Hominin morphological and behavioral variation in eastern Asia and Australasia: Current perspectives

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ABSTRACT

The nature of hominin morphological and behavioral patterning in eastern Eurasia and Australasia is being investigated intensively. Because of the many debates surrounding a number of paleoanthropological and archaeological sites from this region, we felt the time was right to assemble a series of papers that presented new ideas and data from the region. The major conclusion that one can draw from the assortment of papers compiled here is that much new research is being conducted in eastern Asia and Australasia that are welcome additions to the scientific literature.

1. Introduction

It is generally accepted that the earliest hominins evolved in Africa, and then sometime after 2 million years ago (Ma) dispersed into Eurasia. However, the timing and nature of these hominin dispersals, particularly into eastern Eurasia, is still the subject of much debate. Because of the many debates surrounding a number of sites from eastern Asia and Australasia, we felt the time was right to organize a session where researchers that had primary data could present on the current state of studies in these different regions and time periods. In this regard, the two editors, along with Yin Lam (University of Victoria), decided to organize a symposium at the 2008 Society for American Archaeology Conference that was held in Vancouver, Canada. Most of the participants of the session agreed to contribute their papers. In addition, we invited a number of scholars who were unable to attend the conference, but had primary data we felt should be disseminated. After going through the peer-review process we compiled a total of fourteen contributions from researchers working in China, Korea, Japan, Southeast Asia, and Australasia. We split the papers into two sections: 1) hominin fossil morphology and dating; and 2) hominin behavioral variability with the order of papers going first temporally, then spatially.

2. Hominin fossil morphology and dating

In the first paper in this volume, Wu et al. (2010) analyze the Homo erectus endocasts from the important Middle Pleistocene Zhokoudian Locality 1 site in northern China. Wu et al. provide the first comprehensive study of the variability in the Zhokoudian hominin endocasts. Despite covering a time range of approximately 300,000–400,000 years, the six endocasts display remarkable similarity. This is a point emphasized by Weidenreich (1943), one of the first scientists to examine closely the hominin fossils from Zhokoudian. Wu et al.’s study should facilitate broader inter-regional comparisons of Middle Pleistocene hominin endocasts.

The next two papers in this issue focus on the Chaoxian hominin fossils and dating, a site from central-eastern China. Chaoxian is best known for the presence of a maxilla and occipital fragments that were assigned to the archaic Homo sapiens taxon (Wu and Poirier, 1995) or “early” H. sapiens (Etler, 1996), with the original uranium-series (U-series) dates placing the fossils between 200 and 160 thousand years ago (ka). In conducting a morphologic and metric analysis of the Chaoxian hominin teeth, Bailey and Liu (2010) determine that the Chaoxian teeth are distinctive from western Eurasian Neanderthals despite being penecontemporaneous. In their dating analysis of the Chaoxian deposits utilizing mass spectrometric uranium-series methods on intercalated speleothem samples, Shen et al. (2010) argue that the Chaoxian hominin fossils should be between 360 and 310 ka, much older than the original U-series dates. As Shen et al. note, this would make the transition between Homo erectus and archaic H. sapiens 100,000–200,000 years older than currently thought. Given the recent Al/Be dating study of the Zhokoudian Locality 1 site (Shen et al., 2009) which places H. erectus between 800 and 400 ka, this would be consistent with a transition occurring sometime between 400 and 300 ka, rather than 250 and 100 ka in eastern Asia that is traditionally thought.

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Liu et al. (2010) present a synthesis of excavation and laboratory results from the recently discovered Huanglong Cave, located in Hubei Province, central China. The importance of the findings from this site is primarily the presence of seven hominin teeth that display morphological features normally found in modern H. sapiens, despite possibly dating to 100 ka. Comparative descriptive studies of the teeth further suggest the presence of a few plesiomorphic characters that would align them with archaic H. sapiens. If the chronometric dates from Huanglong Cave hold up to further scientific scrutiny, then it would be one of the earliest modern human sites in eastern Asia.

In the final hominin morphology paper in this section, Pietrusewsky (2010) conducts a multivariate analysis of 28 Holocene cranial series from different regions of East and Southeast Asia. The primary finding from Pietrusewsky’s study is that northern and southern populations in eastern Asia are morphologically distinct and have been for sometime (see also Wu et al., 2007). This weakens the hypothesis that rapid population expansion and replacement occurred in the region. However, Pietrusewsky did find that the Japanese Jomon and Yayoi cranial series are distinctive, thus lending support for a major population expansion into the Japanese archipelago during the beginning of the Yayoi period.

3. Hominin behavioral variability

The Movius Line is an arbitrary line that divides India and China into distinct archaeological zones (Movius, 1948). To the west of the Movius Line bifacially worked implements (e.g., handaxes, cleavers, picks) are present, to the east of the line they are absent. Expanding on earlier works (e.g., Norton et al., 2006; Lycett, 2007; Lycett and Gowlett, 2008), Lycett and Norton (2010) develop a cultural transmission theory model that attempts to explain the Movius Line. In their view, the reason why there is a paucity of handaxes east of the Movius Line is due to smaller population densities in East Asia vis-à-vis Africa, India, and the Levant. Future research will be developed to test the model developed by Lycett and Norton.

Pei et al. (2010) and Chen et al. (2010) present lithic analyses from two important Paleolithic sites in China. Pei et al. (2010) analyze the lithics from the Jingshuiwan site, located in the Three Gorges Region, and determine that many similarities exist with older lithic assemblages associated with H. erectus. An important point that Pei et al. make is that the age of the site is ~70 ka, thus refuting claims for an absence of hominin presence in East Asia during the latter half of the Late Pleistocene. According to Bae (2010), foraging groups carrying blade and microblade toolkits migrated southward from Siberia, while other foraging groups wielding the more traditional core and flake tools moved into Korea from southern China and Southeast Asia. More detailed evaluation is needed to test Bae’s hypothesis.

Not many attempts have been made to synthesize the nature of megafaunal extinctions in Japan. Norton et al. (2010) present a model that links the earliest peopling of Japan with the extinction of megafauna on the archipelago. In their model, Norton et al. (2010) argue that the earliest peopling of Japan likely dates to Marine Isotope Stage 3 and that by 20 ka all of the major megafauna (e.g., Mammuthus, Palaeoloxodon, Sinomegaceros) disappear from the paleontological record, well predating the advent of the Jomon culture. Further testing of the model presented by Norton et al. is warranted, particularly more detailed evaluation of the dating and taphonomy.

In similar research designed to address the nature of megafaunal extinctions in Australia, Fillios et al. (2010) conduct a detailed taphonomic study of the faunal remains from the Cuddie Springs site, which dates to between 36 and 30 ka. Fillios et al.’s (2010) primary observation is that there is equivocal evidence for human predation on the animals that appear at Cuddie Springs. This leads Fillios et al. to draw the conclusion that humans played little role in causing the extinction of megafauna in Australia. As with the Japanese case mentioned above, additional taphonomic studies from sites that bracket the earliest peopling of Australia and the extinction of the megafaunas are needed.

Garvey (2010) presents a zooarchaeological study of the Bennett’s wallaby (Macropus rufogriseus) that was excavated from a variety of Late Pleistocene sites in southwest Tasmania. Garvey (2010) determines that the foraging groups were selectively transporting the high utility parts of the Bennett’s wallaby. In addition, Garvey created a meat utility index that is specific for medium size macropods. This meat utility index will be useful for cross comparative zooarchaeological studies that focus on variation in skeletal element profiles throughout the region.

4. Discussion

In synthesizing the various papers in this volume it is clear that many new ideas and data are being produced that warrant further investigation. For example, new comparative data as presented by Jin and Shipman (2010) and Garvey (2010) should facilitate more detailed taphonomic studies in those respective regions. New models as presented by Lycett and Norton (2010), Bae (2010), and Norton et al. (2010), and analyses used to test old or current hypotheses (e.g., Fillios et al., 2010; Liu et al., 2010) certainly should be examined and tested further. The major conclusion that one can draw from the assortment of papers compiled here is that much new research is being conducted in eastern Asia and Australasia that are welcome additions to the scientific literature.

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