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The Northern Spice Islands in prehistory, from 40,000 years ago to the recent past

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The previous 12 chapters have examined the results of our 1990s archaeological project in the Northern Moluccas from the perspectives of chronology, artefact sequences, animal remains, and human remains. The general goal has been to locate the Northern Moluccas within the Island Southeast Asian record of humanity since approximately 40,000 years ago. From start to finish, a number of significant questions have risen to the surface:

- a. What kind of hominins first settled the Oceanic (non-landbridged) islands of the Northern Moluccas, and when?
- b. Were these islands settled permanently by forager populations before the commencement of food production, or did these populations only utilise the smaller islands, such as Gebe, intermittently?
- c. Were marsupials translocated from the New Guinea region to the Northern Moluccas by human intention, or did these animals disperse naturally?
- d. What evidence exists within our data for interaction between the island societies of Southeast Asia (including the Moluccas) and western Oceania during the Late Pleistocene and Early Holocene, before the Neolithic?
- e. How do sites such as Uattamdi fit within the picture for Neolithic dispersal around 3300 years ago through Island Southeast Asia and into Oceania? Were there links with the Lapita archaeological culture in Island Melanesia and with the initial settlement of the Mariana Islands?
- f. What have been the traceable interactions between Austronesian-speaking and Papuan-speaking societies in the Northern Moluccas/New Guinea region during the past 3500 years, and especially the past 2000 years since the spice trade linking western and eastern Eurasia commenced? When did pottery making spread into the Papuan-speaking societies of Morotai and northern Halmahera? Furthermore, were the 'Spice Islands' actual sources of exported spices such as cloves around 2000 years ago, as a lot of rather loose historical inference inclines to inform us?

First, let us examine chronology. In terms of standard archaeological terminology, four overall phases (Northern Moluccas Phases 1 to 4) can be recognised in the prehistory of the Northern Moluccas. The earliest record of a potential human presence comes from Golo Cave on Gebe, with a basal date of 36,350–35,001 cal. BP (Wk 4629). Beyond this followed many millennia of Palaeolithic occupation, possibly intermittent, with bone tools and edge-ground technology

for shell (but not stone) adzes appearing towards the end of this phase; indeed, during the Early Holocene rather than the Late Pleistocene in terms of current chronology. We can call this first phase *Northern Moluccas Phase 1*, let us say from 40,000 to 3500/3000 years ago, with an intensification of cultural activity during the Early and Middle Holocene.

A major change occurred associated with the oldest date of 3342 to 2971 cal. BP (ANU 7776) from Uattamdi, which marked the appearance of red-slipped pottery and the oldest shell ornaments found so far in the region. This second, Neolithic, phase apparently continued in Uattamdi until about 2000 BP, and is here termed *Northern Moluccas Phase 2*.

The first appearances of cupreous and iron artefacts and glass beads ushered in a third, metal-using, phase (*Northern Moluccas Phase 3*), again at Uattamdi, by C14 date ANU 9322, 2136 to 1782 cal. BP. This Early Metal Phase also saw the first *recorded* appearances in the region of jar burial (Uattamdi), supine orientation for an inhumation burial (Golo Cave), and a spread of earthenware potting technology into nearby previously aceramic communities on Morotai and northern Halmahera (Tanjung Pinang, Aru Manara, Gorua).

The Early Metal Phase continued onwards into the historical period (*Northern Moluccas Phase 4*), commencing in these islands in terms of direct written records with the arrival of the Portuguese in 1511 (the manuscript of Tomé Pires was written between 1512 and 1515; Cortesão 1944). One could perhaps also recognise a separate phase of importation of glazed ceramics from Chinese and other mainland sources during the early second millennium CE, but little such material was found during our excavations.

To summarise these four phases, therefore, we have the following:

Northern Moluccas Phase 1: from 40,000 to 3500/3000 BP, flaked stone and shell from the beginning, but with marsupials, bone tools, and edge-ground technology for shell adzes only appearing definitely in Holocene but pre-Neolithic contexts.

Northern Moluccas Phase 2: 3500/3000 to 2000 BP, Neolithic red-slipped pottery, shell ornaments, and pig and dog bones (no data on human burials).

Northern Moluccas Phase 3: 2000 to 500 BP, Early Metal Phase cupreous and iron artefacts, glass beads, jar burial (Uattamdi), skull burial (Tanjung Pinang), extended burial with cranial modification (Golo), spread of pottery into Morotai and Halmahera (see, on this, Ono et al. 2017, accepted), extirpation of marsupials, spice trade(?).

Northern Moluccas Phase 4: 500 BP to recent, European contact, Asian trade ceramics.

With this standard archaeological periodisation in the background, a number of important issues arise. Some can be debated fruitfully, others remain obscure, and many have been discussed in more detail in my newest book-length survey of the region (Bellwood 2017).

Some outstanding questions

What kind of hominin first settled the Oceanic (non-landbridged) islands of the Northern Moluccas, and when?

With archaic hominins attested in Java and Flores by Middle Pleistocene times, and possibly also Sulawesi and Luzon by the Late Pleistocene, one might ask if they also reached the entirely sea-girt islands of eastern Wallacea, even allowing for Pleistocene fluctuations in sea level (Hope 2005; O'Connor et al. 2017). Unfortunately, Pleistocene lithic technology in Island Southeast Asia reveals nothing about the hominin status of the makers, so we can interpret very little of a taxonomic nature from the lithic record in Golo Cave at >36,000 years ago. Neither

in Golo nor in other contemporary sites in Island Southeast Asia are there Pleistocene blade, microblade, or backed tools that might give the species game away and hint whether we are dealing with *Homo erectus*, dwarfed hominins related to *Homo floresiensis*, or *Homo sapiens*.

The Pleistocene paintings in caves in Sulawesi and Borneo, the widespread terminal Pleistocene bone tools, and the eventual settlement of Australia and New Guinea by *Homo sapiens* at about 50,000 years ago or more would suggest that the first traceable Moluccans at 36,000 years ago were indeed *Homo sapiens*. But we cannot be sure, and no human remains in Moluccan sites are old enough to be of assistance. However, as Katherine Szabó has pointed out (in Szabó et al. 2007), the presence of modified shell items in the basal layers of Golo Cave suggests a potential presence of behaviourally modern *Homo sapiens* there, as opposed to an archaic hominin. But, without dated cave art and skeletons, a degree of uncertainty remains.

We might also ask just when humans, modern or otherwise, might first have settled in the Northern Moluccas, noting that it is just as likely that Halmahera was settled initially from western New Guinea, via Gebe, as from any other source region to its west (Birdsell 1977; Kealy et al. 2017). New Guinea was certainly settled by 50,000 years ago (Summerhayes et al. 2010), but this need not mean that every small island in its vicinity was settled also at this time. Indeed, Golo and Wetef were both dug to bedrock, with a maximum date of only 36,000 years ago, so we cannot argue that older material lies unexcavated beneath. Gebe is such a small island that if people really did arrive long before 36,000 years ago, we might ask where they lived without leaving traces in any of the excavated caves and rockshelters on the island. All in all, human arrival at 36,000 years ago on Gebe is the best we can do at the moment, and a claim for anything older would be unwarranted.

Were these islands settled permanently by forager populations before the commencement of food production, or did they utilise the smaller islands, such as Gebe, only intermittently?

Only Golo and Wetef on Gebe Island have sufficient time depth for analysis of this question, given the absence of Pleistocene occupation within Tanjung Pinang on Morotai, and the very limited evidence for it from Daao 2. Indeed, there is a possibility that humans did not occupy Morotai at all until after the Last Glacial Maximum, although this is purely a negative observation that could easily be overturned by future discoveries. The Wetef dates (Table 2.5) from Gebe certainly indicate a consistent human presence during the Holocene, as they do in Golo. But Wetef had rather limited Pleistocene occupation, and Golo has some obvious problems with the distribution of C14 dates. In Table 2.2 for Golo, I have shaded the dates that appear to give a coherent sequence, and I regard all the ‘rogue’ marine shell dates as perhaps reflecting disturbance due to the frequent caching of shell adzes in the soft dry floor of the cave. The three direct dates on the shell adzes themselves cannot be taken seriously as indicators of stratigraphic date, as discussed in Chapter 8. If the apparent rogue dates are ignored, then the Golo sequence between 30,000 and 13,000 years ago could suggest either extremely slow deposition, or even an occupation hiatus. At this point, the Wetef date series might come to the rescue, since they do indicate occupation in the lower levels dated to c. 23,000 BP (Table 2.5). So, do these dates add up to a continuous human presence on Gebe Island from 36,000 BP onwards?

The answer is obviously uncertain. If Golo and Wetef are considered together, there is no sign of any massive hiatus across the Last Glacial Maximum, particularly when lowered sea levels are taken into account. Golo and Wetef would have been quite far inland/uphill at this time, thus perhaps not well-favoured for human occupation. But whether or not humans remained permanently on Gebe or just visited from time to time is unknown. My own intuition from the deliberate caching of shell adzes in both the Golo and Wetef Cave floors is that Gebe Island

was subject to occasional visits rather than permanent occupation, but this can only remain surmise. The phytolith evidence from Golo (Tables 2.4 and 2.5) also supports a fluctuating human presence, yet indicates that Gebe Island was apparently not abandoned for any long periods during the past 35,000 years.

Were marsupials translocated from New Guinea or adjacent islands into the Northern Moluccas?

After our 1990s discoveries of marsupial bones in many excavated sites on Kayoa, Halmahera, Morotai, and Gebe Islands, the issue of human translocation of these animals came to the fore in a fairly positive way (Flannery et al. 1998). In terms of 'indigenous' fauna, it was apparent that all of these islands supported native species of marsupial cuscus (*Phalanger* sp.), and placental rodents and bats (Flannery 1995a), plus reptiles and birds. However, the finding of a few bandicoot bones in Holocene layers in Gua Siti Nafisah on Halmahera was unexpected, and even more dramatic was the finding of large numbers of wallaby bones in Gua Siti Nafisah and in the two Gebe caves of Golo and Wetef. Morotai has, to date, produced neither of these terrestrial marsupial species, but the arboreal cuscus was present there, in Daeo Cave 2.

In 1998, Tim Flannery, Peter Bellwood, Peter White and others (Flannery et al. 1998) published the conclusion that the Gebe wallaby was probably derived from translocation of the Misool Island wallaby (*Dorcopsis muelleri mysoliae*), thus from an island source just west of the Bird's Head Peninsula of New Guinea, and almost 200 km south of Gebe. This conclusion is given further statistical support from wallaby dentitions by Jennifer R. Hull in Chapter 10. No conclusions were drawn with respect to the bandicoot owing to the small size of the bone sample. The Gebe, Halmahera, and Morotai cuscuses were already regarded as indigenous species (Flannery and Boeadi 1995).

As far as the wallabies are concerned, however, there is a lingering problem with the taphonomy. Neither Golo nor Wetef have surviving animal bones in their Pleistocene layers, and the record of them starts rather unhelpfully in the Early Holocene. This is strange, given that Golo especially has stone tools and worked shells in its lower layers that suggest a human presence by 36,000 BP. These humans must have exploited some of the bony creatures of land and sea—bats, rats, lizards, small fish, and so forth, even if marsupials were then absent. Yet no animal or human bones occur in the lower layers of either site, despite the survival of shells. In fact, we have no direct fossil data on the Pleistocene fauna of the Northern Moluccan Islands at all.

So how did the three marsupial species—wallaby, bandicoot, and cuscus—actually reach these islands? Were they translocated by humans, or were they truly indigenous (i.e. endemic, self-transported)? In the case of the cuscus there appears to be no argument. They were indigenous, and belong to two endemic species: *Phalanger ornatus* on Halmahera and Morotai, and *Phalanger alexandriae* on Gebe (Flannery 1995a; Flannery and Boeadi 1995). Since these phalangers are extant species, sample sizes are sufficient for such statements to be made. But the situation is different for the locally extirpated wallabies and bandicoots, since the sample sizes are much smaller. Did humans transport them, or did they travel by themselves? We cannot be certain, but wallabies are known to be able to survive at sea at least 7 km away from land (*Canberra Times*, 14 October 1999). So, dispersal independent of humans, even during the Holocene, cannot be ruled out entirely for *Dorcopsis*.

What were the interaction levels between different island societies in Island Southeast Asia (including the Moluccas) and western Oceania during the late Pleistocene and early Holocene, before the Neolithic?

Northern Moluccas Phase 1, from 40,000 to 3500/3000 BP, with its flaked stone and shell tools, and subsequently during the Early Holocene its marsupials, bone tools, and edge-ground shell adzes, offers rather little evidence in support of frequent interaction across the eastern Indonesian archipelagoes, at least not if we focus on the Late Pleistocene. Recent discoveries of Late Pleistocene shell beads and fishhooks in Timor and adjacent islands (O'Connor 2015), plus related worked stone and bone materials with cave art in Sulawesi (Aubert et al. 2014; Brumm et al. 2017) and Borneo (Aubert et al. 2018; Fage and Chazine 2010), tell us what Late Pleistocene humans in Island Southeast Asia were capable of. But they do not attest any very obvious movement of ideas, raw materials, or of the people attached to them. There are many deep and highly significant cave sequences, such as those from Niah (Sarawak), Tabon (Palawan), Gunung Sewu (Java, many caves), Gua Harimau (Sumatra), Island Melanesia, and also the New Guinea Highlands, where such elaborate cultural and artistic creations were simply not present at all in *confirmed* Late Pleistocene contexts. To this list we can add Golo and Wetef.

During the Holocene, the tempo of inter-island contact most certainly increased. Ground and polished bone tools became common in many regions (Aplin et al. 2017), including the Northern Moluccas (Pasveer and Bellwood 2004). The ground *Tridacna* adzes of Golo and Wetef, as discussed in Chapter 8, are remarkably similar to examples from Pamwak Cave on Manus in the Admiralty Islands, 1600 km east of Gebe (Fig. 8.7). The Pamwak shell adzes are not directly dated, but the Golo ones are almost certainly Early to Mid-Holocene, and it seems reasonable to assume that the Pamwak ones might date likewise. This does suggest interaction, at least to a degree, but the supporting idea of frequent animal translocation between islands is now subject to greater doubt than it was 20 years ago.

Did the Northern Moluccas play a major role in the Neolithic dispersals from Island Southeast Asia into Western Micronesia and Island Melanesia around 3000 years ago?

I have recently addressed this issue in my recent book on the prehistory of Island Southeast Asia (Bellwood 2017), and can only reiterate that, so far, no pre-Metal Age archaeological complex with decorated pottery has been exposed anywhere in the Northern Moluccas that could be considered directly ancestral to the Lapita archaeological culture of Island Melanesia, or to the initial Marianas Redware culture of the Mariana Islands. Montenegro et al. (2016) have recently suggested a Moluccan or southern Philippine homeland for the initial settlement of the Palau Islands in western Micronesia, using wind and current simulations, and this is indeed possible given that Palau currently lacks the distinctive stamped pottery that characterises Lapita and Marianas Redware. However, it remains unlikely from an archaeological viewpoint that ancestral Lapita settlers reached the Bismarck Archipelago or the Admiralty Islands by following a route that travelled from the Northern Moluccas, along the northern coast of New Guinea, and then into Island Melanesia. Given current archaeological knowledge of the distribution of red-slipped pottery with punctate-, dentate-, and circle-stamped decoration, after 3500 BP, it is more likely that the Philippines, the Mariana Islands, and Island Melanesia were linked by migrations that did not pass through the Halmahera region. Naturally, future archaeological discoveries in the Northern Moluccas might render this observation incorrect, but we cannot interpret the archaeological record by giving priority to an absence rather than a presence.

What have been the interaction levels between Austronesian-speaking and Papuan-speaking societies in the Northern Moluccas/New Guinea region during the past 3500 years, and especially the past 2000 years since the trans-Eurasian spice trade presumably began?

The early centuries of Austronesian expansion into the Moluccas, between 3500 and 3000 BP, naturally involved some population admixture between speakers of two great language groupings on the world stage—Papuan of western Melanesia and Austronesian of Taiwan and Island Southeast Asia. The languages of the Halmahera region belong to two genetically unrelated families—West Papuan in the north (one of several Papuan language families in the New Guinea region (Ross 2005)), and Austronesian (a language family of ultimate mainland Asian origin via Taiwan) in the south (Fig. 13.1). The only linguist to offer an overall classification and discussion of the West Papuan languages has been Voorhoeve (1988). His research has been based on lexicostatistics rather than full use of the comparative method to plot shared innovations, but the results still offer a picture of considerable interest, updated from a pronoun perspective by Ross (2005).

The Papuan languages of northern Halmahera were classified into a North Halmahera Stock by Voorhoeve, this stock belonging to the West Papuan Phylum, which evidently has its greatest level of diversity in the Bird's Head region of West New Guinea (West Papua). It is thus very likely that the initial West Papuan languages of Halmahera were taken to the island by migrants from New Guinea.

How long ago might this have occurred? Since glottochronology in this region is unlikely to be a reliable technique owing to gross differences in rates of vocabulary change (Blust 2000), all that can be offered is a guesstimate of several millennia based on a minimum shared cognate percentage between all pairs of languages in the North Halmahera Stock of only 21 to 28 per cent (a figure perhaps inflated by hidden borrowing: Voorhoeve 1988:182). Indeed, Voorhoeve (1994:651) once suggested that the West Papuan languages arrived in Halmahera *after* the initial Austronesian languages, but this suggestion was based on glottochronology and it has not been taken up by other linguists.

Given the archaeological record of New Guinea and Australia, it seems most likely that the West Papuan languages of Halmahera were first introduced there in the pre-Neolithic period, i.e. some time in Northern Moluccas Phase 1. Whether as long as 36,000 years ago is far less certain, and there is no visible patterning in the phylum that could possibly support or refute such an enormous antiquity. Any such patterning that might once have existed will presumably have been reduced by the genealogical levelling between the West Papuan languages to be discussed in the next paragraph. However, the fact that the establishment of Papuan language phyla in New Guinea so clearly predated the arrival of Austronesian languages in that island makes it likely that the same situation also held for the Northern Moluccas.

The remarkable point about the North Halmahera Stock languages, alluded to above, is that the largest subfamily contains languages that are very closely related—indeed, 'levelled' in linguistic parlance. This largest subfamily is termed the Halmahera Subfamily (Wurm and Hattori 1983, Map 45: Voorhoeve calls it the North Halmahera Family) and it covers the whole of northern Halmahera, Ternate, and Tidore, with the exception of part of the island of Makian. Within it all languages share over 65 per cent of basic vocabulary (100-word list). The second subfamily contains only the West Makian isolated language (Voorhoeve 1982a), which shares between 21 and 28 per cent of cognates with the languages in the Halmahera Subfamily. This suggests a situation in which the West Makian language has remained in place for many millennia, but earlier Papuan languages in northern Halmahera and Morotai have been replaced by a recent

language radiation or levelling (an interpretation also followed by Yoshida 1980:Fig. 1). This radiation presumably took place sometime within the past 2000 years, given the very shallow Romance-like level of linguistic diversity between the languages concerned.

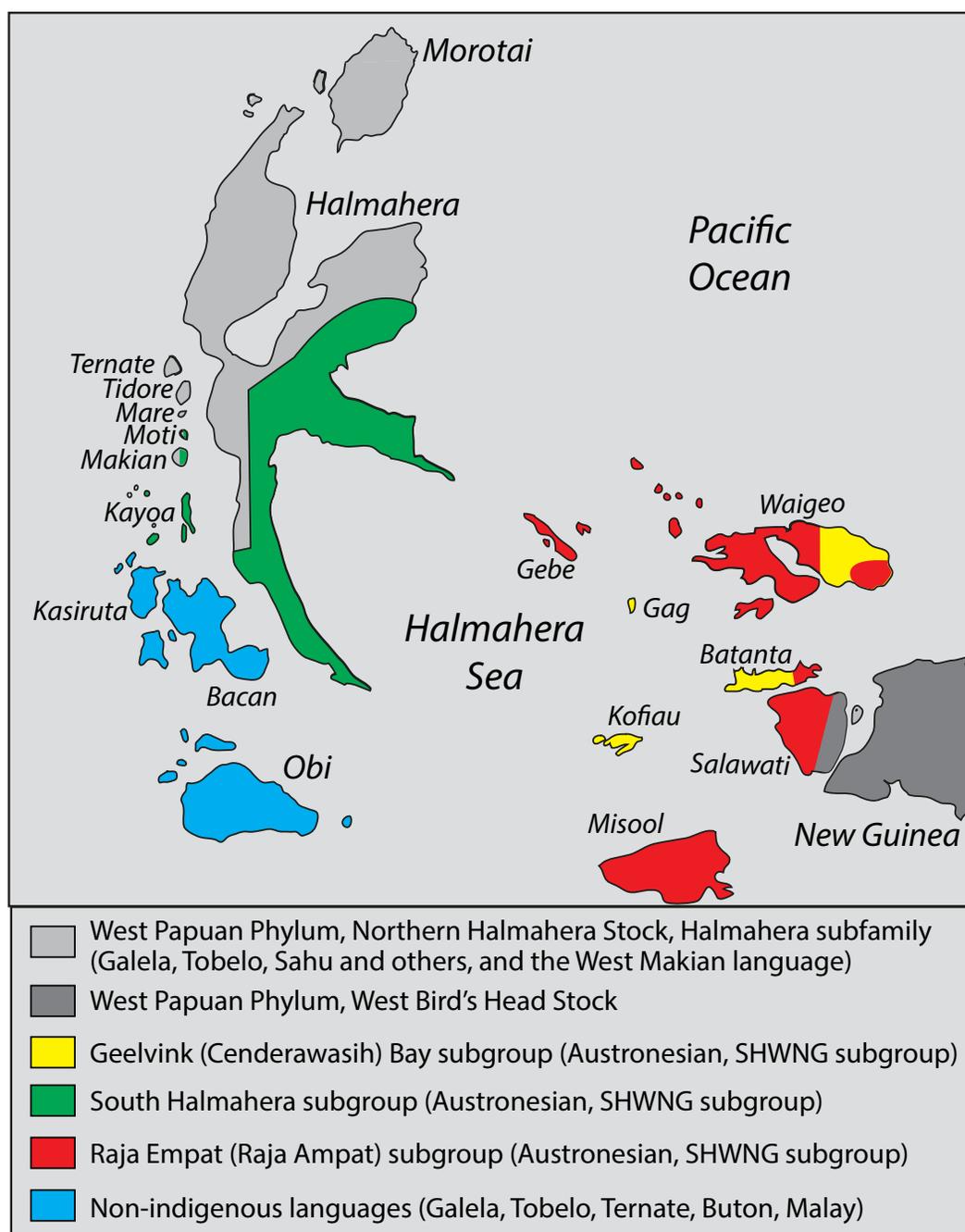


Figure 13.1 Present-day Austronesian and Papuan language groupings in the Northern Moluccas.

Source: Wurm and Hattori 1983: Map 45; Peter Bellwood.

Another very interesting observation made by Voorhoeve (1988:194) is that the North Halmahera Stock languages of Ternate, Tidore, West Makian, and Sahu, all located in the mid-western geographical portion of the Halmahera group, have adopted many elements of Austronesian grammar. Some of this borrowing was also claimed by Voorhoeve to be quite ancient, although

no exact date was suggested. The locations of these four languages, perhaps not coincidentally, are all quite close to the island of Kayoa with its so-far unique assemblage of plain red-slipped pottery, polished stone adzes, pigs, and dogs dating from 3300 BP in the Uattamdi rockshelter. Was the initial enclave of Austronesian speakers at about this time localised to a relatively small area focused on the chain of small islands from Bacan up to Ternate?

There is no simple answer to this question from an Austronesian linguistic viewpoint, partly because the South Halmahera–West New Guinea (SHWNG) languages shown in Figure 13.1 also reveal considerable linguistic levelling according to Blust (2017:195–197), meaning that their current time depth is also likely to be closer to 2000 years, as with the Halmahera West Papuan languages, rather than the >3000 years BP that we would expect for initial Austronesian settlement in the Northern Moluccas. Today, the SHWNG subgroup of Malayo-Polynesian contains 40+ languages (van den Berg 2009) and is defined by about 13 linguistic innovations (Blust 1978, 1993). Its closest cousinly subgroup within the Malayo-Polynesian languages as a whole is Oceanic, rather than any of the Western Malayo-Polynesian subgroups in Sulawesi, Borneo, or the Philippines. Hence, there is a strong likelihood that it entered the Northern Moluccas from the north or east, rather than the west. In Blust’s view, also followed by Kamholz (2014), the SHWNG languages represent a replacement movement from either Cenderawasih Bay or even somewhere east of it, a replacement that might mean that no descendants survive of the first layer of Austronesian languages to reach the Northern Moluccas.

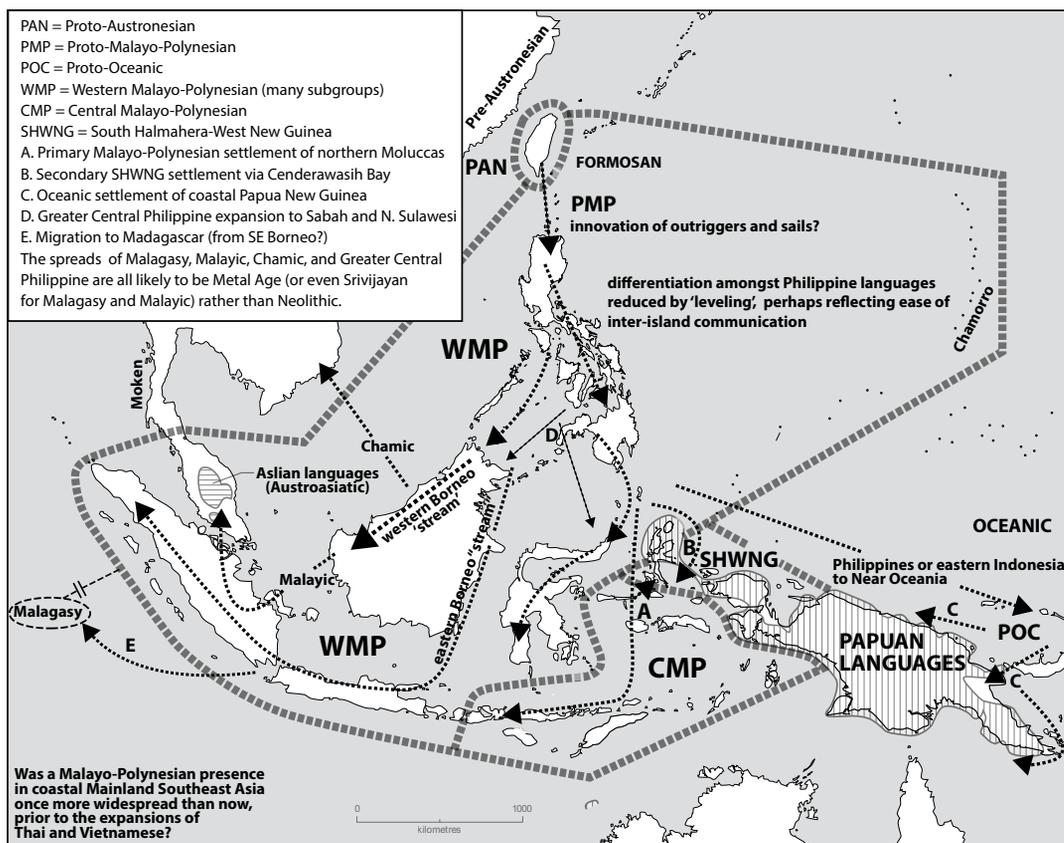


Figure 13.2 The likely migration directions of early speakers of Malayo-Polynesian languages.

Source: Peter Bellwood and Robert Blust (Bellwood 2017:Fig. 6.4).

If such a replacement really did occur quite recently, as also suggested for the Halmahera West Papuan languages, we might need to look for a combination of causes that would include secondary population movements and more recently perhaps forcible population replacement, as well as trade- and exchange-lubricated interaction (Andaya 1993). The very wide occurrence across Indonesia after 2000 years ago of characteristic incised pottery of Indonesian Metal Age style surely reflects increased communication and population movement from this time onwards, and the spice trade comes to mind.

This monograph is hardly the place to review the whole literature on the spice trade that carried cloves from Ternate and Tidore, and nutmegs from Banda, towards the Mediterranean, India, and China, starting possibly 2000 years ago (Bellwood 2017:335–337). Suffice it to say that the Roman author Pliny the Elder referred to what appear to have been cloves in 70 CE, and that actual cloves have been found in early to middle first millennium AD contexts at Segaran IIA in West Java and Mantai in Sri Lanka (Manguin and Indradjaja 2011). Furthermore, Indian pottery in quite large quantities is now well known from the sites of Sembiran and Pacung in northern Bali, dating to circa 2000 years ago or just before (Ardika and Bellwood 1991; Ardika et al. 1997; Calo et al. 2015). Neither ancient cloves nor Indian pottery have been excavated in the Moluccas, but it seems relatively certain that Indian contact could *potentially* have reached the Moluccas by 2000 years ago. So could, and did, the technological developments that are widely associated by archaeologists, linguists, and historians with a combination of Indian, Mainland Southeast Asian, early Malayo-Chamic, and Chinese trading acumen. These include metal items and metallurgy, Dong Son drums, glass beads, nephrite ornaments (although these are not yet found in the Moluccas), and probably also some new Y-chromosome haplogroups (Kusuma et al. 2016).

The Early Metal Phase, or Northern Moluccas Phase 3 in the above terminology, was thus a phase of very considerable change in the prehistory of our region. The Neolithic, or Northern Moluccas Phase 2, brought into the mix an original population of Malayo-Polynesian peoples and languages, but the Early Metal Phase probably led to some hefty stirring of the pot, and possibly the expansion of the SHWNG subgroup of Malayo-Polynesian languages as it exists today, as well as the Halmahera Subfamily of West Papuan languages.

Some further observations on cultural and genetic admixture into Near Oceania

The previous chapters have made it clear that the Uattamdi phenomenon, with its plain red-slipped pottery stone adzes, shell ornaments, and pig and dog bones, marked an external incursion into the islands west of Halmahera at around 3300 BP. It is also inferred that this incursion brought speakers of Austronesian languages, although perhaps not yet the immediate ancestors of the speakers of the SHWNG languages, from an ultimate source in Taiwan and the Philippines. So far, the Uattamdi assemblage is unique in the Northern Moluccas.

By 2000 years ago, as also discussed above, the previously preceramic inhabitants of many other regions of the Northern Moluccas, such as Morotai, Halmahera, and perhaps Gebe, adopted the use of pottery, by now of an incised and stamped style well represented in sites such as Tanjung Pinang, Aru Manara (Ono et al. 2018), Gorua (Ono, Aziz et al. 2017; Ono, Oktaviana et al. 2017), Gua Siti Nafisah, Um Kapat Papo, Buwawansi, and of course in the Early Metal Phase Layer B in Uattamdi. This spread need not have required any large-scale migration of people, but we do have the above-mentioned episodes of linguistic levelling in both the Papuan and the Austronesian languages of the Halmahera region. And this brings up the issue of ancient DNA.

In 2016, my ANU colleague Justyna Miskiewicz extracted petrous bones from four of the Tanjung Pinang skulls, plus one from Uattamdi and one from the Golo extended skeleton (see the research reported by Wyatt and Miskiewicz in Chapter 12). These petrous bones (Pinhasi et al. 2015) were sent to Mark Stoneking at the Max Planck Institute for Evolutionary Anthropology in Leipzig, who forwarded them to Cosimo Posth in the Max Planck Institute for the Science of Human History in Jena (Germany). The Max Planck team was able to get results that hopefully will be published in full soon. Meanwhile, I can state that the Golo skull contained no ancient DNA, but the other five from Uattamdi and Tanjung Pinang did. Perhaps not surprisingly, three of the Tanjung Pinang skulls (numbers 1, 2, and 4) carried ancient Papuan mtDNA haplogroups, whereas Tanjung Pinang skull 6 and the Uattamdi cranium had mtDNA haplogroups that are today widely associated with Austronesian-speaking populations in the Philippines and Indonesia.

The significance of these discoveries is clear, in that three of the inhabitants of Tanjung Pinang, now in the Papuan-speaking region of the Northern Moluccas, were deeply indigenous in terms of their female lines of descent, whereas one from Tanjung Pinang and one from Uattamdi reflected maternal origins further west or north within Island Southeast Asia. This was an admixed population, as illustrated also by the autosomal ancestral profiles (research in progress) of the Tanjung Pinang and Uattamdi individuals, with their shared ‘Papuan’ and ‘Austronesian’ ancestry components. All of this human material dates to around 2000–1500 years ago, and so belongs to the period of spreading material culture here associated with the arrival of the Early Metal Phase and perhaps also the early trade in spices.

This observation of population mixture in the Northern Moluccas commencing from the archaeological record around 2000 years ago is supported by a previous whole-genome autosomal DNA analysis of modern Indonesian populations by Hudjashov et al. (2017). These authors use a molecular-clock calculation to date the commencement of admixture between Papuan and Austronesian ancestral genetic components to about 2000 years ago, noting a time lag of about a millennium without strong admixture following the initial arrival of the Austronesian component, via the Philippines, into eastern Indonesia. These observations fit extremely well with the interpretation of Uattamdi as an Austronesian outlier settlement, relatively contained for almost a millennium, until Southeast Asian styles of Neolithic material culture spread fairly rapidly into regions that are currently occupied by speakers of Papuan languages.

We might now ask how far eastwards this zone of admixture spread into New Guinea coastal regions and the islands of Near Oceania. In 1982, linguist Bert Voorhoeve (C. Voorhoeve 1982b) noted a total of 31 potential borrowings between the north Halmahera West Papuan languages and the Central Papuan languages of the south coast of Papua New Guinea, almost 3000 km to the east. The latter include the modern Motu language of the Port Moresby coastline and are Oceanic (Malayo-Polynesian), not Papuan. Voorhoeve could provide no obvious historical explanation for this situation, apart from noting the possibility of long-distance sailing along the southern coastline of New Guinea by either Ternate or Tidore traders from the west seeking spices and other items, or by the ancestral Motu themselves sailing from the east. The latter were associated in the nineteenth and early twentieth centuries with multi-hulled canoe (*hiri*) voyages to exchange pots made in the Port Moresby region for sago, reaching right to the upper reaches of the Gulf of Papua, close to the Fly Delta (Dutton 1982). Indeed, finds of late Lapita sites along the Papuan southern coastline (McNiven et al. 2011) suggest that Austronesian-speaking populations might have been in that region since at least 2850 BP.

Contact between Island Southeast Asia and Island Melanesia actually has quite a deep archaeological antiquity. A millennium earlier than the Early Metal Phase in the Moluccas (c. 3000 BP), Talasea obsidian from New Britain travelled to Bukit Tengkorak in Sabah, Borneo, presumably by a Neolithic sea route to the north of New Guinea (Bellwood and Koon 1989), rather than via the Northern Moluccas, where no Talasea obsidian has ever been found. The potential Halmahera–Central Papua linguistic borrowing link discussed above appears to be younger in time, and was perhaps associated with a separate chain of connection along the south coast of New Guinea, represented by the sherds of pedestalled pottery from Uattamdi and Tanjung Pinang that resemble a pedestalled vessel found in Collingwood Bay, and the single piece of Fergusson Island obsidian from Tanjung Pinang (Chapter 8).

The evidence for late prehistoric contact between the Moluccas and the islands of Near Oceania is therefore slim, but suggestive. This is perhaps a good topic with which to end this excursion into Northern Moluccan archaeology. Whether the near future will see more discoveries in these idyllic equatorial spice-bearing islands I do not know, but I hope so, with archaeology, zooarchaeology, archaeobotany, and ancient DNA all moving forward hand-in-hand. Evidence on the plant-food elements of ancient diet will be especially welcome, as will ancient DNA from burials of a Pre-Austronesian antiquity. A non-sapient archaic hominin of hobbit morphology would be even more welcome, but I have my doubts!

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