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CZECH REPUBLIC: PROJECTS OF THE CENTER FOR PALEOLITHIC AND PALEOETHNOLOGICAL RESEARCH (INSTITUTE OF ARCHAEOLOGY, ACADEMY OF SCIENCES), BRNO–DOLNÍ VĚSTONICE

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Actually, three research centers in the Czech Republic are involved in the Paleolithic research: the Moravian Museum, Brno (Anthropos Institute), the Institute of Archaeology, AS CR, Prague–Kvílice (Laboratory for Paleolithic Research), and the Institute of Archaeology, AS CR, Brno–Dolní Věstonice (Center for Paleolithic and Paleoethnological Research). A progamm is in preparation to coordinate the future research among the three institutions. For the 1996-2000 period, this report aims to summarize research results of one of them, the Brno–Dolní Věstonice Center, i.e., the contributions by B. Klíma, L. Jarošová, M. Nývltová Fišáková, P. Škrdla, J. Svoboda, associated doctoral students, and collaborating specialists from other scientific disciplines and from abroad.

I. THE ORIGINS OF THE UPPER PALEOLITHIC

The relationships of the „transitional" cultural entities (Bohunician and Szeletian) to the Aurignacian, their chronological correlation, technological analysis, and the problem of anatomic type of their producers represent a constant research topic of the Center. In 1997-1999, excavation was in course at the multilayer Bohunician/Aurignacian site of Stránská skála rock, sites IIIc-f (Fig. 2). The project was joined by the Departments of Anthropology of the Harvard University, Cambridge, and Masaryk University, Brno. The new evidence concerns geophysical research of the site (V. Hašek), loess stratigraphy (P. Havlíček), paleopedology (existence of two superimposed paleosoils of the stage 3, L. Smolíková), frost features (especially visible in the lower paleosol and in the underlying deposits, T. Czudek), faunal and charcoal analysis (R. Musil and E. Opravil), and new series of C14 datings of the Bohunician (Table 1). Final monograph is in preparation with the goal to summarize the Upper Paleolithic evidence accumulated at Stránská skála since 1982 (Bar-Yosef and Svoboda 2001; Svoboda and Bar-Yosef [eds.], n.d.).

Studies of technology and refittings at Stránská skála precised our knowledge of the Bohunician operational sequences as a fusion of two separate technologies, starting with Upper Paleolithic crested cores and ending with flat cores reminiscent of Levallois shapes (Svoboda and Škrdla 1995; Škrdla 1996, 1999a, 2000a). Further contextual studies included publication of related Bohunician materials from surface sites of Mohelno and Brno-Líšeň (Škrdla 1999b, 2000b), whereas systematic surface surveys in other part of Moravia, mainly in the areas of Vyškov Gate (Drnovice, Opatovice, cf. Svoboda 1999a) and Pavlovské Hills (Bulhary, Pouzdřany, cf. Škrdla and Přichystal 1999), yielded additional Szeletian and/or Aurignacian materials. Interregional comparative studies focused on Near East and North Africa in case of the Bohunician (Tostevin 2000; Svoboda 1997a, 1999b) and on broader Middle Danube region for parallels to the Szeletian (Svoboda 2001).

In addition, evidence from two important hominid sites in the Czech Republic has been reconsidered: the Mladeč Caves (I, II) and Koněprusy Caves („Zlatý kůň"). The focus of this project was on the depositional context of human fossils, which is clearer from the documentation on Koněprusy, excavated during the nineteen fifties, than from the early reports about Mladeč. Both caves are multi-floor underground karstic systems penetrated by vertical fissures and chimneys, where the fossils were found in restricted areas, related to debris cones accumulated under the chimneys. This does not mean that living animals and humans never entered the interior of the caves, but it makes it unlikely that the human paleontological accumulations were the result of human activity within the cave chambers. These associations are confirmed using 3-D Surfer reconstruction of the original fillings (Svoboda 2000a, b). Samples from travertine and bone, both Mladeč, and a fragment of human bone from Koněprusy, send for U-series and C14 datings, provided no results. Efforts do date the both hominid sites will continue.

Table 1. New Early Upper Paleolithic dates (C 14, conventional), obtained in 1996-2000.

Site	District	Stratigraphy	Sample No.	Result
Stránská skála IIIc	Brno	Bohunician, lower soil	AA 32058	38300 ± 1100
Stránská skála IIId	Brno	Bohunician, upper soil	AA 32059	37900 ± 1100
Stránská skála IIId	Brno	Bohunician, upper soil	AA 32060	37270 ± 990
Stránská skála IIId	Brno	Bohunician, upper soil	AA 32061	35080 ± 830
Stránská skála IIId	Brno	Bohunician, upper soil	GrA 11504	34530 +830/-740
Stránská skála IIId	Brno	Bohunician, upper soil, hearth	GrA 11808	35320 +320/-300

Even if the number of C14 dates has increased during 1996-2000 (Table 1), the chronological relationships of the main EUP entities did not change drammatically. The Bohunician appears as the earliest, at 43 ka in Bohunice, while the first Szeletian data are slightly later (39 ka). One of the new research results in the broader Middle Danube region is that there is no clear-cut chronological boundary between the „transitional" entities and the first Aurignacian sites which appear around 38 ka (as at Willendorf II, Lower Austria, Haesaert *et al*. 1996). The persistence of late „transitional" industries after this date (as at Stránská skála IIId) suggests their coexistence with the early Aurignacian until approximatively 34-33 ka, when Aurignacian predominated in the whole region.

II. THE GRAVETTIAN IN MORAVIA

This is another long-term project of the Center, based on processing the hitherto accumulated body of material from the large hunter´s settlements (Pavlov, Dolní Věstonice and others), on application of new methods, efforts in preliminary synthesis, and new, smaller-scale excavations. Special emphasis was lain on regional background of the settlements, their internal analysis (with respect to spatial analysis, refittings, ethnoarchaeology and experimental archaeology), environmental background, physical anthropology, technologies (lithics, bone, ochre, ceramics and textiles) and symbolism. Activity reports were regularly published in *Archeologické rozhledy* (Svoboda *et al*. 1995a, 1999a), and I refer to the first publication for summary of our activities prior to 1995. – In early 2000, the course of this project was interrupted by the unfortunate death of Bohuslav Klíma, the principal investigator at most of the analysed sites, an internationally recognized authority in Upper Paleolithic research, and an experienced teacher of all of us.

A series of new conventional C14 datings, supplied mainly by the Groningen laboratory (J. van der Plicht) were obtained from several Gravettian sites (Table 2). These dates, in accord with new dates from the multilayer sequence at Willendorf II, Lower Austria (Haesaert et al. 1996), fit well into the previously constructed three-stages chronological framework of the Gravettian (Early Pavlovian – Evolved Pavlovian – Willendorf-Kostenkian; cf. Svoboda 1996a, b; Svoboda *et al*. 2000a). Even if we generally suppose duration of the Gravettian from 30 ka to 20 ka, the majority of Moravian dates fall into the evolved Pavlovian stage (27ka to 25ka).

Table 2. New C14 dates (conventional) obtained from the Gravettian sites.

Site	District	Context	Sample No.	Result (B.P.)
Pavlov I	Břeclav	Pavlovian (SE)	GrN 19539	26650 ± 230
Pavlov I	Břeclav	Pavlovian (SE)	GrA 192	25530 ± 110
Pavlov I	Břeclav	Pavlovian (NW)	GrN 20391	26170 ± 450
Pavlov I	Břeclav	Pavlovian (south)	GrN 22303	26400 ± 310
Pavlov I	Břeclav	Pavlovian (south)	GrN 22304	25160 ± 170
Pavlov I	Břeclav	Pavlovian (south)	GrN 22305	25840 ± 290
Dolní Věstonice II	Břeclav	Pavlovian, unit 4	GrN 21122	26970 ± 200
Dolní Věstonice II	Břeclav	Pavlovian, unit LP	GrN 21123	26390 ± 190
Dolní Věstonice IIa	Břeclav	Pavlovian, A-lower position	GrA 15132	26190 +390/-370
Dolní Věstonice IIa	Břeclav	Pavlovian, A-upper position	GrA 15134	25870 +370/-360
Dolní Věstonice IIa	Břeclav	Pavlovian, D	GrA 15147	25890 +370/-360
Dolní Věstonice III	Břeclav	Pavlovian, unit 2	GrN 22307	26160 +770/-700
Boršice	Uh.Hradiště	Pavlovian	GrA 11454	25040 ± 300
Jarošov II	Uh.Hradiště	Pavlovian	GrA 9604	25780 +250/-240
Jarošov II	Uh.Hradiště	Pavlovian	GrA 9613	25110 +240/-230
Jarošov II	Uh.Hradiště	Pavlovian	GrA 15137	26220 +390/-360
Předmostí II	Přerov	Pavlovian	OxA 5971	25040 ± 320
Dolní Věstonice III	Břeclav	Willendorf-Kostenkian, unit 1	GrN 20392	24560 +660/-610
Petřkovice Ia	Ostrava	Willendorf-Kostenkian, 1994	GrA 891	23370 ± 160
Jaroslavice	Znojmo	(?) Gravettian	GrA 7574	19340 ± 100

Special attention was paid to geographic patterning of the sites (Fig. 3), defined as territorial type C, or „Gravettian landscape“ (occupations on the slopes, in altitudes between 200-300 asl., providing control of river valleys, natural gates and confluences, Svoboda *et al*. 1996a). Supplementary surface surveys were realised, especially in the Dolní Věstonice – Pavlov and Uherské Hradiště microregions. In addition to classical maps and microregional site-catalogues, the areas of interest were digitized and 3-D maps were created using the computer programm Surfer (Škrdla and Svoboda 1998; Škrdla and Lukáš 2000).

New excavations were organised at the sites of Jarošov II and Dolní Věstonice IIa. Excavation at Jarošov II, in 1996-2000, covered the area of 140 m^2 and yielded a collection of almost 20,000 artifacts. It is an evolved Pavlovian industry, typically rich in microliths (95% of the tool-types), with a reindeer-dominated fauna (55%), and corresponding C14 dates (Škrdla and Musil 1999; Škrdla and Kruml 2000; Škrdla in press). – The site Dolní Věstonice IIa was excavated in 1999 because of repeated disturbances from ploughing. Compared to complex sites such as DV I and Pavlov I, site DV II-IIa is considered as a result of short-term but repeated occupations (cf. the dated strafigraphic superposition in trench A) and more specialized activities (Svoboda in press, with contributions on fauna by D. West and M. Fišáková, refittings by P. Škrdla and use-wear by A. Šajnerová).

Second monograph concerning the site of Pavlov I (northwestern part, excavation by B. Klíma in 1957-1958) appeared as vol. 4 of the Dolní Věstonice Studies (Svoboda [ed.] 1997;

see also Verpoorte, in press). Compared to the previously analysed southeastern part, the northwestern section yielded a male burial, two „dwelling“ features, important accumulation of ochre, an unusually increased share of radiolarite among the lithics, and slightly increased share of mammoth in the fauna. The volume includes chapters on exavation history (B. Klíma), human remains (E. Vlček and E. Trinkaus), spatial distribution (L. Jarošová), lithic industry (J. Svoboda, A. Verpoorte), bone industry (B. Klíma), technologies and refittings (B. Klíma, P. Škrdla), pigments (P. Vandiver), ceramics (O. Soffer and P. Vandiver), textiles and cordage (J. Adovasio *et al*.), radiocarbon dating (J. van der Plicht), anthracology (F. Damblon) and hunting game (R. Musil). Analogical project of a third monograph on Pavlov I is running, now focusing on the south-central part of the site (excavation 1954-1956).

Other Gravettian sites, excavated in frame of our project during the early 90´ies, became recently subject to processing and publication: Předmostí, excavation 1989-1992 (Svoboda *et al.* 1996b – this paper deals with Middle Paleolithic layers, whereas the Gravettian materials are being prepared for publication), Dolní Věstonice III, excavation 1993-1995 (Škrdla *et al*. 1996), and Petřkovice - Landek, excavation 1994-1995 (Svoboda 1996c; Jarošová *et al*. 1996; Jarošová 1997, 1999; Cílek and Jarošová 2000). In addition, the systematic survey of Gravettian and „Epigravettian“ settlement included revision and publication of earlier excavations and smaller surface sites such as Boršice (Škrdla 2000c), Kyjov (Svoboda 2000c), Velké Pavlovice (Svoboda and Fišáková 1999), or Opava (Svoboda 1999c).

As a part of spatial analysis of the large hunter´s settlements, the problems of typology and reconstruction of dwellings structures were addressed, imprunting analogies from experimental archaeology (using the occasion of two movies produced at Dolní Věstonice by M. Hanzlíček and J. Císařovský; cf. Jarošová 1998; Bartošíková 1999) and from ethnoarchaeology (Svoboda and Elster 2000). Two ethnoarchaeological cases were imprunted from the Canadian Arctic and the Fuegian Subantarctic zones. Both are circular features, but of different origin: a stabilizing part of the construction in the first case, and the result of long-term refuse accumulation in the second case. Both effects should be taken in account at Pavlov I, which is a large and complex settlement, resulting from long-term cumulative processes.

New faunal studies were realised, basing on materials from Pavlov I – Northwest and South (Musil 1997, in preparation), Jarošov II (Škrdla and Musil 1999), and Dolní Věstonice II and IIa (D. West, M. Nývltová Fišáková, in press). Even if the importance of mammoths is being confirmed especially at certain locations (Pavlov I – Northwest), smaller carnivores represent so important part of the faunal material that systematic fur and hide working was suggested at some places (DV II – western slope). The dominance of reindeer at Jarošov II is rather an exception.

Special attention was paid to Gravettian technologies (Soffer 2000). Traditional studies of lithic technologies are recently enlarged by refittings and use-wear analyses (both research fields that were hitherto neglected in the Czech archaeology; cf. Škrdla 1997, 1999a, c, 2000a; Šajnerová and Škvařilová 1999). Emergence of other group of Gravettian technologies such as polishing stone and production of ceramics, textiles and cordage demonstrate world primacy in South Moravia, even if these techniques were used differently (or, less „practically“) compared to the Neolithic. In addition to expanding our knowledge on ceramic technology through analysis (Soffer and Vandiver 1997) and experiment (Gonyševová 1999), the new and surprising discovery of textile imprints at Pavlov I and Dolní Věstonice I,II attracted attention and opened discussions (Adovasio *et al*. 1996, 1999; Soffer *et al*. 1998, 2000; Kovačič *et al*. 2000). As was the case with ceramics, the textile technologies are equally tested experimentally (Buňatová 1999; Sosna 2000).

Gravettian symbolism made another topic of recent investigation and reconsideration (Klíma 1997b; Svoboda 1997b, c; Verpoorte 2000), as a preparatory step for editing a complete Catalogue of decorative and symbolic objects from Pavlov I. In addition to this goal, a detailed study of Tertiary molluscs from Gravettian contexts is carried out from viewpoints of archaeological description (L. Jarošová) and paleontological determination (Š. Hladilová).

As one of the largest samples of Upper Paleolithic human remains from one site complex, the human fossils from Dolní Věstonice and Pavlov are subject of a long-term sub-project. As a first step in this analysis, the vol. 5 of the Dolní Věstonice Studies (Sládek *et al*. 2000) presents a complete catalogue of the human remains and osteometric data. The primary description and measurements have been undertaken by four authors, V. Sládek (cranial and mandibular remains), S.W. Hillson (dental remains), T.W. Holliday (axial skeletons), and E. Trinkaus (appendicular remains). In addition, new fragments of human remains, scattered in the cultural layer, were discovered during analysis of the osteological material from site DV II (Trinkaus *et al*. in press). M. Nývltová Fišáková (with J. Zocová, 2000) published main results of her PhD thesis on the hand and foot skeleton. Finally, the human mandible Předmostí 21, believed to be lost during the war-time, has been rediscovered by P. Procházková and subsequently described by E. Drozdová.

As a preliminary conclusion, we recently argue that the Gravettian record from Moravia, with greater sedentism, elaborated resource exploitation systems, long-distance lithic transport, and innovations in technology and ideology, probably represents one of the early cases of a complex hunter-gatherer society. It is probable that such a society was more sensitive to the climatical deterioration around the Last Glacial Maximum (Mussi *et al*. 2000; Svoboda 2000d; Svoboda *et al*. 2000a). – For the future, especially the „Epigravettian" problem, i.e. the occupations around and after the LGM, call for a serious revision in the whole Middle Danube region.

III. THE PLEISTOCENE-HOLOCENE TRANSITION IN KARSTIC AND PSEUDOKARSTIC AREAS

Most of the karstic caves in the Czech Republic, usualy with a rich Magdalenian record, were excavated (or, exhausted) long time ago and recent revisions focus on their chronological and environmental context rather than on obtaining new archaeological materials. A joint project with the Moravian Museum (K. Valoch) and the Natural Reserve Protection Service, Moravian Karst (I. Balák) aims to revise and catalogize the Paleolithic and Mesolithic cave sites in Moravia, and to publish the hitherto unedited excavations. Namely, several sites excavated during our surveys during the 80´ies (Svoboda *et al*. 1995b, 2000b) became recently subject of joint publications with experts on pollen (H. Svobodová), molluscs (V. Ložek), vertebrates (I. Horáček) and other specific topics: Kolíbky, excavation 1982-1984, as an example of smaller but specific Magdalenian site, dated 12.6 ka (cf. the problems of ochre and stone containers); Pekárna Cave, excavation 1986-1987, showing the development of this Upper Paleolithic culture in a reduced stratigraphy: the basal Weichselian loess, the overlying polygenetic soils, dated radiometrically to 13–12.5 ka, and the layers above the Magdalenian; and, finally, Barová Cave (excavation 1983-1985), a site with a scarce archaeological record but a more complete stratigraphic development. Here, the last Weichselian loess with the Magdalenian lies interstratified between warmer oscillations and overlain by an Epimagdalenian layer. In conclusion, it seems that the end of loess deposition is slightly metachronous under different environmental conditions at the individual caves.

New fieldwork in the karst was limited. Mokrá-lom V, a smaller open-air Magdalenian site in Southern part of Moravian Karst, was excavated during 1995-2000. The excavation yielded a collection of 1075 chipped stone artifacts and several fragments of heavy-duty implements. In addition, deposits from earlier excavation in front of the Pekárna Cave were floated for supplementary archaeological and paleontological material (Škrdla *et al*. 1999; Škrdla 1998, 2000d; Škrdla and Lázničková 1999).

A more general paper placed the geographic data from Czech karst areas into context of regional approaches to Late Glacial adaptations (Svoboda 2000e). Two occupation streams, following the Elbe river to Bohemia and the Danube river to Moravia, were separated in the regional record; however the differences between them are visible rather in behaviour than in artifact typology and styles. The evidence of Magdalenian symbolism (recently supplemented by a simple female engraving from Pekárna, excavation 1987) has also been reconsidered (Svoboda 1998). – It should be recalled here that a number of important papers on Moravian Karst were simultaneously published by K. Valoch, Moravian Museum.

Table 3. New C14 dates (conventional) from the Late Glacial and Early Holocene excavations, obtained in 1996-2000.

Cave/rockshelter	District	Context	Sample No.	Result (B.P.)
Pekárna	Brno	Magdalenian, layers 6-7	OxA 5972	12500 ± 110
Kolíbky	Blansko	Magdalenian	OxA 5973	12680 ± 110
Nízká Lešnice	Česká Lípa	Mesolithic, base	GrN 24210	10160 ± 190
Máselník I	Česká Lípa	Mesolithic, layer 7	GrN 21557	8790 ± 70
Máselník I	Česká Lípa	Mesolithic, layer 6	GrN 21556	8560 ± 70
Jezevčí převis	Děčín	Mesolithic, hearth 3	GrN 25171	8530 ± 150
Šídelník III	Česká Lípa	Mesolithic, hearth	GrN 24214	8300 ± 150
Švédský převis	Děčín	Mesolithic	GrN 25170	8180 ± 110
Pod křídlem	Česká Lípa	Mesolithic	GrN 23331	8160 ± 80
Vys. Lešnice	Česká Lípa	Mesolithic, base	GrN 24217	7930 ± 160
Pod Č. Louží	Česká Lípa	Mesolithic	GrA 11455	7620 ± 80
Černá Louže	Česká Lípa	Mesolithic, base	GrN 21558	7950 ± 80
Šídelník I	Česká Lípa	Mesolithic, base	GrN 24213	7830 ± 170
Šídelník I	Česká Lípa	Mesolithic, middle	GrA 11456	7120 ± 80
Pod zubem	Česká Lípa	Mesolithic, middle	GrN 23334	8110 ± 240
Pod zubem	Česká Lípa	Mesolithic, middle	GrN 23335	7660 ± 130
Pod zubem	Česká Lípa	Mesolithic, upper	GrN 23332	6790 ± 70
Pod zubem	Česká Lípa	Mesolithic, upper	GrN 23333	6580 ± 50

In contrast to the Czech karstic regions, new survey and excavation project in the pseudokarstic sandstone rockshelters of North Bohemia is yielding a rich evidence of Early Holocene Mesolithic occupations. This project was joined by Regional Museum in Česká Lípa (V. Peša), together with several specialists in geology, paleobotanic and paleontology (V. Cílek, E. Opravil, P. Pokorný, V. Ložek, I. Horáček, and others). About 30 rockshelters were excavated between 1995-2000, and most of them yielded evidence of Mesolithic occupations, some with surprisingly good state of organic preservation. Basing on the conventional C-14 chronology (Table 3), the Mesolithic occupation flourished during the two millenia between 7-9 ka; a few dates are earlier (Nízká Lešnice, around 10 ka) and later (Pod zubem - upper Mesolithic layers, until 6.5 ka). Whereas most of the lithic assemblages in the southern part of the studied region (Česká Lípa district, Fig. 4) are smaller but include also bone artifacts and an item of decoration, two of the northern rockshelters, Švédský rockshelter and Arba (Děčín district), provided surprisingly large lithic assemblages rich in microlithic

triangles. Human teeth, of older individuals and heavily worn, were found at the sites Pod zubem, Vysoká Lešnice and Šídelník I and one little fragment of a human skull is from Nízká Lešnice; these are analysed by E. Drozdová. It seems that rockshelter formation in the soft sandstone was so recent that occupations earlier than the Holocene are not recorded (Svoboda *et al*. 1996c, 1998, 1999b). The excavation project in North Bohemia will continue in 2001.

IV. GENERAL ACTIVITIES

In 1995 and 1999, the Center organized three international conferences in Dolní Věstonice, Pavlov and Mikulov: a memorial conference in honour of 70th anniversary of Bohuslav Klíma, entitled Paleolithic in the Middle Danube region (Svoboda [ed.] 1996), a Mid Upper Paleolithic conference in frame of ESF network The Paleolithic Occupation of Europe (Roebroeks *et al.* [eds.] 2000), and 41. Meeting of the Hugo-Obermaier Society for Quaternary Research (unpublished). – In addition, two synthetic books on Paleolithic, in English and Czech, were published (Svoboda *et al*. 1996a; Svoboda 1999d), as well as general papers on methodology of Upper Paleolithic research and approaches to spatio-temporal and symbolic structuring of the Paleolithic mind (Svoboda 1999e, 2000f).

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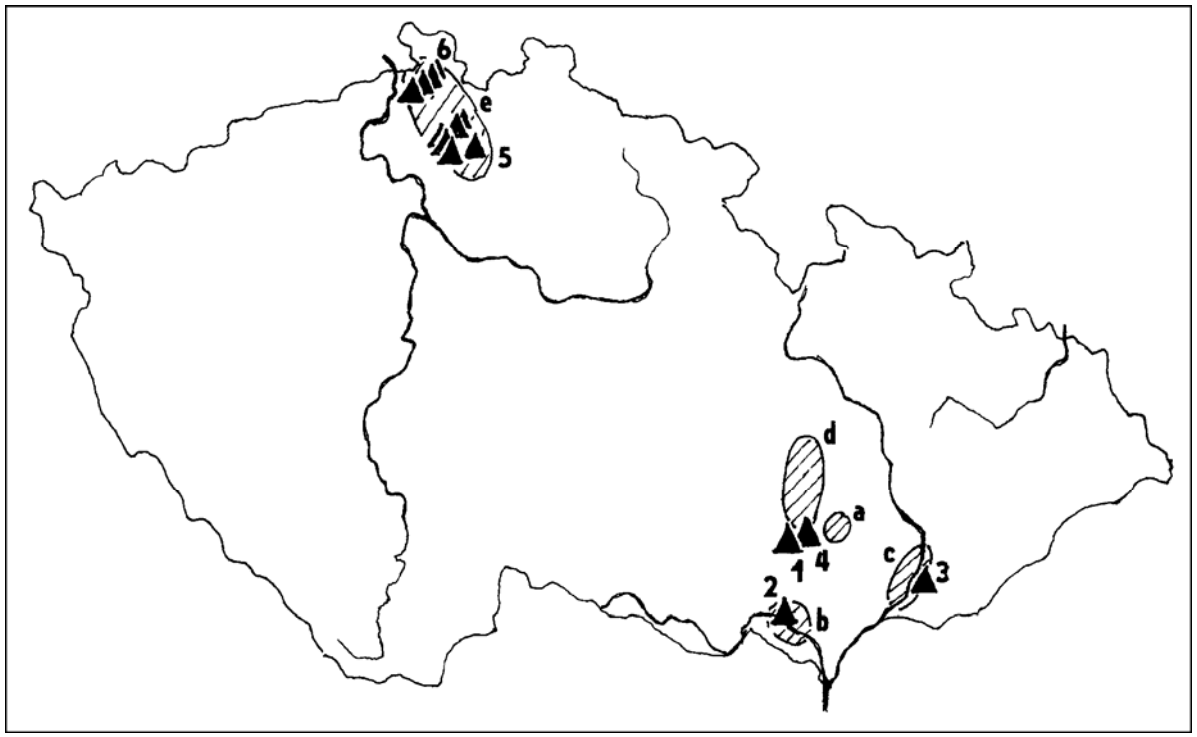

Fig. 1. Czech Republic, 1996-2000: Field activities of CPPR, Institute of Archaeology, Brno-Dolní Věstonice. Triangles – excavated sites (1: Stránská skála IIIc-f, 2: Dolní Věstonice IIa, 3: Jarošov II, 4: Mokrá-lom V, 5: sites in the Česká Lípa district, 6: sites in the Děčín district). Hatched – systematically surveyed areas (a: Vyškov Gate, b: Pavlovské Hills area, c: Uherské Hradiště area, d: Moravian karst, e: North Bohemian sandstone region).

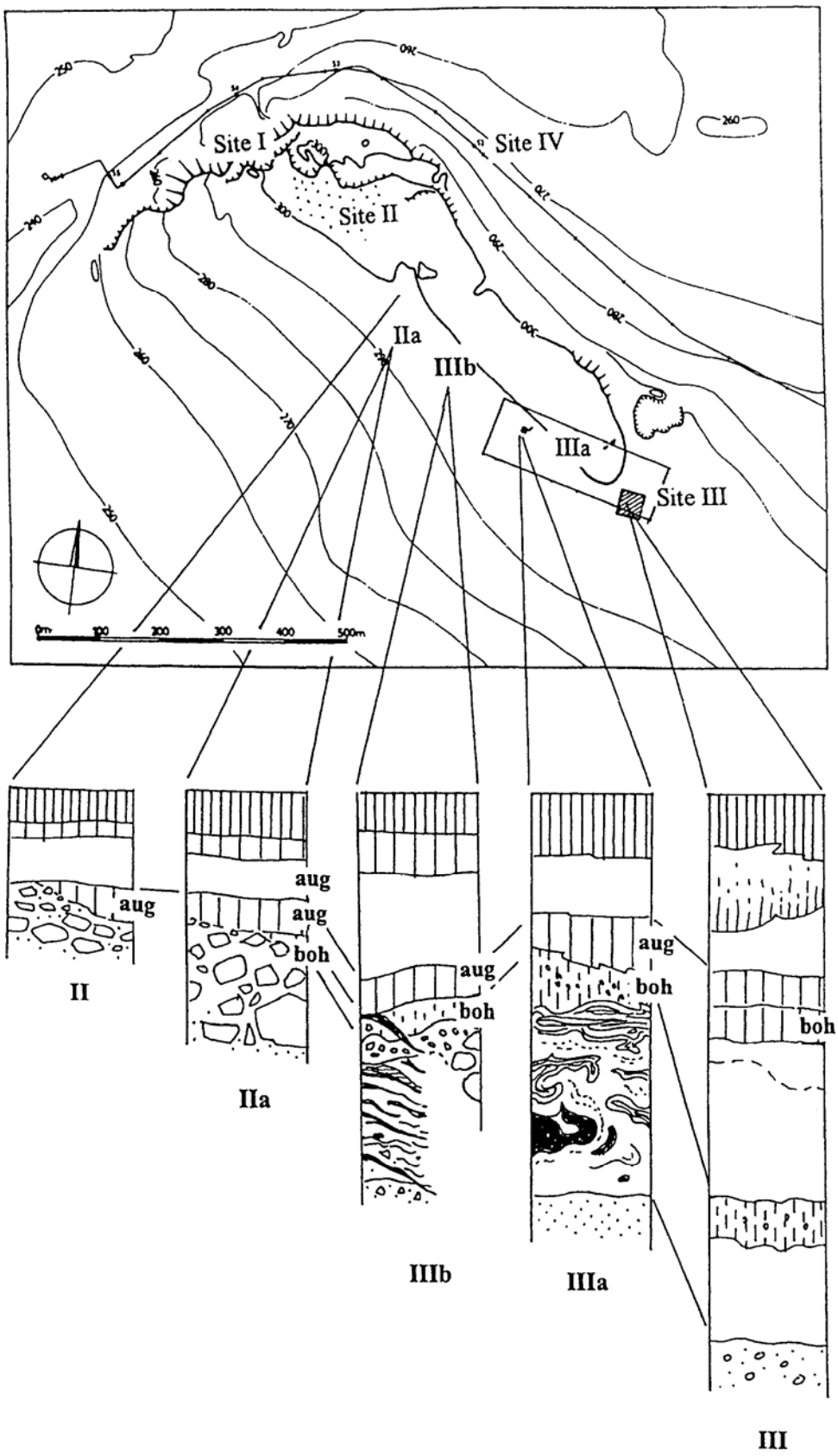

Fig. 2. Origins of the Upper Paleolithic: General plan of the Stránská skála rock and stratigraphic correlation scheme of the main trenches (1982–1999). boh – Bohunician, aug – Aurignacian.

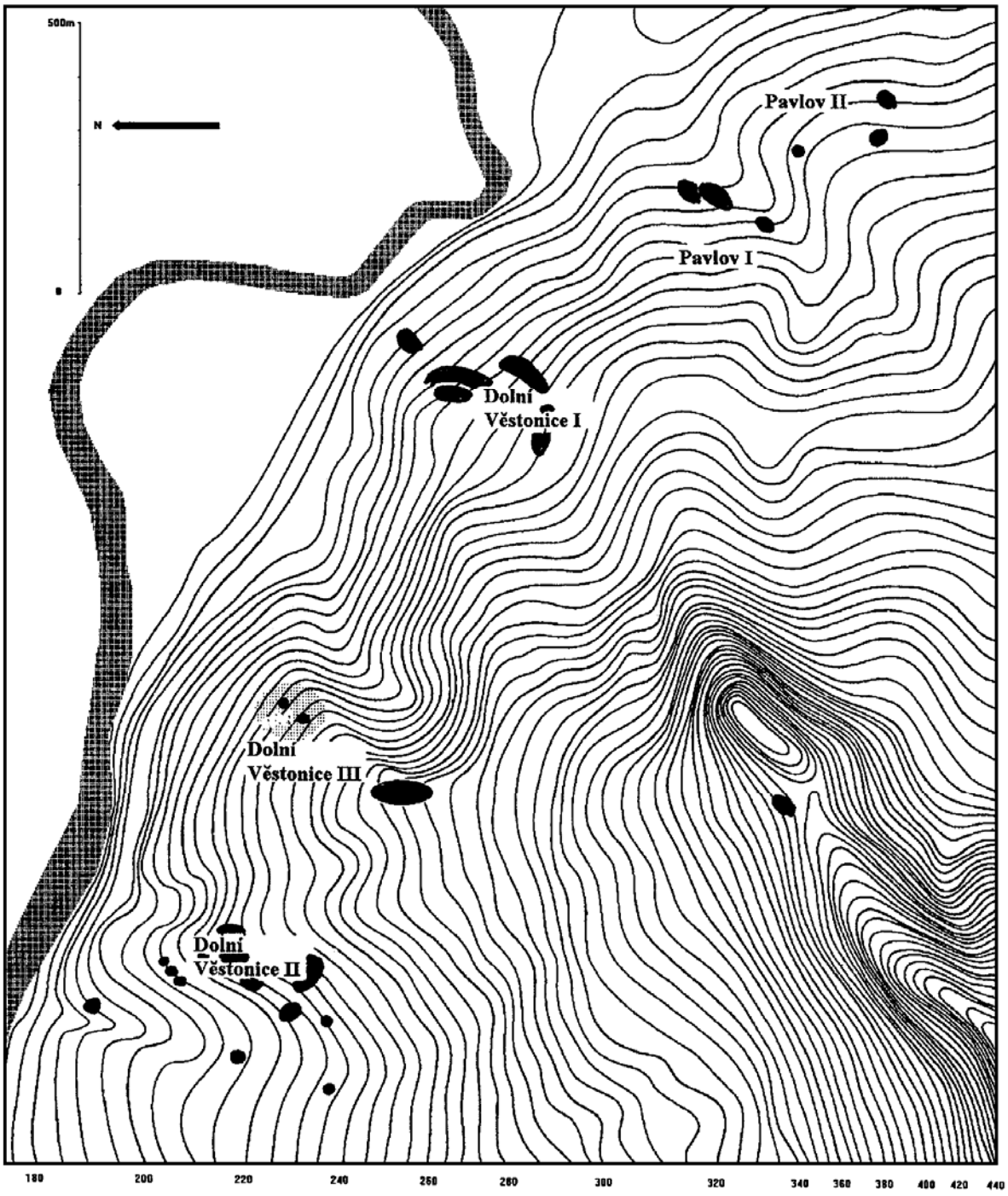

Fig. 3. Gravettian in South Moravia: Occupation in the Dolní Věstonice – Pavlov area.

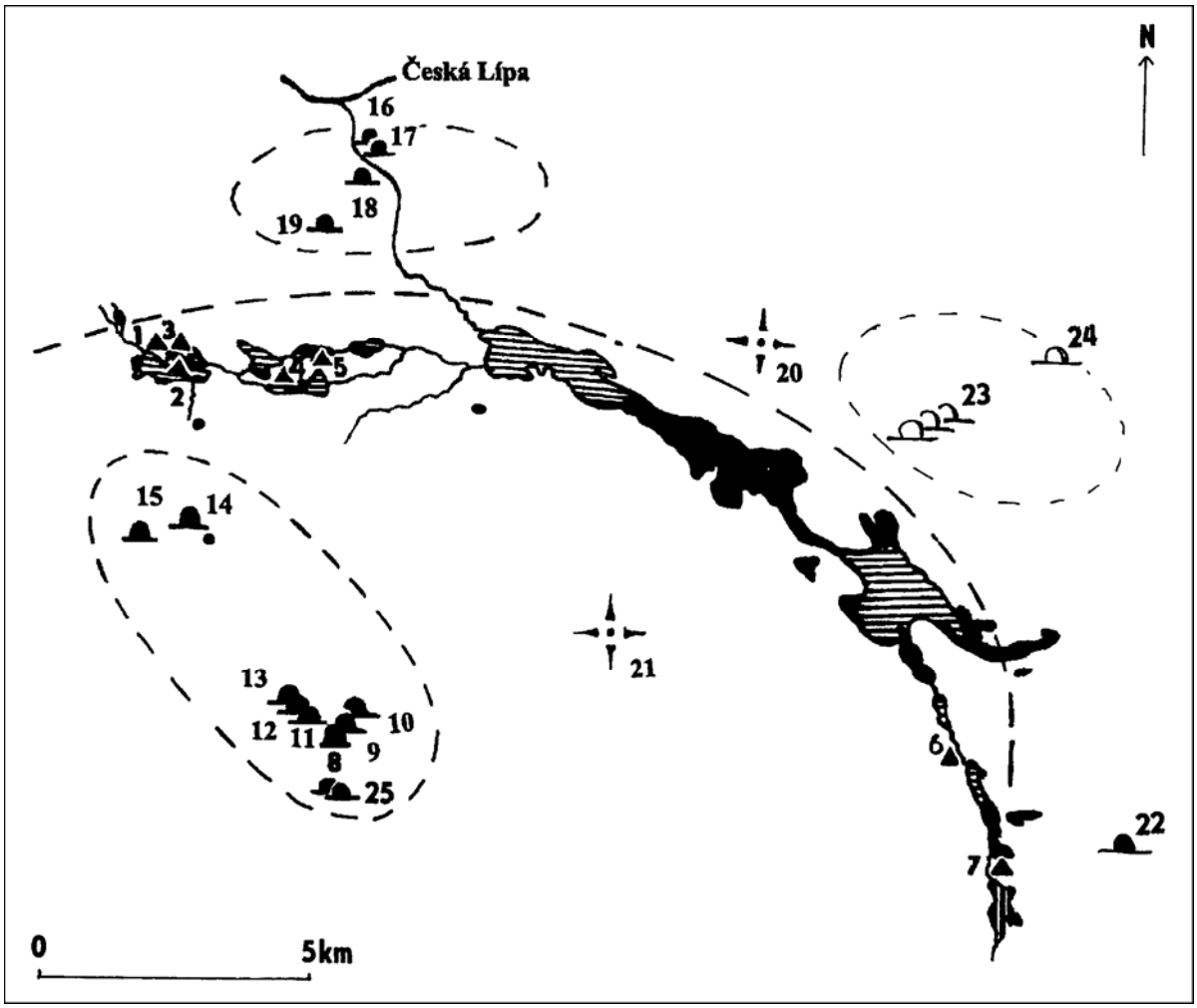

Fig. 4. The Pleistocene-Holocene transition: Occupation in the Česká Lípa district, North Bohemia. Triangles – open air sites, Federmesser and Mesolithic (1: Stvolínky I, 2: Stvolínky II, 3: Stvolínky III, 4: Holany I, 5: Holany II, 6: Doksy, 7: Okna). Arches, full – Mesolithic rockshelters, empty – later occupied rockshelters (8: Zátyní, 9: Strážník, 10: Stará skála, 11: Máselník, 12: Černá Louže, 13: Šídelník, 14: Heřmánky, 15: Hvězda, 16: Grošák, 17: Pod zubem, 18: Pod křídlem, 19: Sněhurka, 22: Bezděz, 23: Uhelná rokle, 24: Donbas, 25: Lešnice valley).