7. BEYOND THE AUSTRONESIAN HOMELAND: THE AUSTRIC HYPOTHESIS AND ITS IMPLICATIONS FOR ARCHAEOLOGY

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Introduction.

When it comes to questions of distant genetic relationship in linguistics I must confess that I have always come down very decidedly on the side of skepticism. To some extent this orientation may be a prejudice instilled by training, a point made repeatedly by outraged long-rangers such as Harold Fleming (the flamboyant and somewhat self-persecuted editor of *Mother Tongue).* I was taught as a student that the only reliable basis for demonstrating the common origin of languages is the complete elimination of chance and borrowing as plausible explanations for observed similarity. I was also taught that the best evidence that can be marshaled for this purpose is lexical, since the generally arbitrary linking of sound and meaning in the lexicon can be seen as a mass of *independent* historical events not likely to be duplicated by convergent development, and in the case of basic vocabulary not likely to be acquired by contact.

The enduring basis of my skepticism, however, has been empirical, not ideological. Despite a general agnosticism toward all claims of distant genetic relationship in linguistics I have consistently maintained a lively respect for observation, and in particular for observations that appear anomalous in the light of prevailing theory. The problem that I have had with such theories quite simply is the quality of the arguments offered in support of them. Those that I am in a position to judge professionally, that is, those theories which involve the Austronesian (AN) languages, in general have a rather dismal history of misrepresenting the data, or at the very least of stretching meanings beyond the limits of credibility, of bizarre leaps of faith based on nothing better than random similarities, or of wild distortions of the Comparative Method intended to manufacture sound correspondences

where none in fact exist. And, of course, these theories have attempted to link AN with almost everything under the sun, from Indo-European (Humboldt 1836-39, Bopp 1840, Brandsteiter 1937), to Austroasiatic (Schmidt 1906), to Semitic (Macdonald 1907), to Japanese (van Hinloopen Labberton 1924, Kawamoto 1977 et seq., Benedict 1990), to Tai-Kadai (Benedict 1942, 1975, 1990), to Chinese (Sagart 1993, 1994), to various South American Indian languages (Rivet 1925, 1926), and to Beothuk of Newfoundland (Campbell 1892), among others perhaps best left unmentioned.

Probably the most sophisticated and certainly the most influential of these proposals in recent decades has been the Austro-Tai hypothesis of Paul Benedict.[1] Benedict (1942) presented enough evidence to support what might be described as a tantalizing argument for distant genetic relationship. One of the charms of this publication is its elegant restraint: a suggestive set of lexical similarities is presented and some tentative conclusions drawn. Where reconstructions are cited they are Austronesian (called "Indonesian") forms drawn from Dempwolff (1938), or less commonly, ancestral Tai reconstructions based on Benedict's own research. No attempt is made to reconstruct Proto-Austro-Tai, and near the end of his article Benedict maintains (597) that "most of the important lexical correspondences have been uncovered." The general tone of the paper is, I believe, accurately reflected by the following quotation (599), which refers to Thai, Kadai and "Indonesian" as established linguistic stocks:

> If we accept the view that these three linguistic stocks are genetically related, we must place the center of their dispersion somewhere in the South China area, the present home of the Kadai tribes, as well as the early home of the Thai peoples. On the basis of this distribution we can conclude, with a high degree of probability, that the proto-IN-speaking peoples migrated from the South China coast, perhaps via the island of Hainan, to Formosa on the north, the Philippines on the east, and Annam, Borneo, Java, Sumatra, and the Malay Peninsula on the south. The Cham and Malay linguistic areas, in southern Annam and the Malay Peninsula, respectively, surely are to be regarded as Indonesian enclaves on the Asiatic mainland, not as possible points of departure for the Indonesian migrations.

Following a lapse of a quarter of a century during which he practiced psychiatry for a living but continued to pursue linguistics as an absorbing avocation, Benedict returned to Austro-Tai with a vengeance in a series of publications which appeared in 1966 and 1967. The results of this work were brought together and supplemented in

Benedict (1975). What perhaps first strikes the reader who compares Benedict's 1975 book with his 1942 article is the remarkable difference in his approach to method in the two publications. Gone is the restraint of the early 1940s and in its place are discussions in a mode that might be called "argument by hyperbole." The following quotation, in which Benedict describes his return to the Austro-Tai question after a quarter of a century, is illustrative (1975: 2-3):

> His goals were extremely modest: to strengthen a point here or there, to come up with a few lexical correspondences previously not noted. He was totally unprepared for the mass of material which he uncovered, partly with the aid of new key factors which will be described. After all, he had already announced in the original paper his belief that "most of the important lexical correspondences have been uncovered," and he had seen no reason, over the years, for changing this view. What is more, his colleagues appear to have believed him, since virtually no new comparative material has been brought forward to this time. It would appear that this unfortunate statement, which surely must be ranked with the most egregious overstatements of our times, contributed to a veritable standstill in this field.

To anyone seriously interested in the question of distant genetic relationship in Southeast Asia Benedict's "new key factors" turn out to be a major disappointment. Far from being metaphorical keys to unlock a previously unknown treasure trove of language history, these new procedures of reconstruction amount to an abandonment of the constraints that gave the Comparative Method its historical successes not only in the Indo-European field, but also in the Austronesian field as established by Dempwolff (1934-38). In fact Benedict's methods afford so much latitude to the imagination that almost any two language families could be "related" through the application of a similar approach to different data, and indeed, in his later work he extends the original hypothesis to include the Miao-Yao (now called Hmong-Mien) languages of eastern China. We need only consider his reconstruction for 'dog', in which PAN *asu (reflected with an unexplained initial /w/ in a handful of Formosan languages), Proto-Thai *hma, and Proto-Miao-Yao *klu are derived from PAT *[wa]kləwm[a]. There is no evidence of any kind for recurrent sound correspondences between these forms. But then, strictly speaking, the method does not require recurrent sound correspondences, since 1.bracketed elements can be included or omitted at one's convenience, 2. many PAT consonant clusters are unique, and 3. although Benedict pays lip service to the Comparative Method by including a table of so-called "Austro-Thai sound

correspondences" (p. 155), these often fail to agree with the actual correspondences which the diligent reader can independently extract from the proposed cognate sets. Finally, even when the correspondences listed in Benedict's table do agree with those that emerge from a study of the supporting evidence, they frequently show unexplained splits, as where PAN *b corresponds unpredictably to PTK *p, *b or *v in initial position, and to *b, *v and *w medially (Benedict 1975: 155).

What Benedict has done in this sample reconstruction (and many others like it) does not differ essentially from a proposal to combine say, English 'dog' and Tagalog *asó* in a reconstructed Proto-English-Tagalog *dogasu, the first three segments having been lost in Tagalog, and the last three in English. To most scholars this is the very model of methodological madness. To Benedict in the years since his return to this field in the mid 1960s, something very similar to it has been the key to what he regards as progress in understanding the linguistic prehistory of Southeast Asia.

Apart from his methodological idiosyncracies, Benedict is an extraordinary scholar, probably unmatched in the history of the field for the breadth and detail of his knowledge of Southeast Asian linguistics. Moreover, the Austro-Tai hypothesis is not in itself implausible. It is generally agreed that both the Austronesian and Tai-Kadai language families have probable homelands in southern China. But in attempting to inflate what initially was a controlled and carefully argued proposal with hundreds of fanciful etymologies, Benedict has damaged his credibility, and tainted the discussion of what could very well be a valid genetic relationship.

There is another proposal regarding the distant genetic relationship of languages in Southeast Asia which has a more venerable pedigree than Austro-Tai, and it is one that Benedict has consciously rejected in print (1976, 1993). I am referring to the Austric hypothesis, first formulated explicitly by the Austrian ethnologist and linguist Wilhelm Schmidt in his book *Die Mon-Khmer Völker* 1906). Schmidt's book advanced two theses: 1) that the Munda languages of Eastern India and the Mon-Khmer languages of mainland Southeast Asia constitute a single language family to which he gave the name "Austroasiatic" (AA) and 2) that the Malayo-Polynesian languages, rechristened "Austronesian," are related to Austroasiatic in a superfamily that he called "Austric." The first of these theses is now well established, and the existence of an AA language family is not in doubt. The second thesis has had a more checkered history. Although it was initially accepted by such influential Austronesianists as Kern and Brandstetter, it was ignored by Otto Dempwolff, whose work laid the foundations for the

comparative phonology of the Austronesian languages, and until fairly recently it has received only limited attention.

Schmidt's evidence for Austric consists of several formally similar affixes, and of a set of 215 appended lexical comparisons. The morphological evidence is particularly interesting, and at first sight compelling. The major syntactic relationships of many of the AN languages of Taiwan, the Philippines, western Indonesia, and a few other languages outside these areas such as Malagasy and Chamorro are expressed through an elaborate system of verbal affixes which generally work in conjunction with a smaller set of particles preposed to the noun phrase. These affixes include a variety of prefixes, the infixes *-um- and *-in-, and suffixes *-a, *-an, *-en and *-I. In some of the languages of the Philippines the infix *-um- (which typically marks inchoative and meteorological verbs, along with some other types of intransitives) and *-in- (which marks completive aspect, and is often used to form deverbal nominals) co-occur as *-inum- or *-umin-. Schmidt noted that Khmer, and to a lesser extent some other AA languages have infixes -m-, -n-, and that the double infix -mn- is found in Khmer and Nicobarese. He maintained further that the meanings of the infixes in the two families, though different, could plausibly be regarded as related.

Given the rarity of infixes in natural languages generally these agreements, down to specific details of co-occurrence, can hardly fail to be impressive. However, as Schmidt himself pointed out, in some AA languages almost any sonorous consonant may be infixed, including m, n, ñ, ŋ, l, and r. The striking superficial resemblance between the AN and AA infixes thus loses much of its force when the facts are viewed in a fuller comparative context.

Schmidt's lexical comparisons, although sometimes quite striking, fail to exhibit systematic phonological correspondences. Where the formal similarity is greatest he sometimes permits the meaning to vary considerably, as with Malay *lumut,* Tagalog *lúmot,* Mota *lumuta* 'moss', next to Khmer *lemuot* 'sticky, viscous, slippery'. Where the meaning is close or identical, the phonetic agreement — although still not based on recurrent sound correspondences— need not be close, as with Malay *ñamuk,* Munda *gamit* 'mosquito'. In a few cases Schmidt appears to have identified true cognates, but these are best explained as loans, as with the well-known AN form seen in Malay *danau*, Jarai *dənaw* next to *dönau* 'lake' in the Mon-Khmer language Bahnar, which borders Jarai on the north, and shows other evidence of borrowing from Jarai or other members of the Chamic branch of AN to which Jarai belongs.

Austric resurrected.

In short, throughout most of this century Schmidt's Austric hypothesis has been regarded as interesting, but inconclusive. Until quite recently this was my own assessment of the matter. However, my view of the Austric hypothesis has begun to change during the past year or two as a result of work by Lawrence A. Reid of the University of Hawaii (most notably Reid 1994b). Reid's background is principally in AN linguistics, and within this field his major area of concentration has been on the languages of the northern Philippines, with particular reference to morphological reconstruction and change. His interest in Austric was initially piqued by an unpublished description of Nancowry, an AA language spoken in the geographically isolated Nicobar Islands of the Andaman Sea. Perhaps in part because of their isolation the languages of the Nicobars have not experienced certain phonological mergers which are typical of mainland Mon-Khmer, where networks of contact and mutual influence have tended to create widely shared areal features. One of these changes is the centralization of penultimate vowels in what are called the 'presyllables' of 'sesquisyllabic' word forms. As a result of this change the vowel of an earlier infix which had the shape *-VC- became nondistinctive in the great majority of mainland Mon-Khmer languages, or dropped out entirely. This is not true, however, of Nicobarese, and the forms of the Nicobarese infixes corresponding to mainland Mon-Khmer -m- and -n- turn out to be -um- and -in-. This point may at first seem small, but in fact the preservation of earlier vowel contrasts in these two infixes is highly significant, as it greatly reduces the likelihood that the M-K and AN infixes resemble one another through chance. In general the Nancowry infix -um- has a causative function, although Reid argues that it sometimes marks inceptive verb forms, as in AN languages. Nancowry -in- and -an- are allomorphs of a noun-deriving infix which has functions that clearly overlap those of the similar infix *-in- in AN languages.

In addition, it had long been known that a causative prefix *pa- is widespread in AA as well as in AN languages. While this agreement is striking, it could conceivably be the result of a convergent innovation. What Reid has done in my view is to eliminate convincingly this alternative. In AN languages reflexes both of *pa- and of *ka causative are widespread. Moreover, in a number of disparate languages these affixes are combined as *paka-. Reid points out that not only Nicobarese, but also a number of mainland M-K languages including Mon, Khmer, Semai and Katu, have reflexes of a causative prefix *ka-, and that Katu combines the two as *paka-* to form double causatives. These

are only some of the more striking pieces of morphological evidence that Reid has found in support of Schmidt's Austric hypothesis. He carefully considers both chance and borrowing as possible explanations, and finds neither of these alternatives convincing. At this point I must say that my general skepticism about such proposals crumbled rapidly. Here at last was a claim about the external relationships of the AN languages that appeared to meet the same demands made of established language families: that chance and borrowing be convincingly eliminated as alternative explanations of observed similarity before advancing a hypothesis of genetic relationship.

The archaeological implications of Austric.

No matter how much one may try to prepare for them in advance, I suspect that fundamental changes of belief are always abrupt. The evidence needed to bring about a change of conviction reaches a certain critical mass, and one is pushed over the brink. It is a somewhat dizzying experience to suddenly see the world in a different perspective than the one made familiar through long habituation. But, as I said earlier, the issues at stake in such claims are ultimately empirical, not ideological, and it therefore struck me almost immediately that while the Austric hypothesis may help to explain what would otherwise appear to be very surprising similarities between unrelated languages, it also raises some very fundamental questions. The first of these concerns cognate vocabulary. If AA and AN are genetically related, why have scholars had so little success in demonstrating recurrent sound correspondences between them? I suppose that my answer to this question must be as follows: in the absence of any empirically supported argument to the contrary, I am willing to believe that a core of key grammatical morphemes could survive long enough for virtually all of the vocabulary of a proto-language to be lost through attrition. It is certainly not inherently implausible that lexical evidence could fall away over the millennia while a core of grammatically central affixes survives, albeit with evolving differences of function, and in fact there are known cases that suggest the same. One or more of the AN affixes *-um-, *-in-, *pa-, *ka-, *paka-, *-a and *-an, for example, are attested with the same or different functions in languages which sometimes share less than 10 percent of their basic vocabulary.[2]

The second question, in my view, is at least as interesting and challenging as the question of genetic relationship itself. If there was an Austric proto-language, where was it spoken? Reid does not address this issue at all, but it clearly is the question of greatest importance to the archaeologist.

The determination of linguistic homelands is ultimately based on the subgrouping of the languages compared, even when the evidence used relates to such lexical domains as terms for flora and fauna (Blust 1984/85). The basic principle for inferring probable centers of dispersal was first clearly enunciated by Sapir (1916), and formalized by Dyen (1956) under the name "principle of least moves." Briefly, it holds that the area of greatest diversity is the most likely center of origin, where "diversity" is understood in terms of the number of primary subgroups, not number of languages. Based on this principle, and on temporal extrapolations from radiocarbon dates which must be associated with ancestral AN-speaking communities in the central Pacific, I have maintained in a number of publications since the mid-1970s that PAN probably was spoken on or near the island of Taiwan in the period 6000-7000 BP. As it turns out, the radiocarbon profile for Neolithic cultures in island Southeast Asia fully supports this inference.[3]

Where, then, was the AA homeland? Diffloth (p.c.) has suggested, that it was in the Burma-Yunnan border region, perhaps in the middle Salween basin (Figure 5). There is almost universal agreement that the first split within AA separated the Munda languages of central and eastern India on the one hand from the M-K languages of mainland SEA on the other, and the Burma-Yunnan border region is roughly midway between these two geographical areas. In another publication (Blust 1994), I suggest that AA has the longest record of settlement in mainland SEA south of China, well antedating the expansion of Tibeto-Burman, Tai-Kadai, Austronesian and Hmong-Mien languages into this area, and I propose there that PAA was spoken in the Assam-Burma border region by 6000 BP or earlier. Discussions with Munda and Mon-Khmer specialists have since persuaded me that PAA probably was spoken as much as a millennium earlier than PAN.

If PAN was spoken in Taiwan by 6000-6500 BP, and PAA was spoken in upper Burma by perhaps 7500 BP, the question of an Austric homeland becomes highly intriguing, since about 1,200 lineal miles of rugged mountainous terrain plus the 100-mile wide Formosa Strait separate upper Burma from Taiwan. Is there any empirically motivated manner in which we can deal with such a problem? I would argue that there is, and that the soundest way to proceed is by small steps from the known to the unknown, making use of whatever linguistic and archaeo-logical evidence is available, and then where necessary extrapolating beyond the available evidence through adherence to principles of simplicity. For convenience I will divide my argument into a series of steps intended to bridge what I will call the "upper Burma-Taiwan gap."

STEP 1: From island to mainland. If we first consider the AN homeland, there is a natural direction in which research is likely to lead us. We know that in other parts of the world islands have been settled relatively late, and from adjacent continents.[4] Since the AN languages of Taiwan show considerably greater internal diversity than those of the Philippines a south-to-north movement from the Philippines to Taiwan does not appear to be warranted by the linguistic evidence. East of Taiwan is the open Pacific, and to the north only the Ryukyus and Japan. Even without considering the archaeological evidence, then, there seems to be no reasonable alternative to inferring an AN movement into Taiwan from the adjacent mainland of China. In past publications I have stated that the AN homeland appears to have been on or near the island of Taiwan, thereby leaving open the possibility that PAN was spoken (or at least also spoken) on the adjacent Fujian coast (Figure 5).

There is a somewhat hair-splitting theoretical issue here as to when the AN-speaking tradition became PAN, and I have heard my position criticized on the grounds that since AN languages are not historically attested on the coast of Southeast China, it is gratuitous to include this area as a possible AN homeland. I personally consider this observation to be of little importance for the issue at hand, and for convenience will refer to the linguistic tradition which gave rise to PAN as 'Austronesian' even though technically the term 'preAustronesian' might be more exact. If Taiwan was settled from the Fujian coast, it would be extremely unlikely:

1. for there to have been no settlement on the intervening Pescadores Islands, and

2. for AN-speakers to settle the Pescadores Islands and Taiwan while leaving no related groups on the mainland.

I know of no historical migration which shows such a pattern, and to follow up on my suggestion that we work from the known to the unknown, I would suggest that history must be considered our best guide to prehistory.

The archaeological record is, of course, fully supportive of these views. Neolithic cultures appear on Taiwan rather suddenly a little before 6000 BP. This is at least half a millennium before the earliest Neolithic cultures reported to date in the Philippines, but approximately two millennia after the earliest Neolithic cultures reported from central and southern China. The first step in bridging the 1,300 mile gap between upper Burma and Taiwan is thus to trace the AN lineage back to the Fujian coast. In all probability during the late fifth millennium BC, AN-speaking peoples were sailing along this coast, hunting,

fishing, growing rice, millet, and sugarcane, producing pottery, weaving, and building villages of substantial pile dwellings both on the mainland and on the adjacent Pescadores Islands and Taiwan. The devil's advocate must find an alternative hypothesis capable of explaining both the linguistic reconstructions which support these inferences (at least for Taiwan), and the archaeological relationships between the Lungshanoid cultures of Taiwan and those of the adjacent mainland which have been noted repeatedly at least since 1969 by K.C. Chang.

STEP 2. From the Fujian coast to the mouth of the Yangzi. The Fujian coast is a narrow strip between the mountains and the sea with many small offshore islands, a region which during recorded Chinese history has tended to isolate the populations which settled it from the rest of China, and to encourage their migration into various parts of Southeast Asia. If the first step needed to bridge the upper Burma-Taiwan gap is to track AN speakers back to the Fujian coast, the second step must be to track them from the Fujian coast to some other region in which the same type of archaeological culture is attested with an appropriately earlier chronology.

It is at this point that we reach a methodological impasse. Although reconstructed vocabulary may tell us a good deal about the kind of material culture a prehistoric society possessed, material artefacts do not tell us what language their makers used. In the SE Solomons, Vanuatu, Micronesia, Fiji, or Polynesia, where there is no evidence of any kind for a pre-AN population, we can safely infer that the bearers of the archaeological cultures were ancestral to the attested indigenous populations, and hence were AN-speaking. But in continental areas with a much longer history of human settlement, the matter is more complicated. The evidence of linguistic subgrouping can help us to place the AN homeland on Taiwan and the AA homeland in upper Burma. To some extent, given an independently dated baseline, the internal structure of a linguistic family tree can even provide approximate dates for the dispersal of proto-languages. What the Comparative Method of linguistics cannot provide, however, is a motivated basis for correlating proto-languages with archaeological cultures. To track the pre-PAN migration to Taiwan further back than the Fujian coast the linguist must rely on the ability of archaeologists to establish likely historical connections between archaeological cultures.

Having stated these qualifications on the power of linguistic inferences, I must add immediately that if the Austric hypothesis is valid there is no escape from the problem of bridging what I have called the

"upper Burma-Taiwan gap," a problem that probably would never arise in a purely archaeological context. In principle the problem of deter-mining the Austric homeland is no different from that of determining the AN or AA homelands. In fact, the AN languages are almost continuously distributed through island SE Asia and the Pacific, and although there is a geographical gap between the Munda and Mon-Khmer branches of AA, it is relatively small (about 400 miles from the Palaung of central Burma to the isolated Mon-Khmer-speaking Khasi of the middle Brahmaputra River in Assam, and a similar distance to Mundari and other Munda groups of Bihar in northeast India). By contrast, the gap between the inferred homelands of AA and AN is over three times this distance, a fact that complicates the problem of determining a center of dispersal in at least two ways:

1) a greater distance between coordinate subgroups implies either that intermediate connecting links have been lost, or that at least one subgroup has migrated a considerable distance from the area of origin

2) the greater the geographical distance between coordinate subgroups the larger the number of possible migration routes that must be considered to bridge the gap.

Historically the mountains just inland from the Fujian coast have effectively blocked migration to or from the west. This leaves only two plausible routes of prehistoric population movement to the Fujian coast: northward from the region of Hong Kong or southward from the region of the Yangzi. Here once again comparative linguistics may be of use. Although the archaeological evidence for early rice in Taiwan is still somewhat limited and controversial, the linguistic evidence is not just clear, but abundantly clear, that rice was grown by speakers of PAN, and hence was present in Taiwan by 6000-6500 BP. Since the only earlier dates for rice in China or Southeast Asia are found north rather than south of the Fujian coast (T.T. Chang 1984/85, Bellwood 1985, Yan 1990), our efforts to retrace the steps of the AN migration from its Austric origins compel us to look northward toward the mouth of the Yangzi River rather than southward toward Hong Kong and Hainan Island. This inference is further strengthened by the clear linguistic evidence (PAN *beCeɲ 'millet sp'., probably foxtail millet *zawa 'millet sp.') that millet was also cultivated by speakers of PAN, since this cultigen was first domesticated in the Yellow River Valley about 8000 BP, and could only have reached Taiwan from the north.

I need not belabor the point here that the 7,000 year old material culture of Hemudu (Figure 5), located some 60 miles south of the mouth of the Yangzi in what is now northern Zhejiang Province is closely similar to the 6,000 year old culture inferred for PAN on

Taiwan in Blust (1976). In some ways Hemudu reveals direct physical evidence for more of the details inferred by linguistic comparison than any early site yet excavated in Taiwan, and it is clear that in reaching inferences about material culture from the archaeological record alone we must always factor in the accidents of preservation. Bellwood (1985, 1991) states emphatically that of all known mainland archaeological sites Hemudu is perhaps the best candidate in terms both of its material culture and its chronology for an ancestral line leading to the AN colonization of Taiwan. Of course, we know nothing of the language spoken 7,000 years ago at Hemudu, but if this language was not AN, other languages in the area almost certainly were. PAN did not arise spontaneously. Like modern languages, it developed from ancestral forms which were spoken by real human populations in a definite time and place. Since there is no linguistic evidence of any kind that it developed in island Southeast Asia, we are left only with the mainland of China as a likely place of origin.

STEP 3. From Hemudu to the Lower and Middle Yangzi. According to K.C. Chang (1986: 208), the Hemudu culture, first recognized in excavations carried out in the 1970s, is "known from some two dozen sites along the southern coastal plains of the Hang-chou Bay, from Hsiao-shan to Ning-po and on out to the Chou-shan Archipelago." A glance at the map will show that this location is no closer than Taiwan to upper Burma. What, then, have we gained in our search for the Austric homeland? As Bellwood (1985), Chang (1986), and others have made clear, Hemudu was only one of various Neolithic cultures that evidently pioneered the domestication of rice in the lower and middle Yangzi basin in the period 8000-8500 BP. Like North American Pueblo or Plains cultures, these Middle and Lower Yangzi cultures may have been linguistically diverse. Whether or not this was the case, chronology, location and inferred cultural type all lend strong support to the argument that PAN, spoken on Taiwan by 6500 BP, arose from one of these rice-growing mainland cultures.

If pre-PAN speakers were at least among those peoples cultivating rice in the lower and middle reaches of the Yangzi River by 8000-8500 BP are we brought any closer to reconciling the AA and AN homelands in time and space? Chang (1986: 221) maps the distribution of rice-growing Neolithic cultures in the middle Yangzi. Most of these sites cluster around Lake Dongting, about midway between Wuhan and Yichang, but the westernmost known sites extend to more than 80 miles west of Yichang, or to within about 750 lineal miles from the Yunnan upper Burma border region. The earliest known Neolithic cultures in

the Yangzi basin that are likely to have been ancestral to the Hemudu culture of 7000 BP are thus only slightly downriver from the halfway point between upper Burma and Taiwan. It is clear that by proceeding in small and reasonably controlled steps we have begun to bridge the "upper Burma-Taiwan gap."

Chang (1977:142) points out that the Neolithic cultures of the lower Yangzi plains appear abruptly, with little indication of possible precedents. He suggests that this region was perhaps too marshy for habitation, or was even submerged prior to the rise of the first rice-growing cultures in the fifth millennium BC, and speculates that these cultures came in either from the Yellow River Valley to the north, or from the Fujian coast to the south. There is, of course, a third possibility: that they came downriver from the middle Yangzi, where for generations they would have adapted to conditions of periodic flooding and life on the water before ever reaching the coast. In the most recent edition of his book, *The Archaeology of Ancient China*, Chang (1986: 224) adopts this view, but in a somewhat different form from what I believe is needed to best reconcile the homelands of the AA and AN languages.

By the 1980s a number of middle Yangzi sites had been recorded with clear evidence of rice dating to as much as 8000 BP (Chang 1986). Because the earliest available radiocarbon dates for the *westernmost* sites were relatively late, Chang concluded that the Daxi culture of the middle Yangzi originated in the region of Lake Dongting, and spread out from there to both west and east. More recently Yan (1990) has presented a series of even earlier radiocarbon dates for the Pengtoushan Culture on the northwest shores of Lake Dongting clustering in the period 7800-8500 BP.

As first pointed out by Sapir (1968), the favored alternative for the homeland of a language family is one that is central in relation to the distribution of primary subgroups. In the case of AN the boundary between primary branches falls between Taiwan and the northern Philippines. There are no intervening nonmember languages, and for all practical purposes, the distribution of AN languages can be considered continuous. As noted earlier, although there are geographical gaps within AA, distributional evidence suggests a primary center of dispersal in the upper Burma-Yunnan border region. A consistent application of the same principle would lead us to posit an Austric homeland in the middle Yangzi (midway between the AA homeland in the middle Salween basin, and the AN homeland on Taiwan). To the extent that we are able to correlate archaeological cultures with one another and with attested language families, then, such an inference

would be remarkably consistent with current archaeological knowledge. However, I believe there are important reasons to question it.

Having come this far on the basis of both linguistic and archaeological evidence, we are perhaps justified in a simple extrapolation: if the cultural tradition leading to the AN settlement of Taiwan was present on that island and the adjacent mainland by 6500 BP, probably was present at Hemudu or similar sites near the mouth of the Yangzi River half a millennium earlier, and was present in the middle Yangzi basin by 8000 to 8500 BP, it would appear that the long-term direction of migration was from the upper Yangzi to the coast and thence south to Taiwan. But to date there is no archaeological support for a derivation of middle Yangzi cultures from the upper Yangzi.

Even with modern technology, the Yangzi is a formidable opponent to upriver traffic. Its currents are strong and clearly favor one-way travel. This is particularly true in those stretches where the river runs through narrow steep-sided gorges, and there is little margin for overland travel, let alone cultivation.[5] The region of the Three Gorges begins not far beyond Yichang, and for speakers of Proto-AA to have reached the middle Salween by 5500 BC would have required an improbable migration from the middle Yangzi; against powerful currents and away from areas in which natural food resources evidently were more abundant. Travel between the upper and middle Yangzi, did not, of course, need to be by river. Given the mountainous terrain which surrounds the upper and middle Yangzi basins, however, there were clear advantages to traveling in the relatively sheltered and far better provisioned river valley. Moreover, if the wild progenitor of *Oryza sativa* is native to the Himalayan foothills, its domesticated descendants must have reached the middle Yangzi via human intervention, thereby implying that it was grown at an earlier date in areas further to the west (T.T. Chang 1984/85: Fig. 1). It thus appears likely that evidence for rice cultivation predating that at Pengtoushan ultimately will be found much further up the Yangzi basin, although probably on a smaller scale.

A conjectural history of the Austric dispersal.

I will now present a conjectural history of the Austric dispersal, a reconstruction which admittedly is speculative, but which at the same time is capable of archaeological testing. In so doing, I will attempt to justify some critical features of my proposal with ethnographic support from present day societies and with ethnohistorical parallels from other areas. Following this, I will consider and reply to certain theoretical objections, and in a concluding section I will return briefly to the

question of Austro-Tai.

For a span of nearly 200 miles in northwestern Yunnan near the borders of Burma, Tibet and Sichuan, the Salween, Mekong, and Yangzi rivers run roughly parallel, separated for much of this distance by watersheds no more than 30 miles in width (Figure 5) . In the millennia immediately following the Pleistocene-Holocene transition this region of montane valleys presented a range of environments with cooler uplands and warmer lowlands, as it does today. It also presented abundant game and wild plant resources, which varied with altitude, as it does today. Apart from possible mean annual temperature differences, perhaps the major difference was the far greater abundance of large game animals and probably of wild food plants during this period than during the present. Game animals that almost certainly would have been available to hunters of this period and location would have included elephant, wild cattle, rhinoceros, panda, bear, various types of deer, wild pig, pangolin, monkey, hedgehog, and hare. The tiger would have been a dangerous adversary on the hunt. I have been unable to obtain much information regarding wild food plants that might have been available in the upper Yangzi region early in the Holocene, but T.T.Chang (1984/85: 69) argues that Asian rice *(Oryza sativa)* "evolved during the Neothermal period (about 15,000-10,000 BP) through early-maturing annual forms along the foothills on both flanks of the Himalaya range." If so, wild rice presumably was one of the important food plants available to populations of the region. Archaeologically the area that I have in mind is a virtual *tabula rasa.* What I propose for archaeological testing is that the food resources of this region were sufficient to support sedentary populations that lived in permanent villages of well-made timber houses by 9000 BP. Whether agriculture and domestication of any animal other than the dog had actually begun is a moot point, my only claim is that resources were sufficient to support permanent villages, and that rice almost certainly was consumed, if not cultivated by the population. There should be archaeological evidence, then, for at least woodworking tools, if not also agricultural tools. Even wild rice must be reaped, and rice cannot be cooked without boiling. Reaping knives and pottery thus presumably were also in use by Proto-Austric speakers.[6]

The region that I have in mind is defined by the area in which the Salween, Mekong and Yangzi rivers run parallel at their narrowest watershed. I would not, however, want this definition to be taken too literally. To account most parsimoniously for the attested distribution of daughter languages, the Austric homeland need only have been an area in which these rivers were easily accessible, and could have

included much of northwestern Yunnan from the southern end of Lake Erh (Erh Hai) to the great bend of the Yangzi where the river turns sharply eastward. From this general region around 9000 BP, the ancestral line leading to AN entered the Yangzi basin, following the river ever eastward toward the coast. By 7000-7500 BP, PAA had separated into western (Munda) and eastern (Mon-Khmer) dialect areas; speakers of western dialects, probably following the Brahmaputra basin, entered eastern India, while speakers of eastern dialects gradually spread southward down the Salween and Mekong Rivers into mainland Southeast Asia.[7]

Once in the Yangzi basin the settlers almost certainly would have made extensive use of bamboo rafts for basic transport of persons and goods, much as the local Chinese population has within the recent past. Not only is bamboo extremely buoyant, but it is the most readily available and easily prepared material for watercraft intended to carry more than one or two persons. Wild rice would have been available, presumably in abundance, on the rich, if narrow, alluvial flood plains periodically inundated by the rising and falling river. In addition to these plant resources there would have been an abundance of fish, including carp, and the large Yangzi sturgeon, which today swims upriver as far as Yibin in south-central Sichuan on its annual cycle of reproduction. Virtually all of the game animals previously mentioned would have been available in the valley, as well as a variety of ducks and other wildfowl, river otters, turtles, dolphins, and flying squirrels. Hemp plants are abundant on the hillsides today, and could have furnished fibers for loom weaving, archaeologically attested at Hemudu around 5000 BC.

The Yangzi has a tremendous water volume, and for this reason the current is often swift and the river subject to dramatic changes of height. Such environmental conditions would have had two important consequences: first, pile dwellings would develop as a natural adaptation to flooding; second, the direction of migration would have been continuously downstream, at least on the main branch of the Yangzi itself.

If rice was not domesticated prior to entering the Yangzi Valley, it would have been harvested wild along the river margins generation after generation until gradually the conditions governing its growth and yield were brought more completely under human control.[8] If pigs were not domesticated prior to entering the valley, once plant food was readily available to humans on a surplus basis, wild pigs could have been brought under control through deliberate feeding. A comparison of this type of migration to the one (or ones) that led to the peopling

of the New World may prove instructive: if the populations in both cases began essentially as foragers, riverine hunter-gatherers almost certainly would be steered toward agriculture much earlier than hunter-gatherers in the open plains or savannas.

Such a hypothesis raises some important new questions, but it also appears to provide satisfying answers to some preexisting ones. I will first consider the new questions.

Bellwood (p. c.) questions the plausibility of an AN movement from the upper Burma-Yunnan frontier into the Yangzi basin, since the proposed Austric homeland is not a known center of population dispersal. His views on this matter are colored by a belief that agriculture was the dynamic which powered the AN diaspora from Taiwan over island SEA and the Pacific, and that determinable human migrations in general have been motivated by agricultural innovation, population increase and migration in search of new land (Bellwood 1994).

I believe that there is much merit in the position Bellwood represents, but I also feel that he has taken this position too far. On a small spatial and temporal scale, for example, his model applies well to Sutlive's (1978) description of the Iban migrations over the past two centuries, where the restless search for new hunting and agricultural lands evidently was a major factor in territorial expansion. In the case of the Malagasy migration from southeast Borneo, however, agricultural expansion is a very unlikely factor, since the need for new agricultural lands could have been satisfied much closer to home. Further afield, but perhaps more spectacularly, the apparently quite rapid expansion of Athapaskan-speaking peoples from a homeland in central Alaska southward over more than 40 degrees of latitude to southern Texas and northern Mexico shows quite clearly that some important determinable migrations had nothing to do with agricultural expansion.

The objection that the upper Burma-Yunnan border region is not a known center of agricultural innovation is, moreover, meaningless until the archaeological picture of Yunnan becomes far more complete. Within the ethnographic present the region of Lake Erh (Erh Hai) and the Dali plain in northwestern Yunnan have been home to the Tibeto-Burman speaking Minchia or Bai ethnic group (Fitzgerald (1941). According to Lebar, Hickey and Musgrave (1964: 10), the Minchia have a history of indigenous rice cultivation long antedating the arrival of the Chinese among them during the Yuan dynasty (thirteenth-fourteenth century), a history which may well reflect traditions which were present in the area at the time of their arrival.[9] Finally, whatever reser-

vations might be expressed about this region in relation to the Austric homeland circa 7000 BC must be expressed equally in relation to the Austroasiatic homeland circa 5500 BC.

The initial impetus for entering the upper Yangzi valley could well have been a combination of such factors as 1. its relatively sheltered topography and mild climate, and 2. its relative abundance of wild game, and particularly wild plant resources. Whatever the reasons, it is clear that, once there, populations could have grown rapidly as a result of abundant and reliable food resources available both from the river and from its periodically inundated flood plains.

Austro-Tai revisited.

The preceding conjectural history is motivated entirely by a need to reconcile the homeland of PAA with that of PAN, and it makes no claims as to whether there were other linguistically distinct groups in the Yangzi basin during the period in question. Indeed, we have little idea of what other languages might have been spoken in southern China or Southeast Asia during the seventh millennium BC. We do know, however, that the Tai-Kadai family is widely distributed in this region, and evidently has a long history in situ. Having confessed my conversion to the Austric hypothesis I must now return briefly to Austro-Tai.

Reid (1984/85) quite correctly criticizes Benedict for an approach to linguistic reconstruction that does little to discriminate between resemblances produced by common origin and resemblances produced by chance. At the same time he points to a number of striking recurrent lexical similarities shared by Tai-Kadai and AN languages. In each case these involve the correspondence of an entire Tai-Kadai monosyllable with the *last* syllable of a reconstructed AN disyllable. Although I do not accept all of his proposed etymologies, I concur with Reid in seeing this as the only acceptable type of match in comparing AN with T-K forms.[10]

Thurgood (1988) posits a primary split between 1.Gelao, and 2. the rest of Tai-Kadai. In a later publication (Thurgood 1994) he posits a similar split between Gelao and Lati on the one hand, and the rest of Tai-Kadai on the other. Gelao and Lati remain among the least known of all Tai-Kadai languages, and based on recent Chinese publications Thurgood (p. c.) has suggested that 'Gelao' may be a cover term for a number of undescribed or poorly described languages that comprise more than one primary branch of Tai-Kadai. Whatever conclusion is eventually reached regarding the subgrouping of these languages, the maps in Lebar, Hickey and Musgrave(1964) and Edmondson and Solnit

(1988) make it clear that the Gelao languages are scattered about the upper course of the Wu River in the west-central region of China's Guizhou Province, while Lati is spoken in the border region of Yunnan and Vietnam. Thurgood (1994) divides the remaining Tai-Kadai languages into two coordinate groups: 1. Hlai. (Hainan Island), and Laqua or Laha (Yunnan-Vietnam border region), and 2. Lakkia (Guangxi Province), Kam-Sui (primarily Guizhou Province), Be (Hainan) and Tai (Yunnan, Guangxi, and Guangdong Provinces in China, Laos, Thailand, eastern Burma). Thurgood's subgrouping of Tai-Kadai thus points clearly to the region of the upper Wu River in Guizhou as the primary center of dispersal of this group, with a likely secondary center of dispersal in southern Yunnan or the coastal areas of mainland China facing Hainan Island.

The Wu or Fu-ling River (Figure 5) which joins the main stream at the city of Fu-ling, some 50-60 miles downriver from Chongqing, is the major southern tributary of the middle Yangzi. A nineteenth century British traveler in the area (Bishop 1899: 501) described it at the confluence with the Yangzi as "a clear stream, about 200 yards broad, and navigable for 200 miles." She added that although it is navigable, the Wu River is known for its whirlpools and reefs, which presented a hazard to the Chinese watercraft she observed on it. Since movement southward on the Wu would have been against the current and hence difficult by boat, it seems a priori likely that a population that migrated into this tributary—even if it maintained a riverine orientation— would have become more oriented to overland travel than one which remained on the main branch of the Yangzi and continued to follow it ever further downstream.

If the Austric superfamily includes AA as one branch, and T-K and AN as the other, we must ask the same question about the Austro-Tai homeland that we have been forced to ask about the Austric homeland. The choice of the upper Wu or Fu-ling River as the homeland of Tai-Kadai peoples follows from the internal subgrouping of the Tai-Kadai languages themselves. If a cultural and linguistic tradition which was ancestral to PAN on Taiwan and to PTK in the upper Wu Valley of Guizhou was present in the middle Yangzi Valley by 6500 BC, we can at last replace the rather vague statements by Benedict (1942) about AN and T-K origins "somewhere in the South China area." Under the interpretation adopted here, PAT was spoken by bearers of the rice-growing middle Yangzi cultures of 6000 BC, the split between AN and T-K occurring when one segment of the population chose to move southward up the Wu Valley, while the other remained on the main river, which it continued to follow downstream

over the generations until it reached the sea.

As an aside it might be useful to note that in the general ethnographic literature pile dwellings appear to have been innovated almost exclusively in areas subject to flooding or tidal bores (Murdock 1967, column 81). The widespread use of pile dwellings among both AN and T-K peoples in environments in which they are sometimes no longer physically motivated suggests that both language groups derive from an ancestral riverine culture which had a practical concern with the danger of sudden changes in water level.

Thurgood himself does not believe that the linguistic evidence supports a genetic relationship between T-K and AN; however, he does believe (15-16) that "considerable contact occurred before the Austronesians left the mainland, as at least some of the obvious borrowings were replaced in Western Malayo-Polynesian before Austronesian languages returned to the mainland." Thurgood's reservations regarding the linguistic evidence for an Austro-Tai unity are based on irregularities in the tonal correspondences of T-K languages, irregularities which suggest that the words in question were borrowed after tonal distinctions had already arisen in the T-K languages. A number of the forms that he cites, however, belong to basic vocabulary, and hence presumably would be resistant to borrowing. Whether one adopts a hypothesis of genetic relationship or of borrowing to explain the similarities between AN and T-K, the Wu Valley of Guizhou should provide archaeological evidence of a southern extension of rice-growing, middle Yangzi cultures beginning perhaps as early as 6000 BC and continuing for millennia into the modern Gelao-speaking peoples of the region.

Conclusion.

Just as the AN languages, with their extraordinarily wide dispersal over some 72 degrees of latitude and more than 206 degrees of longitude, can be traced back with considerable confidence to a homeland on the island of Taiwan, so can the Austric languages as a whole be traced back to a homeland in the general region where the Salween, Mekong and Yangzi Rivers run parallel on the Burma-Yunnan frontier. The dispersal of AN, T-K, and Austric language groups appears to have followed riverine courses: AN down the Yangzi to its mouth and thence down the Fujian coast to Taiwan; T-K down the Yangzi to the Wu, or Fu-Ling River, and thence southward, probably reaching the coast of Guangdong and Hainan Island by 3000 BC; Munda probably down the Brahmaputra Valley into Assam and

Bangladesh, whence they gradually spread westward, and Mon-Khmer down the Salween and Mekong Valleys into mainland Southeast Asia. The subsequent spread of Tibeto-Burman-speaking peoples down the Irrawaddy and Salween Valleys would have separated Khasi on the west from the rest of Mon-Khmer, and displaced or absorbed many earlier M-K groups in the region of the Salween. Similarly, some pre-AN speakers probably spread down the coast of southern China past Taiwan as far as the Gulf of Tonkin, where they may have encountered Tai-Kadai speakers migrating southward from the upper Wu Valley. In time the southward spread of Han Chinese led to the sinicization of all AN-speaking populations that remained on the mainland, whether in the Yangzi valley or in coastal areas from the mouth of the Yangzi to the Gulf of Tonkin (a process that continues today in Taiwan).

In conclusion, without in the least intending to be disparaging, I think it is fair to say that, because of differences in the type of material used, comparative linguistics can sometimes, so to speak, fly where archaeology can only crawl. In other words, it is capable of generating archaeologically testable hypotheses far more rapidly than they can be confirmed or discarded. I look forward eagerly to the results of archaeological testing of the ideas put forward here, but recognize that it may be some time before definitive results emerge. In the meanwhile we must not forget that language and material culture are simply different aspects of what to the native participant must be considered a "way of life," and as a reflection of this fact I would hope that linguists and archaeologists alike come increasingly to realize the benefits of interdisciplinary cooperation in our common attempt to understand the history of our species as a cultural animal.

ACKNOWLEDGMENT

Peter Bellwood, Paul Benedict, George W. Grace, Charles F.W. Higham, Lawrence A. Reid and Graham Thurgood read and commented on an earlier version of the present manuscript. None of them necessarily accepts its arguments or conclusions. In addition, I am indebted to Joyce White for useful criticism based on an oral presentation of the paper, and for time-saving information on references to the archaeological literature on early rice.

NOTES

1. The spelling "Tai" normally refers to the entire group of Daic languages, which includes Zhuang, Saek, Lao, Siamese and Shan, among others, while "Thai" is used distinctively for Siamese. In practice, however, the two spellings often have the same referent (witness Benedict 1975 "Austro-Thai" but Benedict 1990 "Austro-Tai"). I generally adhere to the Tai = Daic, Thai = Siamese distinction, but allow spellings to vary with the source cited.

2. Examples include Cebuano and Roviana, both of which reflect *-in- marker of deverbal nouns', *pa- 'causative', *-a '3sg. object', and *-an 'locative', yet share only 14/200 items on the modified form of the Swadesh 200-item lexicostatistical test-list reported in Blust (1981), or 7 percent of their basic vocabulary. Cebuano and Roviana probably have been separated no longer than 5000 years; as will be seen, the separation of AA and AN almost certainly took place by at least 8500 BP.

3. See Blust (1976: 29ff), where a separation time of 6000 BP for Atayalic from all other AN languages is accepted; Blust (1977: 2), where a subgrouping which implies a Formosan homeland is proposed; and Blust (1980: 13) and (1984/85: 54), where time-depths of 7000 and 6500 BP respectively are suggested for Proto-Austronesian. These estimates were originally made in ignorance of the 6300 BP radiocarbon date for Ta-p'en-keng which is the earliest known evidence of the Neolithic on Taiwan, and were based on extrapolations from a date of 5000 BP for the break-up of Proto-Oceanic made by Pawley and Green (1973: 53, fn. 1). Although a date closer to 4000 BP for the latter event now appears to be archaeologically better-supported, a date of 6000-6500 BP for the break-up of Proto-Austronesian would seem to be quite reasonable.

4. To somewhat belabor the obvious, we can cite Greenland, Iceland, the British Isles, all of the Mediterranean Islands, the Canaries, Zanzibar, Madagascar, Sri Langka, Japan, the Queen Charlotte Islands, Newfoundland, the Greater and Lesser Antilles, and Tierra del Fuego, among many others. The hominid line evolved in continental areas, and in general island environments were among the last to be reached, although the continental "island" of Sahul Land was settled very early (Allen, this volume).

5. For a graphic and highly readable personal account of the difficulties of traveling up the Yangzi by Chinese junk in the winter (low-water) season, see Bishop (1899). Most river travel in the period 8000-8500 BP almost certainly would have been by bamboo raft for the transport of goods and of families, since timber for large canoes is not available in the middle and upper Yangzi basins, while groves of large bamboo are plentiful all along the river.

6. Lawrence Reid (personal com.) has reminded me that in the Philippines

(as elsewhere in Southeast Asia) one traditional method of cooking rice was by boiling in bamboo tubes. It is thus possible that early sites may be found with abundant evidence for rice, but without pottery. The sedentary exploitation of wild resources over lengthy time periods is, of course, not ethnographically unparalleled. The entire Northwest Coast culture area in the Pacific Northwest of North America, with its permanent villages of large timber houses and its distinctive lineage-connected totem poles, rested economically on the consumption of fish (principally salmon, which could be preserved by smoking), marine mammals, and wild plant resources, entirely without the benefit of agriculture.

7. On a far smaller scale we can see such a pattern of radiating dispersal along river valleys in the prehistoric migration of the Kayan, who crossed the watershed from the basins of the Kahayan and Mahakam Rivers in east Borneo, and entered the upper reaches of such rivers as the Kapuas, Rejang and Baram, whence they spread over a considerable distance to the west and south by following the diverging river valleys toward the coast. Photographic accounts of the Yangzi such as that of Wong (1989), and personal narrative, such as that of Bishop (1899), show that the river basin exhibits dramatic topographic changes over relatively short distances. The Yangzi begins to diverge sharply from the Salween and Mekong at the town of Shigu, in northwestern Yunnan, where it turns abruptly north and flows through the spectacular 'Tiger Leaping Gorge', with steep mountain slopes rising nearly 10,000 feet on both sides. It is obvious that such a point of entry would be improbable. On the Yongling Plain less than 40 linear miles to the east, however, the mountain slopes rising from the river are much less precipitous, and reportedly are terraced for small hillside rice farms by the modern Tibeto-Burman speaking Naxi and Lisu of the region, while less than 200 sailing miles further down the river the hillsides are extensively terraced for wet rice by the Tibeto-Burman speaking Yi or Lolo (Lebar, Hickey and Musgrave 1964, Wong 1989).

8. Under this interpretation wet rice under natural conditions would have preceded swidden cultivation. As a linguist my remarks on the transition from harvesting a basically wild form of *Oryza* to sustained cultivation are, of course, largely impressionistic. However, White (1995) reaches a very similar conclusion with regard to the development of early rice agriculture in northeast Thailand: "The essence of agricultural development in this region was not from shifting cultivation to permanent fields, or technologically simpler to techno-logically advanced, or polyculture to monoculture, rather I suspect it was from haphazard, opportunistic, and diffuse to systematic, integrated and focused." As the centerpiece of her theory of agricultural evolution, White notes that environments of permanent inundation do not provide the optimal conditions for high rice yields or short growing cycles. Rather, these conditions exist in areas of fluctuating water levels, where wild strains of *Oryza* tended to develop accelerated growing cycles and increased

yields, presumably as an adaptive reaction to environmental stress.

9. Lebar, Hickey and Musgrave (1964), citing Fitzgerald (1941: 21-22), claim that the Minchia "have been rice farmers in the area at least as far back as the seventh and eighth centuries A.D., when Tali was a capital in the kingdom of Nanchao." Fitzgerald himself only states that "The Min Chia lack any tradition of immigration to their present home, and it may be regarded as certain that they have practiced their present mode of life for at least seven centuries." In either case it appears that rice cultivation has some antiquity in the region of the Dali plain. Chang (1977: 454) suggests that, "civilization apparently came to Yunnan during the latter part of the Eastern Chou period, simultaneously with irrigated farming and the use of iron implements." However, on the next page he notes the discovery, in 1957, of a habitation site near Lake Erh that "is a pile village, built along the Hai-Wei River, half on the bank, the other half submerged. Remains of agricultural implements and grains of rice, wheat, and millet were found, together with a large number of mollusk shells, animal bones, and fishhooks." A piece of wood from the site yielded a calibrated radiocarbon date of 1480-1170 BC. I suspect that far earlier dates for rice ultimately will be found in this area.

10. I also recognize some additional comparisons, as PMP *sakit 'pain, sickness': KAM /kit^{9}/ 'pain', and PAN *Sema: KAM /ma$^{?}$/ 'tongue' (where the numerals mark tone classes).

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ABBREVIATIONS:

AA: *American Anthropologist.*
ALCC: *Archaeology of the Lapita Cultural Complex.- A Critical Review.* Thomas Burke Memorial Washington State Museum Research Report No. 5. Seattle: Thomas Burke Museum.
AO: *AO.*
AP. *AP.*
ASTA: *Anthropological Studies of the Taiwani Area. - Accomplishments and Prospects. Taipei.*- Department of Anthropology, National Taiwan University.
BMP: Bishop Museum Bulletin. Honolulu: Bernice P. Bishop Museum.
JPS: *JPS.*
JSAS: *JSAS.*
OL: *Oceanic linguistics.*
OLSP: Oceanic Linguistics Special Publication. Honolulu: University of Hawaii Press.
OPP: Occasional Papers in Prehistory. Department of Prehistory, Research School of Pacific Studies, Australian National University.
PLP: *Poterie Lapita et Peuplement, Actes du Colloque LAPITA* Noumea: ORSTROM.
YUPA: Yale University Publications in Anthropology. New Haven: Department of Anthropology, Yale University.

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