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Handaxes and the Pick-Chopper Industry of Pleistocene China

Xing Gao^{a, b, *}, Ying Guan^a

^a Key Laboratory for Vertebrate Evolution and Human Origins of the Chinese Academy of Sciences at the Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences, Beijing, China

^b The University of Chinese Academy of Sciences, Beijing, China

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ABSTRACT

The presence of handaxes (bifaces; Large Cutting Tools) in Paleolithic industries in China and elsewhere in East Asia and their relationship with western Acheulian bifaces have been discussed and debated for a long time. Most researchers concur that handaxes occur in some Paleolithic industries in certain regions of central and south China. However, Chinese handaxes exhibit some unique characteristics compared with their western Acheulian counterparts, either in terms of their quantity in lithic assemblages or based upon their specific technological and morphological features. Analyses indicate that most Chinese handaxes are variants of picks, a type of large digging tool found in Pick-Chopper Industries over a vast region, complementary to choppers, which are a kind of large cutting tool produced and used in the region for a long period of time. Raw material impact, adaptation to certain habitat, close ties with the pebble tool tradition, and the relative isolation of local populations may all have contributed to the uniqueness and diversity of this type of lithic artifact in the region. Such stone tools may have played very important roles in human survival and adaptation in the intermontane basins and woodlands in tropical and subtropical environments in central and south China throughout the Pleistocene.

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1. Introduction

Handaxes are a characteristic stone tool type in Acheulian industries originating in Africa in the early Lower Pleistocene (de la Torre et al., 2008; de la Torre, 2009; Lepre et al., 2011; Beyene et al., 2013) and were made and utilized by Lower Paleolithic hominids almost everywhere in the Old World. Handaxes went through a series of changes during the course of their development, from partially and sometimes uniaxially retouched pick-like forms to systematical, bifacially retouched forms. This tool type has attracted great attention from archaeologists studying human technological development and adaptation strategies, regional Paleolithic traditions and variability, as well as their functional, intellectual, cultural and genetic dynamics, mechanisms, and implications (Wynn, 1995; Mithen, 1999; Vaughan, 2001; Roe, 2003; Bar-Yosef, 2006; McPherron, 2000; Iovita and McPherron, 2011; Corbey et al., 2016). Based on the presence or absence of handaxes, Hallam Movius (1948, 1949) subdivided the Lower Paleolithic Old World into two regions: in Africa, Europe and West Asia, the

Acheulian Tradition, in which the handaxe was a vital element, and eastern Asia where such assemblages were absent; instead, the so-called Chopper-Chopping Tool Tradition reflected a long history of continuity and largely dominated the Paleolithic industries. Movius (1948, 1949) also proposed that the isolation of ancient hominids in East Asia living in what he regarded as a marginal region and a lack of suitable lithic raw material were the main reasons why East Asian hominids “failed” to develop Acheulian technology. The so-called Movius Line hypothesis triggered fierce debates regarding the nature of Lower Paleolithic development in China and greater East Asia and the relationship between the western Old World and East Asia in terms of human evolution, migration and interaction for more than half a century. Some insisted that there were fundamental differences between the West and the East reflected in Early Paleolithic lithic technology and typology and, therefore, the Movius Line still held sway (Schick, 1994; Lin, 1996; Norton et al., 2006; Gao, 2011, 2013). Others expressed strong opposition to the notion and either concluded that there were handaxes or Acheulian-like assemblages in East Asia and concluded the so-called Movius Line should be erased (Yi and Clark, 1983; Huang, 1989a,b; 1993; Hou et al., 2000) or pointed out that the gloss “Chopper-Chopping Tool Tradition” was not a suitable label to describe the true typological characteristics and complexity of the

* Corresponding author. 142 Xizhimenwai Street, Beijing, 100044, China.
E-mail address: gaoxing@ivpp.ac.cn (X. Gao).

Early Paleolithic industries of East and Southeast Asia. Additionally, many of the sites and artifact assemblages used by Movius to summarize the unique features of Lower Paleolithic industries in Southeast Asia were actually not of Lower and Middle Pleistocene age (Dennell, 2016).

Such debates in China began with very superficial arguments mostly focusing on the presence or absence of handaxes, or whether those discovered were “real” or not. Many discoveries and identifications of such tools were made without taphonomic and chronometric considerations. Recently, research on and discussion of this topic has shifted to the stratigraphic and chronological framework of handaxe-bearing sites, the technological and functional attributes of such artifacts, their similarity, differences and relationships with Western Acheulian handaxes, and the implications for ancient human dispersal, interaction, etc. (Lycett and Norton, 2010; Gao, 2012; Wang et al., 2014b; Li et al., 2014a, 2014b, 2014c). Without precise, detailed information on artifacts' taphonomy, chronology, distribution and technology, discussions of their potential correlation with Acheulian industries and the implications regarding their role in human evolution, adaptation and migration will be merely building castles in the air.

2. A brief history of the discovery and discussion of handaxes in China and greater East Asia

The term *handaxe* first appeared in Chinese Paleolithic literature in 1935 when the Abbé Henri Breuil announced the discovery of such at Zhoukoudian Locality 1 near Beijing (Breuil, 1935). In 1939, Wenzhong Pei classified some pointed artifacts from Zhoukoudian Locality 15 as *small handaxes*. He pointed out that such artifacts were retouched bifacially and some even exhibited “Acheulian-style” modification (Pei, 1939). In 1954, a handaxe-like tool was collected from the surface near the Dingcun site in Shanxi Province, North China and was reported as most closely resembling European Lower Paleolithic handaxes (Pei and Jia, 1958). In 1963, another specimen was collected in Qianxian, Shaanxi Province, North China and was later reported as a handaxe (Qiu, 1984). In 1965, Lanpo Jia claimed that handaxes were present in many Paleolithic assemblages in China, including those from Zhoukoudian Localities 1 and 15, Dingcun, and Shuidonggou (Jia, 1956). In 1977, more handaxes were identified in the Dingcun lithic assemblage by Freeman and were declared to be typical Acheulian handaxes (Freeman, 1977). In 1987, Weiwen Huang stated there were three handaxe zones in China: the Fen-Wei region of North China, the Hanshui River area in central China, and the Bose Basin of South China (Huang, 1987). Afterwards, Huang and his colleagues identified additional handaxes and other “Western cultural elements” in Early Paleolithic assemblages all over China and used them to invalidate the Movius Line hypothesis (Huang et al., 2009).

In 2000, a paper published in *Science* by Hou and her colleagues on handaxes from the Bose Basin in the Guangxi Zhuang Autonomous Region triggered hot debate and discussions. This paper estimated that the handaxe-bearing deposits in the Bose Basin sites were about 0.8 Ma old based on taphonomy, fission track dating and potassium-argon determinations performed on “associated” tektites as well as morphological and technological comparisons of the tools, leading Hou and her colleagues to suggest that lithic assemblages in the Bose Basin were in accordance with Mode 2 technology in western Eurasia and Africa. This paper also concluded that Lower Paleolithic hominids on both sides of the so-called Movius Line were at the same level of cultural development and cognitive evolution (Hou et al., 2000). In 2002, Guangmao Xie published more bifacial artifacts from the Bose Basin collected during surface surveys (Xie, 2002). Since then, handaxes from several additional sites in the area have been reported, some of

which were excavated from undisturbed deposits (Wang et al., 2008). For instance, five handaxes were unearthed from the Fengshudao site and two more were excavated from the Nanban-shan site (Wang et al., 2014b); such discoveries partly solve the stratigraphic and chronological controversies of the Bose Basin Early Paleolithic.

Other areas yielding handaxes have been discovered recently, some of which derive from primary deposits, including the Danjiangkou Reservoir Region of Hubei Province (Li et al., 2009, 2014a; 2014b, 2014c; Kuman et al., 2014) and the Qinling Mountains of Shaanxi Province, both in central China (Wang, 2005; Wang et al., 2014a). The Luonan Basin in the Qinling Mountains has thus far produced the most abundant collections of handaxes, cleavers and picks, some of which are claimed to resemble typical Acheulian tools. Some artifacts from the Dingcun site in Shanxi Province have been reanalyzed recently and are claimed to be part of a true late Acheulian assemblage (Yang et al., 2014). In other parts of East Asia, especially the Korean Peninsula, handaxes have also been discovered sparking debate as to their significance (Bae, 1988; Norton et al., 2006; Yi, 2011).

However, the proposition that Acheulian assemblages are present in China and East Asia and that there are no obvious differences between the East and the West during the Lower Paleolithic in terms of representative lithic technology, typology and the trajectory of human evolution has not gained general endorsement in China. Wenzhong Pei, the first indigenous Chinese scholar to apply the term *handaxe* to Chinese materials, disagreed with Breuil's identification of handaxes in the Dingcun assemblage and suggested that such artifacts were actually “chopper-chopping tools” and large points, and that the occasional bifacial alternating retouch on some artifacts was the result of staged modifications of the edges (Pei, 1965). He also rejected the notion that Peking Man made and used handaxes (Pei and Zhang, 1985) and ceased mentioning the putative *small handaxes* identified in the Zhoukoudian Locality 15 assemblage. Erjian Dai (1985) undertook a general review of the discovery of handaxes in China and concluded that, compared with the dominant scrapers, chopper-chopping tools and points that defined the mainstream Paleolithic tradition in East Asia, rarely encountered handaxes were few and far between.

Shenglong Lin (1994) restudied the nine handaxes cited by Weiwen Huang (1987) and concluded that these were not true handaxes, but rather picks, points, cleavers, choppers and other tool-types. Lin (1995) also studied handaxes from the Jeongok-ri site in South Korea and reached the same conclusion. Based on his analyses, Lin pointed out that handaxes and the products of Levallois technology were absent or rare in East Asia and, thus, Lower Paleolithic industries in East Asia are significantly different from those of the western Old World (Lin and He, 1995). Following the publication of Hou et al.'s paper on the Bose handaxes in *Science*, some researchers questioned the association between those artifacts and the tektites used as dating samples (Koeberl et al., 2000). Further, Shenglong Lin pointed out that the chronometric results of dating tektites could not represent the true age of the Bose handaxes because the published handaxes were all surface finds, none of them having been found in association with the dated tektites and, thus, they did not constitute solid evidence that challenged the Movius Line hypothesis (Lin, 2002). However, it should be pointed out that, following Lin's assessment, tektites were indeed found in demonstrable association with handaxes at two sites in the Bose Basin (Wang et al., 2014b).

Scholars outside China also joined the debate, for instance, Covinus (2004) declared that lithic artifacts from the Dingcun site and the Bose Basin bore no relationship to Acheulian technology because of the lack of deliberate bifacial retouch and standardized

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