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JIŘÍ SVOBODA, IVAN HORÁČEK

BETWEEN BILZINBSLEBEN AND VÉRTÉSSZÖLÖS: SMALL-SIZED INDUSTRIES IN THE MIDDLE OF EUROPE (CZECH REPUBLIC)

ABSTRACT: Lower Paleolithic research in the Czech Republic underwent a complex history, with alternating periods of enthusiasm and scepticism. Certain archaeological sites are actually rejected and some deserve a revision. Here we discuss two promissing sites of Middle Pleistocene age (MIS 11-9, based on chronostratigraphy and faunal record) associated to the small-sized industries, predominantly made of quartz: Račiněves and Karlštejn.

KEY WORDS: Middle Pleistocene – Small-sized industries – Czech Republic

INTRODUCTION

Lower Paleolithic research in the Czech Republic (Bohemia, Moravia and Czech Silesia) underwent a complex and sometimes dramatic history. Early during the last century, first efforts to detect early human sites in the Brno Basin by J. Woldřich, H. Schirmeisen or H. Mohr were rather intuitive and lacked a methodology concerning chronostratigraphy and artefact morphology. Modern Lower Paleolithic research started in 1950' with the discoveries of lithic objects in loess stratigraphies (Prošek, Ložek 1954, Kukla 1975) and with systematic surface surveys over the landscape (Žebera 1952, 1969), in a positive atmosphere inspired by "pebble-tools" discoveries reported at about the same time from East Africa. By the end of the last century the Lower Paleolithic research in the Czech Republic culminated thanks to enthusiasm of two main protagonists, Jan Fridrich (1991) and Karel Valoch (1995). In the light of later criticism of certain sites (Roebroeks, van Kolfschoten 1995, Valoch 2011), relevance of the whole accumulated evidence ends in a *cul-de-sac* and, in consequence, the region is being omitted from the recent literature (Rocca 2016a, b).

Several Czech sites previously published as Lower Paleolithic do not fulfil criteria for artefacts and may be rejected at the first sight (Beroun, Kročehlavy,

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Hořešovičky, Velké Přítočno, and others, for comments see Valoch 2011). In addition, Stránská skála I and Přezletice, two renowned paleontological sites with faunal assemblages related to the Lower/Middle Pleistocene boundary and supported by paleomagnetism, are dubious in terms of human presence (Roebroeks, van Kofschoten 1995; see discussion of the *pros* and *cons* in Svoboda *et al.* 1996, 80); this question may only be resolved by a complex revision of these sites in field and in laboratory. However other sites of a better quality in terms of chronostratigraphy and artefact morphology offer potentials for further research.

Today, few years after the deaths of Jan Fridrich and Karel Valoch, this question calls for a reappraisal. In a recent paper published in this journal I attempted to review Czech industries diagnostic of the Acheulean (Svoboda 2018). Here I discuss two Middle Pleistocene sites which range in the broad term of small-sized industries: Račiněves and Karlštejn (*Figure 1*).

THE CRITERIA

After years of discussions and revisions (Roebroeks, van Kolfschoten 1995, Svoboda *et al.* 1996), it may be stated that no archaic human fossils are encountered at any of the Lower Paleolithic sites in the area between the two key sites of Bilzingsleben and Vértésszölös. Therefore, the discussion at the Czech sites focused on the lithic industries at the first place. Whereas Valoch's (1995) approach was rather based on his extensive life's experience and professional intuition, Fridrich (1997) tried to define a discrete methodology, including mathematical methods. Both authors considered and evaluated the patterns of raw material selection,

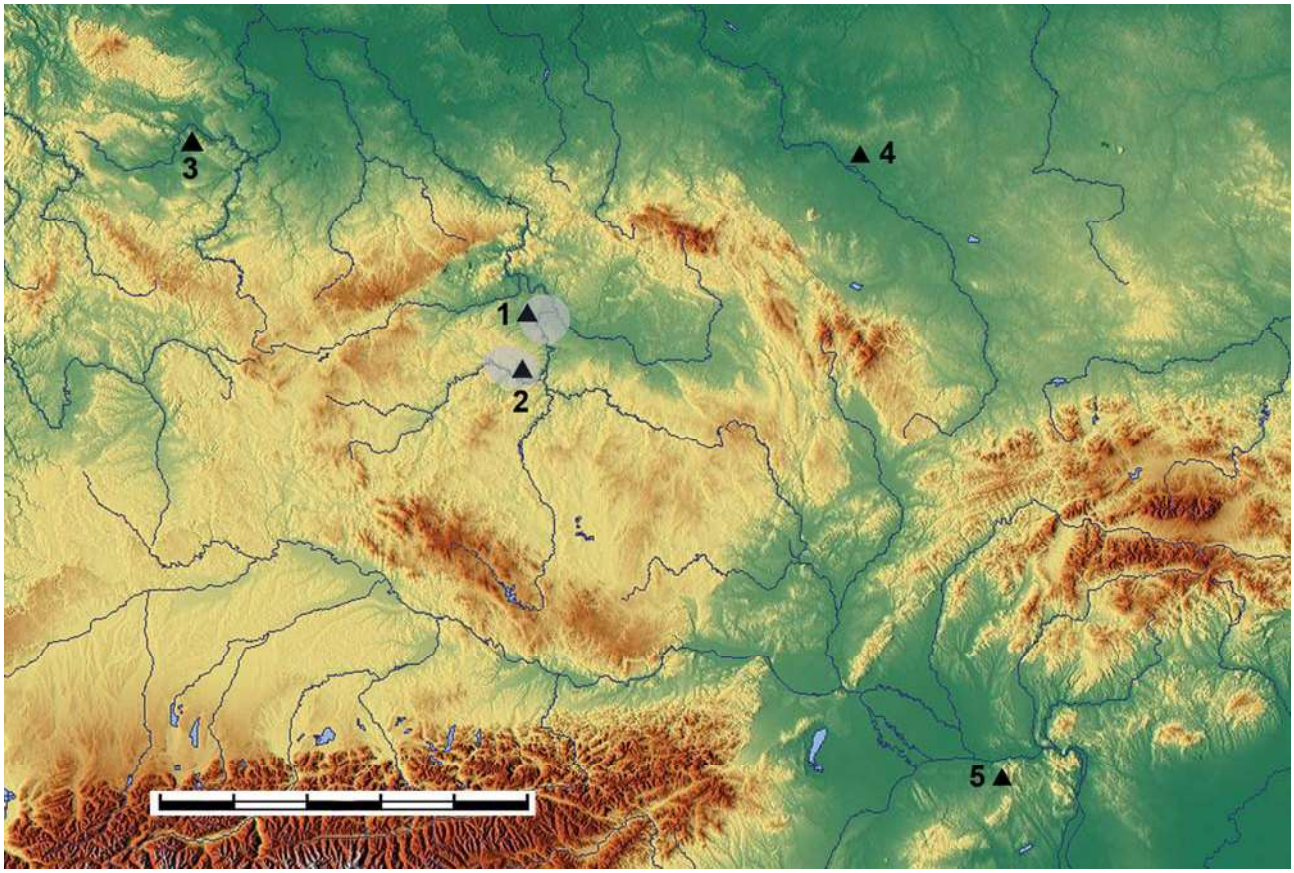

FIGURE 1: Map of central Europe showing location of imporant sites with small-sized industries (triangles) and extension of related surface finds (shaded areas). 1: Račiněves (Czechia); 2: Karlštejn (Czechia); 3: Bilzingsleben (Germany); 4: Trzebnica (Poland); 5: Vértésszölös (Hungary). Scale = 250 km.

operational chains (*chaine opératoire*), technological markers (bulb, flake profilation, striking scars, striking platform) and formal standardisation of the final products. Supporting criteria, wherever preserved, may be the faunal remains (patterns of selection, breakage, and cutmarks) and evidence of fire.

THE SMALL-SIZED INDUSTRIES OF CENTRAL EUROPE

Although the terms "small-sized industries" or "microlithic technocomplex" are far from optimal in terms of the traditional Paleolithic nomenclature, it is difficult to find a good eponyme site and another optimal term. The technology is extremely simple, size of the resulting flakes is relatively small, but geographic extension over Eurasia (cf. Derevianko *et al.* 2000) is so extensive that it is unclear wheter they represent a distinct techno/typological tradition, kind of a "self-limitation", or human adaptation in similar environments. While defining the "microlithism" at the site of Arago, southern France, de Lumley *et al.* (1979) suggested that breadth (as the mean dimension) may serve as representative dimension and showed that 75% of the Arago assemblage fall in the 1–3 cm group.

In central Europe (*Figure 1*), several survey publications were dedicated to this phenomenon (Valoch 1977, Svoboda 1987, Burdukiewicz 2003). Evidence from our nearest neighbouring sites, Bilzingsleben in Germany in the northwest (Mania *et al.* 1980, Bock *et al.* 2017) and Vértésszölös in Hungary in the southeast (Kretzoi, Dobosi 1990), suggests an association of these industries with archaic human fossil fragments, today classified as *Homo heidelbergensis*. Both assemblages represent extreme cases of the "microlithism", with dominant breadth size between 1–3 cm (Weber 1986). Whereas at Bilzingsleben this technology has been applied in good-quality local glacial flint producing a range of distinct retouches and tool-types, at Vértésszölös small pebbles of quartz were preferentially selected and only partly supplemented by radiolarite and chert of better flaking quality. Products of the standard size were achieved by direct flaking of a raw material nodule, without previous core preparation so that most of the products preserved portions of pebble cortex on the surface. Such a simple operational chain results in numerous flakes, chips and debris, leaving some pebble cores and micro-choppers aside. Edges with continuous retouches (micro-side-scrapers and endscrapers in terms of formal typology) are straight, convexe, concave or pointed, completed by various notches, becs and denticulates.

Additional sites of similar character are also encountered in southwestern Poland (Trzebnica, Rusko; Burdukiewicz 2003).

RAČINĚVES (CENTRAL BOHEMIA)

The site was discovered in 1997 during industrial exploitation in an extensive sand-pit (*Figure 2*). Lithic artefacts and fauna were detected in the upper part of the Straškov terrace (210–224 m a.s.l. and 61 m above the floodplain) which is one of the earlier series of Middle Pleistocene terraces of the Vltava river (numbered IIIb after Tyráček 2001). Lithic artefacts and bone fragments were dispersed in several stratigraphic positions of fine gravels and sands overlying the terrace, within total thickness of 2 m. At the base of this layer, J. Fridrich (Fridrich 2002, Fridrich, Sýkorová 2003) identified 39 depression features, about 1–3 m in diameter and 10–30 cm deep, some with accumulations of objects inside, and interpreted them as "hearths". At places, the Straškov terrace is overlain by colluvial deposits which may have included redeposited Middle Pleistocene soil sediments (det. L. Smolíková), but chronological value of this observation is uncertain given the secondary position of these deposits.

Alhtough we have no absolute dates, the general chronological position of the archaeological horizons in the Middle Pleistocene and the mild climatic conditions of one of the warm periods are supported by the associated malacofauna (with *Drobacia banatica*, *Aegopis verticillus*, and new species of *Lithoglyphus pyramidatus*, det. J. Kovanda), microfauna (an assemblage with *Arvicola mosbachensis* and *Lagurus lagurus*, indicative as a whole of MIS 11–10), and 153 fragments of larger mammal bones such as *Desmana* sp., *Talpa* sp., *Castor fiber*, *Canis* sp., *Vulpes* sp., *Cervus* sp. *elaphus*, *Capreolus* sp. *capreolus*, *Dama clactoniana*, *Bos,* sp. *Equus* sp., *Dicerorhinus* sp., and *Mammuthus trogontherii*, especially cranial, neck and forlimb bones (det. J. Fejfar). Following Fejfar and Fridrich, some of the bone fragments display variously oriented cutmarks, breakage, and even burning. However, new analytical study is needed to differentiate the observed patterns from scretch marks and other taphonomic processes occuring in these deposits (Sázelová, personal communication).

FIGURE 2: Račiněves, actual view of the abandoned sand-pit and the site (arrow), after recultivation (2018).

Although a river terrace lies in the subsoil, the lithic artefacts originate from deposits of fine gravel and sand and the majority display distinct signs of arteficial flaking. Fridrich (2002) described 201 lithic artefacts from this context, predominantly (96%) made of whitish quartz from river pebbles (*Figure 3*). Medial length of the artefacts is 3,9 cm; the breadth is larger compared to the extremly small assemblages of the Bilzingsleben and Vértésszölös and majority of the pieces range between 2–4 cm. In addition to several pebble cores and dominant rough flakes, there are formal tools shaped by marginal and flat retouches, dorsal and ventral. In terms of traditional typology such tool-types correspond to simple sidescrapers, pointed sidescrapers (*Figure 3: 2–4*), and a Quinson point (*Figure 3: 1*).

Regional background (15–20 kms distance). Surface prospection has been realised on elevations and river terraces along the adjacent Vltava and Labe valleys, related by Žebera (1974) by altitude to the sequence of cold periods of the Pleistocene. A number of additional artefacts and industries made of quartz and quartzite pebbles was collected from these contexts (Svoboda 1983). The largest and most representative assemblage originates from the elevated marl plain at Mlazice, extending over the river deposits near the Vltava and Labe confluence. Whereas Žebera in his time (1952, 1969) exaggerated the heavy-duty pebble component of this industry, Svoboda (1980) rather centered on the numerous small-sized flakes and fragments, and these display typological parallels to Račiněves.

KARLŠTEJN (CENTRAL BOHEMIA)

The site (named "Altán") is located on the steeply sloping left bank of the Berounka river, 246 m a.s.l. On top of the 35 m river terrace lies a 6 m thick section of Middle and Upper Pleistocene deposits, with several paleosols separated by interlayers of loess, loessic loams, limestone scree, and other colluvia (layers 1–15). The dominant part of the assemblage was collected by František Prošek in 1950 in the lower, Middle Pleistocene part of this deposit (labeled as layers 11–12); the molluscs from above layers 2 and 9/10 were subsequently studied by V. Ložek (1964; n.d.), and the site was subsequently revised J. Fridrich and L. Smolíková (Fridrich 1982, Smolíková, Fridrich 1984).

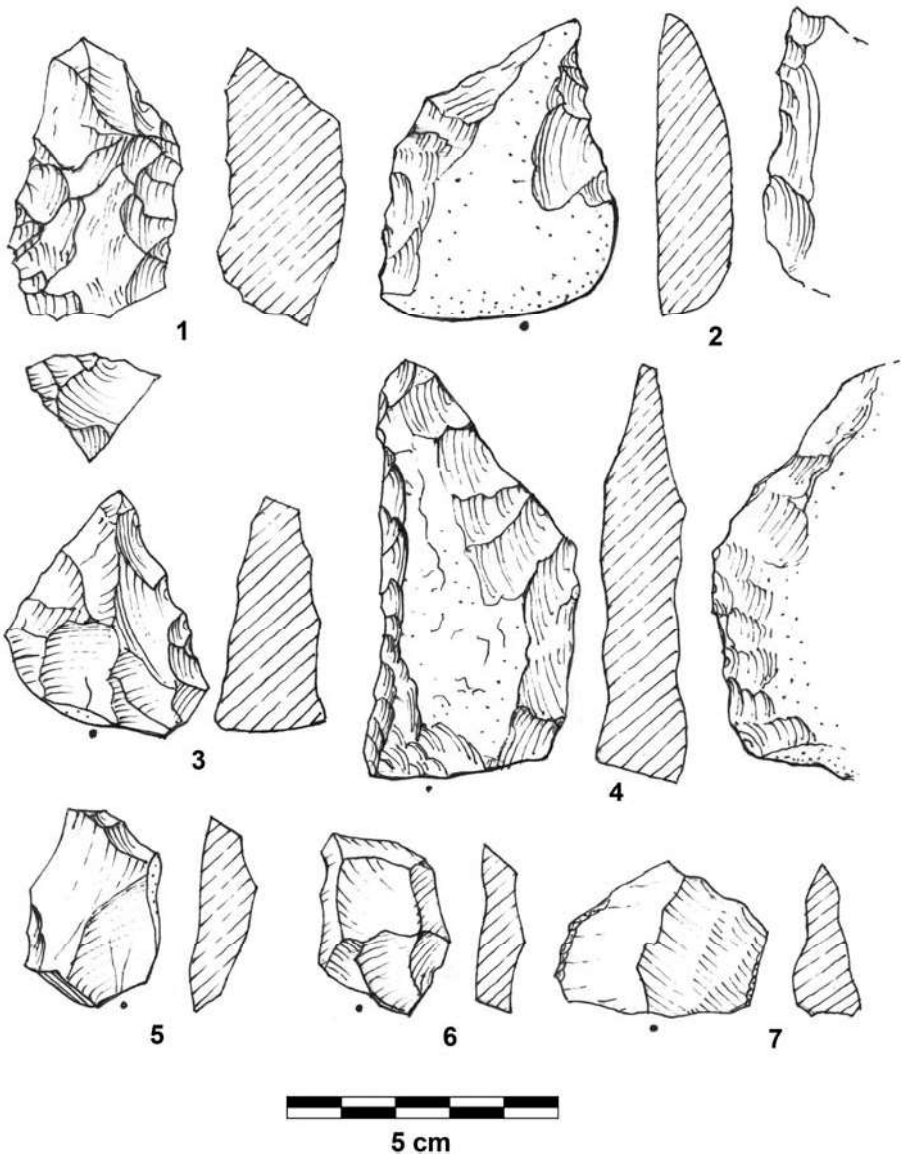

FIGURE 3: Račiněves, selection of the lithic artefacts based on documentation by Jan Fridrich. The points indicate location of the bulbs.

Although redeposition is not excluded in a sloping position, all lithic artefacts were collected from fine loessic deposits and show clear singns of arteficial flaking. The above colluvial layer 10 contained a malacofauna dominated by steppe species with admixture of redeposited demanding forest species indicating another warm and humid phase (Ložek 2018). The younger paleosols 7 and 9, with no archaeological evidence, may be related to MIS 7. The upper part of the section corresponds to the Upper Pleistocene.

Basing on micromorphological character of the polygenetic paleosols, Smolíková identified a sequence of *parabraunerde* soils, some with tendencies to *braulehms*, typical of the lower and middle Holstein warm periods (corresponding to MIS 11 and MIS 9). Paleolithic artefacts associated with some (undetermined) charcoal were detected above the paleosol 13, either in a loessic interlayer 12 or in the pseudochernozem 11. Fridrich described about 40 artefacts made of whitish quartz (*Figure 4*), with

more than a half composed of simple flakes (medial length 3,6 cm; breadth between 2–3 cm), one blade (*Figure 4: 4*), and core fragments. Some of the flakes display irregular marginal retouches, dorsal and ventral (*Figure 4: 1,6*). In 1993 I found another quartz flake in the layer 11 (*Figure 4: 5*), together with several bone fragments of undetermined middle-sized mammals.

Regional background of this site (15–20 kms distance) is provided by numerous surface finds of lithic artefacts from terraces and elevations along the Berounka and Litavka river valleys (Zadní Třebáň, collected by K. Žebera, or unpublished collections by P. Břicháček). Basing on their patination and morphology, they may be roughly contemporary or younger, until the Upper Pleistocene.

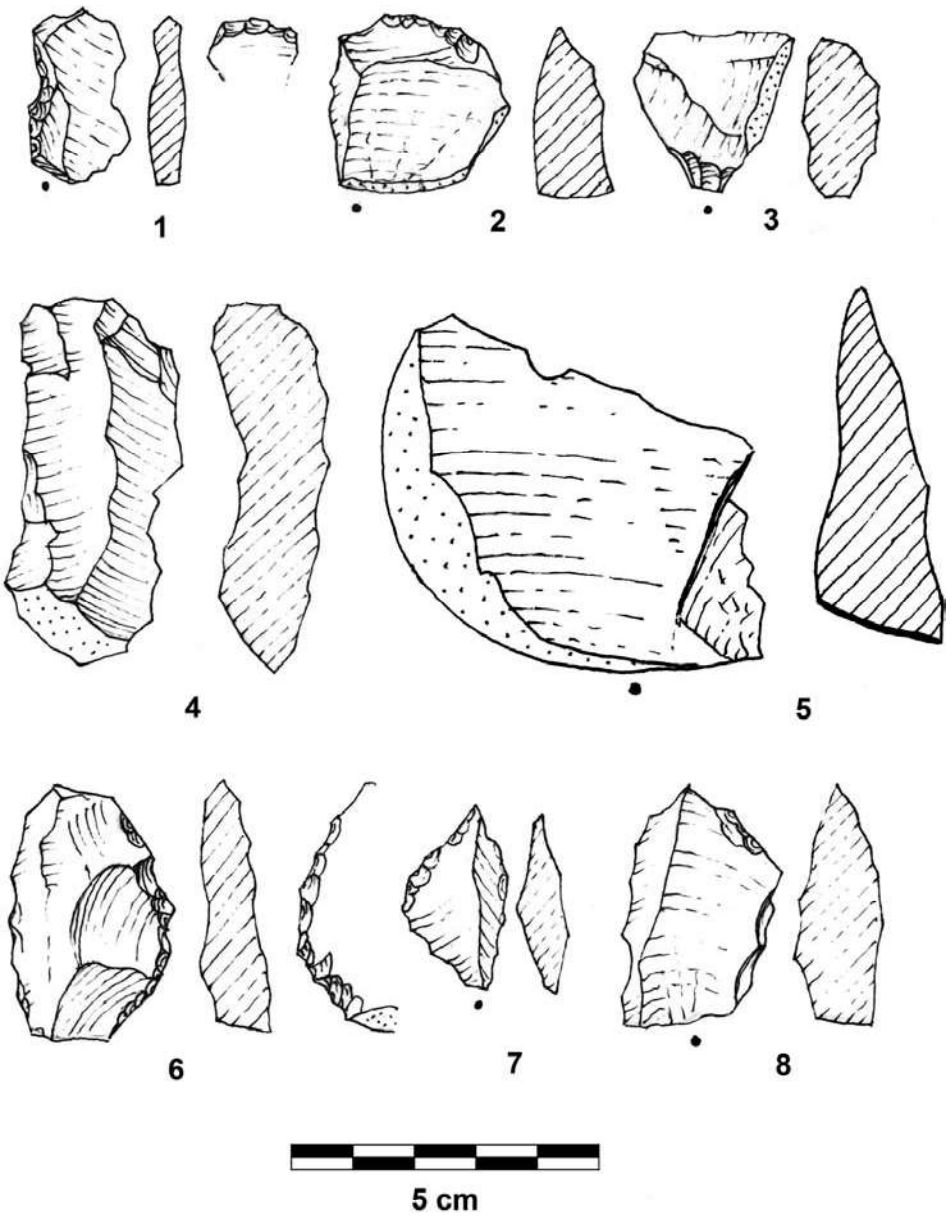

FIGURE 4: Karlštejn, selection of the lithic artefacts based on documentation by Jan Fridrich (except No 5, from later survey). The points indicate location of the bulbs.

DISCUSSION

Leaving aside the "earliest" sites and their problems, diagnostic Czech industries of Middle Pleistocene age range in two distinct entities: the small-sized industries and the Acheulean (cf. Fridrich 1982, Svoboda 1980, 2018). Both entities, although radically different in terms of techno/typology, show patterns of standardisation in size, operational chain and typological structure.

The small-sized industries presented in this paper, Račiněves and Karlštejn, were collected from sedimentary series providing a robust statigraphical and paleoecological context. In both cases they come from interglacial sediments (either soil or soil colluvia) directly overlying the surface of the river terrace deposits belonging to a key morphostratigraphic system of Central Europe, the sequence of river terraces in Bohemian Massif (completely represented along the Vltava river – Záruba *et al.* 1977; *Figure 5*). Particular members of the Vltava terrace system, differing in their altitudinal position, can be directly correlated with the units of the Quaternary

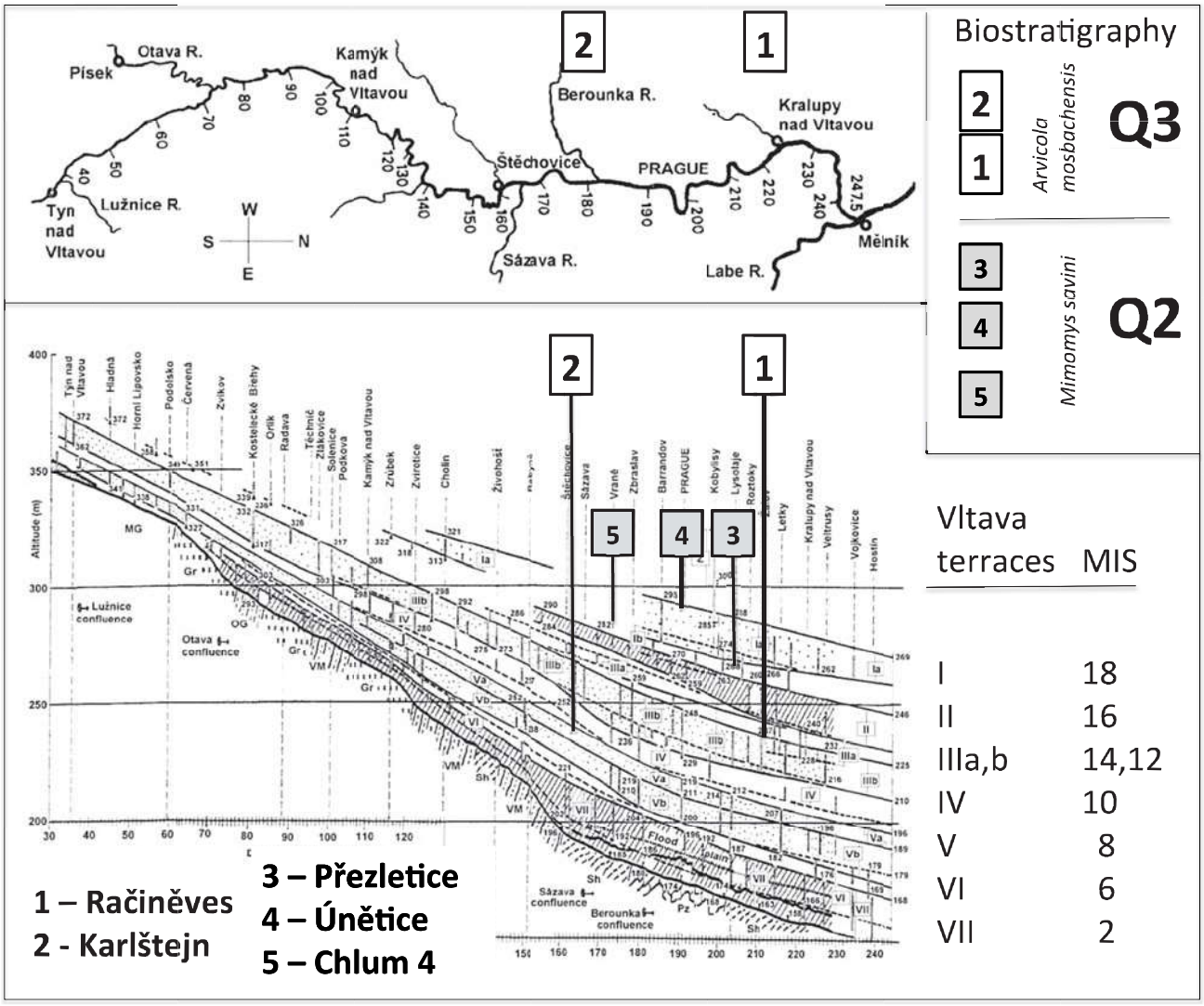

FIGURE 5: Quaternary terraces of the Vltava river in longitudinal section of the river valley (after Záruba *et al.* 1977 and Tyráček, Ed. 2001), their climatistratigraphic correlation and position of the sites Račiněves and Karlštejn-Altán (both in context of Middle Pleistocene fauna) compared to the late Early Plesitocene faunal assemblages from desposits related to higher terraces (Únětice, Chlum 4, Přezletice).

climatostratigraphic scale (Záruba *et al.* 1977, Kukla 1978, Horáček, Ložek 1988, Tyráček, Ed., 2001). Dating Račiněves artifacts to MIS 11, the stage following MIS 12 assumed for the fluvial deposits of the terrace IIIb underlying the fossiliferous sediments, is in a good accord with accompanying faunal assemblage composed of the forms excluding either the Late Pleistocene and early Middle Pleistocene age (*Arvicola mosbachensis, Mamontheus trogontherii, Stephanorhinus hemitoechus, Drobacia banatica* etc.). The stratigraphical setting of Karlštejn is less clear. The fluvial deposits underlying the interglacial series represent a fragment of a larger sedimentary body, not preserved in lower part of the valley, which only allow an indirect correlation with the Vltava terraces. The altimeric position (35 m above level of Berounka river, tributary of Vltava) is assumed to correspond to the terrace V in the Vltava river sequence (MIS 8), yet an older one (IV – "MIS 10") cannot be exluded. The sequence of rich mollusc and vertebrate assemblages in the interglacial series of Karlštejn site combined with the paleopedologic inferences (see above) indicates the former alternative (i.e. MIS 9 for the artifacts) as more probable (Ložek 2018).

Individual small-sized artefacts were collected at additional Czech sites in discrete loess sections of Middle Pleistocene age, in the Brno Basin (Valoch 1995), Sedlec u Prahy (Žebera 1969), and Horky nad Jizerou (Šída *et al.* 2015), but the evidence is never as complex as at the two sites presented here, Račiněves and Karlštejn. Other small-dimensional assemblages, when more numerous and more complex, originate from surface surveys only, as at Mlazice (Žebera 1952, Svoboda 1980). Usage of quartz and quartzite blocks or pebbles as the most widely distributed materials makes the simple character of the resulting artefacts even more visible at all these sites, but patterns of intentional flaking such as bulbs, striking scars and flake profilation are best developed at Račiněves and Karlštejn. Although both industries range to MIS 11-9 basing either on chronostratigraphy or faunal record, new sampling and absolute dating of the preserved sections will be necessary.

In general, the small-dimensional technology in Eurasia was extremely simple and patterns of standardization are visible in terms of size rather than morphology. It aims to create sharp-edges, natural or retouched, straigt, convexe, concave or pointed, using hard-hammer percussion, without core preparation. Voluminous cores may be abandoned at place or re-used as hammerstones, choppers or chopping tools. Raw material selection is opportunistic, mostly using materials disponible at place. To be fully functional, the small tools were supplemented by a larger (heavy-duty) industrial component made of the abandoned pebble cores and fragments (as documeted in the large assemblage from surface surveys at Mlazice, for example). Evidently, given the taphonomic conditions at the Czech sites, additional industrial component of organic materials is difficult to proved in the preserved archaeological record.

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Jiří Svoboda*
Faculty of Science
Masaryk University
Institute of Archaeology
Academy of Sciences
of the Czech Republic
Brno
Czech Republic
E-mail:jsvoboda@sci.muni.cz

Ivan Horáček
Department of Zoology
Faculty of Science
Charles University
Viničná 2, 120 00
Praha 2
Czech Republic
Email: horacek@natur.cuni.cz

*Corresponding author.