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HSAP 057 - a Middle Holocene Site in the Fourth Cataract Area, Sudan

Introduction

During the first months of 2007, the Hungarian Sudanese Archaeological Project (HSAP) arranged it's second campaign in the vicinity of the fourth cataract, by the eastern bank of the Nile, at a strip of 16 km^2 land near the dam construction area in Sudan (Lassányi 2008). Within the frames of the project, we excavated a site, called HSAP 057 between the 17th and 24th of February.

The prime aim was to explain the site's chronological and cultural stand by the investigation of findings. Besides, we tried to take reasonable statements about the organization of the site through the examination of relationships between natural and artificial phenomena there, as well as the micro-region around. In the course of the survey, we registered countless occurences with microlithic findings, ceramics with seemingly prehistoric character (Király 2008). Against the usual light carpet of artefacts, the recorded spots shared distinctive traits, as heavy concentration of findings, and/or the presence of objects with the scatter, like artificial depressions or stone alignments. In consequence of the special ecological and geomorphological circumstances (lack of stratification, heavy erosion, transport factors, etc.), the disturbances, the poor knowledge about the region of the 4th cataract, in many cases we were unable to decide in the field, whether the phenomena are coherent, contemporaneous, or how can we evaluate the data in cultural terms. With the help of a nearly intact site like HSAP 057, we hope we can offer useful suggestions concerning these questions in the future.

Excavation

HSAP 057 was lying near the village Dar el-Arab, on a granite djebel's plateau dissected by weathered boulders and cliffs, in the hill zone behind the habitation area. These boulders gave a kind of compartmental structure to the site, with which the traces of occupation accomodated. The plateau gently sloped towards the west, and outside the collection area this inclination became more pronounced. The lower sections of the jebel and the narrow valleys around were plotted with (sub)recent stone shelters and bones of small livestock. Besides, often we explored patches of prehistoric artefacts similar to the material on the plateau. For example, at HSAP 055, later stone alignments were built on a surface covered with microlithic material, just below our site in question. Same was the situation with HSAP 060, slightly towards the north. Two valleys away, a hundred meters to east we discovered a huge prehistoric plateau site, designated as HSAP 080. That plateau was quite disturbed by later burials, ceramics and recent activities, but the collected sample showed cultural similarity to HSAP 057.

Surprisingly at the excavated site, hints of recent intrusions were completely lacking. At the northern margin of it, among cliffs, two rectangular humps of stone stretched, clearly isolated from the occupation in question. Although they remained unexcavated, according to our experiences elsewhere in the concession area, they were graves from later times. None of the cultural material around could be connected to them, or their material was identical with the prehistoric findings. The southern perimeter of the plateau was framed by naturally formed minor „compartments" with microlithic artefacts in a light density, compared with the main excavation surface.

After a 294 m^2 grid was constructed, we made a piece-plotting, photo documentation and systematic collection at 80 m^2 (Area A), and a total collection of ceramics at 116 m^2, which squares with the length of the plateau (Fig. 1). From the plotted area, we had the possibility to keep only the typical and curious lithics and all the ceramic fragments. These were in a quite fresh condition, other categories of findings were absent. The restricted subsurface investigations showed fine homogenous, yellowish brown sandy sediments with the thickness of 10-15 cm, below that the base rock was lying. Only the upper 3-5 cms contained artefacts, in a very light density in comparsion with the surface. At the southern margin of the grid, an isolated compartment of 3 m^2 was densely covered with chert and flint material (Area B). A total collection was made here, that served as the base of technological analysis.

Lithic artefacts

The lithic industry based on small flint and quartz pebbles, which were omnipresent in the vicinity. In some cases, the knappers used blocks of quartz instead of pebbles, that were locally available as outcrops. The dominant raw material of cores are flint and chert in both samples. At Area B, only these were present, at Area A, five quartz pieces encountered; apart these, one agate core fragment was found. In the view of size differences between the two collection area, it can be stated, that in Area B the presence of cores was much more pronounced.

In Table 1, we can see the distribution of core types. The most frequent is the single platform core at both areas, but the other types together are balancing their weight in both samples (Area A – 50%, Area B – 43%). The so-called „centripetal" cores (Fig. 3.1, 4) are standing for themselves mostly among the core fragments of Area B. These are made of flint, their striking platforms extending around the whole perimeter of pebbles. The closure of the debitage surface consists of a big flake negative in the middle, which starts from the usually prepared proximal part of the core. This negative is surrounded by much smaller traces of detachments, along the perimeter. At first sight, this pattern looks like a kind of Levallois method, but there are differences to that, e.g. the lack of axial side preparation, the the lack of dual convexity (Brantingham, Kuhn 2001; Van Peer 1995; 2002). Anyway, this reduction mode differs significantly from the conception of single platform, where the blanks are detached till a point where the knapper decided to abandon the core or changed the direction of blows, creating a new striking platform (as well as the ninety degree and opposed types of cores).

If we investigate the unhurt platforms of cores and core fragments, we can see that irrespective of raw material, the most common are lisse and cortical (43,6%, 28,1%), followed by faceted examples (18,6%) in both samples. To sum up, the blank production was quite simple and accomodated to the size of pebbles used. The debitage categories are shown in Table 2. Knowing the small size of pebbles and the technological attributes recognized on cores, it is not suprising that the majority of blanks are flakes in opposition of blades (Fig. 4.2,4,6,8), with an average length of 27,7 mm for the undamaged artefacts. The splintered and use-retouched pieces are represented as debitage, because these artefacts are not deliberately worked as this. Their inclusion into the class of modified pieces would overbalance the analysis' ratio. Within this study, the target of tool typology is not the recovery of tool-use, hereby the framing of actions performed, but to assemble a data set, wherewith I can search analogies for the establishment of the site's cultural and chronological position. As for the angular pieces, these artefacts are

without butt or traces of detachment on the dorsal surface, and they do not have striking platforms too. The modified pieces are the different formal tools, created by retouch, backing, notching.

In sample B, almost all the debitage is from flint or chert. In the case of Area A this distribution is illusive in the manner that the sample conatins mostly flint and chert, but in the field, the overwhelming majority of lithics was made of quartz (2618 against 759 pieces), other raw materials are rare. The main difference between the two areas manifests in the raw material usage, which can be detected through the two samples too. This difference is not appears in the category of finished tools, that are primary made of flint and chert at both areas.

As previously mentioned, at Area A only the typical and curious lithics was possible to keep in the sample. Independently from raw material, it consits of all the modified pieces, cores, core fragments, and a selection of blanks which are able to represent the technological repertoire of the site. In comparsion with the sample of Area B, this aim was succesfully reached.

The blanks and modified pieces were grouped by proportion of dorsal cortex coverage. The categories are the followings: without cortex, 0-25%, 26-50%, 51-75%, 76-100% cortex, and pieces with lateral cortex. The aim of this classification was to recover, whether the cortex-amount of a blank played a role during selection for supporting a tool. This question of preference is interesting in the light of that the length of undamaged blanks and modified pieces are roughly the same as the length of the undamaged debitage surfaces of cores. With the knapping technologies applied here, mainly cortical pieces could be detached from the small pebbles used. If the knappers were „economical" they used mostly cortical flakes for formal tools, as blanks without cortex are rare. At Area A, 52,5%, at Area B, 26% of the blanks are without cortex. This distribution with the use-retouched items is 52% and 25%, and 78,3% and 61,5% by the modified artefacts respectively. The difference between the two samples is partly because of blanks from quartzitic blocks in sample A. If we exclude them, the difference remains in a somehow smoother grade. The tools in both samples usually bears no cortex, the use-retouched pieces also, or they have cortex on a lateral edge. This means that the knappers were quite „uneconomical", which is not suprising in the view of abundance of pebble raw material in the vicinity.

Among blanks, the most frequent butts are cortical and lisse, converging with the observations taken about cores. In less proportions, faceted, punctual, dihedral and linear butts are present. There is not any preference of butt-type in case of modified or use-retouched pieces, as there is not a strong connection between

butts and raw material. In sample A, faceted butts are more frequent among artefacts made of quartz blocks, but the cortical and lisse types are much more common with this raw material too.

In the two samples, one third of the items are broken, the breakpoint situates usually at the distal or proximal end. In many cases, damages characteristic for the bipolar technology of detaching occur. Between damage and raw material, there is not any connection.

To summarize, the technological traits on the collected pieces suggest a certain coherence for the artefact scatter. The industry used local raw materials, mostly small flint and quartz pebbles with different coloration, occuring everywhere along the wadis. The pebbles were sliced without preparation, with the help of an anvil and hard hammer, or a lisse striking platform was formed by a blow, from where flakes were detached with direct percussion until the platform became useless in the knapper's view. At this point, the core was abandoned or rotated to continue the operation. In rare cases, the pebble was exhausted in a way that resulted centripetal cores. As the conception is quite different, It is hard to decide whether this chain of movements can be incorporated in the usual sequence of detachments or it existed separatedly. Flakes from these cores are rare or hard to recognize (e.g. Fig. 4.11). The debitage consisted mostly of secondary flakes, which were used without further modifications. Some blanks, usually without cortex, were selected to make formal tools in a sense we understand it.

These formal tools are made of almost exclusively flint and chert, they have an apparently microlithic character (Fig 4;5). The main types are the backed pieces, including characteristic lunates, double backed perforators, other backed tools. In sample A, besides the lunates we can find some rectangles, a trapeze among geometrics, and an atypical backed point which has not an exact analogy in the region (Fig. 5.3). Besides, retouched artefacts, notched pieces, and two burins are present. The types and their distribution are similar in the two samples.

Ceramic material

The ceramic material counts 102 sherds with an average size of 10,2 cm2, in a quite good state of preservation. Wall thickness varies between 3 and 12 cms. The ware is well fired, usually brown or light-brown, but there are items with reddish and blackish colour. The fractal surface bears, mostly on the thicker shreds, a black strip in the middle. Almost all the pieces were smoothed or burnished inside and outside, a pair of them had a polish, and in two cases a red and a brown slip can be recognized. With a ratio of more than 90% the fabric is tempered with quartzitic

sand and angular mineral particles. In the remaining cases the temper was of vegetal fibres, supposedly they are belonging to one vessel. The volume of tempering is medium-heavy, the granule size is mostly medium or smooth. There are not safe estimations of vessel forms; most of the pieces are too small to reconstruct shapes. Probably there were big open bowls with simple, linear profiled or lipped rims.

Along the fabric, three types can be differentiated. The first is represented by the sherds with organic temper; these are thick, quite badly fired pieces, some of them showing the technique of coiling at the inner surface (Table 3A, fabric 3). The second group contains well fired, thick sherds with mineral temper, their color varies between reddish-brown to black (Table 3A, fabric 1). In some instances, the fabric is heavily tempered with coarse particles. The third group consists of well fired, carefully smoothed thin sherds, tempered with fine sand (Table 3A, fabric 2). Their color is light brown or greyish-brown. Almost all the sherds are decorated, for their classification I used the system of Caneva and Marks (1990; Gatto 2002; Table 3B). The motifs were applied before firing with the methods of punctuation, rocker stamping with tools of evenly serrated edge leaving 4-7 dots behind, and simple impression. Striking was the absence of motifs made by incision or rocker stamp with a plain edge. In the majoritiy of cases, the impression of the tools used are dots and dashes. A few sherds wears lines originated from a cord wrapped implement.

As the small fractions allowed, I set up the tightly packed zigzag of dots as the best represented motif, arranged in curved bands. Popular is the loosely packed zigzag, besides common are impressed lines of dots in straight and smoothly curved bands. Based on the dominance of continuously decorated sherds, the structure of application is covering, or in some instances, zonal patterns were made. One of the three rim shreds has a line of deep oblique dashes, on the other two, a line of tiny dots stretches along the intersection of rim and body.

Features and spatial aspects

The distribution of the artefacts roughly followed the plateau's natural compartmentality at Area A, but there were anomalies of density that deserve more attention. Around the stone alignment counted as "1" in Figure 1, the amount of ceramics and lithics was highly increased. The alignment itself consisted of 20-30 cms long, flat stones in an apparently conscious arched arrangement on the surface. Similar one layered alignment we discovered at the nearby HSAP 059, but we did not make a detailed examination there. We suppose that the alignment in question was contemporaneous with the main use of the site, as the coverage of artefacts is dense around it.

A second artefact concentration extended around the object signed as "3" and the quadrants southeast from it. Here again, the amount of debitage, tools and cores was more pronounced as elsewhere. Object 3 was a „patch", a phenomenon we observed at more places during our survey. These features were situated at deeper parts of the ground, their shapes were circular with a diameter between 1 and 1,5 m, slightly deepening towards the middle, with a filling consisted of very fine, homogenous, light-brown sediment. The archaeological material occured always around the perimeter of the patches. Similar phenomena were observed by Wolf and Welsby in the vicinity (Wolf, Nowotnick 2005; Welsby 2006). Also interesting is the natural cliff-compartment that framing the patch, and the other such „niches" within the collection area.

One niche was lying just north from this compartment. The borders of this circular area was formed by huge boulders and smaller, flat stones humped at the hiatuses between them. The floor of that niche was systematically cleaned from gravels, these debris swept away into a curved hump around, marked as „2" in Fig. 1. This hump had a sharp contour in every direction, not absorbing in the gravel outside the compartment. The gravel-free area in the middle was lightly littered with lithic artefacts and some sherds. This phenomenon suggests that the cleaning of the niche pre-dated the deposition of the prehistoric artefacts.

The next anomaly has to be mentioned is a more intensive ceramic sherd coverage west from area A, where, at the same time the amount of lithics dropped drastically. The last distinctive spatial phenomenon was Area B itself. The secondary nature of the deposit is quite sure in the light of those factors like the lack of quartz debitage and ceramics, the fact that much of the lithics was dropped down among millstone-huge cliffs, which was absolutely uncommon at Area A.

The relative homogenous composition of the recovered artefacts delineates quite a tight bracket of time for the use of HSAP 057, but the processes and meanings of their spatial distribution is somewhat obscure at the moment. As the first step towards the differentiation between site formation and subsequent taphonomic processes, a pebble analysis began in 2011 with promising preliminary results. In course of this analysis, we used high resolution orthorectified images, and piece-plot drawings of the surface. On these, we compared the natural granite rubble and the anthropogenic lithic material with respect to three size classes. At the time of the publication of this article, the study covered one fourth of the 80 m2 Area A, that is, an 50 by 50 cm plot at every one square meter of our grid system.

Spatial distribution of non-anthropogenic, worn granite rubble and anthropogenic material was almost similar in respect of quantity, but there were discrepan-

cies between the distribution of pebbles in different size classes. The previously mentioned compartment (no. 2 on Figure 1) was almost free from medium and big rubble, but considerable amounts of anthropogenic material occured here in the same size-class. These selective representations of cultural and natural phenomena, the absence of later Holocene cultural material together suggest only a slightly altered spatial configuration since the earlier Holocene.

Discussion and conclusions

In the lack of appropriate material for radiometric investigations, the age and cultural connotations of HSAP 057 have to be determined through techno-typological analysis. Nowadays numerous publications are entitled to make a coherent, dynamic picture of the whole area, incorporating the new fieldwork results, structuring the material culture, sketching the relations of cultures and groups (Gatto 2006; Jesse 2002; 2003; Keding 2006; Kuper 2006; Lange and Nordström 2006; Salvatori and Usai 2006-2007). The place of our data would have to be found in that kaleidoscope of periodizations that are also searching their validity beside each other. Based on the classic interpretation of cultural markers, we compared the characteristics now attested to the site with traits of the neighbouring cultures and groups. The lithic technology fits well into the trends of Central Sudan and Nubia. These are the use of quartz and flint, the single platform, rarely prepared cores and the slicing, the abundance of cortical flakes in the debitage. It seems that the heavy use of quartz against all other material is not a feature at culture level, as it varies from site to site independently from cultures, but it has chronological significance (Shiner 1968a; Garcea 1996). The heavy presence of it in the debitage but not among tools is a common point with the Abkan (Lange and Nordström 2006). The importance of wide lunates among geometrics can denote a more recent phase, as in Central Sudan the widening of lunates is an observed trend form the late Early Khartoum on (Garcea 1996; Fernández 2006). The double backed perforators represent a significant portion of Abkan assemblages also, and there are some Khartoum Neolithic examples of their frequent use (Shiner 1968b; Nowakowski 1984). In the Khartoum Variant, this type is underrepresented. The lack of gouges and celts is characteristic to the north, and for the Early Khartoum in the south, but their appearance could not strictly knotted with Khartoum Neolithic (Haaland 1989). Although many grinding stones were found at the nearby HSAP 080, at HSAP 057 only one occured in the slopewash. In any case, the lack of grinding implements signifies more the function than the age or culture of an occupation. The ce-

ramic material is comparable with Khartoum Variant and Khartoum Neolithic pottery, manifesting in characteristics like zonal and covering decoration, long dotted curved zigzags, impressed lines of dots. From the Karmakol industry and the Abkan it differs in mineral tempering, the lack of notched rim decoration, the lack of incision. Among the recently excavated sites, we can cite for analogies 8-B-10C and el-Barga, counted as Khartoum Variant (Garcea 2006-2007). On the account for homologous composition of lithic and ceramic material we should mention the „Early Ceramic/Mesolithic" MTG-3 and the „Neolithic" 3-Q-92 sites, or the Neolithic sites of the GAME concession area (Geus and Lecointe 2003; Paner 2003; Wolf, Nowotnick 2005).

The most important question about the reasoning above is the coherence of this sample. The palimpsest nature, the disturbed condition of surface material within our concession area usually permitted to recognize mapping units, instead of "sites". In the case of HSAP 057, the situation was different. The hilltop location assured a delineated spatial context, and the general character of artefacts gave a restricted time-range, i.e. the Holocene. The fact, that this configuration was repeatedly occured in the vicinity (for example HSAP 080), also supports a certain coherence in our sample. These considerations allowed us to handle our data in one interpretative scheme, based on the markers listed. The cultural characteristics of the artefacts suggest an earlier Khartoum Neolithic connotation of HSAP 057, within the second half of the 5th Millenium BC time range. This conclusion hopefully serves as a locational information in the regional history of the Fourth Cataract area. A more minute cultural interpretation requires the unfolding of the site's taphonomic history, a theme of our ongoing research.

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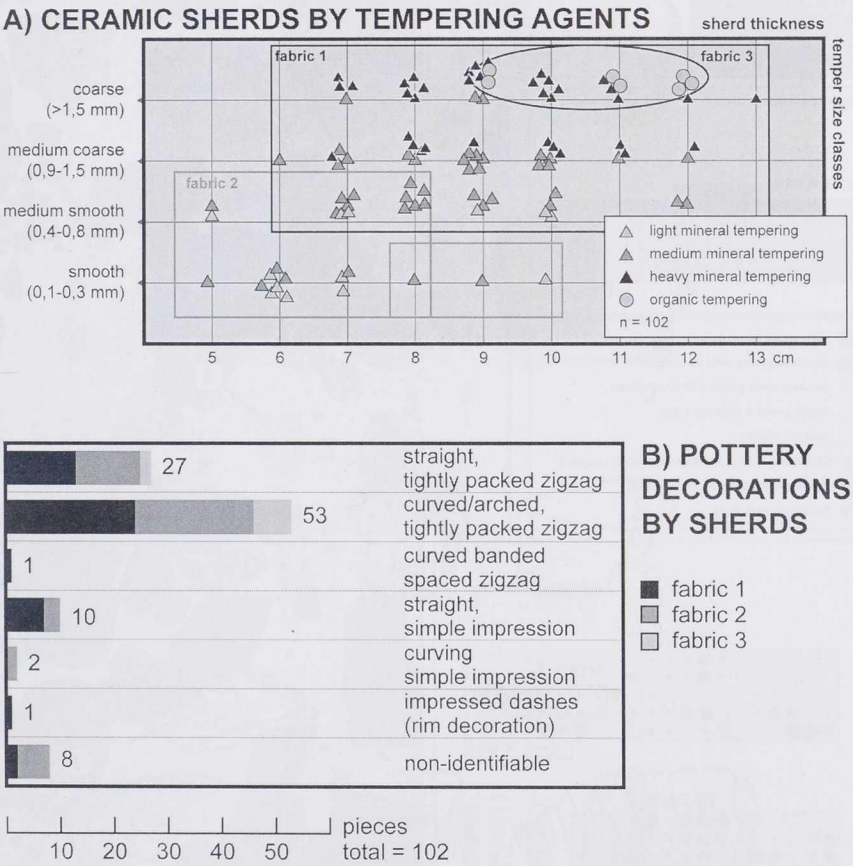
Table 1. HSAP 057, cores and typical items by type and raw material

	Area A			Area B		total
	flint and chert	quartz and quartzite	other	flint and chert	other	
single platform	7	2		4		13
opposed platform and bipolar	1	2		1		4
ninety degree	3					3
multiple platform	2					2
centripetal				1		1
initial	1					1
other				1		1
cores total	14	4		7		25
lunate	18		1	5		19
trapeze/rectangle	3					3
other backed pieces	4				1	5
perforators	9					9
notched pieces		1		4		5
burins	1			1		2
retouched pieces	5	7	1	2		15
varia	1					1
typicals total	41	8	2	12	1	59

Table 2. HSAP 057, lithic material by type and raw material

collected pieces		flint and chert		quartz and quartzite		other		total
category	modification	A	B	A	B	A	B	
cores		14	7	4				25
core fragments		5	10	1		1		17
natural debris			5		1			6
angular debris	no	12	37	6	1		2	58
	splintering	1						1
	total	13	37	6	1		2	59
flakes	no	117	164	106		2	2	391
	splintering	8	1					9
	use-retouch	17	8	8				33
	total	142	173	114		2	2	433
blades	no	11	4	6	1			22
	use-retouch	2		3				5
	total	13	4	9	1			27
modified pieces	retouch	8	2	2		1		13
	notch	3	4	1				8
	backing	29	5			1	1	36
	burin blow	1	1					2
	total	41	12	3		2	1	59
collected pieces total		228	248	137	3	5	5	626
other registered pieces		556	0	2498	0	0	0	3054
total amount								3680

Table 3. HSAP 057, in comparsion of other cultures and groups



Data after Caneva 1984; Caneva and Zarattini 1984; Clark 1984; 1989; Garcea 2007; Geus 1984; 1992; Jesse 2002; 2003; Lange and Nordström 2006; Mohamed-Ali 1982; Nordström 1972; Shiner 1968a; 1968b; Wendorf 1968.

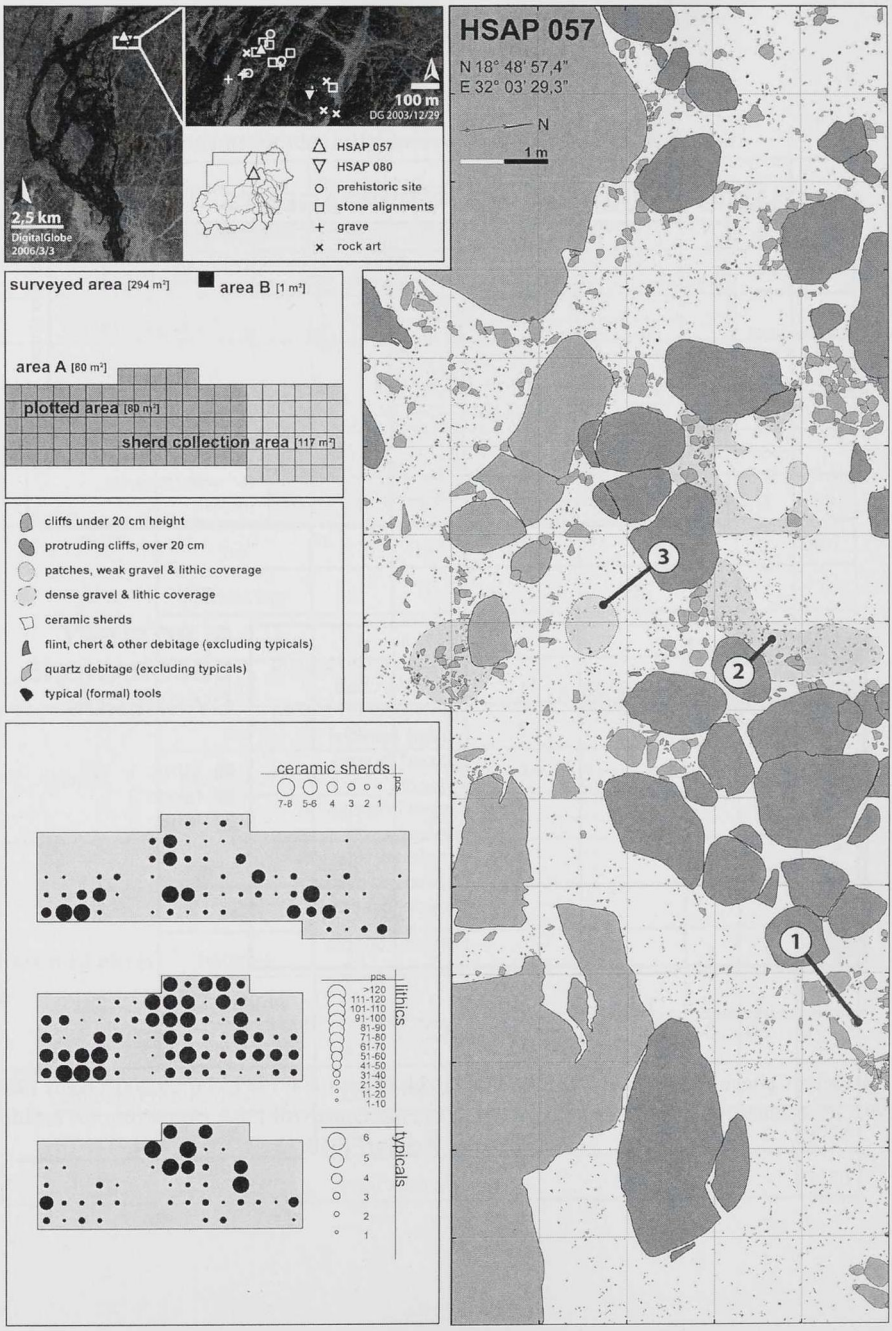


Fig. 1. HASP 057. See the figure for explanations (drawings and arrangement: Attila Király; satellite map from Google Earth).

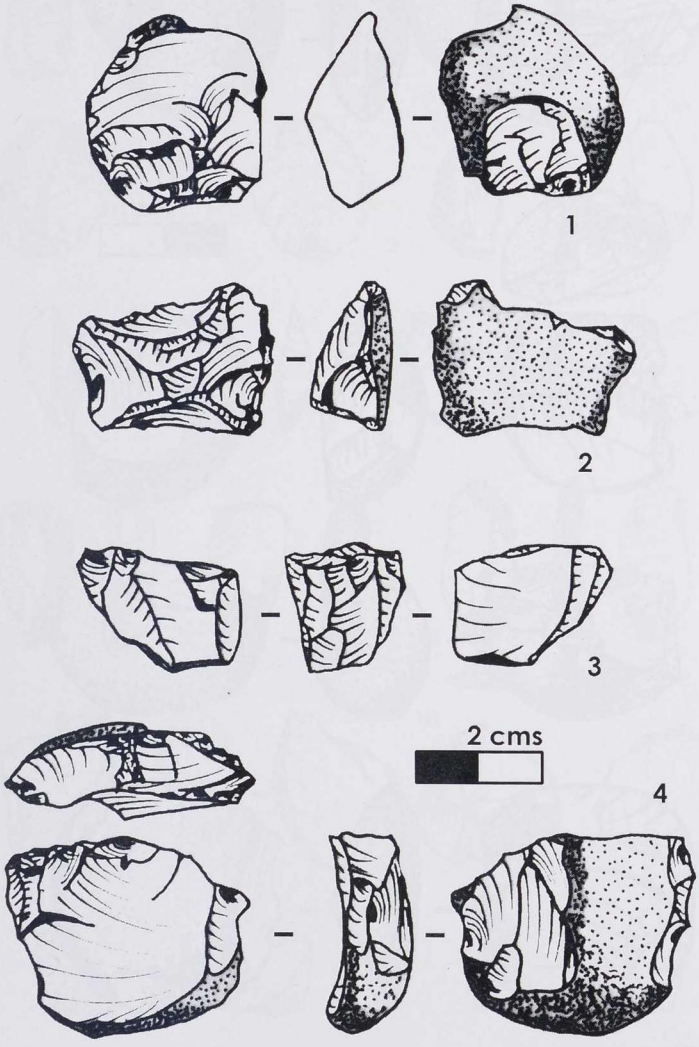


Fig. 2. HSAP 057, lithic material, cores. 1: ninety degree core; 2: multiple platform core; 3-4: single platform cores. (drawings: Attila Király).

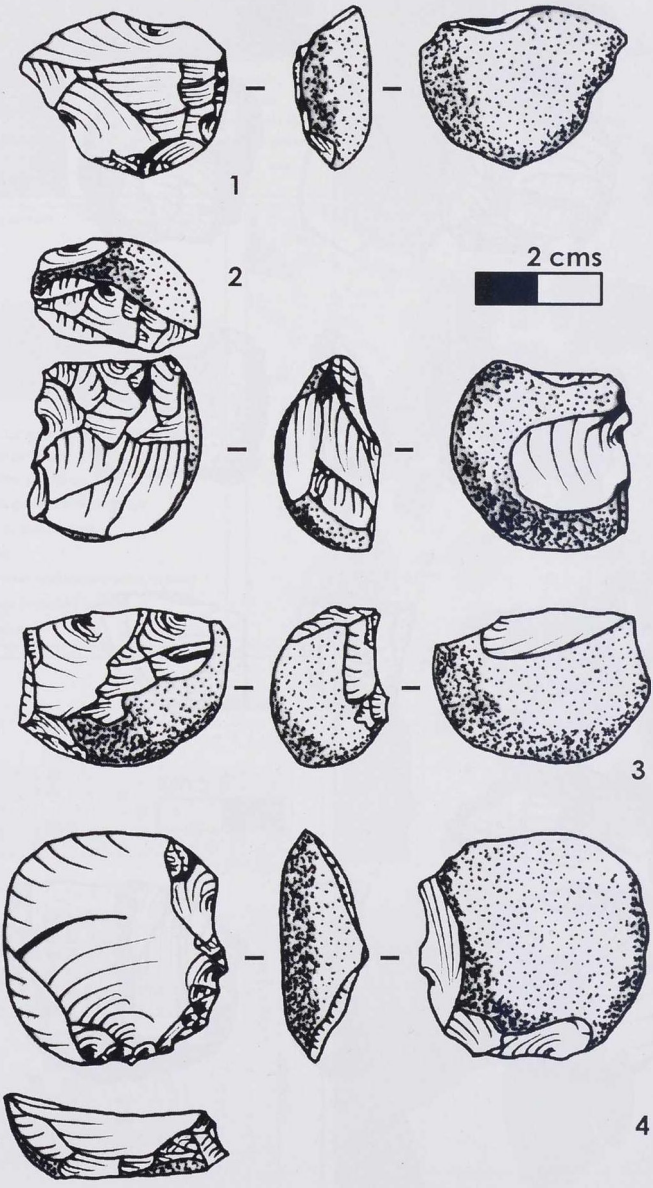


Fig. 3. HSAP 057, lithic material, cores. 1: centripetal core (broken); 2:ninety degree core; 3: single platform core; 4: centripetal core. (drawings: Attila Király).

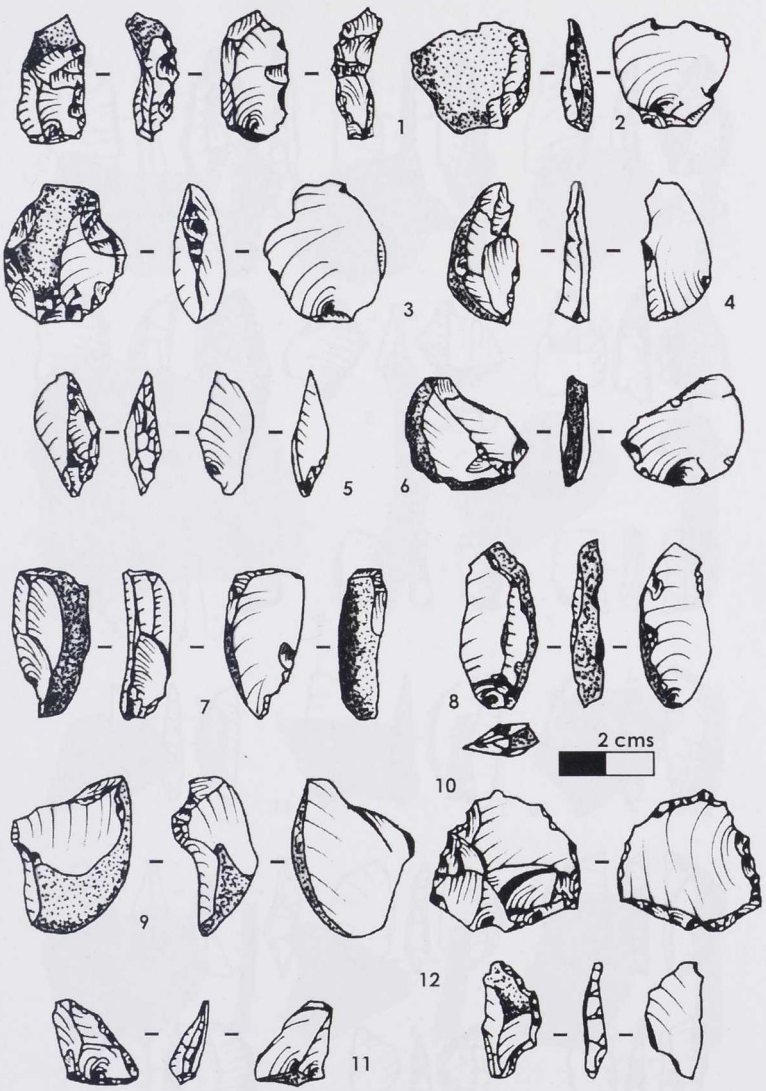


Fig. 4. HSAP 057, lithic material, debitage and tools. 1: splintered piece; 2: cortical flake with use-retouch on dexter edge and damage on the distal part; 3: flake with notch on the dexter edge; 4: cortical crescent shaped flake from quartzite; 5: backed flake; 6: cortical crescent shaped flake from flint; 7: flake with end-scraper on the dexter-distal corner; 8: cortical crescent shaped flake with lisse platform; 9: flake with end-scraper on the sinister part; 10: splintered piece; 11: retouched flake from centripetal core; 12: backed tool with dorsal cortex. (drawings: Attila Király).

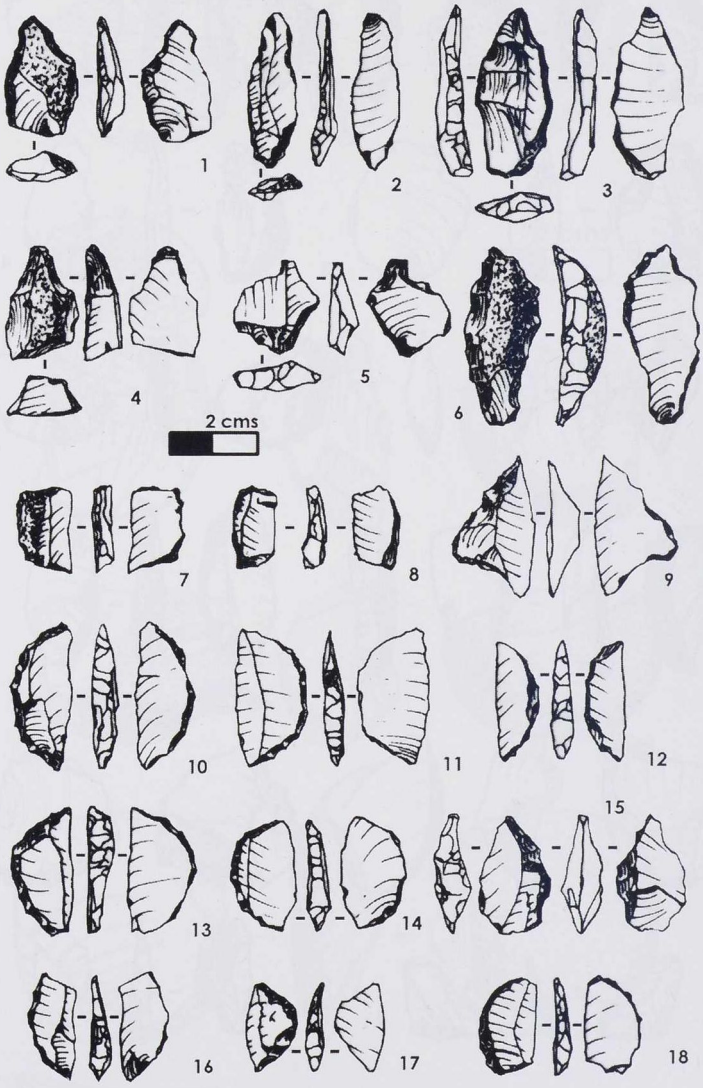


Fig. 5. HSAP 057, lithic material, tools. 1,4,6: double backed perforators; 2-3,9: backed tools; 5: perforator; 7-8: rectangles; 10-18: lunates. (drawings: Attila Király).

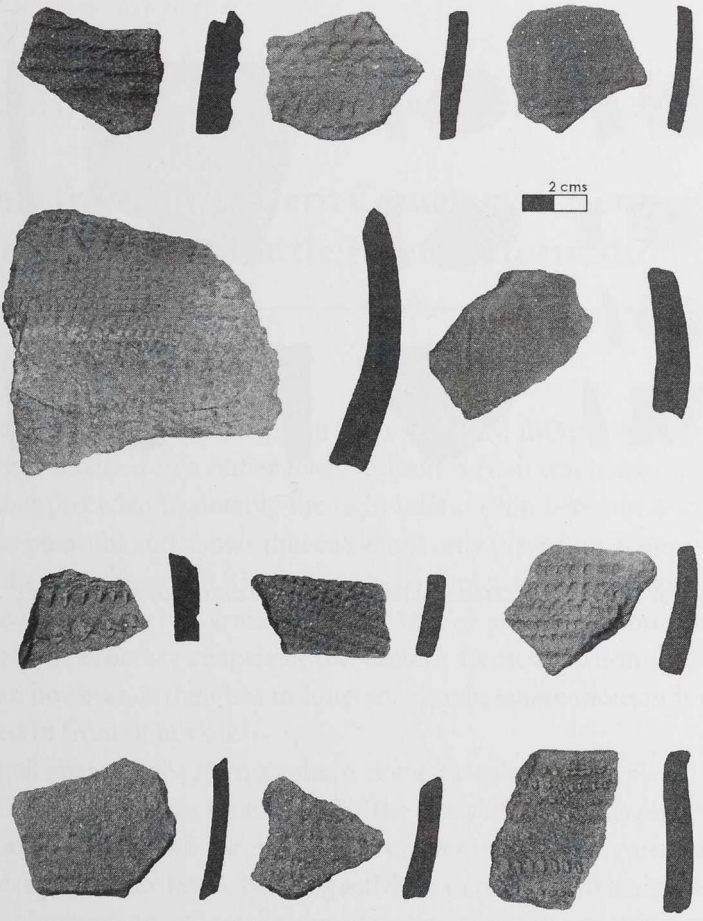


Fig. 6. HSAP 057, ceramic shreds (photos and drawings: Attila Király).

Fig. 7. HSAP 057, ceramic shreds (photos and drawings: Attila Király).