EARLIEST UPPER PALAEOLITHIC LAYERS AT KOSTENKI 14 (MARKINA GORA): PRELIMINARY RESULTS OF THE 1998-2001 EXCAVATIONS

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Resume : Cinq couches culturelles comprises entre 32-36 (> 40?) ka ont été identifiées a Kostienki 14 (Markina gora) au cours des fouilles de 1998-2001. La couche supérieure, directement recouverte par la cendre volcanique, a fourni une industrie de type Aurignacien-Dufour. La couche inférieure (IVb et «l'horizon a foyers») contenait un assemblage particulier, inconnu auparavant, que l'on peut rapporter a la phase la plus ancienne du Paleolithique superieur, mais qui contenait une industrie osseuse et des objets d'art dont le degré d'évolution paraît surprenant. Une tête de figurine humaine, un ornement personnel et des elements de decoration corporelle, composes de coquilles de mollusque exotique, représentent a ce jour la manifestation la plus ancienne de Part figuratif, ornemental et décoratif en Europe de l'Est. De plus, la couche culturelle IVa et l' «l'horizon a os de mammouth», qui sont situés entre les deux couches culturelles mentionnées ci-dessus, présentent des caractéristiques particulières. En particulier, la couche IVa correspond probablement a une aire d'abattage de chevaux et d'exploitation sur place resultant d'une chasse collective. Par ailleurs, «l'horizon des os a mammouth» n'a pas livré de restes culturels et constitue probablement une concentration paléontologique naturelle. L'importance exceptionnelle du site reside donc dans la découverte d'un materiel archéologique surprenant qui contribue a élargir la problématique de la phase la plus ancienne du Paleolithique superieur.

Abstract: Five cultural layers in the chronological frameworks of 32-36 (>40?) ka were identified at the site Kostenki 14 (Markina gora) in 1998-2001. The upper of them, blocked by volcanic ashes, represents the Aurignacian-Dufour entity; the lower (IVb and «horizon of hearth») provide an evidence of the most ancient for East European Upper Palaeolithic cultural tradition, before unknown, with unusually «evolved» bone assemblage and art objects. The head of the human figurine, personal ornament and body decoration made out on exotic sea shell, are on the present moment, the most ancient manifestations of the figurative, ornamental and decorative art of the East Europe. The IVa cultural layer and «horizon of mammoth bones», lied between them, provided the evidences of the particular types of sites. IVa, most likely, was a place of the slaughtering the horse's herd, as a result of collective chase, and primary butchering on place. The «horizon of mammoth bones» does not a cultural but palaeontological layer because of the absence of cultural remains in association with mammoth skeleton. The current excavation of the site, has provided not only unusual archaeological materials, but considerably sponsored the enlargement of the problem set for the earliest stage of Upper Palaeolithic. This is their principal meaning.

The multi-layer Upper Palaeolithic site Kostenki 14 (Markina gora) (fig. 1) (Rogachev, 1957; Praslov, Rogachev, 1982) achieved a significant reputation owing to: a) the unusual lithic and bone assemblages of the IInd cultural layer, the Middle Palaeolithic tool-kit component of which reaches 50% (Sinitsyn, 2000), and b) the unique burial of a "negroid" under the IIIrd cultural layer (Sinitsyn, 1996).

Although the existence of lower cultural layers at Markina gora was known prior to the 1998 excavations, no information about them was available.

During the 1998-2001 excavations, a minimum of four cultural layers were identified in the deep sequence of deposits that underlie the volcanic ash. A cultural layer containing a high density of material was documented in the volcanic ash in 2000.

The principal problem in the study of the site is the classification of the cultural layers. The problem was first addressed during excavations by A.N. Rogachev in 1953-54 and became widely known in the literature. Only the upper cultural layer is continuously distributed across the entire area of the promontory on which the site is located, while

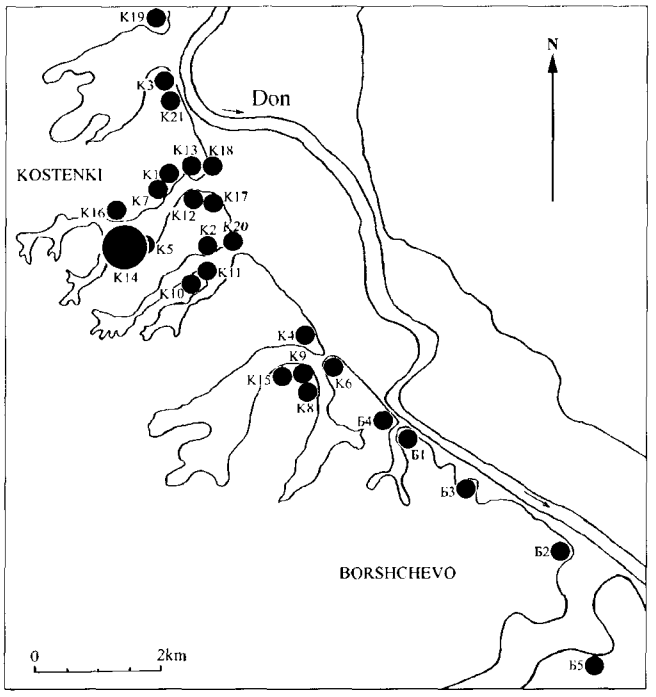

Figure 1. Kostenki 14 (Markina gora) in the Kostenki-Borshchevo area.

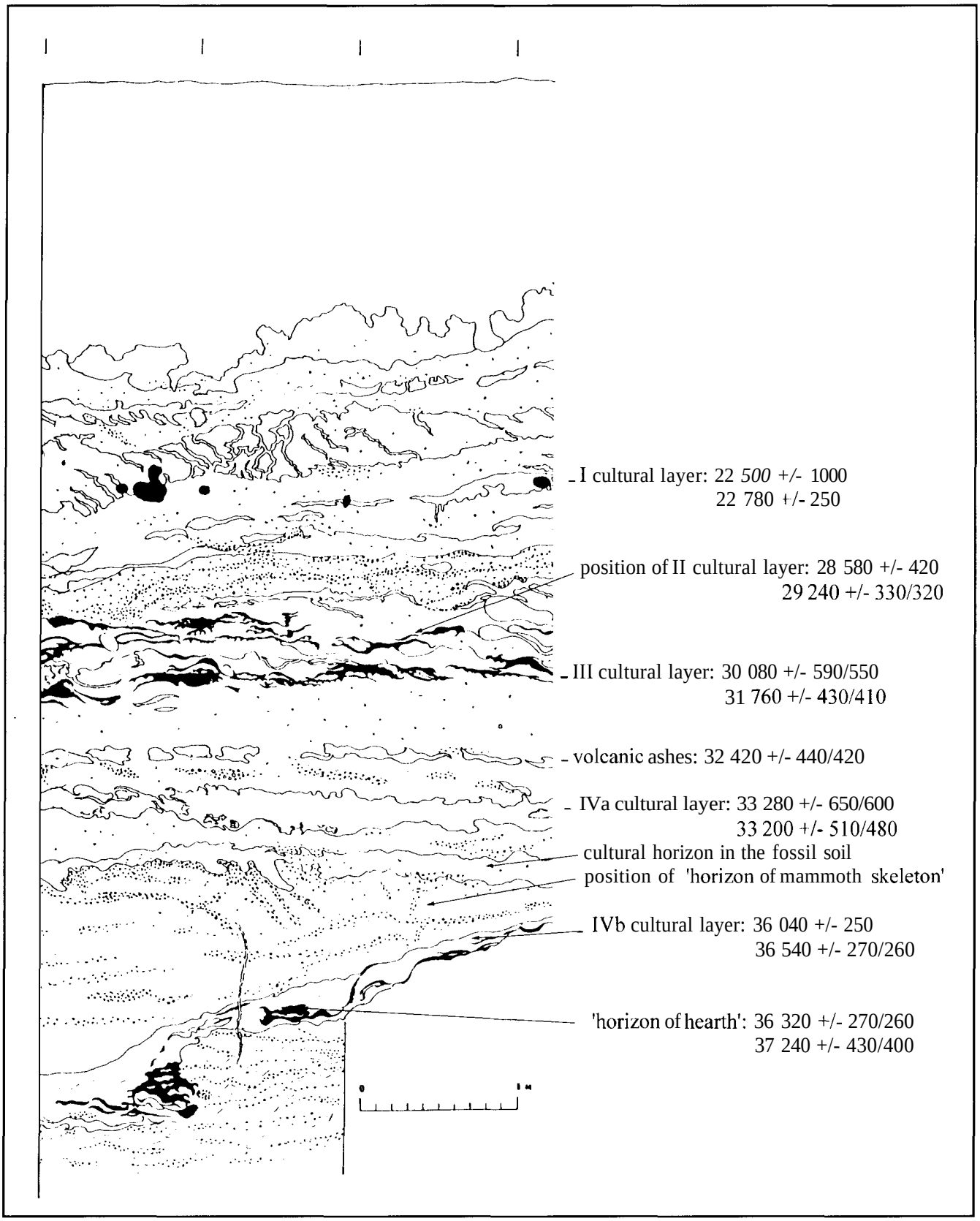

Figure 2. Kostenki 14 (Markina gora). Stratigraphic position of cultural layers.

the others have more restricted distributions and their stratigraphic relationships remain problematic. Revision of the traditional classification seems to be premature at present, given the fact that almost each season of excavation yields new cultural layers. It is more appropriate at this time to introduce provisional designations alongside the traditional classification.

The "cultural layer in the ash" was identified between cultural layers III and IVa in 2000. The existence of the "cultural

layer in the fossil soil" and "horizon of mammoth bones" was confirmed in 2001, although isolated remains were known earlier at these levels. The "horizon of hearth" lay beneath cultural layer IVb, but has not been designated by as number V, as both probably represent the remains of one settlement, the first *in situ* and the latter in a redeposited context. The lower cultural layer on the east slope of the promontory, where the excavations of 1998-2001 are located, was initially discovered by A.N. Rogachev in 1953 over an area of 0.5 sq. m. Two horizons of bones associated with chipped stone in two humus levels, divided by 20-30 cm of a sterile loam, were identified. Although its stratigraphic position was distinct from the position of the IVth cultural layer in the central part of the promontory, they were designated by the same number. To distinguish the IVth cultural layer on the central and highest part, lying in colluvial deposits, from the two layers in humus horizons on the east slope, the number IV was assigned to the first, and the latter were designated as layers IVa and IVb.

The stratigraphy of the site on the eastern slope of the promontory (fig. 2) is typical for Kostenki-Borshchevo Palaeolithic region: loessic loams underlying chernozem and two humic beds, subdivided by the horizon of volcanic ash.

According to the general stratigraphic scheme for the Kostenki-Borshchevo area, a layer of tephra delineates the boundary separating Palaeolithic sites of the second (middle) and first (ancient) chronological groups. During the 1980s, comparative-analytic studies indicated that the origin of the Kostenki tephra was related to the catastrophic eruption of Campi Flegrei in Italy with an estimated age of 35 ka (Melekestsev et al., 1984).

The current estimate of the age of Kostenki tephra is based on: 1) the oldest radiocarbon dates for the sites of the IInd chronological group, and 2) correlation of the ash layer at Kostenki with one of a series of well known eruptions of the Phlegrean Fields volcanic system (Mussi, 1999), available for comparative study in this temporal range.

The earliest dates available for the IInd chronological group are in the range of 31-32 ka: 32 700 ± 700 (GrN-7758) for cultural layer Ia of Kostenki 12 and 31 760 ± 430/410 (GrA-13288) for cultural layer III of Kostenki 14 (Sinitsyn, 1999; Sinitsyn et al., 1997). The minimum age of the ash layer on the Russian Plain probably falls within 32-33 ka. The maximum age is impossible to determine because of the high variability of radiocarbon dates for cultural layers beneath the ash.

Three eruptions dated to 32-33, 35 and 38 ka (Lefèvre,Gillot, 1994; Pawlikowski, 1992) may be regarded as the source of the Kostenki tephra. The question cannot be more fully resolved until completion of ongoing analytical studies. Radiocarbon dates on samples from the cultural layer in the ash are as follows: 32 420 ± 440/420 (GrA-18053) on charcoal and 20 640 ± 170/160 (GrA-18230) on bone, and are discussed in a separate paper (Haesaerts et al. 2003, this volume).

CULTURAL LAYER IN THE VOLCANIC ASH

A cultural layer containing a high density of material was encountered in 2000 within an area of no more than 6 sq. m. On the basis of its depositional setting, it appears to represent a true "Pompei" of the Palaeolithic - an occupation interrupted by a catastrophic event.

The sharply delineated spatial boundaries of the cultural layer and the high concentration of the cultural remains indicate that displacement of materials was minimal, and burial by slope deposits was rapid.

The cultural layer contained the usual components: lithic and bone artifacts, faunal remains, pieces of red and yellow ochre, and pieces of burned bone and charcoals. Features or traces of structures were not found within the excavated area.

These are numerous anatomical groups of small mammal remains (polar fox and hare). In contrast to the larger mammal remains, most of which were fragmented, the small mammal bones were intact. The faunal assemblage includes mammoth, horse, bison, bear, polar fox, and hare (according to Dr. 1. E. Kuzmina, Institute of Zoology, Russian Academy of Sciences, Saint-Petersburg [ZIN RAS]).

The lithic assemblage comprises 340 items of chipped stone, 35 (1%) of which have secondary modifications. Unbroken tools are rare. There are:

- retouched microblades (fig. 3: 1-5,7-8,10-11,13-20,22);
- fragments of side-scrapers (fig. 3: 24-25);
- point on flake-blade with the convergent sides (fig. 3: 23);
- retouched flakes and blades (fig. 3: 26-27).

Although cores are absent in the available collection, blade technology is reflected by the morphology of the blanks, which indicate the use of uni- and bipolar methods of parallel detachment with primary emphasis on the former.

The most diagnostic element of the lithic assemblage is a series of microblades, nearly twenty percent of which exhibit lateral micro-retouch. Specific attributes of their morphology such as asymmetry of form and twisted profile, also alternate and alternative retouch, seem sufficient to identify them as microblades of the type Dufour in its Roc de Comb variety (Demars, Lorent, 1992; Lucas, 1997; Ciotti, 2000). High backed end-scrapers with convergent facets appear likely to have served as cores for their production. The Dufour assemblages are well represented in a number of Western, Central and Eastern European sites as a part of Aurignacian technocomplex.

Bone artifacts and decorations constitute a rich and diverse collection, especially taking into account the small excavated area on the periphery of the site. Four bone long beads, three shell pendants and nearly ten fragments of bone artifacts represent an unusually high concentration. On the other hand, it may be supposed that occupation of the site was interrupted by sudden catastrophe.

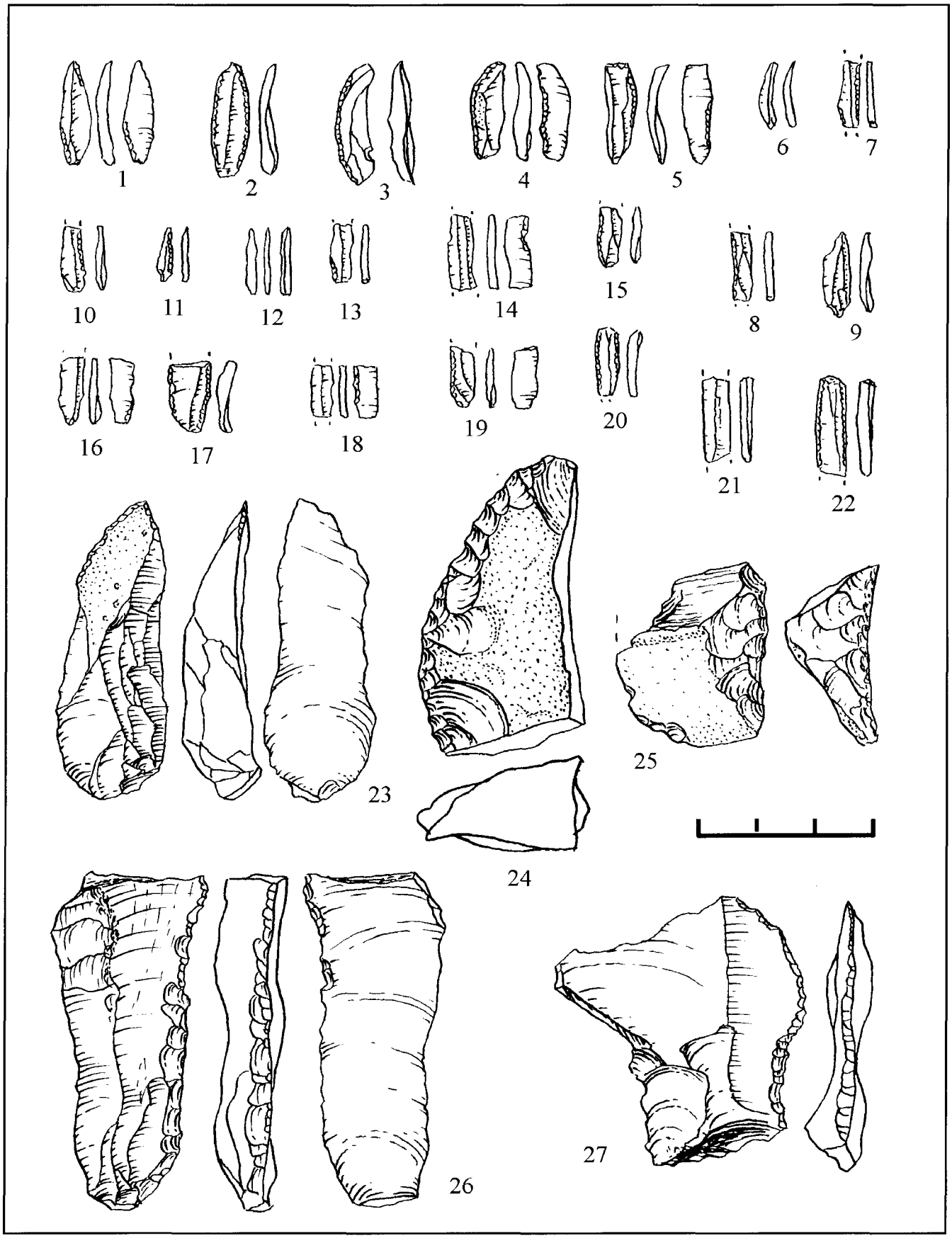

Figure 3. Kostenki 14 (Markina gora). Cultural layer in volcanic ash. Lithic assemblage

Bone long beads (fig. 4) were made from the diaphyses of polar fox long bones, although one of them may be of bird bone (according to Dr. I. E. Kuzmina). All these decorations exhibit a highly polished surface and smoothed edges indicating a lengthy period of use. They are criss-crossed by deeply incised lines, typically circular, and in one case

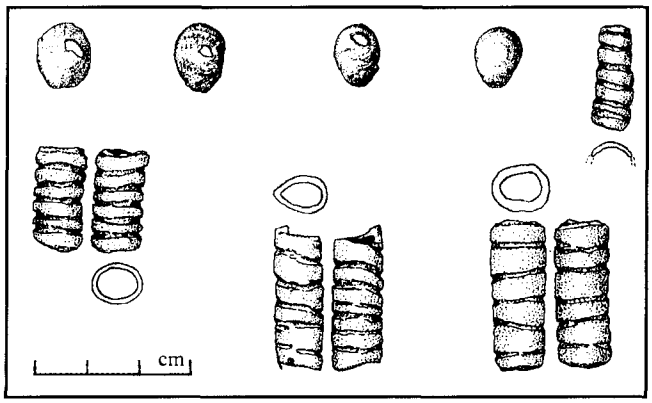

Figure 4. Kostenki 14 (Markina gora). Cultural layer in volcanic ash. Decorations.

forming a spiral pattern. Two beads were broken, one of which is represented by a longitudinal fragment. Elongated beads manufactured from the long bones of small animals are a rather common decoration in Upper Palaeolithic sites in Europe. Their stylistic character is chiefly defined on the basis of their ornamental patterns, and especially the technique by which the ornament was produced, in this case, by deeply incised broad lines. Similar ornaments are known from several Aurignacian sites of Western Europe (White, 1989); their style and method of production are distinct from those of the Gravettian sites. One of the distinctions lies in the lobes: cut in one case and incised in another.

The second group of decorations is pendants made from the shells of mollusks. According to Prof. B. I. Syrenko (ZIN RAS), this was *Theodoxus fluviatilis neritidae,* a mollusk adapted to both freshwater and marine environments. This mollusk is common in the present-day ecosystem of the Don River. Three out of four shells exhibit small punctured holes (fig. 4). The edges of the holes were smoothed, which, as in the case of elongated beads, is suggestive of lengthy use. The shell pendants are widely known from a Palaeolithic context, the widespread occurrence of *neritidae* being one of the reasons. The closest analogy for them may be found in the assemblage of the IIIrd cultural layer of Kostenki 1, a site with an indisputable Aurignacian affiliation (Sinitsyn 1993).

Viewed as a whole, and based on its main components (technology, typology, decorations), the collection of archaeological materials from this new cultural layer of Kostenki 14, referred to as "the horizon in the volcanic ash", can be identified as typical Aurignacian. Its closest analogy may be found in the assemblage of the Illrd cultural layer of Kostenki 1. Taking into account the amazingly close radiocarbon dates of two sites: 32 600 ± 400 (GrN-17117) and 32 600 ± 1100 (OxA-7073) for III layers of Kostenki 1 (Sinitsyn 1999) and 32 420 ± 440/420 (GrA-18053) for "horizon in ash" of Kostenki 14 - both settlements can be examined not only as simultaneous, but as synchronous. The primary significance of this new assemblage rests in its being the third site in Eastern Europe with typically Aurignacian affiliations (in addition to the Kostenki 1, Illrd layer, and Suren 1, Fb2,Ga2, although the Aurignacian layers of the latter have a more recent dates (Otte et al. 1996; Demidenko et al. 1998; Pettitt 1998). It is necessary to add that the two Kostenki assemblages are not only oldest, but also the northeasternmost point in the advance of Aurignacian wave of migration.

The pieces of decoration from this assemblage are the oldest to be found in Eastern Europe (at least presently), the personal adornments being the oldest manifestation of decorative art. Until now, the oldest adornments were known from the IInd cultural layer of Markina Gora, dated by a consistent series of radiocarbon measurements to 28 ka (Sinitsyn et al. 1997).

CULTURAL LAYER IVA

The location of this layer is characterized by a huge concentration of horse bones throughout the area excavated in 1998-2001. All the basic components of a Palaeolithic cultural layer were identified here: stone and bone artifacts, fauna, lenses of ash, lenses of high concentrations of charcoal, and pieces of ochre. The small quantity of chipped stone and almost complete absence of finished tools, which are indispensable for identification of cultural affiliation, provide evidence of site function.

Originally exposed over an area of no more than 3 sq. m, the accumulation of horse bones was explained as a place where animals were slaughtered - a specific type of Palaeolithic site, the best examples of which are the Solutre and Amvrosievka bone accumulations. This type of the site is well known in American Palaeoindian archaeology, from where the term "kill site" is derived. The pattern is a huge accumulation of bones, without any identifiable order, associated with a very small number of chipped stone artifacts (8 small deshets recovered by flotation) (Sinitsyn, 1992).

The concentration of bones revealed a somewhat different appearance in an area of 40 sq. m excavated in 1999. Some regularities in bone distribution were observed, along with small lenses of charcoal and ash (fig. 5). Some aspects of the concentration suggested the possible existence of former structures, but these remained only hypothetical in the absence of known analogous structures composed of horse bone.

The most distinctive feature of an archaeological assemblage of cultural layer IVa and the basis for the interpretation of the bone concentration as a functionally specialized site, remains a small number of associated lithics and almost complete absence of typologically diagnostic forms. Also important is a fragment of mammoth bone with traces of cutting. This massive long bone fragment exhibits distinct linear macrotraces of cutting on two flat surfaces, symmetrically located in both planes. The significance of this item is underscored by the fact that it is the sole mammoth bone in faunal collection of this cultural layer.

Radiocarbon dates of 33 280 ± 650/4600 (GrN-22277) from layer IVa and 33 200 ± 510/480 (GrA-13301) from just above were obtained on charcoal; they may be considered as minimum estimates of the actual age of the layer.

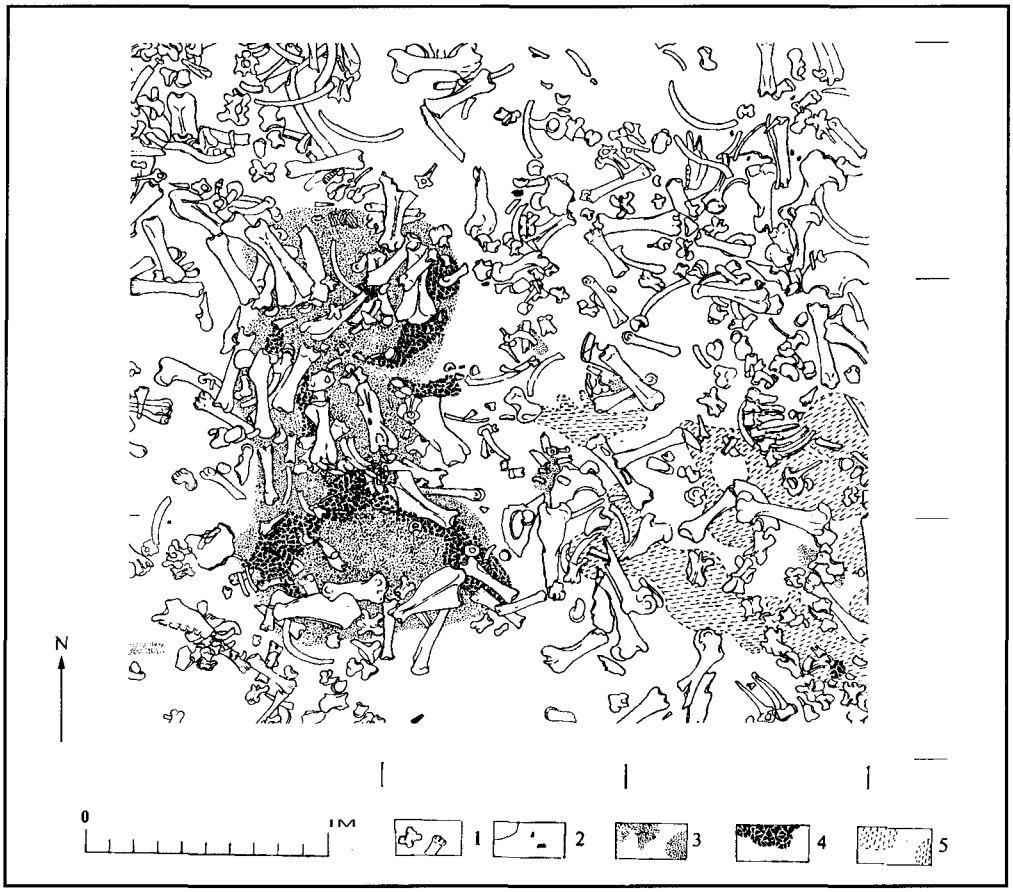

Figure 5. Kostenki 14 (Markina gora). Fragment of IVa cultural layer: 1 - bone, 2 - stone, 3 - ash lenses, 4 - concentration of charcoal, 5 - limish lenses.

CULTURAL LAYER IN FOSSIL SOIL

This layer was identified in 2001 as a distinct cultural entity from which only a few isolated bone fragments and chipped stone items were recovered. The principal significance of this layer is its stratigraphic position in a well-expressed fossil soil dated to 34 550 ± 610/560 on charcoal (GrA-13297). A palaeomagnetic excursion, probably Lashamp, was identified in the upper part of this soil - a preliminary conclusion of the current study.

HORIZON OF MAMMOTH BONES

A complete mammoth skeleton was discovered in bedded deposits between the above mentioned fossil soil and cultural layer IVb. The horizontal position of bones and the total absence of any associated artifacts, appear to indicate that the skeleton is a palaeontological and not an archaeological find. The mammoth appears to have suffered a natural death in a marshy setting. The skeleton is represented by isolated bones that are not anatomically connected, but all of which lie in immediate proximity to each other. The skeleton was exposed apparently for some period of time, either on the surface or in shallow water, during which the bones became disarticulated and dispersed to a limited degree. The process of burial in bedded deposits occurred in rather low-energy conditions, but with sufficient speed that the intervals between formerly articulated joints did not exceed 50 cm.

In spite of the fact that the mammoth skeleton did not provide any evidence of human activity, its presence between cultural layers at a site and the scarcity of similar finds, warrants close attention.

CULTURAL LAYER IVB AND THE "HORIZON OF HEARTH"

Cultural layer IVb was identified as a distinct and separate stratigraphic and archaeological entity by the occurrence of cultural remains in bedded sediments comprising alternating thin lenses of reddish sandy loam, light grey loam, and lenses of small pieces of chalk, with numerous intrusions and deformations. The cultural remains lay in a secondary depositional context with significant vertical variation of finds. Most bones and flints were found in natural cavities at the base of the bedded layers.

The "Horizon of hearth" was observed in 1998 as the lowest horizon of cultural layer IVb. In 1999 it was recorded as a separate stratigraphic unit for two reasons: 1) its status as a distinct lithological deposit, and 2) the presence of a thin, local, but sterile horizon, which separated it from layer IVb. The "Horizon of hearth" was defined as a number of sharply limited lenses of redbrick burnt loam within black humic sediments that were also of a local spatial distribution (fig. 6). Identified as the remains of an *in situ* hearth, the red lenses of burned loams were located on the narrow edge of small

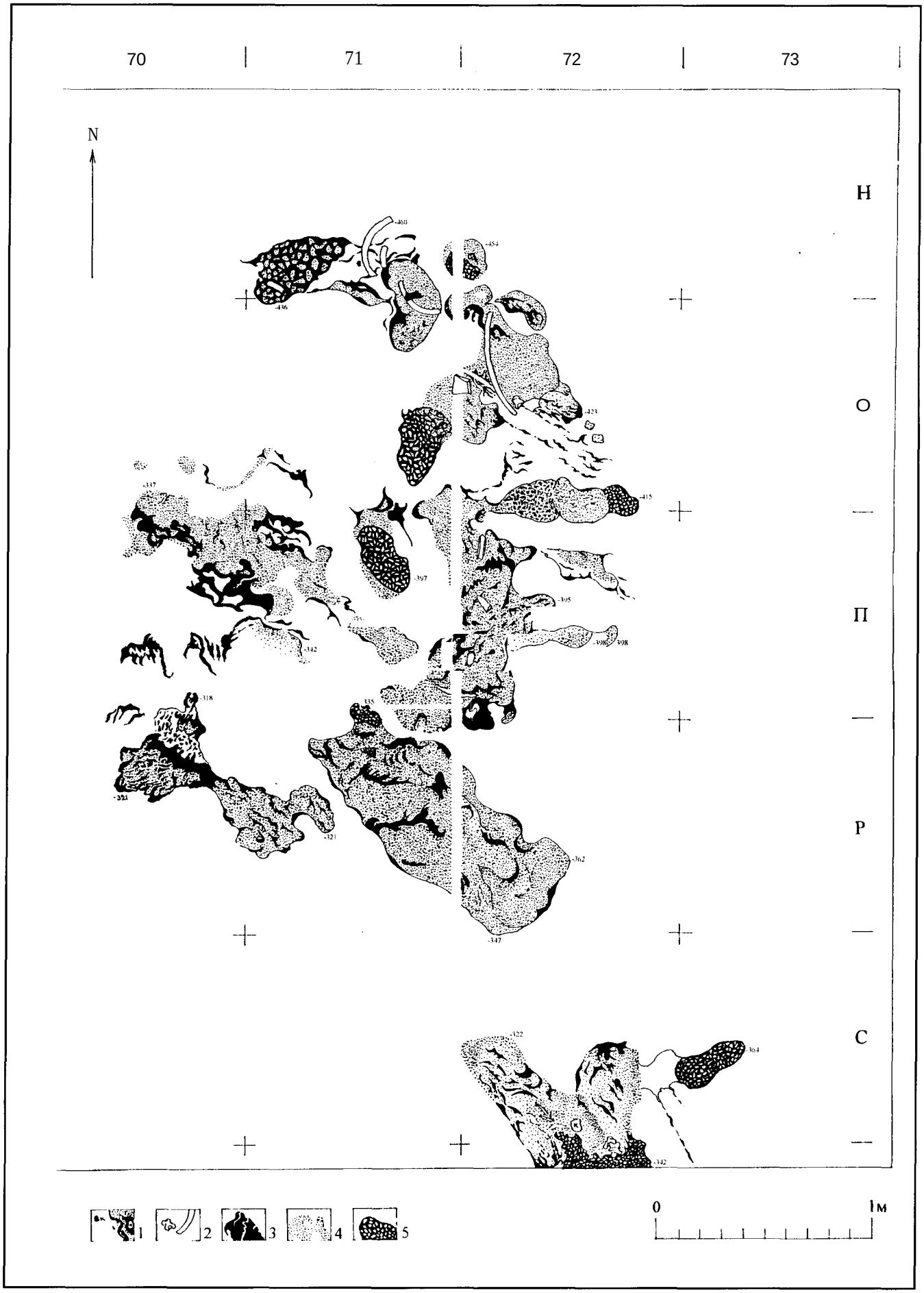

Figure 6. Kostenki 14 (Markina gora). 'Horizon of hearth'. Localization of red-brick lenses.
1 - stone, 2 - bone, 3 - black humus, 4 - red-brick loam, 5 - mixed red-brick loam.

promontory probably formed by the convergence of two flowing channels. The most important aspect of this cultural layer is the unique preservation of the features of daily activity, which were not previously known among the sites of this chronological epoch.

Although the archaeological collection from the "horizon of hearth" is not numerous, the presence of bone mattocks and a splintered piece with a concave edge suggests similarity with the assemblage of cultural layer IVb. Most probably, they are remnants of one settlement in both a primary and secondary depositional setting. However, other explanations of their relationship to each other cannot be excluded.

The lithic assemblage from cultural layer IVb is small, but appears to be sufficiently diagnostic. The technology is characterized by production of medium-sized blades using of the unipolar parallel method of detachment on flat, wedged and prismatic cores (fig. 7: 21-22). The typological composition of the flint inventory reflects the combination of a typical Upper Palaeolithic tools such as end-scrapers (fig. 7: 6,15), burins (fig.7: 1-3,14,17), and splintered pieces

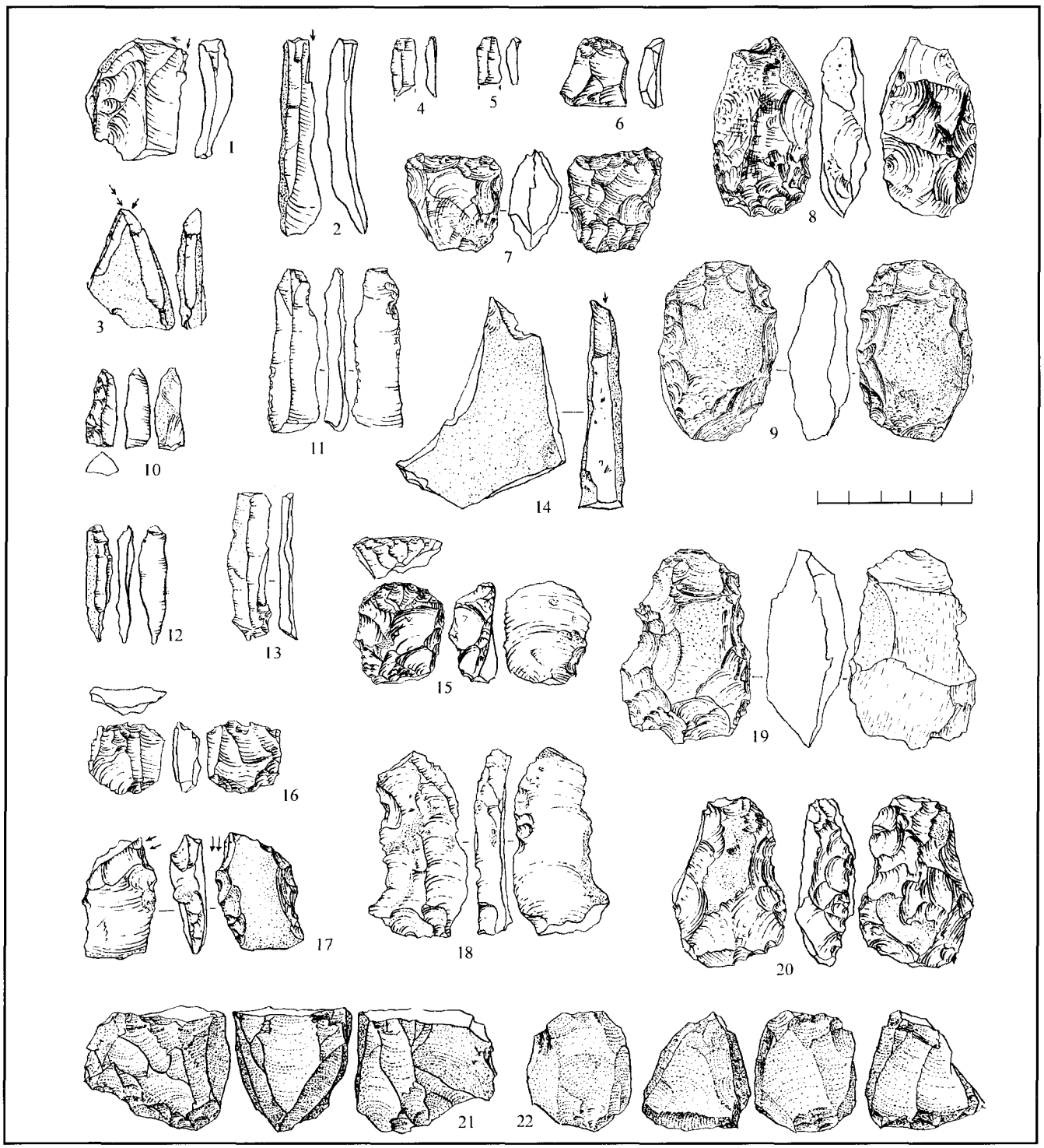

Figure 7. Kostenki 14 (Markina gora). IVb cultural layer. Lithic assemblage.

(fig. 7: 7,16), with unusual bifacial, chiefly oval, tools with a convex-flat profile (fig.7: 8-9,19-20). Although some of them look like pre-cores, their standardized form and similar parameters suggests that they represent a tool category. Their morphology is more similar to some tools of the post-Palaeolithic epoch than it is to those of the Middle Palaeolithic.

The non-lithic artifacts from cultural layer IVb are the most expressive. These include mattocks made on antler, bone, and mammoth tusk (fig. 8: 3-7), a rib with a highly polished edge (almost "mirror-like"), points (fig. 8: 2), a rib with an artificial longitudinal groove, mammoth tusks with traces of artificial splitting, and a 'baguette' on tusk (fig. 8: 1). This association of items is surprising given the fact that at least some of them are characteristic of a much later epoch. In particular, the grooved bones that are traditionally attributed to complex armature equipment are typical of the more recent times, as are the antler mattocks.

Of undoubted significance is the head of female figurine shaped from mammoth tusk recovered during the 2001 excavation (fig. 9). Although the surface is covered with traces of natural damage and it represents an obviously unfinished product broken during manufacture, the finely fashioned outlines of the oval head and the line of the neck leaves no doubt as to its identification as a sculptural image.

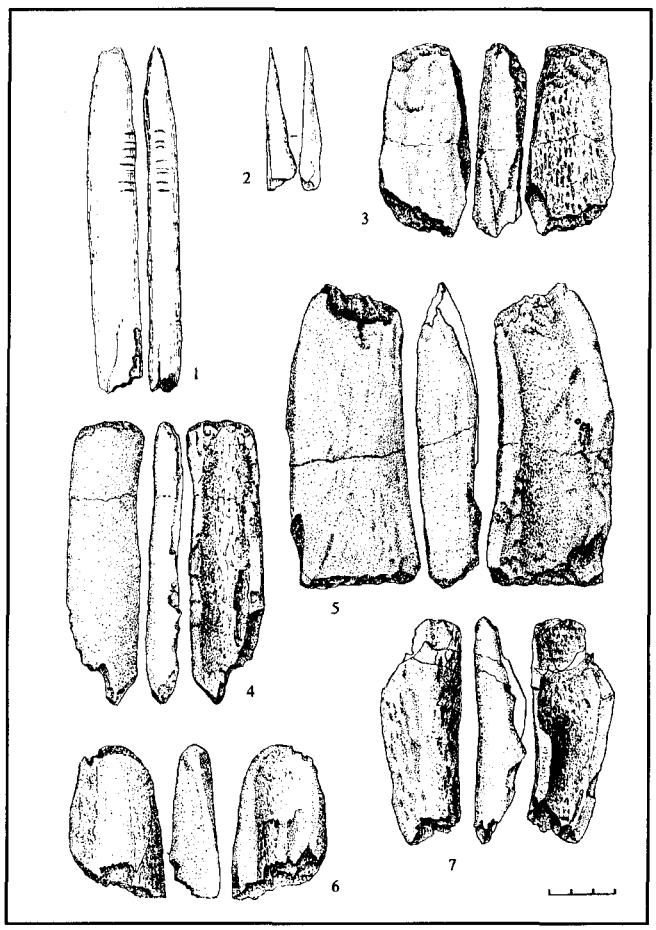

Figure 8. Kostenki 14 (Markina gora). Bone assemblage. 1-5 - IVb cultural layer, 6-7 - 'horizon of hearth'.

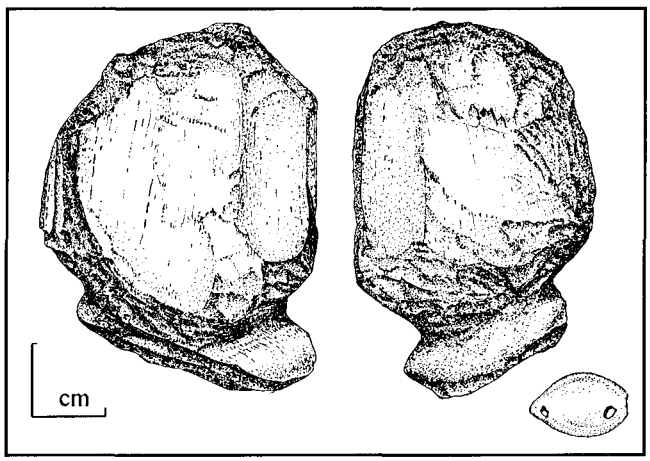

Figure 9. Kostenki 14 (Markina gora). IVb cultural layer. Head of the human figurine (mammoth tusk), pendant on sea shell *Columbellidae*.

For the present, this figurine head is oldest firmly dated example of representational art in the Palaeolithic of Eastern Europe.

Some very important information is also provided by the pendant with two incised holes made of the shell of *Columbellidae*, which is a tropical marine gastropod (according to Prof. J. I. Starobogatov, ZIN RAS) (fig. 9). Modern representatives of this mollusk are confined to the Mediterranean basin, which suggests long-distance transport and connections, and perhaps the origin of the population that used this shell as part of a necklace.

Both the lithic and non-lithic assemblages, along with the decorations and art of the lowermost cultural layers (IVb and the "horizon of hearth"), seem to constitute a new and previously unknown cultural tradition. A series of radiocarbon dates of 36-37 ka indicate the minimum possible age of these cultural layers, while preliminary data of palynologic and palaeomagnetic analyses, as well as IRSL dates, suggest that they may be significantly older. A recovered human tooth confirms that this industry was produced by humans of modern physical type (according to Prof. I. I. Gohman, Museum of Anthropology and Ethnography, RAS, Saint-Petersburg). The presence of the human sculpture, decoration on bone tools (if the rhythmic sequence of incisions may be regarded as ornamental), and shell pendant, is unique evidence of the simultaneous existence and/or appearance at this very early stage in the evolution of art of figurative, ornamental and decorative body arts.

CONCLUSIONS

The excavations of the lower cultural layers at Kostenki 14 (Markina gora) in 1998-2001 provided evidence of a new and previously unknown archaeological assemblage in the earliest Upper Palaeolithic of Eastern Europe. Together with the Spitsinian and Streletsian cultural entities, it reveals the existence of a third entity among the oldest Upper Palaeolithic cultures of this vast area.

Of great importance is the new set of problems to be addressed that have emerged as a result of these novel discoveries. The most striking of these problems is the explanation of the highly "advanced" non-lithic industry, which is traditionally associated with the later Upper Palaeolithic, and even with post-Palaeolithic times.

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