2012-Volume 1

Asian Archaeology

Research Center for Chinese Frontier Archaeology of Jilin University

Science Press

Asian Archaeology

Volume 1

Research Center for Chinese Frontier Archaeology
of Jilin University

Science Press
Beijing

Responsible Editors: Song Xiaojun Zhao Yue
Cover Designer: Tan Shuo

Content Abstract

Asian Archaeology is a new archaeological journal published yearly by Research Center for Chinese Frontier Archaeology (RCCFA) of Jilin University. This volume contains eleven research papers and field archaeological reports. The subjects covered by these papers include archaeological theory and method, Chinese archaeology, the archaeology of the Eurasian steppe and preliminary reports on new archaeological discoveries and researches in 2012.

Published by Science Press
16 Donghuangchenggen North Street
Beijing 100717, China

Print in Beijing

ISBN 978-7-03-034767-1(Beijing)

The cover image of clay statues unearthed from the Buddhist Temple-site at Xishanpo in the imperial city of the Upper Capital of the Liao Period was offered by Mr. Dong Xinlin from the Institute of Archaeology, CASS.

Editorial

The volume in front of you is the first issue of *Asian Archaeology*, published by the Research Center for Chinese Frontier Archaeology (RCCFA) of Jilin University.

The major fields of research advanced by the Research Center for Chinese Frontier Archaeology include the study of ancient human remains, the cultures and environment of ancient China's frontiers and neighboring regions. *Asian Archaeology* covers all those fields and thus we see it as the representation of the broader research framework pursued by our center. Asian archaeology, including Chinese archaeology and the archaeology of Central and Western Asia, is an important part of world archaeology. Research of Asian archaeology not only contributes to better understandings of the history and culture of this region but also to the development of a global approach to archaeology. This last goal is represented by more and more studies of inter-regional or even continental scale and by the increase interest expressed by archaeologists working outside of Asia. Moreover, China offers an ideal context for archaeological studies of long-term processes because of its long and uninterrupted sequence of cultural development. However, such studies by non-Chinese archaeologists are often hindered by the fact that Chinese archaeological data and analyses are published in Chinese. *Asian Archaeology* published by the RCCFA of Jilin University aims to amend some of these problems by introducing new discoveries and researches in Chinese archaeology to the wider audience of English-reading archaeologists. It also aims to become the central international journal for publications in Chinese archaeology by overseas archaeologists. We hope too that the journal will provide a healthy link between Chinese archaeology and the archaeology of other parts of the Asian continent by including in its scope also reports and analyses of new archaeological discoveries in those regions.

A significant development of the current archaeological world is the requirement that archaeologists will be versed in cross-regional comparisons as well as with a more in-depth knowledge of different regions. The publication of *Asian Archaeology* will provide a window for all western archaeologists interested in Chinese archaeology and Asian archaeology. We hope that it will promote better understandings about Asian archaeology, and will entice more scholars to engage in researches for the development of Asian archaeology, or world archaeology at large.

Contents

Late Pleistocene Human Occupation in Tianjin Area, North China

Wang Chunxue Sheng Lishuang Chen Quanjia

Abstract: *Archaeological surveys and excavations have been carried out since 2005 in the Tianjin region of North China. As a result, 13 Upper Paleolithic localities were reported and 2 sites were excavated. According to the analysis of attribute and technology of lithic artifacts collected and based on faunal and palynological analyses, we believe that they have can be termed generally as microblade-based micro-tool industry and flake-tool industry. We can deduce that there are some consanguineous cultural relationships by comparing the environmental changes, technology and typology during the Upper Paleolithic among adjoining regions. The unique natural environment provides a stable and comfortable circumstance for the range of behavioral and adaptive strategies adopted by human beings at the sites. These sites also provide meaningful and important materials for exploring the dispersal of early hominids in East Asia during the Upper Paleolithic.*

Key words: *Stone artifact; Archaeological site; Microblade-based Industry; Upper Paleolithic; Tianjin area*

1. Introduction

The most critical issues for understanding the formation of blade and microblade-based technologies concern the place and time of their origins as well as the models of their dispersal over Eastern Eurasia. For several decades, scholars have discussed the issues of dispersal of blade or microblade-based technologies in Eastern Asia.

Tianjin area concerns to east regions of distribution of the "microblade-based" industries of Early Upper Paleolithic (EUP) of North China. Appearance of the first Upper Paleolithic complexes in North China is archaeologically synchronous to similar in the technological sense complexes of Tianjin area. It is geographically not distant from "classical" areas (such as North China and Shandong Peninsula) of EUP (Shen et al. 2003), while in a contact zone with EUP "pebble-based" industry of Northeast China (such as Xianrendong and Miaohoushan sites) (Yang 1981; Jiang 1996), EUP industry in Tianjin area was traditionally considered as a local and "mixed" cultural tradition in many respects.

During the last seven years (2005–2012), some Upper Paleolithic sites with micro-tools have been discovered throughout the territories of Tianjin area, China. These complexes with microtools have been thought that they could in between 15 ka and 10 ka BP (Wang and Sheng 2013). According to analysis of their cultural characteristics, industries with microtools might have emerged over such a vast territory in the course of migrations and as a result of changes in early human adaptive strategies in the face of

Wang Chunxue: Research Center for Chinese Frontier Archaeology of Jilin University, Changchun 130012; Key Laboratory of Vertebrate Evolution and Human Origins of Chinese Academy of Sciences, Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences, Beijing 100044

Sheng Lishuang: Production Center for Cultural Heritage in Tianjin, Tianjin 300170

Chen Quanjia: Research Center of Chinese Frontier Archaeology of Jilin University, Changchun 130012

environmental fluctuations. Human had to adopt new raw materials and make new varieties of shapes and types of stone tools.

Tianjin area encompasses the southern portion of Liaoning Province, the eastern portion of Hebei Province, the northern portion of Shandong Province, Beijing. It lies to the west of the Korean Peninsula. As far as the spread of microblade technology in Tianjin area are concerned, most Chinese scholars tend to know the Paleolithic context in this area. In 2005–2007, a joint archaeological team (include three parts: Production Center of Cultural Heritage in Tianjin, Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences, Research Center of Chinese Frontier Archaeology of Jilin University joined in 2010) have done a series of Paleolithic investigation and excavation in Jixian area of Tianjin area (Sheng and Wang 2008). A high concentration of Upper Paleolithic sites has been recorded in Jixian area. We have found 13 Upper Paleolithic sites or localities. They include Taiziling (TZL), Zhangyantai (ZYT), Xiaoping'an (XPA), Qiqu (QQ), Yangjiayu (YJY), Yingfang (YF), Chuangziyu (CZY), Zhouzhuang (ZZ), Daxingyu (DXY), Dasungezhuang (DSGZ), Yegou (YG), Dongdatun (DDT) and Beitai (BT); see Table 1 and Figure 1.

Table 1 New Paleolithic localities in Tianjin area (Sheng and Wang 2013)

No.	Name of site	Geographic coordinate	Altitude(m)	Geomorphic unit
1	Taiziling	40°08.941′N 117°35.039′E	127	The second terrace
2	Zhangyantai	40°08.835′N 117°35.293′E	113	The second terrace
3	Xiaoping'an	40°12.991′N 117°26.650′E	232	The second terrace
4	Qiqu	40°11.180′N 117°26.698′E	235	The second terrace
5	Yangjiayu	40°08.611′N 117°23.743′E	166	The second terrace
6	Yingfang	40°03.295′N 117°26.358′E	44	The second terrace
7	Chuangziyu	40°03.134′N 117°22.477′E	32	The third terrace
8	Zhouzhuang	40°03.011′N 117°22.531′E	24	The second terrace
9	Daxingyu	40°03.244′N 117°22.436′E	29	The third terrace
10	Dasungezhuang	40°01.306′N 117°18.053′E	30	The second terrace
11	Yegou	40°03.677′N 117°16.983′E	88	The second terrace
12	Dongdatun	40°03.904′N 117°27.494′E	41	The second terrace
13	Beitai	40°11.536′N 117°26.698′E	220	The second terrace

All the sites are associated with the surface layer of the second terrace and the third terrace of the river. This layer can be correlated with the regional stratigraphic scheme of Holocene-Pleistocene sediments in river. The sediments are a light, yellowish-gray loess-like loam, in some places including one or two horizons. They have yielded numerous stone artifacts. The present

article mainly focuses on lithics from sites above, which yielded the most representative samples of stone artifacts (about 3000 specimens) reflecting various characteristics. Previously, based on data generated through typological and statistical analyses, the Upper Paleolithic sites in North China were divided into three industrial types: the Flake-based Small Tool Industry, the Peddle Tool Industry and the Microblade-based Microtool Industry (Zhao 2003). These sites are integrated into a complicated chronological local culture.

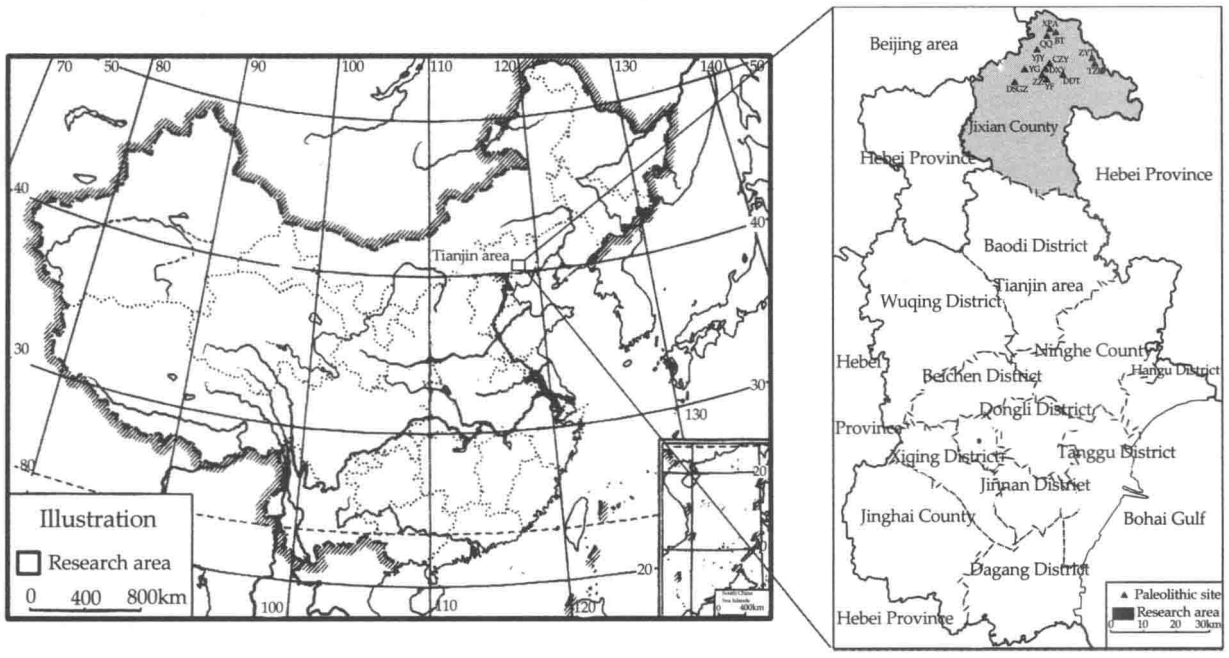

Figure 1 The distribution of Upper Paleolithic localities in Tianjin area.

In this work, a series of technological and attributes analyses are applied to explain a chain of operations associated with the processing and exploitation of lithics by prehistoric people. These analyses include at least the following aspects:

1) Raw materials selection and exploitation (evaluating the raw materials sources; assessing general technological strategies related to specific raw materials, reconstructing the relations between primary reduction techniques and these raw materials, etc.);

2) Reduction strategy (analyzing and elaborating the technological system; regulating the sequence of techniques at different stages of Microblade reduction);

3) Manufacture and utilization of tools (analyzing primary and second modification, retouch technology and morphology of stone tools); and

4) Developmental trends of Upper Paleolithic industries in this area and cultural comparison with adjoining regions.

Since excavations and investigations began in 2005 stratigraphy and geochronology have been major concerns of archaeological research at Paleolithic sites in Tianjin area. However, we do not achieve available some dating samples (such as animal bones, wood carbon and ashes) from cultural stratum in sites. According to available chronological estimates and stratigraphic evidence (the Pleistocene sequences of soft sediments at these sites), these new finds belong to the Late Upper Paleolithic.

From behavioral and adaptive perspectives and through analyzing typological, morphological and technological features of the stone assemblage, this paper addresses several theoretical issues regarding this industry, such as the nature of typological and stylistic variability, the capability and strategies of hominids in exploiting raw materials and modifying stone tools, the influence of raw materials placed on lithic technology and artifact stylistic features, and behavioral options exercised by hominids at the sites.

2. Overview of Upper Paleolithic Stone-tool Industries in Tianjin Area

From behavioral and adaptive perspectives and through analyzing typological, morphological and technological features of assemblage, these sites belong to the Microblade-based Micro-tool Industry and the Flake-tool Industry in final Upper Paleolithic. Stone assemblages include retouched tools, cores (flake cores and micro-blade cores), flakes, blades, microblades, chips and chunks. Flakes, cores, microblades, chunks and chips occupy about 90% of artifacts assemblage. The raw materials used for the stone assemblage are wealthy. Chert is the predominant raw material used for producing stone artifacts at the site, followed by quartz and quartzite. Primary reduction is characterized by percussion with a hard hammer, followed by bipolar flaking. Retouched tools include used flakes, scrapers, burins, backed knife, borer; scrapers are the dominative tool type. Major blanks for tools fabrication are flakes, followed by microblades. Modified tools appear to be retouched by hammer percussion and pressure technique. Tools are mainly retouched on the dorsal surface. Most of tools are finely retouched. Tool types are standardized. Tools are mainly small, followed by middle in size. The extent of raw material consumption in general is quite high, evidenced by the prominence of chips and debris producing by manufacturing and sufficient modification of the retouched tools.

3. Technological Analysis

3.1 Core reduction Technology

At least two major core reduction technologies are recognized in cores and flakes from these sites. One is direct hard or soft hammer percussion, percussion flake and core are the most prominent character in stone tools assemblage, and the other is indirect percussion, microblade core and microblade are the most prominent character in stone tools assemblage (Figure 2). Furthermore, according to physical characteristics of chert, we can not really distinguish bipolar fragments from all the flakes. As a result, we consider that human may probably use the bipolar flaking in sites.

The characteristics of platform of microblade cores and flaking scars on the working face have direct relationships with core reduction technology and raw material economy. Primary reduction was mostly accomplished by flat parallel flaking. The process probably started with the partial removal of the cortex through the detachment of short spalls. Judging by the character and morphology of microblade core, all such microblades were struck from a selected and prepared platform, so the cores acquired the stable shape, such as wedge-shape, boat-shape, conical and cylindrical core. Microblade cores were exploited after the removal of one or two primary spalls aimed at shaping a crest, a character needed for the detachment of a blade blank. This is evidenced by products of flaking varying in size and proportions. According to the analyzing results, we can recognize microblade cores in the prepared stage and flaking stage. It indicates that hominids at sites have high cognitive ability on selecting raw materials and retouching tools.

The majority of microblades are middle parts, followed by proximal and distal part, complete microblades are absence. The ridges of microblades are same, mainly single ridge. Pleistocene hominids are proficient in mastering truncation technique of microblades; they choose straight middle part as the edge of composite tools. Debitage is defined as a detached piece that is discarded during the reduction process. It has recently become one of the most controversial and apparently least understood artifacts types. After being neglecting by researchers for decades as prehistoric trash or debris, debitage has gradually gained importance as an artifact that can help interpret aspects of prehistoric human technology, economy and organization. Debitage and chunks are by-products of retouching process or core reduction, they have a very important significance to study retouch technology and analyze human behaviors. As chert is the predominant raw material used for producing stone artifacts at these sites, we can have some replicative experiments of core reduction and retouching process about chert, experiments are designed to determination which variables best distinguish between diffe-

rent techniques or technologies. We may apply principal components of experiments to archaeological assemblage, and analyze function (such as quarry, workshop or campsite) of sites through calculating percentage relationships between tools and debitage.

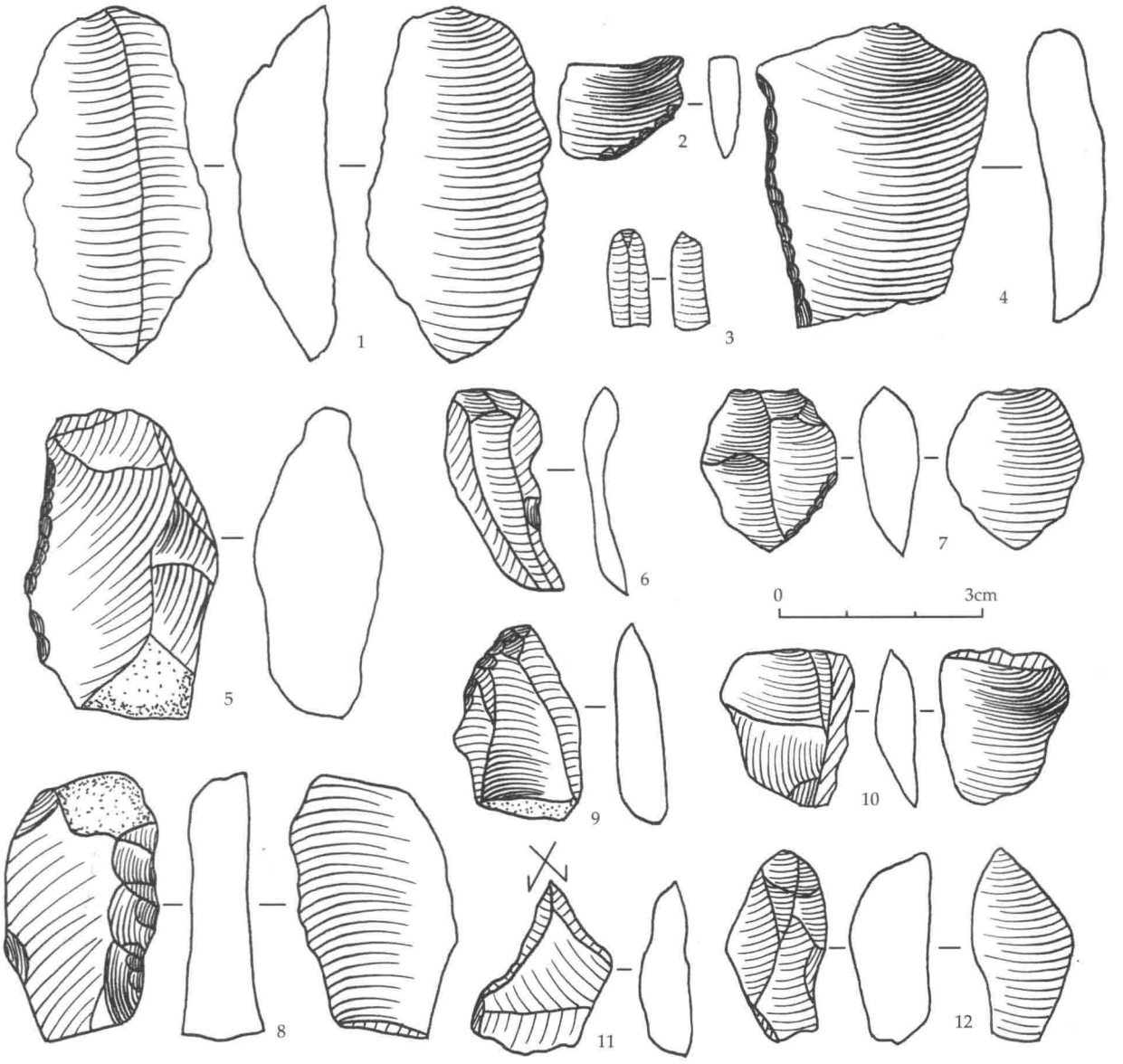

Figure 2 Stone artifacts from Upper Paleolithic localities in Tianjin area (Sheng and Wang 2013): (1) Bipolar flake; (2) (7) (9)Single convex scraper; (3) Microblade; (4) (5) (8) Single straight scraper; (6) (10) (12) Flake; and (11) Burin.

3.2 Retouch Technology

Pleistocene hominids often chose flake with sharp edge as used flakes at Upper Paleolithic micro-tool industry in North, China. Most of used flakes were mainly middle part of flakes or micro-blades; some ones were used as edge of composite tools. The overwhelming majority of edge angle is sharp, followed by blunt angle. We can recognize that some specimens do exhibit obvious, continuous and tiny scars. Indeed, we must check the inferences about used flakes by use-wear analysis in the future.

Generally speaking, modified tools appear to be retouched by direct hard hammer percussion, followed by pressure technique. Most of tools were mainly retouched unifacially, followed by double-faced touched samples. Pieces made on flakes were modified overwhelmingly on the

dorsal surfaces, followed by the ventral surface, multiple directions and alternating retouch. Most of tools are small and regular. Most modification scars are parallel, sharp, shallow, regular, smooth or denticulate cutting edges and similar in size, indicating that modification of these pieces was normally well-controlled. Major blanks for tools fabrication are flakes, followed by some microblades, chunks and pebble (Figure 3).

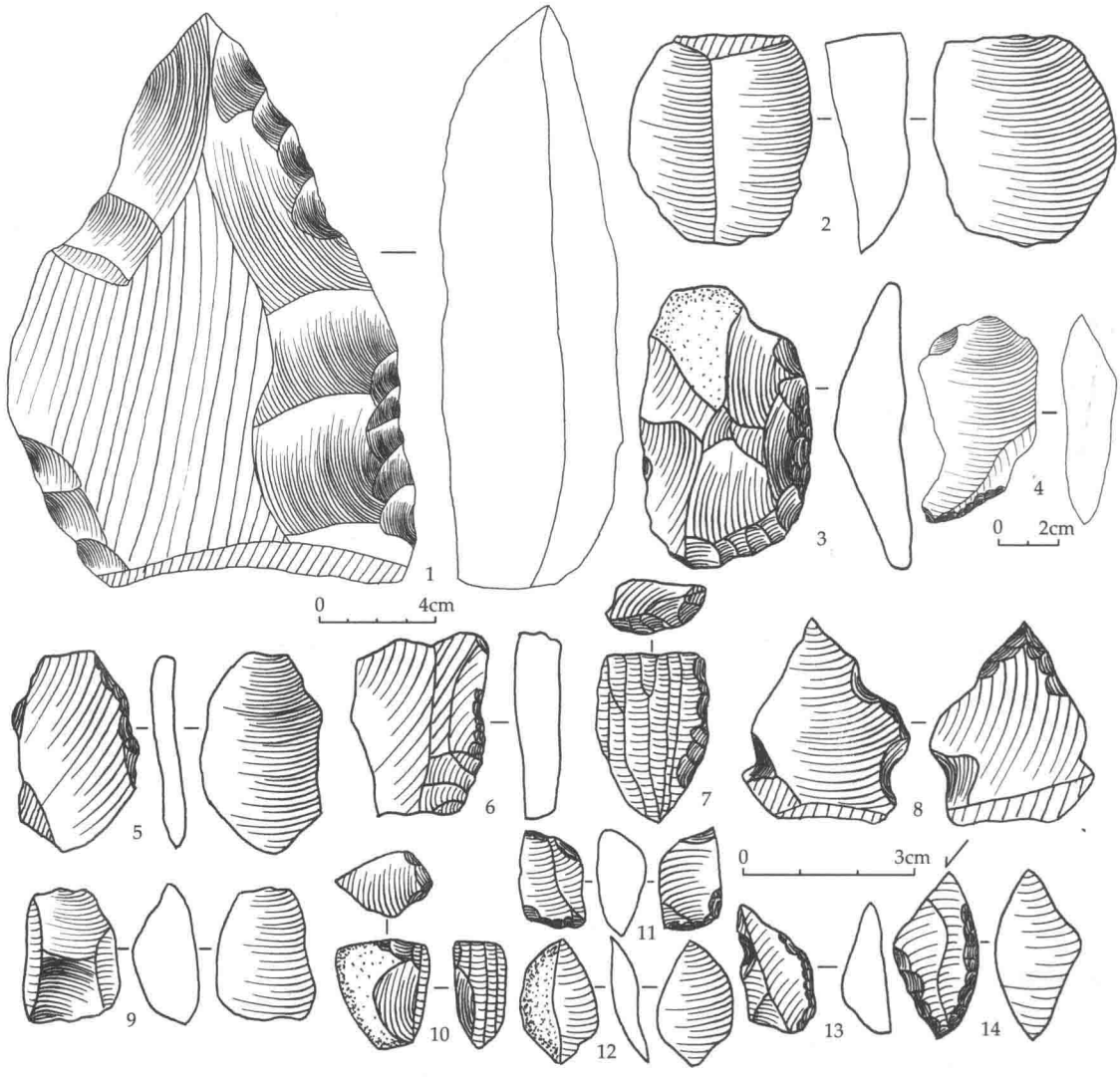

Figure 3 Stone artifacts from Paleolithic localities in Tianjin area (Sheng and Wang 2013): (1) Pick; (2) (12) Flake; (3) (13) Single convex scraper; (4) (5) (6) Single straight scraper; (7) (10) Microblade core; (8)Point; (9) (11) Bipolar core; and (14) Burin.

The overwhelming majority of retouched tools are side scrapers, followed by end scrapers. Side scrapers are varied, such as concave, convex, round, straight scraper. They were retouched by direct hard hammer percussion, followed by pressure technique. Scrapers were mainly retouched unifacially. Pieces made on flakes were modified overwhelmingly on the dorsal surfaces, retouched part concentrate on a certain side of blank, not proximal or distal part. This indicates that such consistent edge can necessarily represent discrete functional types.

4. The Utilization of Raw Materials

Lithic raw material is the most important means of production for Pleistocene hominids. The av-

ailability and quality of raw material, the ability to exploit the raw material, and the rate at which raw material were consumed all represent substantial limiting factors for hominid adaptations and the nature of lithic technology (Gao 2000). Raw materials are inherent in each artifact and are useful in characterizing the lithic assemblage. Knowledge gained from sourcing lithic artifacts can be employed on several different levels (Odell 2004). Seven types of rock were used; they include chert, quartzite, quart, jasper, andesite, alterative shale and vein quartz. The raw material most often exploited at sites was locally available chert. The chert resource is abundant in North China. Chert combines high abundance and good or lower quality. Therefore, Pleistocene hominids are apt to choose chert for making stone tools.

The quality and quantity of available raw material for chipping affects the choices made regarding material selection and conservation. Raw materials can be acquired by several means, including planned collection trips to quarries, opportunistic collecting, or trade (Odell 2004). Raw materials collection strategies will condition the reduction strategies used to produce finished tools. Chert is a kind of dark glassy rock. It has conchoidal fracture. According to the physical property of chert, hominids prefer to choose it for making tools. The main sources of raw materials used by Paleolithic inhabitants of sites are exposed in the lower portion of the terrace and peddle beaches located in close proximity to the sites. It makes hominids understand the advantage of chert and obtain chert of high quality very easily during exercises. Raw material most often exploited at these sites is locally available chert. According to stone artifacts assemblage and the exploitation of raw materials, we know that hominids prefer to select chert as the main raw material for core reduction and retouching tools. In addition, we also have recognized some used flakes with sharp edge, occupying considerable percentage. We believe that hominids employ a special strategy of "adjusting measures to local conditions" and "obtaining raw material from local sources".

5. Conclusion and Discussion

The structure of a stone tool assemblage and the nature of artifact variability on a regional scale are closely related to several factors, including the availability and quality of raw material, the strategy by which it was procured, the particular activities in which stone tools were made and used, and the role of the sites within a settlement or mobility system. Most of The final Upper Paleolithic sites are located on the second or third terrace in Tianjin area, China. These sites consist mainly of microblade cores, flakes, chips, chunks, tools. Most of tools are finely retouched. Such characteristics are shared by many other Paleolithic sites in North China. They have been termed generally as microblade-based micro-tool industry and the Flake-tool industry. Some scholars think that lithic assemblages have been divided into three industry types: flake-based small flake-tool industry, peddle-tool industry and microblade-based micro-tool industry in North of China, these sites in Tianjin area belong to the first and third industry. Microblade-based micro-tool industry derived from small tool industry during the Upper Paleolithic period, it is a distinctive industry type. However, it didn't replace small tool industry; developed trends of two industry types are two parallel technological traditions. Such characteristics are shared by many other Upper Paleolithic sites in North China and neighborhoods, such as Shibazhan at Huma County and Daxingtun at Qiqihaer in Heilongjiang Province, Hutouliang, Youfang, Jijitan, Xiachuan and Zhiyu in Nihewan Basin (Zhang 1990); Hahwagyeri site in the Kangwon-Do region, Sukjangri site in the Chungcheong-Namdo region and Suyanggae site in the Chungcheong-Bukdo of Korean Peninsula (Lee and Yun 1992); many sites in Hokkaido Island and Kyushu Island of Japan (Derevianko 2005); Shorokhovo I, Ilyinka II, Shumikhha I and Bedarevo II in the Southeastern portion of Western Siberia (Markin 2005), Karakol culture in Southwestern Siberia and Selemdja culture in the southern Far East (Derevianko 2005).

According to the analysis of attribute and technology of microblade cores in this area, we can obtain that microblade in these sites might have represented a similar technology employed by hunter-gatherers who lived in diverse and severe environments. Is it the convergence or cultural transmission between this area and

adjoining areas? On the basis of paleoenvironment of these areas in Late Pleistocene, the climatic context was very cold and dry, it did not become warmer until the Holocene, we can deduce that microblade technologies were spread and produced some local technological variants

On the basis of systemic analysis of the raw materials strategy and lithic technology, people at Tianjin area are inclined to select settled temporary camp, making full use of all kinds of foods as collectors. In addition, they use some composite tools (especially made of microblades), which are characterized by long-term maintaining and finely fabrication. Their adaptive strategies are characterized by low frequency of migration within certain natural geographic territories, being practical, flexible and in harmony with local environments and making the specialization and standardization of stone tool. Modern human gave full play to practicability and flexibility in these Upper Paleolithic sites.

Multidisciplinary research at cave and open-air sites has provided data illustrating the formation of microblade-based micro-tool industry during the final Upper Paleolithic period. It is expected that we will reveal similarities among these sites through analyzing technological models. Present, most scholars agree that the abrupt appearance of blade-microblade artifacts in North China is the result of the immigration of or influence from populations to the north, namely Mongolia and South Siberia. However, the present inferences can in no way be regarded as conclusive. It is impossible to resolve the issues of reconstruction of microblade-based micro-tool industry of Upper Paleolithic population of Tianjin area without analyses of faunal remains from sites and without consideration of a wider range of dating data. In future, we should carry through comprehensive archaeological investigation and excavation, at the same time, we put up particular researches in virtue of many subjects' methods and means so that search out new and possible points of breakthrough, this paper expects that we will obtain more information about behavioral potions adopted by hominids in this area.

Acknowledgments: *Collaborative interdisciplinary investigations and excavations of some Upper Paleolithic sites have been carried out with the deeply appreciated assistance of our colleagues, Chen Yong, Mei Pengyun, Jiang Baiguo, Gan Caichao of Production Center of Cultural Heritage in Tianjin, Zhang Senshui, Gao Xing, Pei Shuwen, Chen Fuyou, Liu Decheng, Zhang Yue, Zhang Xiaoling, Cao Mingming, Guan Ying, Li Feng, Yi Mingjie, Xu Xin of Institute of Vertebrate Paleontology and Paleoanthropology (IVPP), Chinese Academy of Sciences. This research has been accomplished with financial support provided by CAS Strategic Priority Research Program (Grant No. XDA05130302, XDA05130202), the Knowledge Innovation Program of Chinese Academy of Sciences (Grant No. KZCX2- EW-QN110), POSCO TJ Park Foundation Year 2012 Research Grants for Asian Studies, Basic Scientific Special Program of MST of China (Grant No. 2007FY110200), China Postdoctoral Science Foundation (Grant No. 20110491309), The Fundamental Research Funds for Scientific Research Backbone Training Program of Jilin University (Grant No. 2011QG007) and Research on philosophy and social science planning projects of Heilongjiang Province (Grant No. 12C055).*

References

Derevianko, A. P. 2005. "Formation of Blade Industries in Eastern Asia". *Archaeology, Ethnology and Anthropology of Eurasia* 4: 2—29.

Gao Xing. 2000. "Interpretation of Lithic Technology at Zhoukoudian Locality 15". *Acta Anthropologica Sinica* 19: 156—165 (supplement).

Jiang Peng 姜鹏. 1996. "Jilin Fusong Xianrendong jiushiqi shidai yizhi" 吉林抚松仙人洞旧石器时代遗址 (Xianrendong Paleolithic Site in Fusong, Jilin Province). In *Dongbeiya jiushiqi wenhua* 东北亚旧石器文化 (Paleolihtic Culture in Northeast Asia), ed. Hanguo guoli zhongbeidaxuexiao xianshi wenhua yanjiusuo 韩国国立忠北大学校先史文化研究所, and Zhongguo Liaoning sheng wenwu kaogu yanjiusuo 中国辽宁省文物考古研究所, 205—211. Shouer: Baishan wenhua.

Lee, Yung Jo, and Yun Yong Hyun. 1992. "Tanged-points and Micro-blade Cores from Suyanggae site, Korea". Paper presented at the International Conference on the Origin and Dispersal of Microblade Industry in Northern Eurasia, Sapporo University.

Markin, S. V. 2004. "Technological Model of the Upper Paleolithic Industries in the Southeastern Portion of Western Siberia". *Archaeology, Ethnology and Anthropology of Eurasia* 4: 1—12.

Odell, George H. 2004. *Lithic Analysis*. New York: Kluwer Academic/Plenum Publishers.

Shen Chen 沈辰, Gao Xing 高星, and Hu Binghua 胡秉

华. 2003. "Shandong xishiqi yicun yiji dui 'Fenghualing wenhua' de chongxin renshi" 山东细石器遗存以及对"凤凰岭文化"的重新认识 (Shandong Microblade Industries and Re-evaluation of "Fenghuangling Culture"). *Renleixue xuebao* 人类学学报 4: 293—307.

Sheng Lishuang 盛立双, and Wang Chunxue 王春雪. 2008. "Tianjin Jixian Dongyingfang jiushiqi yizhi fajue" 天津蓟县东营坊旧石器遗址发掘 (Report on Reconnais- sance of the Dongyingfang Paleolithic Site in Jixian County, Tianjin Area). In *2007 Zhongguo zhongyao kaogu faxian* 2007 中国重要考古发现 [Important Archaeological Discoveries in China (2007)], ed. Guojia wenwuju 国家文物局, 2—5. Beijing: Wenwu.

Sheng Lishuang 盛立双, Wang Chunxue 王春雪, Gan Caichao 甘才超, Zhang Junsheng 张俊生, and Chen Yong 陈雍. 2013. "Jixian 2005 nian jiushiqi kaogu diaocha baogao" 蓟县 2005 年旧石器考古调查报告 (Survey Report on Paleolithic Sites at Jixian County in 2005). In *Tianjin kaogu* 天津考古 (Archaeological Reports in Tianjin Area), ed. Tianjinshi wenhua yichan baohu zhongxin 天津市文化遗产保护中心, 21—35. Beijing: Kexue.

Wang Chunxue 王春雪, and Sheng Lishuang 盛立双. 2013. "Tianjin Jixian Taiziling jiushiqi didian diaocha jianbao" 天津蓟县太子陵旧石器地点调查简报 (A Preliminary Report on Reconnaissance of the Taiziling Paleolithic Locality in Jixian County, Tianjin Area). *Renleixue xuebao* 人类学学报 1: 37—44.

Yang Dashan 杨大山. 1981. "Raohe Xiaonanshan xin faxian de jiushiqi didian" 饶河小南山新发现的旧石器地点 (The New Discovery of Raohe Small Nanshan Paleolithic Site). *Heilongjiang wenwu congkan* 黑龙江文物丛刊 1: 2—9.

Zhang Senshui 张森水. 1990. "Zhongguo beifang jiushiqi gongye de quyu jianjin yu wenhua jiaoliu" 中国北方旧石器工业的区域渐进与文化交流 (Regional Industrial Gradual Advance and Cultural Exchange of Paleolithic in North China). *Renleixue xuebao* 人类学学报 4: 322—333.

Zhao Binfu 赵宾福. 2003. *Dongbei shiqi shidai kaogu* 东北石器时代考古 (The Paleolithic and Neolithic Archaeology of Northeast China). Changchun: Jilin daxue.

Report on the 2012 Field Season of the Project Origins of Agriculture and Sedentary Communities in Northeast China[1]

Gideon Shelach Teng Mingyu Wan Xiongfei

Abstract: *This report is the result about the first season of the "Origins of Agriculture and Sedentary Communities in Northeast China" project. We have already identified several early Neolithic (and perhaps even pre-Neolithic) sites that were previously unknown. Dense concentrations of artifacts at the surface of some of these sites suggest intensive occupation and a potential for future excavations. The picture of the settlement patterns during different periods that starts to emerge from our survey is also suggestive as to the local trajectory of economic and social developments.*

Key words: *Northeast China; Origins of Agriculture; Origins of Sedentary Communities; Fuxin*

Our field work in the Fuxin 阜新 area, western Liaoning province, is part of a collaborative project, called "Origins of Agriculture and Sedentary Communities in Northeast China". It brings together archaeologists and students from the Research Center of Chinese Frontier Archaeology at Jilin University, the Hebrew University, and the Liaoning Provincial Institute of Archaeology and Cultural Relics. In this paper we report the results from our first field season, which ran from April 3rd to May 2nd 2012.

The project addresses the development of agriculture and sedentary ways of life, two interrelated processes that revolutionized human subsistence strategies, dietary habits and living conditions. At the same time, they are also associated with meaningful transformations of social relations and cultural formations that dramatically changed the nature of human societies and set the stage for the development of complex societies (Bar-Yosef 2001; Belfer-Cohen and Bar-Yosef 2000; Cauvin 2000; Hodder and Cessford 2004; Kujit 2000; Plog 1990; Winterhalder and Kennett 2009).

Understanding these processes in northern China will greatly contribute to our knowledge of one of the main centers of independent agricultural development and of one of the world's more vibrant civilizations. Surprisingly, though, of the handful of centers of independent agricultural development in the world, China is the only one for which we cannot reconstruct a full trajectory from hunter-gatherer societies to agricultural communities (Bettinger et al. 2007: 83). During the last 40 years of research, a set of local archaeological cultures dated from the second half of the 7th millennium BCE have been identified throughout the expanses of northern China. These cultures are the Cishan 磁山 and Peiligang 裴李冈 in the middle ridges of the Yellow River;

Gideon Shelach: Department of East Asian Studies of The Hebrew University, Jerusalem 91905 (Jilin University Kuang Yaming Special Invited Professor)

Teng Mingyu: Research Center for Chinese Frontier Archaeology of Jilin University, Changchun 130012

Wan Xiongfei: Liaoning Provincial Institute of Archaeology and Cultural Relics, Shenyang 110003

[1] The research is funded with grants from the National Geographic Society (Grant No. 861409) and the Israel Science Foundation (Grant No. 502\11).

the Dadiwan 大地湾 in the Wei River basin; the Houli 后李 in the Shandong peninsula to the east; and the Xinglongwa 兴隆洼 in the Liao River basin to the northeast, all of which exhibit evidence of evolved sedentary village life and the domestication of plants and animals. However, earlier phases that predate those village-level societies and represent the transition from mobile hunter-gatherer societies to sedentary agricultural societies are virtually unknown from any of these sub-regions.

The "Origins of Agriculture and Sedentary Communities in Northeast China" project aims at addressing these lacunae. We are focusing on the regions associated with the development of the Xinglongwa culture, which has been identified as one of the earliest well-developed sedentary societies in north China (Shelach and Teng 2013). No less importantly, carbonized grains recovered from Xinglongwa strata at the Xinglonggou 兴隆沟 site have been identified as domesticated millet (Zhao 2004). This is the earliest secure evidence of domesticated millet in China, and perhaps even the earliest domesticated plant ever to have been identified in East Asia (Fuller et al. 2007: 326).

Our field research is concentrated on the Fuxin area (in northwestern Liaoning province), where Chahai 查海, one of the better known Xinglongwa sites, is located (Liaoning 1986 and 1994; Liu Guoxiang 2006; Zhao Binfu 2003). Moreover, preliminary reports have indicated that there may be an even earlier stratum, not yet fully defined and dated, at Chahai and at some unexcavated sites. This stratum, provisionally called the Xiaohexi period, might represent the transition to agriculture phase. The Fuxin area was also selected because the natural conditions and site preservation there appear to be better than in the Chifeng region, where we previously worked, and more suitable for the kind of research we are conducting. Previous excavations in this area did not attempt to recover plant remains. However, because it is located only 50km away from the Xinglonggou site, where the earliest remains of domesticated millet were found, we hope that the use of recovery methods – such as flotation and phytolith extraction at Chahai and other sites in its vicinity – has the potential to provide new and important data.

Through a set of carefully planned systematic surveys, on-site explorations and excavations, we hope to identify archaeological remains left by pre-agricultural and early agricultural societies. This will enable us to contribute to a better understanding of the transition to agriculture and to document the local trajectory, which could then be compared with trajectories in other regions of northern China.

Research Methods

Our current project plan includes two years of intensive systematic surveys of the area around and to the east of the Chahai sites, which will be followed by two years of excavations at sample Xinglongwa and pre-Xinglongwa sites discovered by our survey. The first season was entirely devoted to a systematical pedestrian survey[2]. The conditions for surveying in April and early May in this region are ideal as the earth's surface is completely exposed without any vegetative (wild or domesticated) coverage. All told, we were able to cover an area of 55.3 km^2 in which we identified and collected artifacts at more than 700 locations (Figure 1; Plate I, 1).

Our survey methods are based on the systematic survey carried out in the Chifeng 赤峰 region of Inner Mongolia (Chifeng 2003; Chifeng 2012), though with modifications that cater to the special emphases of our project and make use of technologies that did not exist when the Chifeng project was launched. Because we are interested in remains left by non-sedentary societies and early agricultural communities, we anticipated that some of the sites we were looking for would be small, and that the density of artifacts on the surface would be very sparse. Therefore, during the survey team members walked close to each

[2] We are grateful to all the archaeologists and students who participate in the survey: Cai Yan, Mei Shuwen, Wang Tao, Wu Xia, Zhang Bo, and Zhao Yuchao from Jilin University; Xin Yan, Guo Ming from the Liaoning Archaeological Institute; Uri Davidovigh, Yonatan Goldsmith, Michal Lee Gaulan, Tikvha Lee Steiner, Ahiad Ovadia, and Nir Horovitz from the Hebrew University; Cui Song, Wang Yi from the Fuxin Cultural Relics Management Office; Li Jingyan, from the Chahai Site Museum.