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Use-Wear Analysis on Palaeolithic Artifacts of Northern Mongolia

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The present paper aims at understanding functions of Palaeolithic lithic tools excavated from northern Mongolia. This study is the first challenge of traceological study in Mongolia. Objects of use-wear analysis are the Kharga-5 (Kharganyn-Gool-5) site and the Tolbor cache site. Because both sites were partially excavated, we can't reconstruct spatial uses at these sites by spatial analysis of utilized tools. We can discuss here only about relationship between typological, technological, and functional factors of lithic tools. The report of excavation of Kharga-5 site is being prepared by Russian Academy of Sciences now. Detail of the excavation will be described in that report. Therefore, the paper is focused on the result of use-wear analysis.

EXPLANATION OF THE KHARGA-5 SITE RESEARCH

The Kharga-5 site is located in the northern part of Mongolia (Selenge River basin, Kharganyn-Gool River). Previous excavation at the Kharga-5 was undertaken in 2012 during the new stage of multiyear archaeological project of Russian and Mongolian specialists. More than 600 lithic artifacts were recovered stratigraphically.

There are two cultural layers belonged to Upper Palaeolithic period (Khatsenovich 2012). The assemblage of the 3rd cultural layer comprises bladelets, burins, end-scrapes, picks, notches, blades and cores. The assemblage of the 4th cultural layer is composed of the same types of tools in the 3rd cultural layer. There is no apparent difference in technological aspect between the 3rd and 4th cultural layer. Therefore, functional aspect in each layer is important for evaluating distinction of cultural layers. Age of cultural layer 3 and 4 is thought to have belonged to Final Upper Palaeolitic period. Now some charcoal samples are analyzed for AMS dating.

Lithic tools excavated from the cultural layer 3 are shown in Fig.1 and 2. Stone tools were mainly made of chert. The source of chert is located several km away from the Kharga-5 site. Many Palaeolithic artifacts are partly covered with affix. Affixes are presented as dark tone in figures of lithic artifacts. Ingredients of affix must be analyzed to understand mechanism of site formation process.

Assemblage of the cultural layer 3 comprises bladelets, picks, end-scrapers ,burins, notches and a bladelet core (Fig.3). Composition of struck cherts is presented in Tab.1.Blades and bladelets occupy a certain extent. Several of the bladelets were retouched on a lateral side. Blank flakes of burins and end-scrapers were not necessarily elaborate blades. Notches and picks are typical tools in the assemblage.

The assemblage of the 4th cultural layer is composed of the same types of tools with those of the 3rd cultural layer. One difference is that blade cores are accompanied with the assemblage. Three blade cores are contained in the 4th cultural layer. Some blades were removed from these cores and finally blade cores were used repeatedly as hammer stones (Fig.4). Striking traces are recognized on the surface of cores. Though it is difficult to know exactly the reason why inhabitants change their function. The lack of hummer stone in the situation is one of the possible reasons. The platforms of the bladelet cores are sometimes removed after removal of bladelets.

Picks excavated from the 3rd and 4th cultural layers were made with unique technique as is shown in Fig.5. Six picks were manufactured by the same method. Pointed tip was formed by striking on its ventral face. Striking point is recognized on its ventral tip. The removed face is positive as is shown in these photos. Micro-flaking was caused on the edge of dorsal face. This type of pick has quite unique characteristics that might have been discovered for the first time in the Eurasia continent. Therefore, the pick should be named "Kharga type pick" which has possibility

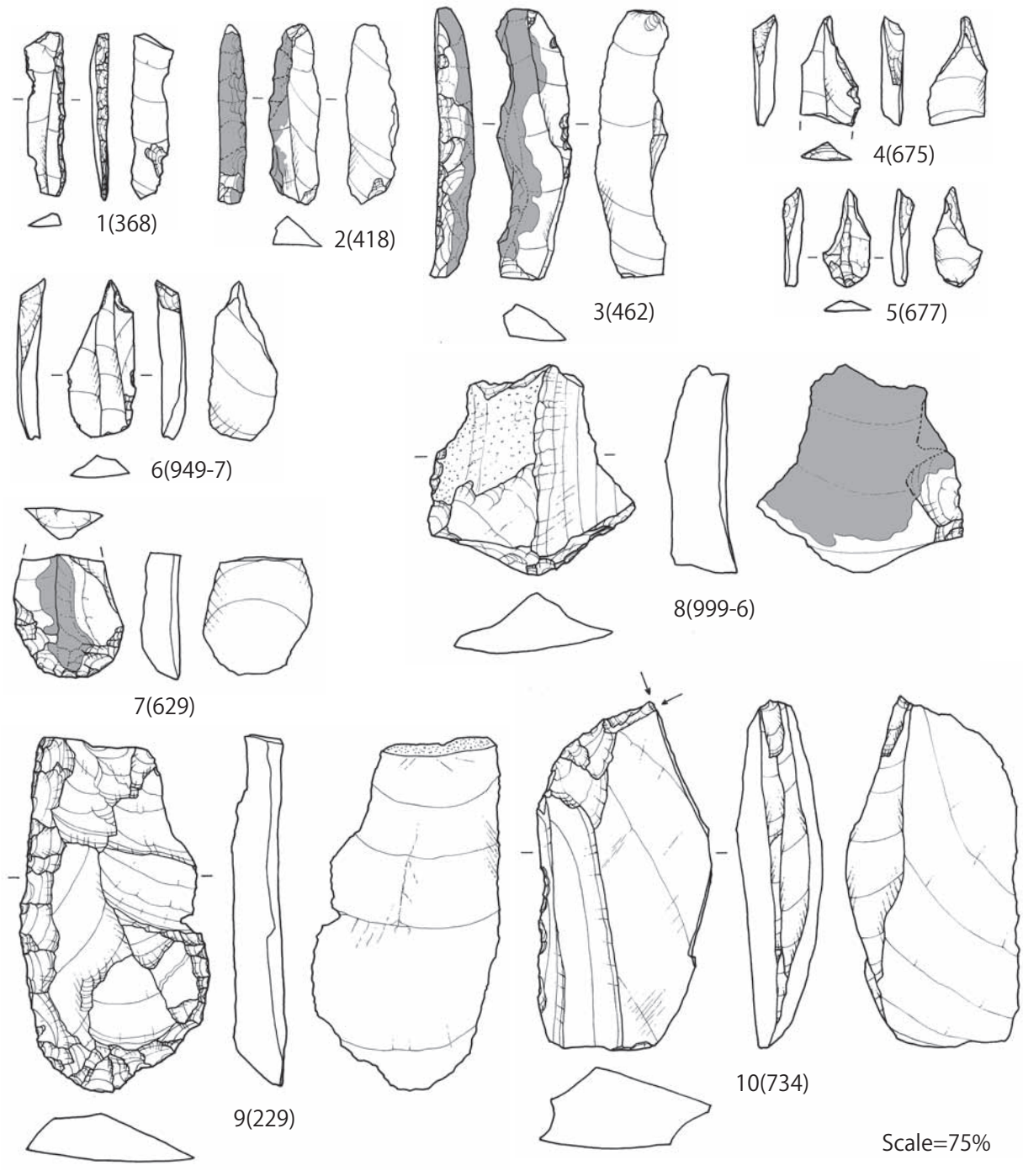


Fig.1 Lithic artifacts excavated from the cultural layer 3 of the Kharga-5 site.

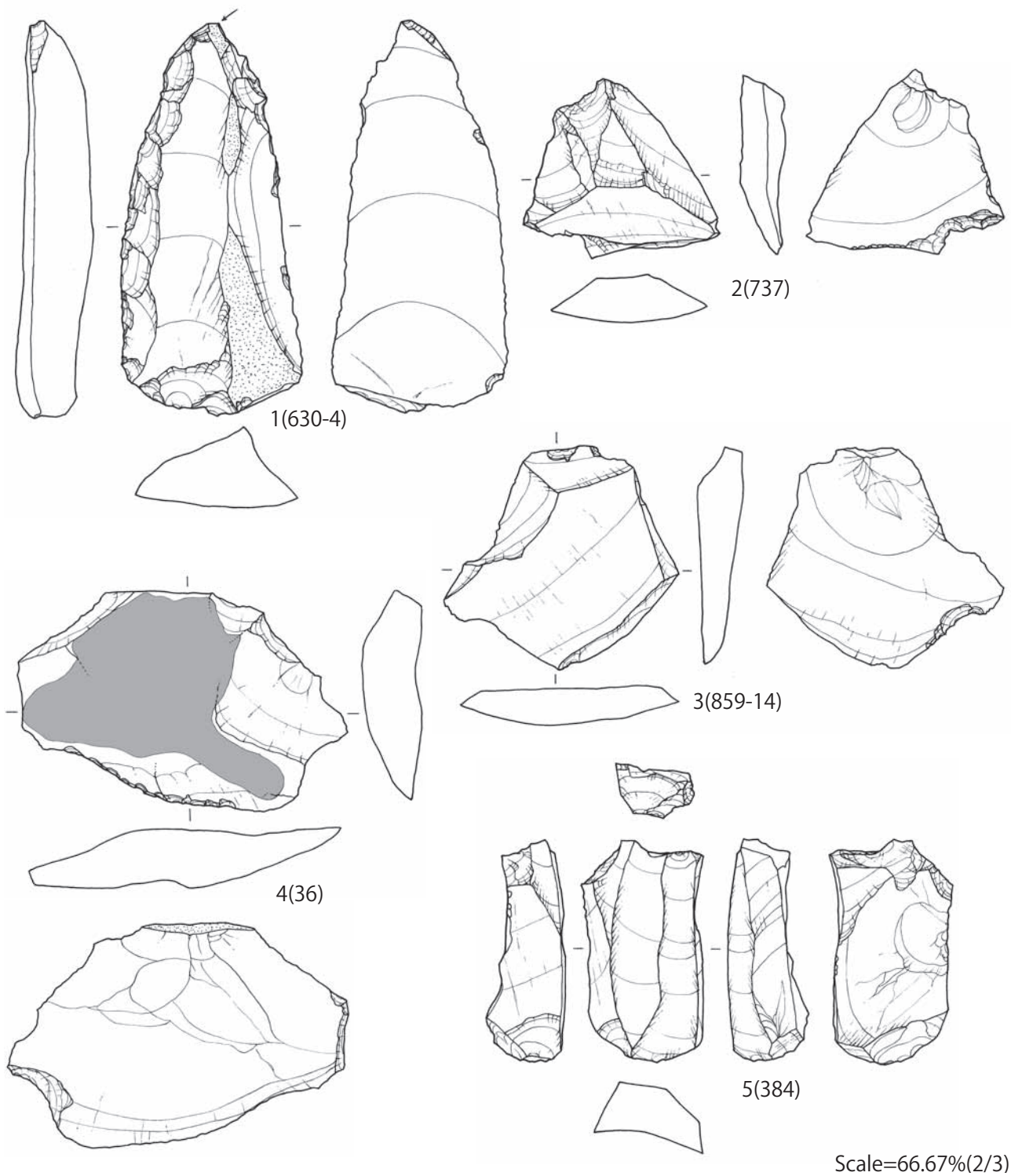


Fig.2 Lithic artifacts excavated from the cultural layer 3 of the Kharga-5 site.

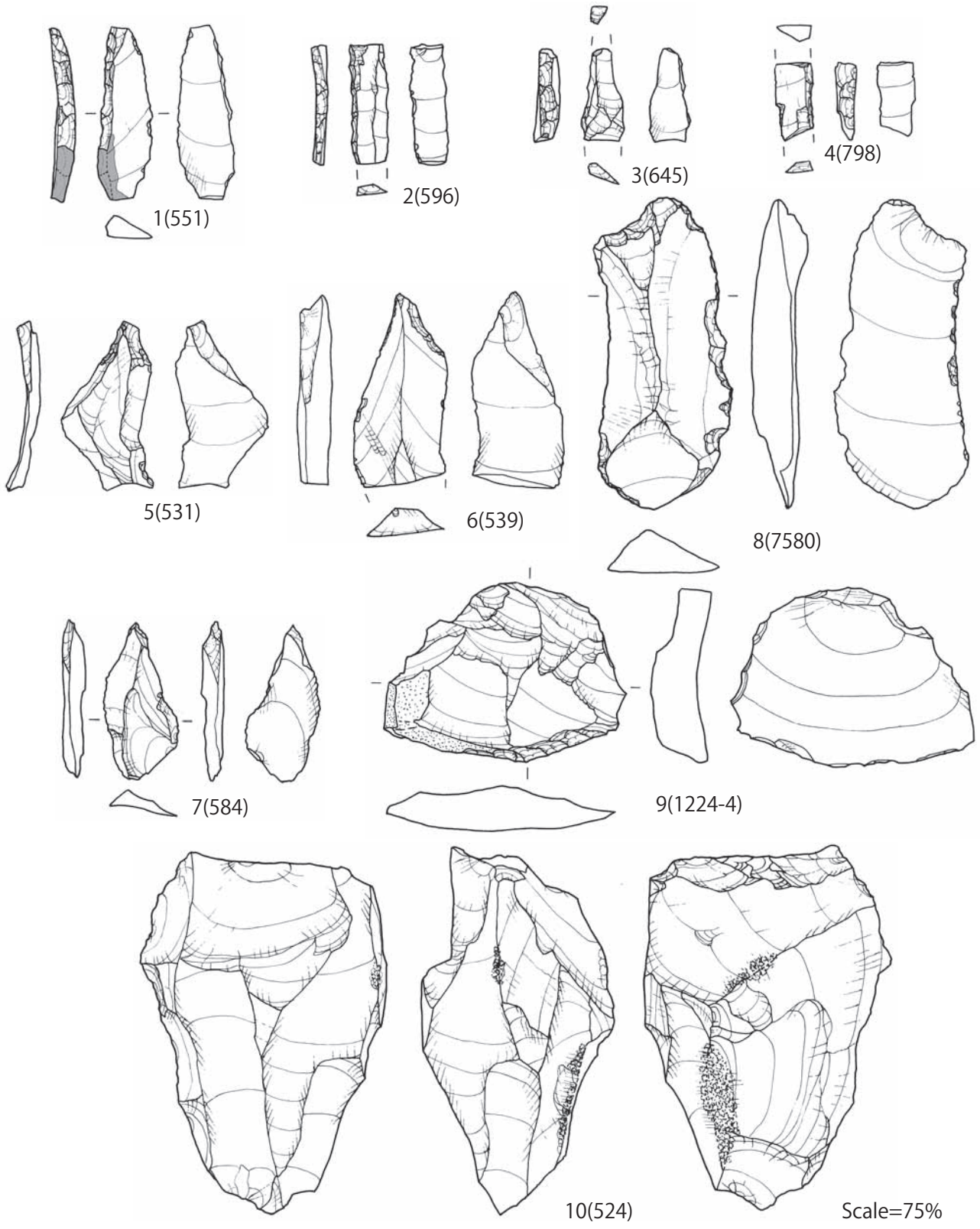


Fig.3 Lithic artifacts excavated from cultural layer 4 of the Kharga-5 site.

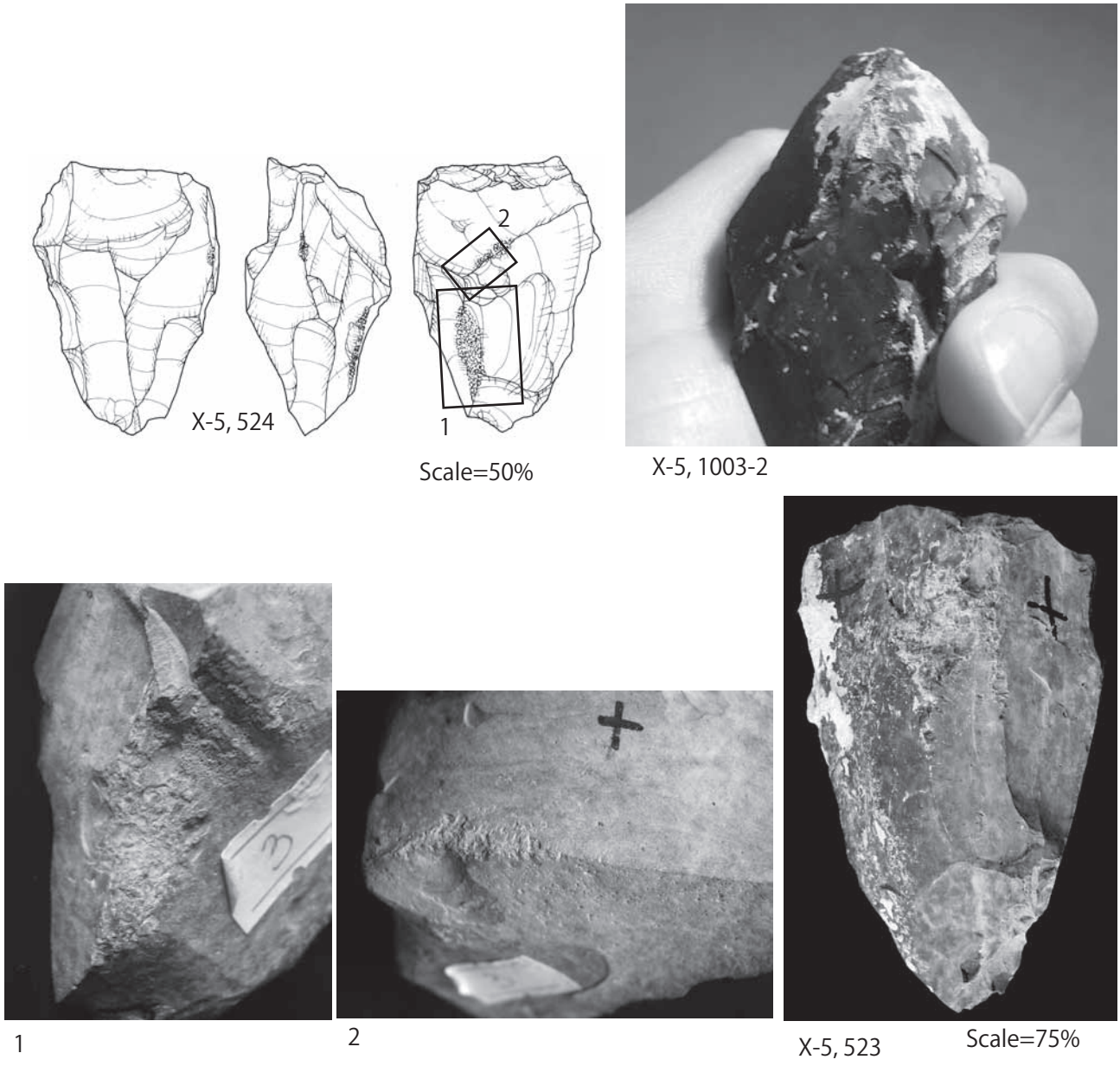


Fig.4 Cores at the Kharga-5 site.

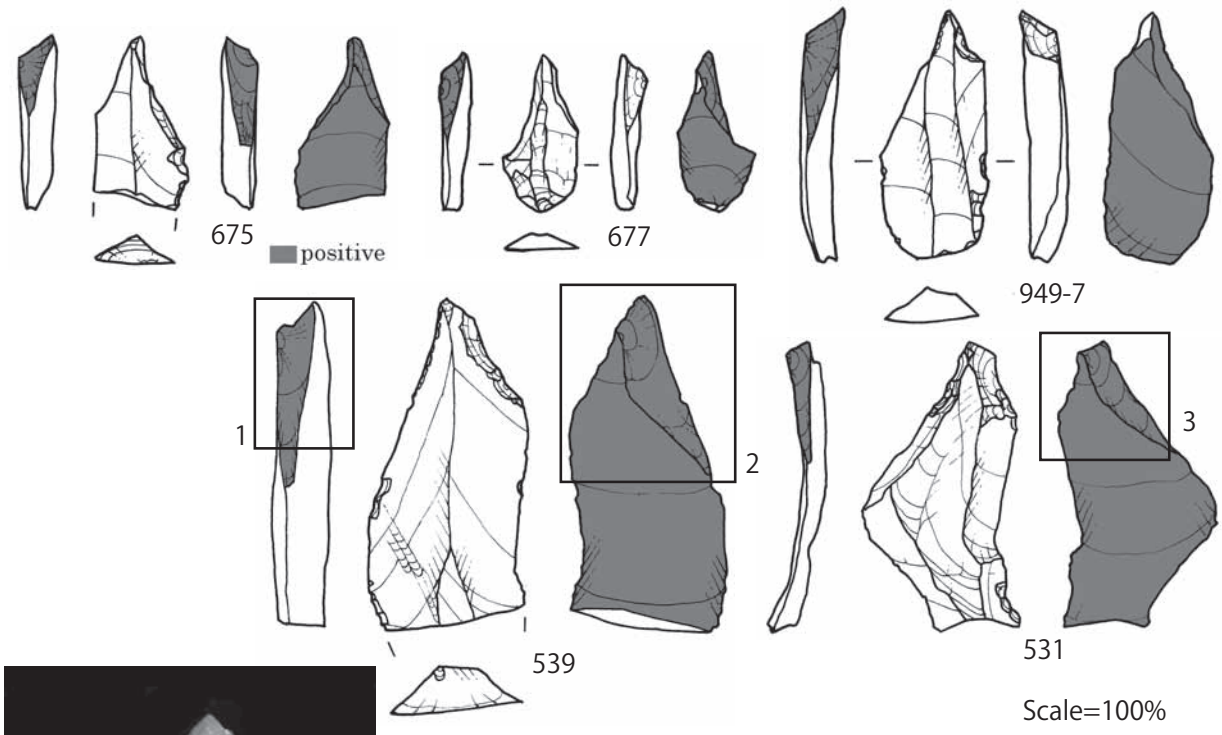
	Flakes	Blades	Bladelets	Microblades	Chunks	Spalls	Scales	Technical splits
Horizon 1 (top soil)	55	4	3	2	3	2	8	0
Horizon 2	55	6	5	1	1	2	10	1
Horizon 3	299	56	44	2	26	12	55	18
Horizon 4	251	34	32	3	41	26	26	7
Horizon 5	11	3	1	0	0	1		1

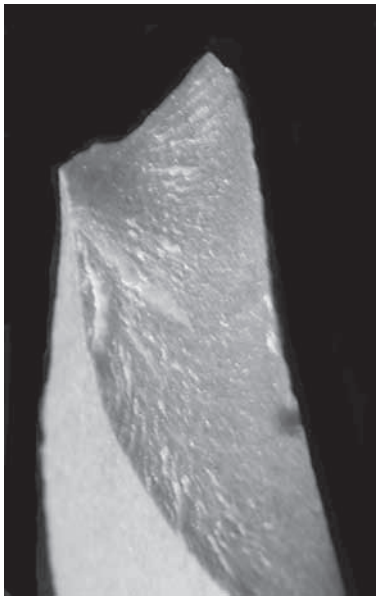
Tab.1 Composition of struck chert at the Khaga-5 site.

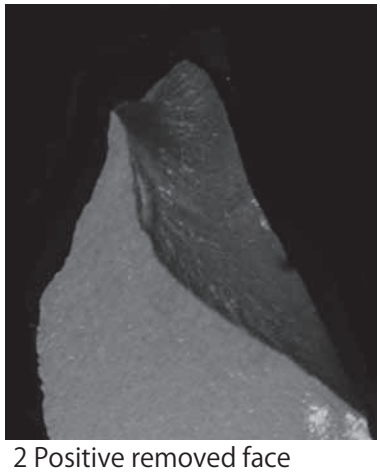
to be recognized as one of the chronological and spatial standards.

FUNCTIONAL ANALYSIS OF THE KHARGA-5 ASSEMBLAGE

One of the authors (Kanomata,Y.)showed case studies of functional analyses of lithic artifacts excavated from Japanese Palaeolithic sites (e.g. Kanomata 2004, 2010). The same method is applied to Mongolian artifacts in the present paper. Systematic functional analysis was carried out using high power microwear technique (Tohoku Univ. method, e.g., Serizawa, Kajiwara and Akoshima 1982). The method of use-wear analysis is 'high power approach' (Keely 1980), what we call 'Keely method'. Metallurgical




1 Positive removed face


2 Positive removed face

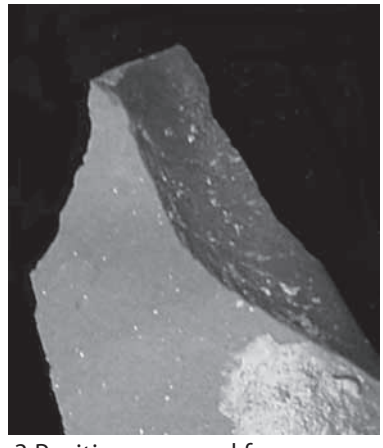
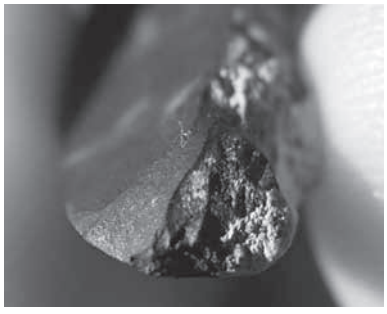
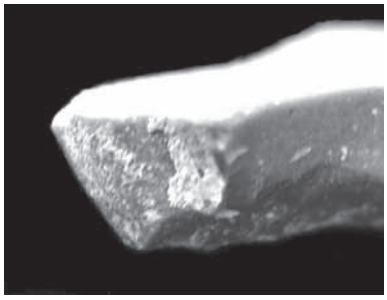

3 Positive removed face

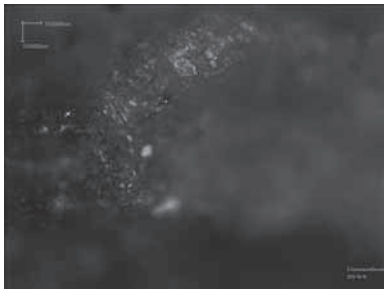
Fig.5 Characteristic removal technique on picks at the Kharga-5 site.



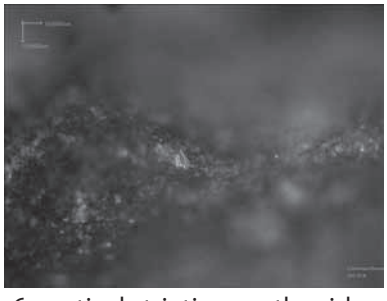
1: flute like fracture



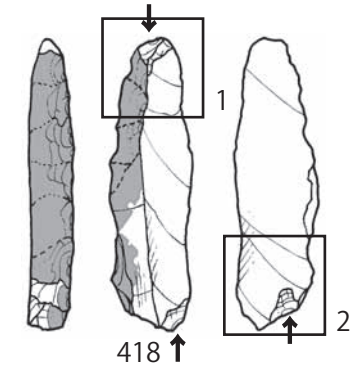
3: transverse fracture with hinge termination

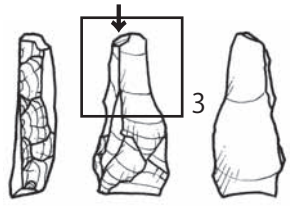


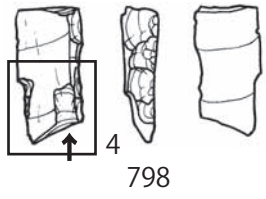
5: vertical striation on the ridge

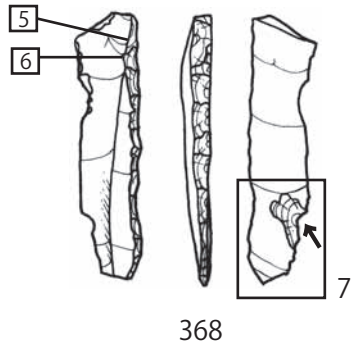


6: vertical striation on the ridge









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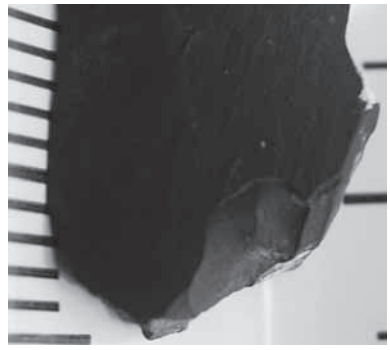


2: flute like fracture

4: transverse fracture with hinge termination

7: microflaking

Fig.6 Use-wear on retouched bladelets at the Kharga-5 site.

cultural layer	artifact No.	tool type	utilized edge	polish type	striation	information
3	384	core				
	630-4	burin	facet	D1	vertical	bone/antler/ ivory
	675	pick	dorcal tip			
	677	pick	dorcal tip			
	949-7	pick	dorcal tip	D2?	vertical	bone/antler/ ivory
	859-14	notch	notched edge			
	999-6	end-scraper	retouched edge	E2	vertical	dry hide
	629	end-scraper	retouched edge	E2	vertical	dry hide
	737	notch	notched edge	D1?	vertical	bone/antler/ ivory
	368	backed bladelet		abration	diagonal	hafting trace?
	462	backed bladelet				
	418	backed bladelet				impact fracture, hafting trace
	229	end-scraper				
	735	burin				
	36	notch				
4	524	core				used as a hammer stone
	1003-2	core				used as a hammer stone
	523	core				used as a hammer stone
	7580	scraper	notched edge	B	vertical	wood
	539-8	pick	dorcal tip	B?	vertical?	wood
	531	pick	dorcal tip	B	vertical	wood
	584	pick				
	551	backed bladelet				impact fracture
	596	backed bladelet				
	798	backed bladelet				impact fracture
	645	backed bladelet				impact fracture
	1224-4	end-scraper	retouched edge	E2?	vertical	slight usage

Tab.2 Results of functional analysis of lithic artifacts at the Khaga-5 site.

microscope is used to classify micro-wear polishes. Lithic artifacts were observed by magnification between 100 and 400 times, mainly 200 times. The approach involves the observation of use-wear both at macro and micro levels. Morphological variable of the working edges were correlated with probable function.

Backed bladelets exhibit less distinctive polish patterns compared to other formal tools (Tab.2). Functional analysis revealed that most of the backed bladelets have been utilized as projectile armatures. Several types of the impact fractures were formed on tips of backed bladelets (Fig.6-1~4). Impact fractures are identified by the existence of burin like fracture, flute like fracture, transverse fracture and spin-off fracture (Sano2009). These fractures were formed after formation of retouch. There is no linear polish, although apparent impact fractures were formed. Hafting trace is recognized on a backed bladelet (Fig.6-5~6). Abrasion with vertical striation is formed on its dorsal ridge. These features show that backed bladelets were used for hunting. Retouched side is thought to have been set into the shaft.

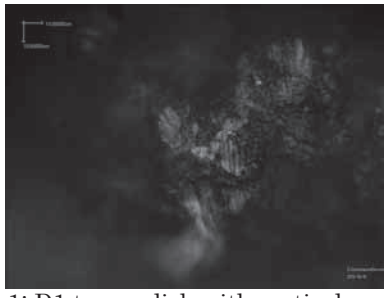
D1 type polish is shown on a burin (Fig.7-1~3). The polished surface accompanies vertical striation. Characteristics of type D1 polish are smooth, flat and like melting snow. In general, this polish type is called “bone polish”. This use-wear of the burin is interpreted to have formed as a result of scraping bone/ antler/ ivory according to experimental tendency.

Different types of polishes (B and D1) accompanying with vertical striation are observed on two picks. B type polish was strongly connected with wood working (Fig.7-5~6).This polish is called “wood polish” generally. D1 type was related to bone/ antler/ ivory working (Fig.7-7~8). Polished surface was accompanied with micro-flaking on the edge of dorsal tip. The most frequently utilized portion was the working edge at the end between the positive removal face and the dorsal surface.

Three end-scrapers retain E2 type polish with vertical striation on the distal end (Fig.8-1~3, Fig.9-3~4). Characteristics of type E2 are rough, round and abrasive. Because this polish type is strongly connected with dry hide scraping, it is called “hide polish” or “dry hide polish”.

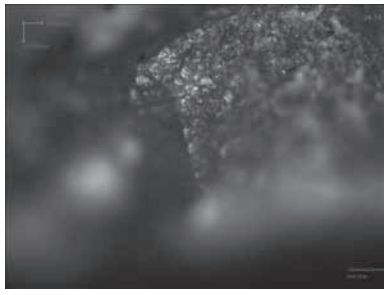
A scraper (no.7580) retains B type polish on the base edge (Fig.8-7~8). This tool is thought to have been used for scraping wood.

A notch retains D1 type polish on retouched edge (Fig. 9-1~2). It is thought to have been used for bone/ antler/ ivory

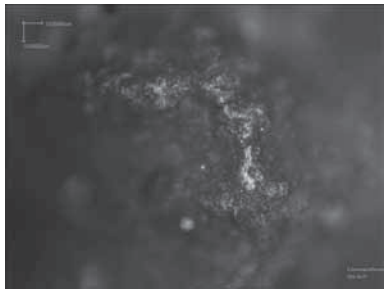


1: D1 type polish with vertical striation (x400)

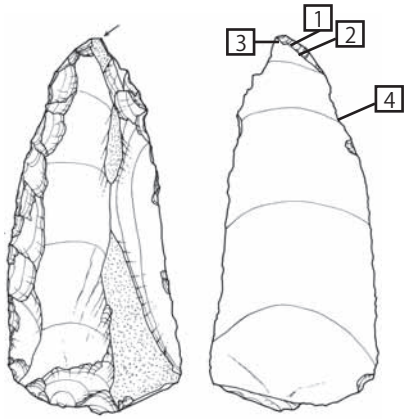
3: D1 type polish with vertical striation (x200)



5: B type polish with vertical striation (x200)



7: D1 type polish with vertical striation (x200)



630-4

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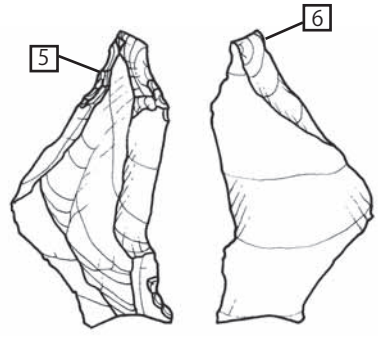

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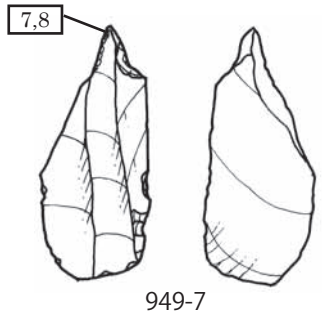

949-7

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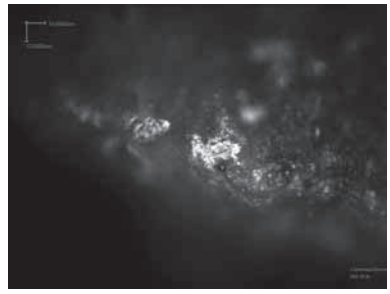
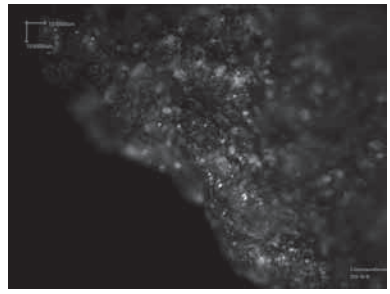
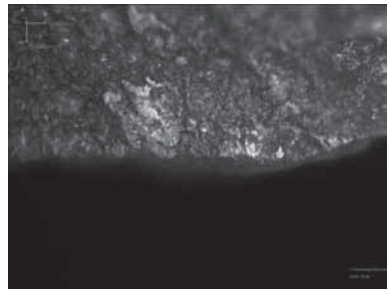


2: D1 type polish with vertical striation (x200)



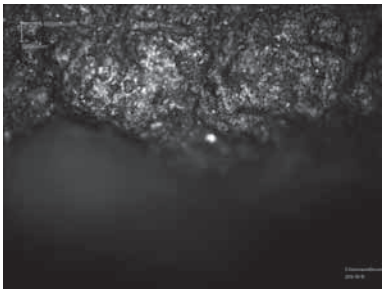
4: Unused edge (x200)



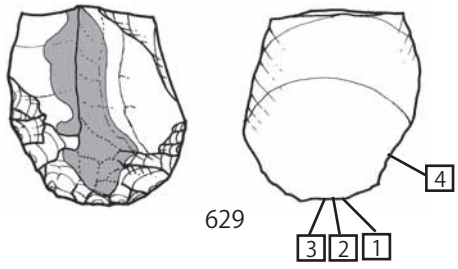
6: B type polish with vertical striation (x400)

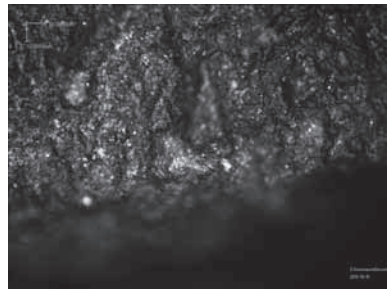
8: D1 type polish with vertical striation (x400)

Fig.7 Use-wear of lithic artifacts at the Kharga-5 site.

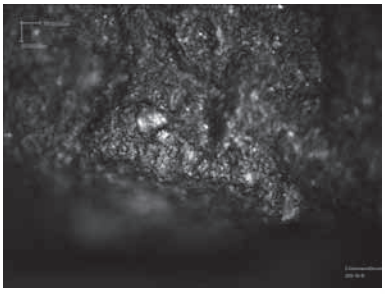


1: E2 type polish with vertical striation (x200)

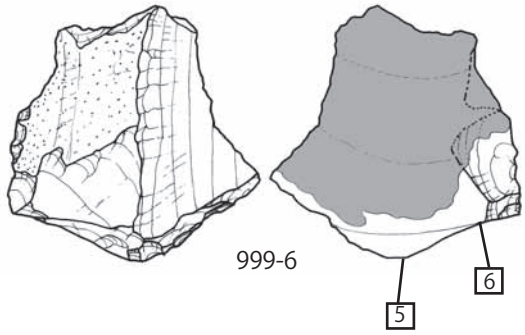


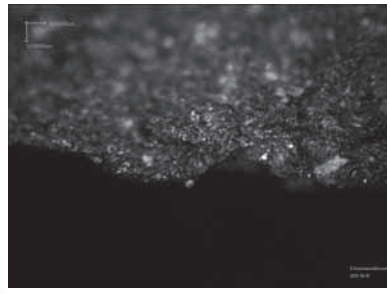


2: E2 type polish with vertical striation (x200)

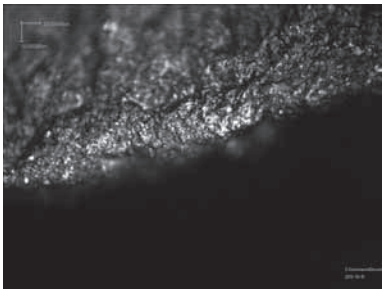


3: E2 type polish with vertical striation (x200)





4: Unused edge (x200)



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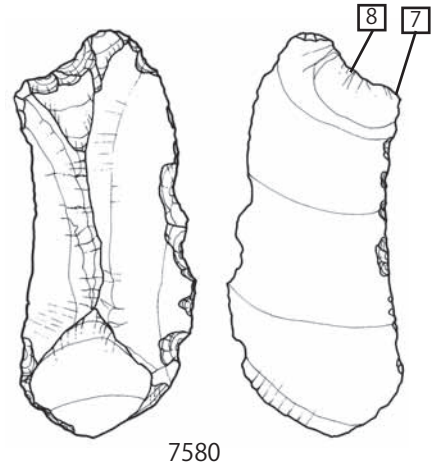
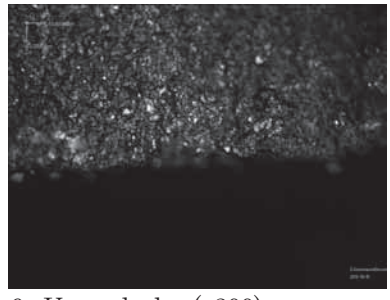
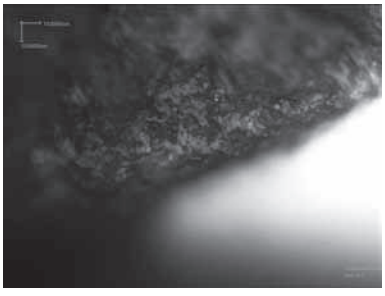
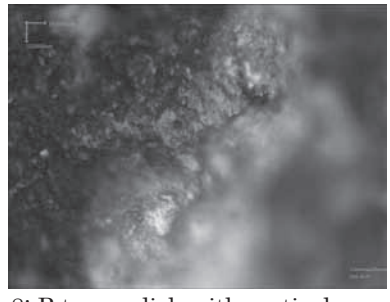




6: Unused edge (x200)

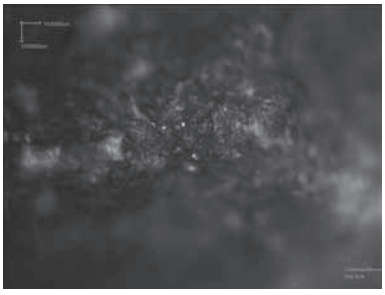


7: B type polish with vertical striation (x400)

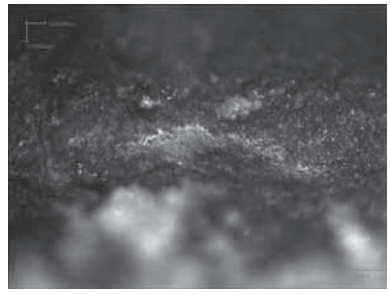


8: B type polish with vertical striation (x400)

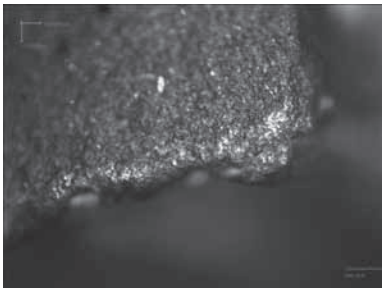
Fig.8 Use-wear of lithic artifacts at the Kharga-5 site.



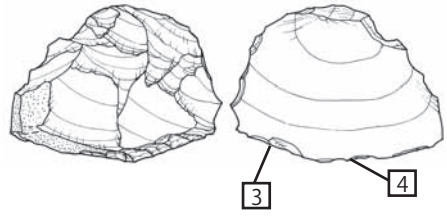
1: D1 type polish with vertical striation (x400)

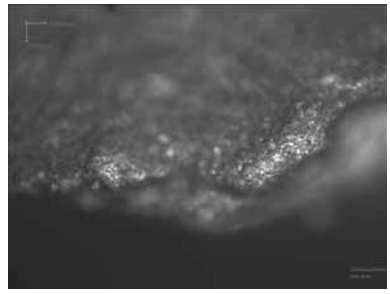


2: D1 type polish with vertical striation or a bright spot (x200)



3: E2 type polish with vertical striation (x200)





4: E2 type polish with vertical striation (x200)

Fig.9 Use-wear of lithic artifacts at the Kharga-5 site.

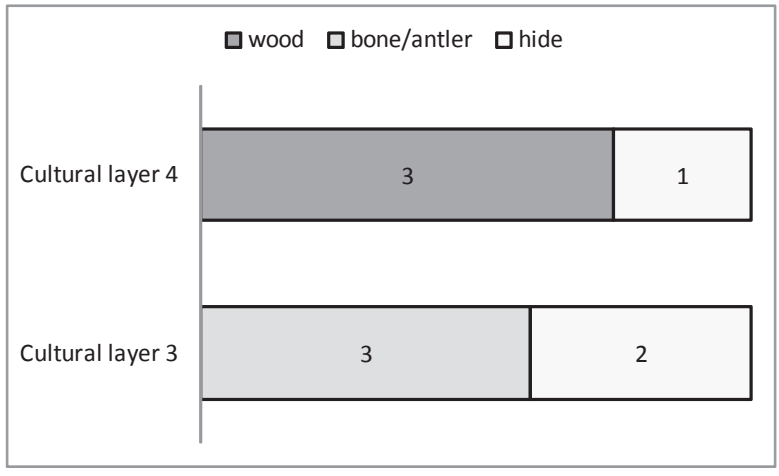


Fig.10 Relative frequency of utilized materials at the Kharga-5 site.

scraping. Because feature of this polished surface is similar to bright spot, it had possibility for having caused by PDSM (post depositional surface modification).

Though a number of utilized lithic tools were found at the Kharga-5 site, many of them retain traces of slight usage. In other word, assemblage was mainly occupied by light work tools.

RELATIONSHIP BETWEEN FORM AND FUNCTION OF LITHIC TOOLS

Tool types are functionally related with limited working to some extent at the Kharga-5 site as below.

- Bladelet: for thrusting by hafting style
- Burin: scraping bone/antler/ivory

- Pick: for graving/cutting bone/antler or wood
- End-scraper: for scraping hide
- Notch: for scraping bone/antler/ivory

Fig.10 presents the data of relative frequency on utilized materials of lithic artifacts from the cultural layer 3 and 4 at the Kharga-5 site. In the cultural layer 4, wood working is outstanding. In opposite, bone/antler/ivory working occupies in a certain extent in the cultural layer 3. This indicates that context of lithic usage was different in each layer. From the technological aspect, there is no apparent difference between cultural layer 3 and 4, but it is probable that two distinct functional contexts are suggesting two different episodes. Because only small areas were already excavated, this hypothesis is regarded as the perspective for further analysis.

EXPLANATION OF THE TOLBOR CACHE SITE RESEARCH

In general, stone tool caching behavior was an activity to store lithic resources in landscape. The Tolbor cache feature was found in 2010 in the Tolbor river valley in the northern part of Mongolia. This is the first Palaeolithic cache ever found in Mongolia. 57 big and middle size flakes were piled up. The assemblage of cache comprises retouched flakes, notches and flakes. There is no typical tool, chip and core. The date of the cache belongs to LGM probably (25,000-18,000BP).

Lithic artifacts excavated from Tolbor cache site are exhibited in Fig.11. No.5 shown at the lowest on the left side in Fig.11 is about 10 cm in length. Notched retouch is recognized on each artifact. “Why were they formed such shape?” This is the first problem to be understood from functional aspect. Furthermore, “whether utilized tool was contained or not?” is an important factor for evaluating the meaning of cache.

FUNCTIONAL ANALYSIS OF THE TOLBOR CACHE ASSEMBLAGE

Objects of use-wear analysis were selected by recognizing micro-flaking under low power observation. Four artifacts retain use-wear traces on retouched edges (Fig.12, Tab.3). It is practically difficult to identify the precise worked material when polish did not develop because of its short term usage. All the polish is recognized as type B. And all of them are used slightly. In other word, they are light work tools. Directions of striations are chiefly vertical and parallel. These use-wear patterns insist that some lithic tools were used for wood scraping or cutting. It is supposed that notched retouch was formed to have made utilized edge. In the case of the Tolbor Palaeolithic cache on open site, some used lithic tools were contained in the cache feature accompanying with many unused flakes. This is very important fact for understanding the meaning of cache. Cache was supposed to have been constructed for repetitive occupation.

Similar cache features were discovered in Northeastern Japanese archipelago, for example, pit 2 at the Nogawa site (Kanomata 2010). Location of the site is measured at a distance of 40 km from the nearest source of stone material. In pit feature 2, seven scrapers, a spatula shaped tool and about 40 flakes were piled up inside. The average weight of flakes in pit 2 is about 33 g. Sizes of flake are suitable for making tools as scrapers. Functional analysis revealed that 3 lithic tools were utilized. The cache is thought to have kept for repetitive occupation accompanying by organized system of mobility strategy over the landscape. Cache pit 2 at the Nogawa site has similar characters to the Tolbor cache.

FURTHER PROSPECTS

The results of microwear analysis conducted in this study bring a new understanding of relationship between form and function of lithic tool of northern Mongolia.

The paper present a case study analyzed from the

artifact No.	tool type	utilized edge	polish type	striation	information
54	notch	notcged edge	B?	vertical	wood?
22	notch	notcged edge	?	vertical	?
12	notch				unused
29	notch	notcged edge	B?	vertical	wood?
7	retouched flake	retouched edge	B	parallel	wood
44	notch				un-used

Tab.3 Result of functional analysis of lithic artifacts at the Tolbor Palaeolithic cache site.

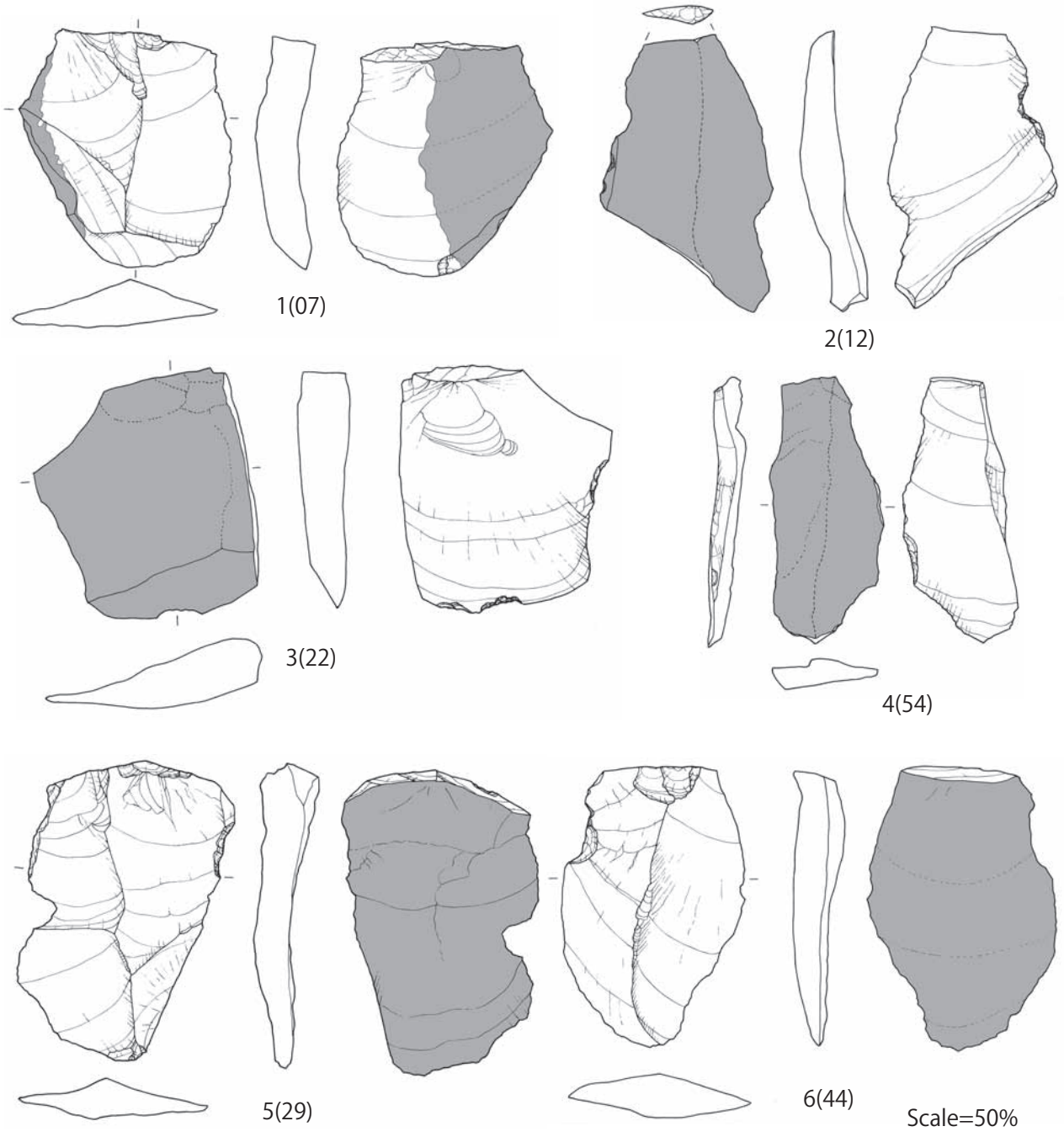


Fig.11 Lithic artifacts excavated from the Tolbor cache site.

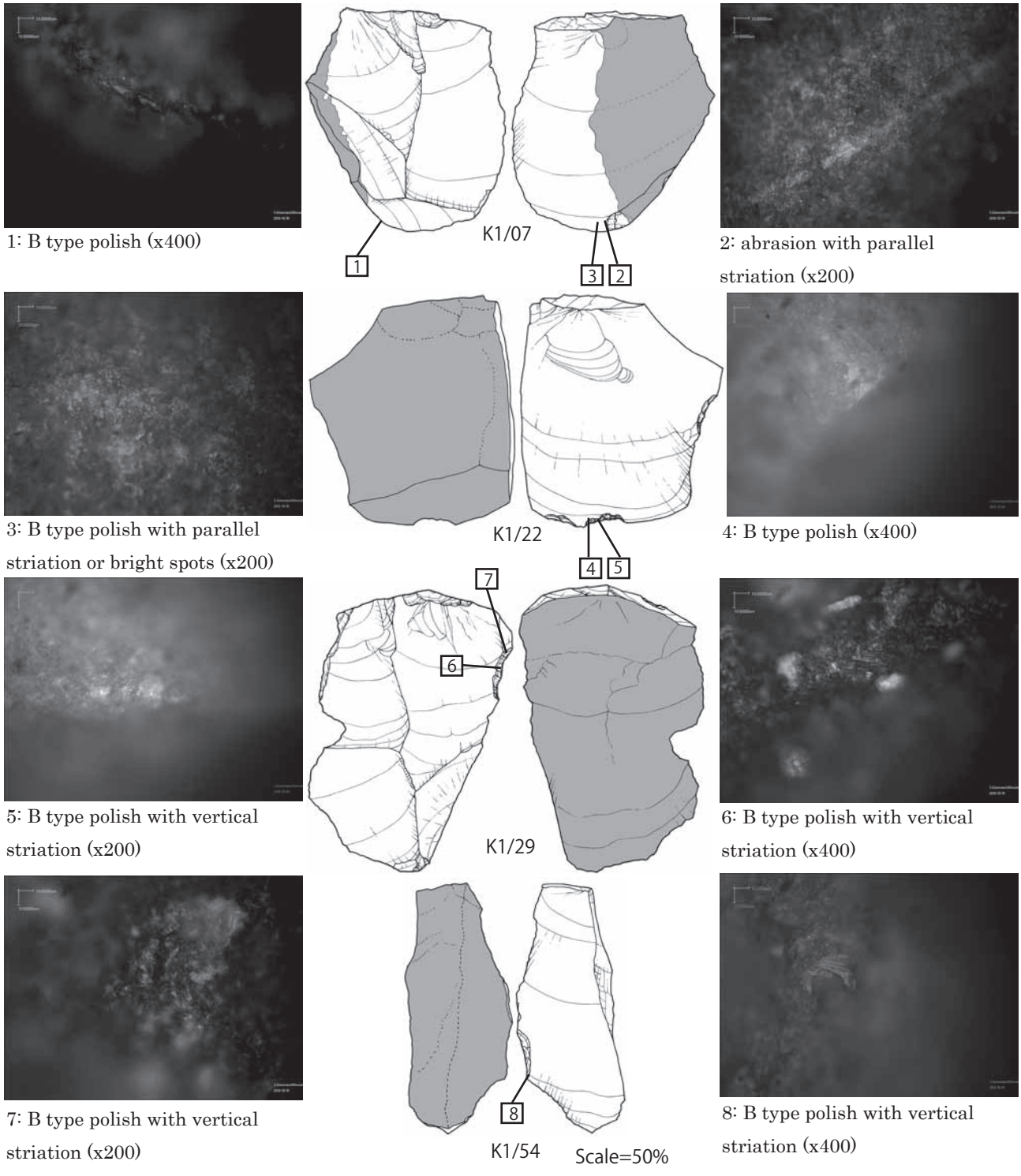


Fig.12 Use-wear of lithic artifacts at theTolbor cache site.

viewpoints of typological, technological, and functional aspects. The study of Kharga-5 site and Tolbor cache site is the first challenge of use-wear analysis in Mongolia. Because the 2nd term excavation will be held in 2013 at Kharga-5 site, the further analysis of new artifacts is hoped. When it becomes clear the distribution of concentrated artifacts, we can discuss about distribution of used tools and site structure. Moreover, it is expected to be understood relationship between lithic tool functions and accompanying organic materials. This information is helpful for us to reconstruct relationship between lithic tools and used materials precisely. It is better that experimental program is carried out based on the environmental resources that would have been available at the Kharga-5 site.

In addition, it is hoped to apply the theoretical concept of "technological organizations" (Binford 1979) to the open-air occupation at the Kharga-5 site, from the viewpoints of microwear and site structure. Functional study will provide insight info spatial utilization and site formation process.

ACKNOWLEDGEMENT

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日本語解説

モンゴル北部の旧石器時代資料の使用痕分析

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はじめに

本論は、北部モンゴルで発掘された旧石器時代の石器の機能的理解を目的としている。そして、本研究はモンゴルにおける石器機能研究の最初のチャレンジである。使用痕分析では、カーガ 5 遺跡およびトルボル・キャッシュ遺跡を対象とした。いずれも、部分的に調査された遺跡であるため、使用された石器の空間分析によって遺跡内の空間利用を復元することは難しい。ここでは、石器の型式学的、技術学的、機能的要素間の関係について議論したい。なお、発掘調査全体の概要は、近々ロシア側から報告される予定である。

1．カーガ 5 遺跡の調査の概要

カーガ 5 遺跡は、モンゴル北部のセレンゲ川流域（支流のカーガ川流域）に位置する。2012 年にロシア・モンゴル考古学プロジェクトによる試掘調査で発見された。後期旧石器時代に属する 2 つの文化層があり、第 3・4 文化層ともに、背付き小石刃や彫刻刀形石器、エンド・スクレイパー、ピック、ノッチ、石刃、石核などで構成される（Khatsenovich 2012）。2 つの文化層間に明確な技術的相違は認められない。したがって、それぞれの機能的側面は文化層区分の評価の点でも重要である。両文化層とも、後期旧石器時代終末に属すると考えられる。第 3 文化層から出土した石器は Fig.1・2 に、第 4 文化層の石器は Fig.3 に示した。また、素材剥片の組成を Tab.1 に示した。石器は主にチャート製であり、その原産地はカーガ 5 遺跡から数 km 離れている。石器の多くは付着物に覆われているが、この付着物がどのような成分から成るものかは不明である。2 つの文化層の違いのひとつは、第 4 文化層にのみ石刃核が伴う点である。3 点の石刃核は、石刃剥離が終わった後に、ハンマーストーンに転用されている（Fig.4）。繰り返された敲打の痕跡が石核の表面に残される。小石刃の石核（Fig.3-15）には、打面再生がみられる。また、2 つの文化層からはピックが発見されている（Fig.5）。6 点のピックは、共通の製作法で作られた。突端部は、腹面の先端部への加撃によって形成されている。しかも、その剥離面は写真の通り、ポジティブ面である。微小剥離痕が突端部の背面側に認められる。この特徴的器種は、これまでに発見されておらず、「カーガ型ピック」と呼称したい。

2．カーガ 5 遺跡における石器機能分析

著者の一人は、日本の旧石器時代遺跡において機能研究に関する事例研究を継続的に行ってきた（鹿又 2004、2010 など）。本論では、同様な方法をモンゴルの遺物に応用した。システマティックな分析は高倍率の金属顕微鏡を用いて行われた（東北大学使用痕研究チームの方法、例：芹沢・梶原・阿子島 1982）。この方法は、高倍率法、いわゆる「キーリー・メソッド」と呼ばれる（Keely1980）。100 ～ 400 倍、主に 200 倍の倍率で使用痕光沢面の分類が行われた。

小石刃は、他の典型的なトゥールに比べてポリッシュの発達が弱く、被加工物を推定できるような使用痕のパターンが見出せなかった。ただし、衝撃剥離痕（Sano2009）が多く確認され (Fig.6)、狩猟活動に使用されたものが多いことが明らかになった。これらの剥離痕は、二次加工の形成後に生じている。また、背面の稜線上に直交の線状痕を伴う摩耗が確認され、これは着柄痕と推定された。これらの使用痕の特徴は、背付き小石刃が狩猟具として使用されたことを示している。二次加工側が柄に装着されたと考えられる。

彫刻刀形石器には、直交の線状痕を伴う D1 タイプのポリッシュが確認された（Fig.7-1~3）。D1 タイプのポリッシュの特徴は、平滑で、融けた雪のような表面である。このポリッシュは、骨・角・象牙のスクレイピングで生じる。

2 点のピックには、B タイプ（Fig.7-5~6）や D1 タイプ（Fig.7-7~8）などのポリッシュタイプが認められた。ポリッシュはいずれも直交の線状痕を伴う。B タイプは木の作業と強く結び付く。背面先端部の縁辺にはポリッシュと共に微小剥離痕もみられる。最も高率で使用された刃部は、この背面先端部であろう。

3 点のエンド・スクレイパーは、直交の線状痕を伴った E2 タイプのポリッシュが認められた（Fig.8-1~3, Fig.9-3~4）。E2 タイプは、粗い丸くなった摩耗面を示し、乾燥皮の作業に強く結び付く。1 点のスクレイパーには、B タイプのポリッシュがその基部側に認められた（Fig.8-7~8）。

ノッチ 1 点には、直交の線状痕を伴った D1 タイプのポリッシュがその二次加工部に確認された（Fig.9-1~2）。ただし、このポリッシュの特徴は、埋没後表面変化（post depositional surface modification）の一種と考えられる輝斑（bright spot）の特徴にも類似している。

このように多くの石器に使用痕が確認されたが、そのほとんどは使用度が低かった。

3．石器の器種と機能の関係

カーガ 5 遺跡では、各種の器種が、下記のようなある程度限定された機能と関連する。

・小石刃：着柄状態での刺突
・エンド・スクレイパー：皮なめし
・ノッチ：骨・角・象牙のスクレイピング
・ピック：骨・角・象牙あるいは木の溝切り
・彫刻刀形石器：骨・角・象牙のスクレイピング

Fig.10 は、カーガ 5 遺跡の第 3・4 文化層別の被加工物の割合を示している。第 4 文化層では、木の作業が目立つ。一方、第 3 文化層では、骨・角・象牙が一定の割合を占めている。これは、石器使用のコンテクストが 2 つの文化層で異なっていたことを示している。技術的側面では、2 つの文化層に明確な相違がみられないが、機能面ではコンテクストが異なる可能性が指摘できる。しかしながら、調査区は狭く、この仮説は、今後の分析によって証明されるべきものだ。

4．トルボル・キャッシュ遺跡の調査の概要

石器の兵站（キャッシュ）行動は、景観に石器資源を貯蔵する行為である。トルボル・キャッシュ遺跡は、2010 年に、モンゴル北部のトルボル川流域で発見された。これは、モンゴルでは最初に発見された旧石器時代のキャッシュ遺構である。57 点の中型サイズ以上の剥片が集積されていた。キャッシュの組成は、二次加工ある剥片とノッチ、それに剥片である。定型的なトゥールは認められず、また砕片や石核も無かった。その年代は、最終氷期最寒冷期（LGM）に相当すると予想される。トルボル・キャッシュ遺跡出土石器を Fig.11 に示した。左側下段の石器の長さが約 10㎝であり、このサイズの石器が多い。ノッチ加工がそれぞれの石器に確認されるが、そのような形態が作られた理由は不明である。この点は、機能的側面から理解すべき最初の課題である。さらに使用された石器がキャッシュに含まれたかどうかも、キャッシュの意味を評価する上で重要である。

5．トルボル・キャッシュ遺跡の機能研究

幾つかの石器はその二次加工部に使用痕を残していた（Fig.12, Tab.3）。ポリッシュは全て B タイプに分類される。また、使用痕はすべて微弱であった。いいかえれば、これらの石器は軽度に使用された道具と言える。ポリッシュに伴う線状痕は、直交が主体であり、平行もみられた。このような使用痕のパターンから、幾つかの石器は木の削りや切断に使用されたと推定される。また、ノッチ加工は、刃部作出の意図で形成されたと考えられる。開地遺跡であるトルボル・キャッシュ遺跡では、使用された石器が、多くの未使用の石器とともに貯蔵されている。この点は、キャッシュの意味を理解する上で重要である。

これに類似した遺構は、日本列島の東北部にみられる。例えば、宮城県野川遺跡が該当する（鹿又 2010）。野川遺跡の立地は、石材原産地から約 40km 離れている。ピット 2 では、7 点のスクレイパーや 1 点の箆状石器とともに、約 40 点の剥片類が土坑の中に集積されていた。剥片類の平均重量は 33g である。これは、スクレイパーを作るのに丁度良いサイズである。機能研究の結果、3 点の石器が使用されていた。つまり、このキャッシュには、トゥールと多くの未使用の石器が、移動戦略における回帰的居住のために確保されたと考えられる。トルボル・キャッシュ遺跡も同じ役割を果たしていたと推定される。

課題と展望

使用痕分析の結果によって、石器の形態と機能の関係に新たな理解がもたらされた。本論は、型式的、技術的、機能的観点で分析された事例研究である。カーガ 5 遺跡とトルボル・キャッシュ遺跡の研究は、モンゴルでは最初の使用痕分析の実例となった。カーガ 5 遺跡の第 2 次発掘調査が 2013 年に実施される予定であり、さらなる分析が期待される。その後に、初めて使用された石器の分布に基づいて遺跡構造を議論することができるだろう。さらに、使用された石器と、被加工物となった有機質資料の関係についても検討することが望まれる。また、使用痕と遺跡構造の観点から、カーガ 5 遺跡を対象とした「技術組織（technological organization）(Binford 1979)」概念の応用も期待される。機能研究は、空間利用や遺跡構造の理解への見通しを示してくれる。