

The Role of Migration, Trade, and Genetic Exchange in the Neolithic Austronesian Expansion  
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**Abstract**

Insular Southeast Asia's (ISEA) Neolithic past invokes the idea of the "Austronesian expansion" into the Malay Archipelago, and the consequent supplanting of a preexisting, hunter-gatherer population by migrating, agriculturalist Austronesian-speaking peoples (ANP). Today, speakers of Austronesian languages (AN) dominate the linguistic landscape of ISEA, such that tracing the origin of their ancestors, determining their Neolithic migration routes, and locating an AN "homeland," have become key to studying the region's prehistoric past. Some theories posit an AN homeland in South China and Taiwan; some claim an ISEAn point of origin; while others even suggest a Melanesian origin of the AN language family. This investigation was thus aimed at taking these various theories into consideration, and examining them in conjunction with the region's archaeological record, and human genetic studies to derive a more holistic understanding of the region's Neolithic past, and the origin of the ANP. In the end, archaeology and genetics all illustrated the sheer complexity of the "Austronesian expansion," failing to provide conclusive answers as to a proposed AN homeland, although succeeding in demonstrating the genetic diversity of modern ANP and bringing into question the treatment of AN and Austronesia as a monolithic entity overall.

**Introduction**

With a geographical distribution from Madagascar off the coast of East Africa, to the Nicobar Islands and Insular Southeast Asia (ISEA), and eastward all the way to Easter Island (Rapa Nui) 3,686 kilometers from the Chilean coast, the Austronesian (AN) language family, before the advent of European colonial expansion, was once the most widespread taxon of

languages in the world.<sup>1</sup> It is a language family characterized by an immense variety of languages and dialect continuums, and is generally accepted as, along with the Niger-Congo language group of Africa, one of the world's most internally diverse linguistic taxa.<sup>2</sup> Today, the largest concentrations of Austronesian-speaking peoples (ANP) are found in the places such as Indonesia, the Philippines, and Malaysia, whose native populations are by majority, if not entirely (as in the case of the Philippines), ANP, with AN languages enjoying political designations of national or official languages.<sup>3</sup> Other sizeable concentrations of ANP are found in Madagascar, Southern Vietnam and Eastern Cambodia, Southern Thailand, New Zealand, and the greater Polynesian region as a whole.<sup>4</sup>

In the linguistic scope, the Austronesian languages can further be subdivided, as the Austronesianist Robert Blust suggests, into ten subfamilies.<sup>5</sup> Nine of these families – Atayalic, East Formosan, Puyuma, Paiwan, Rukai, Tsouic, Bunun, Western Plains, and Northwest Formosan – are found on Taiwan.<sup>6</sup> The remaining subfamily, the Malayo-Polynesian branch, is absent from Taiwan, but constitutes all the remaining diversity of AN languages found from Madagascar to Island Southeast Asia and Polynesia.<sup>7</sup> Overall, the AN language family is accepted as a valid linguistic grouping.<sup>8</sup> In spite of the high degree of variation among its disparate member languages, these “daughter languages” can be theoretically traced back to a

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<sup>1</sup> Blust, R. A. “The Austronesian Languages.” Canberra: Pacific Linguistics, Research School of Pacific and Asian Studies, Australian National University, 2009.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Bellwood, Peter S., James J. Fox, and D. T. Tryon. “The Austronesians: Historical and Comparative Perspectives.” Canberra: Dept. of Anthropology as Part of the Comparative Austronesian Project, Research School of Pacific and Asian Studies, Australian National University, 1995.

common origin from a reconstructed Proto-AN mother language spoken on the coast of South China during the Neolithic period as per the assertions of Peter Bellwood.<sup>9</sup>

The variation among AN languages and the sheer geographical span of the AN taxon has captured the academic curiosities of linguists, anthropologists, and archaeologists for decades, as questions arose as to how the AN languages came to be so diversified; how ancestral ANP were able to disperse throughout a formidably vast geographical area; and ultimately, the origin of the ANP altogether.<sup>10</sup> However, given that the supposed Neolithic migration of ANP, and with them, the AN languages, happened in pre-history, investigating the “Austronesian Expansion” thus proves to be a complicated endeavor. Nonetheless, the prominent role that AN languages have played and continue to play in shaping ISEA and the rest of Austronesia as a whole has kept the academic discourse alive and vigorous. Perhaps there is merit to exploring the AN Expansion, if not to gain a clearer understanding of the history and people of ISEA.

### **Literature Review**

A widely known theory in regards to the origin of the ANP is the “Out of Taiwan” model by Peter Bellwood. Bellwood cites the diversity of AN languages on Taiwan to support his suggestion of a Taiwanese homeland for the Neolithic ANP – most of the AN family’s sub-branches are found on Taiwan, while only one branch, the Malayo-Polynesian subfamily, makes up the rest of the AN-speaking world.<sup>11</sup> According to Bellwood, this diversity is reflective of an earlier, prolonged AN development on the island prior to dispersal into ISEA.<sup>12</sup> Additionally, Bellwood metaphorically likens this linguistic diversity to biological diversity,

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<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> Bellwood, Peter. “Austronesian Prehistory in Southeast Asia: Homeland, Expansion, and Transformation.” *The Austronesians: Historical and Comparative Perspectives* 103-118. Australian National University, 2006. Print.

<sup>12</sup> Bellwood, 2006.

with the colonizing Malayo-Polynesian branch representing only a subset of the linguistic diversity observed in the original, parent population found on Taiwan.<sup>13</sup> Bellwood further explains the supposed AN expansion from Taiwan into insular Southeast Asia through the concept of a “cultural package,” assuming that the Neolithic ANP peoples represented a distinct and characteristic “archaeological cultural expression,” including red-slipped pottery, tattooing chisels, and fully polished stone adzes.<sup>14</sup> Theoretically, Neolithic ANP brought along this cultural package with them in their migrations, and analyzing its appearances throughout Southeast Asia could thus shed light on AN Neolithic migration patterns.<sup>15</sup>

In contrast, Wilhelm Solheim, attributes the spread of the AN languages more so to trade and cultural exchange as opposed to an AN ethno-cultural entity of Taiwanese origin. Solheim postulates that the ancestral AN language originated as a lingua-franca for a “Nusantao” trade network within ISEA, whereupon this lingua-franca was adopted by separate and distinct populations as a means of integration into the broader regional economy.<sup>16</sup> The present diversity of AN languages can thus be explained through linguistic divergence by virtue of geographic and cultural separation.<sup>17</sup> This trade network can be further supported by ISEA’s Neolithic archaeological record, the uniformity of which Wilhelm maintains to be the result of an ongoing and active exchange of cultural material between islands and between both adjacent and far-off populations.<sup>18</sup> Artifact uniformity and the spread of the AN language family may have thus

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<sup>13</sup> Ibid.

<sup>14</sup> Szabo, Katherine and Sue O’Connor. “Migration and Complexity in Holocene Island Southeast Asia.” *World Archaeology* 36.4: 621-28. Taylor & Francis Ltd., 2004. Print.

<sup>15</sup> Ibid.

<sup>16</sup> Solheim, Wilhelm G. “The Nusantao Hypothesis: The Origin and Spread of Austronesian Speakers.” *Asian Perspectives* 26.1: 77-88. University of Hawaii Press, 1984. Print.

<sup>17</sup> Ibid.

<sup>18</sup> Solheim, Wilhelm G., David Bulbeck, and Ambika Flavel. *Archaeology and Culture in Southeast Asia: Unraveling the Nusantao*. Diliman, Quezon City: University of the Philippines, 2006. Print.

dispersed through cultural diffusion brought on by down-the-line exchange and inter-population contact within ISEA as opposed to a mass Neolithic exodus of ANP.<sup>19</sup>

The Lapita Culture, spanning the Bismarck Archipelago eastward to Samoa, can additionally be interpreted as an extension of the trade network found in ISEA that contributed to the spread of AN languages.<sup>20</sup> Lapita's archaeological record suggests inter-island and inter-population exchange of cultural material, an exchange network attributed to the arrival of ANP into the South Pacific, whose advanced maritime culture ushered in an intensification of the region's material exchange and cross-cultural contact.<sup>21</sup> It is noteworthy to mention that Lapitan artifacts have seeming parallelisms with contemporaneous artifacts from ISEA, such as stamped, red-slipped pottery and shell-blade tools.<sup>22</sup> Moreover, it is from Lapita that the AN language family is posited to have spread into the rest of Polynesia.<sup>23</sup>

In addition to linguistic and archaeological studies, genetic investigations have also played a significant, albeit more recent role in the ongoing debate over AN origins. Genetic studies of Polynesian populations in particular have demonstrated that Polynesian Y-chromosome haplotypes have strong affinities to Melanesian populations,<sup>24</sup> while their mitochondrial DNA (mtDNA) group with Southeast Asian populations such as Philippine and Indonesian populations.<sup>25</sup> Studies among Philippine populations have also uncovered the ancestral variant of the 9-base pair deletion dubbed the "Polynesian Motif" – absent in Taiwanese populations but whose derived version is overwhelmingly present in Polynesian

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<sup>19</sup> Ibid.

<sup>20</sup> Kirch, Patrick V. "Lapita and Its Aftermath: The Austronesian Settlement of Oceania." *Transactions of the American Philosophical Society* 86.5: 57-70. American Philosophical Society, 1996. Print.

<sup>21</sup> Ibid.

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> Manfred K, Silke B, Gunter W, et al. "Melanesian Origin of Y Chromosomes." Elsevier Science Ltd. 2000. Print.

<sup>25</sup> Melton T, Peterson R, Redd AJ, et al. "Polynesian Genetic Affinities with Southeast Asian Populations as Identified by mtDNA Analysis." *American Journal of Human Genetics* 57(2): 403-414. 1995. Print.

populations.<sup>26</sup> Genetic studies thus illustrate a west-to-east movement of Asian haplotypes, a phenomenon that investigators link to the dispersal of ANP.<sup>27</sup>

On a similar note to genetics, John Terrell also touches on the racial aspect of ANP. Terrell notes that AN-speakers in ISEA are predominantly of “Southern Mongoloid” stock, while in the Oceanic regions, AN-speakers can be either Melanesian or Polynesian (phenotypically close to “Southern Mongoloids), with Melanesian-spoken AN languages demonstrating greater linguistic diversity.<sup>28</sup> Moreover, he also cites that non-AN speakers are always Melanesian and never Polynesian.<sup>29</sup> To Terrell, the linguistic diversity of Melanesian-spoken AN languages might suggest a South Pacific origin of the language family, with shared linguistic heritage alongside the Papuan languages.<sup>30</sup> Terrell also raises the question as to whether there is a racial component to speaking an AN language, and whether ANP do indeed coalesce into a common ethno-cultural entity.<sup>31</sup>

### Methods

This study was, in essence, an analysis of ISEA’s linguistic, archaeological, and genetic records in relation to the main theories of AN expansion – the Out of Taiwan model of Peter Bellwood, the Nusantao Trade Network of Wilhelm Solheim, and John Terrell’s discourse on Melanesian origins and the racial component of the AN-speaking world. At its core, the investigation relied solely on preexisting literature and data collected from previous studies. Data and literature were then contextualized and superimposed on the aforementioned models of

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<sup>26</sup> Tabbada K, Trejaut J, Loo JH, et al. “Philippine Mitochondrial DNA Diversity: A Populated Viaduct Between Taiwan and Indonesia?” *Molecular Biology and Evolution* 27: 21-31. 2010. Print.

<sup>27</sup> Ibid.

<sup>28</sup> Terrell, John. *Prehistory in the Pacific Islands: A Study of Variation in Language, Customs, and Human Biology*. Cambridge: Cambridge University Press, 1986. Print.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid.

<sup>31</sup> Ibid.

expansion in determining the plausibility of these theories. Ultimately, analysis of the source materials did not seek to legitimize one AN expansion model over all others, but to ascertain whether or not the archaeological data, linguistic inquiries, and genetic studies supported the explanations put forth by Bellwood, Solheim, and Terrell in their own respects. As a complement to this, the study additionally sought to investigate alternative models of AN expansion and median points between otherwise seemingly opposing theories.

## **Results**

### *Archaeology: Insular Southeast Asia*

Excavations in Cagayan Valley in the northern Philippines by Mandy Mijares have yielded lithics and stamped pottery assemblages that bear seemingly similar forms and production techniques (“genetic continuity”) to pottery remains found in the Chaolaiqiao sites in Southern China.<sup>32</sup> The Cagayan and Chaolaiqiao assemblages in turn resemble the red-slipped plainware from the Fushan sites in Taiwan, particularly in vessel form.<sup>33</sup> Interestingly, the Philippine stamped pottery assemblages from Cagayan Valley possess stamping patterns most similar to assemblages found in the Fushan area – the east coast of Taiwan – as well, with Cagayan and Fushan collections dating to approximately 3500-4000 b.p.<sup>34</sup> Additionally, excavations in the Batanes Islands between Taiwan and the Philippines have yielded artifact assemblages that also align closely with eastern Taiwanese collections, most evident in red-slipped plainware, pottery handles and knobbed lids, stone adzes, bi-conical baked clay

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<sup>32</sup> Simanjuntak, Truman, Ingrid H. E. Pojoh, and Muhamad Hisyam. “Austronesian Diaspora and the Ethnogeneses of People in Indonesian Archipelago.” Jakarta: LIPI, 2006. Print.

<sup>33</sup> Ibid.

<sup>34</sup> Ibid.

spindle whorls, and bi-notched stone fishing sinkers, with the oldest artifacts being dated to 3400-3700 cal. b.p.<sup>35</sup>

Faunal remains also demonstrate continuity with Taiwan. DNA analysis of domestic pig remains found in the Philippines exhibit close genetic grouping with domestic pig strains from Taiwan, as do pig remains from Borneo and Sulawesi.<sup>36</sup> However, there is discontinuity with domestic pig remains from the Indonesian island of Java, whose pigs group with Sumatran pigs, and ultimately to mainland Southeast Asian strains and not Taiwanese ones.<sup>37</sup> Java additionally exposes further discontinuity in terms of its pottery assemblages, with some archaeological sites producing the characteristic, Taiwan-linked, red-slipped plain pottery of supposed Austronesian origin, and pottery assemblages that demonstrate clearer links to Sumatra and mainland Southeast Asia by virtue of their form and design patterns.<sup>38</sup> There are also discontinuities in the archaeological records of South China and coastal western Taiwan – William Meacham cites that black plainware, *tou* vessels, and stepped adzes from South China do not appear in Taiwan until at least a 1000 years after their emergence in the former region.<sup>39</sup> In sharp contrast however, are the findings of Roger Blench, which suggest that the pre-Austronesian site of Hemudu in coastal South China, unlike surrounding sites that produced rice, cultivated millet instead, much like in Taiwan at the same period.<sup>40</sup>

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<sup>35</sup> Ibid.

<sup>36</sup> Spriggs, Matthew. "Archaeology and the Austronesian Expansion: Where are We Now?" *Antiquity* 85.328 (2011): 510-28. Web.

<sup>37</sup> Ibid.

<sup>38</sup> Ibid.

<sup>39</sup> Meacham, William. "On the Improbability of Austronesian Origins in South China." *Asian Perspectives* 26.1: 89-106. University of Hawai'i Press, 1984. Print.

<sup>40</sup> Blench, Roger. "Remapping the Austronesian Expansion." *Discovering History Through Language: Papers in Honor of Malcolm Ross* 35-39. Australian National University, 2009. Print.



However, according to Donohue and Denham, the archaeological record yields very sparse evidences that East Asian agricultural practices originating from Taiwan penetrated and diffused across ISEA 3,000-4,000 years ago; the archaeological record is almost completely devoid of domesticated rice originating from the aforementioned time period.<sup>41</sup> Of the 23 sites in ISEA sampled for archaeobotanical analysis, only the site of Gua Sireh in Malaysia produced rice phytoliths from the site's matrix, while 36 sites have yielded rice samples though only ever alongside pottery remains.<sup>42</sup>

Donahue and Denham's investigation additionally asserts that the dating of artifact assemblages from Wallacea and Melanesia, such as shell beads, fishhooks, and shell adzes, artifacts traditionally included within the supposed Austronesian cultural package, indicate earlier dates than the theorized expansion of AN-speakers into those regions.<sup>43</sup> Interestingly, certain elements of this cultural package, namely fishhooks and Taiwanese type shell ornaments, according to Matthew Spriggs, are absent from northern Philippine archaeological sites and in the sites of the Karama River in Sulawesi, Indonesia.<sup>44</sup> Furthermore, comparative analyses of shell bead assemblages from Palawan, Philippines and the site of Uattamdi in northern Moluccas, Indonesia display discontinuities in the raw materials and production techniques utilized.<sup>45</sup>

Moreover, Donohue and Denham put forward that the archaeological data demonstrates the co-circulation of two pottery types during the ISEAN Neolithic, one being "cord or basketry-wrapped paddle impressed" pottery and the other being plain, red-slipped pottery, the

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<sup>41</sup> Donohue, Mark and Tim Denham. "Farming and Language in Island Southeast Asia: Reframing Austronesian History." *Current Anthropology* 51.2: 223-56. University of Chicago Press, 2010. Print.

<sup>42</sup> Donohue & Denham, 2010.

<sup>43</sup> Ibid.

<sup>44</sup> Spriggs, 2011.

<sup>45</sup> Szabo & O'Connor, 2004.

latter supposedly a style originating from Taiwan.<sup>46</sup> Additional pottery analysis comes from The Phong Ngo in his investigation of Vietnamese pottery assemblages. He reports the discovery of Neolithic plain pottery found on the northeast coast of Vietnam that is reminiscent of the pottery found in northern Philippines of similar age, and cites that the oldest pottery in Vietnam have no ring feet or cord markings (impressions made with spun fibers) which are consistent with contemporary pottery in insular Southeast Asia, being similarly plain.<sup>47</sup> These Vietnamese artifact assemblages were found in the sites of Cai Beo and Da But, whose plain-pottery-containing layers dated to 5645 +/- 115 b.p. and 6095 +/- b.p. respectively.<sup>48</sup> Ngo relates these dates to plain pottery found in the Cagayan Valley sites of northern Philippines, which are dated to, at minimum, 4000 b.p.<sup>49</sup> Ngo also notes that the plain pottery assemblages from northeast Vietnam and ISEA predate the impressed pottery (non-plain) assemblages, which are also comparable in imprint design and vessel shape.<sup>50</sup>

#### *Archaeology: Lapita*

Excavation of Lapita sites such as Talepakemalai and Etakosarai, as well as others in the Mussau Archipelago, suggest a large scale, inter-island movement of materials such as obsidian, chert, adzes, and oven stones through the Lapita complex – pottery and obsidian from Mussau sites, for example, can be traced to 16 different sources from other island groups within the Lapita system such as New Britain and the Manus Islands.<sup>51</sup> In addition, Red-slipped Lapita plainware and stamped pottery from Lapita sites such as EHB and ECA in the Mussau Islands

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<sup>46</sup> Ibid.

<sup>47</sup> Ngo, The Phong. "Some Archaeological Questions of the Northern Vietnamese Coastal Areas in Relation to Austronesian Origins." *Asian Perspectives* 26.1: 147-52. University of Hawai'i Press, 1984. Print.

<sup>48</sup> Ibid.

<sup>49</sup> Ibid.

<sup>50</sup> Ibid.

<sup>51</sup> Kirch, 1996.

greatly resemble the Magapit-type vessels of northern Luzon in the Philippines, as well as the Kalumbang assemblage from Sulawesi in Indonesia, and the red-slipped pottery assemblages excavated in Halmahera, also in Indonesia.<sup>52</sup> Radiocarbon dating of these aforementioned artifact assemblages has produced dates that are nearly identical, consistent with the appearance of the Lapita culture in the Bismarck Archipelago 3,500 years ago.<sup>53</sup> However, overall, radiocarbon dating of red-slipped pottery and stamped pottery assemblages found in ISEA, particularly in the Philippines, yield earlier dates when compared to even the oldest known Lapitan assemblages.<sup>54</sup> Lastly, Patrick Kirch puts forward that the archaeological record suggests a waning off of Lapitan trade intensity towards the Late Lapita Period, with production apparently becoming more localized and divergent as per analyses of source materials and artifact stylistics.<sup>55</sup>

*Austronesians, Melanesians, and Genetic Studies*

Y-chromosome analyses by Manfred, Silke, Gunter, et al. displayed that Polynesian populations belonged to only three Y-chromosome haplotypes.<sup>56</sup> The most prevalent haplotype, of which 83% of the test population belonged to, is restricted to Melanesia and Eastern Indonesia and most likely arose in Melanesia, while the remaining haplotypes were found in both Asia and Melanesia.<sup>57</sup> However, the study concluded that all dominant Y-chromosome haplotypes found among Polynesian populations could ultimately be traced back to Melanesia.<sup>58</sup>

Studies of the mtDNA of ANP, however, are in a sense, the “opposite” of the Y-chromosome findings. In the investigation of Tabbada, Trejaut, Loo, et al., the results showed

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<sup>52</sup> Ibid.

<sup>53</sup> Ibid.

<sup>54</sup> Spriggs, 2011.

<sup>55</sup> Kirch, Patrick V. “Specialization and Exchange in the Lapita Complex of Oceania.” *Asian Perspectives* 29.2: 117-33. University of Hawai’i Press, 1990. Print.

<sup>56</sup> Manfred K, Silke B, Gunter W, et al., 2000.

<sup>57</sup> Ibid.

<sup>58</sup> Ibid.

that the vast majority of Philippine mtDNA types are shared in common with those of Taiwanese aboriginal populations, and are linked to haplogroups that have been observed in Asia and Southeast Asia.<sup>59</sup> It appears that diversity among individual mtDNA haplogroups decrease from Taiwan, to the Philippines, and south to Sulawesi, and that 94% of the mtDNA samples belong to haplogroups previously identified in Asia and Southeast Asia (but not Melanesia), while the remaining 6% belong to unnamed or unidentified haplogroups.<sup>60</sup> Based on multidimensional scaling plots, mtDNA haplogroup frequency distributions from Taiwanese aboriginal populations, Philippine populations, and Sulawesi populations are indistinguishable from each other in the first dimension.<sup>61</sup> Interestingly, Tabbada was also able to show that the coalescence dates for the shared mtDNA haplogroups between the aboriginal Taiwanese, Philippine, and Sulawesi populations were older among the aboriginal Taiwanese and younger among the latter two. Additionally, the B4a1a1 characteristic identified in Philippine mtDNA samples appears to be a precursor of the 9 base-pair deletion (genetic mutation) known as the “Polynesian Motif.”<sup>62</sup>

Studies of the “Polynesian Motif” by Melton, Peterson, Redd, et al. implicate that the motif is moderately distributed in Southeast Asian populations, “fixed” in Polynesian populations, and largely absent from Melanesian populations in Australia and highland Papua New Guinea.<sup>63</sup> The deletion occurred in sampled ISEAn populations with a range of 21% to 41%, with the highest frequencies found among Taiwanese Aborigines and Filipinos, at ~40%.<sup>64</sup> Further DNA analysis shows that the nine base-pair deletions observed in the Taiwanese and the

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<sup>59</sup> Tabbada K, Trejaut J, Loo JH, et al.

<sup>60</sup> Ibid.

<sup>61</sup> Tabbada K, Trejaut J, Loo JH, et al.

<sup>62</sup> Tabbada K, Trejaut J, Loo JH, et al.

<sup>63</sup> Melton T, Peterson R, Redd AJ, et al., 1995.

<sup>64</sup> Ibid.

Filipino populations may have been ancestral to the particular deletion that is the Polynesian Motif, while the motif itself most probably arose in East Indonesia.<sup>65</sup>

## **Discussion**

### *Out of Taiwan*

Peter Bellwood's Out of Taiwan model rests on the theory that the archaeological continuity of Neolithic ISEA is the result of the expansion of a distinct group, the ancestral ANP, into the region, and displacing and replacing previous inhabitants and cultures. However, this very same theory ultimately roots itself in the speculation that a certain portion of the archaeological record can be directly attributed to ancestral ANP, and can therefore be used to gauge the expansion of these peoples throughout the ISEAn region. The question thus arises as to the credibility of such an assumption.

To some extent, the archaeological record does support the idea of an AN "cultural package." Simanjuntak, for example, mentioned of the aesthetic similarities between the red-slipped plainware of the Chaolaiqiao, Fushan, and Cagayan Valley sites, illustrating a genetic continuity in the Neolithic pottery styles of South China, Taiwan, and the northern Philippines.<sup>66</sup> The Batanes Island excavations, too, yielded pottery handles, knobbed lids, and bi-conical baked clay spindles that strongly resembled contemporaneous Taiwanese versions.<sup>67</sup> This example is particularly significant given the location of the Batanes Islands between Taiwan and the Philippines, where evidence of AN continuity would be expected seeing as these islands would theoretically have been the gateway from Taiwan to the southern islands, particularly the

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<sup>65</sup> Ibid.

<sup>66</sup> Simanjuntak, Truman, Ingrid H. E. Pojoh, and Muhamad Hisyam, 2006.

<sup>67</sup> Ibid.

Philippines. However, another dilemma is presented here in that these examples are completely dependent on the rationale that South China/Taiwan was the “homeland” of the ancestral ANP.

As for the cultural replacement aspect of the Out of Taiwan model, ISEAn archaeology may also hold important details. The remains of two pig strains in the archaeological record, as mentioned by Spriggs, with one strain genetically grouping with Taiwanese pigs and the other with mainland Southeast Asian types,<sup>68</sup> may represent a clinal point in cultural contact in which Taiwan-type pigs were in the process of replacing preexisting pig strains. By extension of this, it could also tenably be argued that ancestral ANP were displacing pre-AN populations. A similar argument can be made for the case of Java in Indonesia, where some sites yield the characteristically Austronesian red-slipped plainware while other sites contain mainland type pottery assemblages.<sup>69</sup> This could be held as evidence of a Taiwan-influenced culture encroaching upon an earlier aboriginal culture.

However, in the end, Bellwood’s idea of an AN “cultural package” does encounter significant archaeological road blocks. Radiocarbon dating of artifact assemblages from Melanesia and Wallacea, for example, all containing fishhooks, shell beads and jewelry, and spindle whorls – all part of the supposed AN “cultural package,” – reveal that these artifact collections preceded the accepted commencement of AN expansion into ISEA (~4000 b.p.). With this, the data suggests that the AN expansion into ISEA happened at a much earlier date, or that the cultural package as proposed by Bellwood is invalid. Moreover, the work of William Meacham asserts that settlement remains in South China dating from 4000-2500 b.p. are too

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<sup>68</sup> Spriggs, 2011.

<sup>69</sup> Ibid.

sparse to suggest agricultural intensification or a population explosion, factors cited by Bellwood in explaining the motivation of ancestral ANP to disperse from their points of origin.<sup>70</sup>

*The Nusantao Trade Network*

Wilhelm Solheim's Nusantao Trade Network theory can arguably be understood as the antithesis of Peter Bellwood's Out of Taiwan expansion model and Bellwood's very own assertions that increasing agricultural intensification, particularly in the cultivation of rice, pushed the ancestral ANP to migrate southward from Taiwan into ISEA.<sup>71</sup> However, the findings of Donahue and Denham bring Bellwood's assertions of rice cultivation into question. The scarcity of domestic rice samples of Neolithic origin in the ISEAn archaeological record does not support the idea of a wide scale, AN-induced adoption of rice-based agriculture into the archipelagic region, especially given that the rice scarcity appears to extend well into the supposed colonization of ISEA by ANP, dated at ~3500 b.p. Rather, rice samples are always found within the context of pottery remains, and pottery, as Donahue and Denham point out, are containers.<sup>72</sup> It would therefore be plausible to argue that the exclusivity of rice finds to pottery assemblages suggests the transportation of rice in pottery, thus implicating that rice itself was a trade commodity in the region as opposed to being a focus of cultivation.<sup>73</sup> Such a claim correlates with the fact that, out of the 23 ISEAn matrix samples collected by Donahue and Denham, as mentioned earlier, only one sample contained rice phytoliths. The presence of phytoliths harkens at the physical presence of live rice plants coming in contact with the matrix, while the lack of phytoliths would mean otherwise.<sup>74</sup> In essence, the lack of phytoliths points to a

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<sup>70</sup> Meacham, 1984.

<sup>71</sup> Oppenheimer S, Richards M. "Fast Trains, Slow Boats, and the Ancestry of the Polynesian Islanders." *Science Progress* 84(3): 157-181. Science Reviews 2000 Ltd. 2001. Print

<sup>72</sup> Donahue & Denham, 2010.

<sup>73</sup> Donahue & Denham, 2010.

<sup>74</sup> Ibid.

lack in cultivation, and a lack of localized production would therefore render procurement through trade all the more sensible to assume.

Moreover, though the archaeological record of ISEA may present itself as seemingly uniform, closer analysis of specific artifact assemblages, such as the Palawan and Uattamdi shell bead collections mentioned earlier, demonstrate that the materials and production techniques vary from site to site.<sup>75</sup> It appears then that, though production was localized, the end products nonetheless represented variations of the same, particular design concept. It could thus be argued that localized production, representing different material sources and techniques of manufacture, produced similar resulting cultural material in conforming to a broader regional standard of sorts such as, perhaps, the demand for a certain form and aesthetic quality of pottery. Far-flung populations may thus come to produce similar pottery by virtue of injecting themselves within the broader, economic environment of the region at hand. Additionally, continuous trade from locality to locality may thence perpetuate the primacy of the regional standard, leveling differences, and leading to greater genetic continuity in cultural production, as in the example of northeast Vietnamese plainware and northern Philippine plainware offered by Ngo. However, the existence of two differing pottery styles in the Neolithic ISEAn archaeological record – impressed pottery and red-slipped plainware – raises doubts in the genetic continuity that a trade system might create. Nonetheless, this can still be contextualized through the scope of cross-island and cross-population trade, as there may have simply been a demand for both types.

### *Lapita*

The role that the Lapita area plays in the expansion of ANP and the AN language family into the outer Pacific is an interesting one, albeit just as complicated to define as the case of

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<sup>75</sup> Szabo & O'Connor, 2004.



ISEA. It can be argued that Lapita was an extension of the Neolithic ISEAn movement of people and material goods, aligning with the Nusantao network as proposed by Solheim. The tooth-stamped, red-slipped pottery of Lapita, for example is notably similar to pottery found in Halmahera in Indonesia and Luzon in northern Philippines (Magapit pottery), all which have been shown by carbon dating to be contemporaneous to Lapita assemblages.<sup>76</sup> In general, the imprint patterns and vessel shape attested in Lapitan pottery remains display great genetic continuity with designs found in ISEA of roughly the same period.<sup>77</sup> It would thus be reasonable to claim that the Lapita complex may have been an offshoot of the Nusantao trade network. Moreover, dating of ISEAn pottery remains confer ISEAn assemblages chronological priority over Lapitan pottery,<sup>78</sup> which further supports the assertion as to the seniority of an ISEAn trading system, with the Lapita system perhaps being a product of the movement of ANP into the southern Pacific islands. It may possibly have been arrival of the Austronesian speakers – bringing with them a highly mobile, maritime culture – within the Lapita proper that spurred the Lapitan trade network, or intensified a preexisting inter-island exchange system.

However, the chronology of the Lapitan archaeological data also appeals to Bellwood's Out of Taiwan Theory. The seniority of ISEAn pottery to even the oldest of Lapita's assemblages, in conjunction with the stylistic parallelisms between the pottery of both regions, combine to suggest an ancestral pottery tradition originating within ISEA and spreading southeastwards towards the southern Pacific. If contextualized within Bellwood's argument for an Austronesian cultural package, then tracking the appearances of this pottery making tradition will also likewise illustrate the migration patterns of ancestral ANP. With this, the chronology of

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<sup>76</sup> Kirch, 1996.

<sup>77</sup> Ibid.

<sup>78</sup> Ibid.

dates gives ISEA priority over Lapita, which supports Bellwood's hypothesis of a southward/southeastward migration route of dispersing AN-speaking peoples during the Neolithic.

### *Genetics*

Perhaps the most intriguing results came from the genetics studies of present ANP, and sheds light on AN ancestry in a way that the archaeological record cannot. The findings of Manfred, Silke, and Gunter, for example, was significant in determining that all three major Y-chromosome haplogroups found among the Polynesians of today are traceable to Melanesian origins, while Polynesian mtDNA haplogroups cluster closely with Southeast Asian and mainland Asian types.<sup>79</sup> This thus reveals a duality in ancestry as far as it concerns Polynesians, with a male line of Melanesian origins and a female line of Asiatic origins. It appears then, that as ancestral ANP expanded eastwards towards the south Pacific in the Lapita area, significant genetic exchange occurred between preexisting populations and the migrating AN-speaking groups.

However, the aforementioned assertions rest on the assumption that the AN homeland lies somewhere in Southeast Asia or ISEA more specifically, or that an eastward movement of Asiatic genetic lineages did indeed take place. Nonetheless, the genetic data seems to offer support, particularly the results gathered by Tabbada et al. Tabbada's investigation compared the mtDNA haplogroups of Taiwanese aborigines, Philippine populations, East Indonesians, and Polynesians, and discovered that 94% of all sampled mtDNA groupings cluster with previously identified Asian genetic lineages, however, the diversity of these mtDNA groups decreases from

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<sup>79</sup> Manfred, Silke, Gunter, et al., 2010.

Taiwan-Philippines southwards into Eastern Indonesia and Polynesia.<sup>80</sup> Moreover, Tabbada further sites that the observed mtDNA haplogroups had different coalescence periods, with Taiwanese mtDNA groups coalescing the earliest, and Philippine, East Indonesian, and Polynesian haplogroups appearing to be much younger.<sup>81</sup> This chronology of mtDNA coalescence dates combined with the decreasing diversity of haplogroups from west to east therefore supports the eastward pump of Asiatic genetic lineages, and additionally implicates an ISEA origin of Polynesian ancestors. This is further supported by Tabbada's isolating of the B4a1a1 mutation among Philippine populations, a mutation that appears to be a direct precursor for the characteristic 9 base-pair deletion mutation of Polynesian populations.<sup>82</sup>

Lastly, it is intriguing that a Taiwanese genetic influence is constant in all of the aforementioned genetic analyses, particularly through the study of mtDNA haplogroups among AN-speaking populations. It is indeed thought provoking in that it insinuates the existence of an AN genetic legacy by virtue of shared ancestry among the AN-speaking peoples of today. It seems then, that Bellwood's Out of Taiwan theory has much to gain from genetic studies.

### **Conclusion**

A thoughtful and methodical analysis of existing literature attests to the complexity of investigating the "Austronesian expansion." Seeing as the dispersal of the AN language family commenced before recorded history, the archaeological record and genetic studies of present AN-speaking populations prove to be crucial in the ongoing search for the AN "homeland" and in determining the identity of Neolithic ANP. However, the holistic consideration of all of these factors fails to produce any conclusive explanations. Archaeological evidence, for example,

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<sup>80</sup> Tabbada K, Trejaut J, Loo JH, et al., 2010.

<sup>81</sup> Ibid.

<sup>82</sup> Ibid.

points to a large-scale migration of supposedly ANP from Taiwan southward into ISEA on one hand, while on the other, the uniformity of artifact types may be more suggestive of inter-population material exchange as opposed to the existence of a monolithic, AN ethno-cultural identity. Moreover, genetic evidence also suggests that AN-speaking populations are genetically diverse, with Melanesian and ISEAn genetic lineages contributing to genetic legacy of present day AN-speakers, all the while a genetic trace of supposed Taiwanese origin still lies constant with these very same populations. As per the literature, to holistically investigate the “Austronesian expansion” then, is to realize the utter complexity of the topic at hand, and that there is no, one, right answer, but many very plausible and complimentary theories all at once.

Ultimately, the topic of human migration and the peopling of whole regions in itself is a formidable topic to tackle, and the intricacy of the Austronesian expansion requires an extremely holistic, introspective, and retrospective analysis. With this, covering all of the bases of solving the Austronesian the mystery is beyond the scope of this investigative essay. However, to contribute to the larger discourse of Austronesianists as a whole, there may be merit for this investigation in offering its own constructive point of view on the Austronesian dispersal.

In the end, the Nusantao Trade System model is very appealing in that it is theoretically well grounded in its reliance on the archaeological record. The Out of Taiwan model on the other hand, draws evidence from the arbitrary linking of the archaeological record to a language family and the speakers of its daughter languages. Claiming that the speakers of a language family exhibit a specific type of archaeological expression is an assumption on shaky ground, as it overlooks, perhaps purposely, the fact that common language does not equate to common

ethno-cultural-biological lineage, a fact that has been undoubtedly observed by countless of anthropologists.

Perhaps then, the ancestral ANP were disparate, linguistically distinct groups that coalesced into the Austronesian language family through the use of a common trade lingua franca. Perhaps this language was used to navigate an imposingly intricate, multidirectional inter-island trade network that went every which way within the region. Perhaps, with the direction of trade, people also migrated in the same manner, interacted with one another, shared language, shared culture, and witnessed a region-wide cultural diffusion of sorts. And perhaps there was indeed migration from Taiwan, though whole swaths of pre-AN people were not displaced by Taiwanese settlers, and that these settlers themselves contributed to the overall genetic lineage of the region's peoples. Perhaps indeed, though these are all speculations for another time.

### Works Cited

- Bellwood, Peter. "Austronesian Prehistory in Southeast Asia: Homeland, Expansion, and Transformation." *The Austronesians: Historical and Comparative Perspectives* 103-118. Australian National University, 2006. Print.
- Bellwood, Peter S., James J. Fox, and D. T. Tryon. "The Austronesians: Historical and Comparative Perspectives." Canberra: Dept. of Anthropology as Part of the Comparative Austronesian Project, Research School of Pacific and Asian Studies, Australian National University, 1995.
- Blench, Roger. "Remapping the Austronesian Expansion." *Discovering History Through Language: Papers in Honor of Malcolm Ross* 35-39. Australian National University, 2009. Print.
- Blust, R. A. "The Austronesian Languages." Canberra: Pacific Linguistics, Research School of Pacific and Asian Studies, Australian National University, 2009.
- Donohue, Mark and Tim Denham. "Farming and Language in Island Southeast Asia: Reframing Austronesian History." *Current Anthropology* 51.2: 223-56. University of Chicago Press, 2010. Print.
- Kirch, Patrick V. "Lapita and Its Aftermath: The Austronesian Settlement of Oceania." *Transactions of the American Philosophical Society* 86.5: 57-70. American Philosophical Society, 1996. Print.
- Kirch, Patrick V. "Specialization and Exchange in the Lapita Complex of Oceania." *Asian Perspectives* 29.2: 117-33. University of Hawai'i Press, 1990. Print.
- Manfred K, Silke B, Gunter W, et al. "Melanesian Origin of Y Chromosomes." Elsevier Science Ltd. 2000. Print.
- Meacham, William. "On the Improbability of Austronesian Origins in South China." *Asian Perspectives* 26.1: 89-106. University of Hawai'i Press, 1984. Print.
- Melton T, Peterson R, Redd AJ, et al. "Polynesian Genetic Affinities with Southeast Asian Populations as Identified by mtDNA Analysis." *American Journal of Human Genetics* 57(2): 403-414. 1995. Print.
- Ngo, The Phong. "Some Archaeological Questions of the Northern Vietnamese Coastal Areas in Relation to Austronesian Origins." *Asian Perspectives* 26.1: 147-52. University of Hawai'i Press, 1984. Print.

- Oppenheimer S, Richards M. "Fast Trains, Slow Boats, and the Ancestry of the Polynesian Islanders." *Science Progress* 84(3): 157-181. Science Reviews 2000 Ltd. 2001. Print
- Simanjuntak, Truman, Ingrid H. E. Pojoh, and Muhamad Hisyam. "Austronesian Diaspora and the Ethnogeneses of People in Indonesian Archipelago." Jakarta: LIPI, 2006. Print.
- Solheim, Wilhelm G., David Bulbeck, and Ambika Flavel. *Archaeology and Culture in Southeast Asia: Unraveling the Nusantara*. Diliman, Quezon City: University of the Philippines, 2006. Print.
- Solheim, Wilhelm G. "The Nusantara Hypothesis: The Origin and Spread of Austronesian Speakers." *Asian Perspectives* 26.1: 77-88. University of Hawaii Press, 1984. Print.
- Spriggs, Matthew. "Archaeology and the Austronesian Expansion: Where are We Now?" *Antiquity* 85.328 (2011): 510-28. Web.
- Szabo, Katherine and Sue O'Connor. "Migration and Complexity in Holocene Island Southeast Asia." *World Archaeology* 36.4: 621-28. Taylor & Francis Ltd., 2004. Print.
- Tabbada K, Trejaut J, Loo JH, et al. "Philippine Mitochondrial DNA Diversity: A Populated Viaduct Between Taiwan and Indonesia?" *Molecular Biology and Evolution* 27: 21-31. 2010. Print.
- Terrell, John. *Prehistory in the Pacific Islands: A Study of Variation in Language, Customs, and Human Biology*. Cambridge: Cambridge University Press, 1986. Print.