Austronesian Migrations and Developments in Micronesia

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ABSTRACT

When considering prehistoric Austronesian settlement of Remote Oceania, the region of Micronesia has posed some difficult problems. According to historical and ethnographic knowledge, the people of Micronesia sustained multiple long-distance contacts. In these perspectives, ancient cultural origins are complicated and unclear, and the separate cultural groups appear tightly inter-connected. According to archaeological evidence and historical linguistic studies, however, the different groups of Micronesia have distinctive cultural histories. Across these hundreds of very small islands, at least five different colonizing migration episodes can be discerned, beginning 3500 years ago and continuing into the last 1000 years. These earliest migration routes later were over-written by newer traditions of long-distance inter-island contacts and networks. This summary of Micronesian archaeology clarifies the chronology of Austronesian migrations and developments. The results resolve some of the complications and frustrations of Micronesian culture history within a larger Asia-Pacific perspective.

Micronesia consists of hundreds of islands in the northwest Pacific. Most of these islands are tiny coral atolls and other small islands, but a few are larger or taller masses. The Micronesian islanders have adapted to their environment of many small islands, spread over a broad region.

Within Micronesia today, different cultural groups live with their own traditions in the numerous separate areas, but they also share traditions of long-term contact and long-distance mobility. In a modern context, Micronesia is known for traditions of long-distance voyaging and inter-island contacts. These inter-connecting traditions have overlain the ancient records of first settlement of the islands.

This review is based mainly on archaeological evidence, with important input from historical linguistics. The goal is to trace the major events of settlement in the different islands of Micronesia. For this goal, language histories offer important clues, but archaeology provides the best material evidence in association with absolute dating.

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According to current evidence, the peopling of Micronesia took place over several thousands of years. The first colonizing event occurred in the Mariana Islands about 3500 years ago, from a source in Island Southeast Asia. The second event was slightly later, about 3000 years ago in Palau, from a different source in Island Southeast Asia. The third was in Yap, evident by 2000 years ago but perhaps earlier, coming probably from Island Melanesia. The fourth was also about 2000 years ago and continuing over 100–200 years throughout most of central and eastern Micronesia, and these populations came probably from Island Melanesia or perhaps parts of Polynesia. The fifth migration settlement in Micronesia was an unusual case within the last 1000 years, when Polynesian communities moved from east to west and settled in the few remaining uninhabited or under-utilized spaces of Micronesia.

In addition to the colonizing settlements, people later were involved in several interactions with other communities. As a result, networks of communication, trade, and other partnerships characterized much of the cultural history of Micronesia. Many people were mobile across this broad region. The networking created long-term inter-communications and exchange of culture. These processes were important in the development of cultural expression and identity, but they were significantly different from the events of colonizing migrations.

Key Words：Micronesia, migration, archaeology, culture history

INTRODUCTION

Within the Pacific Islands, the archaeology of Micronesia reveals a complicated story of at least five colonizing population migrations into different sub-areas (Figure 1), yet they each share a distant Austronesian origin (Carson 2013; Intoh 1997; Rainbird 1994, 2004). This situation differs from the overall pattern of Pacific Islands settlement, where Austronesian-speaking groups colonized large regions in neat chronological order, generally from west to east across the Pacific. In Micronesia, the founding populations settled in different areas during distinctly separate chronological periods, and they came from variable sources over time. The Micronesian situation then became even more complicated with frequent cross-cultural contacts and communication, built over the foundations of first population migrations. The details in Micronesia offer an opportunity to explore some of the small-scale variation within an elegant large-scale view of Austronesian culture history.

Micronesian archaeology inherently raises questions about how and why Austronesian-speaking groups populated these tiny and remote islands, where nobody ever had lived previously. Socially and environmentally, this setting was more extreme than anywhere else in the Austronesian-inhabited areas of Southeast Asia. Most of the Micronesian islands are small atolls and other diminutive formations of less than a few sq km each. Some larger islands are composed of volcanic hills or elevated limestone terraces, but even these are quite small. In the Mariana Islands, Guam is the largest island in all of Micronesia, yet it covers only 549 sq km. By comparison, Taiwan covers approximately 35,980 sq km.

Any study of Pacific Islands archaeology, including Micronesia, must acknowledge the Austronesian ancestry of the founding populations who first settled in these remote islands (Bellwood 1991). Neolithic Austronesian populations migrated in a series of datable periods across the Asia-Pacific, beginning about 4000 years ago (Figure 1). This large-scale synthesis is convincing by multiple lines of archaeological, linguistic, biological, and ethnological evidence (Bellwood et al. 1995; Kirch 2010), but a number of small-scale internal variations require closer examination within Micronesia.

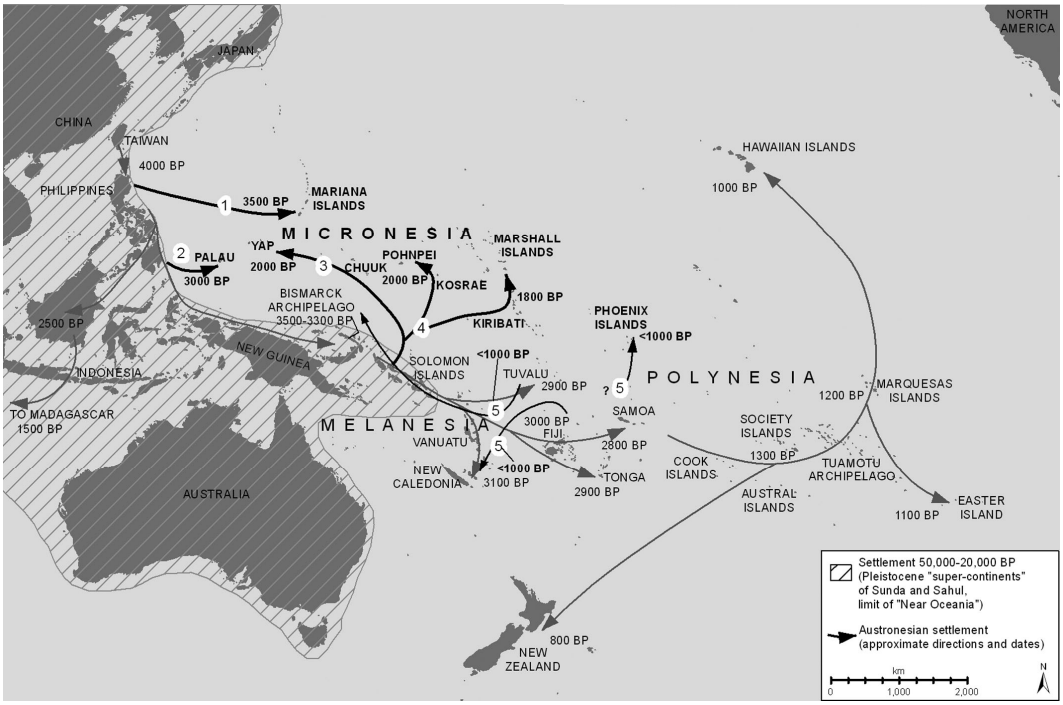

Fig. 1: Major colonizing migrations in Micronesia, in relation to larger Asia-Pacific patterns. BP = years before present. *Item 1:* settlement of Mariana Islands, 3500 years BP. *Item 2:* settlement of Palau, 3000 years BP. *Item 3:* settlement of Yap by 2000 years BP or possibly earlier. *Item 4:* settlement of multiple areas in central-eastern Micronesia, beginning 2000–1800 years BP. *Item 5:* settlement of Polynesian Outliers and temporarily in the Phoenix Islands, within the last 1000 years.

Regarding the role of Micronesia in the Austronesian diaspora, many scholars called attention to the Mariana Islands as a key link of people migrating between Island Southeast Asia and the Remote Pacific (Bellwood et al. 2011; Bellwood 2007:48; Craib 1999; Shutler 1999). In the far west of Micronesia, Austronesians colonized the Mariana Islands 3500 years ago (Carson 2008; Carson and Kurashina 2012; Hung et al. 2011), but curiously other parts of Micronesia were not populated until many centuries later. Marianas archaeology reveals a notably different cultural chronology than in other parts of Micronesia. In fact, the different sub-areas of Micronesia each bear a unique culture history in many ways, although naturally they share a few aspects in common.

Paralleling the case for archaeology, the Micronesian languages reflect a number of separate groupings and histories (Figure 2). The languages of the Mariana Islands and of Palau are considered West Malayo-Polynesian (WMP), originating in Island Southeast Asia and most likely in the Philippines or Indonesia, but they are not directly related to each other (Zobel 2002). The WMP subgroup is not well defined, but these languages most importantly are not members of the Oceanic (Oc) subgroup. The Oc subgroup was synonymous with Austronesian settlement everywhere else in Island Melanesia, Polynesia, and Micronesia (Pawley and Ross 1993). Outside the Marianas and Palau, the Micronesian variants of Oc languages originated proximally in a number of separate sources in Melanesia and Polynesia (Bender et al. 2003a, 2003b). All of these groupings share a common Austronesian ancestry, but the individual language communities in Micronesia are quite different from one another.

A Micronesian culture history synthesis has proven difficult, due to the questionable authenticity of “Micronesia” as a cultural region. Multiple origins and continued long-distance networking characterized the region today known as Micronesia. Thomas (1989) emphasized the inadequacy of the supposed Melanesia-Polynesia division in terms of ethnology, and a similar case can be proposed for Micronesia. At best, some sense of a Micronesian unity can be assessed in a modern setting, but naturally the modern situation does not apply to the original founding populations.

Micronesian specialists tend to focus closely on details, certainly important yet distracting from a large-scale picture of Austronesian settlement chronology. I hope not to commit the same error here. Nonetheless, a certain amount of detail needs to be presented for illustrating key points, without treading too much into minutiae. Readers will find that other reviews of Micronesian archaeology provide additional information (Carson 2013; Craib 1983; Davidson 1988; Intoh 1997; Rainbird 1994, 2004).

The present work aims to solve the apparent complications of Micronesian archaeology, within a large-scale Austronesian narrative. The following summary clarifies the known evidence for each sub-region, in terms of first settlement and subsequent developments. This information supports a chronological synthesis of the last 3500 years.

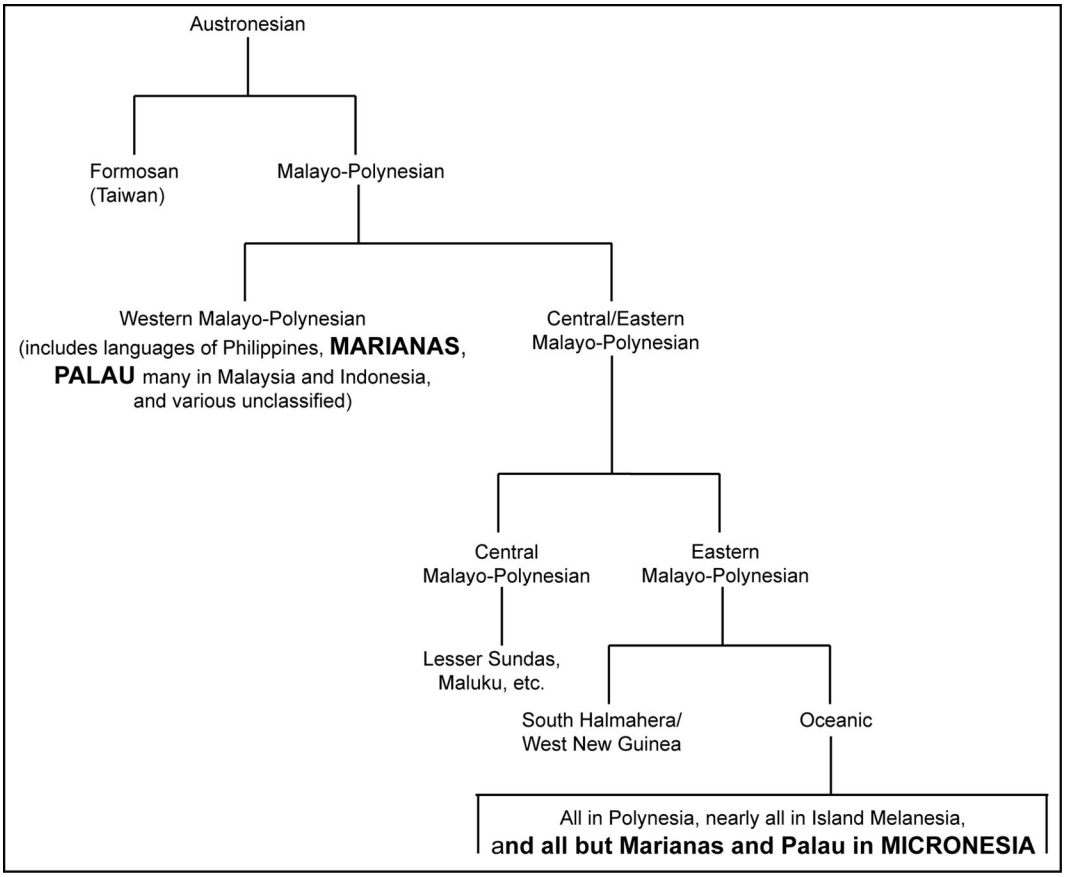

Fig. 2: Linguistic groups of Micronesia. Information is based on Blust (2009) and other references as noted in the text.

MARIANA ISLANDS

Austronesian settlement in the Mariana Islands signaled the very first permanent human occupation in Micronesia and in fact in all of Remote Oceania, about 3500 years ago. This early settlement is confirmed in at least eight sites (Carson and Kurashina 2012). Finely decorated pottery is now well documented and solidly dated (Butler 1994; Carson et al. 2013), and importantly it has not been found anywhere else in Micronesia. The finely dentate-stamped, circle-stamped, and incised pottery (Figure 3) was part of a full set of material culture that also included plain pottery, stone and shell adzes and other tools, fishing hooks, and shell beads and other personal adornments (Figure 4).

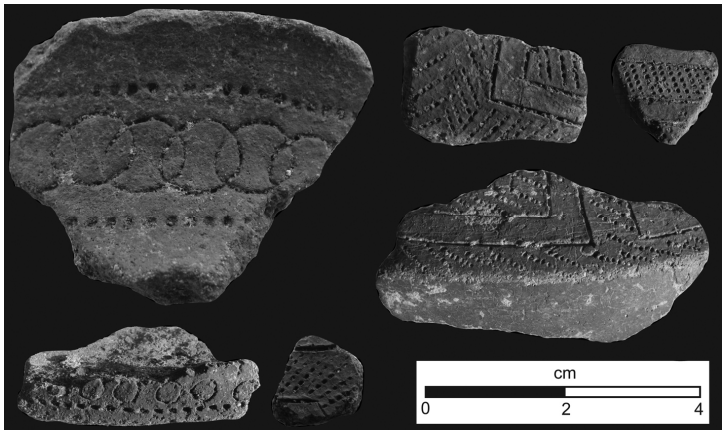

Fig. 3: Examples of early pottery from House of Taga Site in Tinian, Mariana Islands. Graphic is modified from Carson and Kurashina (2012).

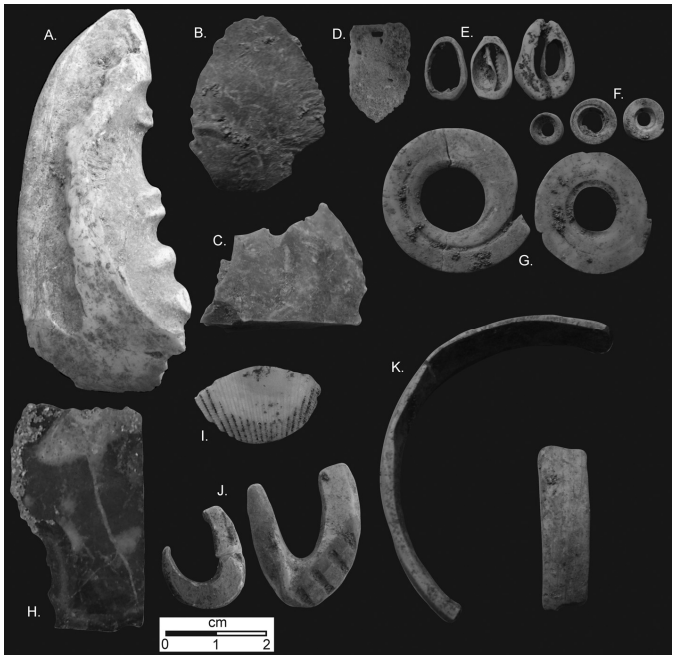

Fig. 4: Examples of early-period artifacts from the Mariana Islands, dated about 3500-3100 years ago. This graphic is modified from Carson and Kurashina (2012). A: Shell adze, hinge portion of *Tridacna* sp., House of Taga. B, C: Utilized chert flakes, House of Taga. D: Carved coral pendant, Unai Bapot. E: *Cypraea* sp. shell beads, House of Taga. F: *Conus* sp. shell beads, House of Taga. G: *Conus* sp. shell pendants, House of Taga. H: Chert adze, broken, Unai Bapot. I: *Anadara* sp. shell artifact, unknown purpose, Unai Bapot. J: *Isognomon* sp. fish-hooks, House of Taga. K: *Conus* sp. bracelet fragments, House of Taga.

Within the Marianas, the earliest settlement was restricted to the largest southern islands of Saipan, Tinian, and Guam between 13 and 15 degrees North Latitude (Carson and Kurashina 2012). The farther northern islands of the Marianas, as far as 20 degrees North, remained uninhabited for another 2000 years or more. Meanwhile, no other area of Micronesia was settled until some centuries or millennia later. During the formative centuries of Marianas settlement, the intimate cross-cultural networking across Micronesia simply could not have existed.

First Marianas settlement originated from the Philippines, attested in the nearly identical red-slipped and finely decorated pottery types in both regions (Hung et al. 2011). The confirmed radiocarbon dating of this kind of pottery overlaps for both regions, but importantly it extends earlier in the Philippines where it most likely originated. In further support of this connection, linguistic studies point clearly to a Philippines source (Blust 2000; Reid 2002). The Philippines-Marianas voyage must have exceeded 2300 km of open-ocean crossing, constituting the longest such voyage in human history at its time (Hung et al. 2012).

The ancestral link with the Philippines should not be mistaken as a wholesale duplication of the same culture and society in the Marianas. The archaeological evidence shows strong links, but the first Mariana Islanders brought only a partial sub-set of their homeland's material culture repertoire into their new setting. A number of important aspects of Philippines material culture were notably absent in the Marianas, such as spindle whorls, bark-cloth beaters, certain forms of ear-rings and other ornaments, a type of fishing-net sinker, and other items (Hung 2008). Likewise, the earliest red-slipped and finely decorated pottery forms in the Marianas represented only a sub-set of the more diverse assemblages found in the Philippines (Carson et al. 2013). Moreover, domesticated animals did not make the journey with the first human colonists to the Marianas, although the complex of pig-dog-chicken-rat became important in most other Pacific Islands (Wickler 2004).

The major imports into the Marianas were the people themselves, along with their cultural practices, knowledge, and skills. These people perpetuated the use of a particular style of decorated pottery that has been greatly significant for tracing their Austronesian ancestry through the Philippines. Meanwhile, they also developed their own cultural expressions.

Early settlement in the Marianas almost did not succeed at all, because the first settlers concentrated on specialized shoreline ecological zones that soon underwent profound transformations (Carson 2011, 2012a). The basic life-giving resources in coral reefs and mangrove swamps very soon degraded dramatically, due to a lowering sea level and impacts by human activities. By 3000 years ago, ecological transformations began to affect the habitats precisely where the earliest settlers made their homes. By 2500 years ago, people were forced to shift the locations of their habitations and to adapt different strategies of basic subsistence and land-use.

The first settlers must have been self-reliant in producing their own goods and foods. The pottery, stone tools, and shell ornaments were manufactured locally from the outset of Marianas settlement. Preserved botanical remains indicate that a few important tree and root crops were introduced quite early, presumably from Island Southeast Asia (Athens et al. 2004). The oldest known evidence of rice and rats came considerably more recently, within the last 1000 years.

Marianas settlement was largely isolated with limited external contacts for several centuries, but this situation changed substantially by 1000 years ago, when a considerably larger number of people lived in the Mariana Islands. All about the same time, the larger numbers developed in the Marianas, throughout Micronesia, and even in other regions of the Pacific. By this time, the potential for overseas influence in the Marianas was no longer limited to a long-range contact with the Philippines, but rather a broad scope of new possibilities had developed. Equally, the potential for Mariana Islanders to influence outside communities was growing, especially in the case of the smaller and more recently settled islands of Micronesia.

The population growth in the Marianas involved both increasing numbers of people and increasing density of settlement. People expanded into new territories, and their numerous villages became densely populated. The same situation may not have been true in other islands with shorter chronologies of settlement. The population growth obviously was greater in the Marianas with settlement 3500 years ago, as compared to other islands with settlement 3000, 2000, or 1000 years ago.

A new form of megalithic house-post architecture called *latte* (Figures 5 through 7) began about 1000 years ago in the Marianas (Carson 2012b), along with formal village layouts, widespread intensively cultivated landscapes, and the import of rats and rice at this time or slightly later. The *latte* design of a pillar-raised house suggests a general Island Southeast Asian heritage, with a degree of local innovation seen in stone pillars and capitals or “capstones” (Laguana et al. 2012). Also during this same time-range, imported rice and rats reveal contact presumably with the Philippines, but again several important aspects of Philippines material culture and practice were excluded from the Marianas.

Within the last 1000 years, *latte*-associated populations expanded through nearly every habitable zone of the Marianas, including the smaller and northern islands. These far northern islands, locally known as the Gani, extend as far as 20 degrees North Latitude. They lack the water-supplies and natural resources of the larger southern islands in the Marianas, and active volcanoes pose serious hazards for long-term settlement. The *latte* villages in the Gani attest to a major population increase and expansion in the Marianas.

External contacts expanded to include a number of Micronesian areas within the last 1000 years, evident in oral traditions and in biological hybridization of breadfruit taxa. The breadfruit hybrid necessarily involved *Artocarpus marianensis* (native only in the Marianas), crossed with other species of *Artocarpus* (Petersen 2006; Zerega et al. 2004,

2006). Except for the rare instance of native breadfruit *A. marianensis* in the Marianas, breadfruit did not exist naturally in the remote Pacific Islands. People must have imported breadfruit from external sources where breadfruit already was growing. For this purpose, Austronesian-speaking populations in Remote Oceania generally chose *A. altilis*. The hybridization of *A. marianensis* with other breadfruit therefore represents a curious aspect of Austronesian cultural history in Micronesia. The timing of this phenomenon is imprecisely known, but it must have occurred less than 2000 years ago, in accordance with earliest settlement dates of central and eastern Micronesia. The transport most likely occurred more than once.

Fig. 5: The *latte* ruins at House of Taga in Tinian, Mariana Islands. These particular megaliths are the largest *latte* ever standing in the Mariana Islands, dated probably in the 1600s just before intensive Spanish colonial efforts in the region.

Fig. 6: Quarry mining site for making *latte* columns and capitals, at As Nieves in Rota, Mariana Islands. These stones never were removed and erected, but they would have become the largest *latte* structure, larger than at House of Taga.

Fig. 7: Architectural engineering reconstruction of a *latte* house structure in the Mariana Islands. Original graphic prepared by John Aguon, reproduced by permission from Laguana et al. (2012).

PALAU

The second Micronesian settlement migration reached Palau by 3000 years ago or perhaps slightly earlier (Liston 2005). The source most likely was from somewhere in the Philippines or Indonesia. Dates possibly as early as 3300 years may yet be confirmed, but so far an age of 3100–3000 years appears most confident.

A vague Philippines-Indonesia homeland region is based on a WMP linguistic affinity that was different from the source responsible for Mariana Islands settlement. The material culture of this earliest period in Palau does not link clearly with any specific external relation. Rather, it includes mostly plain earthenware pottery, as well as a range of shell and stone artifacts typical of most Pacific Islands societies and some parts of Island Southeast Asia in a broad general sense.

The oldest Palauan archaeological deposits may yet be discovered in places where archaeologists have not yet searched thoroughly, for example in ancient shorelines that now are deeply buried beneath more recent slope-eroded clays (Dickinson and Athens 2007). A systematic survey for oldest shorelines so far has not been undertaken, as has been successful in the Mariana Islands (Carson 2011). Unlike the sandy beach-sites in the Marianas, local conditions in Palau may have created very poor preservation in acidic clays. The likelihood of finding a preserved beach deposit is uncertain.

Consistent with the earliest artifacts and midden deposits, a set of human burials in Palau yielded a dating of 3000–2700 years old (Fitzpatrick 2002a, 2003). These findings at

the Chelechol ra Orrak so far represent the earliest known human skeletal remains in all of Micronesia. The only human burials of similar age known so far in the Pacific Islands are in the exceptional Teouma Cemetery of Vanuatu in southern Melanesia, associated with Lapita pottery and dated about 3000–2500 years ago (Bedford et al. 2006; Valentin et al. 2010).

Analysis of the 3000-year-old Palauan burial remains has disclosed special treatment of skulls (Fitzpatrick and Nelson 2011; Nelson and Fitzpatrick 2006). Adult cranial fragments were buried in isolation, perhaps re-buried in a later mortuary activity. One of these cranial fragments covered a complete child's frontal bone. Other special treatment of skulls was found at the Teouma Cemetery in Vanuatu, including purposeful placement of disembodied skulls (Valentin et al. 2010). Many societies in Oceania and Island Southeast Asia are known to have practiced special treatment of skulls, including curation of skulls for some time and possible later re-burial.

Curation of skulls carries numerous implications about what may have happened to the other skeletal elements. In archaeological contexts, only fragments and partial sets may be found, and a degree of decay potentially occurred during a curation period. The cases of buried skull fragments or disembodied skulls in Chelechol ra Orrak (Palau) and Teouma (Vanuatu) occurred in specialized ritual contexts. These contexts may have been reserved for just very few distinguished circumstances, not necessarily replicated for the general population at large. We still need to ask basic questions about the most ancient mortuary practices in the Pacific Islands.

The evident rarity of early burial features deserves some discussion not just for Palau but rather for the implications in Micronesia and the Pacific Islands as a whole. The most obvious interpretation posits that the earliest burial practices for the most part did not involve formal interments or other treatments, so long-lasting material evidence has been extremely rare. In this view, the very few known preserved formal burial pits represent exceptional cases. Burial at sea, cremation, open-air exposure, cannibalism, bone curation, and other practices must be considered.

Later major episodes of Palauan archaeology entailed earthwork-building about 2000 years ago and then stonework village complexes beginning 1000 years ago (Liston 2009; Wickler 2002). Both types of villages developed locally, apparently by indigenous Palauan design. Within both the earthwork-building and stonework-building periods, considerable geographic and chronological variations are evident. Studies of settlement pattern and land-use chronology bear considerable research potential.

Quarry sites for making Yapese stone money discs are evident within the last several centuries and especially the last 500 years in Palau (Fitzpatrick 2002b). Many of the discs exceeded 2 m in diameter, carved from solid limestone. These sites reflect how people from Yap came to Palau, extracted limestone for making large money discs, and transported the discs overseas to Yap. These discoveries reveal that cross-regional activities

indeed formed an important aspect of Micronesian prehistory. The stone money quarries offered just one of many possible contexts for cross-regional contacts and exchange (Fitzpatrick 2008). The quarries in themselves were to some extent one-sided operations by Yapese people procuring exotic resources overseas, but other possible contexts cannot be ignored outside these quarries.

YAP

The third colonizing migration in Micronesia occurred approximately 2000 years ago or possibly earlier (Intoh and Leach 1985). An exact date is unclear, but the Yapese language derived from an Oceanic-speaking source in Melanesia (Ross 1996). Later contacts with other parts of Micronesia greatly influenced Yapese language and culture. Yapese influence on external communities equally must be acknowledged.

Archaeological studies in Yap have concentrated on late pre-Contact and early post-Contact village settlement patterns. These studies relied on surface-visible stonework ruins, oral traditions, and ethnohistories (Cordy 1986; Hunter-Anderson 1985). The material patterns reflect social and political structure, economic land-use systems, and other cultural practices most relevant within the last few centuries. Although these findings are remarkably informative, the patterns of earlier periods are unknown.

Ethnohistorical information in Yap has provided a model example for studies of trade and exchange, specifically in the formal exchange system of *sawei* and a number of other concurrent trade networks (Descantes 2005; Hunter-Anderson and Zan 1996). The origins and dates of the *sawei* system are unknown, but it required island groups to send tributes to Yap. The tributes did not necessarily go directly to Yap, but rather they moved in a series of lower to higher rank of community until they reached their final destination. Prestige goods and basic necessities circulated among multiple communities in Yap and various outer islands. Alkire (1965, 1970) provided several important ethnographic observations about the *sawei* system.

In addition to the highly formalized *sawei* system, other inter-island contacts occurred with lesser degree of rigid social and political structure. Some of these contacts extended much farther-afield exotic sources, as evidenced in an Asian “dragon jar” in Yap, traded from Asia through the Philippines most likely during the 1800s (Descantes et al. 2002). Fitzpatrick (2008) mentions additional external trading contacts, possibly involving the Mariana Islands and Indonesia.

In a model of “inter-regional interaction” (Stein 2002), Fitzpatrick (2008) stresses the importance of multiple concurrent trade networks and interaction spheres at different scales, temporal cycles, and contexts. In this view, intersecting short-distance and long-distance contacts and activities were expected parts of life in Yap and throughout western

Micronesia. They were potential vehicles for exchanging information and knowledge, maintaining awareness of the outside world, and facilitating regional cultural change.

About 180 km east of the larger Yap, the smaller island of Fais has supported repeated archaeological research (Intoh 2008). The resulting data-sets so far have yielded important information about chronologies in artifact forms, introduced animals, subsistence practice, and other topics (Intoh 1996; Intoh and Leach 1985; Intoh and Shigehara 2003). As this research program continues, more results and new interpretations can be expected.

CENTRAL AND EASTERN MICRONESIA

The fourth major colonizing migration episode in Micronesia was responsible for populating most of the broad region, around 2000–1800 years ago. At this point, a widely shared Micronesian culture can be traced through a single Oceanic-speaking language origin (Blust 1984). The source came probably from Melanesia, but it was different from the Yapese settlement. Largely due to the near-instantaneous nature of this wide geographic dispersal, a shared linguistic origin still remains intact. In addition, extensive inter-island contacts promoted considerable cultural sharing over time.

This migration at first may have targeted the higher islands of Kosrae, Pohnpei, and Chuuk, although people also settled into the numerous atolls and smaller islands in Kiribati and the Marshall Islands all about the same time (Athens 1990a, 1990b; Ayres 1990; Craib 1981; Galipaud 2001; Shun and Athens 1990; Sinoto 1984; Thomas 2009). Settlements were established throughout this broad region all within a few centuries. A precise order of settlement is unclear within the limits of available radiocarbon dating, but perhaps it can be refined in the near future.

Following two important developments about 2000 years ago, populations throughout Micronesia became markedly lager and more widespread than ever had been the case previously. First, approximately 2000–1800 years ago, a lowering sea level stabilized at an elevation allowing many of the tiny Micronesian islands to become habitable for the first time (Dickinson 2003). Second, people intentionally excavated pits tapping into the shallow freshwater lens in the low-lying atolls, thereby enabling productive cultivation of swamp taro as a reliable subsistence crop (Weisler 1999, 2001). A long-term view of historical ecology reveals the intimate relations between Austronesians and their island environment, for example in Kiribati in eastern Micronesia (Thomas 2009).

Beginning about 1000 years ago, people constructed monumental stonework ritual complexes in and around Pohnpei and Kosrae (Athens 1983; Ayres 1992; Ayres and Haun 1990; Cordy 1982, 1985, 1993). These massive works invite studies of how they reflect aspects of technology, economy, social structure, political order, ideological beliefs, and more (Seikel 2011). These sites are recorded in local legends as related to people arriving

from an unclear external source. The language histories reveal continued contacts with other Micronesian communities (Rehg 1995), and nothing in particular points to a source that can be linked confidently with the stonework monument-building period. In terms of the material archaeological evidence, a local development seems just as likely as an immigrant population.

The conditions for supporting island habitability throughout central and eastern Micronesia were encouraging starting 2000 years ago, and they became increasingly attractive starting 1000 years ago. These circumstances further created opportunities for numerous contacts and exchanges with communities in the longer-settled areas of the Marianas and Palau in western Micronesia. Complex trading networks clearly involved Yap and Palau for stone money quarrying and other activities, and contacts may have ranged much farther. We can recall that breadfruit hybridization east-west across Micronesia must have involved *Artocarpus marianensis* in the Marianas (Zerega et al. 2004, 2006).

POLYNESIAN OUTLIERS

The fifth major migration into Micronesia was part of a larger movement of Polynesians into the various Polynesian Outliers scattered through Micronesia and Melanesia, starting around 1000 years ago (Carson 2012c; Kirch 1984). Of the Polynesian Outliers in Micronesia, Kapingamarangi was settled 1000–700 years ago (Leach and Ward 1981). Nukuoro was settled perhaps as early as 1200–1100 years ago, but certainly it was settled by 500 years ago (Davidson 1992). Also of note are the seemingly Polynesian settlements in the Phoenix Islands of Kiribati, later abandoned but leaving behind a mysterious record of stonework ruins typical of Polynesian community-activity centers of the last 1000 years (Carson 1998; Pearthree and DiPiazza 2003).

Polynesian Outlier settlement coincided with a cross-regional Micronesian-Melanesian-Polynesian population increase about 1000 years ago, and further it coincided with Polynesians moving eastward into the previously uninhabited islands of Central and East Polynesia (Spriggs and Anderson 1993). This nearly instantaneous widespread dispersal was largely responsible for the high degree of cultural homogeneity throughout Polynesia. It contributed to larger patterns of long-distance population movements and circulation already existing in the Pacific Islands.

The broad Pacific-wide evidence calls attention to new conditions about 1000 years ago, involving large numbers of people and frequent inter-island contacts. These conditions surely affected much of what became cemented in today's known ethnohistories and cultural traditions of Micronesia. An important historical depth is evident in a complex network of long-distance contacts and communication. These traditions are essential for

understanding Micronesian culture and society, but we need to look deeper if we want to learn about the original population migrations.

CHRONOLOGICAL SYNTHESIS

This synthesis traces the last 3500 years of Austronesian settlement in Micronesia at a large scale. The archaeological findings in any single sub-area do not necessarily inform us significantly about Micronesia at large. The culture histories of the Marianas and Kiribati, for instance, were remarkably different from one another. This synthesis will progress in chronological order, incorporating the findings from each sub-area for a holistic narrative.

3500 – 3000 YEARS AGO

During the centuries 3500–3000 years ago, the only populated area in Micronesia was in the Mariana Islands. In fact, it was the first settlement in all of Remote Oceania. Other Austronesian communities lived in many parts of Island Southeast Asia at this time (Bellwood 1997; Bellwood et al. 2011), while Lapita pottery-bearing sites first appeared in the Near Oceanic islands of the Bismarck Archipelago (Kirch 1997; Summerhayes 2007). Austronesian groups did not, however, cross the boundary into Remote Oceania until later, except for the unusual case of the Marianas.

If the earliest Marianas settlers knew of the surrounding Micronesian region 3500–3000 years ago, then they knew it was uninhabited. Micronesia's numerous atolls and small low-lying islands were not emerged above sea level at that time. Nearly the entire areas of the Marshall Islands, Kiribati, and many other islands simply were not habitable until more than 1000 years later. The only potentially inhabitable land masses were in the Marianas and the scattered higher-elevation islands of Palau, Yap, Chuuk, Kosrae, and Pohnpei. Outside the southernmost of the Mariana Islands, however, none of these islands were inhabited until more recently.

3000 – 2500 YEARS AGO

During the period 3000–2500 years ago, the Mariana Islanders were no longer the solitary inhabitants of Remote Oceania. Lapita pottery-making groups entered into the Remote Oceanic world of Southern Melanesia and West Polynesia, yet Micronesia was mostly untouched by these events. First habitation of Palau occurred at this time, but otherwise Austronesian migrations were most active outside Micronesia.

While Austronesian groups established new settlements elsewhere in Remote Oceania, the Mariana Islanders continued coping with their changing coastal ecosystems. The first settlers targeted specific shoreline niches, but these ecosystems were transforming due to sea-level drawdown combined with cultural impacts. The lowered sea level caused

disruption of coral reefs, mangroves, and entire coastal ecosystems. The new Austronesian settlements in Remote Oceania all would need to face these same challenges.

During this time, cultural adaptation to a changing environment probably was most crucial in the Mariana Islands, where people had been practicing a certain mode of life for a few centuries. In order to survive, these people needed to learn new ways of interacting with their coastal ecosystems and resources. Meanwhile, the fresh new communities in Palau did not need to change any deeply established routines or traditions, but rather they adapted to their island environment in Palau for the first time. These issues did not apply in other parts of Micronesia, all apparently settled much later and after the period of sea-level drawdown.

2500 – 2000 YEARS AGO

Archaeological sites 2500–2000 years ago show signs of adjusting to the changing coastal ecosystems of Oceania, after the sea level had been lowering for a few centuries. Coral reefs and mangrove swamps no longer provided the productive life-giving resources that they once did for the founding Austronesian groups in these distant islands. Habitation sites in many cases shifted away from the shorelines, and instead people concentrated more on land-based food-production and other resources.

2000 – 1500 YEARS AGO

The period 2000–1500 years ago witnessed several new settlements throughout Micronesia, and this period marked the beginning of a broadly shared Micronesian culture. Starting 2000 years ago, the sea level had lowered near its present elevation, and shorelines temporarily were stable. These conditions made the numerous small islands of Micronesia inhabitable for the first time. These new developments surely created more ease of voyaging across Micronesia.

During these few centuries, Austronesian people spread through almost all of Micronesia, into the numerous small atolls as well as larger volcanic islands. This wave of immigration more realistically consisted of several waves, but we cannot yet discern them individually within current dating constraints. The groups came from different sources, presumably in Island Melanesia where the strongest linguistic connections have been found.

Also during these few centuries, the foundations of world commerce took root in Island Southeast Asia, while the Remote Oceanic world was outside the direct reach of these events and affected primarily by neglect. Traders and others from India established networks and settlements in several parts of Indonesia (Ardkia and Bellwood 1991). Another important network was active across the South China Sea, connecting several communities in both Mainland and Island Southeast Asia (Hung et al. in press). A new era of “globalization” was taking shape. Whatever contacts continued between Island Southeast Asia and Remote Oceania, the interactions did not extend world-trading

networks into Micronesia or other distant island regions. Even the seemingly attractive items of bronze, iron, glass, and written script did not become part of the regular material culture beyond Southeast Asia.

1500 – 1000 YEARS AGO

During the period 1500–1000 years ago, no major new migrations occurred in Micronesia, because the region already was populated throughout its key areas. Populations expanded into some of the lesser productive zones and smaller islets, but these were within very close range of the established settlements. By this time, Austronesian populations in Micronesia relied more and more on their tree and root crops, although naturally they benefited from the coastal resources of their islands. Coastal ecosystems by now were re-stabilized and thriving, unlike the situation of 1000 years previously.

THE LAST 1000 YEARS

Within the last 1000 years, life-changing population growth and other transformations occurred throughout Micronesia. Resident populations vastly increased, as witnessed in widespread formalized villages. Stonework complexes were constructed throughout Micronesia, some on a grander scale than others. Meanwhile, almost every ecological zone and small island became inhabited.

Also starting 1000 years ago, an unusual case of "back-migration" occurred with Polynesians moving from east to west, back into previously populated areas of Melanesia and Micronesia. These groups inhabited small islands now known as "Polynesian Outliers", including Kapingamarangi and Nukuoro in Micronesia. At the same time, other Polynesian groups migrated eastward into East Polynesia.

This time period was busy with long-distance migrations in Micronesia and generally in the Pacific. Perhaps some of the motivation sprang from population crowding and competition over resources in the inherently limited island environments. Perhaps new sailing technology or navigational knowledge also aided these adventures. Indirect effects may have been felt from the bustling world-trading activities in Island Southeast Asia. Whatever may have been the underlying reasons, the results were clear in substantially larger, intensive, and widespread imprints of Austronesian settlement.

CONCLUSIONS

A baseline culture history of Micronesia must account for at least five major colonizing episodes of: 1) the Mariana Islands 3500 years ago; 2) Palau 3000 years ago; 3) Yap at least 2000 years ago; 4) central and eastern Micronesia in a number of possible internal components beginning 2000 years ago; and 5) the Polynesian Outliers beginning

1000 years ago. The colonizing episodes created definite material signatures, each within a directly datable context. Later, continued cross-regional contacts contributed to ongoing cultural developments throughout Micronesia.

Micronesian traditions point very clearly to a set of intimately connected overseas communities in long-distance contact with one another, overlaying the original population settlements that already were rather complex across Micronesia. This deep connectivity in some ways has obscured the foundations of first population movements. Austronesian origins in Micronesia of course are important for cultural history, but they did not create a direct unbroken link between first settlement and modern-day inhabitants. Instead, cross-cultural contacts have built rich layers over the founding traditions. Nonetheless, in the cases of distantly separated islands, surely people, materials, and ideas must have come from somewhere else at one time, and archaeological studies now have clarified some of this complicated cultural history.

This brief summary hopefully clears some of the untidiness of Micronesian archaeology, specifically in terms of how the islands were colonized by quite different but ultimately related Austronesian populations. At least five major colonizing migrations involved separate areas and time intervals, beginning 3500 years ago and continuing within the last 1000 years. Periodic long-distance contacts and migrations have created ongoing cultural traditions throughout Micronesia, but the initial versus later migrations occurred in quite different contexts. With this growing knowledge-base, Micronesian prehistory can be understood more clearly within larger Asia-Pacific and Austronesian contexts.

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古南島語族的遷移及其在密克羅尼西亞的發展

Mike T. Carson*

當我們在探討遠大洋洲的史前南島聚落時，密克羅尼西亞這個區域的研究呈現幾道難題。根據歷史學和民族學的研究，密克羅尼西亞人一直保持著多線的長距離往來，在這樣視野之下，他們古代文化的起源是複雜而不清楚的，而且這些現生的不同文化族群之間又緊密聯繫。依據考古學證據以及歷史語言學的研究，無論如何，密克羅尼西亞的不同族群有其各具特色的文化史；穿越數以百計這麼多小島嶼，目前至少可以辨別出五個不同的移民事件，它們最早發生於距今 3500 年前、並持續到距今 1000 年以內。其後，較晚發展成形的長距離島嶼間的接觸和網絡取代了這些早期移民的遷移路線。本文對於密克羅尼西亞考古學的研究闡明了南島語族遷移和發展的年代，從一個較宏觀的亞太觀點來看，此項研究結果解決了密克羅尼西亞文化史一些複雜而惱人的問題。

密克羅尼西亞包括了太平洋西北部的幾百個小島，它們多是小的珊瑚環礁或是小島，但有少數是較大或較高的島嶼。這些密克羅尼西亞的島民在擴散到這麼廣大的區域的同時，必須適應許多小島的環境。

在今日的密克羅尼西亞，不同的文化群體秉持他們自己的傳統而生活在多樣化而分散的地區，但是他們也共享了由長期接觸和長距離移動下所形成的傳統。在現代的脈絡下，長距離航行和島嶼之間的接觸是密克羅尼西亞眾所皆知的傳統，這些內部之間彼此連繫的傳統，自然而然的覆蓋了這些島上早期聚落的古老紀錄。

本文的回顧是基於考古的證據和歷史語言學的重要貢獻，去追溯人們首度在密克羅尼西亞不同島嶼定居的重要事件，在這樣的目標下，語言的歷史提供了重要的線索，但是考古學則提供了最好的物質證據和伴隨的絕對年代。

根據近來的證據，密克羅尼西亞的島民之定居過程耗時了幾千年才完成。最早的移民發生在 3500 年前由島嶼東南亞來到馬里亞那群島。第二次的大移民則是稍晚之後，大約是在距今 3000 年前，從島嶼東南亞的它處來到帛琉。第三次的大移民則是大約在距今 2000 年前或是甚至更早，從美拉尼西亞的島嶼來到雅蒲島。第四次的大移民則是 2000 年前、其後並延續了 100～200 年，從美拉尼西亞的島嶼或玻里尼西亞來到密克羅尼西亞的中部和東部。第五次在密克羅尼西亞的移民則是一個較不尋常的例子，發生在距今 1000 年之內，移民是來自玻里尼西亞的社群、由東到西，進駐到密克羅尼西亞爲數不多未有人定居或極低度開發的地區。

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除了殖民定居，其後這些人群與其它社群有了往來互動，因而，社群網絡、貿易以及其它的伙伴關係成爲密克羅尼西亞文化史的重要特色。許多人群移動穿梭在這廣大的區域之中。此一網絡關係展現了長時期的社群聯結以及文化交流，這些過程在文化呈現和認同的演進中是相當重要的，然而不同的殖民事件顯然有不同的歷程。

關鍵詞：密克羅尼西亞、移民、考古學、文化史