very obvious evidence of Indian and Chinese influences in different parts of Southeast Asia. These scholars became acquainted with the aristocracy of countries of Southeast Asia and recognized the close similarity of the religious beliefs and the political practices of the aristocracy of countries in Southeast Asia with those of China or India. As more and more knowledge was accumulated of some of the spectacular ruins in Southeast Asia, it was realized that these also showed a very strong influence from India or China. The interpretation was, therefore, that civilization had not developed in Southeast Asia but had come to Southeast Asia from China and/or India. To their minds this was just further evidence that Southeast Asia was culturally far behind the rest of the world until these civilizing influences had entered from the north or the west.

Combining this historical viewpoint with the developing ideas on the prehistory of Southeast Asia, it seemed logical to the European prehistorians and their local students that Southeast Asia had been a cultural cul-de-sac which owed all progress to outside sources. The explanation of progress as seen in the patchy archaeological record was that it came about through migrations of people, ordinarily from the north. You could almost automatically say that in an archaeological excavation when some new and advanced technique appeared in an area the interpretation would be that it had been brought in by a new people coming from the north. Slightly later, in the very early historic times,

many of the advances were thought to have come in from India. In the 1950s and even the 1960s, prehistorians who were reasonably well acquainted with world prehistory said that Southeast Asia was of importance in world prehistory as here you could investigate interaction between India and China. One of the archaeologists went so far as to explain the lack of any references to Southeast Asia in an anthology of archaeological works because nothing of importance had ever been found in Southeast Asian prehistory.

A rapid review of the traditional reconstruction of the prehistory of Southeast Asia will amply demonstrate the passive position of Southeast Asia in the eyes of the prehistorians.

The early and the middle palaeolithic cultures were discovered and defined primarily in the '30s by Hallam L. Movius, Jr. (1955), and others in Burma, Malaya and Indonesia. Movius presented the definitions of the chopper-chopping tool tradition of Southeast Asia and hypothesized that this was distinct from the stone-working traditions of western India and the west. Throughout the duration of this general pebble tool industry there was little change in form of the stone tools, only a slight decrease in the size of the tools and a slight improvement in the flaking. It was felt that during this cultural stage Southeast Asia was culturally isolated from the rest of the world and already was falling far behind in cultural development.

The Hoabinhian culture was first discovered and defined in North Vietnam by Madeleine Colani. At first she considered it a late palaeolithic culture but after disagreement with her colleagues she changed her mind and felt that because this appeared to date completely from the Holocene it should be considered a mesolithic culture rather than palaeolithic (Matthews 1966). In the Philippines and central and eastern Indonesia there was evidence discovered of several flake cultures which showed some resemblance to each other. While these flakes were relatively small compared to the earlier flakes and cores of the chopper-chopping tool tradition, they were not true microliths in that they were, for the most part, not geometric and were considerably larger than true microliths. The prehistorians in Southeast Asia were not well acquainted with Middle Eastern and European prehistory, however, and they used

the term microliths for the tools and microlithic as a descriptive term for the cultures which, in equating again with European terminology, they considered as mesolithic.

The reconstruction of the "neolithic" in Southeast Asia is primarily the result of research by Robert Heine-Geldern in the 1920s and 1930s (1932). He proposed a series of migrations which, for the most part, brought peoples from the north (China or Japan) south into Southeast Asia. These cultures were typified by their typical associated stone polished axes and adzes. One of these cultures, the shouldered ax culture, was completely internal to Southeast Asia, and Heine-Geldern did suggest the possibility that the oval ax culture (the early neolithic) could have originated in Southeast Asia but much more strongly suggested that it came from Japan or the coastal area of North China. The most important of these neolithic cultures for Southeast Asia was the late neolithic culture of the four-cornered adze, or rectangular adze. This, Heine-Geldern suggested, came out of North China, down through Southeast Asia and Malaya into Indonesia and up into the Philippines and Formosa, moving to some degree as far as Japan, and another branch going off to the east into Melanesia and Polynesia. Agriculture, he hypothesized, was introduced into Southeast Asia in two stages: by the early neolithic cultures from Northern China or Japan and by the rectangular adze culture from North China. In the upper layers of the Late Hoabinhian sites were commonly found some quantity of potsherds and a few chipped stone adzes which were ground and polished only on their working edge. No one suggested that this was an internal development in Southeast Asia but hypothesized that neolithic farmers from the north who made pottery and polished their stone tools were settled in the valleys and the Late Hoabinhian people, in contact with these, picked up the techniques of polishing stone and making pottery but never were able to incorporate them well into their stone work and cultural life. Others suggested that the Hoabinhian people did not make the pottery found in their sites but that this was left by the neolithic farmers of the lowland. None of the lowland neolithic sites of this assumed association have ever been found.

The traditional bronze culture of Southeast Asia was the Dongson culture first noted in North Vietnam. Two different hypotheses of its origin both brought it in from outside of Southeast Asia, Heine-Geldern

(1951) hypothesizing its resulting from a migration of tribal groups from eastern Europe who arrived in North Vietnam around 800 B.C., and Bernhard Karlgren (1942) saying that these techniques were brought from Northern China into North Vietnam around the third century B.C. bringing in Late Chou art styles, as found on the large bronze drums in particular.

Finally, the reconstruction of the earliest history and protohistory of Southeast Asia made by the historians presented overwhelming evidence for the beginnings of civilization in Southeast Asia as a result of contacts of one kind or another from India and from China. From these contacts were developed the civilizations of Vietnam, Champa, Funan, Dvaravati, and Shrivijaya. The later civilized empires of Southeast Asia developed out of one or the other of these earlier civilizations.

Archaeological data which have been uncovered primarily during the last ten years is very strongly suggesting that these traditional interpretations are incorrect (Solheim 1971s). Edge damage analysis of some of the flakes from an archaeological site in far northern Thailand suggests that many of these may have been used in working wood. I have hypothesized that there was a lignic period during the Late Pleistocene when instead of an evolution of new and better technique in stone working, the peoples of Southeast Asia started making wooden tools and that the evolution which would demonstrate their cultural development took place in wood rather than stone. If this is so, it is most unlikely that any of the wooden tools themselves will ever be found to prove it as they are organic and the soil and climatic conditions in Southeast Asia result in the rapid destruction of this type of organic remains.

I have visited five areas in Southeast Asia where archaeological excavations have produced sequences of up to 40,000 and more years. In all of these sequences there have been additions to the cultural inventory apparent in the artifacts recovered but in most of them there has been little indication of a replacement of one cultural group with a new and different cultural group. The site with which I have been most closely connected, Non Nok Tha in northeastern Thailand, has a sequence

of about 7,000 years. From the very beginning of this sequence to the end of the sequence, probably about 200 years ago, it is obvious that it is populated by people of the same general culture. There are numerous changes but at all times it is apparent that the people who are there are closely related to those who had come before them. This does not deny that there may have been movements of people which were sufficiently large to be called migrations but it very strongly suggests that most of the cultural evolution in Southeast Asia was internal with new elements of culture obviously coming in but not making any major disruption of the culture that was there. The one time when I feel that there was something approaching a migration was during the last half of the first millennium B.C. when I feel that the evidence suggests that a considerable number of people moved out of southeastern China by water, some of these people going to Formosa, some going to Korea and Japan but the majority going south through the Philippines and into Indonesia and later moving north into western Mainland Southeast Asia.

Our excavations at Non Nok Tha have demonstrated a clear and long lasting bronze technological period and the dates that we have for this bronze manufacture go back to about 3,000 B.C. A burial at an earlier level than the earliest bronze had on its chest a copper-socketed tool which was very likely heat worked at some stage in its manufacture. This indicates bronze manufacture and metallurgy at least 2,000 years before the so-called Dongson culture and a thousand or more years before bronze was being manufactured in China. This is five hundred to a thousand years earlier than bronze was being worked in India.

The evidence of bronze working at Non Nok Tha shows that the ores were not being mined in the immediate locality of this site but that there was trade bringing either bronze or the component metals copper, lead, and tin to the localities where they were worked. From the few sites so far excavated in Southeast Asia where bronze working artifacts have been found, I would hypothesize that bronze working was done in many localities and that there was not a major trade in bronze artifacts, at least at the beginning of its manufacture.

Paul Benedict, the person who in 1941 hypothesized that the Thai language was not a Sinitic language but related to the Austro-Asiatic languages, has done considerable research along these same lines during

the last five years (Benedict 1967). There is not time here to go into his findings but he has suggested to me in a letter that writing was developed in Southeast Asia before it was in China and diffused from Southeast Asia to China. Because the traditional material on which writing was done in Southeast Asia has been bamboo or leaves of one kind or another, none of these early records of writing are likely to be recovered. I emphasize that this is purely a hypothesis, but a possible one. If this is so, we have in Southeast Asia, probably early in the third millennium B.C., all of the requirements for a civilization except for urbanization.

There are some suggestions from recent excavations in the central plains in Thailand that some urbanization was underway before Indian influence came into the area to speed it up. Whether there was urbanization or not, there is no indication of political centralization in Southeast Asia except for the area of North Vietnam. Excavations and analysis of the artifacts recovered in North Vietnam since 1960 have indicated that there were one or possibly two distinct bronze manufacturing cultures in North Vietnam before the time of Dongson. At least one of these cultures produced large quantities of arrowheads or spearheads indicating an army and obvious political organization of some type. The North Vietnamese archaeologists are in the process of relating these to the previously considered mythological kingdoms of Vietnam. Their hypothetical dating, of which they have done very little, has suggested to me that they felt that these go back to about the beginning of the first millennium B.C. Early in May, 1971, I received a letter from an archaeologist in East Berlin from an institute that has been doing Carbon-14 dating for the North Vietnamese. This archaeologist, Professor Dr. H. Quitta, mentioned that dates for early bronze cultures in North Vietnam are in the second millennium B.C. (1600-1100 B.C.).

It is much too early to relate these developments in North Vietnam and the first millennium developments in Thailand to the early history of China and the first millennium B.C. history of India. I believe that we can say, however, that the cultural situation in Southeast Asia before the beginnings of Indian and Chinese contact was much higher than anyone has previously accepted or even suggested.

I am going to very briefly summarize the new data that has led to my new reconstruction of Southeast Asian prehistory which will follow. Some of these data have been published and much of the rest is in the process of publication. I will give you general references to this work so that you can check the data.

In the early 1950s I lived for over four years in the Philippines and put in most of my efforts on the pottery of Philippines. As a result of this work and work since that time I proposed the Sa-huynh-Kalanay Pottery Tradition as found on the coast of Annam and in the central Philippines. Related pottery has been found on a small island in the Gulf of Siam, in Indonesia, Borneo, and South Vietnam. At first I had proposed this for a Southeast Asia-wide pottery tradition but in the last few years with more data and more of this pottery dated, it had become obvious that there is too much variation both in dates and in the material to include all of this pottery in one tradition. Rather, there are a number of related traditions of pottery manufacture in Southeast Asia that have many similarities partially because of a Southeast Asian art style that is shared by many peoples of Southeast Asia and which is also found in the designs in tattooing, textiles, basketry, and wood carving (Solheim 1967).

The most important area of prehistoric sites in the Philippines is in the neighborhood of Puerto Princesa on the west coast of Palawan. Here, following several years excavations in the Tabon Caves, and other caves located in the area, under the direction of Robert Fox of the National Museum, a sequence of cultures has been built up going back over 30,000 years. A good summary of these finds is available in *The Tabon Caves*, by Robert Fox (1970).

The Niah Caves sites in the fourth division in Sarawak, East Malaysia, were excavated under the direction of Tom Harrisson, at the time the Curator of the Sarawak Museum. From these sites there is a sequence going back 40,000 years with, as in the Tabon Caves, deposits going down considerably deeper, and thus earlier, than the earliest Carbon-14 dates. From Niah Cave was recovered a skull of an adolescent *Homo sapiens* which dates from about 40,000 B.C. This is the earliest dated *Homo sapiens* skull known in the world. The cultures represented

in the Niah Caves and the Tabon Caves show a number of relationships both in the earlier levels and in the later levels. The Late Pleistocene levels in both caves were occupied by peoples making and using primarily flakes for their tools. Later, when pottery manufacture came in, it came into both areas some time during the second millennium B.C. or possibly earlier. This pottery, though far from identical, shows considerable relationship and I have hypothesized that both of these potteries belong to the Sa-huynh-Kalanay Pottery Tradition. Fox, on the basis of his more extensive work with the pottery from Tabon Caves sites, does not completely agree with this but he does agree that the pottery from Borneo and from the Tabon Caves is very closely related. One of the important items of evidence from Niah Cave is an edge ground stone tool dated at about 8,000 B.C. A detailed summary of the results of the work in Niah Cave and in Sarawak as a whole can be found in an article by Tom Harrisson in Volume XIII of *Asian Perspectives* to appear some time in the fall of 1971.

In 1964 and 1965, Professor Kwang-chih Chang of Yale University led an expedition from Yale and from the National Taiwan University in excavations at Fengpitou and Tapenkeng in Taiwan (1969). Two distinct cultures were identified and dated going back to about 2,500 B.C. One of these, Chang suggests, is related to the Lungshanoid cultures of southeastern China and the other to the painted pottery cultures of the north. Below these levels in two sites he found an earlier corded-ware culture for which he has no Carbon-14 dates. From the considerable depths of these deposits it is obvious that this corded-ware (pottery) culture was in existence for a long time. Chang has hypothesized that this was a horticultural society with its closest relationships to the people making cord-marked pottery in southeastern China of as yet unknown but early dating. About the middle of the first millennium B.C., geometric pottery started showing up in sites in Formosa, related obviously to the geometric pottery in southeastern China.

In far northern Thailand, near the Burmese border, Chester Gorman discovered and excavated Spirit Cave. In this cave he found a typical Late Hoabinhian stone industry and in the top layer he found cord-marked, incised, and burnished pottery, polished slate knives, and rectangular polished stone tools. Throughout the site he found remnants of plants

which are tended and cultivated in the general area today. The dates for this site go from about 5,600 B.C. at the very top to about 10,000 B.C. in the middle of the deepest cultural level. The polished stone tools and pottery came into the site about 6,600 B.C. and the very possibly domesticated plants go back to 10,000 B.C. or earlier. Included in these probable domesticated plants are two different kinds of beans and a pea. A summary of the contents of this site will be found in *Asian Perspectives* XIII (Gorman, 1971).

The excavations at Non Nok Tha, like those of Spirit Cave, were undertaken by a joint expedition of the Fine Arts Department of Thailand and the University of Hawaii under my general direction. Excavations at Non Nok Tha were primarily conducted by Hamilton Parker of the University of Otago in Dunedin, New Zealand, and Donn Bayard, now also of the University of Otago. While there was very little problem with the Carbon-14 dates from Spirit Cave the Carbon-14 dates from Non Nok Tha have presented considerably more problem. We have a sequence in which we feel confidence, however, going back beyond 3,600 B.C. and continuing up to only one or two hundred years ago. From the very bottom of this site we found evidence of bovines which are probably *Bos indicus*, the zebu cattle, and these were probably domesticated. In potsherds from the bottom levels of the site we have found impressions of *Oryza sativa*, the common rice of Asia. Rice impressions were identified by Professor Hitoshi Kihara of Japan but from the impressions it is impossible to say whether the rice is domestic or wild and whether it is dry or wet rice. We are of the opinion that this is a dry, domesticated rice. As mentioned before, from the burial dated about 3,600 B.C. was recovered a copper-socketed tool and from levels just above this, dating probably a bit before 3,000 B.C., we have recovered the first considerable remnants of bronze. Bronze was being used at the site in some quantity as evidenced by the remains of pairs of sandstone molds for casting the axes, several bronze axes, whole and fragmentary crucibles, and many small nodules of bronze (Solheim 1968). The dating for bronze working at Non Nok Tha goes back as early as any of the bronze working known in the Middle East and the technology evidenced in this site is on a level with anything being done in the Middle East at this time. It is possible that bronze was invented earlier in Southeast Asia than in the Middle

East. A detailed preliminary report on the work at Non Nok Tha by Donn Bayard will be found in Volume XIII of *Asian Perspectives* (1971).

The site of Chansen was excavated in 1968 and 1969 by a joint Thai-University of Pennsylvania expedition. This site is in eastern central Thailand. Carbon-14 and thermoluminescence dates suggest that it was in use as a village and later a city from previous to 200 B.C. until about 1050 A.D. The artifacts of the original village show no relationship to those of the following settlements on the site and no dates are available for this village. Early in the second century B.C. a definite Indianized occupation began with Buddhist artifacts included. This phase lasted until about 250 A.D. The third phase from 250 to 450 A.D. shows resemblances to Funan sites and the fourth phase from 450 to 600 A.D. continues showing Funan resemblances. Up until the end of this fourth phase, the pottery is distinctive from that of all other sites in central Thailand and elsewhere. By the fifth phase from 600 to 800 A.D. the pottery is beginning to look similar to pottery from other sites in the area and by the last phase the pottery is very similar to pottery from other sites in the area and into northeastern Thailand. The preliminary report on this site by Bennet Bronson (n.d.), who was in charge of the excavation in the field, will appear in Volume XV of *Asian Perspectives*, hopefully in 1972.

Many other excavations have been made during the last ten years in Thailand by British, Danish, and Thai expeditions. Preliminary reports of these will generally be found in the *Journal of the Siam Society*.

The remaining area in which excavations have produced data disagreeing with the former interpretations of Southeast Asian prehistory is in North Vietnam. Archaeological activity by the Vietnamese began in late 1959 and has concentrated in no one area but rather all over North Vietnam. For our purposes here the most important results of their work are the finds of the one or two bronze working cultures previous to Dongson and the indicated centralization of power and political organization of one or both of these cultures. Here it would appear that the centralization of power through some form of political organization began independently of strong outside influence though it is possible that the ideas and philosophy behind this development were

shared between peoples of North Vietnam and those of Northern China. A very brief review of the work being done in North Vietnam will be found in *Southeast Asia Area 19, No. IV, Survey and Bibliography* of the Council for Old World Archaeology by myself and Jean Kennedy, to appear later this year (1971). A detailed summary in English (not including some of the latest results) of the work in North Vietnam is the translation of P.I. Boriskovsky's book (1968-71) *Pervobytnoe proshloe V'etnama* (Vietnam in Primeval Times).

I would like to complete this paper with a brief résumé of my hypothesized new reconstruction of the prehistory of Southeast Asia. I have divided this prehistory and history into five stages and periods. The first stage is the Lithic stage having to do with hunting and gathering peoples. The other four are periods rather than stages and each is based on a different conception of content. These are the Lignic, Crystallitic, Extensionistic, and Conflicting Empire.

The Lithic stage begins with the first presence of man in Southeast Asia and with the new potassium argon dates of the Djetis fauna in Indonesia, we know this goes back to at least 1,900,000 years ago. The earliest tools of early man in Southeast Asia are probably from the Middle Pleistocene though it has been hypothesized that the chopper-chopping tool tradition represented in the Tampanian culture of Malaya comes from the Lower Pleistocene rather than the middle Pleistocene. We know virtually nothing about the life of the people at this time but we can assume that they were living in small family groups and were dependent on hunting and gathering.

I have suggested that the Lignic period started about 42,000 years ago with the beginning of the final mild stadial of the last great glaciation. I equate the beginning of the Lignic with the beginning of the Hoabinhian culture, and, in particular, the Early Hoabinhian which I suggest developed directly out of the chopper-chopping tool tradition of Southeast Asia. During the Lignic I hypothesized a development of wooden tools. I suggest that at some time during this period the bow and arrow and possibly the blow pipe were invented in Southeast Asia and possibly the pellet bow as well. Making of baskets and traps was developed and possibly the beginning of cordage manufacture. Traps were used both for trapping animals and/or trapping fish. The evidence for this is the food remains found in the Early Hoabinhian sites of small animals, fish, and shellfish which animals lived in the treetops, in the

lower levels of the trees, on the ground, and in the water. It would have been extremely difficult to have caught or killed these animals by hand or simply by throwing stones at them.

The Crystallitic period is a direct continuation of the Lignic period. During this period we see the beginnings of distinct cultures. During the Lignic, and the Lithic before it, the cultures were generalized and very similar over all Southeast Asia, at least as far as their material culture is concerned. The Crystallitic culture I begin at about 22,500 years ago with the end of the final warm stadial of the final glaciation. This begins with the Middle Hoabinhian and is signified by the first polishing and grinding of stone tools. This was done on some of the typical Early Hoabinhian tools involving only the working end or working edge of these tools. The earliest dated of any of these tools comes from a site in northern Australia where these tools have been dated to about 20,000 years ago. The one edge ground stone tool in Niah Cave at around 8,000 B.C. indicates its presence in Island Southeast Asia, which means that the technique for making this kind of tool must have come into the area before the end of the Pleistocene, unless it was independently invented. During this period the peoples of Southeast Asia were becoming better and better acquainted with the plants and animals on which their life depended. The early portion of this period I would suggest was a period of incipient horticulture and very possibly by as early as 15,000 B.C. the people of some of these cultures were on the verge of domesticating plants and inventing pottery. I have proposed that we consider a Hoabinhian site with either one domesticated plant or animal or pottery as belonging to the Late Hoabinhian. It would not surprise me if one of these requirements had come about by 15,000 B.C.

The Extensionistic period is a time of movement and changing cultures. The population has filled the first successful niche of Hoabinhian hunting, gathering, and incipient horticultural people to overflowing. This niche was the small upland valleys in association with limestone formations. It is possible that a closely related development was occurring along the seacoast in the Late Pleistocene; and, if so, the important area for this development would probably have been along the shores of the Sunda Shelf which, with the melting of the glaciers, were drowned out by the rising sea levels and are now on the bottom of the South China Sea. With the rising of the sea level and the overpopulation of the upland valleys, people had to move into new areas which

they had not exploited to any extent before this time. The people along the seacoast started moving along the rivers, first at the river mouths along the South China coast and on the forming islands and the new coastline of Southeast Asia, and gradually back in along the river banks themselves. While the fish and salt water, brackish, or fresh water shellfish were of major importance to these peoples, they were also hunting animals and using domesticated plants as a source of food. The people of the mountain valleys were probably moving out on to hilly slopes of the mountains and developing dry land farming as an increasingly important source of their food because with the growing population it was more and more difficult to live primarily by the hunting and gathering of wild products.

By 4,000 B.C. the outrigger canoe had been invented by the river people and Southeast Asians started moving by water. This enabled them to move relatively easily and fairly rapidly up and down the rivers so that they were able to move up the major rivers back into the interior, finding new territories and coming in close contact and probably intermingling and intermarrying with the mountain people coming down on to the hilly flanks of their mountains. When they started venturing out to sea I have suggested that some of them were driven by storms and the Japanese current up to the southern islands of Japan, bringing to Japan some of the elements of Southeast Asian culture that are known in Japanese culture. They started moving out into the Philippines and south. I have suggested that this first movement by sea of Southeast Asians came from the east coast of Southeast Asia, primarily from Annam and South China. These people spread southeast and east through the Indonesian islands and east into Melanesia. Ultimately this spread included all of the islands of the Pacific and, moving towards the west, brought Southeast Asians into contact with the east coast of India and ultimately around to the east coast of Africa and to the settlement of Madagascar probably around the beginning of the present era 2,000 years ago.

On the mainland, probably around 6,000 B.C., dry rice agriculture had been developed and *Bos indicus* domesticated. It is possible that the pig had been domesticated earlier as some of the pig bones found in Spirit Cave give indications of domestication. I would hypothesize that by 5,000 B.C. the heat working of copper was underway and probably early in the fourth millennium B.C. bronze was invented somewhere in Southeast

Asia. It is uncertain when or where iron working started in Southeast Asia but one site in Thailand has a thermoluminescent date for iron at around 700 B.C. By the first millennium B.C. there were quite a number of fairly large villages in Southeast Asia and it is possible that there was a beginning of urbanization in the area. If, as we get further data, we find out that this is actually what happened, we will have to make a new period to inject between the Extensionistic and the period of Conflicting Empires. For the present, however, I will continue to consider the invention or diffusion of iron working into Southeast Asia and the possible village-town development as a distinct subdivision of the late Extensionistic period.

The Conflicting Empire period continues to be prehistoric in many outlying areas in Southeast Asia and certainly in the Pacific. It is, however, a period of proto-history at its beginning, and full history in many areas in Southeast Asia. For the most part, the empires that developed and were in conflict with each other were the results of the outside influence coming and overlaying the cultures of Southeast Asia. This was the beginning of the centralization of power and political organization which heretofore have been so foreign to most of Southeast Asia. From the point of view of a prehistoric archaeologist, the Conflicting Empire period has continued up until the Second World War and there is little difference between the Conflicting Empires of the European colonial empires and those of the earlier empires. The effect of the aristocracy on the mass of the Southeast Asian population was little different whether it was based on the European model of the 17th, 18th, and 19th centuries or the Indian or Chinese models of the earlier centuries. The styles and philosophy of these different aristocracies were naturally very different but they had little close contact to the styles of the great mass of the common people of Southeast Asia and little more effect on their life other than to require taxes of various kinds and to indulge in organized warfare (Solheim 1971b).

A major and true migration was the first major event of this period. This was made up of Malayo-Polynesian speaking peoples from southeastern China. These people made pottery with geometric, impressed patterns. They started moving out at about 500 B.C., possibly under increasing pressure from the Chinese to the north. The first evidence of their movement is in Taiwan where the geometric pottery started to

appear at about 500 B.C. Shortly thereafter some of these people moved north to southern Korea and Japan, bringing with them paddy rice culture and the custom of the burial of some of their dead in large earthenware jars. They also started moving south along the west coasts of Luzon and Palawan in the Philippines and of Borneo. As they moved some of them settled and intermarried with local peoples while others continued further south. When they reached the western tip of Borneo some of these people moved east and some west. As they moved, both the people and their cultures gradually changed as a result of both genetic and cultural additions from their contacts with the peoples who were there before them. Those peoples moving east from Borneo fanned out over eastern Indonesia, some of them returning towards the north into the southern Philippines. Those moving west continued into Sumatra and from there, about 1,000 years ago, into southern Malaya, continuing north until they came into contact with Thai peoples moving south. These peoples were the ancestors (in varying combination with people already there) of the present day Malay groups.

Sites excavated in central and northeastern Thailand which date from the end of the Extensionistic period and the first millennium of the Conflicting Empire, before they became incorporated in one or another of these empires, show general similarities in their life and economy but show distinct styles of their own. For over a thousand years during this time numerous sites that were within a radius of about 150 miles retained their own distinct style of pottery. Apparently these people were not warlike or power conscious in their outlook and were willing to let other people be different from them even though they were in fairly close contact with each other. Individual independence and community awareness with intense family loyalty were the primary social forces. There is good evidence for head hunting at Non Nok Tha, but then as now, this was apparently a family affair rather than the business of the community. To my knowledge, this sort of a situation is not known anywhere else in the world and I personally feel that this is the true Southeast Asian style of life and this style and philosophy of independent villages with a willingness to live and let live for neighboring different cultures has much to offer to the present day world.

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