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The publisher regrets that due to our error the News and Views articles by Petraglia and Shipton and Norton and Bae were not published as a reply/response pair but were published separately; one as a full length article and the other as a News and Views in volume 55 issue 6. To rectify this issue, we reprint both articles here as a News and Views pair. The articles are unchanged from the original except for the removal of the abstract from the Petraglia and Shipton contribution.

News and Views

The Movius Line sensu lato (Norton et al., 2006) further assessed and defined

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Introduction

Previously, we outlined a model of the Movius Line sensu lato (s.l.) to describe the relative paucity of bifacial implements in Pleistocene East Asia (Norton et al., 2006). We made three general observations (Norton et al., 2006: 534):

• Compared to East Africa and India, the frequency of handaxe sites in East Asia is significantly lower.
• The percentage of bifaces in these East Asian lithic assemblages is usually much lower than coeval sites from India and East Africa.

• East Asian handaxes are not morphologically similar to typical western Old World Acheulean implements (based on thickness here, but also in other attributes and dimensions)."

Petraglia and Shipton (2008) agree with our first two observations, but in light of their re-evaluation of the biface data from the Luonan and Bose basins in China and the Imjin/Hantan River Basin (IHRB) in Korea, they argue for a significant amount of overlap between metric data from bifaces east and west of the Movius Line. In so doing, they reject our third point that the bifaces from these two regions are morphologically different. Even though this third observation was only a minor point in the Norton et al. (2006) defined Movius Line s.l. model, we welcome the opportunity to more fully investigate questions about East Asian handaxe morphology, in addition to clarifying a few points in our earlier paper. There are three primary areas that we discuss: 1) morphology of the East Asian handaxes; 2) sample size and distribution; and 3) age of the IHRB sites and Luonan Basin sites.

Statistical analysis was done in SPSS 11.5.

Morphology of the East Asian handaxes

Petraglia and Shipton (2008) use biface metric data to support their argument for morphological similarities between bifaces east and west of the Movius Line. For instance, they note that when measuring handaxe thickness, the material from Olduvai Bed II (East Africa) and Mudnur VIII (India) are greater than or within the...
range of the Korean and Chinese localities. This leads them to conclude that “while the Acheulean localities tend to have thinner implements in general, thickness does not, in itself, discriminate handaxe morphology across the Movius Line” (Petraglia and Shipton, 2008: 963). The mean values as presented by Petraglia and Shipton (2008, their Table 1) do show that the average thickness of the Olduvai Bed II and Mudnur VIII implements is greater than or within the range of that of the East Asian materials. However, the 18 other lithic assemblages in their table all have means much lower than the Korean and Chinese materials. A Mann-Whitney U-test comparing their western Acheulean thickness data against their East Asian thickness data is statistically significant (Mann-Whitney U = 7.0; Exact p = 0.007). Not only is there a significant difference in mean thickness, but it might be argued that the Olduvai Bed II and Mudnur VIII bifaces cannot be used in comparisons with the East Asian materials, particularly because: 1) temporally the Olduvai Bed II and Mudnur VIII bifaces are considered unfinished, while there is no reason to believe the East Asian handaxes are also unfinished. Petraglia and Shipton (2008) note both of the above reasons as explanations for the thickness of these particular assemblages.

Nevertheless, in these types of analyses we suggest that simple presentation of descriptive statistics is of limited interpretative value. In light of the limitations of using univariate measures to examine variation in handaxe morphologies east and west of the Movius Line, we propose that the recent application of multivariate morphometric methodologies (e.g., Lycett, 2007a,b; Lycett and von Cramon-Taubadel, 2008) be used to address these questions in the future. For instance, instead of relying solely on unilinear variables (e.g., width, length, thickness), Lycett (2007b) measured 60 different quantitative metrics on core nuclei. In short, methods such as Lycett’s multivariate research approach are significantly more robust and convincing than the univariate data analyses presented by Petraglia and Shipton (2008) and, we admit, than those in our own original paper (Norton et al., 2006).

Sample size and distribution

Petraglia and Shipton (2008: 962) note that in their study, “when available, our analysis attempts to examine the range of variation between sites, rather than by coarser level comparisons between basins.” This is an important distinction that we feel is necessary to discuss, particularly because how a data set is aggregated or divided has important implications for the ensuing analysis and resulting interpretations. Petraglia and Shipton (2008) use the data from the Luonan Basin, China as the basis for their argument to discount the Movius Line s.l. as defined by Norton et al., 2006). Our age calculation was based on bracketing dates of 0.5 Ma and 0.095 Ma on underlying basalts and overlying tephra, respectively, and a steady rate of deposition. Indeed, the hominin occupation may be even older since handaxes have been excavated in situ from the sandy clay layer that underlies the thicker loess layer (Kim and Bae, 1983; Bae, in press).

We emphasize a point here that we did not make fully in our earlier papers concerning the IHRB materials (e.g., Norton, 2000; Norton et al., 2006) and which is important to contextualizing the age of these materials. It should be remembered that the Korean Peninsula was never completely separated from the Chinese mainland during the Pleistocene, and during periods of lower paleobathymetry Shandong Province (eastern China) was connected to the Korean Peninsula (see Norton, 2007 for paleobathymetric reconstructions during the late Pleistocene-Holocene in the region). If Homo erectus populations appear at nearby Zhokoudian (Shen et al., 2001) and Huludong (Wu et al., 2002) between 800–400 ka it is quite plausible for hominins to have reached the Korean Peninsula during that time interval, or shortly thereafter. In fact, evidence for this may be present in North Korea at the site of Komunmoro, which is broadly comparable to Zhokoudian Locality 1 on biostratigraphic grounds (Norton, 2000).

Although it is beyond the scope of this paper to more fully discuss the question of the age of the Korean handaxes, there is growing evidence that the earliest peopling of the Korean Peninsula likely occurred sometime during the middle Pleistocene. Even the foremost proponent of the “young” age for the Chongokni handaxes (e.g., Yi, 1986) has excavated sites (e.g., Jangsanni) and materials in the IHRB that are probably of middle Pleistocene age (Yi, 2002). New studies at sites like Mansuri and Keum Cave also suggest the strong possibility that hominins reached the Korean Peninsula by at least the middle of the middle Pleistocene (see Bae, in press).

While at least some of the IHRB specimens we analyzed are from stratified and dated contexts, the handaxes from the Luonan Basin analyzed by Petraglia and Shipton (2008) were all surface collected or derive from unclear contexts (Wang, 2005). Even though Petraglia and Shipton (2008) acknowledge the
uncertainty of the ages, they include these materials in their analysis, which we consider unwise. Although recent studies have suggested a middle Pleistocene age range (780–144 ka; Lu et al., 2007), the Huaiashuping and Mayigou sites were recently dated by optically stimulated luminescence to between 90–50 ka (Wang et al., 2007). Since all of the bifacial implements come from unclear contexts, it might be possible for them to be terminal Pleistocene or even early Holocene in age. We think this latter scenario to be unlikely; however, until the sites and materials from the Luonian Basin are better studied and described, the interpretative value of finding < 1 handaxe per site remains to be established.

Defining the Movius Line sensu lato (Norton et al., 2006)

Norton et al. (2006) defined the Movius Line s.l. by making three salient observations about: a) the number of sites in East Asia that have handaxes, b) the number of handaxes at each site, and c) the morphological variation between the handaxes east and west of the Movius Line. We did not argue that typical Acheulean handaxes are never present in East Asia, although one could read Petraglia and Shipton (2008) to imply that we did. It is a well-known fact that in certain cases the East Asian handaxes are similar in some respects to those found west of the Movius Line, particularly the African Sangoan (e.g., Clark, 1982, 1994; Yi, 1986, 1989; Bae, 1988, 1994, 2000, 2002; Schick, 1994; Norton, 2000). Thus, this observation is neither surprising nor new.

In addition to the points we note above, there is growing evidence of handaxes in regions where they were previously unknown. For instance, handaxes and associated tektites were recently excavated from in situ deposits of the Damei and Fengshudao sites in the Bose Basin (Wang et al., 2006). Handaxes have also been identified in the Danjiang Reservoir localities in Hubei Province (Li, 2007). Like a few of the bifaces from the IHRB and Luonian Basin, some of the handaxes from Damei, Fengshudao, and Danjiang resemble typical Acheulean bifaces. However, as with previous findings of heavy duty tools at basins/localities like Bose, Luonian, Dingcun, and the IHRB, the bifacial components of the respective lithic collections are proportionately very small, and for the most part, look different than a typical Acheulean.

As we have noted previously (Norton et al., 2006: 534), even “if a map of East Asian Paleolithic sites were drawn, the conspicuous lack of biface-bearing sites in East Asia is still prominent, despite over 80 years of paleoanthropological research in this region of the Old World.” Only when Paleoanthropologists working in East Asia begin to find hundreds of sites with bifaces, and each of these sites has hundreds of typical Acheulean bifaces, will we feel a strong argument can be made to fully reject or reconfigure the Movius Line s.l. (Norton et al., 2006). Finding one, or even a few, “typical” Acheulean handaxes at a site east of the Movius Line is not grounds for dismissing the boundary. A quarter-century ago Yi and Clark (1983) used this same argument and failed to convince the greater scientific community. We contend that the case is not substantially different today.

There are a growing number of inter-regional comparative studies of Paleolithic bifacial technologies between Africa, India, and East Asia (e.g., Leng and Shannon, 2000; Noll and Petraglia, 2003; Norton et al., 2006; Lycett, 2007a; Lycett and von Cramon-Taubadel, 2008). Even though future studies may prove otherwise, current published archaeological data still strongly supports all aspects of the Movius Line sensu lato as defined by Norton et al. (2006). This includes the additional data presented by Petraglia and Shipton (2008).

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References


