

## LEAF-SHAPED IMPLEMENTS FROM HUNGARIAN OPEN-AIR SITES

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Leafpoints are one of most popular topics in the Hungarian palaeolithic literature. We shall not describe the rich and complex history of research, since the great summaries touching on the leafshaped points contain a full list of reference (Siman 1978, Ringer 1982, Gabori-Csank 1986, Allsworth-Jones 1986).

The paper will enumerate the most important open-air sites with leaf-shaped implements. We cannot promise to answer questions, the description of the finds, however, will enable us to weigh the positive or negative data and to think over the existing theories.

### Implements of middle-palaeolithic character

Miskolc-Avas: the area has been known and surveyed for a long time, it is considered as the "cradle" of Hungarian palaeolithic research. The surface finds and materials coming from several excavations have been reviewed by K. Siman 1986(a).

The geological sections on various points of the hill show varied layer series. The excavations yielded no cultural layer or settlement surface where a coherent find unit could be proved. According to typological analysis the implements of at least two palaeolithic cultures can be collected on the Avas hill: one is a middle palaeolithic industry characterized by bifacial tools rich in side-scrapers, the other is a less typical industry of upper palaeolithic characteristics.

Some of the bifacial tools of middle palaeolithic character are leafshaped points, most of them, however, are side-scrapers of various forms, retouched in various ways, often with rounded base. The archaic roots of the industry are attested by some handaxes or their fragments.

The bifacial tools do not typologically belong to the Szeleta culture. The ratio of occurrence of the types of the implement group underline this observation. The function of the settlement must have been first of all the procurement/mining of the raw material and further on the preparative/workshop activities: similarly to other sites where the ratio of the local raw material reaches or overpasses the 90 % and the number of the implements is low as opposed to that of the flakes (Siman 1988a).

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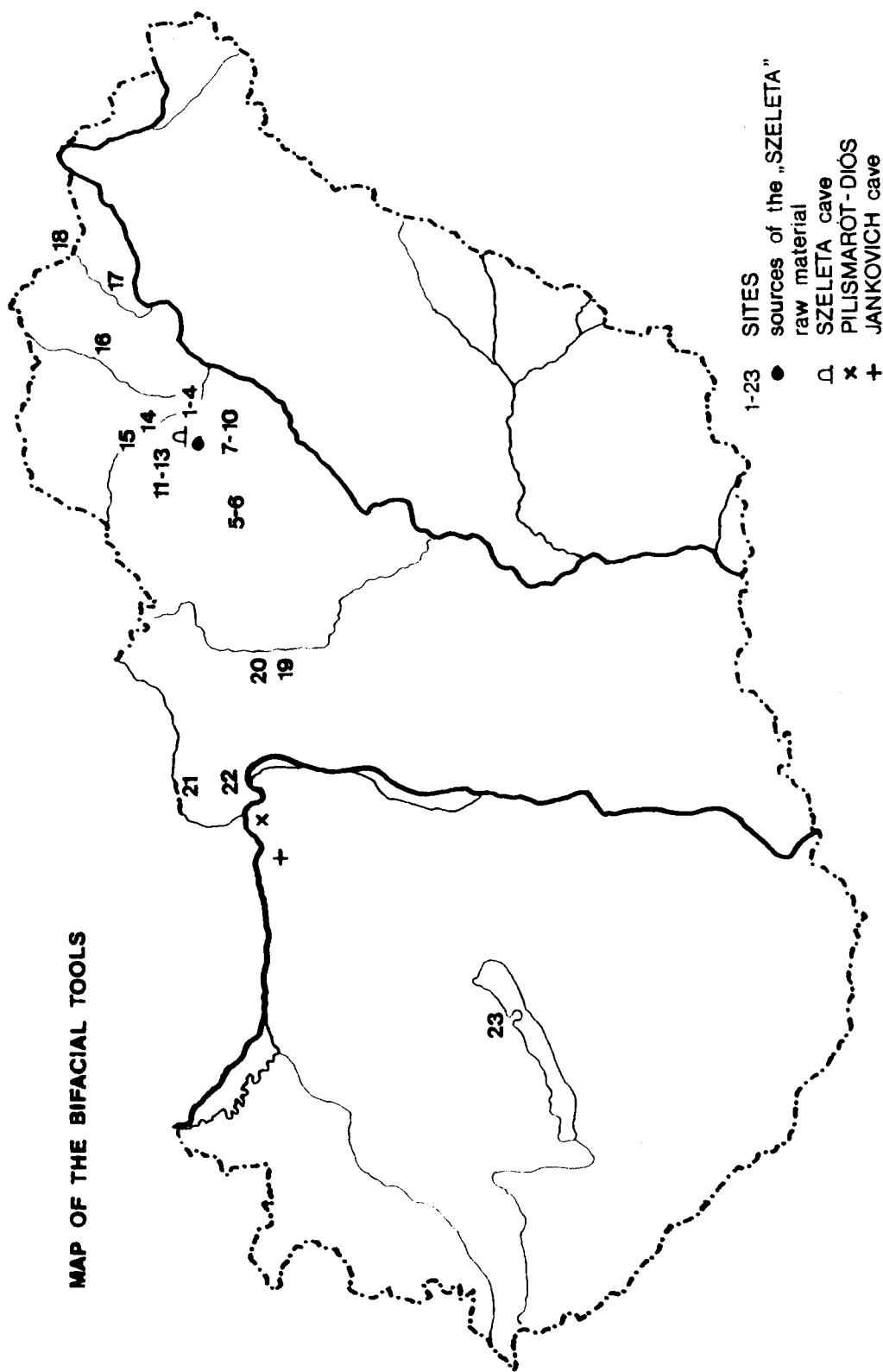


Fig. 1. Map of the sites

- 1 - 4: Miskolc - Bársony-house; Petőfi-street; Ávas hill; Görömböly; 5-6: Eger - Köporos; Ostoros-Rácpa; 7: Kács  
8: Mezőnyék; 9: Mállyi; 10: Hejocsaba; 11: Bükkmogyorósd; 12: Csokvaomán; 13: Nekézseny; 14: Sajóbábon; 15: Sajószentpéter; 16: Korlát; 17: Sárospatak; 18: Nagygéres (Velky Gires); 19: Aszod; 20: Verseg; 21: Hont; 22: Szob; 23: Lovas

**Korlát:** The ridge running along the western side of the Arka valley is covered by limnic quartzite from Boldogkövaralja till Korlat-Ravaszyuktető (Dobosi 1981a). The analysis of the materials partly collected, partly unearthed during excavations were last analyzed by K. Siman. She arrived to the conclusion that people of several archaeological cultures had settled on the ridge collecting, at least many of them, raw material for stone implements. The earliest phase is represented by bifacial tools of middle palaeolithic types discovered in secondary situation, uncertain stratigraphical position in eroded, disturbed levels. These implements are: rough knives of handaxe-like elaboration, side-scrapers, handaxes with straight or obliquely cut base. The latter ones, if they are flat enough are somewhat closer to the traditional form of the leptolithic implements. Concerning its origin and relations, it is more or less sure that the handaxes suggest an Acheulean root of southeastern origin, here, however, without its traditional background industry (Siman 1988b).

**Sajóbábony:** the Babonyian culture was outlined in result of years of field survey here and in the vicinity (Ringer 1982). Most of the leaf-shaped tools belonging to the industry are leafshaped side-scrapers of knives of various types (Babonyian, Volgograd etc.). The high, asymmetrical ridges of both faces, running in a zig-zag line, the scarce elaboration of the tip, the greater angle of the edge set these implements apart from the real leafshaped points.

During the verifying excavations, which, however, did not lead to result, some real leafshaped points were also found (Dobosi 1987–88). They are asymmetrical both along the longitudinal axis and in cross-section, the edges are straight, the greatest width is in the lowest third of the implement. On the surface it is the flat handaxe retouche which is preferred to the scalariform retouch. Regarding the analogies the industry belongs to the Micoquian tradition of the Middle Palaeolithic. The leafshaped implements are actually the late products of the Acheulean bifacial tools. The industry does not survive the early Würm (Ringer 1982). Based on recent research K. Siman (Siman 1988b) questions the independence of the Babonyian, according to her these spots uncovered on the surface must have been workshops belonging to the lower cultural layer of the Szeleta cave.

**Csokvámány-Nekézseny, Hatartető** (Fig. 3., 1–5.): Marton Rozsnyói collected finds and made field survey in the area in 1951 (Rozsnyói 1963). The hills of 250–260 m average height are rich in water; on the northwest they are separated from the great massif of the Bükk mountains by the valleys of the Ban and the Szilvas streamlets. The 366 m high Hatartető with its terraced sides is situated between the two villages. The surface finds were collected by Rozsnyói on the northwestern side of the hill sloping to the valley of Csermaly-streamlet. Five spots of various sizes were found on the cca 800 m long terraces of the hillside. The two, situated the closest to the top (on the top: 70 x 70 m, and another one 250 meters farther in a ravine: 15 x 15 m) yielded no sherds, while on lower altitudes the finds contained poorly baked, uncharacteristic pieces of prehistoric pottery together with the stone implements. There were no excavations on the territory, some kind of stratigraphy could be deduced only from the upper 40 cm disturbed by agriculture: "the 40 cm thick cultural layer is uniform what totally excludes the possibility of overlying settlements" Rozsnyói wrote. Now we would call it a partly transformed, eroded fossil soil, exposed to surface, then redeposited by slope movements and mixed by agriculture.

The collector did not separate the finds according to the place of occurrence. The implements are mostly made of felsitic quartzporphyry: planconvex bifacial tools, knives of asymmetrical cross-section, retouched on one side ("Babony messor"), "Feustkeil-blatt", which are the widest in the middle part. In this find unit there are isosceles shaped double scrapers, convex (Quina-type) scrapers, blade fragments with aurignacian steep retouch. On the whole the execution of tools made on dark grey or liver brown radiolarite is much finer than in case of quartzporphyry raw material. It is also possible that the material was mixed with the scattered traces of neolithic at the foot of the hill.

**Bükkmogyorósd-Hosszúbérc** (Fig. 3., 6–8): The topographical situation of the 337 m high hill is especially favourable for settlement. It is above the meeting point of three valleys with brooks/animal routes, about

5 km from Nekézseny-Hatartető. On the terraces of the hillside, covered by tertiary pebbles, 455 chipped stone items were collected, 76 of them implements (Rozsnyoi 1963). Some of the collected pieces cannot be identified any more, the bifacial ones, however, are typical tools. No stratigraphy can be reconstructed: the plough has brought even the pebble cover to the surface. From the bifacial tools triangular arrow heads of obliquely cut base, a knife of Babony type, a finely shouldered leafshaped point with straight edge made of limnic quartzite (Fig. 3.6). The numerous, typologically varied side scraper group underlies the middle palaeolithic character of the industry, while some other tools represent upper palaeolithic types. These latter ones are more finely worked, and made on different raw materials. Among the pieces, which surely belong to the site the Middle Palaeolithic features are dominating. The site is grouped provisionally to the younger phase of the Babonyian (?). The possibility of a mixture of two industries cannot be rejected, though this explanation is acceptable only in special cases. For example in case a good quality and popular raw material is exploited and used in workshop. This is not the situation here, only the favourable topographical situation might be attractive.

**H o n t:** It is mentioned in literature that leafshaped points and scrapers were found with mousteroid material (Gabori 1969a, Gabori–Csank 1984). The area of Hont is rich in sites from different prehistoric periods. Upper palaeolithic hunters must have occupied the loess terraces along the Ipoly valley in the same density as in the Danube Bend.

**L o v a s:** Beside the bone tools of the paint mine unearthed in 1950–1951 there was a typical stone implement lying. For a long time the site was cited as an important element of the Transdanubian Szeletian. The many-sided revision allowed a new typological and chronological grouping. The chronological revision of the site was made through the faunistic identification of the bone tools, which constituted the majority of the find material. The faunal unit consisting of 5 mammals and a bird may be dated to the end of the Riss/Würm interglacial (Dobosi-Vörös 1979). The only typologically evaluable tool is a scraper, which was grouped by Gabori-Csank in the recently sketched Jankovichian culture (Gabori-Csank). The implement, however, seems to be alien among the classical implements of the Jankovichian from respect of size, form, raw material, and consequently also of the quality of execution.

**Surroundings of Eger:** The west-southwestern part of the Bükk is a characteristic hill-range. The foothill slopes are proportioned in 2–3 kilometers by streamlets of North-South direction (Eger, Ostoros, Novaj). Between the streamlets the 200–220 m high hills are plateau-shaped, proportioned later on by further West-East directed valley. These cross-valleys meet the main ones with 70–80 m high steep walls. It is practically impossible to reconstruct the pleistocene landscape. The industrial constructions /first of all quarries/ and the intensive agricultural utilization (vineyards) have disturbed, changed great territories or even closed from access.

**Eger-Köporos and Ostoros-Rácpa sites** are southeast of Eger, 4–5 kms from each other.

Köporos was situated on 241 m height on the northern top of the Tihamér vineyards, in a 50 m relative height. The Ostoros site was found on the hill above the next streamlet to the east.

Stratigraphy could be observed only on the Köporos site:

- 30 cm thick disturbed humus with recent waste,
- 20–25 cm thick transformed rock detritus soil with stone scattered in it,
- rock surface, the local detritus of the riolite, continued in the riolite block (Vértes 1948).

The Ostoros finds were collected partly from the surface, partly under it from the recent humus. Partly on the Ostoros site itself and also on a lower hill beside it traces of a neolithic settlement were observed (Mazan 1966).

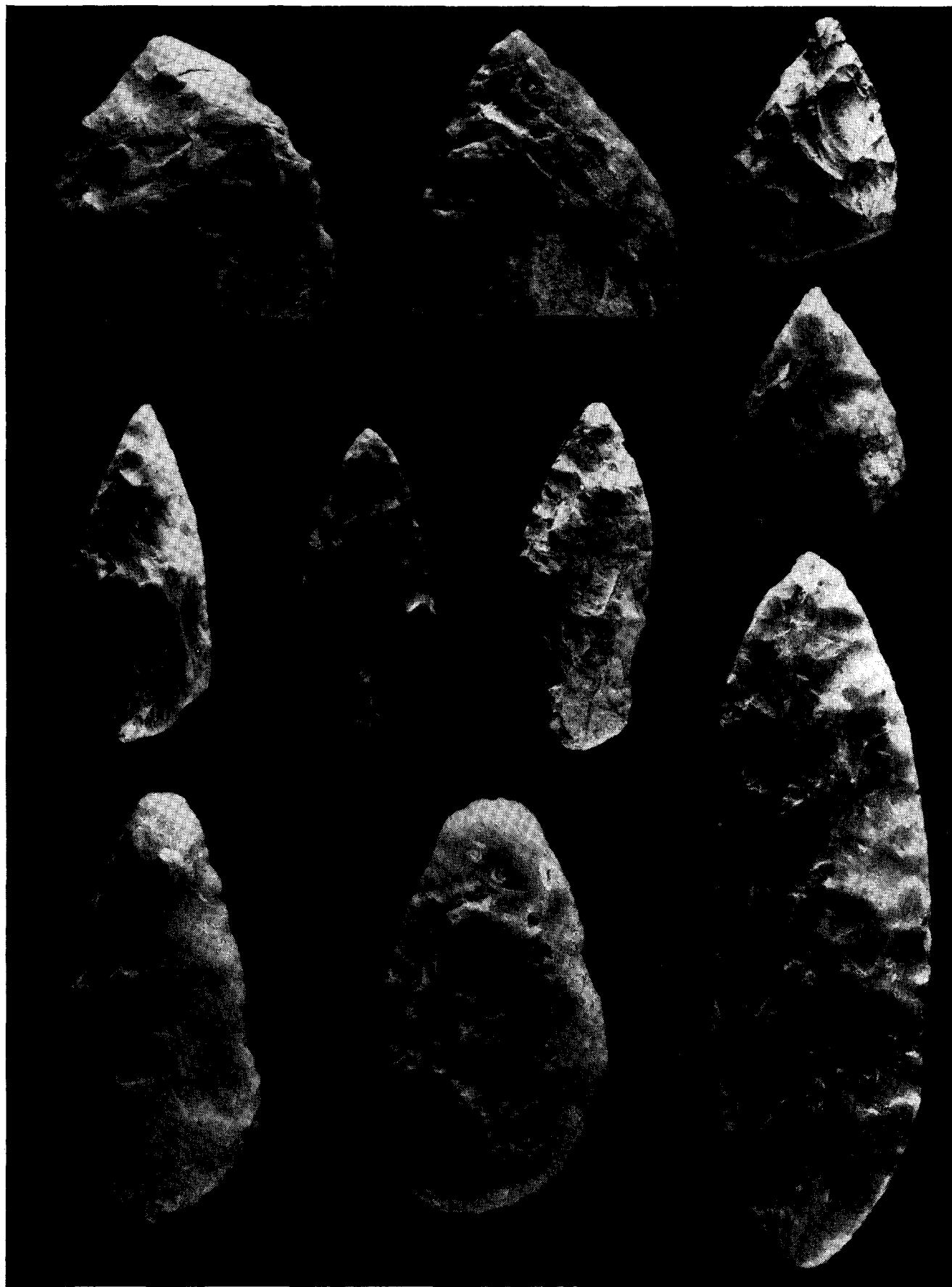


Fig. 2. Bifacial tools (1:1)

1: Mezönyék; 2: Eger-Köporos; 3: Görömböly; 4: Eger-Köporos; 5: Ostoros; 6: Nekézseny; 7: Sarospatak; 8: Velky Gires/Nagygéres; 9: Szob; 10: Aszod.

The find unit of the Eger-Köporos site has run a varied career since the first publication (Vértés 1951). It was A. Ringer who last grouped it in the Bábonyian cultural circle (Ringer 1982). Ph. Allsworth-Jones describes the site, though he shows scepticism in cultural grouping (Allsworth-Jones 1986).

Allow me to promote another suggestion for classifying the culture. I think that Eger-Köporos shows cultural affinity to the material in the upper layer of the Subalyuk cave. The upper palaeolithic typological-technological characteristics detectable in the material do not contradict this view. In the light of the later stratigraphical correlational experiments the upper cultural layer of the Subalyuk cave seems to be identical with a soil layer of interstadial features, deposited in the period of the appearance of the earliest upper palaeolithic industries (Ringer 1988). This means the first Aurignacian wave in about 40 kyr B.P., pedologically it is relevant to the Basaharc double soil complex. The charcoal found together with the finds does not reject this chronology, the same as it did not prove the original datation to the Mesolithic: the pinaceae lived all through the Würm, while oak was present during all the interstadial periods in the Carpathian Basin (Stieber 1967).

The arguments in favour of the contact with the upper cultural layer of Subalyuk cave are the following:

- identical raw material utilization: dark grey hornstone, limnopalites from the Matra Mts, hydroquartzites from the Mátra Mts, hydroquartzites from the foothills of the Bükk, silicified greenish marl, obsidian, Szeletian quartzporphyry and, first of all, spotted hornstone (Holy-Cross Mountains) which occurred, beside Eger-Köporos, only in the Mousterian of Solyomkut cave, so the procurement and use of this specific raw material is restricted to a short period, the very end of the Middle Palaeolithic.
- typo-technologically the raw material of nodule/pebble form were preferred, laminarization is minimal (tools considered blades for their size are also rather blade-shaped flakes), the side-scraper group is varied, there are no Babony knives, on the other hand Mousteroid points are present (which are missing from the Babonyian), and due to the pebble raw material Levallois type removals can be attested.

Analogous forms to the early upper palaeolithic industry of Bodrogkersztur type are revealed in:

- wide, bulky blade-blanks,
- end-scrapers on flakes reminding of side-scrapers,
- the ratio of upper palaeolithic and middle palaeolithic type groups in the whole tool assemblage.

Since a double scraper, nearly identical to the one from Eger was found in Mezönyék (Fig. 2., 1–2), this find may also be attached to this circle. A single find, however, is not enough for qualification: the detailed revision of the Eger-Köporos material is needed. Anyhow, there is a hope that open-air sites of the Subalyuk population will be found within an area of 20 km radius around the cave in the same geographical situation as the two sites.

The other quantitatively significant find unit around Eger came from Ostoros-Racpa. This material, collected on the surface, contains 130 artifacts. The rich end-scrapers component lends it an upper palaeolithic character. The root/contacts to the Middle Palaeolithic are not so unilateral as in the case of Köporos. One of the five leaf-shaped implements is a regular, finely shaped point (Fig. 2., 6), one is a fragment of a point, two are scrapers.

L. Fodor reports about further rich surface materials collected by him around Eger (Fodor 1984). Bifacial tools were found on two sites: Andornaktálya-Szükszardomb, the hill range along the western coast of streamlet Eger running in North-South direction, yielded the fragment of a leaf-shaped point. From Egerszalok a somewhat irregular, roughly executed bifacial double scraper is described.

Examining all the open-air sites with bifacial tools around Eger, there is a striking duality appearing. There are some technological means which are common in the Bábonyian and on these sites (obliquely cut base, utilization

of high-ridged flakes, retouche-type). In case of cultural grouping, however, the discrepancies seem to be more convincing:

- the ratio of end-scrapers is about 5 times higher in the Eger-surroundings than in the Bábonyian,
- there are twice as many side-scrapers in the Babonyian as in the Eger-surroundings,
- the heavy bifacial tools with asymmetrical ridges are missing,
- the raw material distribution is basically different in the two industries.

Before the detailed reconsideration of the finds from Eger, following a short review of the data we hold that the finds from the Eger-surroundings are younger than the Bábonyian. It may even be contemporary to the earliest upper palaeolithic populational wave, the varied side-scrapers stock and the occurrence of mousterian-type points place the sites culturally near the upper cultural layer of the Subalyuk cave.

Sajószentpéter: K. Siman started excavations on one of the hills on the eastern side of the Bükk mountains, where surface finds had earlier been collected. The excavations, however, did not succeed in defining the stratigraphical position of the ca 70 artifacts. The bifacial middle palaeolithic implements were collected in similar topographical position to Sajóbabony (small ridge, surrounded by steep slopes, in the upper 50 cm of mixed layers), and it can be attached to the younger facies of the Babonyian industry. It contained leaf-shaped tools, half-products or broken points. The typological duality is explained by the excavator by the mixing of a middle palaeolithic workshop material of Babonyian type and an upper palaeolithic industry of Bodrogheresztur type (Siman 1985).

#### Unique/stray finds

Miskolc, handaxe from the Barsony-house. This is the find which started palaeolithic studies in Hungary and which is the first one describe in all papers on history of research. The implement is a paradox in itself. It is a regular, symmetrical leaf-shaped point made by flat (!) surface retouching. Its size has hardly analogies (232 x 106 mm). The surfaces are fresh, the retouched show no patination. It cannot be fit in either of the Hungarian find units from stratigraphical, chronological or even typological point of view. Consequently the endeavours for a chronological grouping led to various results.

Miskolc-Petőfi str. (Fig 4.1) The single leaf-shaped point of Moravany-Dlha type was found 84 years ago and the circumstances cannot be reconstructed any more. The very prepared asymmetrical point is made on radiolarite. The occurrence of the type at least 250 km from eponymous site as the crow flies, is wholly unexpected, as yet inexplicable. This point cannot be related to the Szeleta cave (Barta 1965).

Görömböly (Fig. 2.3) A highly patinated obsidian point got in the collection of the Hungarian National Museum from the State Geological Institute. "Early solutréan spear-head, found by Zoltan Schréter, July, 1934, Grömböly, south of Bagolymező, in a ditch". There is no more detailed information of the site. The small, asymmetrical arrow head has obliquely cut base. Size: 64 x 33 mm. It is plano-convex, there are some large scalariform retouche negatives on the dorsal side, the frontal side shows the non-scalariform retouche commonly used on Hungarian pieces. The cultural grouping is not clarified, though it is surely neither Szeletian nor Solutréan.

Kacs. Zoltan Schréter carefully collected and inventorized the "by-products" of his geological field surveys between 1915 and 1933. From this district (Hideg-valley, beside the sheep stall) he described "a Protosolutréan spear head made of opal" in the old inventory book of the HSGI. No more is known about the site and the find.

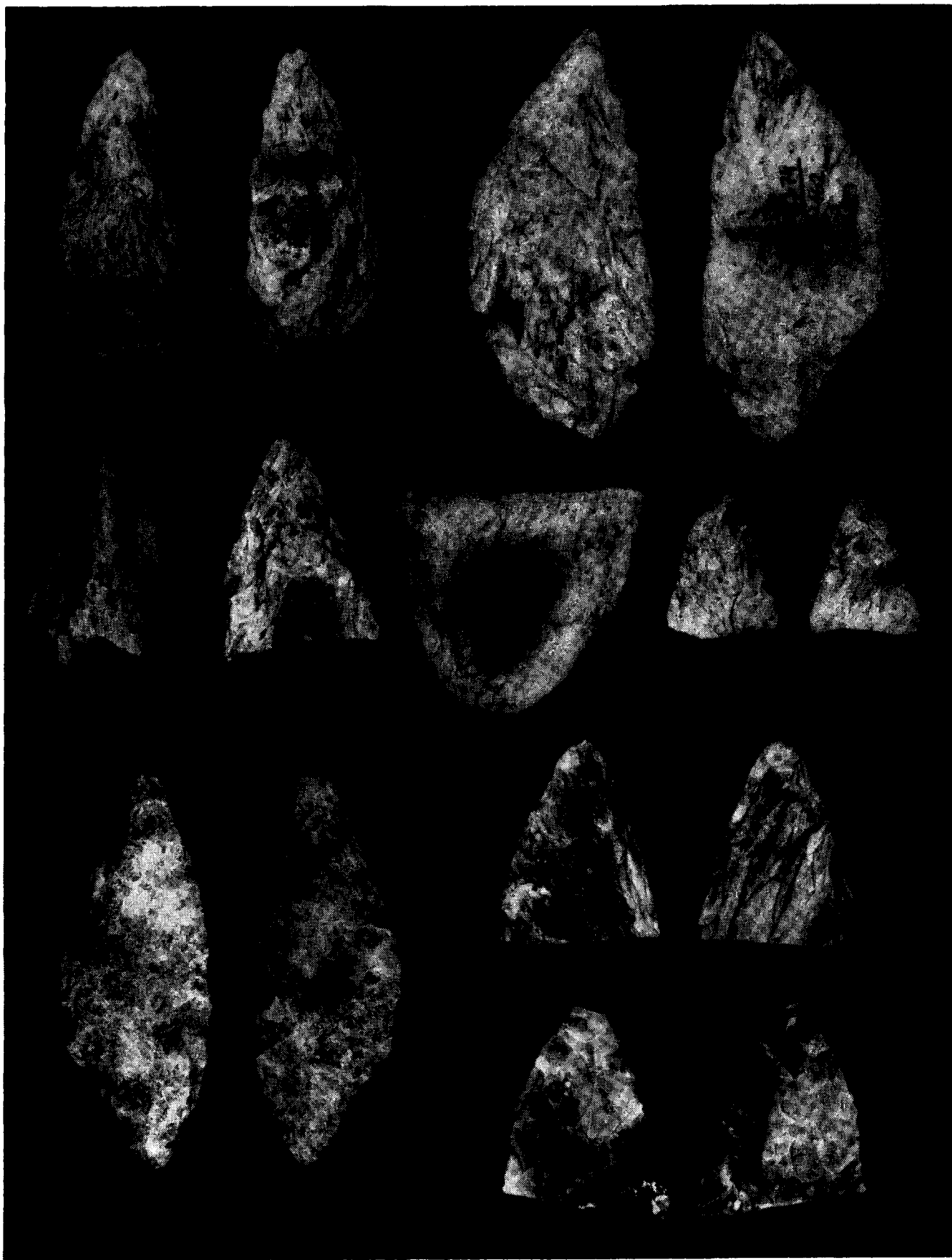


Fig. 3. Bifacial tools (1:1)  
1–5: Bükkmogyorósd; 6–8: Nekézseny.

**M e z ö n y é k.** "Half of a Late Solutréan spear head, chalcedony" from the road beside the cemetery. The plano-convex double scraper made of glassy quartzporphyry (Fig. 2.1) has a good analogy in Eger-Köporos. The site is not verified, the circumstances are unknown.

**H e j ö c s a b a,** beside Benedek-hill. Z. Schréter inventorized a "unifacial leaf-shaped point" in 1934. If the piece is identical with the find from the same site in the collection of the National Museum, it cannot be attached to sites with bifacial implements. This artifact, namely, is a heavy, plano-convex flake with finely retouched converging edges (Vértes 1965).

**M a l y i,** brick works around the clay pit. Surface find, a regular leaf-shaped point pointed on both ends (Fig. 4.2). The raw material is hydroquartzite. Several buried soil layers belonging to interstadial periods could be observed in the clay pit. This find, just like other flakes collected in the surroundings, cannot be attached to any of them with certainty. Morphologically it is not relevant to the Szeleta culture, it stands closer to the material of the open-air sites around Eger (Vértes 1965). Later A. Ringer collected mixed material, belonging to several cultures, on the hill above the pit. According to him the material belonged to at least two cultures, which both used leaf-shaped implements: the Babonyian and an early upper palaeolithic industry (Ringer 1982).

If the finds from the Eger-surroundings are also considered, this double feature does not necessarily mean the mechanical mixture of two industries.

**N a g y g é r e s** (Fig. 2.8). The piece was bought by the collection in 1932, the find circumstances are unknown. It is made of light grey, striped chalcedony. The somewhat asymmetrical point is flat, the edges and both surfaces are carefully retouched. Size: 79 x 32 mm.

**S a r o s p a t a k-S ö t é t ö l d a l.** Nothing is known of the find circumstances, even the suspected site could not be found. The piece was collected in 1905, and was presented to the HNM in 1971 (Dobosi 1975). The arrow head is flat, only very slightly biconvex, both surfaces are prepared by scalariform retouche, the base is straight. The raw material is glassy quartzporphyry. It is the widest at the base. There is no direct analogy of the triangular arrow head with rounded corners (Fig. 2.7).

There are some more, up till now unpublished bifacial implements collected in Northeast Hungary (oral communication by K. Siman and A. Ringer), but these sites seem to be just of quantitative information, they do not convey more about the problem.

**M a r h a d - t e t ő.** A "scraper-knife of Bockstein-type" is to be mentioned from two aspects: typologically it fits in the Babonyian, and seems to be an important station in the westward spreading of the glassy quartzporphyry, its raw material (Biro 1984).

**A s z o d** (Fig. 2.10). One of the most regular leaf-shaped points in Hungary, found on hill Aszod-Tarackas , was presented to the Museum in 1976. The site could not be verified: the survey covering a large area yielded neither palaeolithic finds nor any traces of settlement. The leaf-shaped point of fine elaboration, made on quartzporphyry is pointed on both ends, and differs from other leptolithic tools known in Hungary. The nearly straight and parallel edges show similarities to the circle of Kostionki 4 (Aleksandrovskaya), that one, however has an obliquely cut base (Praslov-Rogatchev 1982).

**V e r s e g** (Fig. 4.3). The northeastern foothills of the Gödöllő hill-range is proportioned by east-west directed valleys of streamlets belonging to the watershed area of the Zagyva river. The village itself is situated in the widening valley of the Nográd streamlet, and is surrounded by several archaeological sites from younger periods. The southern

side of the village is geographically ruled over by the 220 m high Tatar hill with its sloping eastern side. The terraced surface on an altitude of 208 – 210 m a.s.l. yielded stray finds (the material was given to me by E. Bacskey), among others a slender leaf-shaped point. It is biconvex, retouched on both surfaces. Both surfaces, the edges and the tops are highly patinated, rolled, worn off, probably kryptoturbated. Beside it fine end-scrapers on blade, burins of upper palaeolithic features were found. They, however show fresh surfaces.

The site could not be verified. The pleistocene layer containing the finds (a fossil soil?) was eroded and disturbed by agriculture. The finds could be collected from the upper level of the humus. On the northern edge of the Tatar hill, looking over the valley, on a small terrace in 170 height a.s.l. a small section of an upper palaeolithic temporary hunters' camp could be unearthed. This is now under analysis. Up till now, there is no proof telling that this settlement and the stray finds collected on the surface of the Tatar hill would be connected.

S z o b (Fig. 2.9). Unknown find circumstances, its connection with upper palaeolithic settlement with the shell-depot (Gabori 1969b) is highly dubious. The slightly asymmetrical double scraper is finely retouched on both surfaces, the tip is rounded, made on glassy quartzporphyry.

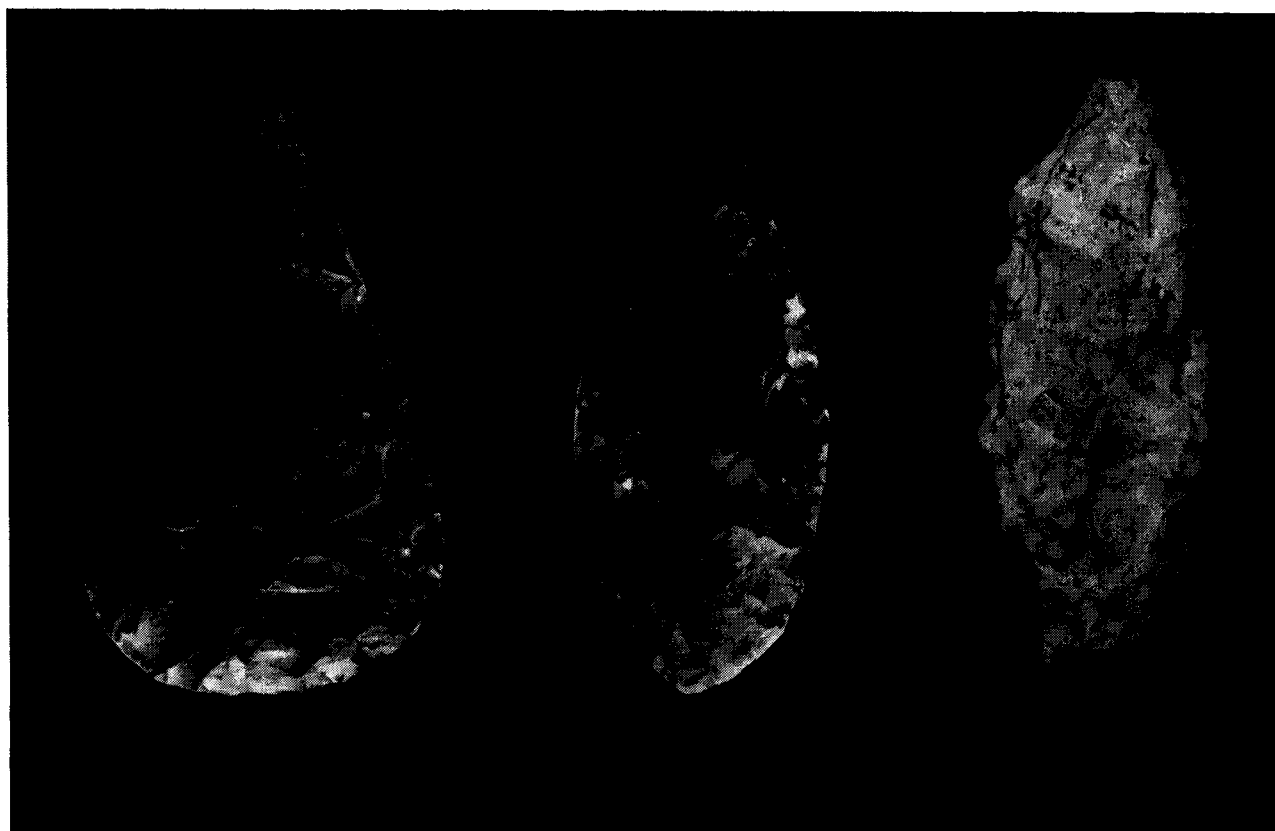


Fig. 4. Bifacial tools (1:1)

1: Miskolc; 2: Mályi; 3: Verseg-Tatàrdomb

## Function

The differentiation of the bifacial tools and weapons is only seemingly easy. There are several reasons to make it difficult:

- obvious interrelations, e.g. R. Feustel presents regular, symmetrical leafshaped points functioning as tools (Feustel 1985).
- some of our leaf-shaped implements – similarly to the bifacial ones from the layer of the Szaleta cave – are rolled, worn off, the edges, surfaces are patinated.
- total lack of traceological analyses in Hungary.

A bifacial artifact may be called a tool, a scraper or a knife if the whole of the implement or at least the tip, obviously standing out of the handle, is not symmetrical to the longitudinal axis, or if there is absolutely no pointed tip, if the angle of the edge retouche is close to or larger than cca 45 degrees. Many of the thick bifaces of high ridges and zig-zag line edges may also be considered as tools (handaxe function).

Leaf-shaped artifacts, which can definitely be used as weapons (straight edge line, thin edge, flat angle of the edge and the tip, symmetrical to the longitudinal axis) have various shapes (form of base, vaulting of the edges, length-width ratio etc.). These form variations may indicate different functions.

The recent researches in history of weapons help us in the differentiation of functions. (Here I would like to thank F. Temesvari, weapon historian's help).

It should be considered that the modern grouping was made on more effective metal weapons, and no standard measurements (length/width ratio, weight etc.) are supplied.

The tilting-thrusting weapons are the lance, spike, halberd. Their characteristics are: extremely long shaft (from the height measurement of the owner till maybe even 4 to 6 meters!). The leaf shaped head usually has a ridge-edge, its length may reach 30 cm even when made of metal. The especially heavy ones have wings on both sides of the shaft socket what shifts the centre of gravity close to the base of the point. The leaf-shaped points, which are made more durable with preserving a ridge are large sized, they are the widest at the base or in the lower third of the point: they belong to this group. From this respect the size of the handaxes from Barsonyház is not more so strange, it might just as well have had the most prosaic function.

The projectile weapons are the spears, wehre the length of the shaft does not surpass the 2 meters. The head is more slender and flat. It retained its importance for warfare and hunting up till the appearance of the fire-arm. The occurrence of the (probably) two types of weapons and their ratio in a tool assemblage are not suitable for making cultural grouping. It is rather the fauna and the prey animal which defines the most optimal ways of hunting, the most fitting weapon types for which were consequently formed from the most suitable raw material people within reach.

Up till now no examinations have been made on the raw material of only the leaf-shaped tools.

At first glance it seems that the raw material of the leafshaped implements is less specified than in the caves. The preference for the glassy quartzporphyry is characteristic around the natural source of the raw material and furthermore also on the middle palaeolithic sites on the eastern foothills of the Bükk mountains. The same raw material is used on sites in the Eger-surrounding, though it is never dominating. Here the raw material of the bifacial imple-

ments is just as varied as that of the other ones. It is, however, striking that the ratio of the quartzporphyry is very high in case of single leaf-shaped implement finds.

The glassy quartzporphyry has a very important role in certain phases of Hungarian Palaeolithic (Siman 1986b). The diffusion area in Hungary (Fig. 1) reaches till the Jankovich cave during the Middle Palaeolithic (middle fragment of a bifacial tools), and Pilismarot-Díós, a point on a blade) in the Upper Palaeolithic (Gabori-Csank 1986; Dobosi 1981). Our latest excavations (Pilismarot-Bitóc, 1989) also yielded some flakes of the raw material which indicates its popularity.

The bifacials made not on quartzporphyry usually have higher ridges, so the edges become steeper, the surfaces more convex. These raw material maybe silex types of local hydrothermal origin, flint, radiolarite, jasper, obsidian etc. The function of the implements collectively called leafshaped points is to be revised. On open-air sites the effect of the kryoturbation is less hard (as there is no ice wedged rubble in the soil here). It seems that the original tool must have been basically the same as now, disregarding the patination of various thickness. So examinations of this kind may lead to a justifiable result.

## Summary

The following can be told about the open-air sites with leaf-shaped implements in Hungary:

- |                        |                                                                                                                                                                                                                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| topography:            | <ul style="list-style-type: none"> <li>— unknown</li> <li>— the original place of occurrence can be verified though the excavations had no results</li> <li>— the site is authentic.</li> </ul>                                                                                                                                                               |
| stratigraphy:          | up till now there is no stratigraphy, the observations suggest that the finds belong to a fossil soil layer.                                                                                                                                                                                                                                                  |
| faunal-botanical data: | there are no data, if there is still anything it is either indifferent or does not surely belong to the finds.                                                                                                                                                                                                                                                |
| typology:              | <ul style="list-style-type: none"> <li>— real leaf-shaped points, there is a great variety of forms, analogies draw from Kostienki till Moravany Dlha or even farther to the west, the accompanying industry is various</li> <li>— leaf-shaped implement of indefinite function</li> <li>— other leptolithic implements like scrapers, knives etc.</li> </ul> |

- cultural grouping:
- middle palaeolithic accompanying finds (Szeleta cave lower layer ? Babonyian ? Mousteroid of Subalyuk type ? )
  - upper palaeolithic background: Bodrogkeresztur type industry, Paudorf ?

There is no complex find material from authentic excavations, so the only starting point maybe typology. This, however, does not show the way out of the heterogenous overall picture.

The leaf-shaped points are culturally not specified, they are defined by function. This idea is not new (lately Oliva 1988 a,b and other), and K. Siman has arrived to the same conclusion in her paper on the finds from the Szeleta cave. The analysis of the foliated implements of the open-air sites also seems to support this view. The shaping of the individual tools, the way of retouching was rather dependent of the function than of the traditions. The shape and execution of the leaf-shaped implements from various techno-complexes show less differences than suggested by the background industry. The difficulties of the cultural grouping may be overcome only after setting up the modern definition of the real Szeleta culture. The category, which was rather topographically than typologically bound has undergone many modifications (Barta – Banész 1981; Svoboda-Prichystal 1987), and it is going to lose validity. Its application is more liable to cover than to underline the basic discrepancies of the different industries. The revision of the excavations and finds of the Szeleta cave together with the correlation of the latest result may help us to fulfill this task.

Regrettably enough this paper has provided more of the uncertainties than of the positive results. Nevertheless let us hope that we have made one more step toward the clarification of the phenomena and a future synthesis.

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