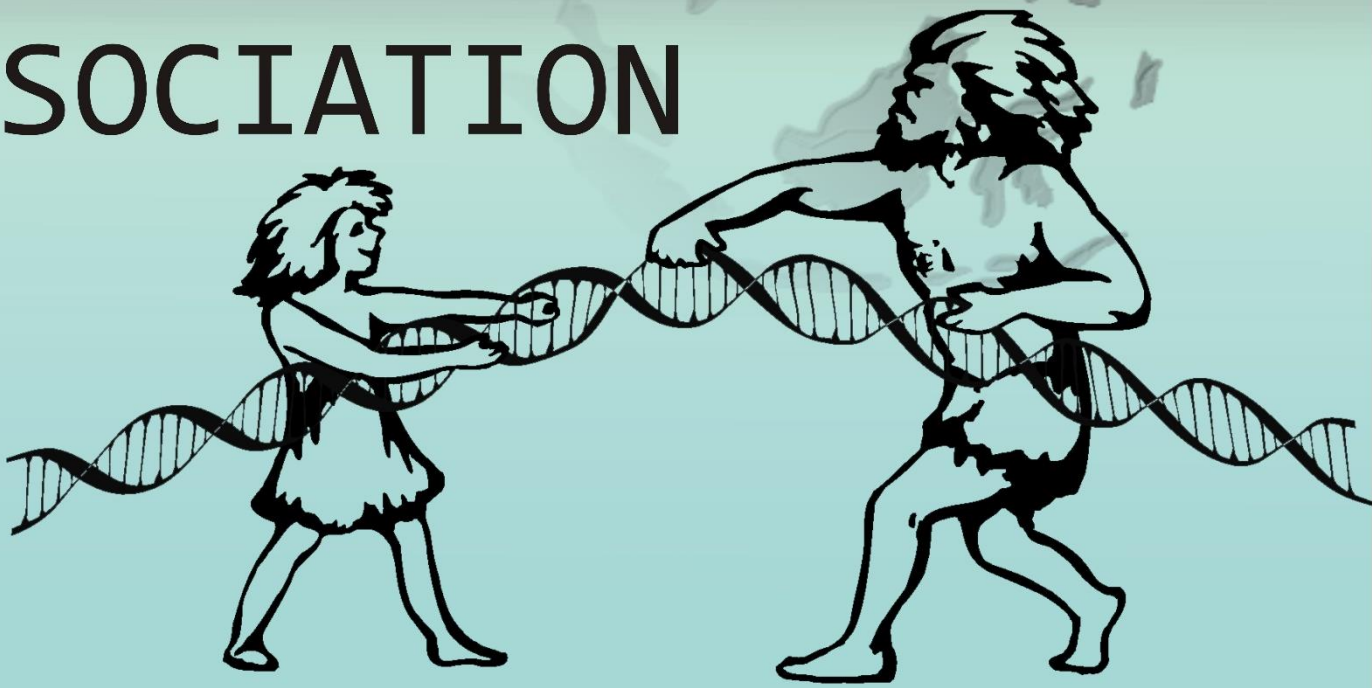
DENISOVA CAVE
ALTAI
RUSSIA
JULY 30 - AUGUST 6
2018

9th meeting of the

ASIAN PALEOLITHIC ASSOCIATION



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Contents

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BONE POINTS IN THE INITIAL AND EARLY UPPER PALAEOLITHIC COMPLEXES OF GORNY ALTAY*

In this paper, we presented the new results of multidisciplinary investigations of the first bone point of Kara-Bom site (43–31 ka uncal BP) in the context of the IUP and EUP assemblages of Gorny Altai.

The studied bone tool was found in 2017 in the process of the faunal assemblage reanalysis. The bone point is made from deer antler, has a narrow elongated symmetrical shape, sharpened butt and dimensions of 76.6×18.6×9.4 mm. Most of the artefact surface bear traces of root etching and exfoliation due to desiccation. Diagnostic traces of planing most preserved on the lateral faces in the proximal and medial parts of the tools. At the base of the tool revealed of transverse fracture, probably occurred during the use of this artifact.

Antler point from Kara-Bom site has analogies in another IUP and EUP archaeological complexes of the Altai region. Upper palaeolithic assemblages of Denisova cave (North-West Altai) contains the largest series of bone points, made by planing from bone, ivory, antler, and dates from 50,3–29 ka BP (uncal). Another bone industry found in EUP assemblages of the Ushlep–6 site (North-East Altai), which was dated 42–39 ka BP (uncal). The single bone points, which date 44–19 ka BP (uncal), found in the Strashnaya cave.

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INVESTIGATING CHRONOLOGY WITH THE ABSOLUTE DATE OF THE UPPER PALEOLITHIC SITES EXCAVATED IN JEONBUK REGION

(based on radiocarbon dating results and artifact assemblage)

Since 2000s in Jeonbuk region, a total 29 Paleolithic remains have been excavated and investigated, and around 150 remains have been excavated and identified during surface survey. Until now, the Paleolithic studies in Jeonbuk region was mainly about the type of stoneware and artifact assemblage during the certain period, and chronological in-depth study on artifact assemblage and certain stoneware by utilizing OSL and AMS have rarely done. For the chronological recording of Upper Paleolithic era of Jeonbuk region, this paper has grasped the temporal location of the remains by mainly applying AMS absolute age measurement and artifact assemblage. In order to confirm that the AMS absolute age measurement, which confirmed at the remains, has correct absolute age measurement, I set the criterion for the type of sample, accordance of multiple-period measurement, stratigraphic order, distinguishing error range and examined the possibility of apply, defer, reject to the age measurement of the remains. And at the same time, I calculated correct period of the remains by using Oxcal Programme‘s IntCal 13 calibration curve. The three applicable remains can be divided into three artifact assemblages: simple core and layered stoneware artifact assemblage where the stoneware was manufactured with irregular form of core and layers; blade tool artifact assemblage where the stoneware was manufactured with blade tool technique; and lastly, microblade artifact assemblage. And these remains’ periods were identified as following: simple

core and layered stoneware artifact assemblage is confirmed from 45,000 cal B.P – 17,000 cal B.P; blade tool artifact assemblage is confirmed from Jinan Jingeuneul remains to Wanju Deokdong C remains, that is to say from 27,000 cal B.P – 7,000 cal B.P; microblade artifact assemblage is confirmed to have the same period as blade tool artifact assemblage. These aspects are not much different from the aspects which confirmed from the remains judged as deferred and its applicated periods. And at Jinan Jingeuneul remains and Imsim Haga remains in Jeonbuk region, the Japanese artifact assemblage such as knife-shaped stoneware, stone mortar-shaped stoneware, sharpened stone, etc., and in some Sageunri remains in Jeonju, there have been confirmed artifact assemblages such as Gukbuma curb-stone and in Seoduri remains in Iksan, there have been confirmed artifact assemblages such as Yukyeongsik point – they all show us a complex artifact assemblage aspect of that time. To clearly see the characteristic of Jeonbuk region, I examined the period and artifact assemblage of Upper Paleolithic remains of Korea (mainly South Korea) exactly the same way as I did for the Jeonbuk‘s remains. Upper Paleolithic remains in Korean can be roughly divided into 3 artifact assemblages: simple core, layered stoneware artifact assemblage, stone blade artifact assemblage, microblade assemblage. There are eight remains which applicable periods are confirmed: Cheolwon Jangheungri remains, Namyangju Hopyeongdong remains, Hongcheon Hahwagyeri remains 1st cultural zone, Daejeon Daejeongdong remains, Daejeon Yongsandong remains, Geochang Jeongjangri remains, Jinju Jiphyeon remains, and Jangheung Sinbuk remains. In addition to the applicable remains, I also referred to those deferred remains as well. After reviewing the Upper Paleolithic remains in Jeonbuk region and Korea comprehensively, simple core and layered stoneware artifact assemblage continually lasts from before the Upper Paleolithic period, 45,000 cal B.P to 11,000 cal B.P, and it is confirmed that it coexists with other artifact assemblages consistently. It was confirmed that blade tool artifact assemblage was continued to exist

from Pocheon Hwadaeri remains‘s second cultural layer(deferred, absolute age), 35,000 cal B.P to Wanju Deokdong C remains, 18,000 cal B.P. Finally, microblade artifact assemblage is confirmed to continually existed from Cheolwon Jangheungri remains, 29,000 cal B.P to Upper Paleolithic and transition point of a Neolith if I consider Jeju Gosanri remains. As the result of the examination, these differences are confirmed. In the case of the chronology through existing uncalibrated period, the remains where artifact assemblage of blade tool and microblade of Korean Upper Paleolithic period were excavated seem to be concentrated between 25,000 B.P – 13,000 B.P, whereas in the calibrated period, the remains concentrate between 30,000 cal B.P – 18,000 cal B.P. Then, after LGM, along with interstadial, it was confirmed that Upper Paleolithic culture gradually disappears. However, in the calibrated period, Upper Paleolithic culture tends to be rapidly disappeared after 12,000 B.P. The microblade artifact assemblage of Korean Upper Paleolithic period tended to disappear rapidly entering into interstadial, whereas during this period at the Yellow River region in China, remains including the microblade artifact assemblage increased sharply; we can see the phenomenon of consecutive transition to the Neolithic period. Through this aspect, we can presume that during LGM (Last Maximum Glacier) period, those Upper Paleolithic inhabitants, the microblade culture group, who resided within the coastal environment of the West Coast has largely emigrated to China due to the Current sea level rise; while in Korea, except for some Southern Coastal Area and the Jeju Island, the most part of it shows non-resident aspect of population. This research is now in the stage of reviewing, and it is expected that the results will be continuously supplemented and newly reviewed by incessant study and excavation of the remains.

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AN EXPERIMENTAL STUDY ON THE TECHNIQUE OF RIDGED-HAMMER BIPOLAR FLAKING IN CHINA

Ridged-hammer bipolar flaking (RHBF) is a method of lithic production that has been predominantly found in southwest China. This technique was firstly seen and named in Xiaohuidong Cave, Guizhou Province in 1970s. The fieldwork of recent years suggests that it is widely found in the region of the Three Gorge, and it is also reported in Fujian, Taiwan and Southeast Asia. According to the current discoveries, the appearance of this technique can traced back to 200,000 years ago, in Wanshouyan, Fujian Province. This technique reached its highest extent of sophistication in the early Neolithic, and remained its existence until Shang Dynasty. It has been argued that the RHBF flakes can be produced by throwing or a singlehanded bipolar flaking on flat boulders. Our new experiment compares bipolar flaking, throwing, anvil touching, and hammer striking with RHBF in the efficiency of production and form of final product. This study argues that the right gesture of RHBF should use bipolar flaking with both hands holding a heavy hammer while a flat boulder is fixed on the anvil. This work further indicates that RHBF is a highly specialized method in order to produce a thin, flat and large flake from a flat boulder. The use of raw material is rather wasteful with this technique. It has certain requirements on the size, form, quality of raw material, as well as the size

and form of hammer, but it has rather low technological requirement for the operators, either male or female, either sophisticated in flaking or not.

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COLD DESERTS, HUMAN DISPERSALS ACROSS ASIA AND THE DEVELOPMENT OF HIDE BASED CLOTHING

One of the most challenging aspects of a northern dispersal of Homo sapiens across Asia was when they first encountered cold deserts, i.e. ones with prolonged sub-freezing winters. These deserts expanded in the last glacial cycle and were largely continuous through northern Iran, Central Asia and into Mongolia and northern China. Occupation of these regions by both Neanderthals and H. sapiens was likely intermittent and it is most unlikely that the Initial Upper Palaeolithic (IUP) represents a single dispersal event. Instead, it is likely to consist of numerous short episodes with repeated local extinctions. One of the key innovations that H. sapiens had to devise was warm, insulated clothing made from animal hides, instead of clothes made from plant fibres, as was likely in the southern dispersal across Asia. Hide-based clothing made from animal skins requires a complex sequence of manufacturing processes in removing fats and unwanted hairs, and making them soft and supple. The technology for hide working appears to have been first developed by Neanderthals, and hide working may have been a skill that H. sapiens obtained by emulating Neanderthals. If so, it is a rare example of our species learning a new skill from another.

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THE EARLY UPPER PALEOLITHIC IN THE ALTAI MOUNTAINS

The Altai Paleolithic is the best-studied part of the Quaternary history of Central and Northern Asia. Archaeological research in the Anui River valley in the northwestern Altai has yielded stratified sites allowing for the construction of chronological sequences covering the Middle and Upper Pleistocene. This time span encompasses the development of human culture and environment from the Middle to the Upper Paleolithic.

In the period of 50–40 ka BP in the territory of the Altai, a gradual formation of the cultural complex of the Early Upper Paleolithic on the basis of local traditions was taking place. The Altai assemblages of stone artifacts of the Early Upper Paleolithic testify to mass production of narrow thin blades that were used as a basis for various special tools. A tool set acquired a novel thing, microblades that serve as blades for composite tools. Tools and ornaments made of bone, mollusk shell and gem stones are yet another innovation. The set of adornments include: miniature needles with a bored eye, pendants made of animal teeth, bone cylindrical beads with symmetrical rows of deep and wide incisions, beads and rings made of mammoth tusk, flat bead-rings made of fossil ostrich egg-shell, mollusk shells with man-made holes, pendants made of soft minerals, ring made of marble and bangle made of chloritolite. These artifacts were found in Early Upper Paleolithic layers of the Denisova Cave associated with the human fossils of a formerly unknown hominin type named as the Denisovan.

The Denisovan population co-inhabited the Altai region with the easternmost Neanderthal population group. The Neanderthal fossils were

discovered in the Chagyrskaya, Okladnikov and Denisova Cave. The lithic culture practiced by the Denisovans was rooted in the earliest strata in the Denisova sediment sequence. Subsistence strategy of the Denisovans was not inferior and even superior in some aspect to that of the anatomically modern humans who lived in other places during this period.

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PALEOLITHIC STAGES IN MIDDLE SIBERIA

Middle Siberia is the vast territory in Russia, situated in Enisey River basin, and includes three administrative subjects –Republics of Khakassiya and Tuva and Krasnoyarsk region. Paleolithic occurrences here are the key sites for understanding the problems of initial human occupation of Northern Asia. Here we describe the current stage of multidisciplinary research of geoarchaeological objects and cultural chronological divisions in Paleolithic of Middle Siberia. These divisions are based on materials from the most important sites. The oldest stage is associated with initial human occupation of Middle Siberia in Early Pleistocene, the discovery of Torgalyk`s Acheulean bifaces by S.N. Astakhov in 1987. Since that time the Early Paleolithic sites, such as Kamenny Log, Razlog II, Razliv, Berezhekovo. Second stage is presented by Middle Paleolithic sites with the complexes of Levallois-Mousterian character, found in Sagly River valley in Tuva, Dvuglazka grotto in Khakassiya, Kurtak geoarchaeological area. Middle Paleolithic sites are disperced at the territory from Southern Tuva to North Minusinsk basin in Early Murukhty geological complex. Third stage is the transition from Mousterian to Late Paleolithic in Middle Siberia (Karginsky interstadial) and presented by stratified sites in Kurtak area. Forth stage (Karginsky-Sartan time, 40–10 kya) includes three divisions: the Early Late Paleolithic, presented by complexes of Malaya Siya, Taragarikha, Kashtanka, Chany, Kurtak IV, Pokrovka, Derbina V (lower layer), Ust-Kova (lower horizon); Middle Late Paleolithic, characterized by blade production (26 – 15 kya) and presented by complexes of Strizhovaya gora,

Mayninskaya, Listvenka, Achinskaya, Ust Kova sites and Afontova culture; Final Late Paleolithic (15 – 10 kya) is widely spread in the Middle Siberia and known in Kokorevskaya culture, Mayninskaya, Golubaya, Ui, Listvenka, Druzhinikha, Kashtanka sites.

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REVISITING THE "CHINESE MIDDLE PALEOLITHIC"

"Middle Paleolithic" is a controversial issue in Paleolithic research in China. In the past, the author and others proposed that there were no real Middle Paleolithic techno-complexes in China and East Asia comparable to the Mousterian industries prevailed in western Eurasia during the "Middle Paleolithic". Instead, the "Early Paleolithic" and the "Late Paleolithic" developmental stages were suggested for the Chinese and East Asian Paleolithic sequence in order to conduct meaningful comparative study between the East and the West and to emphasize the differences and variability in lithic technological trajectory in different parts of the world. Recently, a few sites with Levalloisian components and Mousterian-style artifacts have been discovered, excavated and analyzed in northwestern and northern china, mainly in Xinjiang and Inner Mongolia. Such discoveries made some researchers argue that there was Middle Paleolithic cultural elements in the Paleolithic record in China, even though such assemblages are distributed only in marginal and limited areas in the vast region. The paper will report the new progress in such archaeological investigations and discuss its implications for the study of human migration, interaction and adaptation in East and Northeast Asia during the Late Pleistocene.

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REFINING THE CHRONOLOGY OF SMALL FLAKE-BASED ASSEMBLAGES DURING THE EARLY UPPER PALEOLITHIC ON HOKKAIDO (Japan)

Recent progress of reliable geochronological studies of the Upper Paleolithic in northeastern Asia has provided a basis for scientific debate on human evolutionary history, notably modern human colonization into high latitudes, an evaluation for the decolonization hypothesis of Siberia during the Last Glacial Maximum (LGM), and the timing and dispersal routes of humans into Beringia. In Hokkaido, where encompassed to the southern part of Paleo-Sakhalin-Hokkaido-Kuril Peninsula (PSHK), a late Pleistocene peninsula situated in the southern margin of northeastern Asia, accumulated case studies of site-based geochronology where thick layers of Late Quaternary tephra have provided ideal contexts to determine the age of Late Pleistocene human occupations. Results of recent studies suggest that the southern part of PSHK peninsula was occupied ca. 30,000 years ago, and the three lithic assemblages have been attributed to the following geochronological framework: small flake-based assemblages dating to ca. 30,000 years ago; blade- and flake-based assemblages dating between ca. 27,000 to 25,000 years ago; and various microblade assemblages dating between ca. 26,000 and 15,000 years ago. However, solid geochronological evidence to determine the chronological dates for the small flake-based assemblages (ca. 30,000 years ago) has not been obtained yet, while the LGM and post LGM assemblages securely placed with numerous reliable site-based evidences. Given this situation, here I discuss on the ages for the

small flake-based assemblages in the southern part of PSHK Peninsula with newly obtained AMS ^{14}C dates.

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CHRONO-SPATIAL PATTERNING OF THE LATE PLEISTOCENE LITHIC ASSEMBLAGES FROM EAST AND SOUTHEAST ASIA

Currently, we participate with PaleoAsia project, and create Paleolithic DB, which requires a description of the lithic industry. However, unlike the western Eurasian region, East and Southeast Asia do not have an adequate setting of the lithic industries based on stone tool technology. Thus, it is difficult to concretely understand chronological and regional developments of the Late Pleistocene lithic assemblages in East and Southeast Asia.

On the other hand, in recent years, the accuracy of dating of the lithic assemblages has developed due to the increase in measurements of absolute dating such as AMS, OSL and so on as well as deepening of geological knowledge such as the loess-paleosol sequence. Further, the accumulation of a sufficient number of detailed observations of lithic assemblages by archaeologists has ensured that the technological features of them are gradually becoming evident.

On this occasion, we will describe stone tool technologies of the lithic assemblages by using the framework (“Lithic Modes”) proposed by Shea (Shea 2017), and typify lithic industries based it. Finally, we will propose chrono-spatial patterning of the lithic assemblages from E. and SE. Asia during OIS 6 – OIS 2.

References

Shea, J.J. (2017) *Stone Tools in Human Evolution: Behavioral Differences among Technological Primates.* Cambridge: Cambridge University Press.

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RAW MATERIAL AND PEOPLE MOVEMENT IN THE TERMINAL MIDDLE– INITIAL UPPER PALEOLITHIC AT THE TERRITORY OF MONGOLIA*

Due to climatic conditions, most of the Mongolian Paleolithic sites are exposed. Two areas where stratified sites were found and investigated from 1949 to 2017 are the Orkhon-Selenga belt and the eastern part of the Gobi Altai. All of the stratified sites of the Orkhon-Selenga belt share a constellation of common feature: in all cases, sources of raw materials suitable for manufacturing artifacts are at distances of no more than several hundred meters, both primary outcrops and pebbles from alluvium. Ancient people preferred to knap the chert clasts. Other varieties are rare in the assemblages. The study of human migration routes is associated with the occurrence of sedimentary rocks. Such rocks are widespread in the Orkhon-Selenga belt. The belt of these rocks also stretches through the entire Central Asia from Uzbekistan to Mongolia via Kazakhstan. Human migrations through the Selenga Corridor have been studied in the recent years. The IUP industries constitute a single cultural entity in the territory of the Altai, Transbaikal region, and Northern Mongolia, which is also corroborated by the radiocarbon dating. The Final Paleolithic Selenga culture is typical of Transbaikal region and Northern Mongolia. Another possible migration route stretches between the Central Mongolia and the Russian Altai passing through the Mongolian Altai, Dzungaria (Xinjiang), and East Kazakhstan.

The preliminary analysis of lithic raw materials shows that IUP industries here are based on the same sedimentary rocks present in the Middle Selenga area.

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FORMATION PROCESS OF PALEOLITHIC SITES IN THE LOWER HAN RIVER BASIN, KOREA

The present research aims to study the formation processes of the Paleolithic sites located in the lower Han River region by assessing the depositional patterns and distribution patterns of stone artifacts. The lower Han River Paleolithic sites share several noticeable patterns of deposits mainly due to the low elevation and its close location to the river: a) stone artifacts are found mixed together with angular rock fragments in the layer of weathered sediments of colluvium right above the bedrock, and b) no typical Late Paleolithic artifacts such as blades and tanged points were recovered from the upper layers. While various scientific analyses including OSL and AMS dating methods were applied, a reanalysis of the site and its lithic assemblage from an archaeological perspective would be required to achieve a more rounded understanding of the site formation process. The stratigraphic sequence of studied sites can be divided into three recognizable units, weathered colluvial deposits, lower paleosol and upper paleosol layers, from the bottom to the top. Artifacts from the bottommost colluvial deposits share common technological aspects with those from the lower paleosol layers, while artifact assemblages of the upper layers show some signs of difference including smaller size. OSL dates and depositional characteristics suggest that the bottom colluvial layers were formed during the early MIS 3 probably under the influence of summer monsoon, while the lower paleosol layers were deposited during the late part of MIS 3. And the upper paleosol

layer was formed during the cold and dry conditions of the MIS 2, as the prominent soil cracks indicate. Fewer number of lithic artifacts were unearthed from the upper layers.

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A REPORT ON THE PALEOLITHIC SITE IN THE SOUTHERN NEPAL

Nepal's Paleolithic studies were initiated by the German Geological Survey teams (Gudrun Corvinus), which began in the 1980s. The main site of the survey, Siwalik is distributed across Nepal, Pakistan, India and Bhutan, and the Paleolithic remains are found on the upper floor of the late Siwalik. Jeongok Prehistory Museum conducted an index survey on southern Nepal in July 2016. This area can be divided into three rivers. The Babai-Tui-Lapti River flowing through Siwalik are divided into the Dang, Tui, and Deokhuri area. The archeological layer structure is idendified in Arjun of Dang area. The basic layer of Arjun (as known as Babai layer) consists of the gravel layer, silt layer, the gravel layer, the reddish-brown soil layer, and the topsoil.

Paleolithic artifacts were identified from in the lower gravel layer and the reddish brown layer. The artifacts we have identified are from the Middle and Late Paleolithic periods. Most of the cobble used in stone tools are quartzite cobble. The medium/large cobble (around 10~40cm) and small cobble (around 10cm) seem to have been used for different purposes. The medium and large cobble were made through shaping, and made several chopper, large flake (failed cleaver), and core-scraper or polyhedran. The small-sized cobble debitage is mainly identified as "bipolar-technic" or "centripetal technic".

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MIDDLE PALEOLITHIC CHAGYRSKAYA CAVE IN ALTAY

The Chagyrskaya Cave is located in the pre-mountains of the north-western part of the Altay region, Russia. The cave faces north and is situated at an elevation of 353 metres above sea level and 19 m above the Charysh River. It consists of two chambers with a total area of *c.* 130 m^2. The stratigraphic sequence (max 3.5 m thick) is subdivided into Holocene, and Pleistocene sediments. Based on OSL analysis of the samples from layers 5-6c/2 the final MIS-4 and beginning of MIS-3 age has been proposed [Derevianko et al., 2018]. Layers 6a-6c/2 were accumulated under the condition of continental arid climate. Dry steppe communities were widespread. The Human occupations associate with continental dry conditions. [Rudaya et al., 2017]. The Human remains originate from the following layers: 5-6c/2. The cultural deposits of Chagyrskaya cave contain the most numerous collections of Neanderthals remains in Northern Asia [Viola et al., 2012]; more than 82 pieces of cranial and post-cranial parts from several different ages individuals.

During the 2007-2017 seasons, excavation was conducted at the entrance and central chamber of the cave; the excavated area is about 39 m^2. The Paleolithic occupations in the Chagyrskaya cave demonstrate high density of artifacts and bones. The animal remains from layers 6b and 6c accumulated due to the specialized bison (*Bison priscus*) hunting activities of Neanderthals [Rudaya et al., 2017]. The layers 6a, 6б, 6в/1 and 6в/2 contain the abundant stone artifacts: more than 90000 pieces. The local

source of raw material – pebbles from river valley – was used for artifacts production. At present time, the technological and typological characteristics of Chagyrskaya cave artifacts are based on the results of detailed attributive studies of layer 6/B1 assemblage. The artifact categories composition is characteristic for on-site model of cores reduction and tools production. Obtained results demonstrate that Chagyrskaya cave assemblages is a manifestation of separate and unique Middle Paleolithic variant in Altay and has no technological and typological similarities to regional Levallois-Mousterian techno-complex.

References

Derevianko A.P., Markin S.V., Kolobova K.A., Chabai V.P., Rudaya N.A., Viola B., Buzhilova A.P., Mednikova M.B., Zykin V.S., Zykina V.S., Zazhigin V.S., Vasiliev S.K., Roberts R.G., Bo L., Jacobs Z. (2018) *Interdisciplinary Studies of Chagyrskaya cave – Middle Paleolithic site of Altai*. Novosibirsk: IAET SB RAS Publ. – in press.

Rudaya N., Vasiliev S., Viola B., Talamo S., Markin S. (2017) *Palaeoenvironments during the period of the Neanderthals settlement in Chagyrskaya cave (Altai Mountains, Russia)* Palaeogeography, Palaeoclimatology, Palaeoecology (467), 265–276.

Viola B.Th., Markin S.V., Buzhilova A.P., Mednikova M.B., Dobrovolskaya M.V., Le Cabec A., Shunkov M.V., Derevianko A.P., Hublin J.-J. (2012) *New Neanderthal remains from Chagyrskaya Cave (Altai Mountains, Russian Federation).* American Journal of Physical Anthropology, vol. 147, Suppl. 54: 293–294.

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RECENT DATA ON THE ALTAI MIDDLE PALEOLITHIC

(based on evidence from Denisova Cave)*

Comprehensive archaeological studies conducted over the past few years at Denisova Cave have made it possible to examine the lower part of the Pleistocene sequence in the East Chamber of the site. The earliest archaeological evidence has been recorded within lithological layers 15 and 14 deposited during MIS 7. A lithic industry associated with this part of a stratigraphic section has been attributed to the early Middle Palaeolithic and can be characterised by the use of disc-shaped cores and Kombewa cores. Different types of denticulate, notched, spurred tools and scrapers dominate the tool assemblage. Collections recovered from layers 22 and 21 in the Main Chamber of the cave also correspond to this cultural-chronological phase. A lithic industry from the overlaying Middle Palaeolithic deposits reflects a certain technical-typological discontinuity with the preceding archaeological assemblage assigned to the early Middle Palaeolithic. The primary flaking in these industries was associated with using Levallois technology aimed at producing elongated points and blades that do not occur in the collections from layers 15 and 14, 22 and 21. To date, it can therefore be argued that the Palaeolithic assemblages from the lower part of the Pleistocene deposits at Denisova Cave are the oldest in the Altai region after the cobble tool industries from the site of Karama.

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ISOTOPIC RECONSTRUCTION OF SEASONAL CHANGES OF ENVIRONMENT AROUND CHAGYRSKAYA CAVE (ALTAI) DURING NEANDERTHAL OCCUPATION

In this paper we present an insight into seasonal changes in the environment of Neanderthals from Chagyrskaya Cave through the isotopic analysis of animal teeth. We used several specimens of wild horse and steppe bison teeth for the high-resolution sequential isotopic sampling, to reveal the changes in Paleolithic environment month by month. The oxygen isotopic composition was used to calculate the seasonal and annual changes in weather (climate), while carbon, derived by herbivores from plant food, was used to reconstruct the type of vegetation that served as a food source in particular seasons. To set our interpretations in a seasonal time scale, we supported the isotopic results with the analysis of the season of death, established for the same tooth specimens. This allowed us to propose the preliminary pattern of annual migrations of horse and bison herds in Altai during the studied interval of Pleistocene. The combined use of carbon and oxygen analyzed parallel in the same samples serves as an additional indicator of animal migration patterns.

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SEDIMENTS OF CHAGYRSKAYA CAVE – NEW EXCAVATIONS AND NEW INTERPRETATIONS

Chagyrskaya Cave in Russian Altai was initially excavated during 2007-2013. Then the preliminary stratigraphy and scheme of site formation processes were proposed. In 2017 we started new programme of geological investigation, including the studies of sedimentary macro- and microfeatures, texture and geochemistry. In this paper we present new results and propose modified lithostratigraphical scheme. According to new detail observations the lower part of sequence (layers 6c-6d-7), including Neanderthal occupation levels, was disturbed by cryoturbation, which might result in re-orientation of artifacts, but also their relocation to both upper and lower strata. The middle part of sequence (layers 5-6a-6b), also containing Middle Paleolithic material, was deposited as an effect of colluvial processes. This series in more complex than previously thought and possibly contains re-deposited material from the lower series. According to these data, most probably only layer 6c represents the Middle Paleolithic levels preserved in situ.

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THE HUMAN OCCUPATION OF CENTRAL ASIA IN THE MIDDLE PLEISTOCENE:

INVESTIGATIONS OF SELUNGUR CAVE (Kyrgyzstan)

One of the most interesting sites in Central Asia is the cave of *Sel'ungur*, located in the Sokh river valley of the Fergana depression (Kyrgyzstan), near the present day town of Khaidarkan. Excavations in the 1980s revealed an at least 8 m thick sequence of Late and probably Middle Pleistocene deposits with a rich faunal and archaeological record. The hominin status of six teeth, found at this site, is very doubtful, but a child humerus is Neanderthal-like based on a preliminary examination. The dating of the site is problematic, but based on a U-series date and the fauna of the lower layers more likely date to OIS 5e or older. Since 2014, we re-excavate this crucial locality and recover about 1900 lithics, of which ca. 900 are debris. The Sel'ungur industry shows several peculiarities when compared with other Middle Palaeolithic industries from Central Asia: evidence for the use of Levallois technology, such as faceted platforms or dorsal pattern is not present in any lithics. In general, the industry is very small in size, which can't be explained by the size of the available raw material.

In contrast to the previous interpretations of the Sel'ungur material, we do not see any evidence for the presence of Acheulean technology or

typology. Rather, this seems to be a Middle Palaeolithic industry in a broader context, closer to European Middle Palaeolithic assemblages than to anything else in the region. We also found material better attributed to the Upper Palaeolithic and possibly to the Mesolithic.

In summary, even though Sel'ungur is not the Acheulian assemblage expected before, the site is important, as it is one of the very few in the region that is stratified and contains both Middle and Upper Palaeolithic industries.

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THE NATURE OF KOREAN HANDAXES: THEIR JUXTAPOSED FEATURES

More handaxes have been found in the Korean Peninsula during the last few decades. The great amount of data on handaxes (e.g., measurements, chronometric and stratigraphic information) provides for secure analytical studies on the given assemblage. Although the reliable information has increased, the affinities with that from west of the Movius Line (ML) are not strong enough. Compared to conventional western Acheulean assemblages, Korean handaxes are not collectively homogeneous. Some characteristic features deviate from those of the western pattern, morphological features partly overlap between the handaxes from west and east of the ML. However the additional features, which are the frequency of handaxes per site and the temporal distributional pattern, suggest that these two assemblages are not consistently homogeneous. Especially, the age of handaxes from Korea needs to be examined. Conventionally, the Acheulean handaxes are treated as a strong cultural marker during an earlier episode within the Paleolithic period. But the Korean chronometric data offers rather controversial results. Typical Acheulean handaxes are commonly regarded as culturally mediated outputs, so an ancestor–descendant relationship is inevitably highlighted. If the implication is right (i.e., if handaxes are the result of cultural tradition), the Korean handaxes ought to have the associated time range with the western cases in terms of the temporal rate of transmitting manufacturing ideas. Moreover, the time range for the handaxes from neighboring regions

should be closer. However, the Korean handaxes do not show a significant temporal connection, so it is difficult to argue that a strong cultural tradition is the main element for understanding the Korean assemblage.

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CHANGE OF LITHIC ASPECTS FROM EARLY TO LATE UPPER PALEOLITHIC AT SUYANGGAE LOCALITY 6 (SYG-6), KOREA

The Suyangge site is located at Aegok-ni and Hajin-ri, Jeokseong myeon, Danyang County, Chungbuk Province, Korea (MSL 125~132m). 13 excavations have been carried out from 1983 to present By Chungbuk National University Museum (CBNUM; 1~8th) and Institute of Korean Prehistory (IKP; 9~13th). In the 3 localities, the Paleolithic cultural layers(CL) were discovered:

Loc. 1 (Middle-Upper Paleolithic): Exc. 1 ~ 4, 11

Loc. 3 (Lower-Upper Paleolithic): Exc. 8 ~ 10

Loc. 6 (Upper Paleolithic): Exc. 11 ~ 13

The Cultural Layer 1 (CL 1) is distributed in the middle and Northeastern part of excavated area. While most of artifacts are related to tool-making, rate of tool is relatively low. Shale is the main raw material, obsidian, quartz, hornfels, crystal, rhyolite were used as well. 686 pieces were excavated in this layer.

CL 2 shows high concentration of artifacts in the middle of excavated area, yielding 20,904 pieces that is largest number among CLs. Most of Artifacts are related to tool-making where blade and microblade manufacturing appears as the mainly utilized technology. Given various types of microblade-core, microblade and spall, it is expected to provide crucial data to reconstruct the microlithic technology. While most of tools were made of blades, ratio of end-scrapers with steep edges in distal end of

blade is noticeably big. In addition, there were unearthed side-scraper, burin, lancelot point, stone bowls made by grinding talc, axe-shaped tools, and partially ground stone tool in the layer.

CL 3 shows elongated distribution north and south in the western part of excavated area. All 7,355 artifacts were discovered. Moreover, there were observed application of microlithic technology that can be closely connected to the microlithic production of CL 2, which implies the emergence of the technology. In addition, there were excavated some unique lithic artifacts such as pebble stone with 23 precise engraved lines, engraving of human face, and other line-engraved stones from the layer.

CL 4 is focused on the northwestern part. Among 10,860 remains, 94.8% of them were made of shale, showing remarkable concentration of single raw material. While blade and tanged-points were intensively manufactured, formal tools are relatively rare forming uncomplicated lithic composition. Production of large blades dated older than 42ka Cal.BP predates any other sites having yielded early blade technology by several millenia.

Each cultural layer of the Suyanggae Locality 6 show difference in lithic technology and raw material, that can provide us a picture how application of lithic technique had been changed through times;

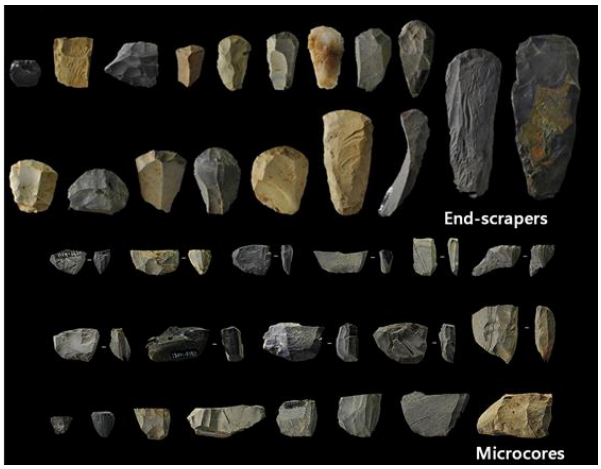
CL4: blade and tanged-points were intensively manufactured, formal tools are relatively rare forming uncomplicated composition.

CL3: appearance of new techno-cultural systems like line-engraved and application of microblade technology.

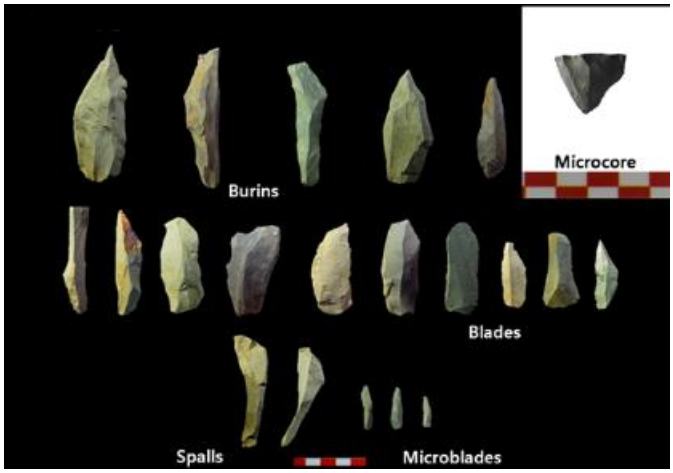
CL2: development of microblade making and the increase of living tools such as end-scrapers.

These assemblages of Suyanggae Locality 6 shows the changing features by environmental conditions from MIS3(CL.3~4) to

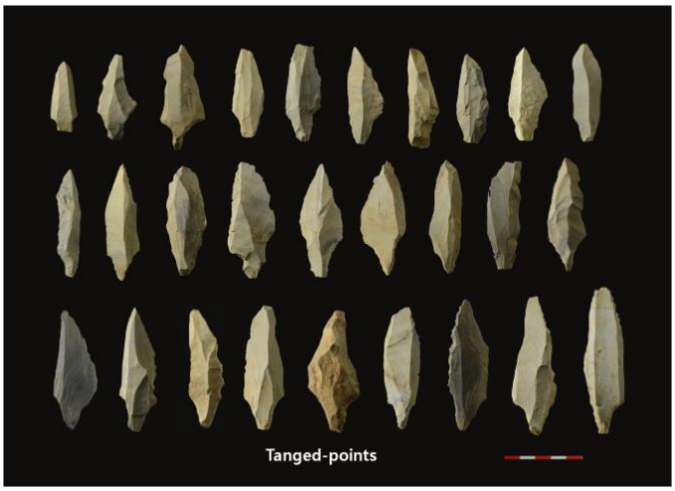
MIS2(CL.1~2). After completion of lithic typology, observation of aspects, and refitting, it is expected to obtain more detailed and thorough insights in the lithics and characteristics of the site.



Ph. 1. Tools from Cultural Layer 2, SYG-6



Ph. 2. Tools from Cultural Layer 3, SYG-6



Ph. 3. Tanged-points

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MIDDLE PALEOLITHIC IN CHINA: NEW DISCOVERIES AND THEIR IMPLICATIONS ON HUMAN DYNAMICS IN NORTHERN ASIA DURING MIS 3

For many years now, there have been debates about whether the term 'Middle Paleolithic,' generally associated with Neanderthals in western Eurasia, was even applicable to China and adjoining areas. As a result, a two-phase model of the Chinese Paleolithic record has been increasingly suggested: Early and Late Paleolithic. However, recent discoveries from Chinese Central Asia and Inner Mongolia have largely changed our knowledge of Middle Paleolithic in the region. Since the beginning of this century several lithic assemblages with Levallois technology and Middle Paleolithic typological tools in northern China have been located. Here we will introduce the stratigraphy, chronology, and the general lithic technology of Jinsitai and Sanlong caves in Inner Mongolia, and Tongtian cave in Xinjiang Province. A preliminary comparison with the artifact assemblages from the Russian Siberian Altai sheds light on our understanding of population movements and technology diffusion in eastern Eurasia during Late Pleistocene.

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THE EARLY NEOLITHIC MICROLITHIC (MICROBLADE) INDUSTRY OF NORTHEASTERN CHINA: INSIGHTS FROM AN EXCAVATION OF A MID-6TH MILLENNIUM BCE XINGLONGWA CULTURE SITE 12D16, FUXIN

Recently, as part of the Fuxin Area Survey Project in Liaoning Province, Northeastern China, a newly discovered Early Neolithic site (Site 12D16; ca. 5,450 BCE) was excavated and assigned to the Xinglongwa Culture (6,200–5,400 BCE). The Xinglongwa is well known in as one of the earliest Neolithic cultures north China and Xinglongwa sites yielded the earliest evidence known so far of domesticated millet. However, up till now excavations of Xinglongwa sites were carried out on a very large scale with less attention payed to micro-stratigraphy, spatial distribution of artifacts, and detailed analysis of the lithic industry. The meticulous excavation methods of Site 12D16 (known also as *Tachiyigzi* 塔尺营子), the high-resolution spatial distribution analysis and the technologically-oriented lithic assemblage analysis (*chaîne opératoire*) applied to the findings, enabled, for the first time in this region, the reconstruction of the manufacture process of several lithic industries, which include pressure-knapped microliths (microblades). Here we present our insights regarding this microlithic

industry, which constitutes a significant portion of lithic manufacture by these early sedentary communities. Since it appears to have been commonly produced by various knappers as a household routine, we suggest it reflects the non-specialized socioeconomic organization of Xinglongwa communities.

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THE EMERGENCE AND DEVELOPMENT OF PRESSURE DEBITAGE IN CENTRAL AND WESTERN ASIA

An early MIS2 context of the Upper Paleolithic from northeast Asia produced the oldest evidence for pressure technology in microlithic production. The emergence of this technology in other regions of the world is considered a result of “diffusion” from the core regions of northeast Asia. However, this interpretation has not been substantiated with sufficient evidence of well-dated pressure debitage assemblages on a global scale. This paper reviews available evidence from Central and West Asia, including the new data from recent fieldwork. This evidence shows the emergence of pressure debitage no earlier than the late MIS2 in Central Asia and the early MIS1 in Western Asia, followed by a rapid development of similar technology. The spatiotemporal gradient to the west is apparently in line with the current diffusion theory from the east.

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ANALYSIS OF HUNTING-TOOL PRODUCTION AND RAW MATERIAL STRATEGIES IN THE LATE PALEOLITHIC OF KOREA

In the Late Paleolithic of Korea, the lithic assemblages has become diverse such as pebble tools and flake tools made from quartz, tanged-points and microlithic cultures which are new technology of Late Paleolithic. The structural change also appeared into the raw material using patterns. Before then, most of stone tools are made from quartz and quartzite so-called 'coarse-grained materials'. which are available from nearby sites. But in Late Paleolithic, other raw materials such as shale, hornfels, tuff and rhyolite which called fine-grained materials had become begin to be used for new lithic technology of tanged-points and microlithic productions. And also obsidian appeared with microlithic production. These new type of raw materials are distributed in limited areas far from sites. This paper will seek to study understand the tanged-points and microlithic culture in Korea through considering assemblages related to raw material using patterns.

Consequently, tanged-points production is concentrated on fine-grained raw materials source. On the other hand, microlithic production is operated with several kinds of raw materials, and site scales vary according to process of using raw materials.

And tanged-points and microlithic culture can be divided into 5 stages. From the initial stage with appearance of tanged-points and beginning of using the fine-grained raw materials source (stage I), tanged-points technology is found developed gradually and appearance of microlithic

(stage II). And tanged-points technology reaches its peak with pioneering of fine-grained raw materials source, and microlithic production is more developed with beginning of using obsidians (stageIII). After that, tanged-points gradually diminished, microlithic production is more developed with pioneering of fine-grained materials source (stage VI). Finally, pioneering of obsidian source far from sites enabled manufacturer to produce microblades with higher quality (stage V). Among then, tanged-points and microlitic assemblages are coexisted in stage III and VI.

These changes of tool production were closely related with change strategies for acquiring raw materials. In other words, selective use of raw materials and pioneering material sources dynamized the tanged-points and microlithic production, and also founded base of these new technologies which requires more premeditated management of stone tools and raw materials.

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VEIN QUARTZ, A TECHNICAL OBSTACLE OR ADVANTAGE?

The quartz vein is frequently used worldwide from paleolithic age to the recent prehistory. Among archaeologists, quartz is generally meant the quartz vein classed as a mono-mineral rock in the petrographic classification. The morphology and cortex of quartz reflect the context of resource. The form of quartz is divided into cobble and rubble: the first has the smooth neocortex and the last has irregular cortex. The cortex of the state plays an important role in a lithic production. The site 'Punggokri' is an example which shows the gestures based on two different types of quartz. In the case of quartz rubble, the cleavage surface is preferred as the striking platform, but in the case of quartz cobble, the neocortex is favored as the striking surface. In addition, the former was mainly used in heavy pebble tools, while the latter was used in the production of small flake tools. Quartz is usually considered as a second choice since the cleavage surface often introduces the fracture of flake. But if the orientation of quartz cleavage surfaces is read well, the accidents of knapping can be reduced. What is very interesting is that the technical obstacle is inversely profited as an advantageous technique in the site 'Punggokri. The quartz cleavage surface is exploited deliberately to produce flakes. We need analyze more minutely the character of quartz to capture the behavior of prehistoric man well.

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BEFORE THE OBIRAKHMATIAN?

NEW DATA FROM KULBULAK SITE

Kulbulak located on the southeastern slope of the Chatkal Ridge in the Western Tien Shan (Uzbekistan) is among the most important multilayer open-air Paleolithic sites in western Central Asia, because the stratigraphic sequence of the site was considered to be the most complete in this region. The new excavations are particularly interesting due to the presence of an early industry with blade and bladelet technology at the depth of 13.5 m in layer 23, which is a loamy-sandy sediments of mostly an proluvial genesis. The assemblage from the layer (more than 25 000 stone artifacts) is mostly marked by the production blades and points from Levallois (in most cases) and parallel flat-face cores, in combination with radial and truncated-faceted cores for flakes, along with prismatic and narrow-face cores (some with triangular shape) for bladelets prepared on blanks and small nodules. The tool kit (more than 300 items) mostly contains extensively retouched blades (with one or two working edges), pointed blades, thick elongated points (including Levallois), scrapers (including convergent and dejete types), few end-scrapers (including some of carinated shape), few uni- and bifacial tools, along with great number of blanks with irregular retouch. Assemblages with similar features have been reported from western Central Asia, notably at Obi Rakhmat Grotto (also in Uzbekistan). But Levallois technology plays a secondary role in this industry. Taking into account the results of

geomorphological, sedimentological, and stratigraphic studies, Kulbulak is now providing new data showing the presence of an earlier development of blade industry in the region (based on Levallois technology). Previously the emergence of Obirakhmatian industries in the region recognized as a result of cultural influence from the Middle East.

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THE TOLBOR 21 INITIAL – EARLY UPPER PALEOLITHIC SITE (NORTHERN MONGOLIA): CULTURAL SEQUENCE, TECHNOLOGY AND SITE FUNCTION

The Tolbor 21 site is located in the Ikh-Tulberiin-Gol (Tolbor River Valley), a right tributary of the middle reach of the Selenga River in northern Mongolia. The site was excavated from 2014-2017. The archaeological sequence documents several phases of human occupation characterized as Late, Early and Initial Upper Paleolithic but has also yielded evidence for a Middle Paleolithic occupation. The latter was identified in a trench at depths of 6 m and 4.5 m beneath the IUP horizon in a possible paleosol (Layer 13). Assuming that the paleosol corresponds to MIS5e, the few artifacts found there represent one of the oldest open-air occupations known from a stratified context in northern Mongolia. The Initial and Early Upper Paleolithic occupations (Layer 3) date between 37–44 kya uncal BP. Associated with this layer are rich lithic and faunal assemblages that include ornaments, combustion features, and a semi-circular rock alignment. Although classified as IUP, the Tolbor 21 assemblage also exhibits techno-typological features distinct from other collections documented in the Tolbor Valley. While our work is still in progress, implications of the preliminary

results are presented to enhance general understanding of IUP-EUP lithic assemblages, raw material exploitation, and site function in northern Mongolia.

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FUNCTION OF EARLY UPPER PALAEOLITHIC POINTED BLADES IN JAPAN

In the Japanese islands, Upper Palaeolithic lithic assemblages suddenly appear after c. 38,000 cal BP and thereafter their number rapidly increases. The lithic technocomplex between 38,000 and 30,000 cal BP, assigned to the early Upper Palaeolithic (EUP), is characterized by trapezoids, pointed blades, and edge-ground axes. Radiocarbon chronology for the EUP assemblages indicates that while trapezoids made on flake were predominant at the earliest phase of the EUP, pointed blades representing the first blade technology in Japan appeared slightly later (Morisaki et al., in press). Recent use-wear studies show that a considerable number of the trapezoids were used as projectile armatures and played a significant role for hunter-gatherers in the forest-rich environment during the early phase of the Japanese EUP (Sano, 2016). However, the function of EUP pointed blades is still little known. To better understand why the Japanese EUP hunter-gatherers started to make pointed blades in addition to trapezoids, a functional study on pointed blades is undertaken. This paper presents preliminary results of a use-wear analysis of pointed blades from EUP sites in the Tohoku region, Japan.

References

Morisaki, K., Sano, K., Izuho, M. (in press*) Early Upper Paleolithic blade technology in the Japanese Archipelago*. Archaeological Research in Asia.

Sano, K. (2016) *Evidence for the use of the bow-and-arrow technology by the first modern humans in the Japanese islands.* Journal of Archaeological Science: Reports 10, 130–141.

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NEW DISCOVERY OF PLEISTOCENE CEMETERY AT THE SHIRAHO-SAONETABARU CAVE SITE IN JAPAN

At the Shiraho-Saonetabaru Cave Site in Ishigaki Island of the southernmost tip of the Japanese Archipelago, more than 1,000 Pleistocene and Holocene human fossil bone remains unearthed. Based on interdisciplinary surveys of geology, sedimentology, soil science, analytical chemistry, radiometric dating etc., mainly on prehistoric archeology, it was revealed that this Cave Site was a cemetery composed of more than 19 human individuals buried in the Upper Paleolithic. It is considered to have been used for a certain period of UP, more than several thousand years, 28.5 to 20 ka cal BP as an aerial sepulture like a cliff burial grave.

According to the dietary analysis of collagen extracted from the fossil human bones by carbon and nitrogen isotopic analysis, Paleolithic and early Holocene humans depended mainly on land animals and plants for foods, however after the mid-Holocene inhabitants had been started to be used the marine products. Likewise, haplotypes of mt-DNA obtained from the Paleolithic and the early Holocene human bone that succeeded in extraction from collagen are R and B4e, however it changes to M7a after the mid-Holocene. R and B4e are haplotypes that is distributed in the present South China and Southeast Asia, and M7a is common in the basic human group of the Japanese archipelago, so that it can be presumed that the lineage of the human group changed in the mid-Holocene.

Although aerial sepulture like a cliff burial grave is traditional funeral system of Okinawa including Ishigaki Island, which has been known to be used continuously from the Late Jomon period to the present as far, it turned out that it dates back to the Paleolithic.

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TECHNOLOGICAL APPROACH OF LITHIC INDUSTRY FROM YONGSUJAEUL SITE, POCHEON, SOUTH KOREA

Yongsujaeul site is located at the right bank of the Geonji Stream, a branch of the Hantan River. It is adjacent to the confluence where the Geonji Stream and Hantan River meet. As a result of excavation by construction of a flood control dam on the Hantan River in 2013, two Late Paleolithic cultural layers were discovered in this site. The lower cultural layer is dated between 42,000 and 24,000 BP (uncal.) by AMS, and the upper cultural layer is estimated to be around 19,000 BP (uncal.). Technological analysis of lithic production from two cultural layers has allowed to reveal the implementation of many knapping reduction methods and techniques can be distinguished between the lower and the upper cultural layer. The lower cultural layer show a certain specialization in the production of blades. The raw material is nearly all consist of tuff. Blades were generally produced by core preparation and systematic knapping. Bladelets were even derived as final removals blade cores (blade/bladelet continuum). Flaking technique was exclusively direct percussion. Both hard stone and soft stone were used as hammers in knapping processes. The upper cultural layers have a variety of raw materials compared to the lower layer. The acquisition and utilization of raw materials was very strategic. We suggest that three chaînes opératoires exist depending on different raw materials: tuff, obsidian, quartz, etc. Blade production was based on direct percussion with an organic hammer. Micro blades were produced by pressure flaking. Most of quartz flakes were related to bipolar flaking technique.

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BIFACES FROM CHAGYRSKAYA CAVE: THE TECHNOLOGICAL APPROACH

Previously the single bifacial tools found in different industrial variants of the Altai Middle Paleolithic (Sibiryachikha and Karabom) were not considered to be cultural markers that could be used to differentiate the technological/cultural variants. Bifacial tools were rather regarded as a bright, but situational manifestation of the typological variability, especially in the case of the Sibiryachika assemblages. As a result of recent studies of Chagyrskaya Cave, the key-site of Sibiryachikha, it was found that all the bifaces (approximately 300 pieces) are made using plano-convex technology. In the bifacial operational chain several working stages are distinguished: primary pretreatment, plane/convex facial fashioning, thinning, retouching and recharpening. All stages of bifacial production have been found in the assemblage: pre-forms, bifacial tools and tools made on the bifacial thinning flakes accompanied by numerous bifacial thinning flakes and bifacial thinning chips. Use-wear analysis shows that among the analyzed bifacial tools several meat knives and perforators have been identified.

A preliminary study of the bifaces from the second Sibiryachikha site, Okladnikov Cave evidenced the use of the same plano-convex technology. On the other hand, in the Karabom complexes (Kara-Bom, Ust-Karakol–1, Anuy–3), all bifacial tools are made using bi-convex bifacial technology. Thus, the criteria for the technological distinction of bifacial production assumes special importance as a cultural marker that allows the

differentiation the Altai Middle Paleolithic technological variants. Taking into account the fact that Chagyrskaya Cave and Okladnikov Cave are associated only with Neanderthal remains, it can be assumed that bifacial plano-convex technology in the Middle Paleolithic of Altai is linked to the appearance and existence of their population in the region.

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FISHING FOR CHANGE – JORDAN RIFT VALLEY EPIPALEOLITHIC FISHER-GATHERERS IN CHANGING ENVIRONMENTS

The Levantine Epipaleolithic (EP; 23,000 to 11,500 years ago) was a period of unprecedented socioeconomic change beginning at the Last Glacial Maximum with nomadic bands of hunter-gatherers and ending with Natufian sedentary communities. Recent excavation at the site of Jordan River Dureijat (JRD), located on the Jordan River bank in the southern Hula Basin, unearthed a well-defined stratigraphic sequences. JRD is unusual for its outstanding preservation of organic remains, which will enable establishment of a high resolution chronology for the entire Levantine EP. The archaeological horizons of JRD document >10,000 years of repeat visits by hunter-gatherers to a preferred spot. The unique lithic assemblage comprises well-defined typo-chronological markers (microliths) but the primary finds are fishing equipment and numerous fish bones. JRD, is, therefore, a logistic hunting (fishing) station located at the outskirts of the large EP sites of the Hula Valley such as Eynan (less than 10 km to the northwest). This unique, task-specific, short-term sequence of occupations will enable us to explore changing mobility patterns, modes of subsistence during the EP.

The JRD layers contain uniquely well-preserved paleoenvironmental proxies including a rich macro and micro-faunal, ostracods, seeds, fruit, wood and charcoal, well-preserved pollen, and an exceptionally rich mollusc assemblage. These proxies will enable development of models explaining

the impact of changing paleoclimates between the LGM and the Holocene interglacial and their interrelationship with fundamental changes in human ways of life, from hunter-gatherer groups to sedentism and the establishment of agricultural communities of the Neolithic.

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THE STUDYING OF BONE RETOUCHERS FROM CHAGYRSKAYA CAVE ASSEMBLAGE BY 3D SCANNING AND GEOMORPHOMETRIC ANALYSIS OF SHAPE

According to paleoanthropological and genetic data, the Russian Altai marks the easternmost fringe of Neanderthal distribution. Neanderthal fossils were recovered in Chagyrskaya cave, Denisova Cave and Okladnikov Cave. Whereas the Neanderthal fossils from Denisova cave where found without any specific cultural signal, the remains from Chagyrskaya Cave and Okladnikov Cave were associated with a lithic industry hitherto unknown not only from the Altai, but from the vast region between the Ural and the Trans-Baikal region. It is therefore concluded that the presence of this industry, which has been provisionally termed “Sibiryachikha industry”, is directly related to the dispersal of Neanderthals into the Altai region.

According to recent studying the assemblages of the “Sibiryachikha industry” shows the features of Micoquian industries. One of the characteristic features of this industry is the presence of bone retouchers. In the framework of this study, we conducted a detailed analysis of retouchers from Chagyrskaya cave. The method includes the sourcing of the material and method for describing and analyzing artifact shapes using 3D geometric morphometric analysis and multivariate statistical methods in order to explore the strategies developed and use by the group of Neanderthals from

Chagyrskaya cave. As results we identified a variability of the shape of retouchers and the relation between the shape of retouchers and a utilization stage.

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NEW DATA ON THE RADIOCARBON DATING OF THE NEOLITHIC BURIALS OF ALTAI, UPPER OB AND TRANSBAIKALIA*

Due to the new archaeological discoveries and paleogenetic research, at present there emerged a new stage in the study of the Neolithic of North Asia. Such scientific activity requires a total radiocarbon dating of the available materials involving various finds from already known Neolithic sites. The report presents some previously published results and a series of recently obtained data that have not been fully introduced into scientific circulation. They are obtained in Russian and foreign laboratories with the use of different facilities. Calibrated indicators allow us to determine the chronology of the Neolithic complexes under study. In this process there is a new look at the concepts that have been formed earlier, or there is an accumulation of important information for further interpretation of non numerous materials. The main attention will be paid to the burials found on the Ust-Biike II site (Altai), Chumysh-Perekat (Upper Ob River), Nozhiy, Lime–1 and Palaces-dacha (Transbaikalia). In addition, brief information is provided on the Neolithic burials excavated in Northern Mongolia. During the analysis of radiocarbon dates, the problems are identified that allow us to one more time refer to already known materials and implement an interdisciplinary approach on the modern level.

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TRANSITION FROM THE LATE PLEISTOCENE TO HOLOCENE IN THE TRANSBAIKAL REGION IN COMPARISON WITH NEIGHBORING TERRITORIES

According to present knowledge of transitional period from the Late Pleistocene to Holocene in the Transbaikal region there is a number of complexes with ceramics. These include the complexes of *ust'-karengsky* culture and Ust'-Kyakhta 3 (cultural horizon 1) (Jull et al., 2001). A number of complexes of Studenoe 1 and Ust-Menza 1 (Razgildeeva et al., 2013) as well as Krasnaya Gorka (Tsydenova et al., 2017). For these Transbaikal complexes bifacial tradition is more typical (Tsydenova et al., 2017), which brings them closer to the complexes of *gromatukhinsky* and *osipovsky* cultures (Derevyanko, Medvedev, 1993; Lapshina, 2000). Along with this, there are similarities seen in the ceramics of *gromatukhinsky*, *osipovsky*, and *ustinovsky* materials (Shevkomud, Yanshina, 2013). The majority of the ceramic collections of the examined territories are characterized by horizontal comb-scraped (?) furrows on their interiors; a part of them are characterized by cord impressions/vertical slightly scraped lines and comb ornamentations (Okladnikov, Derevyanko, 1980; Garkovik, 1996; Hommel, 2012; Shevkomud, Yanshina, 2013; Razgildeeva et al., 2013). Although Pleistocene ceramic complexes of various parts of the East Asia appeared in different periods and in different environmental conditions (Sato, Natsuki, 2017), Transbaikal and Far East complexes are mostly referred to the Late Pleistocene warming periods.

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ARCHAEOLOGICAL EXCAVATIONS AT THE LONGGANG SITE IN THE HANZHONG BAIN, CENTRAL CHINA

The Hanzhong Basin, located in the upper catchment of the Hanjiang River in the southern piedmont of the Qinling Mountains, central China. In the early 1980s, more than 10 Paleolithic open-air sites were identified in the basin. These sites are distributed between the third to fifth terraces in the Hanjiang (Hanshui) River and its branches. The former analysis suggests that the lithic assemblage from the surface collection not only include cores, flakes, choppers, spheroids, scrapers, points, but also contain Mode II tools such as hand-axes and picks. Some geologists put these site in the Middle Pleistocene based on the analysis of the animal elements that were identified belong to the *Ailuropoda-Stegodon orientalis* fauna.

Since 2013, a systematic excavation were carried out by Institute of Vertebrate Paleontology and Paleoanthropology (IVPP), Shaanxi Provincial Institute of Archaeology, and Nanjing University, the *in situ* artifact were subsequently uncovered by our team in the aeolian deposits on both the fourth and fifth terraces of the Hanjiang River. We conducted a magnetostratigraphic analysis of strata from the fourth terrace to date these artifact layers. Magnetic susceptibility (MS) of strata from all four terraces was also measured for comparison with the master MS curve of the loess–paleosol sequence from the central Chinese Loess Plateau to further constrain the ages. Our results revealed that the age of the oldest lithic

assemblage on the fourth and fifth terraces were approximately 1.20 Ma. Thus, the Longgangsi site is probably one of the earliest in central China. Our observations also showed that hominin occupation in the Hanzhong Basin occurred at least in two major phases, i.e., ~1.2 0.8 Ma (the fourth terrace), 600–70 ka (the second and third terraces). Based on stratigraphic, chronological, and lithic artifacts analysis in recent years, it appears that the regional lithic assemblage is belongs to the Oldowan (Mode I) lithic industry, and it is dominated by cores, flakes, and simple retouched flake tools.

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THE BLADE INDUSTRY IN CENTRAL CHINA AND RELATED ISSUES

Since 2010, Archaeologists from Peking University and Zhengzhou Municipal Institute of Cultural Relics & Archaeology in Henan have been working in Xishi region, Dengfeng City, Henan Province. Tens of thousands stone artifacts have been unearthed from several localities around Xishi village. The lithic assemblages from Xishi region contain hammer stones, cores, flakes, blades, bladelets, retouched pieces and chert nodules. Some cores and flakes can be refit, which shed light on the blade knapping technique. The typological and technological attributes of the lithics, as well as their spatial distribution, document a clear operational sequence of blade production. This is considered as the first blade industry found in central China. This paper will briefly introduce the new blade industry and discuss related issues.

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GEOGRAPHIC INFORMATION SYSTEM IN ZOOARCHAEOLOGY: A CASE STUDY OF NEWLY EXCAVATED FAUNAL REMAINS FROM THE GEZISHAN SITE, NINGXIA, CHINA

Geographic information systems (GIS) has now found its way into many areas of archaeological research, especially in the area of landscape archaeology and cultural resource management; however, its integration with zooarchaeology is rarely practiced. In this study, we tentatively adopt this technique in an analysis of the faunal remains from the Gezishan site (ca. 11–12 ka BP), Ningxia Province of China. Associated with structured hearths, a large number of microlithics and burned stones, the hundreds of cutmarked and burned bones from the site clearly testify to the primary role played by humans in the formation of bone accumulations; the spatial analysis module in GIS application, on the other hand, ultimately enhances visual presentation of the distributional patterns of the bone surface modifications.

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