

The Austronesians: an agricultural revolution that failed



Presented as a keynote address at the

2014 International Conference on Formosan Indigenous Peoples: Contemporary Perspectives. 15-17

September 2014. Academia Sinica, Taipei, Taiwan

and subsequently revised

Roger Blench
Kay Williamson Educational Foundation
8, Guest Road
Cambridge CB1 2AL
United Kingdom
Voice/ Ans (00-44)-(0)1223-560687
Mobile worldwide (00-44)-(0)7847-495590
E-mail rogerblench@yahoo.co.uk
<http://www.rogerblench.info/RBOP.htm>

This printout: Taipei, January 18, 2015

TABLE OF CONTENTS

ACRONYMS	II
1. INTRODUCTION	1
2. THE AUSTRONESIAN EXPANSION: PUNCTUATED EQUILIBRIUM?	3
2.1 Linguistics	3
2.2 Archaeological results: the pattern of dates	7
3. THE GREAT SHIFT	9
3.1 The evolution of agricultural society in Taiwan	9
3.3 The switch to fisher-foragers	11
4. RELIGION AND MATERIAL CULTURE	12
4.1 <i>Adat</i> : the role of religion	12
4.2 Comparative Austronesian iconography	14
4.2.1 General	14
4.2.2 <i>Lingling-o</i>	15
4.2.3 The <i>bulul</i>	15
4.2.4 The figure with splayed legs bent at the knee	16
4.2.5 <i>Ikat</i> weaving	16
5. AUSTRONESIAN SOCIETY	17
5.1 Headhunting	17
5.2 Social hierarchy	18
6. TURNING THE NARRATIVE ON ITS HEAD	19
REFERENCES	21

TABLES

Table 1. Cereals grown by indigenous Taiwanese peoples.....	10
Table 2. Crop reconstructions in PMP.....	12
Table 3. Headhunting in the Austronesian world.....	17

FIGURES

Figure 1. Primary subgroups of Austronesian.....	3
Figure 2. Primary branches of Austronesian in Ross (2012).....	4
Figure 3. Primary subgroups of Proto-Malayo-Polynesian.....	Error! Bookmark not defined.
Figure 4. Primary subgroups of Oceanic.....	6
Figure 5. Subgroups of Polynesian.....	7
Figure 6. Internal structure of Austronesian.....	9
Figure 7. Dynamics of Austronesian dispersal.....	19

PHOTOS

Photo 1. Rukai millet varieties.....	10
Photo 2. Taiwanese <i>linglingo</i>	14
Photo 3. Tabon caves <i>linglingo</i>	14
Photo 4. Sumbanese earpieces.....	14
Photo 5. Tanimbar (left) and Batak (right) figures.....	15
Photo 6. Stone <i>bulul</i> , Ifugao, Philippines.....	15

Photo 7. Wooden figure, Timika, West Papua	16
Photo 8. Wooden figure, West Papua	16
Photo 9. Wooden inset on <i>pahu</i> drum, Austral Islands	16

MAPS

Map 1. Australian languages	1
Map 2. The impact of external religions on the Austronesian world	13
Map 3. Distribution of the <i>bulul</i> figure	15
Map 4. Distribution of <i>ikat</i> weaving traditions	17
Map 5. Records of headhunting in the Austronesian world	18

ABSTRACT

Although the Austronesian expansion was one of the most rapid and widespread in history, a convincing analysis of the forces that underlie it remains elusive. The most persuasive narrative, promoted energetically by Peter Bellwood, has highlighted the role of agriculture in driving demographic growth and linguistic diversification. The model proposes that it was the Austronesian adoption of an agricultural package, including rice, pigs and chickens, which allowed them to colonise Island SE Asia at the expense of resident hunter-gatherers. However, archaeology has signally failed to confirm this model. Early sites show very similar dates across a wide geographical area, suggesting that the first phase of post-Taiwan Austronesian expansion took place extremely rapidly. Pigs, dogs and chickens have been shown to arrive in ISEA via other routes and rice is conspicuously absent in most places. This paper argues that this model has effectively inverted the actual situation, and that the Austronesian expansion was the consequence of a failed agricultural revolution and a reversion to opportunistic foraging.

We now know that the Austronesian peoples of highland Taiwan were skilled practitioners of intensive cereal cultivation, both adopting species from outside and domesticating local grasses. However, these skills and cultigens were not transferred to the Philippines. Even the famous rice-terraces of Luzon are now not considered to be an inheritance from the field rice of Taiwan. The groups which left Taiwan and became the Yami, Itbayat and Chamorro, were instead fisher/forager/traders energised by a powerful religious ideology but with no tradition of cultivation or livestock production. With access to innovative sailing technology they were able to expand rapidly in many directions, hence both the apparent lack of nested structures in the Austronesian language phylum and the near-simultaneous dates for archaeological sites across the region. The evidence suggests this happens four items in the history of the phylum and that it may be linked to religious renewal, social hierarchy and the ‘founder ideology’.

ACRONYMS

*	regular reconstruction
BC	Before Christian era
BP	Before present
ISEA	Island SE Asia
NAN	Non-Austronesian
PAN	Proto-Austronesian
POc	Proto-Oceanic

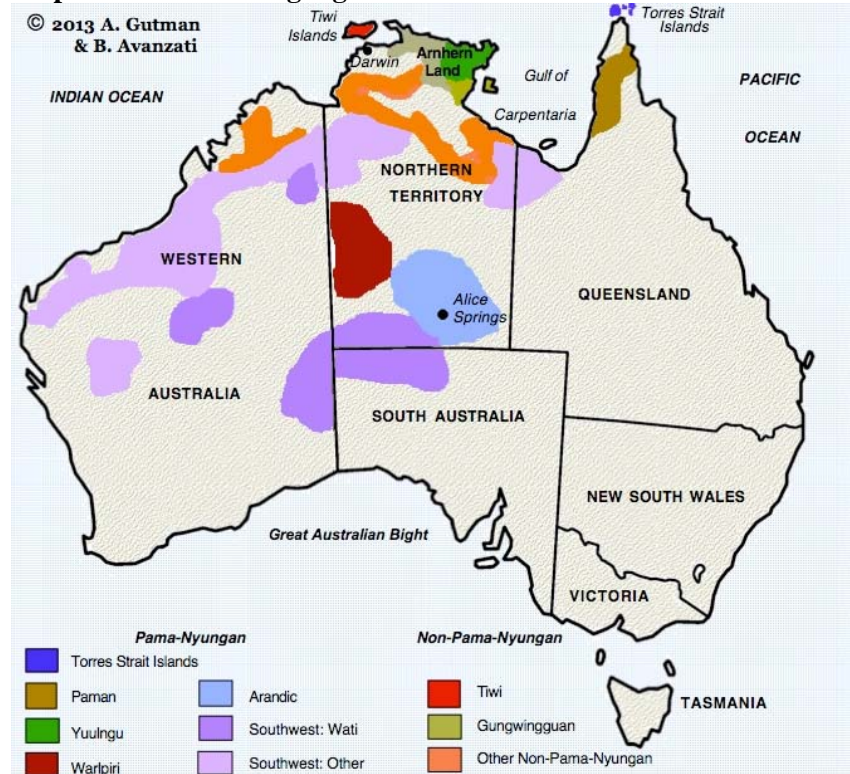
1. Introduction

One of the most persuasive narratives in prehistory has been the irreversible changes effected by agriculture. Seemingly, humanity spent millennia in the dead end of foraging, to be transformed by the discovery and spread of agriculture. Associated initially with Gordon Childe (1958) and the archaeology of the Near East, this schema has gradually taken on global application (e.g. Barker 2006; Bellwood & Renfrew 2002; Bellwood 2005, 2013). And clearly it has a great deal to recommend it; populations of agricultural societies *are* strikingly more dense than foragers, they do support large cities and infrastructure, whereas foragers have gradually been driven into increasingly remote locations.

However, it may be that we have been misled by the current situation and read it back into the past. Hunter-gatherers in the present are encapsulated by large, pluralistic societies, and require desperate efforts by NGOs to retain even a toehold in their ancestral lands. In the process of their assimilation the arrow only points in one direction. Archaeologists, seeking to model forager societies in the past, inevitably turn to the Hadza, the Khoisan or the Australian aborigines. But in reality, these are the last peoples we should be looking at when attempting to model prehistory. Recent times have provided a mounting body of evidence for the dynamism of hunter-gatherer societies, especially in the area of language. When the language phyla spoken by hunter-gatherers are mapped, they turn out to have very uneven distributions. In the New World, in Northeast Asia, Africa and Australia, the pattern is not a predictable one of diversification following dispersal. The map consists rather

of large areas of related languages, and zones of striking diversity where isolates predominate. This is illustrated most dramatically in Australia, where much of the continent is dominated by a single phylum, Pama-Nyungan, with a restricted area in Arnhem Land where the languages are highly diverse (Harvey 1997; Map 1). Similarly, in North America, where agriculture was mostly confined to south-central regions, large language phyla such as Na-Dene and Algonquian seem to have expanded as part of the acquisition of new types of bow and arrow (Wilson 2011; Fiedel 1990). Such patterns rather reflect forager dynamism, responding to the adoption of changing technologies, and possibly new types of social and religious organisation.

Map 1. Australian languages



Similarly, the notion that the characteristic pattern of forager social organisation is the scattered band is becoming increasingly untenable. The discovery of the site of Göbekli Tepe in Turkey, some 12,000 years old, and thus prior to agriculture (Schmidt 2000; Dietrich et al. 2012), shows that hunter-gatherers could apparently mobilise labour on a scale large enough to construct monumental ritual centres.

What of the irreversible direction of progress towards complex societies? Many examples can be quoted of societies which have reverted to hunting and gathering, simply because it is a more efficient resource extraction strategy in particular situations. In the Austronesian world, the Moriori of Chatham Island dropped agriculture (Skinner & Baucke 1928) as did some of the southernmost Maori, the Tasaday in the

Philippines and the Siriono in the Amazon (Holmberg 1969). The Numic subgroup of Uto-Aztecan seems to have migrated north from their centre of origin in Mexico and reverted to foraging in the Great Basin (Inge 2012). Sahlins (1972) long ago pointed out that foraging can be a low-cost strategy in situations of abundant resources. With limited competition from other human groups, dropping agriculture can make sense.

The Austronesians are often treated in the existing literature as a type-society for demographic expansion, with agriculture the underlying engine of growth. This is in increasing disaccord with the archaeology of the region, and this paper will suggest that the explanation is almost its inverse, that they succeeded precisely because they strategically reverted to foraging. In case it should be argued that a more nuanced approach to the Austronesian expansion is now commonplace, the following quotation from a recent publication in PNAS shows that the demographic model lives on, virtually unchanged;

‘...the Austronesian expansion, which represents a complex demographic process of interaction between migrating Neolithic farmers and indigenous Mesolithic hunter-gatherer communities
(Xu et al. 2012)

The archaeology of ISEA and Oceania increasingly points rather to a pattern of rapid dispersals and then pauses, periods of consolidation. This is in line with linguistic understanding of the internal structure of Austronesian, where the ‘tree’ features a series of bottlenecks or choke-points characterised by an array of difficult to classify co-ordinate branches, only one of which will become the source of the next major expansion. Such a pattern is linked to advanced maritime technology and the geography of islands; with fast and effective boats, expansion can be in an explosive manner, heading off in different directions simultaneously, seeking new subsistence resources or trading partners.

However, technology provides necessary but not sufficient conditions for this to occur. There must also be a social dynamic, something that motivates the mariners to undertake what is inevitably a highly risky enterprise, especially when heading into the Pacific. It cannot be known for sure there are any destinations ahead and resident populations cannot be relied on for access to food. This pattern of rapid dispersals followed by pauses strongly resembles the ‘punctuated equilibrium’ model of evolution delineated by Niles Eldredge and Stephen J. Gould (1972). The dispersal of language phyla elsewhere in the world do not show a similar pattern. Nonetheless, there is a useful sociological parallel, the periodic renewal movements within certain religions, notably Islam. From the initial expansion in the Arabian peninsula, to the purist movements of the Almoravids across the Maghreb, to the present fervour, Islam typically expands in pulses, followed by periods of consolidation (Abun-Nasr 1987).

The expansion of religious ideologies is associated with a certain amount of demographic growth but more significantly conversion and assimilation. The initial impulse to spread outwards is evidently concerned with beliefs about purity of ideology, but within some generations corruption and the desire for an easy life creeps in. After a period, a generation impatient with this redevelops or reinvents the model of ideological purity and sets off on a new wave of expansion and conversion. During each wave, the associated material culture of the restructured religion is carried along and eventually provides a major subset of evidence for the process as a whole. We know a great deal more about this as a historical process in societies with written records, and it can be traced for Buddhism, Christianity and Islam¹. However, there is no reason to believe this pattern cannot equally be traced in oral societies.

Although techno-environmental determinism has much recommend it when modelling past societies, especially for archaeologists, who are disposed towards materialism, it is never a complete story. The twentieth century provides abundant evidence for the power of ideology, and there is no reason to believe it was not an equally strong force in the past. The underlying argument of this paper² is that a combination of highly characteristic vertical social structures and a powerful religious ideology drove serial waves of

¹ Although not Hinduism or Confucianism, which presumably reflects their strong links with specific ethnicities.

² This paper has been prepared at the invitation of the Academia Sinica, Taipei and the Sun Ye Museum of Formosan Aborigines for presentation on the 16th September 2014. I would like to thank Dave Bulback, Phil Piper and Andrew Pawley for comments on the preliminary version.

Austronesian expansion, and their subsistence strategies were highly situational, dropping, adopting and adapting agriculture as appropriate. The evidence for their distinctive religious ideology can be traced in a highly characteristic iconography attested from Taiwan to New Zealand. Hence the paradox implicit in the title; the Austronesians succeeded so dramatically precisely because they were flexible enough to strategically drop agriculture in order to disperse more effectively.

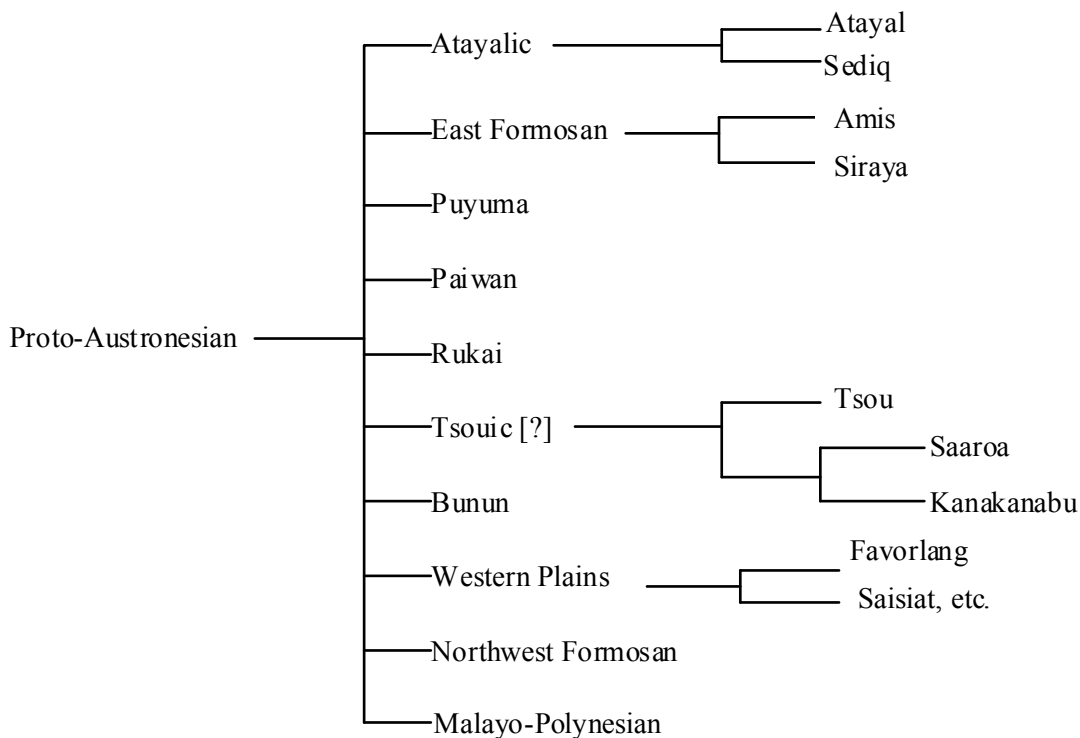
2. The Austronesian expansion: punctuated equilibrium?

2.1 Linguistics

Austronesian is primarily a linguistic concept, something that often gets lost in the debate concerning the expansion of ‘The Austronesians’. Deriving from the original hypothesis of the kinship of over a thousand languages in SE Asia and the Pacific, it was first established using modern linguistic methods by Dempwolff (1920, 1934-8) although Schmidt (1899) had previously grouped these languages into categories still used today (Polynesian, Micronesian, Melanesian etc.) using lexical resemblances. Although the hypothesis that Formosan languages were Austronesian had been made in the early nineteenth century by Klapproth (1823: 380-2), Dempwolff did not clearly identify and situate them. This omission was rectified by the second major figure in Austronesian studies, Isidore Dyen (1963). The first author to establish that the diversity of Formosan languages (*yuánzhùmín* 原住民) required that they be ancestral to all others and constitute a primary branching was Blust (1984/5, 1999, 2013). Bellwood (1984/85, 2008) then made the link with the archaeology which remains broadly accepted today.

Blust argues that there are nine primary branches apart from Proto-Malayo-Polynesian (PMP), the ancestor of all non-Formosan Austronesian languages which includes Yami, spoken on Orchid island, part of Taiwan (Figure 1). Sagart (2004, 2005) on the basis of numerals, has developed an innovative theory of the process whereby the island of Formosa was peopled by Austronesian speakers in a circular pattern. Ross (2012) has argued for another subclassification of proto-Austronesian which has Puyuma, Rukai and Tsou as primary branches with the others as a fourth, which he names ‘Nuclear Austronesian (Figure 2).

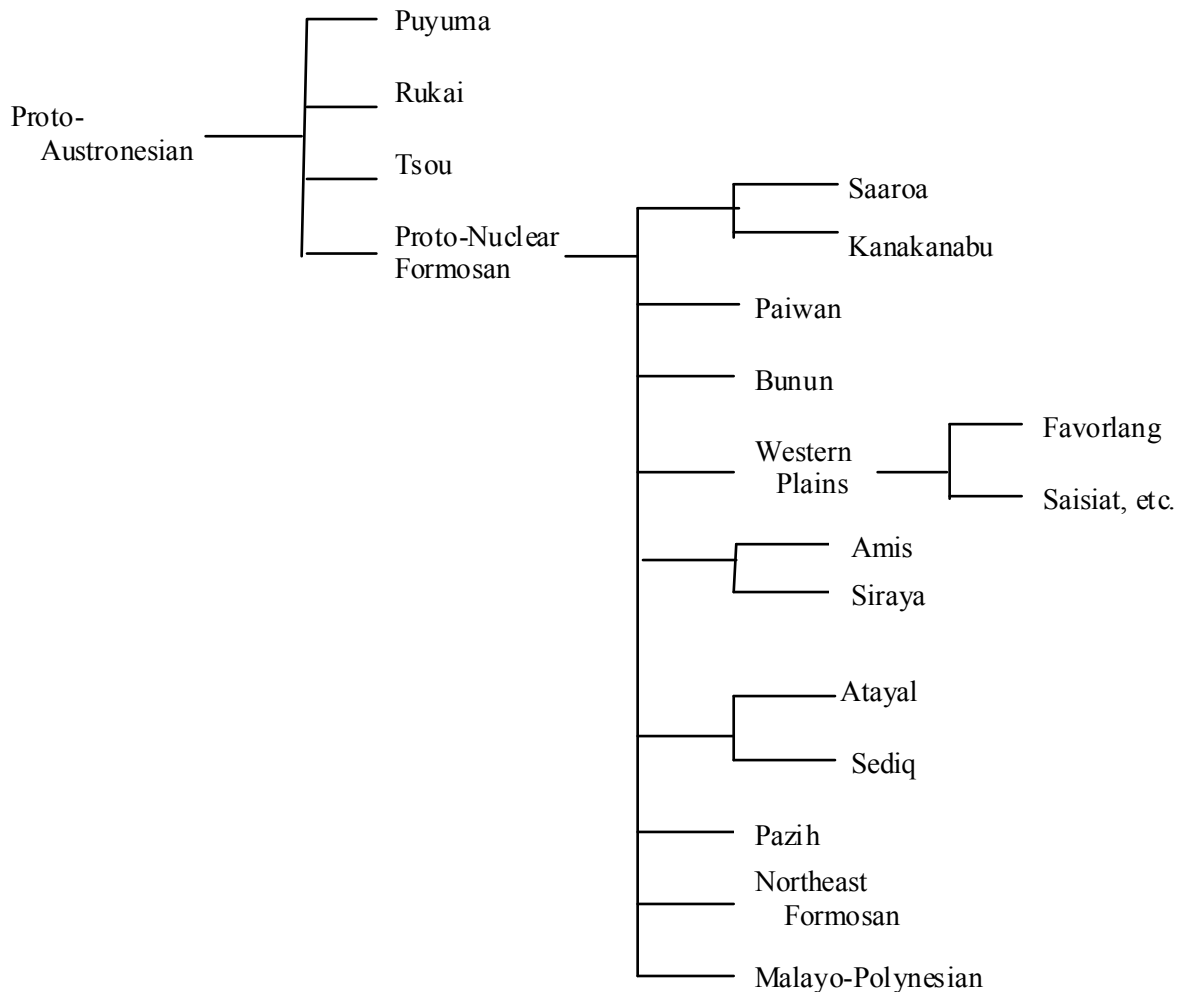
Figure 1. Primary subgroups of Austronesian



Source: Blust (2103)

Ross (2012) has argued for another subclassification of proto-Austronesian which has Puyuma, Rukai and Tsou as primary branches with the others as a fourth, which he names 'Nuclear Austronesian (Figure 2).

Figure 2. Primary branches of Austronesian in Ross (2012)

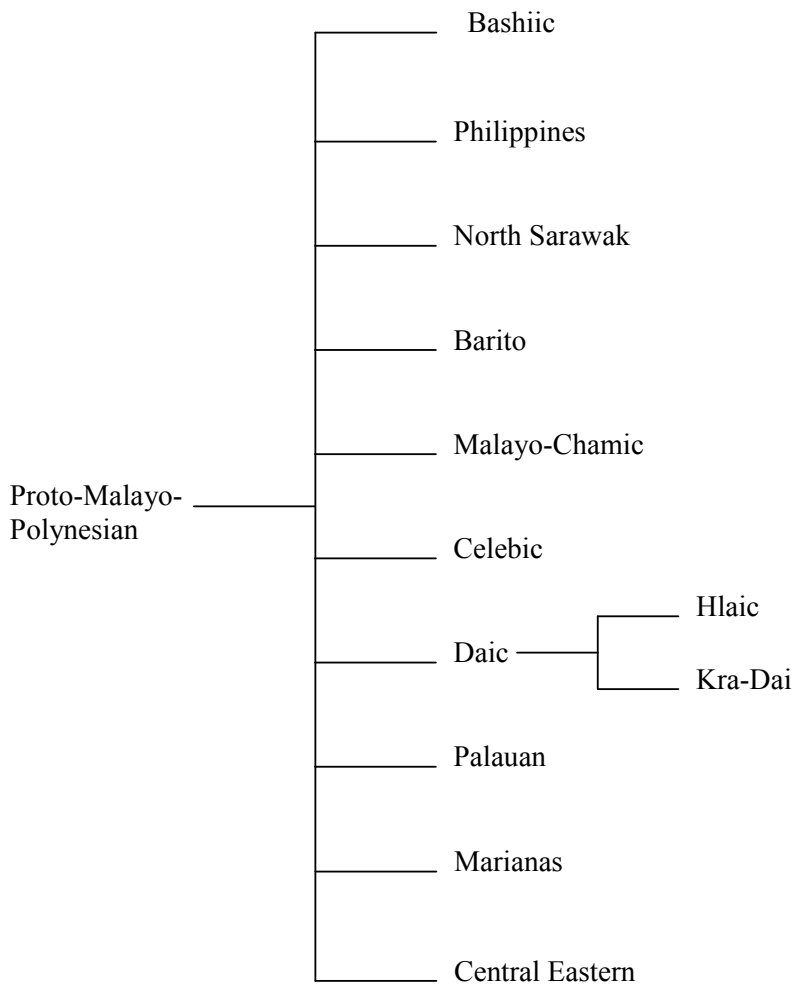


Source: Ross (2012)

For a further review of the many hypotheses concerning the subgrouping of Formosan Austronesian see Ross (2012) and Blust (2013). Barring minor readjustments, the pattern remains, an array of co-ordinate branches with just one being the ancestor of PMP is unlikely to change. At this point, the precision of the linguistic narrative becomes blurred. Blust (2013) continues to support a nested tree ultimately leading to Central-Eastern Austronesian, which represents the immediate ancestor of the Oceanic languages. It is now generally accepted that both Palauan and the languages of the Marianas represent a split from PMP at this point, as was first argued by Reid (2002). The nested tree which Blust argues leads to proto-Oceanic has been questioned, particularly by Donohue & Grimes (2008) who argue for an array of primary subgroups.

More problematic is the relationship of the Daic (Tai-Kadai) languages to Austronesian. Blust (2013) provides a history of this debate without reaching any conclusive result. Observations about the links between Daic and Austronesian go back at least to Benedict (1942). Significant arguments are presented by Ostapirat (2005, 2013) for the Daic link and Norquest (2007) provides additional evidence for the distinct set of cognates with the Hlai languages of Hainan island. Sagart (2005) specifically proposed that the proto-Daic languages split away from Austronesian at the PMP stage. Blench (2013) shows that these linguistic connections are supported on ethnographic grounds. It is therefore proposed here that Li and Tai-Kadai are primary branches of PMP. With this in mind, **Error! Reference source not found.** presents a version of the early splits in PMP, bringing together these various proposals.

Figure 3. Primary subgroups of Proto-Malayo-Polynesian



The composition of the subgroups is as follows;

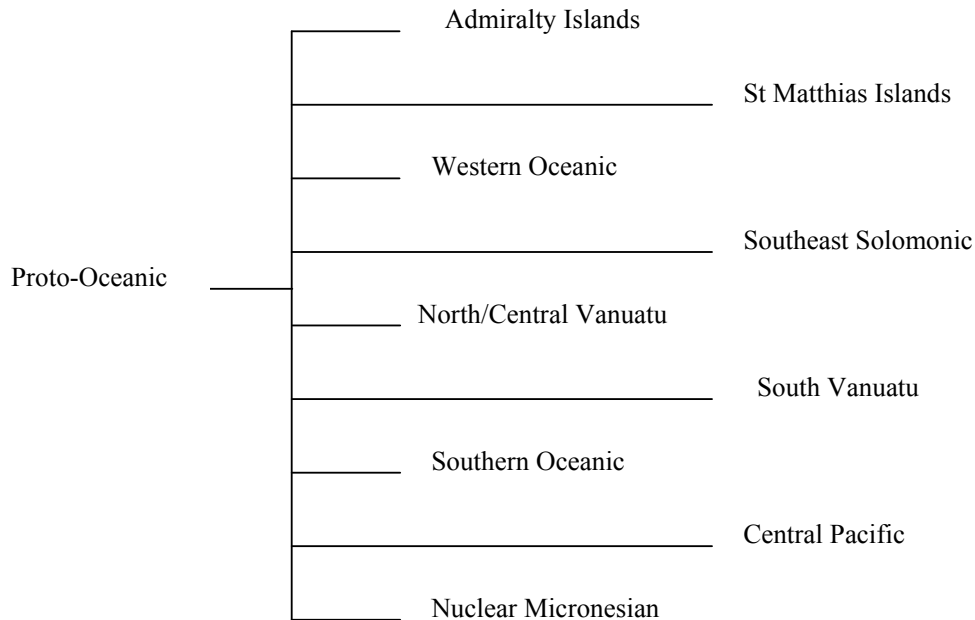
1. includes all languages of the Philippine Archipelago except the Sama-Bajaw (or Samalan) languages spoken by traditionally nomadic ‘sea gypsies’ of the central and southern Philippines and various parts of Indonesia-Malaysia, and the Bashiic languages, i.e. Ivatan and Tao [Yami]
2. includes a number of the languages of northern Sarawak in Malaysian Borneo,
3. includes Ngaju Dayak and Ma’anyan of southeast Kalimantan, as well as Malagasy
4. includes the Malayic languages of insular Southeast Asia, and the Chamic languages of mainland Southeast Asia, and
5. includes all languages of Sulawesi south of Gorontaloic, except the South Sulawesi group (whose best-known members are Buginese and Makasarese).
6. corresponds to Oceanic. In the view of Blust (1993, 2013) there is a branch ‘Eastern Malayo-Polynesian’, which divides into Halmahera and Oceanic.

The discussion will no doubt continue, but PMP divides into the well-characterised Oceanic and the rest, i.e. Western Malayo-Polynesian (WMP) whose internal divisions are much harder to clarify. Oceanic is well-defined by a series of lexical and phonological innovations (Lynch et al. 2002), but WMP remains uncertain, ‘innovation-linked’ rather than ‘innovation-defined’ in the terminology of Ross (1997).

Grace (1961) concluded that the immediate ancestor of the Oceanic languages was probably spoken within a region bounded by the north coast of New Guinea in the south and the Bismarck

Archipelago in the north. With a great deal more evidence to hand, Pawley (2008) essentially reaches the same conclusion. Oceanic also undergoes an elaborate parallel diversification, possibly as much as a primary nine-way split. Groups 3, 5 and 8 are innovation-linked subgroups: there is no innovation which all their members share relative to POc. Figure 4 shows the primary subgroups of Oceanic;

Figure 4. Primary subgroups of Oceanic

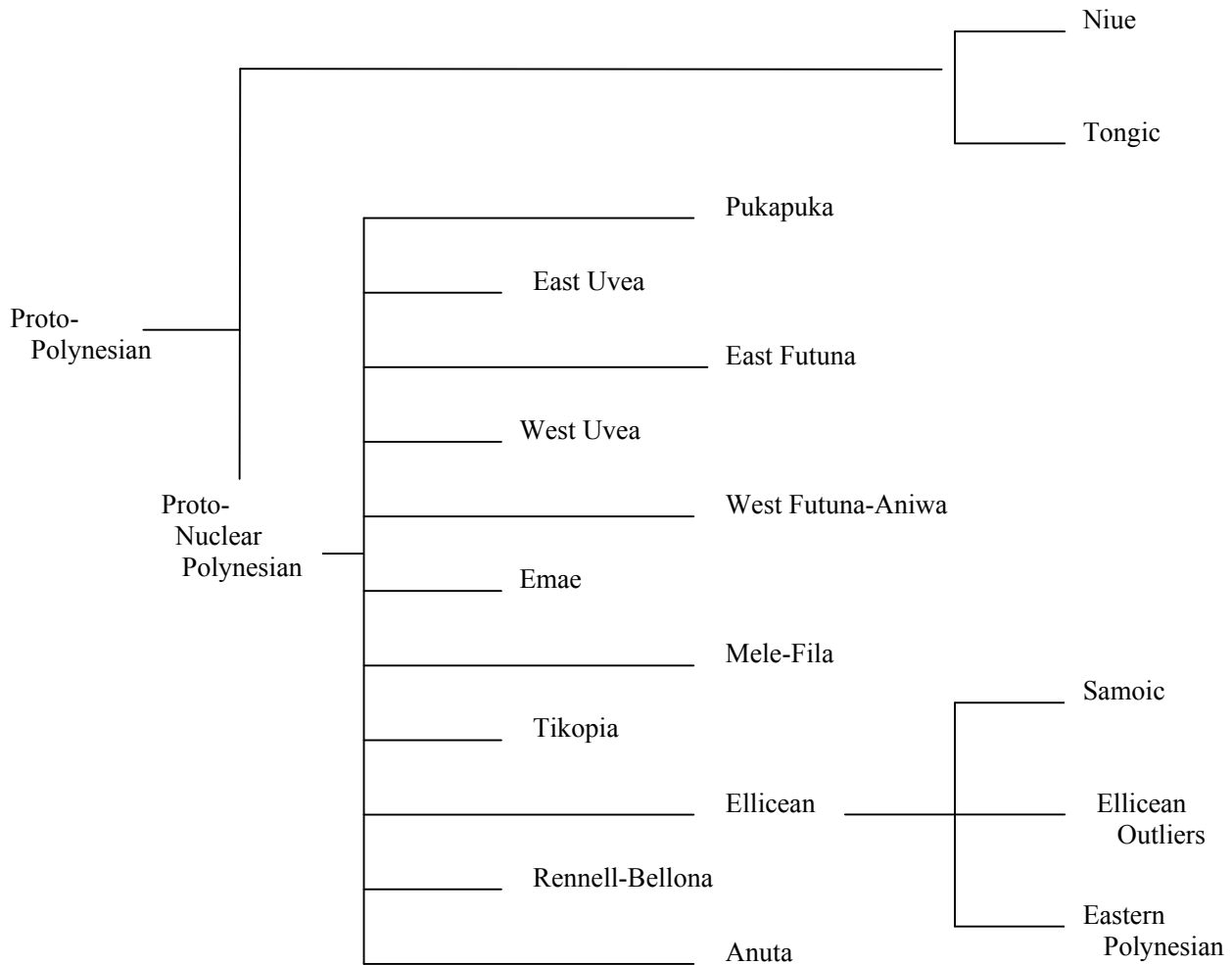


Source: Pawley & Ross (1995)

One of the subgroups of Oceanic, namely Central Pacific, includes Fijian-Rotuman, and this in turn gives rise to the Polynesian, which similarly subdivides into parallel branches. Marck (2000) proposed that Eastern Polynesian had eleven parallel families. The ‘Ellicean’ branch has recently been questioned by Wilson (2012) but the underlying pattern remains the same. Figure 5 shows the primary subgroups of Eastern Polynesian;

Despite low-level disagreements, the linguistic pattern should now be clear. Austronesian is characterised by a series of bottlenecks, points at which there is a sudden breakup into a parallel subgroups which cannot be nested. A period of consolidation follows and then another single branch undergoes the same pattern of diversification. It is worth underlining that this is unique globally; no other large language phylum is structured in this way. The challenge is then to establish how the linguistics mirrors archaeology and material culture, and in particular to unravel the sociological aspects of Austronesian society which correspond to these dispersals.

Figure 5. Subgroups of Polynesian



Source: Marck (2000)

2.2 Archaeological results: the pattern of dates

Compared with many other regions of the world, the dating of the Austronesian expansion is well covered by archaeology. Taiwan, the Oceanic region and Polynesia are supported by a suite of dates and sites. Island Southeast Asia (ISEA) has been less well-known but the last few years have seen a considerable expansion of dates for open-air sites. The first farming cultures in appeared in Taiwan about 5500 BP. The Ta-p'en-k'eng (TPK) culture is defined by rice, distinctive cord-marked and incised pottery, shell harvesting knives, net sinkers, baked clay spindle whorls and barkcloth beaters, has antecedents in south China (Rolett et al. 2002; Bellwood 2007). By about 4500 BP, the TPK and its successors on Taiwan had developed into several regionally diverse cultures. The Fengpitou culture, characterized by fine red cord-marked pottery, was found in Penghu and the central and southern parts of the western side of the island, and a culture with similar pottery occupied the eastern coastal areas. There was a later differentiation into the Niumatou and Yingpu cultures in central Taiwan, the Niuchouzi and Dahu cultures in the southwest, the Beinan Culture in the southeast and the Qilin culture in the central east. The Yuanshan Culture in the northeast does not appear to be closely related to these, featuring sectioned adzes, shouldered-stone adzes and pottery without cord impressions. It has been suggested that the Yuanshan represents another wave of immigration from the mainland, although no typological parallels have been proposed.

Around 4000 years ago, one subset of the Taiwanese populations, taking advantage of enhanced maritime technology, migrated both to the Batanes and the Northern Philippines (Bellwood & Dizon 2014), but also eastwards to the Marianas (Reid 2002; Hung et al. 2011) and (more controversially) westward back to the Chinese mainland. The archaeological evidence of first settlement in the Marianas by at least 3500 BP is

strong, on the basis of convincing similarities in the ceramics. Interestingly, change in the ceramics of the Northern Philippines is rapidly reflected in the Marianas, and thus contact was continuous and intentional rather than a one-off voyage. Carson et al. (2013) provide a comprehensive view of the evidence connecting the Northern Philippines with Remote Oceania.

The demographic expansion model assumes that the settlement of the Philippines was followed by a gradual onwards movement to other parts of ISEA. There have been many versions of this over time, including the hypothesis that Austronesian is not an expansion but the spread of a trade language (for a useful review of existing models see Greenhill & Gray (2005). Donohue & Denham (2010) have published an influential review positing a more complex interaction between the Austronesians and farming than the primary models suggest. However, the pattern of dates for the Neolithic of ISEA argues strongly against slow demographic expansion. Spriggs (2007, 2011) argues that the narrow range of dates in the northern Philippines and elsewhere in ISEA and the Pacific, points to a very rapid dispersal, within a window of a few hundred years just before and after 4000 BP and draws a parallel with the Lapita expansion;

The spread of Neolithic AN-speaking cultures across much of ISEA is a similar phenomenon, in terms of its rapidity, to the Lapita expansion beyond the Bismarck Archipelago between about 3100 and 2900 BP (Spriggs 2011: 513).

This is hardly a pattern characteristic of farmers. The appearance of early sites in the Marianas can only be the result of a striking advance in maritime technology, possibly the sail. Pawley & Pawley (1994) observe that various aspects of sailing technology reconstruct to PMP but not to PAN. Bulbeck (2008) proposed the term 'fisher-foragers' to characterise Austronesian society at this period. At least in later periods there is a military aspect, so 'raiders and traders' might also capture the character of this dispersal. Their relationship with agriculture would have been opportunistic; trading for staples and tree products with resident farmers and adopting production techniques in particular times and places. Carson & Hung (2014) rather idiosyncratically use semiconductor theory to model this type of opportunistic dispersal, capturing the dynamic movement of populations. In more recent times, there are similarities with sea nomads such as the Orang Laut in western ISEA and the Bajaw, who nomadise between Borneo and the southern Philippines. Strikingly, there is evidence for the Bajaw, who speak Samalic languages, resettling on land, turning to agriculture and dropping their maritime lifeways (Blust 2005).

This pattern of dates is best interpreted as a maritime expansion, spreading out to seek new resources in an explosive dispersal, and this corresponds well with the multiple parallel branches of PMP. Just one branch of PMP, Oceanic, constitutes a well-defined subgroup which in turn disperses following the same pattern. Few scholars do not now believe this can be correlated with the sudden appearance of Lapita pottery. Around 3200-3100 years ago Lapita settlements were established in the Reefs/Santa Cruz Group and in Vanuatu, making decorated pottery in the Middle Lapita style (Green 2003; Bedford & Sand 2007). Only slightly later, by 3100-3050 BP, Lapita people had colonised New Caledonia (Sand 2001). There is evidence at a site in Fiji for dentate-stamped pottery at 3000 BP (Nunn *et al.* 2004) and by no later than 2900 BP they had reached Fiji and Tonga, some 4500 km to the east of the Bismarcks (Burley *et al.* 2001, Clark and Anderson 2001) and. It is worth underlining again just how rapid this is, with Lapita appearing over a vast area of the Pacific within a very short period and then disappearing or evolving into other styles within a few centuries.

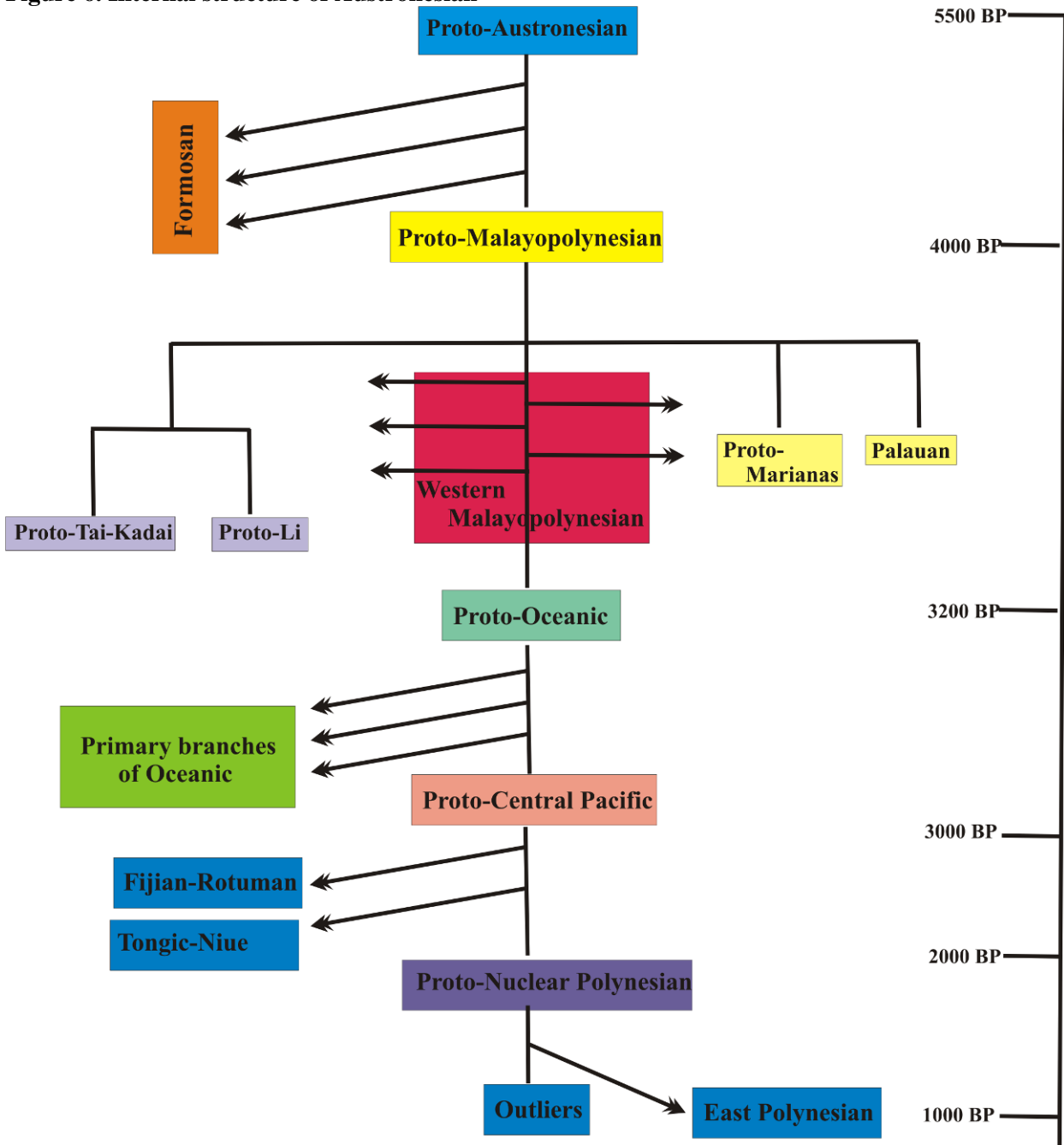
Shortly after the Lapita expansion, canoes reach Fiji and Tonga, to establish the precursors of Polynesian culture. Even when dating was somewhat sparse, it was clear that the early Polynesians did not immediately begin the characteristic voyages for which they are famous. Pawley (1996: 404) says;

'what the linguistic evidence does indicate, very strongly, is a long delay after Western Polynesia was settled, before the effective colonisation of Central Polynesia'

Wilmshurst et al. (2011) have undertaken a re-evaluation of the radiocarbon chronology for Eastern Polynesia, which has dramatically shortened the estimated settlement time. Proto-Eastern Polynesian is now dated to 1000 BP, with the final canoes reaching New Zealand by as late as 1200 AD. Again, the same

pattern appears; after a period of consolidation, one branch of Austronesian undergoes an explosive dispersal, reaching numerous locations within a very short period.

Figure 6. Internal structure of Austronesian



These phases of dispersal and consolidation bring together neatly the linguistics and archaeology. The key question, however, is explaining the historical dynamic responsible for this recurring pattern. To answer this, we need to bring together historical sociology, technology and subsistence as interpretative strategies.

3. The great shift

3.1 The evolution of agricultural society in Taiwan

Taiwan today consists of a large region dominated by the Chinese population and a relatively small region, mostly in the mountains, where the remaining Austronesian peoples live. In the sixteenth century, substantial populations speaking Austronesian languages still persisted on the plains areas, and we know of languages

such as Favorlang and Siraya, for which documentation exists. In the case of Siraya, an ethnic population retains this identity. However, today even the mountain languages are severely threatened. Pazeh has effectively disappeared with the death of the last speaker in 2010, and Thao had just six elderly speakers in 2000.

Although Taiwan has been occupied for as much as 25,000 years, there is no reason to think agriculture was practised until the ancestors of the present Austronesians arrived from the mainland. Finds of *Setaria* millet and rice as well as the archaeology of the Ta Pen Keng suggests this was ca. 5500 years ago. The subsistence systems of lowland populations are not well-characterised, but those in the highlands were strongly focused on cereal cultivation. The montane Austronesians who have persisted grow a wide variety of cereals, including those shown in Table 1;

Table 1. Cereals grown by indigenous Taiwanese peoples

Common name	Scientific name
Foxtail millet	<i>Setaria italica</i>
Common millets	<i>Panicum miliaceum</i>
Sorghum	<i>Sorghum bicolor</i>
Finger millet	<i>Eleusine coracana</i>
Job's tears	<i>Coix lacryma-jobi</i>
Taiwan millet	<i>Spodiopogon formosanus</i>
Rice	<i>Oryza sativa</i>

Photo 1 shows examples of the millets grown by the Rukai peoples, illustrating their diversity. Sorghum and finger millet are of African origin, so must have been incorporated later into the cultigen repertoire, although there is no archaeological evidence to indicate the date of this. Similarly, there is no evidence for Job's tears, although, as an ancient SE Asian domesticate, it could have arrived with the initial settlement. Job's tears has been conspicuous by its absence in any SE Asian site, but in 2014, several samples were found in the site of Lo Gach in Southern Vietnam dated to ca. 800 BC (Piper p.c.).

Given this complex agriculture, it seemed reasonable to assume that it was carried out of Taiwan with the Austronesian expansion and onwards to the Philippines and the remainder of ISEA. The existence of elaborate rice terraces in the northern island of Luzon, seemed to be initial confirmation of this continuity. The earliest statements about the Austronesian expansion assume a horticultural economy (Shutler & Marck 1975).

Photo 1. Rukai millet varieties



Source: Courtesy Emiko Takei

However, archaeology has signally failed to confirm this picture. No remains of cereals of the relevant antiquity have been found in the Northern Philippines. Even today, the characteristic millets of the Asian mainland are barely represented in ISEA agriculture. Of the dogs, pigs and chickens originally thought to be part of the Austronesian 'package' only pigs cross the Taiwan Strait, and these now seem to be a local domestication not ancestral to the domestic pigs which are generally part of the Austronesian world.

3.3 The switch to fisher-foragers

Most of island SE Asia has long been inhabited. Redating the Tabon cave skull on Palawan produced a date of 47,000 BP (Dizon et al. 2002) and Niah cave skull is nearly as old (Barker et al. 2007). It has generally been assumed that the inhabitants prior to the Austronesians were exclusively foragers. Encapsulated modern populations such as the Andamanese, the Orang Asli in the Malay Peninsula and the remnant negrito populations in the Philippines seem to point in this direction. There are also foragers on other islands, such as the Penan of Borneo (Puri 2005) who are clearly Mongoloid; and are presumably not survivors of a pre-Austronesian population but farmers who went back to the forest, like the Tasaday (but see Sellato 1988).

Logically there is the possibility that there were prior agricultural populations on some of the islands and that the evidence for their subsistence systems is difficult to find. There may be two reasons for this, either because they were based around vegeculture and arboriculture or because the number of open-air sites in ISEA is still very low. If there were such populations who switched from other languages to Austronesian, they would have been all but submerged. Ellen (1988) describes this type of mixed vegeculture and arboriculture, a sedentary lifestyle based around sago extraction, for Seram in Eastern Indonesia. Stark (1996) touches on this hypothesis in a discussion of the archaeology of Eastern Indonesia, and Kyle Latinis (2000) discusses the broader role of arboriculture in early subsistence in ISEA. Hunt & Rushworth (2005) report evidence for disturbance in the tropical lowland forest at Niah, Sarawak, Malaysian Borneo at 6000 BP which they attribute to cultivation. Huw Barton (2012) has evidence from starch on stone pounders in the Kelabit highlands for palm granules earlier than 6500 BP.

What is conspicuously absent from the evidence is any archaeological trace of the complex cereal-based agriculture typical of Taiwan. The picture is diverse, suggesting continued foraging, vegeculture, and sago starch extraction. Hence the concept that the subsistence base of maritime Austronesians relied on fishing, trading, possibly raiding and exchange of prestige goods. With their advanced sailing technology, they were well-placed to carry high-value goods from one exchange site to another. In this case, it was the encounter with the Melanesian populations in Eastern Indonesia is certainly responsible for their adoption of vegeculture and possibly the dog³, but they were willing to drop and re-adopt these according to the circumstances of individual cultures they encountered.

An important question is where this switch took place. The site of O Luan Pi (I and II) on the southern tip of Taiwan, described by Kuang Ti (2000) is dated to 1795-1420 cal BC. Although these populations were pottery users, the site has no trace of agriculture, and it seems subsistence was based on aquatic resources and wild animals. If so the people of O Luan Pi may have already dropped agriculture in response to the rich resources of their location. It is precisely these sorts of populations which may have first reached the Batanes, although much more data will be necessary to confirm this link.

A major methodological question arises in the reconciliation of archaeological and linguistic data. Proto-Malayopolynesian includes a significant number of reconstructions which point to cereal agriculture and livestock production. Crops include those shown in Table 2;

Blench (2012a) discusses the contradictions between domestic animal reconstructions and the archaeology and concludes these were based on chains of loanwords giving an appearance of spurious antiquity. The evidence is similar for taro (Blench 2012b) where the few cognates of the **tales* root in the Philippines appear to be loans from further south. Again, if we consider the evidence for 'millet' as compiled in the Austronesian Comparative Dictionary, it consists of a small set of scattered terms in Buginese and Eastern

³ Unpublished reports are now citing a possible find of dog in Sulawesi as early as 4500 BP (Piper p.c.)

Indonesia. The ‘cooked rice’ term is more widespread in the Philippines, but still not necessarily a genuine reconstruction to PMP.

Table 2. Crop reconstructions in PMP

Species	Latin	Proto-Form
Banana	<i>Musa spp.</i>	* <i>punti</i>
Taro	<i>Colocasia esculenta</i>	* <i>tales</i>
Sugar-cane	<i>Saccharum officinarum</i>	* <i>tebuh</i>
Cooked rice	<i>Oryza sativa</i>	* <i>hemay</i>
Rice husk	<i>Oryza sativa</i>	* <i>qeta</i>
Millet	<i>Setaria italica</i>	* <i>betem</i>

Source: Blust ACD (consulted 5.09.14)

I am well aware that this argument goes contrary to the assumptions about the Austronesian expansion that have been proffered in numerous models. But linguists can no longer ignore what now seems to be a quite striking contradiction with the archaeological evidence. The apparent evidence for early agriculture in the Northern Philippines is in fact a combination of two factors, the later spread of cognate terms as agriculture did indeed spread and (possibly) a familiarity with grains and other staples acquired in trade and exchange. §6 draw parallels with the ‘Neolithic’ Ertebølle culture of Southern Scandinavia, foragers who traded for grain with their southern neighbours. In addition, Blust (2005) has argued for a significant process of language levelling in the Philippines and I suggest that the spread of lexemes suggesting agriculture was part of this process.

4. Religion and material culture

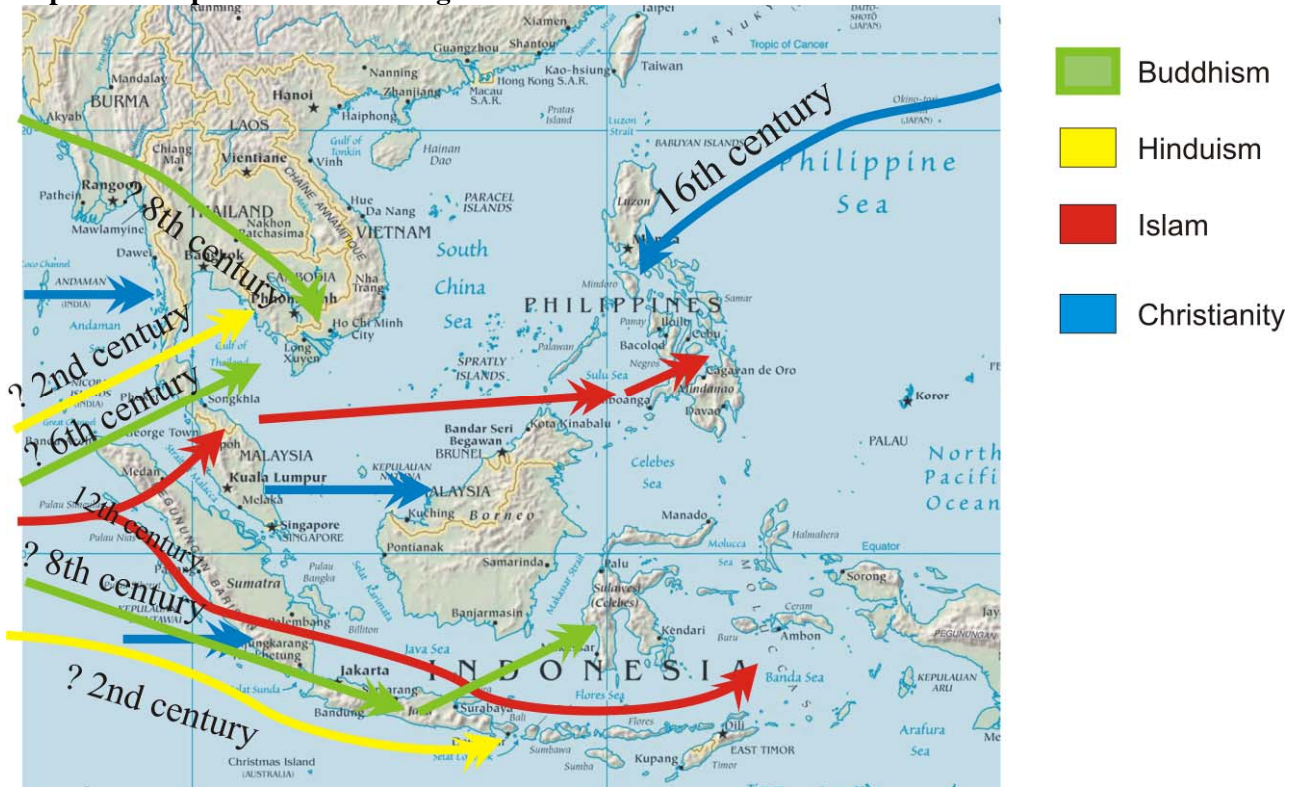
4.1 Adat: the role of religion

Archaeology and linguistics both suggest a common pattern of punctuated equilibrium, pauses followed by explosive dispersals. This occurs on a large scale at least three times during the Austronesian expansion, at intervals of approximately a thousand years. Although this could not have occurred without the facilitating element of maritime technology, this does not provide the motivating force. This cannot be the quest for land, foraging resources or trade goods alone, since many of the areas into which they expanded were at best sparsely settled. The additional impulse may lie in the area of religion, the desire to expand and proselytise for a particular world-view.

This is clearly not a widespread hypothesis to explain the Austronesian expansion, and there may be two reasons why this factor is not much discussed in the literature. Archaeologists are at heart secularists and empiricists, more satisfied by materialist models. Stone-built monuments they can understand, but immaterial ideologies are far more elusive. But most of the world’s religions, prior to 500 BC, the era when Confucianism, Buddhism and Zoroastrianism all began, are associated with a rather sparse material record. It is generally considered that the expansion of Pama-Nyungan foragers in Australia must have been related to new forms of belief and social organisation (McConvell & Evans 1998) but we base this on synchronic ethnography, not material remains. The second is that world religions as we understand them are connected with scriptures, sacred texts which may begin their transmission orally, but which must in due course be written down. These form a canon and an organising principle by which we conceptualise religion, essentially along Judaeo-Christian lines.

The spread of external religion has somewhat obscured Austronesian religious practice. World religions have come in from different directions and at different eras and are overlaid on the original religious system. Map 2 shows the approximate dates and routes for appearance of the different ideologies in SE Asia.

Map 2. The impact of external religions on the Austronesian world



Although religion often functions according to the Judaeo-Christian model, it does not need to be so structured. In the Austronesian world, we find a strong common pattern, from Taiwan to New Zealand, which underlies the basic belief system of every society, until displaced by Hinduism, Buddhism, Islam and more recently Christianity. This is widely known as *adat* in Indonesia and may be an appropriate term to cover Austronesian religious practice. *Adat* is no longer a coherent set of practices in Indonesia, but an island whose importance is persistently under-rated is Sumba. This is the only large island in the Indonesian archipelago which has rejected the world religions in favour of maintaining *adat* [*marapu* on Sumba], the traditional religious practices (Kipp & Siregar 1987).

Building on Sumba and other records of religious practice, the following aspects can be ascribed to Austronesian religion and society;

- ▶ Strong hierarchical social structure, with caste-like elements
- ▶ Priestly caste or group, with esoteric knowledge and ability to recite ancestral chants often in archaic language
- ▶ Strong attention to genealogy, with reference to semi-mythical founder ancestors
- ▶ Lack of focus on a single over-arching deity
- ▶ Reincarnation
- ▶ Reinforcement of belief system through persistent and stable iconography

The notion that the Lapita complex had a strong religious element has been put forward by Best (2002: 95). He says; ‘the Lapita horizon can be inferred to represent a stratified hierarchical society, and that this had a strong religious content’. Bellwood (1995: 103), in support of his demographic expansion model also adduces ‘a culturally sanctioned desire to found new settlements in order to become a revered or even deified founder ancestor in the genealogies of future generations’. However, Best appears to argue by analogy with the design of Islamic carpets rather than with direct reference to the ethnographic record. A better historical parallel would have been Islam itself, which is marked by a sort of explosive democracy linked to a powerful lineage system, justification of historical priority through attention to detailed

genealogies, and a series of renewal movements through the centuries which have purported to replace corrupt versions of the faith with newer purer version.

Religion and social structure are highly negotiable, and there is no doubt that when the Austronesians encountered other populations with different beliefs and lifestyles, they were forced to adapt. Hence in some ways the striking differences between Austronesians in contact with Papuans, whose typical social structures were individualist, acephalous and marked by great diversity in approaches to religion and belief. Austronesians on the island of New Guinea were largely unable to maintain the complex hierarchies characteristic of other regions. However, in Polynesia, New Caledonia and other places where they encountered no opposing trends, chiefly societies were retained in a ‘strong’ form (see §5.2).

4.2 Comparative Austronesian iconography

4.2.1 General

A distinctive feature of Austronesian iconography is its dispersal and conservation over an extensive geographic and temporal range, with remarkably similar representations found from Taiwan to New Zealand. This section focuses on a number of specific examples. Globally, it is extremely rare for iconographic elements to be conserved in this way within a language grouping. Despite the importance of figurative art in Africa, there is nothing comparable which could be associated with African language phyla, with Austroasiatic or the other phyla within mainland SE Asia (except Hmong-Mien, which has a rather shallow time-depth). The parallel that does come to mind is the iconography of a global religion such as Catholicism. Images of the saints conceived in European cultural traditions, have been carried all over the world; carvers in the Andes, in Việt Nam, in Nigeria, all continue to reproduce the same basic iconography. Despite a slight trend towards local features, the core images are essentially the same everywhere. If the Austronesian situation is comparable, then this pervasive imagery is a manifestation of *adat*, the traditional religion of Austronesian ISEA prior to the spread of world religions.

One objection to this might be that, as with Catholicism, and indeed other world religions such as Buddhism and Islam, the iconography might have diffused subsequently. But this would be difficult to sustain, especially in the case of visual tropes that are present in Polynesia. For the same demonstrably analogous image to be present in New Zealand, the Austral Islands and Việt Nam and yet be a later diffusion, it would have to be moved around by some vast trade or religious enterprise which is completely unattested historically or archaeologically. These icons are just as prominent in remote inland areas as they are along sea-coasts, as the *bulul* figures of the Philippines highlands or the megalithic rocks carved with split figures in the interior of Borneo demonstrate. To suppose there was a so far invisible prehistoric process that could account for these which was not the primary spread of Austronesian culture would be at the least a highly uneconomical explanation.

Photo 2. Taiwanese *linglingo*



Source: Hung et al. (2007)

Photo 3. Tabon caves *linglingo*



Source: Fox (1970)

Photo 4. Sumbanese earpieces



Source: Author collection

4.2.2 *Lingling-o*

Typical are the *linglingo*, the jade/nephrite earpieces which occur from Taiwan to New Zealand⁴ as well as on the SE Asian mainland and which have been associated with the Austronesian expansion (Hung et al. 2007). Photo 2 shows some examples of those found on Taiwan, which have been traced to local jade sources. Similar pieces have been found in the Tabon caves on Palawan in the Philippines⁵ (Photo 3) while Photo 4 shows the typical Sumbanese forms, usually made from gold or silver. Paz (2013) discusses the possible link between these pervasive forms and the forms of spiritual behaviour which can be reconstructed. Versions of this form are found in all types of metal as well as stone, wood, clay and shell and the motif is then transferred to other decorative surfaces, such as wooden doors.

Photo 5. Tanimbar (left) and Batak (right) figures



Source: Author collection

Map 3. Distribution of the *bulul* figure



Photo 6. Stone bulul, Ifugao, Philippines



Source: CC

4.2.3 The *bulul*

One of the most well-known Austronesian characters is the *bulul*, a seated figure with either the arms crossed or placed on the knees, and generally with a serious demeanour (Photo 6, Photo 5 and Photo 7). The northernmost occurrence of the *bulul* figure is in Luzon (Anderson 2010) and it is recorded widely across the Austronesian world in very similar form (Anderson 2010). It reaches Viêt Nam, Eastern Indonesia and western Melanesia and then appears to die out, apparently unknown to the Lapita peoples. Its strongly religious associations suggest it was of key importance in the early Austronesian spiritual world. Map 3 shows the distribution of the *bulul* figure.

⁴ At least in form, though they are realised in different materials and are not always attested archaeologically

⁵ Type a is distinctive to the Philippines and Viêt Nam (the Sa Huynh culture) and does not extend into other parts of ISEA.

4.2.4 The figure with splayed legs bent at the knee

Another iconographic element is even more pervasive, the seated figure with splayed legs bent at the knee (Photo 9 and Photo 8). This is found from the Philippines to the Austral islands and also on the Vietnamese mainland. The very close correlation with the geographic distribution of the Austronesians and the centrality of these images to religion suggests that these are not subsequent diffusion dating from the age of metals, especially for forms attested in Polynesia. If this were the case we would expect a more patchy distribution and equal occurrence among non-Austronesian peoples.

4.2.5 *Ikat* weaving

An Austronesian culture trait which shows a remarkable match to the version of Austronesian history given here is the warp *ikat* weaving tradition (Buckley 2012). A variety of authors have noted the strong similarities in both motifs, technical construction and place in the ritual system associated with these textiles. In addition, prior to the introduction of cotton into the region, they depended entirely on locally available fibres. There is thus no reason to think

ikat is not of considerable antiquity. Map 4 shows the distribution of *ikat*, which corresponds to the Austronesian world, but including both Hainan Island and the Tai area, suggesting strongly these were diffused with the breakup of PMP. There is no parallel for these traditions in Taiwan, hence this is an innovation which must have developed subsequent to the departure of the early PMP speakers.

Photo 8. Wooden figure, West Papua



Source: Author photo, Loka Budaya Museum

Photo 7. Wooden figure, Timika, West Papua



Source: Author photo, Loka Budaya Museum

Photo 9. Wooden inset on *pahu* drum, Austral Islands



Source: Author photo

Map 4. Distribution of *ikat* weaving traditions



Source: Buckley (2012)

5. Austronesian society

5.1 Headhunting

Headhunting, the taking of heads for ritual purposes, is recorded globally in the ethnographic record as well as archaeologically. However, it has a very patchy distribution in ISEA and Oceania and there is every reason to think it is associated with the Austronesian expansion (De Raedt & Hoskins 1996). Headhunting is characteristic of Taiwan and Northern Luzon and is scattered through the region. Table 3 shows the places where headhunting has been recorded and Map 5 shows these plotted on a map.

Table 3. Headhunting in the Austronesian world

Location	
Taiwan	Montgomery-McGovern (1922)
Northern Philippines	
Borneo	
Sulawesi	George (1991)
Nias	
Sumba	Hoskins (1996)
New Guinea	
Solomons	
New Zealand	

An issue in the correlation with Austronesian is the presence of headhunting in non-Austronesian speaking communities in western Melanesia, notably the Asmat, Korowai and similar societies. Whether this reflects contact or was an early practice in some Papuan groups remains uncertain.

Map 5. Records of headhunting in the Austronesian world

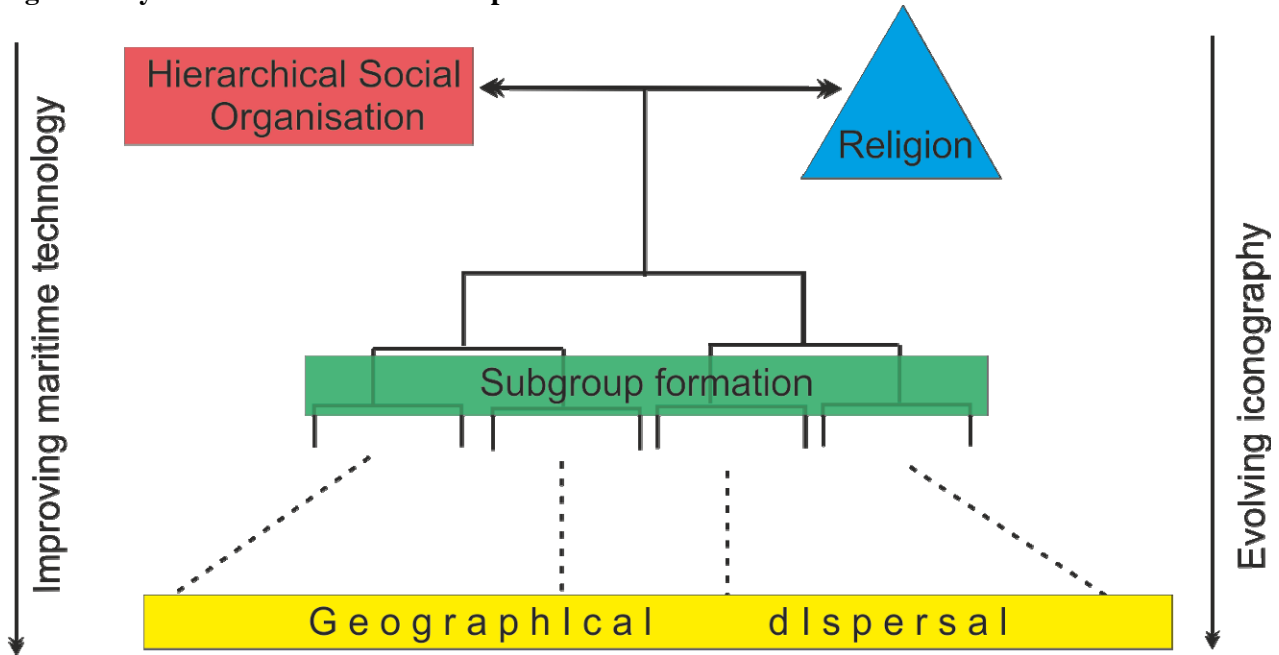


5.2 Social hierarchy

An aspect of Austronesian society which remains to be fully discussed is the pattern of hierarchical societies. Across the Austronesian world, many societies have a complex social hierarchy expressed in linguistic and cultural terms. This is at its most obvious in Java, where the complex of courts and levels of honorific speech have been nicely translated into an Islamic idiom. However, strikingly hierarchical societies occur across the whole Austronesian range including small islands, where an egalitarian structure might seem more practical (see Van Wouden 1935 for a review of social structures and Blust 1980, Pawley 1982 for the linguistic evidence). The significance of this is related to the ‘founder ideology’ identified by Bellwood (1996) which is part of the driving force behind the expansion and also expressed in the physical structure of the house (see McKinnon 1995 for an example from Maluku and Blust 1987 for the lexical reconstruction of words connected with the house in Austronesian). Those at the apex of the social pyramid need to constantly develop new subordinate groups, underpinned by a striking religious ideology.

In places where there were no resident populations prior to the Austronesians, such as New Caledonia and Polynesia, this hierarchical ideology could retain its fullest expression. Elsewhere, it was retained in places, according to the nature of interaction with local populations. Particularly in Melanesia, the local Papuans generally had very egalitarian social structures and the result of a confrontation of the two ideologies produced mixed results. In Nias, hierarchy was fully expressed because the incoming Nias Austronesians seem to have eliminated the resident foragers (Kennerknecht et al. 2012). Figure 7 integrates these ideas into an overall model.

Figure 7. Dynamics of Austronesian dispersal



Interestingly, some of the new mathematical approaches to cultural phylogeny have suggested that this type of cultural complexity can be modelled and that it relates to linguistic diversity (Walker & Hamilton 2010). However, these types of models depend on an extremely simplistic model of social evolution to which few anthropologists would subscribe. In this version of reality social structure evolves from the community to the petty chiefdom, large chiefdom and finally the state, before undergoing a crash and the process beginning anew. Unfortunately all this demonstrates is the extent to which this sort of modelling is in thrall to a type of Marxist evolution. The model presented in this paper is almost the exact opposite. It suggests the hierarchy is primary and that the acephalous small-scale society ('community' in these terms) is a secondary development. It suggests the retention or breakup of these social forms is historically contingent and reflects both the social structures of *in situ* societies and the ecological or economic matrix into which the migrating group finds itself.

6. Turning the narrative on its head

In this interpretation, the Austronesian expansion over much of ISEA is actually a process of Austronesianisation. Pre-existing populations, some of whom may have practised vegeculture and arboriculture, were culturally assimilated by mobile fisher-foragers bringing prestigious trade goods and innovative religious ideas. Like a crime, the Austronesian expansion needs both motive and opportunity. The claim here is that motive may have been primary and that technology and long-distance trade and exchange provided the mechanism. The wave of expansion were driven by religious renewal, which occurred in pulses. Best (2002: 95) in a discussion of the Why? of Lapita touches on the relationship with religious ideologies characteristic of ISEA. He says, 'the Lapita horizon can be inferred to represent a stratified hierarchical society, and that this had a strong religious content'. This reflects Bellwood's (1995: 103) 'culturally sanctioned desire to found new settlements' mentioned earlier (also Bellwood 1996). As in more visible religious movements in history, the energy these require can only be sustained in short bursts of a few hundred years before the desire for a quiet life kicks in. The hierarchical structure underlying Austronesian society was regularly compromised by both the long lines of communication inevitable in maritime dispersal and the interaction with acephalous peoples who did not accept the vertical structuring of social relations. Hence the rather unusual consequences for the internal linguistic structure of the Austronesian language phylum. On each occasion where a dispersal event occurred, the movement in a wide geographic arc inhibited communication between related lects, hence the result of a flat array.

The other result was the apparent coherence of the Austronesian 'package' which turns out to be a retrospective construct. 'Austronesians' quickly reinvented themselves, incorporating regional innovations

into their cultural repertoire. Apart from their own distinctive pottery, they must quickly have seized on other early trade possibilities, obsidian, stone axes, woven goods and baskets. By the time they begin to reach uninhabited islands they have *constructed* Austronesian culture out of fragmentary elements adopted from a wide range of sources. The Austronesian construction of their culture was sufficiently convincing way as to bemuse twentieth century researchers into imagining that it constituted a coherent whole from the beginning. So books such as ‘The Austronesians’ (Bellwood, Fox and Tryon 1995) become part of an unconscious conspiracy with their unnamed forebears to retrospectively integrate what was historically a conjunction of fragments.

The Austronesian story is thus one of paradox. They succeeded precisely because they failed as Taiwanese cereal farmers, returning to fishing and foraging, a highly appropriate strategy for a vast archipelago rich in marine resources and lightly populated. ‘Failed’ here is a dramatic trope, since the development of a successful forager culture in Southern Taiwan was in other ways the start of their success. As with the Pama-Nyungans in Australia, they assimilated and incorporated almost all the populations they encountered through a powerful religious ideology, backed up with iconography which they spread everywhere they travelled. Underlying the religion was a strong notion of social hierarchy, seen in its purest form in Sumba, in the Loyalties and the Polynesian chiefdoms.

This story seems to have broader implications for our understanding of forager societies. While we work with mental models of small populations in marginal environments (the ‘Cambridge Encyclopaedia’ view) we inevitably assume that large complex societies of the recent past are fully paid-up agriculturalists. Moreover, we read back into the past present patterns of subsistence. But it may well be that many linguistic expansions were primarily those of foragers who only later became farmers. Niger-Congo, for example, is the largest language phylum in the world, covering most of Sub-Saharan Africa. It is usually assumed to be of the order of 10-8000 years old, based on its internal diversity and the rather more secure dates for Bantu, which is of the order of 4000 years old. Agriculture in West Africa is rather late, with no secure dates before about 4200 BP. This argues rather strongly that much of the diversity of Niger-Congo was in place before farming came on the scene. Nilo-Saharan similarly, was primarily an aquatic expansion, exploiting the abundant resources of the ‘green Sahara’ (Drake et al. 2011). A narrative with even more parallels to the Austronesians is the Ertebølle culture of Southern Scandinavia (ca. 5300 BC – 3950 BC) a hunter-gatherer and fisher, pottery-making culture dating to the end of the Mesolithic period (De Roever 2009). Although pottery-making and in regular trade contact with grain-producers, the Swifterbant culture, they persisted with exploiting only wild resources, presumably because those resources were so rich.

Another interesting aspect of this story is the underestimation of role of maritime or aquatic expansions in prehistory. A fascinating example to parallel the Austronesian story is that of the Vikings. The Vikings also had rapid boats, a powerful religious ideology and a ‘raiding and trading’ strategy. Within a period of about three centuries they founded settlements from Newfoundland to Central Asia, and, like the Austronesians left a characteristic material culture everywhere they touched. We can make some hypotheses about the nature of their religion from the texts of the sagas, but we have no direct account of their beliefs. In the New World, a comparable example is the Arawakan expansion, usually thought to have begun somewhere in northeast South America about 5000 kya (Williams 2003). The scattered nature of Arawakan languages suggests their primary means of dispersal was along rivers and they were not driven by a search for agricultural land so much as new trading partners. Whether the Arawakan expansion included a religious component remains uncertain but there is a broad correlation with the ‘Timehri petroglyphs’ which may be a partial reflection of spiritual beliefs.

The Austronesian expansion is virtually unique in human history both in terms of the speed at which it happened and the geographical area it covered. Our understanding of the pattern formed by its languages and the link with archaeology suggests that the two mirror each other. The reason for this pattern are controversial but modern ethnography points strongly to a religious component which appears to have an iconographic counterpart. Moreover, the model runs counter to our usual assumptions about the foraging-farming transition; it is quite possible to be a highly structured society and still depend on foraging and exchange for staple foodstuffs.

References

- Abun-Nasr, J.M. (ed.) 1987. *A History of the Maghrib in the Islamic Period*. Cambridge: Cambridge University Press.
- Anderson, Atholl J. 2005. Crossing the Luzon Strait: Archaeological Chronology in the Batanes Islands, Philippines and the Regional Sequence of the Neolithic Dispersals. *Journal of Austronesian Studies* 1(2):25-44.
- Anderson, E. Moltzau 2010. *In the shape of tradition : indigenous art of the Northern Philippines*. Leiden: Zwartenkot Art Books.
- Barker, G. 2006. *The Agricultural Revolution in Prehistory: Why did Foragers become Farmers?: Why did Foragers become Farmers?* Oxford University Press.
- Barker, G., Barton H., Bird M., Daly P., Datan I., Dykes A., Farr L., Gilbertson D., Harrison B., Hunt C., Higham T., Kealhofer L., Krigbaum J., Lewis., McLaren S., Paz V., Pike A., Piper P., Pyatt B., Rabett R., Reynolds R., Rose J., Rushworth G., Stephens M., Stringer C., Thompson G., and Turney C. 2007. The human revolution in lowland tropical Southeast Asia: the antiquity and behavior of anatomically modern humans at Niah Cave (Sarawak, Borneo). *Journal of Human Evolution* 52: 243-61.
- Barker, Graeme 2006. *The Agricultural Revolution in Prehistory: Why did Foragers become Farmers?: Why did Foragers become Farmers?* Oxford: Oxford University Press.
- Barton, Huw 2012. The reversed fortunes of sago and rice, *Oryza sativa*, in the rainforests of Sarawak, Borneo. *Quaternary International*, 249: 96-104.
- Bedford, S. & C. Sand 2007. Lapita and Western Pacific settlement: Progress, prospects and persistent problems. *Oceanic Explorations: Lapita and Western Pacific Settlement*. *Terra Australis*, 26:1-16.
- Bellwood, Peter 1984/85. A hypothesis for Austronesian origins. *Asian Perspectives*, 20:107-117.
- Bellwood, Peter 1995. Austronesian prehistory in Southeast Asia: homeland, expansion and transformation. In: *The Austronesians*. Bellwood, Peter, J. Fox and D. Tryon (eds.) 96-111. Canberra: Australian National University.
- Bellwood, Peter 1996. Hierarchy, founder ideology and Austronesian expansion. In: *Origins, Ancestry and Alliance: Explorations in Austronesian Ethnography*. Fox, James J., Clifford, Sather (eds.) 18-40. Canberra: Research School of Pacific and Asian Studies, Australian National University.
- Bellwood, Peter 2005. *First farmers: The origins of agricultural societies*. Oxford: Blackwell.
- Bellwood, Peter 2007. Southeast China and the Prehistory of the Austronesians. In: *Lost Maritime Cultures: China and the Pacific*. T. Jiao (ed.) Hawaii: Bishop Museum Press, 36-53.
- Bellwood, Peter 2008. Austronesian cultural origins: out of Taiwan, via the Batanes Islands, and onwards to western Polynesia. In: *Past human migrations in East Asia: matching archaeology, linguistics and genetics*. Alicia Sanchez-Mazas, Roger Blench, Malcolm D. Ross, Ilia Peiros and Marie Lin (eds.) 23–39. London: Routledge.
- Bellwood, Peter 2013. *First migrants: ancient migration in global perspective*. John Wiley & Sons.
- Bellwood, Peter and Colin Renfrew (eds.) 2002. *Examining the farming-language dispersal hypothesis*. Cambridge: McDonald Institute for Archaeological Research, Cambridge University.
- Bellwood, Peter, J. Fox and D. Tryon (eds.) 1995. *The Austronesians*. Canberra: Australian National University.
- Benedict, Paul King 1942. Thai, Kadai, and Indonesian: a new alignment in Southeastern Asia. *American Anthropologist* 44:576-601.
- Best, Simon 2002. *Lapita: a view from the East*. Auckland: New Zealand Archaeological Association Monograph 24.
- Blench, R.M. 2012a. Almost everything you believed about the Austronesians isn't true. In: *Crossing Borders: Selected Papers from the 13th International Conference of the European Association of Southeast Asian Archaeologists, Volume 1*. Editors: Dominik Bonatz, Andreas Reinecke & Mai Lin Tjoa-Bonatz. Singapore: NUS Press.
- Blench, R.M. 2012b. Vernacular names for taro in the Indo-Pacific region and their possible implications for centres of diversification. In: *Irrigated Taro Colocasia esculenta in the Indo-Pacific: Biological, Social and Historical Perspectives*. M. Spriggs, David Addison & Peter J. Matthews (eds.) 21-43. Osaka: Minpaku.
- Blench, R.M. 2013. The prehistory of the Daic (Tai-Kadai) speaking peoples and the hypothesis of an Austronesian connection. *Unearthing Southeast Asia's past: Selected Papers from the 12th International*

- Conference of the European Association of Southeast Asian Archaeologists, Volume 1.* eds. Marijke J. Klokke and Véronique Degroot. 3-15. Singapore: National University of Singapore Press.
- Blust, Robert A. 1980. Early Austronesian social organization: the evidence of language. *Current Anthropology* 21: 205–247.
- Blust, Robert A. 1984/1985. The Austronesian homeland: a linguistic perspective. *Asian Perspectives* 20: 45-67.
- Blust, Robert A. 1987. Lexical reconstruction and semantic reconstruction: the case of Austronesian house words. *Diachronica* IV (1/2): 79–106 (28).
- Blust, Robert A. 1993. Central and Central-Eastern Malayo-Polynesian. *Oceanic Linguistics*, 32 (2): 241-293.
- Blust, Robert A. 1999. Subgrouping, circularity and extinction: some issues in Austronesian comparative linguistics. In E. Zeitoun & P. Jen-Kuei Li eds. *Selected papers from Eighth International Conference on Austronesian linguistics*. Taipei: Academica Sinica, 31-94.
- Blust, Robert A. 2005. The linguistic macrohistory of the Philippines: Some speculations. In: H.-C. Liao, C.R.G. Rubino, K. Lawrence and A. Reid (eds.) *Current issues in Philippine linguistics and anthropology*. Manila: The Linguistic Society of the Philippines and SIL, Philippines, 31-68.
- Blust, Robert A. 2013. *The Austronesian languages*. Canberra: Pacific Linguistics. [Revised online version of hardcopy originally published 2009].
- Buckley, C.D. 2012. Investigating Cultural Evolution Using Phylogenetic Analysis: The Origins and Descent of the Southeast Asian Tradition of Warp Ikat Weaving. *PLoS ONE* 7(12): e52064. doi:10.1371/journal.pone.0052064
- Bulbeck, David 2008. An integrated perspective on the Austronesian diaspora: the switch from cereal agriculture to maritime foraging in the colonisation of island SE Asia. *Australian Archaeology*, 67:31-52.
- Burley, D.V., Dickinson, W.R., Barton, A., & Shutler Jr, R. 2001. Lapita on the periphery. New data on old problems in the Kingdom of Tonga. *Archaeology in Oceania*, 89-104.
- Carson, M.T. & Hung, H.C. 2014. Semiconductor theory in migration: population receivers, homelands and gateways in Taiwan and Island Southeast Asia. *World Archaeology*, (ahead-of-print), 1-14.
- Carson, M.T., Hung, H. C., Summerhayes, G., & Bellwood, P. 2013. The pottery trail from Southeast Asia to Remote Oceania. *The Journal of Island and Coastal Archaeology*, 8(1): 17-36.
- Childe, V.G. 1958. *The prehistory of European society*. Harmondsworth : Penguin Books.
- Clark, G. & Anderson, A. 2001. The pattern of Lapita settlement in Fiji. *Archaeology in Oceania*, 36: 77-88.
- De Raedt, J. & Hoskins, J. (eds.) 1996. *Headhunting and the social imagination in Southeast Asia*. Stanford: Stanford University Press.
- De Roeber, Jutta Paulina 2009. The Pottery of Hunter-Gatherers in Transition to Agriculture, Illustrated by the Swifterbant Culture, the Netherlands. In: *Early Farmers, Late Foragers, and Ceramic Traditions: On the Beginning of Pottery in the Near East and Europe*. Dragos Gheorghiu (ed.) 150–166. Newcastle: Cambridge Scholars Publishing.
- Dempwolff, Otto 1920. *Die Lautensprechungen der indonesischen Lippenlaute in einigen anderen austronesischen Südseesprachen*, Beihefte zur Zeitschrift für Eingeborenen-Sprachen 2. Berlin: Dietrich Reimer (Ernst Vohsen) / Hamburg: C. Boysen.
- Dempwolff, Otto 1934-8. *Vergleichende Lautlehre des austronesischen Wortschatzes*. 3 vols. Zeitschrift für Eingeborenen-Sprachen, Supplement 19. Berlin: Reimer.
- Dietrich, O., Heun, M., Notroff, J., Schmidt, K., & Zarnkow, M. 2012. The role of cult and feasting in the emergence of Neolithic communities. New evidence from Göbekli Tepe, south-eastern Turkey. *Antiquity*, 86(333): 674-695.
- Donohue, Mark and Charles E. Grimes 2008. Yet More on the Position of the Languages of Eastern Indonesia and East Timor. *Oceanic Linguistics* 47 (1): 114-158.
- Donohue, Mark and Tim Denham 2010. Farming and Language in Island Southeast Asia: Reframing Austronesian History. *Current Anthropology*, 51(2): 223-256.
- Drake, Nick A., Roger M. Blench, Simon J. Armitage, Charlie S. Bristow, and Kevin H. White 2011. Ancient watercourses and biogeography of the Sahara explain the peopling of the desert. *Proceedings of the National Academy of Sciences of the United States of America*, 108(2):458-62.
- Dyen, Isidore 1965. *A Lexicostatistical Classification of the Austronesian Languages*. Baltimore: The Waverley Press.

- Eldredge, Niles and S.J. Gould 1972. Punctuated equilibria: an alternative to phyletic gradualism. In: *Models in Paleobiology*. T.J.M. Schopf ed. 82-115. San Francisco: Freeman Cooper.
- Ellen, Roy F. 1988. Foraging, starch extraction and sedentary lifestyle in the lowlands forest of central Seram. In T. Ingold, D. Riches and J. Woodburn (eds.) *Hunters and Gatherers 1: History, evolution and social change*. Oxford: Berg Publishers, 117-134.
- Fiedel, S.J. 1990. Middle Woodland Algonquian expansion: A refined model. *North American Archaeologist*, 11(3): 209-230.
- George, K.M. 1991. Headhunting, history, and exchange in upland Sulawesi. *The journal of Asian studies*, 50(3): 536-564.
- Grace, George W. 1961. Austronesian linguistics and culture history. *American Anthropologist* 63:359- 368.
- Green, Roger C. 2003. The Lapita horizon and traditions—signature for one set of oceanic migrations. *Pacific archaeology: assessments and prospects*, 95-120.
- Greenhill, S.J. & Gray, R.D. 2005. Testing population dispersal hypotheses: Pacific settlement, phylogenetic trees and Austronesian languages. In: *The evolution of cultural diversity: phylogenetic approaches*. R. Mace, C. J. Holden & S. Shennan (eds), 31–52. London, UK: UCL Press.
- Harvey, M. 1997. The temporal interpretation of linguistic diversity in the Top End. In: *Archaeology and linguistics: Aboriginal Australia in global perspective*. P. McConvell and N. Evans eds. 179-186. Melbourne: Oxford University Press.
- Holmberg, A.R. 1969. *Nomads of the long bow: The Siriono of eastern Bolivia*. American Museum of Natural History: Natural History Press.
- Hoskins, Janet 1996. The Heritage of Headhunting: History, Ideology, and Violence on Sumba, 1890-1990. In: *Headhunting and the Social Imagination in Southeast Asia*, De Raedt, J. & Hoskins, J. (eds.) Stanford, CA: Stanford University Press.
- Hung, Hsiao-Chun et al. 2007. Ancient jades map 3,000 years of prehistoric exchange in Southeast Asia. *Proceedings of the National Academy of Sciences* 104.50: 19745-19750.
- Hung, Hsiao-Chun, Carson, M.T., Bellwood, P., Campos, F.Z., Piper, P.J., Dizon, E., Bolunia, M.J.L.A., Oxenham, M. & Zhang Chi 2011. The first settlement of Remote Oceania: the Philippines to the Marianas. *Antiquity*, 85(329): 909-926.
- Hunt, C.O. and G. Rushworth. 2005. Cultivation and human impact at 6000 cal yr. BP in tropical lowland forest at Niah, Sarawak, Malaysian Borneo. *Quaternary Research* 64: 460-468.
- Inge, W.R. 2012. Christopher Morgan and Robert L. Bettinger. *The Oxford Handbook of North American Archaeology*, Timothy R. Pauketat ed. 185-198. Oxford: Oxford University Press.
- Kennerknecht, Ingo, Hämmerle, Johannes Maria, Blench, Roger M. 2012. The Peopling of Nias, from the Perspective of Oral Literature and Molecular Genetic Data. In: *Crossing Borders: Selected Papers from the 13th International Conference of the European Association of Southeast Asian Archaeologists, Volume 1*. Editors: Dominik Bonatz, Andreas Reinecke & Mai Lin Tjoa-Bonatz. Singapore: NUS Press.
- Kipp, R.S. & Siregar, S. R. eds. 1987. *Indonesian religions in transition*. University of Arizona Press.
- Klaproth, Julius Heinrich von 1823. *Asia Polyglotta*. Paris: A. Schubart.
- Kuang Ti, L. 2000. Change and stability in the dietary system of prehistoric O-Luan-Pi inhabitants in southern Taiwan. *Bulletin of the Indo-Pacific Prehistory Association*, 20: 159-163.
- Kyle Latinis, D. 2000. The development of subsistence models for Island Southeast Asia and Near Oceania: the nature and role of arboriculture and arboreal-based economies. *World Archaeology* 32(1): 41-67.
- Lynch, John, Malcolm Ross and Terry Crowley eds. 2002. *The Oceanic Languages*. Richmond, Surrey: Curzon.
- Marck, J. 2000. *Topics in Polynesian language and culture history*. Canberra: Pacific Linguistics.
- McConvell, P. & N. Evans 1998. The enigma of Pama-Nyungan expansion in Australia. In: *Archaeology and Language II*. R.M. Blench and M. Spriggs (eds.) 174-191. London: Routledge.
- McKinnon, S. 1995. Houses and hierarchy: the view from a South Moluccan Society. In: *About the House: Lévi-Strauss and Beyond*. Carsten, J., Hugh Jones, S. (eds.). 170-188. Cambridge: Cambridge University Press.
- Montgomery-McGovern, Janet B. 1922. *Among the Head-Hunters of Formosa*. Boston: Small Maynard and Co.
- Norquest, Peter K. 2007. *A Phonological Reconstruction of Proto-Hlai*. Ph.D. Department Of Anthropology, University of Arizona.

- Nunn, P. D., Kumar, R., Matararaba, S., Ishimura, T., Seeto, J., Rayawa, S., & Tegu, E. 2004. Early Lapita settlement site at Bourewa, southwest Viti Levu Island, Fiji. *Archaeology in Oceania*, 139-143.
- Ostapirat, Weera 2005. Kra-Dai and Austronesian: Notes on phonological correspondences and vocabulary distribution. In Laurent Sagart, Roger Blench and Alicia Sanchez-Mazas (eds.) *The Peopling of East Asia: Putting Together Archaeology, Linguistics and Genetics*. London: Routledge Curzon, 107-131.
- Ostapirat, Weera 2013. Austro-Tai revisited. Papers from the 23rd Annual Meeting of the Southeast Asian Linguistic Society, Chulalongkorn University, Bangkok. Vol. 29.
- Pawley, A. 1982. Rubbishman commoner, Big-man chief? Evidence for hereditary chieftainship in Proto-Oceanic. In: Siikala, J. (ed.), *Oceanic Studies: Essays in Honour of Arne A. Koskinen*. 33-52. Helsinki: Finnish Anthropological Society.
- Pawley, Andrew K. 1996. On the Polynesian subgroup as a problem for Irwin's continuous settlement hypothesis. In: *Oceanic culture history: essays in honour of Roger Green*, Davidson, J. M., Irwin, G., Leach, B. F., Pawley, A., & Brown, D. eds. 387-410. New Zealand Journal of Archaeology Special Publication.
- Pawley, Andrew K. 2008. Where and When Was Proto Oceanic Spoken? Linguistic and Archaeological Evidence. In: Yury A. Lander and Alexander K. Ogloblin (eds.), *Language and Text in the Austronesian World: Studies in honour of Ulo Sirk*. 47-71. München: Lincom Europa.
- Pawley, Andrew K. and M. Pawley 1994. Early Austronesian Terms for Canoe Parts and Seafaring. In: *Austronesian Terminologies: Continuity and Change*, ed. A. K. Pawley and M. D. Ross, 329-361. Pacific Linguistics C-127. Canberra: Australian National University.
- Pawley, Andrew K. & Ross, M. 1995. The prehistory of Oceanic languages: a current view. In: *The Austronesians: historical and comparative perspectives*, Bellwood, P., Fox, J. J., & Tryon, D. (eds.) *The Austronesians: Historical and comparative perspectives*. 39-74. ANU E-Press.
- Paz, Victor 2013. Accessing Past Cosmologies through Material Culture and the Landscape in the Philippines. In: *Archaeology of Spiritualities*. K. Rountree, C. Morris and A. A. D. Peatfield eds. 133-162. New York: Springer.
- Puri, Rajindra S. 2005. *Deadly dances in the Bornean rainforest: hunting knowledge of the Penan Benalui*. Leiden: KITLV Press.
- Reid, Lawrence A. 2002. Morphosyntactic evidence for the position of Chamorro in the Austronesian language family. In: *Collected papers on Southeast Asian and Pacific languages*, R.S. Bauer ed. 63-94. Canberra: Australian National University.
- Rolett, Barry V., Jiao, Tianlong & Lin, Gongwu 2002. Early seafaring in the Taiwan Strait and the search for Austronesian origins. *Journal of Early Modern History*, 4(1):307-19.
- Ross, Malcolm D. 2012. In defense of Nuclear Austronesian (and against Tsouic). *Language and Linguistics*, 13: 1253-1330. [Taipei]
- Sagart, Laurent 2004. The higher phylogeny of Austronesian and the position of Tai-Kadai. *Oceanic Linguistics*, 43 (2): 411-444.
- Sagart, Laurent 2005. Tai-Kadai as a subgroup of Austronesian. In: *The Peopling of East Asia: Putting Together Archaeology, Linguistics and Genetics*. Laurent Sagart, Roger Blench and Alicia Sanchez-Mazas, eds. 177-181. London: Routledge Curzon.
- Sahlins, M.D. 1972. *Stone age economics*. New Brunswick, NJ: Transaction Publishers.
- Sand, C. 2001. Evolutions in the Lapita cultural complex: a view from the southern Lapita province. *Archaeology in Oceania*, 65-76.
- Schmidt, K. 2000. 'Zuerst kam der Tempel, dann die Stadt' Vorläufiger Bericht zu den Grabungen am Göbekli Tepe und am Gürcütepe 1995-1999. *Istanbuler Mitteilungen*, 50: 5-41.
- Schmidt, Pater Wilhelm 1899. Die sprachlichen Verhältnisse Ozeaniens (Melanesiens, Polynesiens, Mikronesiens und Indonesiens) in ihrer Bedeutung für die Ethnologie. *Mitteilungen der Anthropologischen Gesellschaft in Wien*, 29:245-258.
- Sellato, B.J.L. 1988. The nomads of Borneo: Hoffman and "devolution." *Borneo Research Bulletin*, 20: 106-120.
- Shutler, R., Jr. & J. Marck 1975. On the dispersal of the Austronesian horticulturalists. *Archaeology and Physical Anthropology in Oceania*, 10: 81-113.
- Skinner, H. D., and William Baucke 1928. *The Morioris*. Honolulu, Hawaii: The Museum.

- Spriggs, M. 2007. The Neolithic and Austronesian expansion within Island Southeast Asia and into the Pacific. In S. Chiu and C. Sand (eds.) *From Southeast Asia to the Pacific: Archaeological perspectives on the Austronesian expansion and the Lapita cultural complex*. Taipei: Centre for Archaeological Studies Research and for Humanities and Social Sciences, Academica Sinica, 104-125.
- Spriggs, M. 2011. Archaeology and the Austronesian expansion: where are we now? *Antiquity* 85: 10–528.
- Stark, K.J. 1996. *Alternative rainforest economies of Maluku, Indonesia: a reply to the 'wild yam hypothesis' from the archaeological record*. Ph.D. Anthropology, University of Hawai'i.
- Van Wouden, F.A.E. 1935. *Sociale Structuurtypen in de Grootte Oost*. Leiden: Ginsberg. [English edition, translated by Rodney Needham, 1968. *Types of Social Structure in Eastern Indonesia, Koninklijk Instituut voor Taal-, Land-en Volkenkunde Translation Series, 11*. The Hague: Martinus Mijhoff.
- Walker, R.S. & M.J. Hamilton 2010. Social complexity and linguistic diversity in the Austronesian and Bantu population expansions. *Proceedings of the Royal Society B: Biological Sciences*, 278(1710):1399-404. doi: 10.1098/rspb.2010.1942.
- Williams, Denis 2003. *Prehistoric Guiana*. Kingston, Jamaica: Ian Randle.
- Willoughby, C.C. 1919. The Serpent Mound of Adams County, Ohio. *American Anthropologist*, 21(2): 153-163.
- Wilmshurst, J.M., T.L. Hunt, C.P. Lipo, and A.J. Anderson 2011. High-precision radiocarbon dating shows recent and rapid initial colonisation of Eastern Polynesia. *Proceedings of the National Academy of Sciences* 108.5: 1815-1820.
- Wilson, J.A.P. 2011. *Material cultural correlates of the Athapaskan expansion: A cross-disciplinary approach*. PhD. University of Florida.
- Wilson, W.H. 2012. Whence the East Polynesians?: Further Linguistic Evidence for a Northern Outlier Source. *Oceanic Linguistics*, 51(2):289-359.
- Xu, Shuhua, Irina Pugach, Mark Stoneking, Mandred Kayser, Li Jin and The HUGO Pan-Asian SNP Consortium 2012. Genetic dating indicates that the Asian-Papuan admixture through Eastern Indonesia corresponds to the Austronesian expansion. *Proceedings of the National Academy of Sciences of the USA*, 109 (12): 4574-4579.