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## THE MICOQUIAN OPEN-AIR SITE OF RÁJEČKO 1

THE LAND USE IN THE MORAVIAN MIDDLE PALEOLITHIC

**ABSTRACT** — *The site of Ráječko I is located in the border area of the high plateau with an excellent view, 150 m above the Svitava river. The pebbles of Cretaceous hornstone were used as raw material. The most characteristic feature of this industry is the excessive number of cores. Retouched tools are represented by thick triangular hand axes and other bifacial implements; side scrapers are rare.*

*The geographical analysis of the Middle Paleolithic occupation reveals the resemblance with the early phase of the Upper Paleolithic (a frequent position near hornstone outcrops, prevalence of raw material from the nearest sources, location of sites on high grounds far from rivers). The reasons and significance of these facts are under discussion. In spite of all distorting factors the mentioned similarity can prove (in contrast to Western Europe) a certain persistence of the Middle Paleolithic way of life in Moravia. The radical change in the settlement location did not take place before the Gravettian (Pavlovian) period.*

**KEY WORDS:** *Micoquian — Land use — Raw material sources.*

The name of my teacher Karel Valoch is mainly connected, in spite of his research of all Paleolithic periods, with the excavations of the Kůlna Cave. The fundamental significance of the Kůlna monography consists in the evaluation of the largest Middle Paleolithic sequence in Central Europe. This contribution deals with a small open-air site occurring near Kůlna and being rather different from the other industries hitherto known in Moravia. Nevertheless, this is a good opportunity to evaluate the Moravian Middle Paleolithic settlement system from a broader geographical point of view.

The site of Ráječko was discovered by A. Štrof in spring 1984 and in the following years systematically surveyed by the members of the archaeological club of school-children. All excursions were supervised by Dr. Štrof from the Archaeological Institute in Brno so that the structure of the industry is not biased by the collecting of the "pretty pieces" only (cf. White

1983, 119). All but the smallest chips of hornstone were picked up.

The location of the site gives an extraordinarily good view (also marked on the tourist map) of the whole of the Lysice basin and the valley of the Svitava river with numerous Paleolithic stations (Oliva, Štrof 1985). The finds of the lithic industry are widely scattered in the field around a thicket, 400 m NNE of the Horničky gamekeeper's lodge 410–430 m above sea level. In these places the border of the high plateau merges into the eastern hill-sides of the Svitava valley. Some artefacts can be still found on the western slope. The relative elevation above the river is 150 m. From the west and east-west the landscape slopes down to small sheer valleys with brooklets which, overcoming 2 km, pour themselves into the Svitava river. The Kůlna Cave lies 10 km to the east, 470 m above sea level. The landscape between these two sites is only partly covered with

the forest but surface prospecting in the accessible area did not show the slightest evidence of the lithic industry or of the occurrence of hornstone.

#### RAW MATERIAL

Almost the whole of the industry is made from the honey-coloured Cretaceous hornstone. The frequent occurrence of rounded cortex remains yields evidence of the origin of hornstone pebbles in the gravels of the Svitava river. The primary deposits of this raw material lie in argillite layers which form for example Velký Chlum near Bořitov on the other bank of the Svitava river.

Most pieces are marked by a continuous white patina. Some pieces are slightly rounded but the majority of the industry are marked by quite fresh edges. Only one blade has been struck from the hornstone of the Krumlovský les type, whose nearest outcrops have been documented about 30 km to the south under the Hádý Hill.

#### TECHNOLOGY

Cores represent the most numerous group of artifacts (101 pieces). This group also includes initially worked pieces (16) and pre-cores without any traces of exploitation. The preparation is often bifacial so that some forms resemble semi-finished products of hand axes or bifacial knives (*fig. 1: 2*). Reduced pieces are mainly represented by single platform cores (17). On the basis of the preserved traces of preparation the prevalent pieces seem to be the cores with ventral crest and flat ventral preparation. Some flat fragments were flaked by parallel blows from one edge. The blunt edge between the platform and the flaking surface is usually chipped out strongly and resembles a rough side scraper. It is possible that they are semi-finished tools.

The changed orientation cores and those with opposite platforms (*fig. 2: 2*, a strongly developed piece) are rare. Most of flat cores are marked by irregular flake scars (*fig. 1: 1*), only six of them can be designed as subdiscoidal cores (*fig. 1: 1; 2: 1* a raw form of the hand axe?).

The low percentage of blades — only 9 pieces in contrast to 84 flakes and 16 chips and fragments — is in accordance with wide and irregular negatives on the cores. The cortical or partially cortical removings from the first phases of core preparation and/or exploitation are prevalent. Similarly, relatively numerous flakes with the margin of a flaking surface („débor-dants“) are related to the generally rough reduction rather than to core rejuvenation. The core trimming removings with central crest occur very sporadically, which is typical of the Middle Paleolithic technology. Most flakes are very thick.

The platform analysis could be realized only in a small part of removings: 14 flat, 9 with a cortex, 6 dihedrals, 4 faceted (2 of them strictly), 9 pointed and linear platforms (2 of them on blades). Although the flakes with flat or cortical platforms also contain

“lipped” specimens, typical of the Upper Paleolithic, the hard hammer mode with direct percussion, frequent in the Micoquian, can be considered the prevailing reduction strategy.

#### TYPOLGY

A dominant feature in the assemblage is represented by bifacially shaped tools. The most striking pieces in this assemblage are triangular hand axes of a markedly plano-convex cross section (*fig. 5: 4; 6: 3*) with an asymmetric side view (*fig. 3: 1; 4: 1*). This feature also characterizes the tools which can be called “Halbkeil” (*fig. 5: 1, 3*). Three other implements can be formally defined as bifacial knives (*fig. 5: 2; 6: 4; 4: 2* — the back is created by a secondary flake scar). The transitional forms between hand axes and leaf points represent hand axe points (“Faustkeilblatt”, *fig. 3: 2* and *6: 13* with two wide notches). The piece represented by *fig. 3: 3* can be a small hand axe (Fäustel). *Fig. 6: 11* shows the object which can be classified as a fragment of a thick leaf point. All the described bifacial tools were probably chipped from natural nodules and pebbles of hornstone. The interlink of the working process shows 8 bifacially trimmed semifinished products.

A relatively less typical group includes side scrapers (10 pieces) usually produced from flakes. The most expressive specimens are three side scrapers with flat (*fig. 7: 1*) or bifacial retouch (*fig. 7: 10*). Denticulates and notches, whose number is not very high, can partially result from negligent retouch or artifact wearing.

The Upper Paleolithic forms almost do not exist in the assemblage. It is possible to mention only one hornstone fragment with bec (*fig. 5: 5*) and two less typical burins (*fig. 7: 5*).

#### COMPARISONS

The most striking phenomenon in the whole inventory is an extremely unbalanced general structure: 101 cores versus 106 pieces of raw debitage and cores. This is related to the composition of retouched tools consisting mostly (about 50 %) of bifacial implements or their raw forms. Only 11 tools were probably formed of flakes while for the others core-like blanks or natural fragments were used. In fact, some objects classified as tools, can also represent raw forms of implements. The production of tools directly from pebbles and nodules gave the industry a very archaic character and led to the high frequency of hand axes and their derivatives similar to those of the Lower Paleolithic. However, the internal structure of bifacial tools is typical of the Micoquian, which is in harmony with the cultural attribution of the majority of sites in this region. Almost all the major assemblages from the Lysice basin contain a relatively high percentage of cores (Bořitov V 25 %, VII 30 %, IX 24 %, Černá Hora III 22 %, Doubravice I 38 %, Obora I

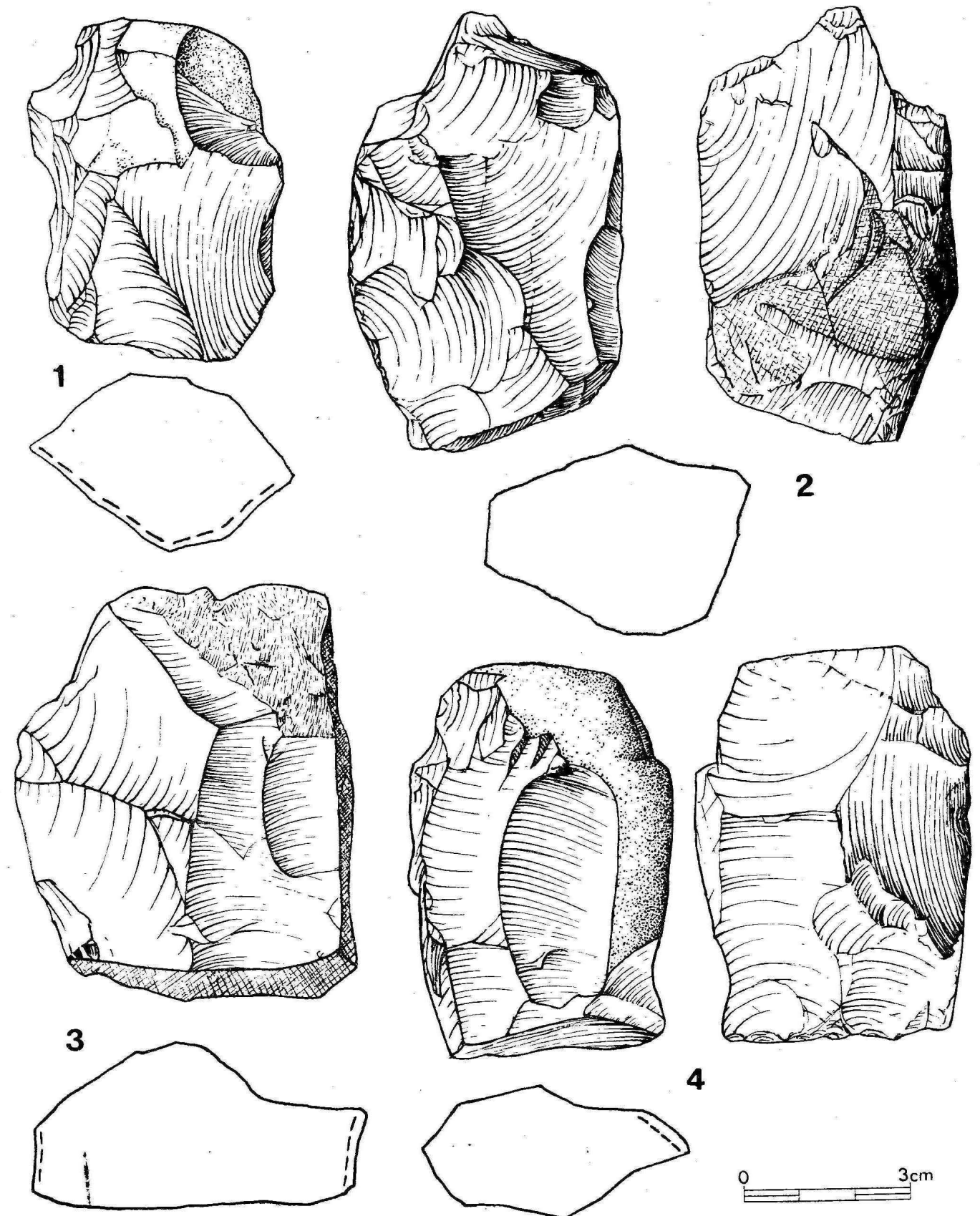


FIGURE 1. Ráječko I, Middle Paleolithic cores. Drawings by J. Brenner.



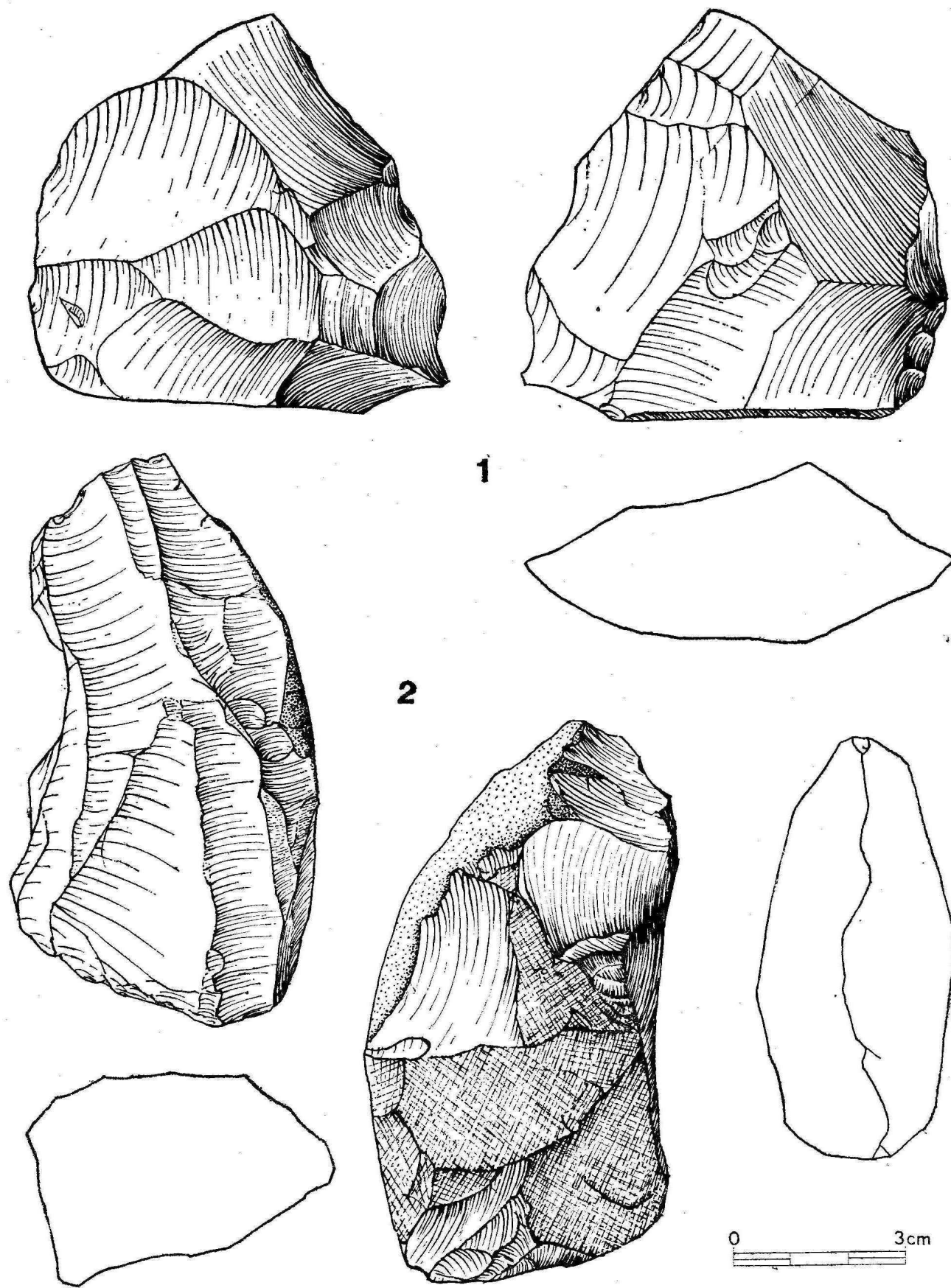


FIGURE 2. *Ráječko I*, cores. Drawings by J. Brenner.

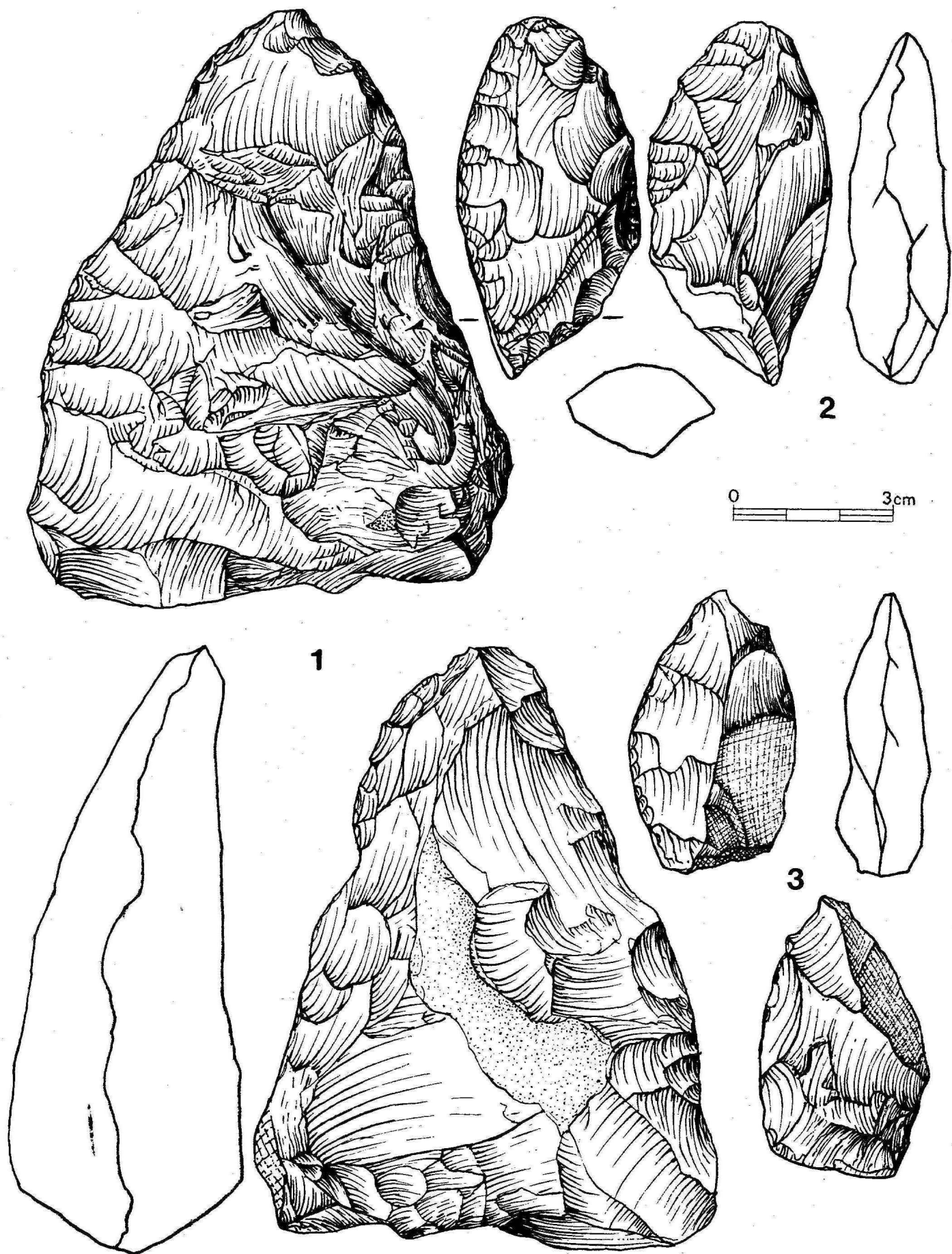


FIGURE 3. *Ráječko I*, bifacial implements. Drawings by J. Brenner.

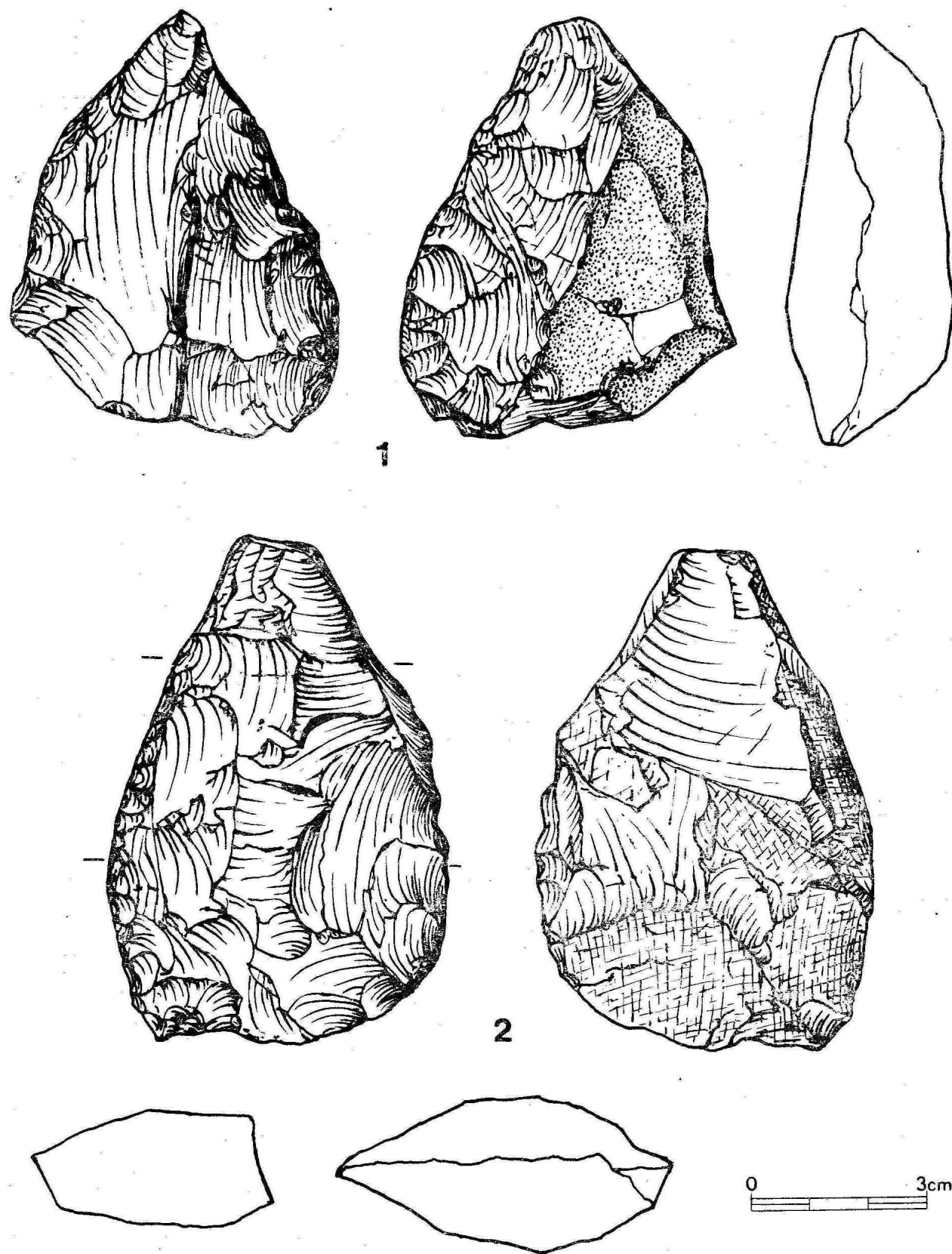


FIGURE 4. Ráječko I, bifacial implements. Drawings by J. Brenner.

1 %) probably as a consequence of the near-by sources of raw materials. The Micoquian layers in the Kůlna Cave, more distant from hornstone deposits, contain relatively less cores (levels 7c +  $\alpha$  and 7a about 13 %, 6a 10,5 %, Valoch 1988, 86).

In spite of the scarcity of good blanks and the quasi-absence of blades the character of cores in Ráječko is essentially the same as in the sites of the Lysice basin and the Kůlna Cave. All the mentioned sites are characterized by the occurrence of archaic core types (i. e. irregular and subdiscoids) accompanied by a low number of strikingly developed and sophisticatedly prepared cores with blade scars (cf. the specimens from Kůlna 6a, Valoch 1988, Abb. 25: 2–3). Highly developed core-forms also occur in the surface collection from Bořitov V (Oliva 1987a, figs. 2–3), which, however, represents undoubtedly a longer time span. In Ráječko this category includes the cores in figs. 1: 4 and especially 2: 2.

The consequence of the local technological tradition, i. e. the manufacture of tools directly from nodules, is an unusually high percentage of bifacial core implements. In fact this is the only form here which is connected with the traditionally coded shaping of a tool type. However, the low quality of raw material and perhaps the insufficient knapping skill cause that the bifacial forms are not classic examples so that their classification into hand axes, biface knives or raw forms is more or less arbitrary, which may be in accordance with the absence of thinner leaf points.

In a wider geographical context the dominant triangular hand axes are typical of the Wylotne group of the Polish Micoquian (Chmielewski 1975). The low occurrence of side scrapers and the lack of their more expressive types are exceptional in the Micoquian assemblages. The fact that in Bořitov V side scrapers also represent only one fourth is caused by the workshop character of the industry with the profusion of notches and denticulates of a very low degree of intentionality. In the Kůlna Cave the side scrapers reach the values of 40–50 %, while the share of bifacial tools is much lower (6–12 %, Valoch 1988, tab. 15). However, the comparative value of the Ráječko assemblage is reduced by the insufficient number of tools.

#### THE LAND USE IN THE MORAVIAN MIDDLE PALEOLITHIC

The map of the Paleolithic finds shows that the regular Middle Paleolithic settlement existed only in two areas. The first region is the Lysice basin together with the western part of Malá Haná and the Moravian Karst, the second area is spread on the eastern slopes of Krumlovský les together with Kounická brána (the Gate of Kounice). The former includes almost one hundred localities and sporadic Paleolithic finds, approximately 1/5 of which yielded sufficiently numerous material of Middle Paleolithic character. I think that this period includes the majority of the other localities, as bigger Upper Paleolithic assemblages do not occur in the above mentioned

area. With the exception of sporadic, considerably altered Levalloisian cores from Bačov Ib and Černá Hora IV (Oliva, Štrof, 1985) it is possible to classify all the other sites as Micoquian, probably of its upper or final phases. This culture also represents a focus of the Middle Paleolithic settlement of the Moravian Karst known mainly from K. Valoch's excavations in the Kůlna Cave near Sloup. An exception is only the Upper Rissian layer 14 containing some Levalloisian artifacts and layer 11 holding small Taubachian forms of the Eemian age (Valoch 1988).

The industries from the eastern slopes of Krumlovský les are quite different. The bifacial component is represented only by sporadic hand axes with insufficiently mastered flat retouch. Dominant elements in the assemblages are notches, denticulates, rough side scrapers, choppers and various proto-prismatic forms. The chronological position of these industries, baptized the Krumlovian (Valoch 1971; 1976; 1990; Oliva 1990) requires more reliable stratigraphic data. However, it is not possible to eliminate the long-term local development covering a considerable part of the Middle Paleolithic. Although the finds from reoccupied sites can be confused with the Upper Paleolithic workshop artifacts (Svoboda 1983), the Middle Paleolithic age of about a dozen of the most striking assemblages is beyond any doubt. The site of Trbouchany IIb with many bifacial forms is very similar to the Micoquian.

The Middle Paleolithic finds of other Moravian regions are either very sporadic or not always quite conclusive. For example the age of the altered Levalloisian industry from Jamolice I, west of Moravský Krumlov (unpublished), is not clear. In the environs of Brno there are only several stratified and surface finds of isolated Middle Paleolithic artifacts (Valoch 1962; 1971; 1977b). In central Moravia, especially south of Prostějov, a part of quartzite industries from Otaslavice, Ondratice II and some smaller localities of the same region could be classified as Middle Paleolithic. In contrast to the big quartzite assemblage from Ondratice I (Svoboda 1980) these smaller collections lack Levalloisian character and Upper Paleolithic types and often show striking traces of eolization. However, the industries are not accompanied by any stratigraphic data and, with the exception of the archaic hornstone hand axe from Určice (Valoch 1980a) they do not contain any bifacial component.

In East Moravia there are only two perfect radiolarite hand axes from Karolín I (Oliva 1981), small bifaces from Prusinovice (Skutil 1933, tab. I: 23) and Lubná and a bifacial knife from Bynice-clay pit (unpublished). As to insufficiently investigated South-East Moravia, it is possible to mention only chronologically equivocal finds of a small biface and a leaf point from Mutěnice (Schwabedissen 1942). In North Moravia it was only the Šipka Cave and the Čertova díra Cave that contained the undoubtedly Middle Paleolithic industry of the so called denticulated Mousterian (Valoch 1965). However, many of the notches and denticulates are a consequence of the cryoturbation in sediments rich in debris. The surface



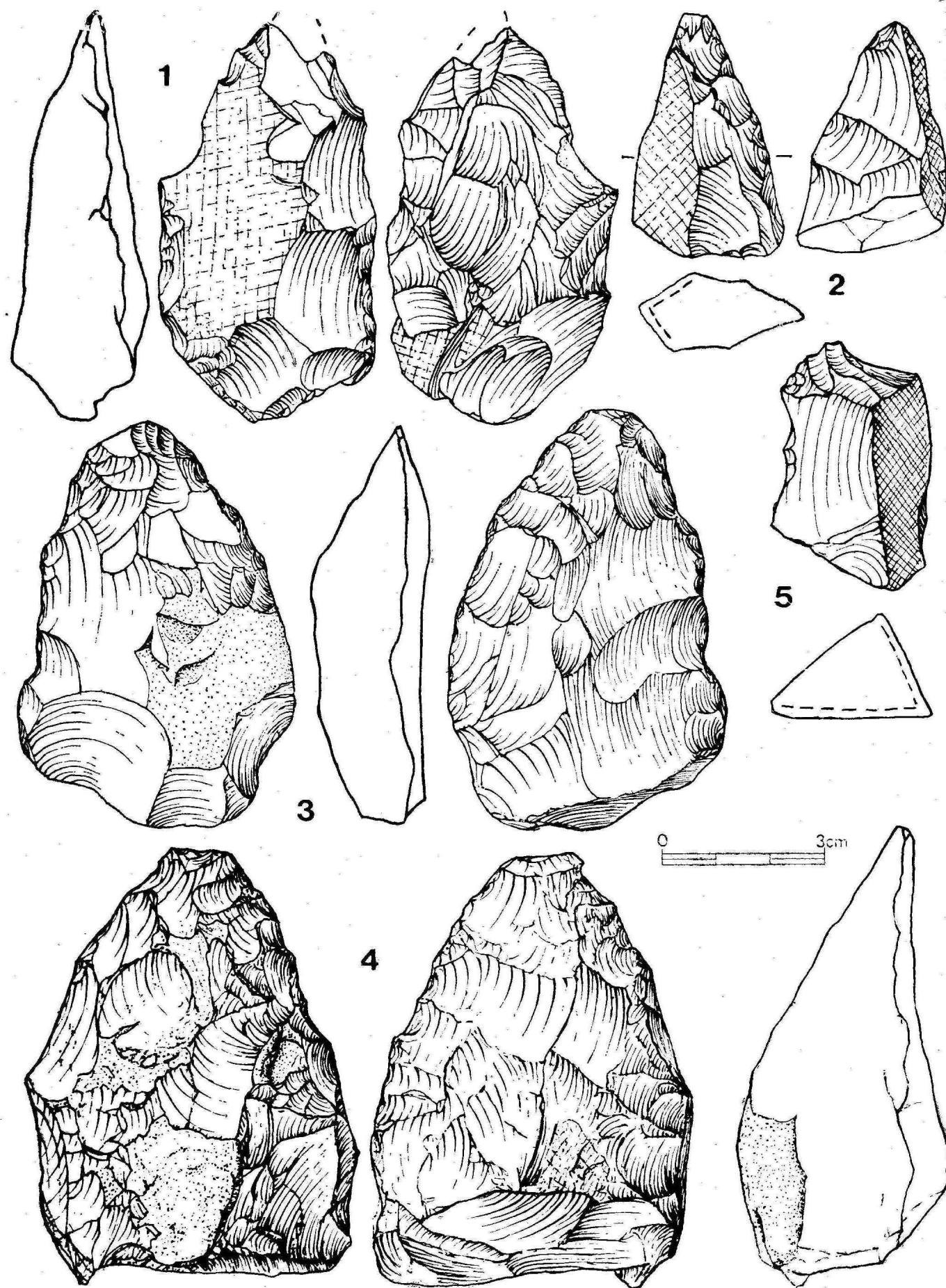


FIGURE 5. Ráječko I, 1–4 bifacial implements, 5 bec. Drawings by J. Brenner.

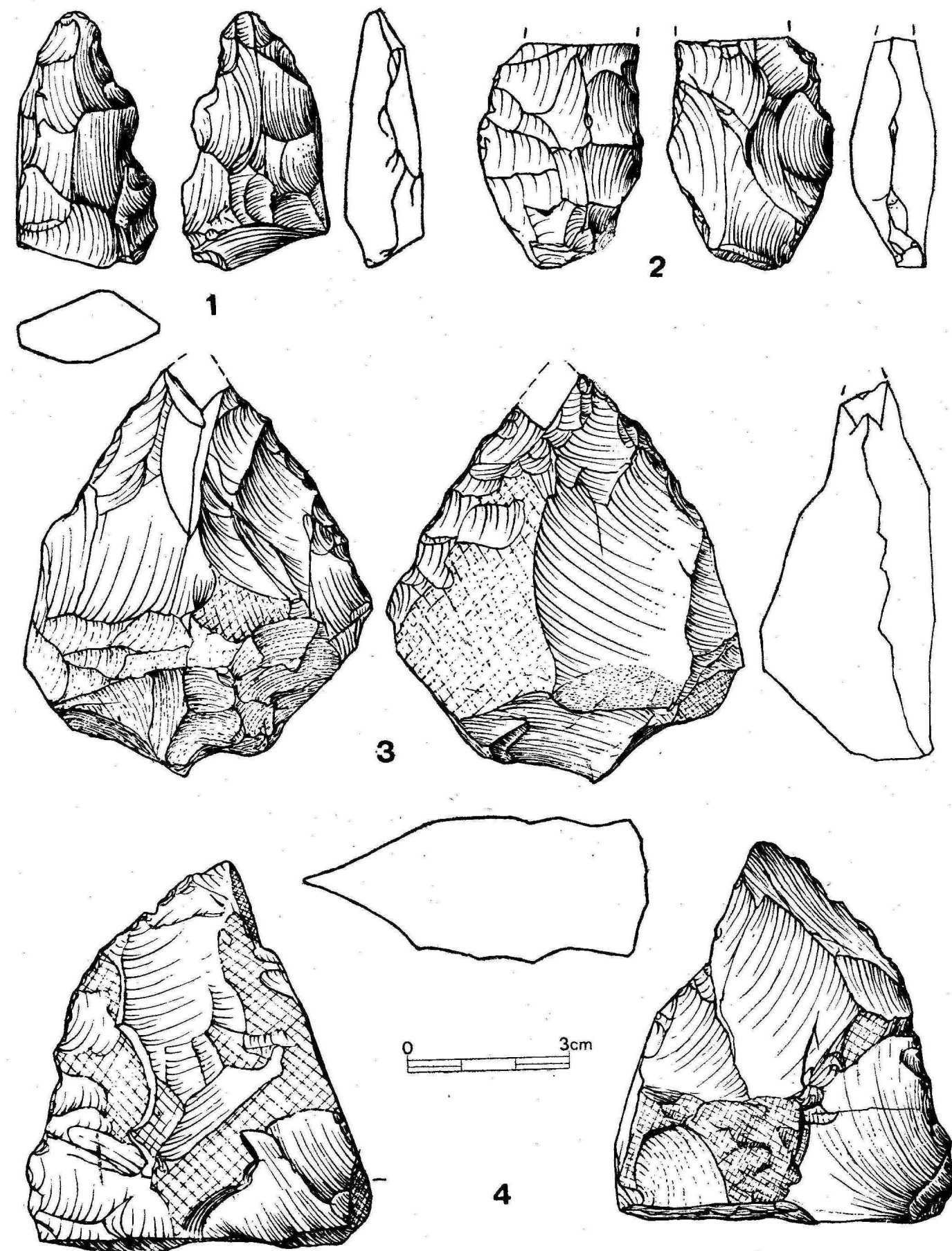


FIGURE 6. Ráječko I, bifacial implements. Drawings by J. Brenner.

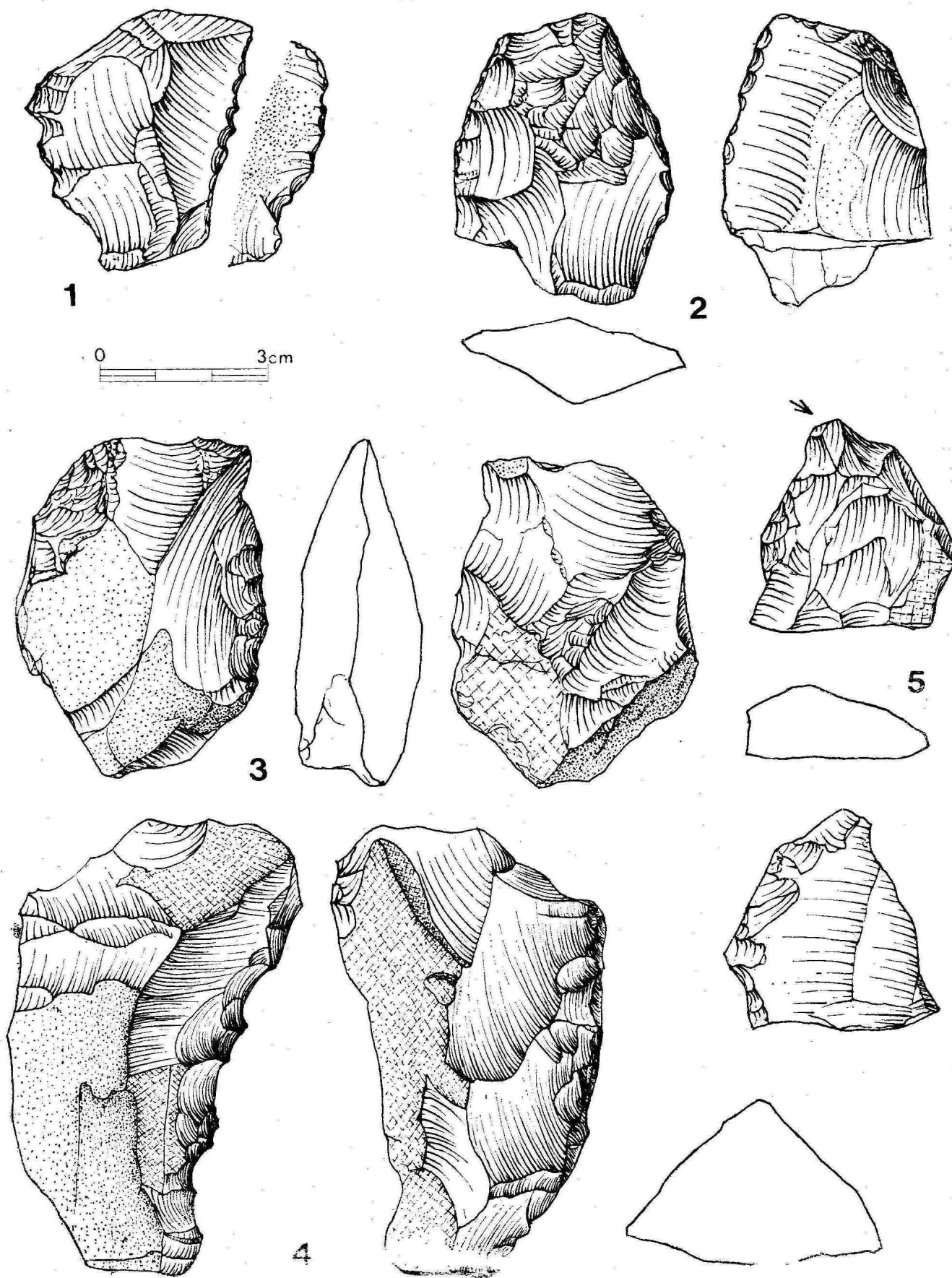


FIGURE 7. Ráječko I, 1, 4 denticulates, 2, 3 side scrapers, 5 burin. Drawings by J. Brenner.

finds from Otice (Klíma 1974) have been multiplied by new collections and the sporadic occurrence of leaf points, end scrapers and burins now gives us a possibility to classify the main phase of settlement more or less to the Szeletian. The Middle Paleolithic age of the industry of the Kylešovice Hill near Opava (Jisl 1971, original report Bayer, Stumpf 1929) cannot be accepted at present. The site of Předmostí situated on the south-eastern end of the Moravian Gate is a source of at least two different Middle Paleolithic industries (Žebers 1958, 109–112; Žebers et al. 1955; Absolon, Klíma 1977, 84).

TABLE I. Ráječko I — the cores

	Pcs.	total
initial cores	16	16
pre-cores:		9
with 1 crest, chopper-like	1	
with 1 crest, triangular cross-section	1	
with 2 crests, bifacially prepared	2	
with 2 crests, unifacially prepared	2	
with 3 prepared crests	3	
single platform cores		17
without preparation	3	
with ventral crest	5	
with ventral flat preparation	3	
flat pieces with parallel scars	6	
opposite platform cores		3
without preparation	1	
with ventral crest	2	
changed orientation cores	1	1
different cores		21
subdiscoids	6	
flat, irregular	7	
bipyramidal	1	
irregular	7	
Total number of classified cores		67
cores in final exploitation stage	18	18
core fragments	16	16
Total number of cores	101	101

Now let us try to characterize the position of individual Middle Paleolithic stations (table I). Approximately a quarter of sites can be found on tops of hills and in plateaus. The finding surface of the other stations is oriented as follows: S 17 %, NE 13 %, N, E, SW, W 10 %, SE, NW 3 %. Five out of six localities in a northward direction are cave entrances. The fact that the majority of sites slope down into mutually opposite quadrants (SW 37 %, NE 33 %) yields evidence of the secondary importance of the direction of sites towards four cardinal points.

The division of sites according to their altitudes shows the unimportant selectivity: less than 250 m 19 %, 251–300 m 21 %, 301–350 m 22 %, 351–400 m 19 %, 401–450 m 13 %, 451–500 m 6 %. In contrast to the early Upper Paleolithic it is possible to observe a higher average location of the sites as a consequence of the high altitude of the Lysice basin and the Moravian Karst. It is, of course, possible that the closed enclave of the Lysice basin could preserve some archaic features of industries. The caves

TABLE II. The debitage from Ráječko I

Cortical flakes	13
partially cortical flakes	19
non-cortical flakes	20
flakes with core margin (débordants)	22
crested flakes	4
core rejuvenation flakes ("outrepassés")	3
partially cortical blades	3
non-cortical blades	6
Total number of flakes and blades	90
chips and chunks	16
Total	106

TABLE III. General structure of the industry from Ráječko I

	Pcs.	%
Retouched tools	47	18,36
flakes and blades	90	35,16
chips and chunks	16	6,25
cores	101	39,45
hammerstones	2	0,78
Total	256	100,00

TABLE IV. Ráječko I — retouched tools

	Pcs.	Total
handaxe	4	
handaxe-point ("Faustkeilblatt")	1	
handaxe-point, notched	1	
"Halbkeil"	2	
bifacial knife	3	
small handaxe ("Fäustel")	2	
leaf point (thick)	1	
raw forms of bifacial tools	8	
single straight side scraper	2	22
single convex side scraper	2	
side scraper with bifacially retouched edge	2	
double side scraper with flat retouch	1	
side scraper with flat bifacial retouch	3	
denticulates on bifacial piece	2	10
denticulates on thick flake (fragment)	2	
notch	2	
bec	1	6
burin on bifacial piece	1	
angle dihedral burin (atyp.)	1	
splintered piece	1	
tool fragments	1	4
partially retouched flakes	4	4
Total	47	47

of Čertova díra near Štramberk and Kůlna near Sloup lie in the highest altitude (470 m). [In case of Kůlna, each cultural unit is considered as an individual site although there the Micoquian is divided into more levels.] The finds from Ostrava-Přívoz (gravels of the



TABLE V. The Moravian Middle Paleolithic sites

	Altitude	Exposition	Nearest water course (order)	Industry	Chronology	References
Northern and Eastern Moravia						
1 Štramberská-Sipka cave	440	N	2	DM	MW?	Valoch 1965
2 Štramberská-Čertova díra cave	470	NW	3	DM	MW?	Valoch 1965
3 Ostrava-Privoz	220	P?	1	A?		Žeberská 1952
4 Předmostí I	230	S	3	TM, A?		Absolon, Klíma 1977
5 Předmostí II	230	E	3	T?	MW?	Žeberská et al. 1955
6 Karolín I	315	T	4	LA?		Oliva 1981
Central Moravia						
7 Ondratice II	330	N	6	?		—
Moravian Karst						
8 Sloup-Kůlna cave 14	470	S	7	L	UR	Valoch 1988
9 Sloup-Kůlna cave 11	470	S	7	T	E	Valoch 1988
10 Sloup-Kůlna cave 9b, 7c+d, 7a, 6a	470	S	7	M	LW	Valoch 1988
11 Křtiny-Drátenická cave	402	NE	7	?		Bayer 1925
12 Mokrá, Pekárna cave	360	N	6	M?		Absolon, Cížek 1926
13 Ochoz, Švédův stůl cave 14	334	N	6	?	E	Klíma et al. 1961
14 Ochoz, Švédův stůl cave 11	334	N	6	M?	MW	Klíma et al. 1961
15 Ochoz, Křížova cave	350	N	6	?	LW?	Valoch 1960
Lysice basin and environs						
16 Bačov Ib	410	W	6	L		Oliva, Štřof 1985
17 Bačov Ic	400	S	6	I		Oliva, Štřof 1985
18 Blansko I	330	W	6	?		Oliva, Štřof 1985
19 Bořitov I-II	330	SW	7	M?		Valoch 1977a; 1978
20 Bořitov V	400	T	5	M		Oliva 1987a
21 Bořitov Va	390	S	5	M		Oliva, Štřof 1985
22 Bořitov VI	330	SW	8	M?		Valoch 1977a
23 Bořitov VII	390	SE	7	M?		Oliva, Štřof 1985
24 Bořitov IX	350	SW	6	M?		Oliva, Štřof 1985
25 Boskovice I	370	SW?	7	M		Oliva, Štřof 1985
26 Býkovice I	395	NE	6	M?		Valoch 1977a
27 Býkovice II	450	T	6	M?		Valoch 1977a
28 Býkovice IV	415	T-N	6	M?		Valoch 1977a
29 Černá Hora III	360	NW	7	M?		Oliva, Štřof 1985
30 Doubravice I	380	W	5	M		Oliva, Štřof 1985
31 Obora I	400	T	6	M		Oliva, Štřof 1985
32 Obora II	420	S	6	M?		Oliva, Štřof 1985
33 Obora III	390	T	5	M?		Oliva, Štřof 1985
34 Rájec-Jestřebí II	350	NE	6	M?		Oliva, Štřof 1985
35 Ráječko I	430	T-N	6	M		Oliva, Štřof 1985
36 Sebranice I	420	T	6	M?		Oliva, Štřof 1985
Environs of the Brno-basin						
37 Horákov I	360	T	7	M		Oliva 1987b
38 Brno-Obřany, Lichy	330	E	6	M		Oliva 1987b
39 Brno-Maloměřice, Podzimní street	225	W	5	?	E	Musil, Valoch 1961
40 Brno-Maloměřice, Railway station	215	P	5	?	LW	Musil, Valoch 1961
41 Brno-Židenice, Růženin dvůr	270	S	7	?	E	Valoch 1977b
42 Brno-Židenice, Malá Klajdovka	265	NE	7	?	E	Valoch 1977b
43 Brno, Červený kopec	275	E	4	P	UR?	Valoch 1962; 1977b
44 Modřice V	220	E	4	P	R, E	Valoch 1977b
45 Popovice u Rajhradu II	210	E	5	P	R	Valoch 1962
46 Troubsko II	290	P	6	M		Valoch 1969
47 Tetčice I, Krumlovský les and the Gate of Kounice	300	S	5	P	R	Valoch 1977b
48 Dolní Kounice IV	285	SE	6	K		Valoch 1990
49 Dolní Kounice VI	330	T	5	K		Valoch 1990
50 Dolní Kounice X	260	W	5	K		Valoch 1990
51 Dolní Kounice XI	270	W	5	K?		Oliva 1990
52 Dolní Kounice XVII	270	S	5	K		Valoch 1990
53 Dolní Kounice XX	250	T	5	K		Oliva 1990
54 Kupařovice II	200	NE	5	I		Oliva 1990
55 Maršovice I	280	E	>6	K		Valoch 1971
56 Maršovice IV	260	NE	>6	K		Valoch 1976
57 Vedrovice VI	260	SW	>6	K		—
58 Vedrovice VII	290	SW	>6	K		Valoch 1976
59 Vedrovice IX	280	S	>6	K		—
60 Trboušany IIb	225	N	6	M?		—
61 Trboušany VIII	250	NE	6	A?		Valoch 1990
62 Moravský Krumlov, loam pit	315	P	7	K	E	Valoch 1962
63 Jamolice I	250	P	8	L		—

Explanations: T top, P plateau, plain, A Acheulian, LA Late Acheulian, DM Denticulate Mousterian, TM Typical Mousterian, M Micoquian, I irregular industries, L Levallois industries without typical forms, K "Krumlovian" Mousterian, T Taubachian. Chronology: R Rissian, E Eemian, W Würmian (L lower, M middle, U upper).

Odra river) and from Kupařovice II (the low plateau above the Jihlava river) have been found in the lowest altitude.

The relation to the river system can be expressed by the classification of the nearest river (the first order pours into the sea, the second into the first etc.). The river of the first order is represented by the upper, weaker stream of the Odra river in North Moravia, the rivers of the second order by its small tributaries and the present biggest Moravian stream — the Morava river. It is evident that a useful factor is only the relation to the last-mentioned river basin including all localities with the exception of Štramberská and Ostrava.

There is no station directly at the Morava river, the site of Předmostí is near Bečva, the tributary of the Morava and the loam pits near Modřice and Brno-Červený kopec (Red Hill) with sporadic finds occur near the Svratka river (the fourth order). The axis of densely inhabited regions is formed by the streams of the fourth order: the Svitava river (the Lysice basin) and the Jihlava river (the Gate of Kounice with adjacent Krumlovský les). However, even in these areas the sites are situated mainly near small streams or periodic drainages. Although we

cannot observe the concentration of the Middle Paleolithic sites directly in interfluvial crests (cf. Rigaud 1982), nevertheless we can accentuate that the nearness of the river did not play any positive role as far as the selection of the site location is concerned. A similar situation existed in the early Upper Paleolithic (Oliva 1987c).

The most similarities in the land use exist between the Middle Paleolithic and the Szeletian. In both cases there is no settlement of "strategic" points e. g. tops of striking hills (which was often the case in the Aurignacian), or narrow passages between the river and hills although high grounds with a good view were preferred. In contrast to the Aurignacian both the Szeletian and Middle Paleolithic stations are larger and the concentration of their finds is smaller. A radical change did not take place before the Gravettian (Pavlovian), the typical feature of which are highly concentrated settlements near rivers.

The most numerous traces of cave occupation in the whole ante-Magdalenian Paleolithic come from the Middle Paleolithic but it is only the Šipka Cave and some horizons of the Kůlna Cave that can be remains of long-term sites. The finds in the other caves are only very small collections of tools, which

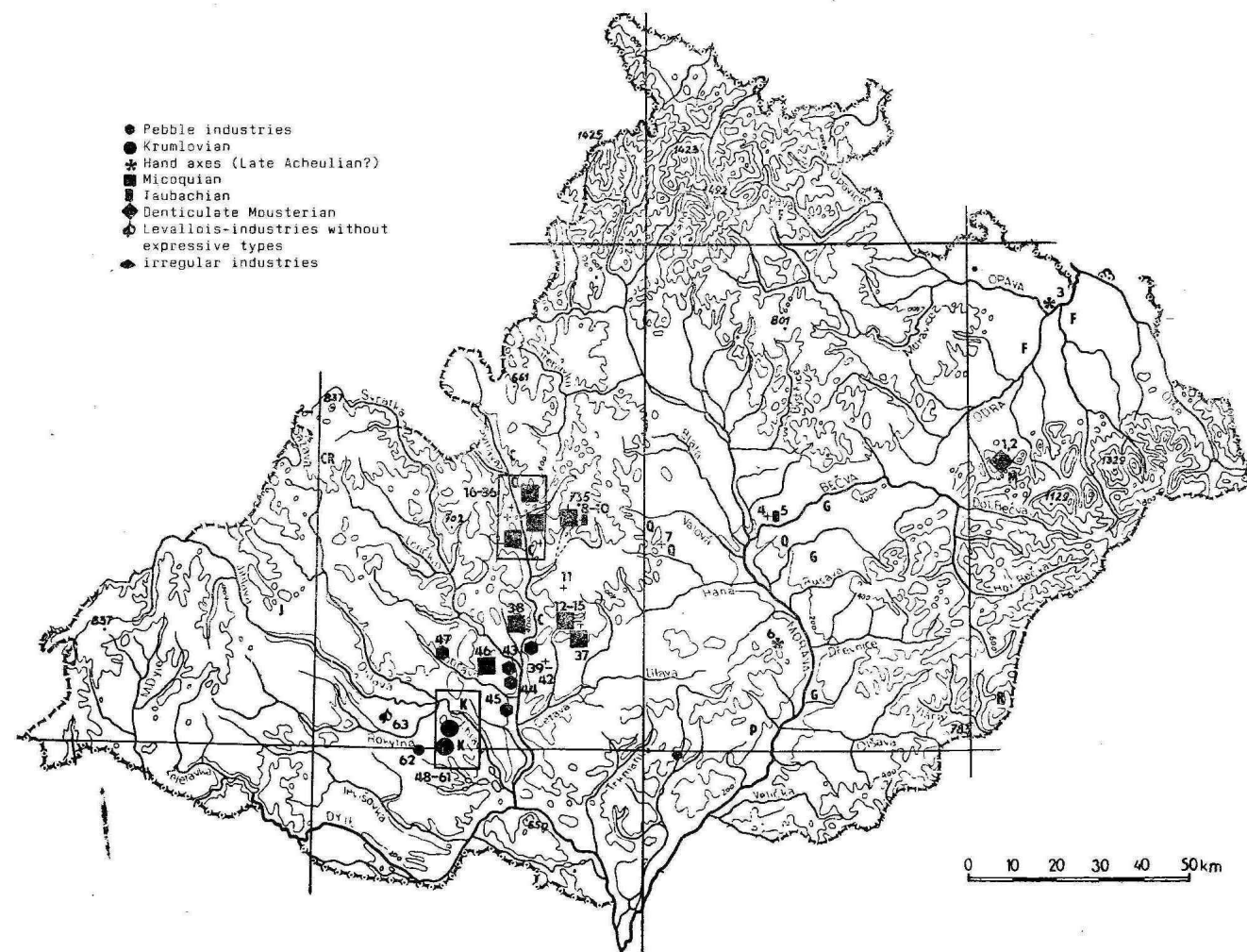


FIGURE 8. The map of the Middle Paleolithic sites in Moravia (for the numbering of sites see Tab V). Raw materials: K Krumlovský les hornstone, C cretaceous hornstone, G different hornstones from the gravels, CR crystal, R radiolarite, F flint, P porcelanite, J jasper, M menilite, Q quartzite.

is in strong contrast to rich levels e. g. in the caves of South Germany.

Naturally, the question of the hierarchy of Moravian sites is difficult because of the insufficient number of stratified and excavated localities. From a theoretical point of view it is possible to differentiate "residential camps" settled several times or for longer periods, short-lived camps and stone-knapping places (Bosinski 1976; Marks 1988). However, in practice all these mentioned categories merge together to some extent: rich archaeological records can also come into existence, during slow sedimentation or after erosion, as a result of the accumulation of the

remains of more different episodes. The settlement of not exactly the same point can result in finding places of several hectares as Bořítov V or Maršovice I. The multi-phase settlement can lead to typological differences in the horizontal distribution of artefacts: e. g. in relatively thick layer 7a in the Kůlna Cave the frequency of the Upper Paleolithic tool-types in entrance areas D<sub>1</sub> and D<sub>2</sub> was twice higher than that inside the cave (Valoch 1988, table 15).

The categories of residential camps and workshop sites partially merge together, especially if they occur in the area of raw material sources. The largest open-air site of Bořítov V with numerous retouched

tools lies in the middle of the lithic exploitation area but not immediately at a hornstone outcrop. Its location on the top of the high ground overlooking a very large area is very suitable from the point of view

of hunting behaviour. Similarly, the small sites of Dolní Kounice IV, VI and X (Valoch 1990) in the Krumlovský les exploitation area are situated outside the direct occurrence of hornstone. In the regions rich

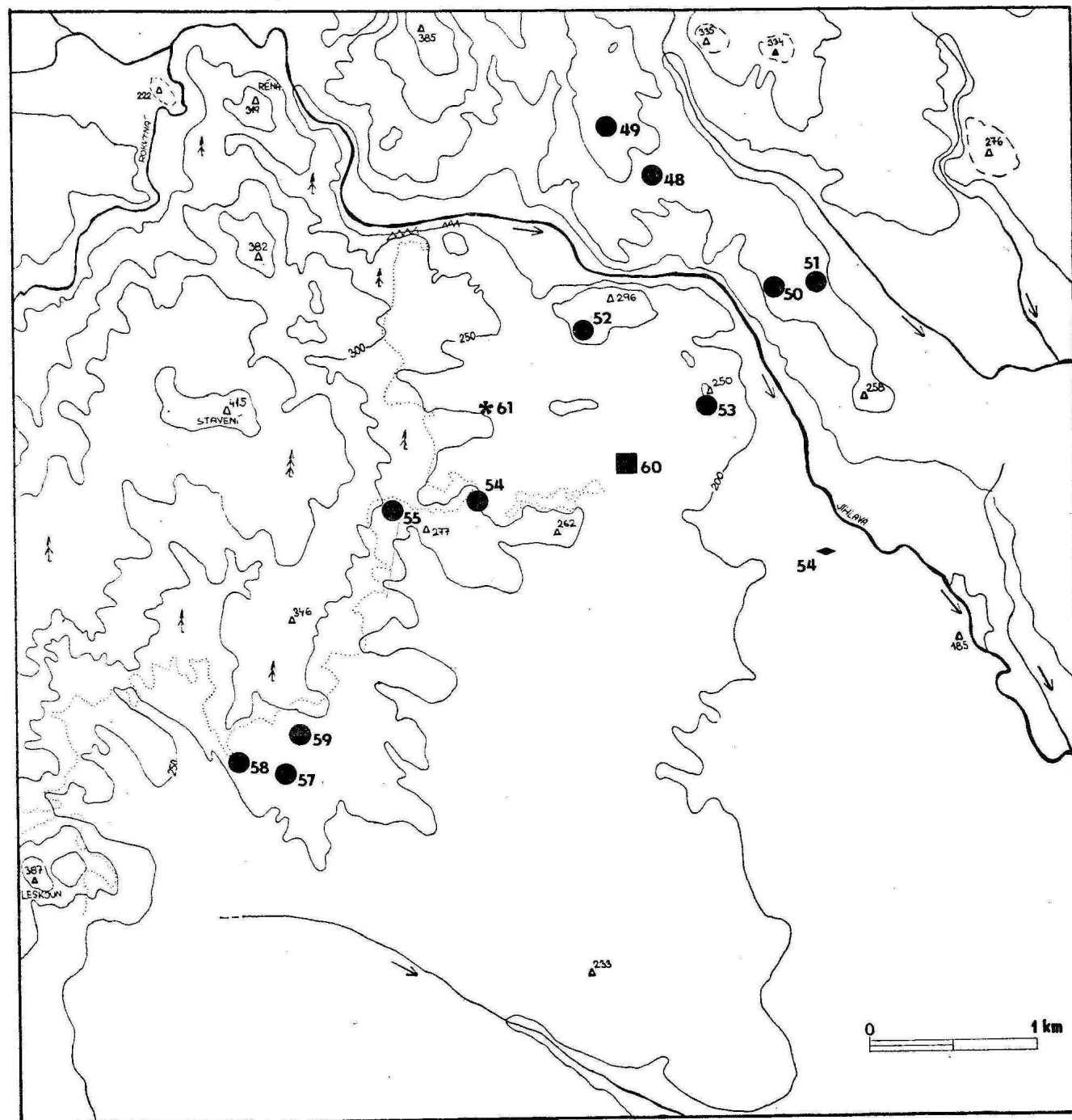


FIGURE 9. The Middle Paleolithic sites in the Krumlovský les area.

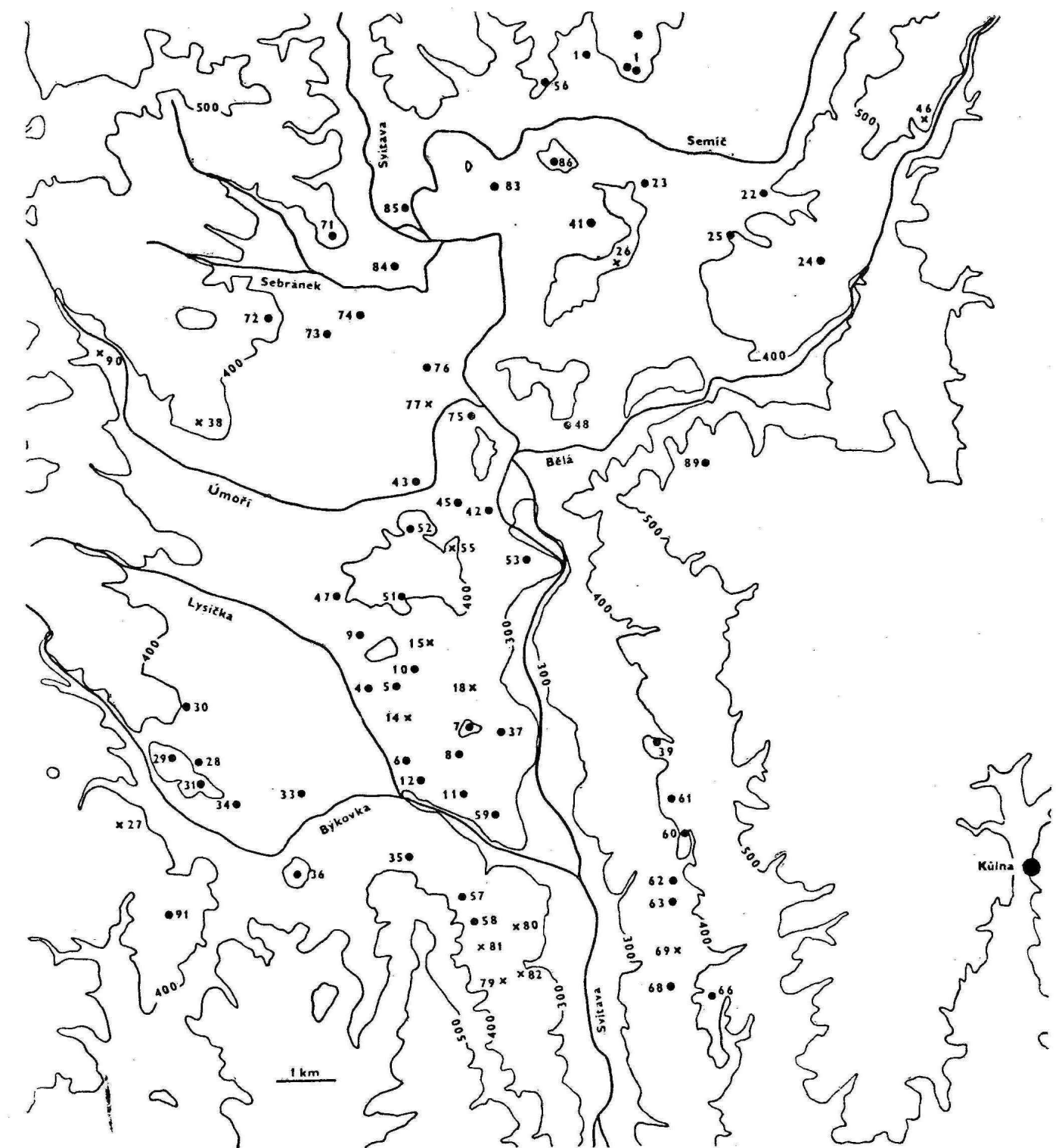


FIGURE 10. Distribution of Paleolithic sites in the Lysice Basin and in the western part of Malá Haná. The numbering of sites according to Oliva, Štřof 1985: 1 Bačov, 2–3 Blansko I–II, 4–21 Bořítov (7 Bořítov V), 22–26 Boskovice, 27 Brtov, 28–32 Býkovice, 33–36 Černá Hora I–IV, 37 Doubravice, 38 Drnovice, 39 Holešín, 40 Hořice, 41 Chrudichromy, 42–45 Jablonany I–IV, 46 Klnice, 47 Krhov, 48 Lhota Rapotina, 49 Lysice, 50 Mladkov, 51–55 Obora, 56 Podolí, 57–65 Rájec-Jestřebí, 66–69 Rájčko (66 Rájčko I), 70 Rudka u Kunštátu, 71–74 Sebranice I–IIIa, 75–77 Skalice, 78–82 Spešov, 83–87 Svitávka, 88 Šebetov, 89 Újezd u Boskovic, 90 Zbraslavce, 91 Žernovák.



in suitable silicites it is not easy to distinguish between short-lived camps and small workshops, as the documents about local lithic manufacture always prevail in the industry. It is evident that the present classification of sites, especially of those that have not been sufficiently excavated, is considerably influenced by their distance from the sources of raw material.

As far as the typology and consequently cultural attribution of the assemblages are concerned, the above mentioned influence is not so high. It is, of course, clear that the quantity of raw material can increase the size of artifacts, change the general structure of the industry and influence the typological spectrum. If some Mousterian groups are defined by a higher percentage of tools typical of immobile raw materials (e. g. notches and denticulates, Geneste 1989, 83), their influence on cultural classification is evident (cf. Rolland 1981; Dibble 1988). It does not mean that the high percentage of denticulates and notches could not be the matter of tradition in other cases.

Although the primary form of available raw-material can, to some extent, affect the looks of the industry, the dominant technological and typological tradition can evidently modify the influence of the available raw material in various ways. A diachronic view of both the principal systems of the lithic procurement proves the mentioned idea: the Micoquian in Kůlna, using near-by sources of Cretaceous hornstone, was preceded by quite a different Taubachian industry in the Eemian; while in the Krumlovský les area two very different early complexes of the Szeletian and the Aurignacian appeared in the early Upper Paleolithic.

A certain uniformity of the Middle Paleolithic industries can be observed in other territories rich in raw material. In the Jurassic formation of Cracow — Czenstochowa it is the Micoquian that prevails expressively and for example in Central Negev, Israel, all the sites in the vicinity of the flint outcrops are classified as the Early Levantine Mousterian of the Tabun D type (Marks 1988). A rather different situation was e. g. in the south-west of France (Geneste 1989, 83) or in the south of Germany (Bosinski 1977), where different Middle Paleolithic cultures were present but their technological and typological habitus can slightly differ in accordance with raw material economy. However, a big part of residual typological variability remains unexplained in terms of economic behaviour.

In Moravia the wider area of hornstone sources concentrates almost 90 % of sites of Middle Paleolithic character. It is possible that this observation can be rather exaggerated by the pseudoarchaic features from the workshop-sites (cf. Svoboda 1983). In spite of the lack of time for further discussion, we believe that the reasons for the pre-leptolithic attribution of the main inventories are convincing enough (Valoch 1984; 1990; Oliva 1987a, c).

The other way to explain the occurrence of Middle Paleolithic artifacts close to where raw materials are naturally available is the presumed absence of tool curation in this period (Binford 1973 etc.). However,

the reasons for the possible indications of expedient behaviour as well as for the rare occurrence of the Middle Paleolithic outside the region of lithic outcrops can be the same from a general point of view, i. e. the lack of imports of raw material. In fact there exists no Moravian Middle Paleolithic industry in which the prevalent silicite would be taken from other than the nearest sources. This fact can be proved in the sporadic sites occurring more than 5 km from natural deposits of hornstone. The raw material used in the caves of Kůlna, Pekárna and Švédův stůl and in the open-air site of Horákov was mostly Cretaceous hornstone or quartz, in Jamolice I Jurassic hornstone of a Krumlovský les type. The raw materials of the supposed Middle Paleolithic tools from Předmostí I are not known at present, as the collection was destroyed during World War II. The only possible exception are two radiolarite hand axes from Karolín but they might be mere secondary imports of these pieces in the Aurignacian stations as well. Although imported rocks are sporadic in the Middle Paleolithic stations, the radiolarite and flint in the Kůlna Cave were brought from the distance of 100–200 km. It is hard to say whether these stones yield evidence of the maximum range of the displacements of Micoquian hunters or whether they were obtained through contacts among groups. In this connection the presence of raw materials naturally occurring in the regions without any traces of the Middle Paleolithic is interesting. In the Taubachian from the Kůlna Cave 11 the above mentioned observation concerns porcelanite, whose nearest deposits are situated near Uherské Hradiště, about 60 km east of Kůlna. Relatively large implements from smoky quartz have been found in the Micoquian level (Valoch 1980, figs. 9–10). The primary outcrops of smoky quartz lie in the Czech-Moravian Highlands in the surroundings of Žďár nad Sázavou. The same mountainous region, in the vicinity of Třebíč is, at the same time, a finding-place of brown opal (Valoch 1987; 1988). These curiosities seem to have been picked up during long-distance excursions of Taubachians and Micoquians. Of course, such finds were not important from a practical point of view. It is not surprising that the absence of the economically important amount of imported raw material has resulted in the fact that the short-term sites outside the regions with hornstone sources are archaeologically hardly visible. Such small lithic units can be noticed only in carefully excavated caves or by chance in loam pits. Thus the picture of the Middle Paleolithic settlement, biased as a result of the immobility of raw materials, can make the misleading impression of the non-curational technology.

The prevalence of raw materials from the nearest outcrops is also typical of the oldest phase of the Upper Paleolithic but the increasing distance from their sources resulted in the higher amount of long-distant imports or vice versa (Oliva 1987, 127). This situation lasted till the late phases of the Aurignacian and the Szeletian, when the dependence of the sites on the nearest sources of raw materials ceased. This process can be seen as an important factor of growing social contacts.

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