

BOOK REVIEWS

Expansion of Austronesian Languages and their Speakers during the Neolithic as Inferred from Archaeological Evidence and Genetic Diversity in Southeast Asia and Discussed in Five Journals¹

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Abstract

This paper is a journal review on Austronesian expansion in Southeast Asia. Most archaeological research in the Neolithic Age sites across Island Southeast Asia are geared toward supporting or disproving the hypotheses on the origins and dispersal of Austronesian-speaking people. The most mainstream is the "Out of Taiwan" hypothesis, which is a part of the larger farming/language dispersal hypothesis (Bellwood 2005). The geographical scope of this hypothesis explains the geographical focus of this analysis. On the other hand, the most popular alternative to this hypothesis is known as the "Nusantao Maritime Trading and Communication Networks" hypothesis (Solheim et al. 2007). The discourse on the Austronesian expansion in Southeast Asia during the Neolithic was tracked down in the last 15 years, from 1996 to 2010, in American Journal of Physical Anthropology, American Anthropologist, Current Anthropology, Molecular Biology and Evolution, and Antiquity. The focus is on articles discussing bioarchaeology, genetics, and material culture for examining how the two subfields of anthropology, which are bioanthropology and archaeology, covered this discourse. This analysis discusses the treatment of the topic and trends across the five journals, across time, and across subfields and disciplines. Then, general comparisons across categories and concluding remarks follow.

Introduction

This paper is a journal analysis on Austronesian expansion in Southeast Asia. Most archaeological researches in the Neolithic sites

¹ Originally submitted as a journal analysis required for Proseminar II in Bioanthropology and Archaeology class (Bioanthropology portion) under Dr. Connie Mulligan, Spring 2011 term, Department of Anthropology, University of Florida. Graduate students were required to track research on their topic of interest in biological anthropology and another subfield of anthropology in the last 15 years in five leading, peer-reviewed journals. The journals *American Journal of Physical Anthropology*, *American Anthropologist*, and *Current Anthropology* were required to be included. The student had to choose the two other journals.

across Southeast Asia and Taiwan are geared toward supporting or disproving the hypotheses on the origins and dispersal of Austronesian-speaking people. The most mainstream among these hypotheses is the “Out of Taiwan” hypothesis, where the main proponent is Peter Bellwood. According to this hypothesis, around 5500/6000 years ago, the proto-Austronesian speaking agriculturists from China migrated to Taiwan, and ~4000 years ago, the Austronesian-speaking people migrated from Taiwan to Island Southeast Asia. This hypothesis is part of the larger farming/language dispersal hypothesis (Bellwood 2005). The geographical scope of this hypothesis explains the geographical focus of this analysis. However, there is a notion that the Austronesian-speaking people also moved into the Mainland Southeast Asia (Malay Peninsula and Vietnam; Blust 1984-1985, as cited in Bellwood 1996), since at least two of the Austronesian languages are spoken in that area by two ethnic groups (Bellwood *et al.* 2006). Taiwan is crucial as the hypothetical origin of the Austronesian-speaking people (Bellwood 2005). Although its political affiliation is East Asia, Bellwood (2005) included Taiwan in the Island Southeast Asia. These explain why researches from Mainland Southeast Asia and Taiwan are also included in this analysis, aside from those in Island Southeast Asia. Not everyone agrees with the Out of Taiwan hypotheses. The most popular alternative, where the main proponent is Wilhelm Solheim II, is known as the “Nusantao Maritime Trading and Communication Networks.” According to this hypothesis, the Austronesian-speaking people are called Nusantao and their homeland is in the islands of southern Philippines and eastern Indonesia (Solheim *et al.* 2007).

In relation to the discourse on the Austronesian expansion in Southeast Asia during the Neolithic, the analyst wanted to track how this issue was tackled in the last 15 years, from 1996-2010, in *American Journal of Physical Anthropology*, *American Anthropologist*, *Current Anthropology*, *Molecular Biology and Evolution*, and *Antiquity*. For the purpose of this paper, the author of this paper is referred to as the “analyst,” not to be confused with “author(s)” of works referred in the discussion. The focus is on articles discussing bioarchaeology, genetics, and material culture for examining how the two subfields of anthropology, which are bioanthropology and archaeology, covered this issue. Aside from the three leading American anthropology journals, two other journals that cover the two subfields were chosen. *Molecular Biology and Evolution* journal covers genetics of not only humans but also of domesticated plants and animals. Also, *Antiquity* has a worldwide coverage on

archaeology (especially prehistory). The other subfield, which is linguistic anthropology, is also mentioned in the discussion as being incorporated in interdisciplinary articles.

This analysis discusses the treatment of the topic and trends across the five journals, across time, and across subfields and disciplines. Then, general comparisons across categories and concluding remarks follow.

Methodology

Articles pertaining to the topic were searched in Wiley Interscience database for *American Anthropologist* and *American Journal of Physical Anthropology*, JSTOR database for *Current Anthropology*, Oxford Journals database for *Molecular Biology and Evolution*, and *Antiquity* website. Keywords used for searching are Austronesian, Southeast Asia, Neolithic, mid-Holocene, and expansion. Taking notes in index cards was done for convenient sorting according to categories (journal, period, and subfield), comparison, and looking for trends. Articles published online from 1996-2010 and gathered from the journal databases until February 8, 2011 were included in this analysis.

Across Journals

American Anthropologist

The Austronesian expansion is minimally discussed in the pages of *American Anthropologist*. Only four articles were found. It is not even a featured topic. Austronesian as a language family is included in the social structural dimension of emerging synthesis with a worldwide coverage (Jones 2003). By integrating all four subfields of anthropology, Jones (2003) took demic expansion further by incorporating kinship systems and proposed his version of culture areas. He lamented that the syntheses on expansions only include the three subfields and cultural anthropology has often been neglected. Coincidentally, his manuscript is the only one that encompasses the four subfields. Instead of expansion of Austronesian-speaking farmers, Kealhofer (2002) investigated the development of agroecosystems in Southeast Asia. She suggested that there is too much focus on Austronesian expansions coupled with the spread of agriculture. Her perspective could be a critique against archaeologists who do research in Southeast Asia who do not come from the four-field tradition of American anthropology. That *American Anthropologist* is published by the American Anthropological Association could be one reason why non-US educated

archaeologists do not publish in that journal, resulting in the few manuscripts being published in the 15 years reviewed. Many archaeologists researching in Southeast Asia were educated in Europe, and it is well-known that European archaeology has a different tradition and perspectives from those of American archaeology. Two proceedings with chapters on Austronesian expansion (with critiques, supporting and contradicting evidences) were published in this journal (Anderson 2008; Dolukhanov 2001). As a result, Austronesian expansion during the Neolithic as a central issue was never discussed in this journal in the span of 15 years.

Current Anthropology

In contrast to *American Anthropologist*, *Current Anthropology* has the most number of manuscripts that tackle Austronesian expansion. Nine manuscripts were found. The claim of the journal as a transnational one (www.jstor.org/page/journal/curranth/about.html) could be one reason behind this, where archaeologists working in Southeast Asia are more comfortable in publishing with this journal. Southeast Asia as a region is not necessarily the focus of discussion with respect to Austronesian expansion, but it is included. This journal is an excellent venue to keep updated with recent developments and debates about this topic. For example, environmental factors affected the movement of agriculture (Dewar 2003) and rice-based agriculture might have been adopted by hunter gatherers already engaged in plant management (Barton 2009). Bellwood (2009a) presented his perspective on the spread of early food-producing populations. Large syntheses and research articles are often accompanied by commentaries from other researchers and the authors are allowed to comment to the replies (Barton 2009; Bellwood 2009a; Dewar 2003; Donohue and Denham 2010; Terrell *et al.* 2001). While Bellwood (2009a), for example, equated the spread of agriculture with the spread of people through a worldwide synthesis, Donohue and Denham (2010) offered a supporting alternative framework and others offered alternative perspectives (e.g., Barton 2009; Dewar 2003; Terrell *et al.* 2001). Bellwood is often strongly critiqued with respect to his hypothesis; however, he is given the opportunity to reply. He strongly replies by saying that the contents of the papers are misinformed, problematic, and denigrate the farming/language dispersal hypothesis (Bellwood 2009b; Donohue and Denham 2010; Terrell *et al.* 2001). Two of the articles observed in this analysis are multidisciplinary syntheses of information from archaeology,

linguistics, and genetics (Donohue and Denham 2010; Terrell *et al.* 2001). Bellwood (2009a) excluded genetics, since he thought that it will not reveal a full picture of his hypothesis. Donohue and Denham (2010) also incorporated information from crop domestication histories. Bellwood's (2005) book expounding on the spread of agriculture along with people and language, and another book on the alternative theory of Austronesian expansion were reviewed (McCorrison 2006; Terrell 1999). Research updates from a multidisciplinary conference on Austronesian and other language groups were also reported (Bellwood and Sanchez-Mazas 2005). Although Austronesian expansion in the Island Southeast Asia during the Neolithic as a focus of discussion is only found in one article (Donohue and Denham 2010), this topic is highlighted in most articles found in this journal, especially those with accompanying comments.

American Journal of Physical Anthropology

As the official "flagship" journal of the American Association of Physical Anthropologists, the *American Journal of Physical Anthropology* covers related research on primate/human morphology past and present, in addition to genetics-based research that explores primate and human history and variation. However, all eight articles pertaining to Austronesian expansion are based on genetics research except those by Matsumura and Hudson (2005) and Turner (2006). It was expected that a substantial number of articles on the morphological analysis of ancient human remains would be found. Matsumura and Hudson (2005) used dental evidence to support the two layer immigration hypothesis, where one of the layers pertains to the migration of the Austronesian-speaking people during the Neolithic. The problems most commonly mentioned by the articles are limited information on indigenous Southeast Asians, and Taiwan and Island Southeast Asia areas are poorly studied genetically. Genetic diversity studies explore genetic relationships across populations (Parra *et al.* 1999), and the peopling history of a specific area (Lertrit *et al.* 2008; Miranda *et al.* 2003; Sewerin *et al.* 2002). One of the major findings observed is that there are existing major differences between populations on mainland Southeast Asia and the insular islands (Parra *et al.* 1999). The surprising result on Ami people in Taiwan, a suspected ancestral population, is another striking finding (Sewerin *et al.* 2002). The Ami people lack genetic affinity with other Austronesian-speaking populations, leading to the possibility that they are not Austronesian-speaking people. The research by Lertrit *et al.* (2008) is not focused on the Austronesian expansion, per se, since the subject area is focused on a

different language family (Austro-Asiatic) that occurs principally in Mainland Southeast Asia. What is unique with their work, however, is that it is the only study to publish aDNA purportedly derived from ancient human remains. A model of human migration and the influence of language on genetic diversity were also presented in two global-based studies (Belle and Barbujani 2007; Dugoujon *et al.* 2004). Generally, Austronesian expansion during the Neolithic is central only to one article, which provided dental perspectives. The rest of the articles only reference the Austronesian expansion in the discussion or a minor component in a bigger picture.

Molecular Biology and Evolution

Molecular Biology and Evolution covers not only human genetics but also genetic-based work in many groups of animals and plants. Only seven articles on human population genetics are found in this journal that addressed issues of the Austronesian expansion. Articles on the genetic diversity of domesticated plants and animals that would support or contradict theories of Austronesian expansion were expected by the analyst, but they were not observed in this journal. It is noticeable also that articles that do focus on Austronesian expansion were all published in the last five years (2006-2010). New geographical areas were investigated for their genetic diversity and history to shed insights on settlement history (Hill *et al.* 2006; Karafet *et al.* 2010; Peng *et al.* 2010; Mona *et al.* 2009; Tabbada *et al.* 2010; van Oven *et al.* 2010), addressing the problem of the lack of genetic data from some areas of Southeast Asia. Human migrations preceding the Neolithic Austronesian expansion were investigated using genetic data collected from across the Southeast Asian region (Soares *et al.* 2008). The majority of articles have results showing evidences of admixture, with dominant signatures of older migrations present in the overall genetic diversity reported (Hill *et al.* 2006; Karafet *et al.* 2010; Mona *et al.* 2009; Soares *et al.* 2008; Tabbada *et al.* 2010). Unexpectedly, two articles demonstrate that signatures of Neolithic expansion are only a minor contribution (Karafet *et al.* 2010; Tabbada *et al.* 2010). In contrast, it is also unexpected that one population shows dominant signatures of Austronesian expansion along both matrilineal and patrilineal lines (van Oven *et al.* 2010). Findings from mainland populations seem to disprove the Austronesian expansion hypothesis from the Island Southeast Asia to the Mainland Southeast Asia and support another hypothesis of Nusantao Maritime Trading and Communication networks (Peng *et al.* 2010). In summary, the fact that this

journal only published articles related to Austronesian expansion in the Southeast Asia in the last five years means that it had filled the gaps in the genetic data from the region. The topic is not necessarily central to these articles, since genetic diversity and history had also shed insights on earlier human migrations in the Southeast Asian region.

Antiquity

Since *Antiquity* has a worldwide coverage of all archaeological periods, the analyst expected that the majority of articles on Austronesian expansion might be found in this journal. However, only eight articles were found. One possible reason is that there are a lot of other archaeology journals that cover both worldwide and regional issues. Austronesian expansion is only a minor component in Bellwood's (1996) worldwide synthesis, critique, and integration of findings from archaeology, linguistics, and genetics. Environmental changes in Southeast China, for example, were investigated as an alternative backdrop for the expansion of Austronesian-speaking people into Southeast Asia (Jiao 2005). Findings from material remains excavated from associated sites support the migration of Austronesian-speaking people from Southeast China and Taiwan to Southeast Asia (Chi and Hung 2010; Fuller *et al.* 2007; Piper *et al.* 2009; Rolett *et al.* 1999), two of which integrated their models with the spread of rice agriculture (Chi and Hung 2010; Fuller *et al.* 2007). However, Fuller *et al.* (2007) argued that the spread of agriculture in East Asia is a longer process than what is proposed with the Austronesian expansion, but their work is still consistent with the proposed route from Southeast China to Taiwan and Island Southeast Asia. In addition, investigations resulting to associated technology and art that actually preceded the Neolithic expansion are also published in this journal (O'Connor and Veth 2004; O'Connor *et al.* 2010). In summary, it is not a surprise that the Austronesian expansion in Island Southeast Asia is more highlighted in this journal compared to the previous four journals. Three of the articles focused on supporting the Out of Taiwan Neolithic dispersal, while two offered alternative perspectives.

Across Time

1996-2000

From 1996 to 2000, the topic of Austronesian expansion during the Neolithic in Southeast Asia received minimal attention. Indeed, the

subject is not even the focus in Bellwood's (1996) synthetic paper. Although many people think that the Austronesian expansion is the focus of Bellwood's works, this is not necessarily true. Some of his writings only mention Austronesian as a language family along with other language families, usually in his syntheses. There are only a few articles that highlighted Austronesian-speaking people as a distinct group of people. This analysis reflects the problem of limited information of Southeast Asia during this period.

2001-2005

Austronesian expansion as a topic showed an increase in scholarly attention from 2001 to 2005, as demonstrated by a book review on related proceedings and a meeting report. Also, critiques against and alternatives to the Out of Taiwan Neolithic expansion as well as investigations on single populations appear in this period.

2006-2010

As shown by more than half of the articles published during the last 15 years, Austronesian expansion during the Neolithic gained even more attention from 2005 to 2010 compared to 1996-2000. This is illustrated by book reviews for the book by Bellwood (2005) and two proceedings. Debates on the spread of agriculture and dispersal of Austronesian-speaking populations are heightened in this period, as illustrated in *Current Anthropology*. Despite the critiques, the research published in *Antiquity* supported the Out of Taiwan Neolithic dispersal into Southeast Asia. Findings from the abundance of human population genetics researches, as already demonstrated by *Molecular Biology and Evolution*, surely heighten the debate on this important topic.

Across Anthropology Subfields and Disciplines

Generally, bioanthropology and archaeology are almost equally included across the related articles published for the last 15 years. All bioanthropology focused articles are based on genetics researches addressing human population diversity and history. One of them has integrated linguistic anthropology. Two of them have worldwide coverage, four of them covered wide geographic areas, and majority focused on single populations for sampling. No single trend was observed in archaeology focused articles, in contrast to the bioanthropology

focused articles. Four articles noticeably discussed agriculture based on archaeobotanical and environmental data, either supporting the Out of Taiwan Neolithic dispersal or providing alternatives on how agriculture developed in East and Southeast Asia. One article on zooarchaeology that addressed the introduction of a domesticated animal actually incorporated information from animal population genetics. The articles dwelt on single and multisite research but the discussions of findings generally cover the Southeast Asia region. The only synthetic article focusing on archaeology with worldwide coverage integrated linguistic anthropology. For the manuscripts that integrated both bioanthropology and archaeology, four synthetic articles incorporated information from linguistic anthropology. One of them has actually even integrated the subfield of cultural anthropology. Two of them have a worldwide coverage and the other two are limited within the areas of Austronesian-speaking people. There are only two research articles and both dwelt on ancient human remains. Linguistic anthropology is incorporated in manuscripts with worldwide and regional coverages. Both bioanthropology and archaeology addressed settlement history in the region, supported the Austronesian expansion from Taiwan during the Neolithic, and provided alternative views. On one hand, bioanthropology utilised ancient and modern human population diversity and generally more focused on human migrations. On the other hand, archaeology provided evidences through material culture, archaeobotanical, and zooarchaeological remains to support and/or contradict the Neolithic expansion from Taiwan.

Summary and Concluding Remarks

The treatment of Austronesian expansion during the Neolithic was traced and analysed in five leading journals for the span of 15 years. It was never discussed as a central issue in *American Anthropologist*. On the contrary, the topic is highlighted in *Current Anthropology*, especially in the latest article that expounded an alternative framework on Austronesian dispersal in Island Southeast Asia (Donohue and Denham 2010). The debates and alternative perspectives are often found in this journal. On one hand, this topic is central only to one article found in *American Journal of Physical Anthropology*, where the rests of the articles treated this topic as a reference or part of a bigger picture. On the other hand, the Austronesian dispersal is highlighted along with earlier human migrations in *Molecular Biology and Evolution*. Compared to the four

journals, the topic gained more attention in *Antiquity* and a substantial number of articles highlighted it.

It was demonstrated before that for 15 years, the topic of this analysis gained gradual attention. It was minimal from 1996 to 2000, had an increase in scholarly attention from 2001 to 2005, and gained more attention from 2006 to 2010. The anthropology subfields of bioanthropology and archaeology are almost equally included across the analysed articles. All bioanthropology focused articles, except two articles on morphological analysis, are based on genetics researches addressing human population diversity and history. They are found in *American Journal of Physical Anthropology* and *Molecular Biology and Evolution*. On the contrary, no single trend was observed in archaeology focused articles. Most of them are found in *Antiquity*.

This analysis reflects how Austronesian dispersal from Taiwan to Southeast Asia is being tackled based on five journals. The researches that encompassed bioanthropology and archaeology are dominated by the geneticists and archaeologists, as reflected in *American Journal of Physical Anthropology*, *Molecular Biology and Evolution*, and *Antiquity*. However, this analysis does not reflect the actual amount of researches done on this topic. More human population genetics researches could be found in *American Journal of Human Genetics*. At the same time, papers on the animal and plant genetics could be found in *Proceedings of the National Academy of Science*. In addition, other articles on this topic are found in regional journals, such as *Journal of Austronesian Studies* and *Asian Perspectives*. The perspectives supporting and contradicting the Neolithic Out of Taiwan migration are somewhat balanced in *Current Anthropology* and *Antiquity*. *American Anthropologist* reflected only the perspectives from the American anthropology, since non-US educated researchers tend not to publish in this journal. The analyst would like to add one striking observation. The main proponent (Wilhelm Solheim II) of the alternative Nusantao hypothesis did not publish any articles in *American Anthropologist* and *Current Anthropology* during the period covered. As US-educated archaeologist, he used to publish in those two journals prior to 1996. Any manuscript expounding his hypothesis or perspective that lands on the pages of those two journals will surely enhance the debates on the Austronesian-speaking people during the Neolithic. The abundance of articles from 2006 to 2010 on genetics and archaeology will surely heighten the developments and debates on this topic in the coming years.

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The Transforming Ethical Practice in Philippine Archaeology

Pamela Faylona

2010. Madrid, Spain: JAS Arqueologis S.L.U. 193 pp.

Review by Al Parreno

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Given the growing interest for archaeology in the country, the author emphasised the need for ethics in the study (p2). As the book said,