

## NEW PERSPECTIVES ON INDO-MALAYSIAN PREHISTORY

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The following paper is extracted from a presidential address given to Section 25A (Archaeology) at the 53rd ANZAAS Congress, held in Perth, Western Australia, in May 1983. The text has not been changed from the cyclostyled version which was originally distributed at the Congress, although I have deleted the general introductory statement.

### THE SHAPE OF INDO-MALAYSIAN PREHISTORY

In the time allowed for a short address I cannot hope to discuss all the major themes in Asian prehistory which from time to time attract my attention. Instead, I will concentrate on the area which has interested me most during the past ten years - Island Southeast Asia (or the Indo-Malaysian archipelago) - through a time-span is taken up by the expansion of the Austronesian-speaking peoples, who today number some 220 million souls in perhaps 100 or more major ethnolinguistic groups. The story here is not just an archaeological record, but involves very careful consideration of linguistic, biological and anthropological data, as well as results from the natural and earth sciences. At present I am completing a book on Indo-Malaysian prehistory, a much-revised and expanded version of a part of my Man's conquest of the Pacific which was published in 1978. Since then I have written three general "updates" of my views (1980a; 1980b; 1983a), but here I wish only to be discursive and to give impressions.

Some of the major questions which attract my interest in this archipelago are as follows:

- (1) The time and space developmental histories of major ethnolinguistic groups - the Austronesians, and more peripherally the Aslian peoples of Malaya and the Papuans of New Guinea.
- (2) Major aspects of the interrelationships between the main ethnolinguistic groups - for instance, the whole question of biological and ethnolinguistic "diversity" in eastern Indonesia and Melanesia is, to my mind, very closely related to the nature of two-way relationships between long-resident Papuan groups and expanding Austronesian populations.
- (3) Major aspects of prehistoric developments in technology and economy - many questions arise here, such as the role of the hitherto ignored but clearly dramatic change to

Holocene climatic conditions; the patterning of different stone tool industries; the origins of agriculture; the significance of cereal agriculture as an initial trigger for Austronesian expansion; and the later equatorial economic adaptations of the Austronesians.

I have views on all these questions, which I will now try to summarize.

Firstly, it is very important to set out some fundamental facts about the Indo-Malaysian archipelago in terms of its geographical shape, its climates and, since I will be considering agricultural populations, its soils. I always view geographical shape in terms of an upside-down T (as seen looking north from Australia). The north-south stem of the T is formed by Taiwan and the Philippines, and it meets the west-east bar in Sulawesi. This bar is in fact double - the great equatorial islands of Sumatra, the Malay Peninsula, Borneo and Sulawesi form one bar which ends in the Moluccas; and the much thinner Sunda chain from Java eastwards forms the other. Both converge towards the east to meet in New Guinea.

In terms of climate and soils we have a most fortunate concurrence which I believe is absolutely crucial in considering all prehistoric periods, right back to Homo erectus. The equatorial islands are in general constantly humid, lack dry seasons, and support dense evergreen equatorial forest on infertile leached soils. The intermediate tropical islands (i.e. parts of the Philippines and the central-eastern Sundas) tend to have long dry seasons, fertile volcanic soils in many places (especially Java and Bali), and support a more open forest and even grasslands in very dry areas (I am referring to natural vegetation here). Beyond the intermediate tropical zone lie the subtropics of southern China and Australia.

It seems to me that throughout human prehistory in Southeast Asia the intermediate tropics have always been much more significant than the equatorial zone (of the subtropics of the northern hemisphere and their central role in agricultural origins I will speak later). Certainly, in terms of modern population distribution and agricultural potential the distinction is crystal clear - compare the 80 million inhabitants of Java with the 5 million of much larger Indonesian Borneo. Since almost all Austronesians have been agriculturalists during the 5000 years of their existence in Island Southeast Asia this observation is highly significant. But I think it also applies to the remoter past. Ever-wet equatorial rainforest is not a favourable environment for hunter-gatherers, although they can survive there in small bands. I suspect, although I find it hard to prove, that the more open monsoonal forests and parklands of parts of the Philippines and the

Sundas from Java eastwards would have supported in pre-agricultural times (and especially in the late Pleistocene) a greater mammal biomass than the equatorial forests, although faunal diminution across Huxley's Line may have reduced the differences in eastern Indonesia. Despite the rather special conditions for fossilization in Java, it is perhaps no coincidence that the remains of Homo erectus have been found in several places there, and yet remain unrecorded in Sumatra and Borneo - even the rather meagre evidence of stone tools seems to be in support of this distribution.

1. Pre-Austronesian (ca. 20,000-5000 B.P.)

Let us first consider the human situation in the Indo-Malaysian archipelago at about 18,000 years ago - at the peak of the last glaciation. Firstly, sea levels were lower, and the two continental shelves of Sunda and Sahul were exposed, with the Wallacean islands between. The latter, of course, were never land-bridged. World climates were generally cooler and drier than they are now, and although we know little about climatic conditions in the Indo-Malaysian equatorial belt - opinions differ on the magnitude of any differences from present conditions which might have existed - we do know that the intermediate tropical belts were drier and probably supported a more open vegetation than they do now. In fact, hunting and gathering may have been a very flourishing lifestyle in those regions at that time; in the north with mobile cognatic bands of Negritos and related groups, and in the south with groups related to the peoples of New Guinea and Australia, with strongly patrilineal group organizations and sharp distinctions between male and female ritual statuses. I suspect that the equatorial region was only very thinly inhabited, except in favourable coastal, lake-edge or riverine situations.

Let us now consider the situation about 8000 years ago, towards the end of the late glacial climatic amelioration, and at a time when the sea had almost reached its present level. By this time the archipelago had taken on its familiar shape of many islands, and climates were a little warmer and wetter than at 18,000 years ago; the equatorial rainforest may have expanded slightly, and the creation of new water barriers combined with human predation may have caused a limited number of mammal species to become extinct. Evidence is a little unclear on this, as it is in Australia, but two important species which do disappear at about this time are the Javan rhino in Borneo and the elephant in Java.

From my reading of a range of recent articles on palaeoclimatology, in which a variety of information sources (oxygen isotopes, carbon-13, ocean salinity, pollen and past sea-levels) have been used, I have little choice but to believe that the climatic amelioration which occurred between about 14,000 and 8000 years ago was of an order of magnitude far in excess of anything

which had occurred in the previous 100,000 years (see Kukla 1981; Fig. 4 for illustration). I think we need to sit back and allow the significance of this observation to sink in.

In recent years I have come more and more to doubt the idea that early Holocene populations in various parts of the world developed agricultural techniques purely by chance, with no common factor of causation. Of course, diffusion in its most simplistic form is not the answer. But I now believe that the dramatic nature of this warming of the earth, and of the spread of forests and cereals from their more restricted glacial distributions, gave unparalleled advantages to certain populations in a specific latitudinal belt. This belt lies between approximately 20° and 40° north, and it includes the homes of cereal domestication in western Asia (wheat, barley), central China (some millets), southern China and northern Southeast Asia (rice), and highland Mexico (maize). It now seems to me, as it has seemed to many before me, that agricultural developments based on cereal cultivation in these regions led to fundamental changes in the nature of human society; they have ultimately transformed the face of the earth.

Island Southeast Asia is, of course, a long way below this latitudinal belt, and has clearly not contributed to the origins of cereal cultivation. But what of those hoary old theories that people here were busily cultivating tubers and fruits while others were still hunting and gathering everywhere else? I must say now, after some years of considering this question, that I can see no indication whatsoever that such a stage existed anywhere in Southeast Asia (for New Guinea see below). The basic techniques of agriculture (or horticulture if we need to split hairs) were introduced by Austronesian-speakers from the cereal belt far to the north, after 5000 B.P.

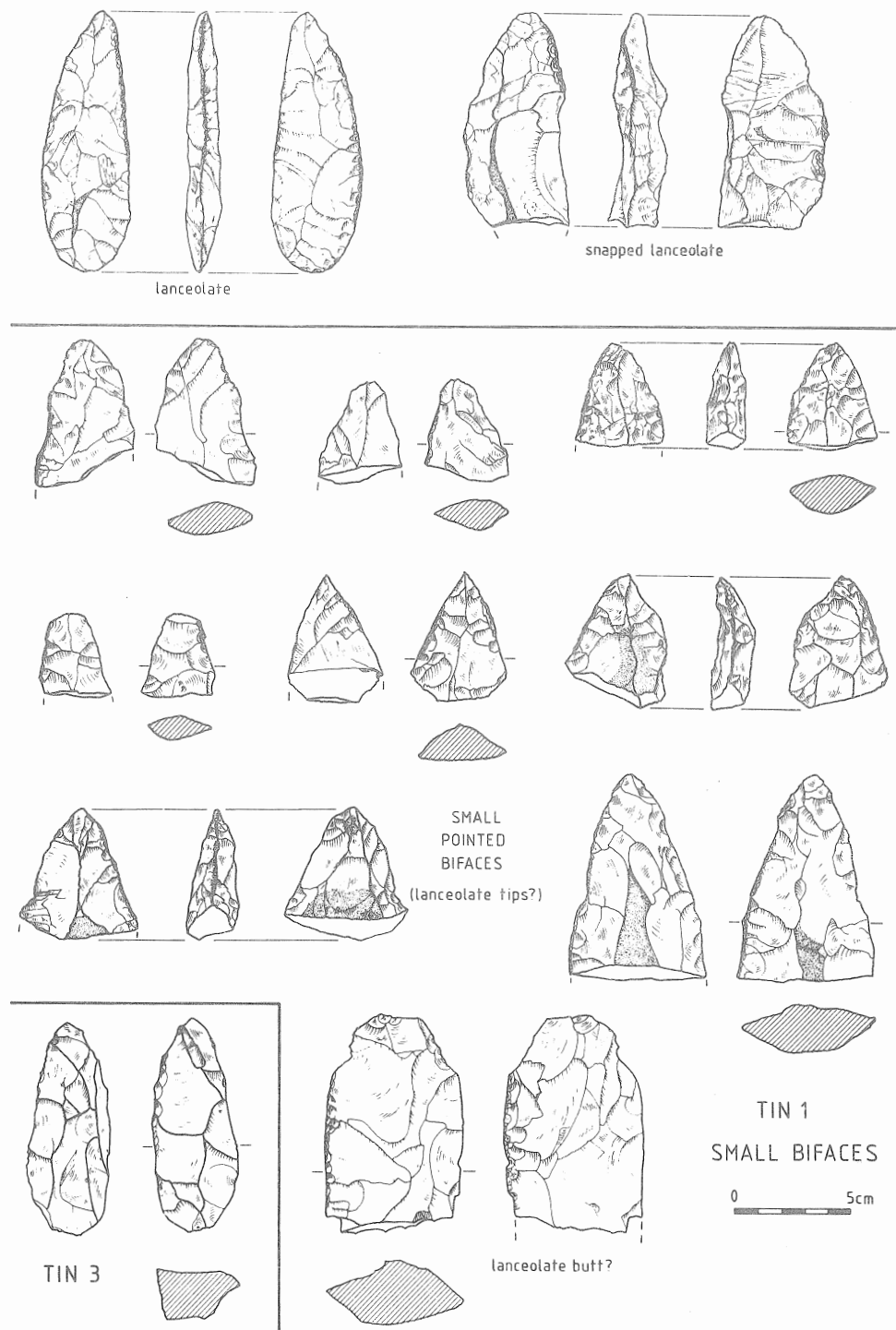
I know that this kind of statement is guaranteed to generate criticism, but my viewpoint is basically this. Of course forest hunters and collectors have always re-planted tuber tops, exploited fruits, dropped seeds around their campsites, and so forth. I am also sure that many of the major plants now domesticated which are of Indo-Malaysian or Oceanic origin - bananas, coconuts, breadfruit, varieties of yams and aroids - have been intensively collected since humans have inhabited the region. But I really don't believe that these practices have much to do with a systematic seasonal round of forest clearance, planting, weeding, and harvesting on an annual basis. I strongly suspect that, as far as Island Southeast Asia is concerned (and not necessarily New Guinea), this economic mode has its origins in the regions of seasonal cereal cultivation, and that the local tubers and fruits were adopted into the system, and the cereals dropped out of the system, as Austronesians expanded towards the Pacific Islands.

I wish to make another point. In the past, I and many other prehistorians have adopted the idea, originally derived from the writings of Boserup, that the post-glacial sea-level rise in Southeast Asia caused demographic crowding and hence stimulated agricultural developments. I no longer regard this view as having any real validity. For one thing, the coasts of the Sunda continent would have been so low-lying and swampy that they could only have supported very small populations willing to survive on shellfish and other products of a mangrove environment. Furthermore, and perhaps more importantly, as the sea-level rose the extent of coastline eventually increased rather than decreased. It may be that the drowning of the great Sunda continent took place totally unnoticed by the many generations of inhabitants who "witnessed" the event.

The basic view which I am adopting here is that the late glacial climatic amelioration, despite its importance in certain latitudes, had relatively little impact on human society in Island Southeast Asia, although I do not deny that environmental changes here did change the whole geographical face of the archipelago. The archaeological evidence presents certain faces which do not really contradict this view - the Hoabinhian in Malaya lasts to about 3000 years ago in the interior, and in northern Borneo an industry of horsehoof and discoid cores, rather amorphous flakes and scrapers, and occasional grindstones and bone tools continues with apparently little change from the late Pleistocene until the period of Austronesian settlement. In fact, Borneo, the Philippines and some parts of eastern Indonesia have now produced many assemblages from late Pleistocene and early Holocene contexts which seem to be quite closely related to the "core and scraper" industries of Australia and New Guinea.

However, it is always dangerous to over-generalize. I am saying that there are no apparent signs of any change in a basic hunting and gathering economy in the Indo-Malaysian archipelago until perhaps 5000 years ago or later, and I am also saying that some aspects of stone tool technology express long-term stability. But there are at least three pieces of evidence which, in different ways, serve to challenge our impressions of uniformity. Firstly, I will refer to the research by my colleague Jack Golson and his team in the Wahgi valley in the Papua New Guinea Highlands. Here, it does appear that agricultural techniques developed independently, after about 9000 years ago, in the rather unique environmental conditions of the highlands which, incidentally, have no real analogues in the islands of Southeast Asia. I think this evidence throws a whole new light on Papuan prehistory, and I will return to this matter later on.

Secondly, two recent discoveries from the period between 20,000 and 30,000 years ago challenge the apparent stability of the stone tool traditions of the Indo-Malaysian archipelago. Ian Glover



**Figure 1.** Bifacial Lanceolates from Lake Tingkayu.

(1981) has reported an industry of elongated flakes struck with prepared striking platforms from the cave of Leang Burung 2 in southern Sulawesi - an industry which has certain affinities with the Old World Levalloisian technique. A Sabah Museum team (Bellwood 1983b) has also reported a quite unique industry of bifacially-flaked lanceolate knives (Fig. 1) from a site on the shoreline of a 100 km<sup>2</sup> late Pleistocene lake (Lake Tingkayu) in eastern Sabah; this industry, which is associated with a flake and not a blade component, is believed to date to about 20,000 years ago.\* It has certain parallels in Japan and north-eastern Asia, but I am unwilling to be specific about these at present.

Thirdly, we have the well-known occurrence of blade-like flake industries after perhaps 7000 years ago in the Philippines, Sulawesi, and possibly Java, with an interesting elaboration of backed flakes and microliths in the Toalian of southern Sulawesi. I am now fairly certain that industries of this type do not occur in Borneo or Sundaland generally (with the possible exception of Java), and they also appear to be absent in far eastern Indonesia and New Guinea. I would be willing, given their apparent restriction to a north-south distribution through Sulawesi and the Philippines, to consider a case for diffusion of technique from Japan. However, I hesitate to enter the debate about the origin of the "small-tool" industries of Australia - I am aware that there is now a trend towards regarding them as indigenous creations, although I should point out that Gollan (1983) suggests that the dingo may have an Indian origin, and also that the southern and eastern states of India (Kerala, Tamil Nadu, Andhra Pradesh and Orissa) have so-called "non-geometric" microlithic industries which I feel are morphologically quite close to some Australian industries. Unfortunately, the Indian Ocean is rather wide, and microlithic industries do not occur on the mainland of Southeast Asia or in Sumatra, so I am still inclined to think that the closer central Indonesian occurrences may be more relevant for those who wish to make a case for introduction.

## 2. Austronesian expansion, after 5000 B.P.

The Indo-Malaysian archipelago at 5000 years ago appears, therefore, to have been occupied by hunting and gathering societies with fairly uniform flake industries (excluding the Toalian and a few other more northerly pockets), and with population densities perhaps highest in the areas with long dry seasons outside the equatorial zone. Between 5000 and 3000 years ago the major phenomenon of Austronesian expansion changed the whole face of the region.

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\* See Addendum.

I now need to make some generalizations for which I can produce detailed support, but not in the context of this short paper. Firstly, I am not prepared to accept that the predominantly Southern Mongoloid inhabitants of Island Southeast Asia have evolved within that region, apart from the micro-evolution which has occurred since their expansion took place. Secondly, I accept the results of an enormous quantity of linguistic research which suggests that early Austronesians were agriculturalists with cereal (rice and millet) cultivation, canoes, timber houses, pottery, domestic animals (pigs, dogs and possibly chickens), and, in short, many of the features of an agricultural neolithic lifestyle (see Blust 1976; Foley 1980 for brief statements). The Austronesian languages have their origins in the region of southern China and Taiwan, and I refuse to believe that they have spread through the Indo-Malaysian archipelago by anything short of a major expansion of their speakers accompanied by assimilation of pre-existing non-Austronesian groups.

The combined results of many years of research by comparative linguists (Kern, Dempwolff, Haudricourt, Benedict, Blust and many others) now suggests that the expansion of Austronesian speakers took place from Taiwan, southwards through the Philippines, and then westwards to Malaya and eastwards to Polynesia. Without going into all the details of proto-languages and "family-trees" I will just make two further points; there is not the slightest degree of evidence to suggest that Austronesian expansion took place through Malaya or from the coasts of Vietnam, and the lexicostatistical classification of Dyen, which Melanesianists have often adopted with great gusto, is in part a classification of retention rates in vocabulary from Proto-Austronesian, and not truly a genetic classification. These retention rates (or rates of vocabulary change) are known to vary so much from region to region that overall lexicostatistical classifications and the glottochronological dates derived from them give results which are way out of line with all other sources of data on Austronesian prehistory. The linguistic diversity in Melanesia has arisen owing to very rapid rates of change caused by influence and assimilation between small-scale Papuan and Austronesian-speaking groups over a period of some 3500 years. The actual date of Austronesian expansion into western Melanesia now appears to be only about 4000 years ago or less, and not the dates in excess of 5000 years which others, including myself, have accepted in the past. The spread and break-up of Proto-Oceanic (Pawley 1981) is almost certainly to be associated with nothing less than the expansion of the Lapita culture through Melanesia into western Polynesia.

I am of course hinting here at linguistic models which many prehistorians may find exasperating and very hard to equate with the archaeological record. It is my belief that, as far as the prehistory of the Austronesian-speaking peoples is concerned, the



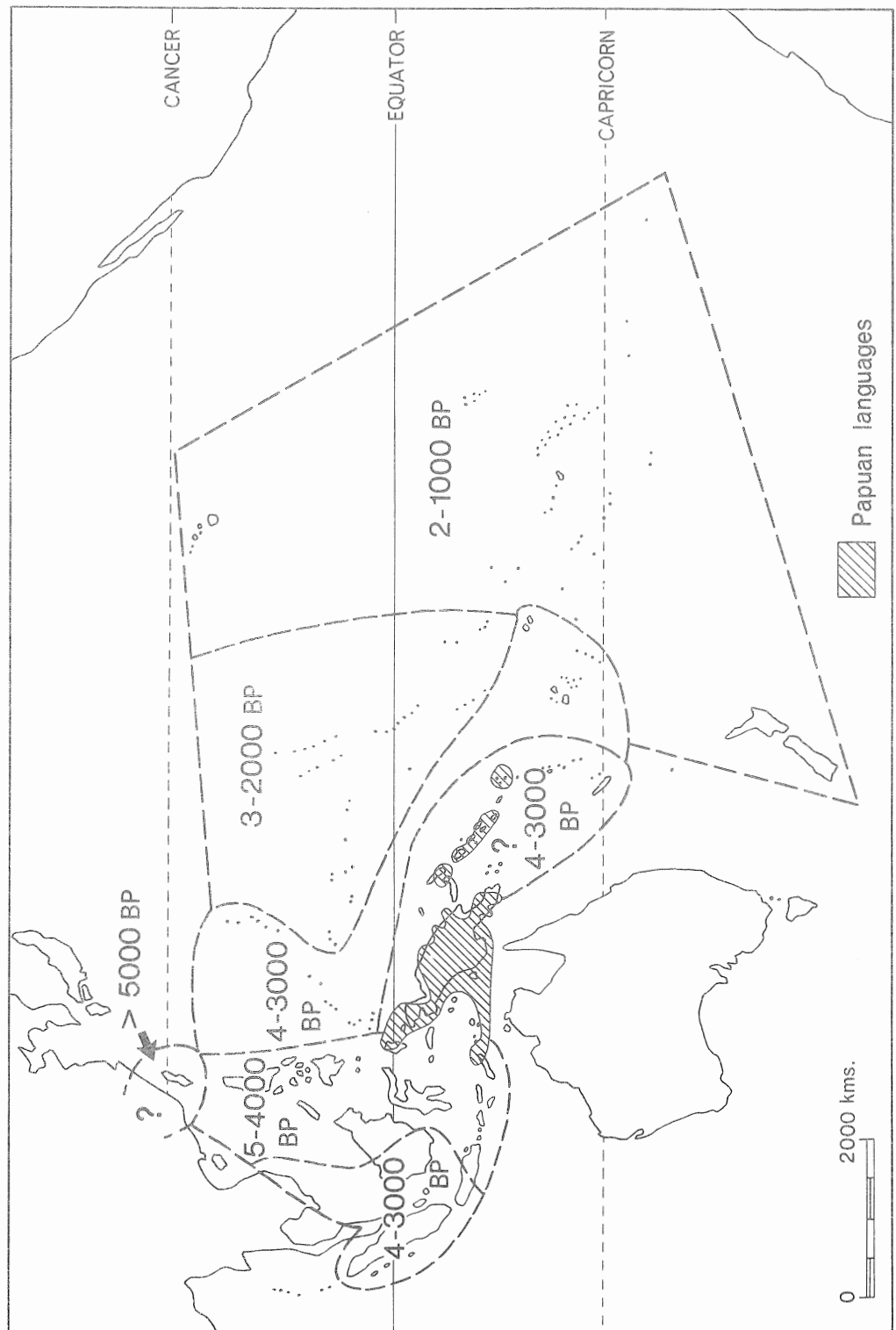


Figure 2. The Expansion of Austronesian Settlement.

ANU 1983

linguistic models are very much more important than those derived from archaeology. However, it is now very clear to me that only archaeology can provide the dates, and here we must accept the view of linguists (e.g. Blust 1976:24; Pawley 1981:287) that many terms for items connected with agriculture, seafaring, fishing, and also pottery imply, by the regularities of their sound changes, continuous traditions from the period of Proto-Austronesian.

If we accept this linguistic view of continuity, then we are perhaps entitled to equate Austronesian expansion with the archaeological record of pottery-using in Island Southeast Asia - a record which shows considerable homogeneity and a fairly regular decrease in antiquity of first appearance from north to south (I find the idea that pottery could have been invented independently by non-Austronesian groups of forest hunter-gatherers in the archipelago rather untenable). Thus, by 5500 years ago expansion had taken place from the rice cultures of southern China into Taiwan, by 5000 years ago it had continued into the Philippines, and central Indonesia was perhaps well-settled by 4000 years ago. By 3000 years ago the expansion had reached Malaya at one extreme, Samoa at the other, and by 1500 years ago Madagascar and Easter Island - 210 degrees of longitude apart (Fig. 2).

So here I am inferring, as I have often done before, a major human expansion which has changed the ethnic face of a very large part of the earth. Note here that I am discussing an expansion which took 4000 years to reach completion; I am not talking about ferocious conquering migrants sweeping all before them. The Austronesian story was partially one of assimilation of other cultures, and, in Melanesia, partially one of being assimilated. To gain a real understanding of Austronesian expansion we need to examine three geographical divisions separately - Island Southeast Asia, Melanesia, and the peripheral regions of Madagascar, Micronesia and Polynesia. It is not my intention here to discuss the latter areas, but I still have a little say about the first two.

I have maintained for some time (Bellwood 1980) that the source-region for Austronesian expansion lies amongst the rice-cultivating neolithic societies of southern China, which is where both the linguistic and archaeological trails lead us. The expansion was slow and piecemeal, and an initial source through population growth and a need for new land seems to me to be a perfectly adequate explanation for the first millennium or so. As groups expanded so they developed better methods of canoe construction and navigation, and since they almost certainly had a stratified form of society (according to linguistic reconstructions) there would perhaps be every reason for younger sons of chiefs, restricted in their inheritances at home, to attempt to found villages and chiefly lineages in newly-cleared areas of land. Much

of the resultant expansion involved co-existence with aboriginal hunter-gatherers, many of whom have survived to this day as the Negritos of the Philippines and later-settled Malaya.

The initial southward expansion from the sub-tropical regions with their monsoonal climatic regimes into the ever-wet equatorial islands also caused fundamental adaptations in the economies of Austronesian societies. Cereals such as rice and millet are annual crops adapted to variations in day-length, sunshine intensity and rainfall in the latitudes of their origin. Rice, for instance, grows best in sub-tropical climates with high sunshine duration and low cloud-cover. In equatorial regions these cereals, while not totally unsuited, would have lost dominance in the face of the more suitable native tubers and fruits of the region. Furthermore, forest cutting and burning, to say nothing of weed control, is not at all easy in a dense, massive and wet equatorial rainforest without metal tools, as the recent history of Iban expansion in Sarawak may perhaps tell us. Indeed, some Austronesian societies of these regions, such as the Kubu of Sumatra, the Penan of Borneo and the Tasaday of Mindanao have clearly dropped a former agricultural lifestyle in favour of hunting and gathering. As a result of these equatorial difficulties, the first Austronesian settlers to reach Melanesia appear to have dropped the growing of rice altogether, and to have turned completely to the economy of vegetative reproduction of fruits and tubers characteristic of the Pacific Islands. In addition, if populations in New Guinea and surrounding regions were already practising their own forms of tuber and fruit cultivation, as the emerging record seems to suggest, then we clearly have scope for borrowing as well as ecological adaptation.

But economy was not the only aspect of Austronesian life to have changed deeply as expansion progressed. In the Philippines and in the equatorial islands such as Borneo and Sulawesi it appears that loosely stratified forms of cognatic social organization, often without corporate land-owning descent groups greater in size than the nuclear family, were able to establish themselves without undue influence from any populations there before. But in south-eastern Indonesia and Melanesia (I am not so certain about Sumatra and Java) the story was very different. Large Papuan-speaking populations existed here, possibly with pre-existing agricultural economies and certainly with social structures centred on corporate unilineal (presumably patrilineal) descent groups focussed on localized lineages. As anyone who knows the ethnography of these regions will realize, the assimilatory process between Austronesian and Papuan was very much a two-way phenomenon, and in Melanesia the Austronesian "energy" can be said to have virtually petered out, except amongst those who reached the uninhabited archipelagoes beyond Vanuatu. The great significance of this long-lived and stable group of Papuan-speaking societies in the border regions

between Indonesia and remote Oceania has perhaps not yet been realized to its full due.

I am fully aware that in this paper I have been presenting some wide-ranging views which have wide implications for prehistoric interpretation in what is, after all, a very large area of Southeast Asia and the western Pacific. I am always happy to be proven to be wrong on some topics if new data so demand, and I am happy to modify my ideas as necessary. Perhaps I can finish by mentioning three rather important lacunae in the prehistory of the region which we need to examine with some urgency. We do need to find out much more about the prehistory of rice cultivation in the region between the Ganga valley and southern coastal China. We do need (for reasons not really touched on in this paper) to know a lot more about the prehistory of Java and Sumatra. And finally, we must find out more about the extent of the agricultural knowledge of people in the New Guinea region prior to Austronesian settlement.

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#### ADDENDUM (August 1983)

A recent radiocarbon result provided by the ANU Laboratory suggests that the Tingkayu industry from Sabah may be closer to 30,000 years old. The sample is of charcoal burnt beneath a lava flow near Tingkayu village which flowed across the surface of the presumed lake sediments at a time when they were clearly dry and supporting vegetation. The date is  $28,300 \pm 750$  (ANU 3444 - coarse fraction), and geomorphic information suggests that the lake had already drained away by this time. The full argument is being prepared for publication.