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NEW LIGHT ON THE EARLIEST OCCUPATION OF EAST ASIA

ABSTRACT: This paper critically examines recent paleoanthropological evidence for hominid colonization of Eastern Eurasia. After discussing new archaeological, geological, and morphological evidence for the earliest human presence in China, Japan, Korea, Mongolia and Siberia, and documenting its surprisingly great antiquity, it suggests that the time has come to reconsider the hypothesis about the Asian roots of Homo erectus.

KEY WORDS: Colonization – Early hominids – Eastern Eurasia – Evolution – H. erectus

INTRODUCTION

The connections between human ancestors in East Asia and their relatives to the west has been a topic of intense debate since the end of the nineteenth century when DuBois' discovery of *Homo erectus* remains in Indonesia forced paleontologists to re-evaluate the mechanisms of human evolution and dispersal across the Old World. The dramatic discoveries of abundant remains of Middle Pleistocene human ancestors and an associated archaeological complex at Zhoukoudian, in north China, beginning in the 1920s fuelled this debate, but by the 1950s a consensus had emerged that the following were true:

1. The paleontological and archaeological records indicated that both the biological and behavioural aspects of human evolutionary trajectories in the eastern and western Old World were distinct.
2. In examining contemporaneous archaeological industries in the east and the west, it seemed clear that those in the east were less technologically sophisticated than their western counterparts. Often this geographical bias was extended to the interpretation of hominid fossil remains where patterns of regional variation in particular traits were established not so much on the basis of careful morphometric comparison, but rather as an extension of preconceptions stemming from naïve interpretations of the cultural record. Explanations of this variability focused mainly on the peoples and cultures of the Pleistocene Far East being somehow (and merely) derivative from their more "fully developed" cousins to the west.
3. The geography of this apparent east-west dichotomy was argued to follow a separation of the northern Old World landmass into European and Asian components by drawing a line roughly southeast from the Black Sea through the Caspian and thence to a segment that bisects the Indian subcontinent. This frontier that seemed to establish a geographically concrete rationale for maintaining and refining the interpretive perspectives outlined above, came to be known as the Movius Line, after its most eloquent proponent, Hallam Movius, who, in the 1940s, began to articulate a well-crafted series of arguments for the existence of such a boundary (Movius 1944, 1948, 1969, but see also Teilhard de Chardin 1941).

Lacking a reliable means of establishing an absolute chronology for the evidence of human evolution in the Middle Pleistocene, interpretations such as Movius' found favour among a generation of archaeologists and human paleontologists seemingly more concerned with taxonomy and typology than with behavioural interpretations.

It was only after the application of radiometric dating techniques, beginning in the 1960s, that a reliable absolute chronology for Middle Pleistocene human evolution could be developed. These events, as well as the discovery of more fossil and cultural remains in better understood geological contexts, led to the gradual abandonment of perspectives that exclusively stressed the lack of congruence between eastern and western Old World assemblages. Alternative explanations of the patterned geographical distribution of particular artifact types (especially large bifaces and the Levallois core preparation technique) and specific morphological characteristics of the fossil remains have been thoroughly summarized by Andrews (1984), Bae (1988), Pope (1989), Schick (1994), Schick and Dong (1993) and Watanabe (1985) and need not be repeated here.

The predominantly Eurocentric view of hominid evolution was eclipsed in the 1960s by the wealth of fossil and archaeological materials stemming from Africa. Although the African data forced a re-evaluation of the relative importance of western Eurasia in understanding the patterns and directions of human evolution, evidence from the eastern end of that continent remains poorly integrated into the overall picture of hominid development.

The social, economic, and, to some extent, political restructuring of many of East Asia's nation-states during the 1980s and 1990s has resulted in the documentation of a range of fossil and archaeological data that now forms a foundation upon which revised interpretations of hominid evolution may be laid.

This paper summarizes recent discoveries and reinterpretations of previously-known materials from five principal sub-regions of eastern Eurasia-China, Japan, Korea, Mongolia, and Siberia. The data to be discussed include both isolated cultural and fossil remains as well as presumed associations. The crucial perspective underlying this discussion is that East Asia can no longer justifiably be treated as a series of disarticulated, insular zones regardless of the history of paleoanthropological research in any particular region. Recent integrative approaches to East Asian material (e.g. Schick 1994, Schick, Dong 1993, Swisher et al. 1994) clearly demonstrate the necessity of understanding regional sequences within the context of patterns of human evolutionary development that only become apparent on a larger geographical scale.

CHINA

For the past two decades, south China has dominated the picture of paleoanthropological discovery in the easternmost Old World. Localities discovered in Yunnan, Guangxi, Guizhou and elsewhere south of the Yangzi drainage have yielded both fossil and cultural remains radically altering interpretations of primate and human evolution in the region (Olsen, Miller-Antonio 1992).

Among the most recent of these discoveries are those made in 1992 at Shanghuang in southern Jiangsu province (Beard et al. 1994). Setting the stage for subsequent primate evolution in the region, the middle Eocene Shanghuang fauna comprises at least two species of lemur-like adapiforms, two tarsiiform genera, including a new species of *Macrotarsius*, a genus otherwise known only from North America, and a new family of basal simians, the *Eosimiidae*, that collectively demonstrate even the earliest phases of primate evolution in East Asia were characterized by complex interactions with other continents, including Europe, North America, and perhaps Africa, through dispersal. While many factors underlying the dispersal patterns of individual taxa remain to be explained, the Shanghuang discoveries indicate complexity of interaction rather than insular separation is the key to formulating models of primate development in the region.

The large sedimentary Yuanmou Basin in northern Yunnan province, near China's border with Myanmar (formerly Burma), has long been known as a source of Cenozoic fossils. In 1965, two upper central incisors ascribed to a new subspecies of *Homo erectus*, *H. e. yuanmouensis*, were discovered near the village of Shangnabang. Several thick quartzite scrapers were also found in questionable association with the hominid teeth. In 1973 cores, flakes, scrapers, choppers and pointed tools were recovered from five additional localities within a 15 km radius of Shangnabang, although again no clear association could be established between the artifacts and the hominid remains recovered earlier.

During the 1970s and early 1980s paleoanthropological research in the Yuanmou Basin focuses on the problem of chronology. The Yuanmou Formation, in which the hominid remains and artifacts were recovered, is a nearly 700 m thick sequence of fluvio-lacustrine strata subdivisible into four main members. Precisely locating the original find-spots of the Middle Pleistocene hominid fossils and artifacts within this sedimentary sequence has proven difficult and subsequent palaeomagnetic determinations have led Chinese workers to infer ages ranging from nearly 1.8 million years to only 500–600 thousand years for the hominid-bearing strata (Chen, Zhang 1991).

Of greatest relevance to the discussion at hand is a series of discoveries made in the Yuanmou basin in 1986. There, in Zhupeng district, more than 200 isolated primate teeth were recovered including several that subsequent analysis has ascribed to a new species of *Homo* (*H. orientalis*) and a new species of *Ramapithecus* (=*Lufengpithecus*), *R. hudiensis* (Zhang *et al.* 1989). A handful of chipped stone tools were also recovered from the same sedimentary deposit as the hominid remains. Palaeomagnetic dates of 3.0–4.4 million years ago have been proposed for the Zhupeng *Homo*, but substantial doubt remains as to the true association between the fossils, artifacts and the derived dates. Few scholars accept *H. orientalis* as a taxonomically valid species, and it is likely these remains

will be subsumed under *H. erectus* after additional comparison. Nonetheless, the extraordinarily early dates proposed for the Zhupeng hominid remains necessitates consideration of the possibility that *H. erectus* in south China antedates *Homo* in the north by some substantial margin (Olsen, Miller-Antonio 1992).

In March 1993, Chinese scientists recovered a partial fossilized hominid cranium at Huludong, a karst cave near Tangshan in Jiangning county, Jiangsu, east of Nanjing (Mu et al. 1993). These remains, including the frontal bone, anterior portions of the two parietals, a partial occipital, complete nasals, an incomplete left zygomatic arch, and a small part of the left maxilla, have been ascribed to *Homo erectus* both on the basis of their morphology as well as their depositional context which includes an associated middle Pleistocene mammalian fauna (Xu *et al.* 1993). While no unequivocal artifacts have yet been found in association, Chinese scientists believe there is sufficient morphometric evidence to suggest the Tangshan hominid bears closer affinity to *Homo erectus* from Zhoukoudian, in north China, than to the middle Pleistocene hominid from Hexian, Anhui, also in the south. This fact may be explained on the basis of chronological disparity between the Tangshan and Hexian sites or, perhaps, as a result of far more substantial geographic variability among synchronic populations of *H. erectus* than previously suspected in China. While more detailed comparison with roughly contemporaneous hominids may resolve the apparent contradiction of the Tangshan individual's geographic connections, the preliminary analyses at least demonstrate the fallacy of basing interpretations of phylogenetic relationships on mere spatial proximity.

The early Pleistocene Longgupo site in eastern Sichuan province has yielded an important array of primate fossils including one of the few known associations of *Gigantopithecus blackii* and a hominid, provisionally classified as *Homo erectus* (Huang *et al.* 1991). Excavations conducted between 1985 and 1988 uncovered a 17 m sedimentary sequence containing a mandibular fragment (Layer 8) and an isolated upper central incisor (Layer 7) ascribed to *H. erectus*. A single flake tool was recovered from Layer 8 and a hammerstone from Layer 5.

Both palaeomagnetic correlations and amino acid racemization determinations yielded dates in excess of two million years for the earliest hominid and artifact-bearing stratum at Longgupo, but there is as yet no universal acceptance of these extremely early dates.

Preliminary analyses of the hominid remains suggest affinities with both Indonesian and north Chinese (Zhoukoudian) populations of *H. erectus*, although the incomplete state of the fossils recovered thus far precludes definitive judgement.

Between 1989 and 1991 Chinese workers recovered two well preserved fossil human crania in association with a rich mammalian fauna from the fourth (50 m) terrace of the Quyuan River near its confluence with the Han River in Yunxian (Yun county), Hubei province (Li, Etler 1992). The excellent state of preservation of the Yunxian crania has allowed investigators to identify a range of morphometric indices that suggest rather advanced members of *Homo erectus*; curious in light of relatively ancient associated dates. Uranium-series tests conducted on fossil bone and travertine have generated dates in excess of 400,000 years B.P. while paleomagnetic determinations place the hominid-bearing stratum just above the Jaramillo [N] subchron with an age between 830–870,000 years ago.

More than 50 stone artifacts have been recovered in situ at Yunxian, including nuclei, flakes and core tools that researchers believe ally it with so-called "pebble tool" cultures of central and southern China rather than with industries based on flakes of the type most closely associated with north China. As Li and Etler (1992) point out, the Yunxian remains contradict conventional wisdom concerning the supposed perfect correlation between relative antiquity and the degree of development of those morphometric features commonly taken to be reliable criteria upon which to distinguish *Homo erectus* from their *H. sapiens* successors. The Yunxian locality, currently under areal excavation, may hold many of the keys to resolving this issue as well as the problem of spatial variability among synchronic Palaeolithic assemblages in China.

While the fossil record of human evolution in China has grown geometrically in the past two decades, archaeologists have also contributed substantially to a broad understanding of long-term behavioural adaptations in the region. In particular, it is encouraging to see that an explicitly integrative approach is steadily gaining ground on older, essentially isolationist models of technological and behavioural change (Pope 1989, Schick 1994, Schick, Dong 1993).

While a dozen or more localities have been reported during the past few years that investigators claim to be of terminal Pliocene or earliest Pleistocene antiquity (including Xihoudu, Shanxi and Lantian, Shaanxi), only a handful are convincing based on either their depositional context or, more rarely, on clearly associated chronometric dates (Chen, Zhang 1991).

The best documented archaeological evidence for earlier Pleistocene human occupation of north China comes from a series of localities in the Nihewan Basin west of Beijing (Schick *et al.* 1991). At the sites of Donggutuo, Xiaochangliang, Maliang, and Chenjiawan, in particular, Chinese and American researchers have uncovered evidence of human occupation (though no hominid fossils as yet) that is earlier; possibly substantially earlier; than the 730,000 year old Matuyama [R] chron – Brunhes [N] chron boundary. The antiquity of these sites ranks them not only as among the oldest in China, but perhaps in all of East Asia as well since the Matuyama-Brunhes palaeomagnetic boundary also seems to define the beginning of the record of human occupation in most regions. Whether or not the impermeability of the Matuyama-Brunhes chronological boundary will prove to

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be just as illusory as the geographical isolation imposed by the now-defunct Movius Line remains to be seen. What is clear is that several Chinese sites, collectively yielding a substantial sample of both hominid fossils and technologically simple chipped stone tools, have been definitively associated with sediments that antedate the Matuyama-Brunhes boundary.

JAPAN

Until the 1950s it was generally assumed that the Japanese islands were either geologically too young to produce substantial evidence of Palaeolithic occupation or that the archipelago as we know it today represented only marginal territory during the early Quaternary, of little interest to Ice Age foragers who presumably concentrated their activities on the vast expanses of continental shelf exposed by the radically lowered sea-levels of the Pleistocene (Derevianko 1984). Today, evidence suggests the human occupation of Japan extends back perhaps a half million years. Unfortunately, to date no hominid fossils that can be reliably ascribed to other than fully modern humans have been discovered in Japan, thus the record of the archipelago's earliest occupants is, at present, strictly archaeological.

Among the most interesting of recent early Palaeolithic finds in Japan are those from northern Honshu (Reynolds 1985). Thermoluminescence dates in excess of 350,000 years before present have been proposed for sites such as Nakamine, but the artifactual status of these materials, mostly amorphous flakes, has been questioned (Oda, Keally 1986).

Excavations conducted by the Tohoku Museum of History that commenced in 1988 at the Takamori site, near Tsukitate in Miyagi prefecture, have yielded chipped stone implements in a stratigraphic context radiometrically dates to approximately 500,000 years ago (Sato 1992). Thought to resemble in some typological ways the presumably contemporaneous Zhoukoudian industry, the flake tools and modified cobbles from Takamori may establish Japan's earliest record of human occupation.

The present absence of hominid fossils in Japan dating earlier than approximately 80,000 B.P. (Bahn 1987) leaves an enormous hiatus between those remains and the earliest reliably dated archaeological materials. In addition, the complex relationship between Japan and the East Asian mainland during the Quaternary, which included the periodic exposure and inundation of what are now the submerged northern and southern extremities of the archipelago, created many possible routes by which Japan may have been colonized. Since the later Pleistocene industries of Japan are characterized by marked differences between the northern and southern halves of the archipelago (Akazawa *et al.* 1980), one important task for Palaeolithic archaeologists will be to determine the extent to which these differences may be attributed to variability in the geographic basal stocks from which each tradition emerged as opposed to varying adaptations to the palaeoecological mosaic that characterized Japan in the upper Pleistocene. While it is also possible that neither of these explanations is correct, the intersection of archaeological, demographic, and linguistic data, including the problem of Ainu origins, leads one to conclude that Palaeolithic Japan was anything but homogeneous. The degree to which this heterogeneity may be perceived as patterned regional variation prior to, say, 50,000 years ago remains to be seen.

KOREA

Like Japan, Korea has only recently become the focus of coordinated efforts to unravel its Pleistocene prehistory. For too long a persistent view that Korean prehistory is nothing more than the record of the ebb and flow of essentially Chinese or Japanese peoples across its rugged landscape dominated interpretations of Korea's distinct heritage (Nelson 1993).

The region's 20th century history has bequeathed a fractured peninsula whose northern half is poorly reported in archaeological literature available in the West (Barnes 1993). The lack of consistently applied typological and taxonomic terminology, widely varying chronological and paleoecological interpretations of key Quaternary sedimentary sequences, and the absence of significant scholarly exchange between workers in the north and the south have all conspired to yield a record of Pleistocene human activity in Korea that is certainly tantalizing but, equally certainly, far from meaningful resolution.

Perhaps fifty Palaeolithic sites are now known scattered across the peninsula; a rather small sample until one realizes that as late as 1986, only half that number was reported (Nelson 1993: 26). Of these sites, only a handful have produced hominid fossils claimed by some to represent *Homo erectus*. In the south, only Kumgul Cave on the Namhan River has produced *Homo* cf. *erectus* remains; in this case a highly disputed fragmentary skull cap (Sohn 1990). In the north, Daehyundong Cave and Yonggongni are both said to have produced several complete skulls attributable to *H. erectus*, but in the absence of a descriptive report, it is only possible to speculate on the true affinity of these remains (Nelson 1993: 30).

The archaeological record of Middle Pleistocene human activity in Korea is rather more abundant than the paleontological record. In the north, Hukwuri Cave, 40 km south-east of Pyongyang, has yielded vertebrate fossils associated with an assemblage of unretouched heavy core tools in indisputably Middle Pleistocene sediments (Sohn 1988). Although some investigators have expressed doubt over the artifactual status of the Hukwuri finds, the site has not been published sufficiently to allow a definitive conclusion to be reached (Nelson 1993: 30).

The lowest levels of the Sokchangni site in south-west Korea and the entire site of Chon'gongni, near the 38th parallel, have produced what most workers regard as the most reliable archaeological evidence of Middle Pleistocene human activity on the peninsula. At Chon'gongni, a 16 km stretch of the 30 m terrace above the Hantan River has yielded bifacially-flaked core tools, including true hand-axes, as well as abundant flake tools. Large-scale disturbance of the site, including bulldozer stripping, prior to systematic archaeological excavation, has produced severely mixed deposits, hence absolute dating of the Chon'gongni assemblage is controversial. A range of K/Ar and thermoluminescence dates have defined a temporal period from roughly 600,000 to only 40,000 B.P. in which the Chon'gongni assemblage may fall (Nelson 1993: 35–36). Bae (1987, 1988) has examined the full spectrum of chronometric evidence derived from Chon'gongni and concludes the site is approximately 200,000 years old. Although the site's disturbed stratigraphy and the lack of clearly associated vertebrate remains precludes reliable absolute dating at present, there is no question but that the Chon'gongni artifacts are indeed the products of human manufacture. Regardless of their absolute antiquity within the Pleistocene, this assemblage is noteworthy for the inclusion of true bifaces and prepared cores although typological patterning is minimal; perhaps a consequence of the rather intractable quartz and quartzite from which the majority of the tools were fashioned.

The deeply-stratified open site of Sokchangni was the first Palaeolithic site excavated in the Republic of Korea (Sohn 1972). At Locality 2, Layers 15a through 27 have yielded a typologically limited range of tool forms (including choppers, pointed tools, scrapers, hammerstones, and flakes) from sediments that apparently accumulated during a relatively cold phase of the Pleistocene. Whether this cold episode may be correlated with the last glacial as Clark (1983) suggests, or with a much earlier, middle Pleistocene period (Sohn 1978) remains to be demonstrated. In the meantime, the lack of human fossils at Sokchangni as well as its complex stratigraphy, preclude a final determination as to the site's absolute antiquity.

The recent discovery of fossils of *Homo* cf. *erectus* on the Chinese mainland in regions immediately adjacent to the Korean peninsula (especially Yiyuan, Shandong and Jinniushan, Liaoning) increases the probability that Korea was occupied by the Middle Pleistocene as well. Unfortunately, the inability to precisely correlate stratigraphic sequences from the northern and southern halves of the peninsula along with the absence of securely dated artifact assemblages in association with taxonomically verifiable hominid remains means that the role Korea played in the earliest transmission of people and their technologies from the mainland to Japan and vice versa remains essentially unknown.

SIBERIA AND MONGOLIA

Northeast Asia, including the easternmost fourth of Russia known as the Siberian Far East, has become increasingly important in our understanding of the initial human settlement of East Asia. The anachronistic notion that Mongolia and Siberia could have played no significant role in this process due to their supposed harsh and uninhabitable continental climates during the Pleistocene has been dispelled by the results of numerous field investigations conducted by Russian and Mongolian scientists beginning in the 1970s (Zeitlin 1979, Derevianko 1990).

Evidence of the earliest occupants of north-east Asia remains controversial at this stage. Yuri Mochanov's excavations in the 1980s at Diring-Ur'akh in the Lena valley produced cobble tools, flakes, and quartzite cores from strata said to be between 1.8–3.4 million years old (Mochanov 1992). While the age of the deeply buried strata from which the presumed artifacts were recovered has been determined on the basis of reliable thermoluminescence and palaeomagnetic techniques, some have questioned the association between the artifacts and the dated strata and even the status of the "artifacts" as products of human modification (Derevianko 1990: 10). In addition, a substantial part of Mochanov's argument for the antiquity of Diring-Ur'akh rests mainly on a rather surprising comparison with the African Oldowan industry: "The techno-typological characteristics of the Diring Complex permits us to consider its upper age limit to be no less than 2.3–2.2 million years" (Mochanov 1992: 8).

If proven correct, Mochanov's interpretations will force a complete re-evaluation of the role of high latitude ecological zones (Diring-Ur'akh lies at approximately 61° north) in determining the pathways of human evolution in East Asia. For the time being, in the absence of associated human or other vertebrate remains, the Diring-Ur'akh materials may best be classified as intriguing.

A number of additional sites scattered across Siberia, including Ulalinka, Kumary I, Filimoshki, Ust'-tu, and Mokhovo I, have yielded Pleistocene industries exhibiting the same general characteristics; unsystematic primary reduction and a significant percentage of tools fashioned on pebbles (including unifacial "choppers", bifacial "chopping tools", and large side scrapers termed "skreblo"). The few palaeomagnetic determinations reported from these sites suggest ages somewhat in excess of 300,000 years ago (Derevianko 1990) but the chronometric and typological problems inherent in the Diring-Ur'akh site may also be extended to these other early Siberian localities.

The early dilemma of reconciling typologically unsophisticated artifacts with the relatively young sedimentary deposits seems to have been resolved by subsequent geological correlation (i.e. Zeitlin 1979) and more accurate chronometric dates. Nonetheless, the lack of earlier Pleistocene human fossils in Siberia and the uncertain depositional histories of many of the localities

referred to above warrants continued caution as to the chronological classification of Siberian lower Palaeolithic sites.

From the standpoint of behavioural implications, Derevianko's (1990) identification of two parallel typological traditions in north-east Asia—one based on pebble tools and another, Derevianko's "Acheulean", containing large numbers of scrapers, denticulates, prepared-platform flakes and, usually, bifaces—suggests that southern Siberia may have been witness to substantially more complex demographic movements in the Pleistocene than previously realized.

Mongolia's geographical location in the heart of Inner Asia has generated speculation since the 1920s regarding its role as a prehistoric "cross-roads" linking the Chinese, Siberian, and Central Asian cultural spheres. Since the 1960s, the Soviet-Mongolian Historical and Cultural Expeditions have identified approximately 1100 Stone Age sites in Mongolia, of which the majority are Palaeolithic (Derevianko *et al.* 1990, Okladnikov 1981). At least a dozen localities in the depressions and valleys of the Mongolian and Gobi Altai ranges of western Mongolia have yielded assemblages of artifacts on high (90–130 m) terraces that Derevianko (1990) and his colleagues equate with the early Palaeolithic.

The valley of the Nariyn-gol, on the southern Hangai Plateau, has yielded aeolized pebble tools as well as less abundant unabraded "Acheulo-Mousterian" flake tools strewn on high (140 m) terraces. Unabraded tools typologically classified as early Palaeolithic are also found on lower terraces in the Nariyn-gol valley, which Derevianko (1990: 15) takes to be evidence of their redeposition. At some localities, such as Nariyn-gol 17, large cores are found surrounded by conjoining flakes, thus a percentage of these western Mongolian sites seems to preserve a record of discrete activities rather than being exclusively reworked palimpsests.

While the great majority of early Palaeolithic finds from Mongolia are surface occurrences and, therefore, only roughly datable by geological correlations and typological affinity, one locality bears particular promise for future investigation. The Tsagaan-Agui cave lies near the southeastern extremity of the dolomitic Ikh-bogdo range. Excavations have revealed a 50 m long corridor with unconsolidated deposits reaching a depth of 3 m near the cave entrance. The cave's complex stratigraphy, including a small lower chamber near the drip-line, yielded a small collection of stone tools, including a bifacially flaked plano-convex handaxe and a single platform pebble core in association with a microfaunal assemblage and charcoal that may ultimately resolve important issues concerning the cave's chronology and palaeoecological history (Derevianko *et al.* 1996, 1998). Sites such as Moil'tyn-am in the Orkhon valley have preserved a stratified record of northern Mongolia's upper Pleistocene occupation, thus it is hoped that the Tsagaan-Agui sequence may ultimately be correlated with the lower deposits at Moil'tyn-am to yield an unprecedented record of diachronic change in Inner Asia.

Like Siberia, the present lack of human fossils from Mongolia severely limits the extent to which archaeologists can draw definitive conclusions regarding the absolute antiquity of the technologically unsophisticated tool forms recovered in geological contexts that extend back to the Plio-Pleistocene boundary. Derevianko's (1990) evidence for the occupation of Mongolia before the middle Pleistocene is compelling and, if proven correct, may provide one of the geographical links between the region's earliest sites (i.e. the 800,000 year old Kul'dara complex in southern Tajikistan and the younger Sel-Ungur cave in central Kyrgyzstan) and those to the north-east in Siberia.

CONCLUSIONS

Several recent events have spurred palaeoanthropologists to adopt a more explicitly interregional approach in developing models of hominid biological and cultural evolution in eastern Eurasia. Among the most important of these developments has been the revision of absolute dates for the earliest known hominid fossils in Southeast Asia. Carl Swisher and his colleagues (1994), in announcing that Indonesian *Pithecanthropus* and *Meganthropus* (both commonly considered members of the Asian *Homo erectus* hypodigm) are perhaps 1.66–1.81 million years old, thereby rank them comparably in age with the oldest Koobi Fora *Homo* cf. *erectus* (or *Homo ergaster*) in Kenya. The implications of these new dates include the likelihood that *H. erectus* may have evolved outside of Africa which would provide one explanation for the typological variability seen between early Palaeolithic tool assemblages in Africa and East Asia.

The supposed distinctiveness of *H. erectus* and their culture in East Asia is a theme perhaps all too often dismissed as nationalistic wishful thinking on the part of scholars pursuing their discipline without the benefit of easy access to comparative collections from outside their local areas. These revised dates and the nearly universal acceptance of stone assemblages antedating one million years ago in several areas of China (particularly the Yuanmou Basin in Yunnan and the Nihewan Basin in Hebei although other, less securely dated, localities such as Lantian, Shaanxi and Longgupo, Sichuan may eventually prove contemporaneous) force us to reevaluate even the more extreme claims for the antiquity of hominids in eastern Eurasia (e.g. Mochanov 1992).

As the geographical (Movius Line) and chronological (Matuyama-Brunhes palaeomagnetic horizon) boundaries defining traditional interpretations of Eurasian hominid evolution dissolve, integrative models must be developed to account for what have until recently seemed improbably early occurrences of human fossils and culture complexes in East Asia. Increasingly, it appears that the "human tide" responsible for the distribution of hominids outside of

Africa must have taken place substantially before one million years ago to allow a sufficient interval for the full development of the morphometric and typological variability that is clearly visible by the middle Pleistocene. It is encouraging to note that while China, due to its enormous size, will undoubtedly continue to play a central role in illuminating these events, scholars across East Asia have begun to contribute data essential to the resolution of the patterns and pathways that characterized this evolutionary process.

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