

# THE EARLY UPPER PALAEOLITHIC OF KOSTENKI: CHRONOLOGY, TAXONOMY, AND CULTURAL AFFILIATION

A. A. Sinitsyn

## Abstract

This paper deals with the structure, composition, and chronology of the early stage of the Upper Palaeolithic in the Kostenki-Borshchevo area, from the earliest manifestation of Upper Palaeolithic technocomplexes to the appearance of the local Gravettian. This is a principal unit of Upper Palaeolithic classification showing a fundamental change in the organization of the Upper Palaeolithic European world at 28–30 ka. The Kostenki model provides evidence of both general European evolutionary trends and particular local features, which appear to be the basis for its distinction as a separate period of Upper Palaeolithic classification.

## Keywords

Upper Palaeolithic, Kostenki' model of evolution, EUP-MUP boundary.

## 1. Geo-cultural Zones of the European Upper Palaeolithic

The concentration of Upper Palaeolithic sites at Kostenki is an extraordinary phenomenon both with respect to the quantity of sites in a relatively small area around the two villages of Kostenki and Borshchevo, and the cultural variability contained in these sites. They also are rare in terms of the range of archaeological data – virtually every category of archaeological remains known from the Upper Palaeolithic is present, including lithics, faunal assemblages, traces of former dwellings and other features such as hearths and pits, art objects, personal ornaments, human skeletal remains and burials with funeral objects. Only cave paintings are absent, because of the lack of caves and rock.

On the basis of these characteristics, the Kostenki-Borshchevo sites are rare, but not unique: comparable concentrations of Upper Palaeolithic sites are also known from parts of Europe such as Les Eyzies (Dordogne) and Pavlov (Moravia). What is unique about the Kostenki-Borshchevo sites is that they contain their own peculiar sequence of industries that

represents a distinct regional pattern comparable to much larger geographic areas of Europe.

Nine major geographic areas or zones of cultural evolution are identified for the European Upper Palaeolithic (Fig. 1). There seems to be consensus that each of these areas, such as the Aquitanian, western Mediterranean, Central Europe, Balkans, eastern Mediterranean, and others, represents distinct zones of local cultural development during the Upper Palaeolithic. During some time periods, one or more areas reflect common developments (see DJINDJIAN 2006):

a) the Early Upper Palaeolithic (EUP) exhibits a binary pattern, one component of which is the Aurignacian with a continental distribution, while the other is represented by series of local “transitional” cultures: Castelperronian for Western Europe; Uluzzo for a limited part of the Western Mediterranean, Szeletian and Bohunician traditions for Central Europe; and Streletskian for Eastern Europe. On the basis of the local “transitional” component, no more than five areas or zones may be distinguished in Europe during this epoch;

b) the Middle Upper Palaeolithic (MUP) is characterized by various Gravettian technocomplexes (Noaillian, Maizerian, Pavlovian, Kostenkien, etc.) considerably exceeding the nine major zones of local cultural evolution on one hand, but actually representing one unified Gravettian cultural entity from the Atlantic coast to the Don River;

c) the Magdalenian unification of Europe is a diagnostic feature of the Late Upper Palaeolithic period (LUP), along with the post-Gravettian dominance of the Mediterranean areas.

Among the various approaches to classification – either those of general periodization or those based on local models of cultural evolution – Eastern Europe is represented as a uniform zone of development, primarily because of the relatively limited degree of investigation of this huge territory in comparison to Western and Central Europe.

In fact, Upper Palaeolithic Eastern Europe contains its own set of geographic areas with local cultural developments,

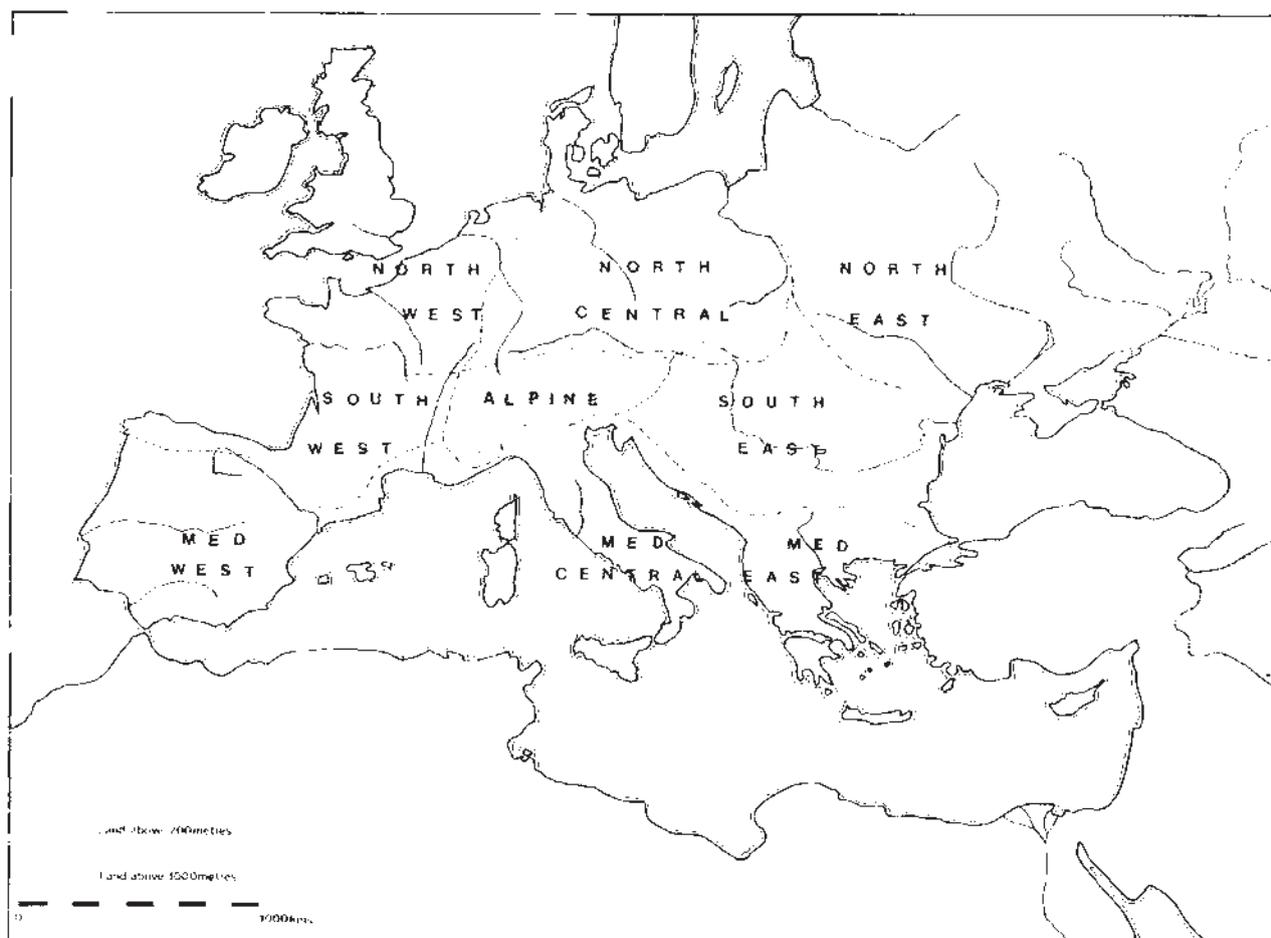


Fig. 1: Main zones of particular models of evolution of the European Upper Palaeolithic (GAMBLE 1986, Fig. 3.1, p. 72).

analogous to Europe as a whole. Six local zones have been identified in Eastern Europe: southwestern, middle Dnieper, southern steppe, northeastern (probably containing a distinct Ural zone), Caucasus, and the Middle Don (Fig. 2). Although the Middle Don River area occupies a comparatively small territory among these zones, the Kostenki-Borshchevo sites warrant the status of a separate area on the basis of their own distinctive sequence of local cultural development.

The objective of this paper is to characterize the structure, composition, and chronology of the early stage of the Upper Palaeolithic in the Kostenki-Borshchevo area, from the earliest manifestation of Upper Palaeolithic technocomplexes to the appearance of the local Gravettian. The paper also addresses the context of the appearance of the Gravettian, which represents a principal unit of Upper Palaeolithic classification, and a fundamental change in the organization of the Upper Palaeolithic European world at 28–30 ka.

## 2. The Kostenki Model

The Kostenki model of Upper Palaeolithic cultural evolution currently possesses more similarities with the general Eu-

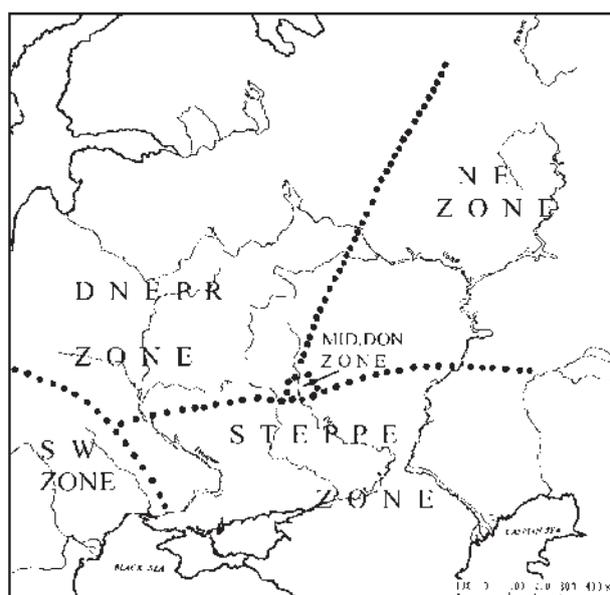


Fig. 2: Main zones of particular models of evolution of the East European Upper Palaeolithic.

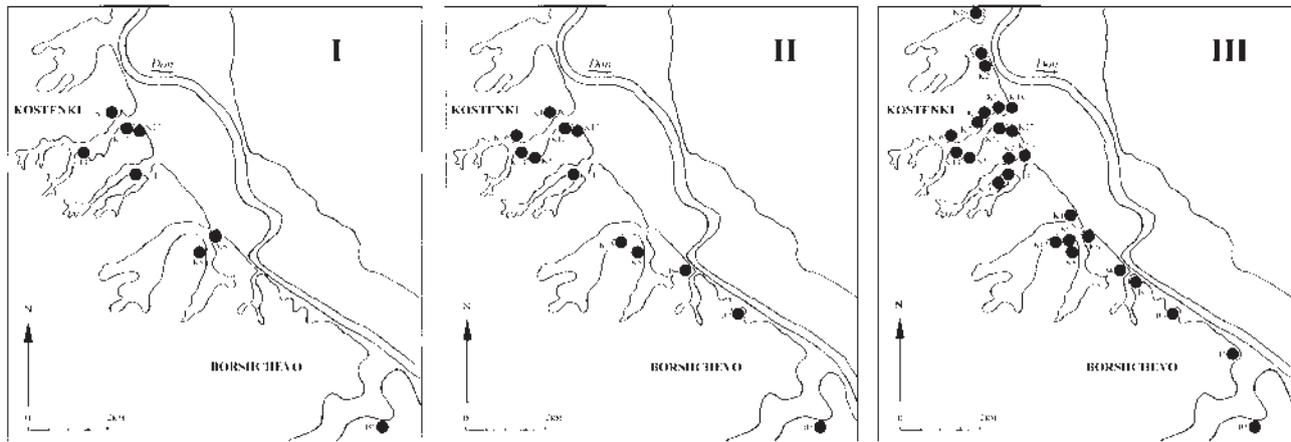


Fig. 3: Kostenki-Borshchevo area. Distribution of Upper Palaeolithic sites. I – first chronological group (37/42/-33 ka); II – second chronological group (32–28 ka); III – third chronological group (27–20 ka).

ropean (West European) model than the other East European geo-cultural zones. Only the Kostenki group yields evidence of firmly dated early Upper Palaeolithic occupations in the 37–28 ka time range (37,000–28,000 uncalibrated radiocarbon years ago), and only at Kostenki is the EUP replaced by a typical MUP at 28 ka.

The tripartite periodization of the Kostenki Palaeolithic sequence was established by A. N. Rogachev (ROGACHEV 1957) during the 1950s on the basis of a tripartite division of geological sediments by the geologists M. N. Grishchenko (GRISHCHENKO 1950), G. I. Lazukov (LAZUKOV 1957a, b), and A. A. Velichko (VELICHKO 1963). Sites of the IIIrd (youngest) chronological group were distinguished on the basis of their cultural layers in deposits of loessic loam on the first and second terraces of the Don River and major side-valley ravines, while sites of the Ist and IInd chronological groups were attributed to the two humic beds, respectively, which are subdivided by a layer of volcanic ash (VELICHKO, ROGACHEV 1969).

During the 1970s and 1980s, N. D. Praslov, together with L. D. Sulerzhitsky (PRASLOV, SOULERJYTSKY 1997), E. A. Spiridonova (SPIRIDONOVA 1991, 2002), and S. A. Pisarevsky (PISAREVSKY 1983) determined – on the basis of natural-scientific methods unique for that time – the following chronological boundaries for the three groups (Fig. 3)

- Ist chronological group: 36–33 ka;
- IInd chronological group: 32–27 ka;
- IIIrd chronological group: 26–20 ka.

On the basis of palynological data, the Lower Humic Bed was correlated with the Hengelo – Les Cottès oscillation, and the Upper Humic Bed with the Arcy-Denekamp (MALYASOVA, SPIRIDONOVA 1982; SPIRIDONOVA 1991). Sites of the Last Glacial Maximum and Tardiglacial period (20–12 ka) appear to be absent at Kostenki (SINITSYN et al. 1997) because of the absence of geological deposits of this age

Research at Kostenki during the past decade (HAESAERTS et al. 2004, LEVKOVSKAYA et al. 2005; SINITSYN, HOFFECKER 2006, ANIKOVICH et al. 2007; HOLLIDAY et al. 2007) has been undertaken within the context of this paradigm, but has revealed evidence of earlier occupations in the lowest layers of the sequence, and addressed the problem of reconciling chronological data obtained by different methods and varying degrees of precision and accuracy.

### 2.1 Chronological Group I

Two cultural entities were identified in the earliest chronological group on the basis of field research in the 1950s and 1960s by A. N. Rogachev (ROGACHEV 1957) at Kostenki 1, 8, 11, 12, and 14, and by P. I. Boriskovsky (BORISKOVSKY 1963) at Kostenki 17. The *fossil directeur* for the first of these entities – *Streletskian* (found in Kostenki 1, cultural layer V; Kostenki 6; Kostenki 11, cultural layer V; and Kostenki 12, cultural layer III) was the bifacial triangular point with concave base, associated with both Upper and Middle Palaeolithic typological elements. The second – *Spitsyanean* (based on the assemblage in cultural layer II at Kostenki 17) was characterized by the total absence of any Mousterian attributes, both with respect to technology and typology, and the presence of personal ornaments of stone and fossil (shells and belemnites).

Two other cultural entities were added on the basis of excavations during 1998–2006 in the eastern portion of Kostenki 14 (Markina gora): an assemblage of Aurignacian affiliation with Dufour bladelets (*lamelles Dufour*) associated with the layer of volcanic ash (SINITSYN 2003a); and a new, previously unknown cultural tradition represented in cultural layer IVb with blade and microblade technology, typical Upper Palaeolithic tools with partly bifacial oval tools, an atypical bone artifact assemblage, personal ornaments, and figurative and decorative art objects (SINITSYN 2004a).

No other European geographic area or zones exhibits this degree of cultural variability during the EUP period with the exception of Moravia, where the binary opposition of Aurignacian and Szeletian (local transitional industry) is complemented by the Bohunician tradition, and probably the Balkan area, where the XIth cultural layer at Bacho-Kiro contains a non-Aurignacian and non-transitional industry (for a discussion of the current state of the problem, see KOZŁOWSKY 2004). In both cases, these industries appear to be older than the Aurignacian.

At least two interpretations of the pattern observed in chronological group I seem to be possible: 1) the simultaneous presence of four separate cultural traditions, and 2) the presence of two contemporaneous cultural traditions during a late phase (Aurignacian and Streletskian) and two other traditions during an early phase (Spitsyean and cultural layer IVb at Kostenki 14). At present, the second interpretation seems more probable. Both cultural layer II at Kostenki 17 and layer IVb at Kostenki 14 occupy lower relative stratigraphic positions and underlie sediments that yield evidence of the Laschamps paleomagnetic excursion (~ 42 ka). Moreover, the later sub-group exhibits the familiar EUP binary structure (i.e., Aurignacian in the volcanic ash at Kostenki 14 and “transitional” Streletskian).

According to this view, the cultural entities of the lower sub-group represent a separate unit. Along with some other East European assemblages, such as Zaozer'e 1 at Ural (PAVLOV 2002a, PAVLOV et al. 2006), Sokirnitsa in the Transcarpathia (USIK 2003, USIK et al. 2003, 2003–2004, 2004), Buran-Kaya III, cultural layer C in Crimea (CHABAI 2003), it may be identified as an Initial Upper Palaeolithic (IUP) stratum (SINITSYN 2003b, 2005).

These assemblages lack common techno-typological parameters, however, and the basis for grouping them together lies in their stratigraphic and chronologic position:

a) each represents the earliest Upper Palaeolithic techno-complex known in that geographic area (at least older than the local Aurignacian, which is traditionally used as a stratigraphic marker for the EUP);

b) none can be assigned to the Aurignacian, nor be described as “transitional”;

c) they appear suddenly, without obvious local predecessors, and also disappear suddenly without continuation;

d) they contain, in most cases, an unusual combination of material culture elements, the appearance of which traditionally is connected with more ancient periods of the Upper Palaeolithic, or even with the post-Palaeolithic epoch (e.g., Magdalenian techno-typological basis of the industry for cultural layer II of Kostenki 17, bone assemblage for cultural layer IVb of Kostenki 14, trapeze for Buran-Kaya, cultural layer C).

The classification of these various assemblages as IUP stratum seems appropriate, because all of them lie outside the classic binary EUP pattern and in the earliest stage of the Upper

Palaeolithic. On the basis of these considerations, the assemblages of chronological group I are divided into two subgroups: IUP (~ 42–36 ka) and EUP (36–28 ka).

## 2.2 Chronological Group II

Chronological Group II at Kostenki is characterized by the binary EUP structure, comprising coexisting Aurignacian (cultural layer III at Kostenki 1) and “transitional” Streletskian assemblages (cultural layer Ia of Kostenki 12 and cultural layer III of Kostenki 11). To these may be added the Gravettian assemblage in cultural layer II at Kostenki 8 and the unique East European Gorodtsov culture (Gorodtsovian) in cultural layers II at Kostenki 14, Kostenki 15, and others.

The pattern is similar to that of Chronological Group I. No other Upper Palaeolithic geographic area or zone exhibits such a high degree of cultural variability in this time period (32–27 ka). Once again, at least two possible interpretations emerge: 1) a set of four cultural traditions, existing simultaneously within the same geologic isochron, and 2) two chronologically successive sub-groups, each with its own particular composition, possibly overlapping in part. Neither stratigraphic nor palynological evidence can resolve this problem because of the pronounced stratigraphic variability of the Upper Humic Bed at different sites and sections. Only radiocarbon dates provide support for the second interpretation. A date of 27 ka for the Gravettian cultural layer II at Kostenki 8 (Telmanskaya), and a series of dates for the Gorodtsovian cultural layer II of Kostenki 14 (Markina gora) at around 28 ka suggest a younger age for both the Gravettian and Gorodtsovian assemblages. Dates of about 32 ka for Aurignacian cultural layer III at Kostenki 1 and Streletskian cultural layer Ia at Kostenki 12 appear to support an older age for these cultural entities within the II and chronological group.

Most important in a broader European context is the occurrence of an early manifestation of the Gravettian (cultural layer II at Kostenki 8) within Chronological Group II, and more precisely in its upper part at about 28 ka. Elsewhere, from the Atlantic coast to Kostenki, the earliest Gravettian assemblages appear along with the Aurignacian (also with “transitional” cultures), but reflect the beginning of a new epoch (MUP) characterized by a widespread Gravettian “mosaic” entity (SVOBODA 2004) representing a new pattern in the European Upper Palaeolithic world. A special feature of the Kostenki sequence is the additional presence of the Gorodtsovian, a unique East European cultural phenomenon.

### 3. Cultural Composition and Discussion

#### 3.1 Initial Upper Palaeolithic: Spitsyean and IVb cultural layer of Markina gora

The recognition of assemblages older than those of the traditional Early Upper Palaeolithic and distinct from both Aurignacian and “transitional” cultures is an important feature of the cultural sequence documented at Kostenki in the last few years. These assemblages include the Spitsyean (cultural layer II of Kostenki 17 or the Spitsyn site) and the cultural tradition of layer IVb at Kostenki 14 (Markina gora). Uncalibrated radiocarbon dates of 36–37 ka (SINITSYN, HOFFECKER 2006, HOLLIDAY et al. 2007) may be considered the upper limit of the true age of the assemblages. The stratigraphic position of both cultural layers underlying sediments identified with the Laschamps palaeomagnetic excursion (~ 42 ka) (PISAREVSKY 1983, GERNIK, GUSKOVA 2002) provides the primary evidence of such an early age, the correlation of which with the radiocarbon time-scale remains one of the principal problems of chronology at Kostenki. Neither assemblage can be assigned to the Aurignacian or to any of the “transitional” cultures. The chronological position of these sites may overlap with EUP assemblages, because their apparent place in the sequence of Upper Palaeolithic cultural development may or may not correspond to their age, as in the case of the “survival” of the Mousterian in some regions.

##### 3.1.1 Spitsyean

The Spitsyean industry is characterized by complete dominance of blade knapping technology based on uni- and bipolar removal of blades from volumetric and semi-volumetric cores, a typical Upper Palaeolithic tool kit, and numerous and varied sets of personal ornaments, including pendants on stone and fossil shell with holes for suspension made by bilateral drilling (Fig. 4). A wide range of possible cultural affiliations has been suggested for this industry: J.K. Kozłowski (KOZŁOWSKY 1986) placed it in the Gravettian sequence, and later (see DJINDJIAN et al. 1999) in the Aurignacian (also see ANIKOVICH 1992); on the basis of its techno-typological features the excavator, P. I. Boriskovsky (BORISKOVSky 1963), placed it in the “Early Magdalenian” group of sites. At present, the Spitsyean is identified as a separate cultural tradition of the Early Upper Palaeolithic (ROGACHEV, ANIKOVICH 1984). Nevertheless, both the technological and typological composition of the lithic assemblage seems to be more similar to those of the Magdalenian, than those of the Aurignacian and/or Gravettian (SINITSYN 2001). The recognition of Magdalenian stylistic elements in cave paintings of the Early Upper Palaeolithic (AMORMINO 2000, VALLADAS et al. 2005) renders this pattern less bizarre.

##### 3.1.2 Cultural Layer IVb at Markina gora

The artifact assemblage of cultural layer IVb – the “horizon of hearth” (Fig. 5) also is characterized by predominance of

blade knapping technology in a variety of technical methods. Volumetric and flat uni- and bi-polar cores are identified, but the most numerous are cores on dolomite slabs morphologically similar to lateral burins. The technology of microblade production represents a separate method with some modifications reflected in the thick flakes and blades used as cores. The tools comprise end-scrapers and burins of variable morphology, varied splintered pieces, and items with concave and fluted working edges. Particularly noteworthy are several oval bifaces with plano-convex profiles. Also significant is the bone assemblage (Fig. 6) containing a series of “mattock-like” tools on bone, antler, and mammoth tusk with “splintered” extremities. The fragment of anthropomorphic figurine, probably the head, unfinished and broken during the process of manufacturing, seems to be the oldest known sculpted human image in the European Upper Palaeolithic. Especially intriguing is an ornament with two holes manufactured on a *Columbellidae* shell (a tropical gastropod, the modern ecology of which is connected with the Mediterranean Basin). As excavations continue in the lowest cultural layer of Markina gora and each season of field studies yields new materials and new information, all conclusions about its cultural affiliation remain preliminary. Although some Aurignacian types of burins, such as busked burins (*burins busqué*), Vashon burins (*burin des Vashons*), are present as isolated artifacts (Fig. 5 a, b), the assemblage contrasts sharply to both the Aurignacian and the various “transitional” industries.

A distinctive feature of both assemblages in the Initial Upper Palaeolithic stratum is the uniform character of the raw materials within each assemblage. The Spitsyean artifacts were made on Cretaceous black flint of high quality, the nearest sources of which are known at a distance of no less than 150 km from Kostenki (BORISKOVSky 1963). Siliceous limestone (dolomite) of local origin appears to predominate in cultural layer IVb at Kostenki 14, although a wide array of raw materials, including a few pieces of Cretaceous black flint are represented in the tool kit and debitage. The model of adaptation for both cultural traditions may be defined as highly mobile, but with varying orientation. The Spitsyean reflects the use of distant, high-quality materials, while the occupants of cultural layer IVb at Markina gora preferred the available local materials.

#### 3.2 The Early Upper Palaeolithic: Aurignacian and Streletskian

Throughout Europe, the Early Upper Paleolithic is characterized by a binary structure, one component of which is Aurignacian, while the other is represented by a series of local “transitional” cultures – in Eastern Europe by the Streletskian. The Streletskian at Kostenki is radiocarbon dated at 36–32 ka; the radiocarbon age of the Aurignacian at two Kostenki sites is nearly 32 ka. Because the cultural “horizon in volcanic ash” at Kostenki 14 lies both within and below the volcanic ash, which is derived from the CI eruption (Campanian Ignimbrite) at the Phlegrean

fields in southern Italy and dated 39–41 ka (TON-THAT et al. 2001, FEDELE et al. 2003, GIACCIO et al. 2006, 2007), this Aurignacian assemblage may be of the same age or slightly older. The chronological position of the Streletskian component seems to conform to the other European “transitional” cultural entities.

Assemblages assigned to the Aurignacian have been identified at three Kostenki sites: 1) the “horizon in volcanic ash” at Kostenki 14 (Fig. 7) on the upper temporal boundary of the IInd chronological group; 2) cultural layer III at Kostenki 1 (Fig. 8) within the IInd chronological group; and 3) cultural layer II at Kostenki 1 in the loessic loams, or within the IIIrd chronological group (according to Rogachev’s scheme). The assignment of all three assemblages is based on the techno-typological features of the Aurignacian technocomplex, including Dufour microblades of the Roc-de-Comb variety (HAHN 1977, SINITSYN 1993, 2003a).

The Streletskian industry (Fig. 10) is based on flake technology (flakes serve as the primary blanks for tools) and contains a wide variety of bifacial tools (including the *fossil directeur* triangular point with concave base), numerous Mousterian tool types (chiefly side-scrapers of various types). On the basis of the technology and Mousterian tool component, the Streletskian assemblages are traditionally identified as a “transitional” industry with a problematic range of possible predecessors: Moldavian (ANIKOVICH 1983) and Crimea Mousterian (ANIKOVICH 2001–2002), Central Russian (TARASOV 2006), and East Siberian (GLADILIN, DEMIDENKO 1989).

The geographic distribution of the few indisputable Aurignacian assemblages in Eastern Europe, including Kostenki, Crimea (Suren 1–D) (COHEN, STEPANCHUK 1999, 2000–2001; DEMIDENKO 2000–2001; DEMIDENKO, OTTE 2000–2001; VISHNYATSKY, NEHOROSHEV 2004), and also of the Streletskian from the Vladimir region (Soungir) (BADER 1978, BADER, LAVRUSHIN 1998; ANIKOVICH 2005), Urals (Garchi 1) (PAVLOV, INDRELID 2000), and the steppes of the Black Sea coastal area (Biryuchya Balka) (MATIOUKHINE 1998; OTTE 2000; OTTE et al. 2006) suggests an absence of both cultural traditions in certain ecological zones. The distribution of sites in various habitats, along with the exploitation of local raw materials, indicate a high degree of mobility and adaptive flexibility for both the Aurignacian and Streletskian populations.

### 3.3 The Problem of the EUP-MUP transition: Gorodtsovian and Gravettian

One of the salient features of the Kostenki sequence is the appearance in the upper part of the IInd chronological group (in deposits of the Upper Humic Bed) of Gorodtsovian and Gravettian assemblages.

#### 3.3.1 Gorodtsovian

As a separate cultural unity, the Gorodtsovian was defined by P.P. Efimenko (EFIMENKO 1956) following the excavations

at the Gorodtsov site (Kostenki 15) on the basis of a very unusual lithic and bone assemblage, especially the “Mousterian” component (Fig. 11). Large “shovels” made on mammoth bones with “nail-like” heads of the haft were identified as a *fossil directeur* for this cultural entity (Fig. 12). The emphasis on flake technology and high proportion of tools on flakes (which are predominant in cultural layer II at Kostenki 14), the numerous and variable “Mousterian” tool types (up to 50 % in cultural layer II at Kostenki 14), and the relatively rich bone assemblages – all of non-Aurignacian and non-Gravettian character – establish these assemblages as a unique East European cultural entity without analogies in other parts of the continent. The specific sites included in the Gorodtsovian have been the subject of much debate: Kostenki 15, Kostenki 4(I), Kostenki 14 (I, II) according to P.P. Efimenko (EFIMENKO 1956, 1958); Kostenki 15, Kostenki 12 (I, or locality B), Kostenki 2, Kostenki 3, Kostenki 1 (II), and outside Kostenki, Karacharovo (Oka basin) and the Talitsky site (Tchusovaya basin, Mid Ural) according to A. N. Rogachev (ROGACHEV 1957, 1961). G.P. Grigoriev (GRIGORIEV 1970) has limited the number of Gorodtsovian assemblages to sites of the IInd chronological group: Kostenki 15, Kostenki 14 (II), Kostenki 12 (I or locality B), Kostenki 16; A. A. Sinitsyn (SINITSYN 1982) has included all sites of the IInd chronological group of non-Aurignacian and non-Gravettian affiliation; M.V. Anikovich (ANIKOVICH 1992) retains only the sites with the distinctive bone “shovels”.

The current debate over the Gorodtsovian concerns: a) taxonomy – restricting the Gorodtsovian at Kostenki to the IInd chronological group, most probably its upper part; and b) the geographic distribution of the Gorodtsovian outside the Kostenki area, specifically the possibility of including the Talitsky site (Urals) (for discussion of the current debate see GRIGORIEV 1997, 2001, SINITSYN 1997) and Mira (Ukraine) (STEPANCHUK et al. 1998, 2004a). There still remain the problems of the origin of Gorodtsovian and its evolution.

#### 3.3.2 Gravettian appearance

The assemblage in cultural layer II at Kostenki 8 (Tel'manskaya site) remains the most ancient manifestation of the Gravettian in Eastern Europe. Its stratigraphic position in the Upper Humic Bed is the basis for assigning this cultural layer to the IInd chronological group in the Kostenki sequence, but a single radiocarbon date of 27 ka may provide a possible upper limiting age.

Uni- and bi-polar flake production (both macrolithic and microlithic forms) are evident from the few cores, most of which are exhausted. The morphology of the blanks and tools on blades indicate the predominance of Gravettian technology (as opposed to Aurignacian blade technology). The typology of the macro-component is typical: burins of varying sub-types, including multifaceted pieces (some of them undoubtedly

microblade cores); end-scrapers; perforators; and a number of notched blades. The micro-component is dominant: nearly 900 pieces or more than 40% of the tool kit. Along with widespread Gravettian points and backed bladelets with abrupt and semi-abrupt retouch, bi-points, (quasi-)segments, and trapezes are identified in the collection (Fig. 13). The bone assemblage and personal ornaments, while not numerous, are relatively diagnostic (ROGACHEV 1953, LITOVCHENKO 1969, TCHELIDZE 1968, PRASLOV, ROGACHEV 1982).

The unusual composition of the lithic assemblage at the site, without analogy in Eastern Europe, encouraged a search for parallels in other parts of Europe. P. P. Efimenko (EFIMENKO 1953:25, 1960:14) saw the closest analogies to this assemblage in the Gravettian of the Western Mediterranean, specifically in “Menton’s grottoes”, with the local cultural tradition known as “Grimaldian” (EFIMENKO 1956: 47–48, 1958:446). He also believed (EFIMENKO 1960:14) that the “negroid” burial beneath cultural layer III at Markina gora (Kostenki 14) (ROGACHEV 1955, DEBETZ 1955, SINITSYN 2004b) might reflect a southwestern origin for this tradition.

As in the case of the IUP, the Gorodtsovian and Early Gravettian provide evidence of differing patterns of adaptations. The wide spectrum of raw materials used in the Gorodtsovian contrasts with the uniform material base of the Gravettian assemblage at Telmanskaya, which was imported from Cretaceous flint sources outside the Kostenki area.

The primary significance of the Gravettian appearance in Kostenki around 27–28 ka is its relation to the broader problem of the origin of the Gravettian technocomplex and the fundamental restructuring of the Upper Palaeolithic world – the replacement of the binary structure of the EUP with a relatively uniform MUP organization. At present, it is widely believed that the transition occurred suddenly and simultaneously in different parts of Europe at roughly 30–28 ka, and the question of where it appeared first is open to debate (OTTE, NOIRET 2004).

#### 4. Conclusions

1. The concentration of sites at Kostenki, although confined to a small area, represents a separate and unique zone of Upper Palaeolithic cultural development, comparable to other major geographic zones in Europe (e.g., Mediterranean, Aquitanian, etc.).

2. The chronology of the sites, which was originally based solely on stratigraphy, now should be reconsidered in the light of discrepancies between the geological (climato-stratigraphic) and archaeological (epochs) sequences. The IUP-EUP interface at Kostenki lies within the climato-sedimentological cycle of the Lower Humic Bed (traditionally correlated with the Hengelo – Les Cottes oscillation) and the boundary of the EUP-MUP lies within the cycle of the Upper Humic Bed (equivalent to the Arcy – Denekamp oscillation); the transitions

do not coincide with the boundaries of the geologic units.

3. The recognition of an IUP stratum at Kostenki is based on the distinctive character of the cultural assemblages and their early chronological position (42–37 ka); the assemblages of K14–IVb and K17–II do not represent Aurignacian or typical “transitional” cultures. The wider European context for the Spitsyanean and Markina gora (IVb) includes assemblages (cultural layer XI of Bacho-Kiro, Sokernitsa 1, cultural layer C of Buran-Kaya III, Zaozer’e 1), also from the basal Upper Palaeolithic, that cannot be assigned to either the Aurignacian or local “transitional” cultures.

This group of distinctive assemblages with few common techno-typological elements underscores the extremely high degree of variability of the earliest Upper Palaeolithic sites. They are united, nevertheless, by several common characteristics: they lack Mousterian features, they do not have obvious predecessors, they do not exhibit developmental change through time, and they seem to disappear without issue.

4. The typical binary structure of the Early Upper Palaeolithic (EUP), entailing coexistence of the pan-European Aurignacian and a series of local “transitional” cultures at roughly 36–28 ka, is represented at Kostenki by the presence of Aurignacian (Kostenki 1–III and Kostenki 14–“horizon in volcanic ash”) and Streletskian assemblages (Kostenki 12–Ia, III, Kostenki 6, Kostenki 1–V, Kostenki 11–V) in this time range.

5. The earliest appearance of Gravettian is identified at Kostenki at 28 ka, simultaneously with the earliest manifestation of the Gravettian techcomplex in other parts of Europe (Masiere, Geissenklosterle, Paglicci). In each area, the Gravettian emerges as a fully developed complex in the context of the later Aurignacian. Kostenki presents a more complicated situation owing to the additional presence of the unique Gorodtsovian cultural entity that is unknown in other parts of the continent.

6. The principal changes in the structure and composition of Upper Palaeolithic cultures took place within specific climato-stratigraphic units and not at the boundaries of such units (i.e., not during times of instability or major climate change).

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*Address*

*A. A. Sinityn*

*Institute of the History of Material Culture*

*Russian Academy of Sciences*

*Dvortsovaia nab., 18*

*St. Petersburg. 191186*

*Russia*

*Email: sinityn@as6238.spb.edu*

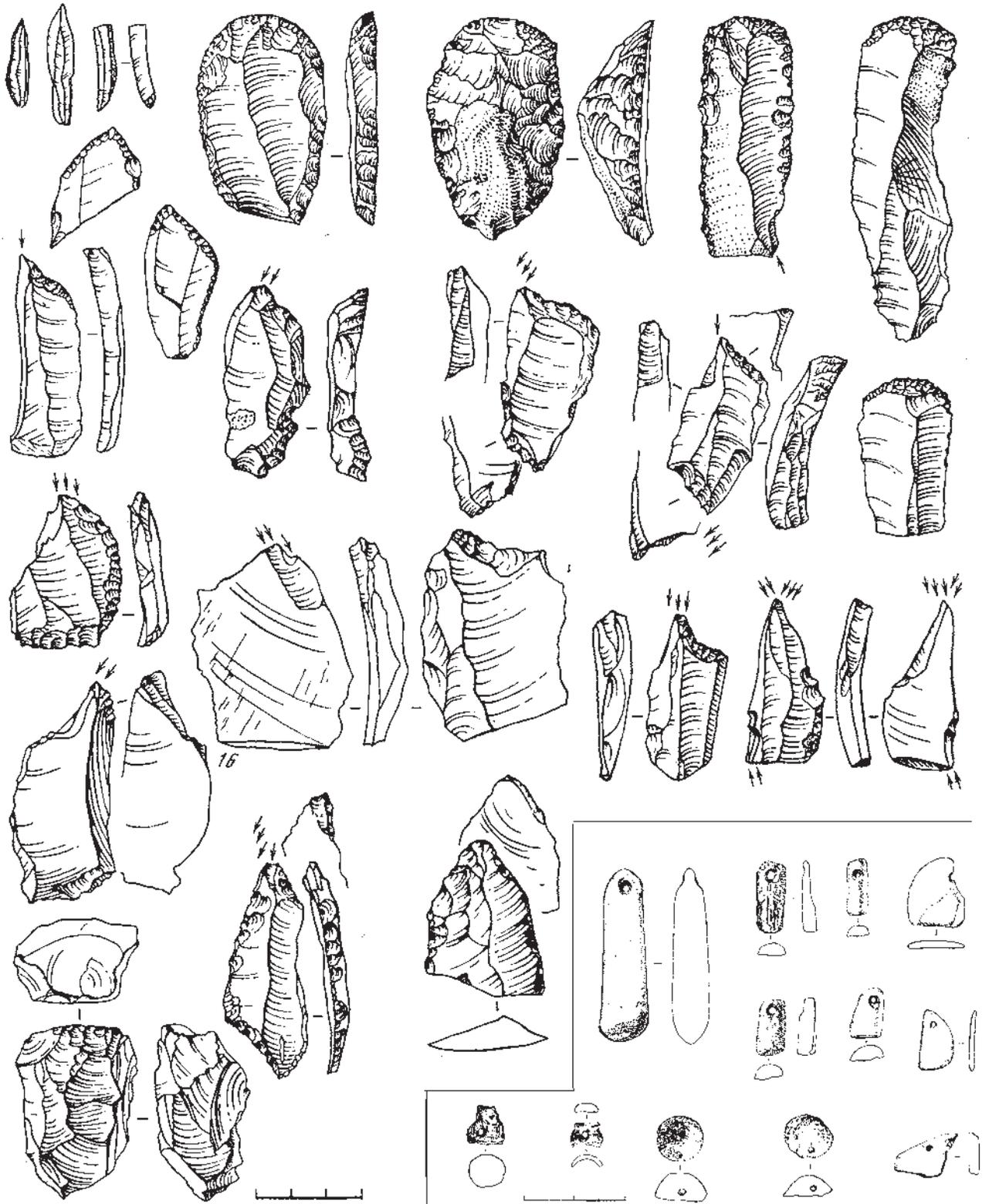


Fig. 4: Spitsyean. Kostenki 17 (Spitsyn site), II cultural layer. Lithic assemblage, personal ornaments (after BORISKOVSky, 1963).



Fig. 5: Kostenki 14 (Markina gora), IVb cultural layer. Lithic assemblage: a – burins busqué; b – burin de Vashons.

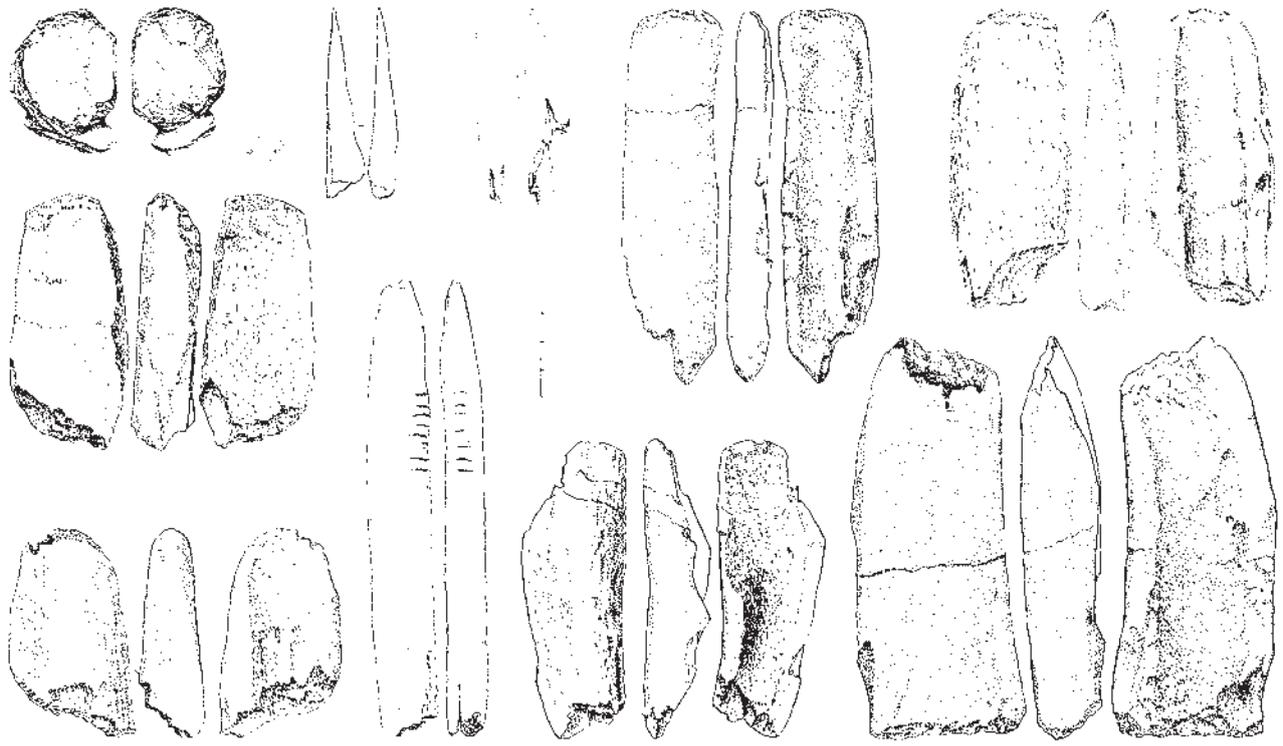


Fig. 6: Kostenki 14 (Markina gora), IVb cultural layer. Bone assemblage, personal ornament, art object.



Fig. 7: Aurignacian. Kostenki 14 (Markina gora), cultural layer in volcanic ash. Lithic assemblage.

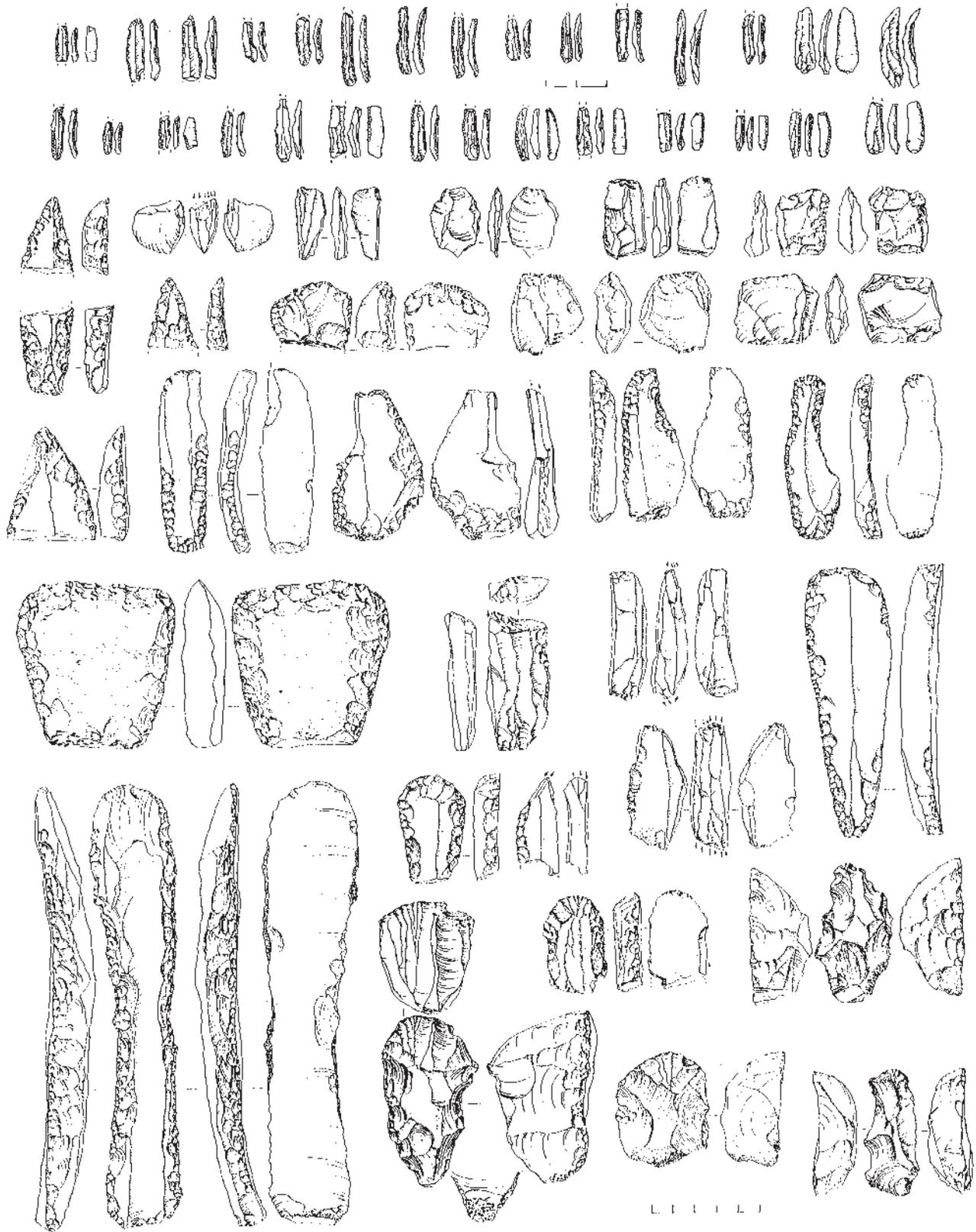


Fig. 8: Aurignacian. Kostenki 1, III cultural layer. Lithic assemblage.

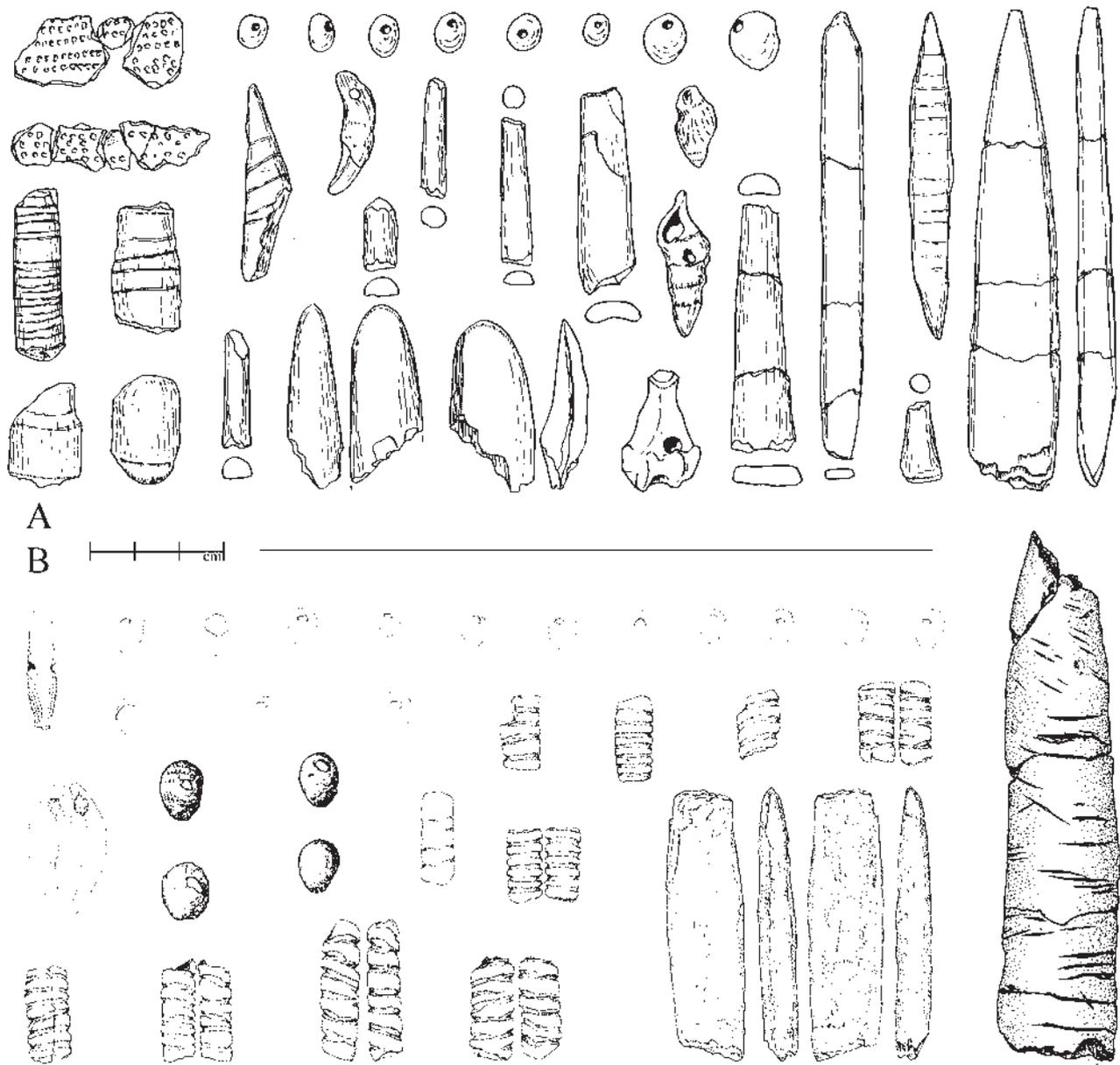


Fig. 9: Aurignacian. Bone assemblages, personal ornaments. A – Kostenki 1, III cultural layer; B – Kostenki 14, cultural layer in volcanic ash.

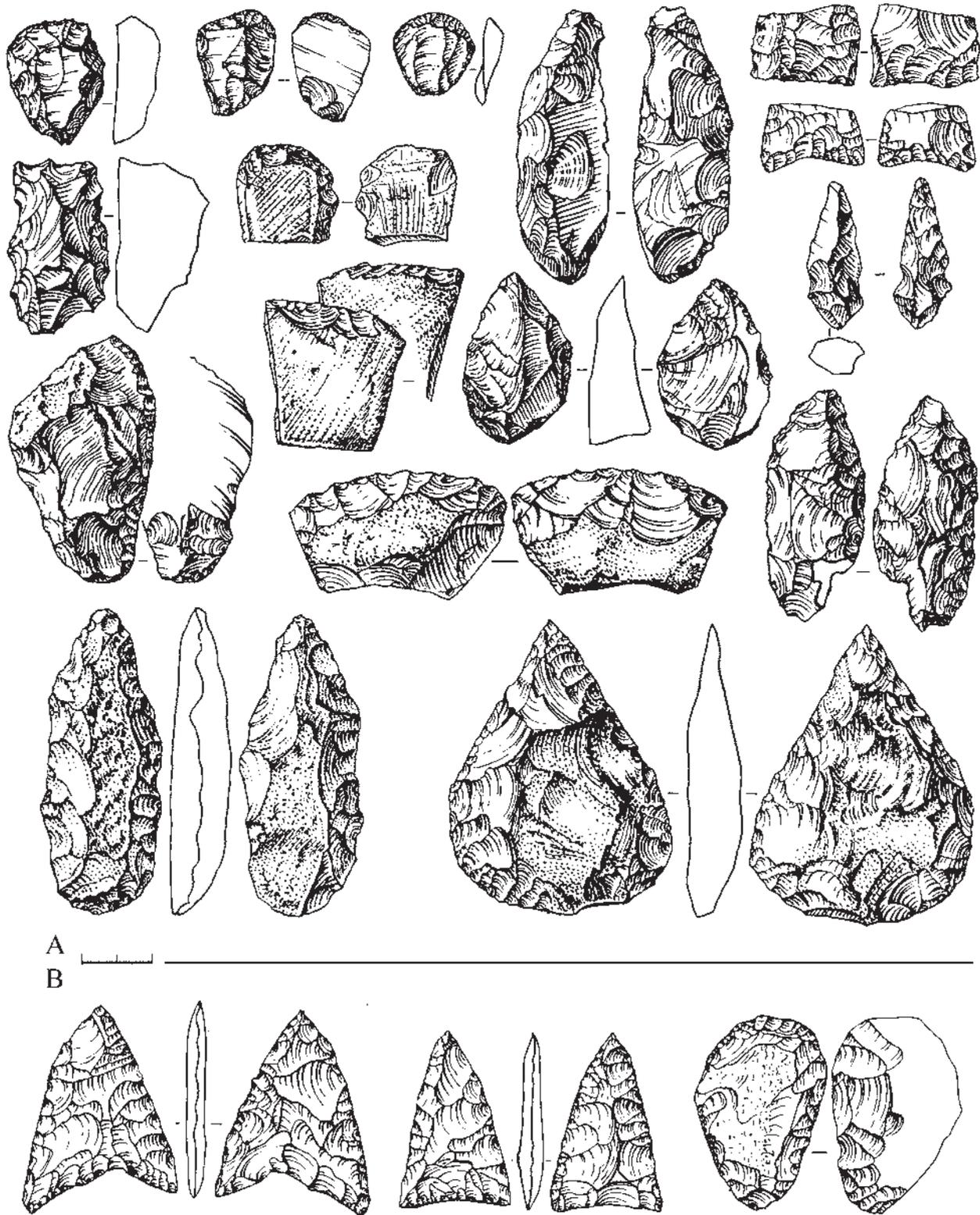


Fig. 10: Streletsian: A – Kostenki 12, III cultural layer; B – Kostenki 1, V cultural layer (ROGACHEV, ANIKOVICH 1984, Fig. 80–81, p. 244–245).

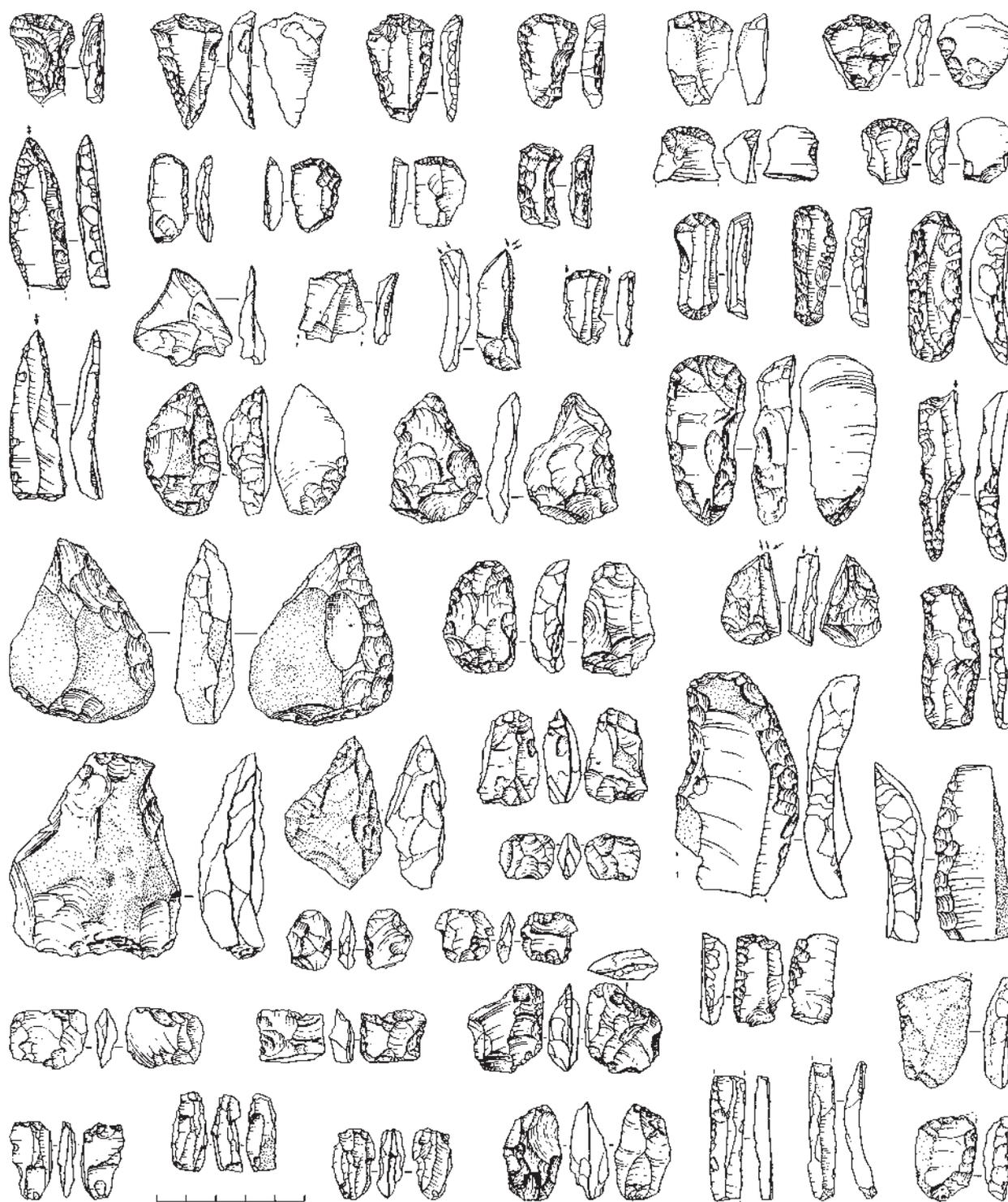


Fig. 11: Gorodtsovian. Kostenki 15 (Gorodtsov site). Lithic assemblage.

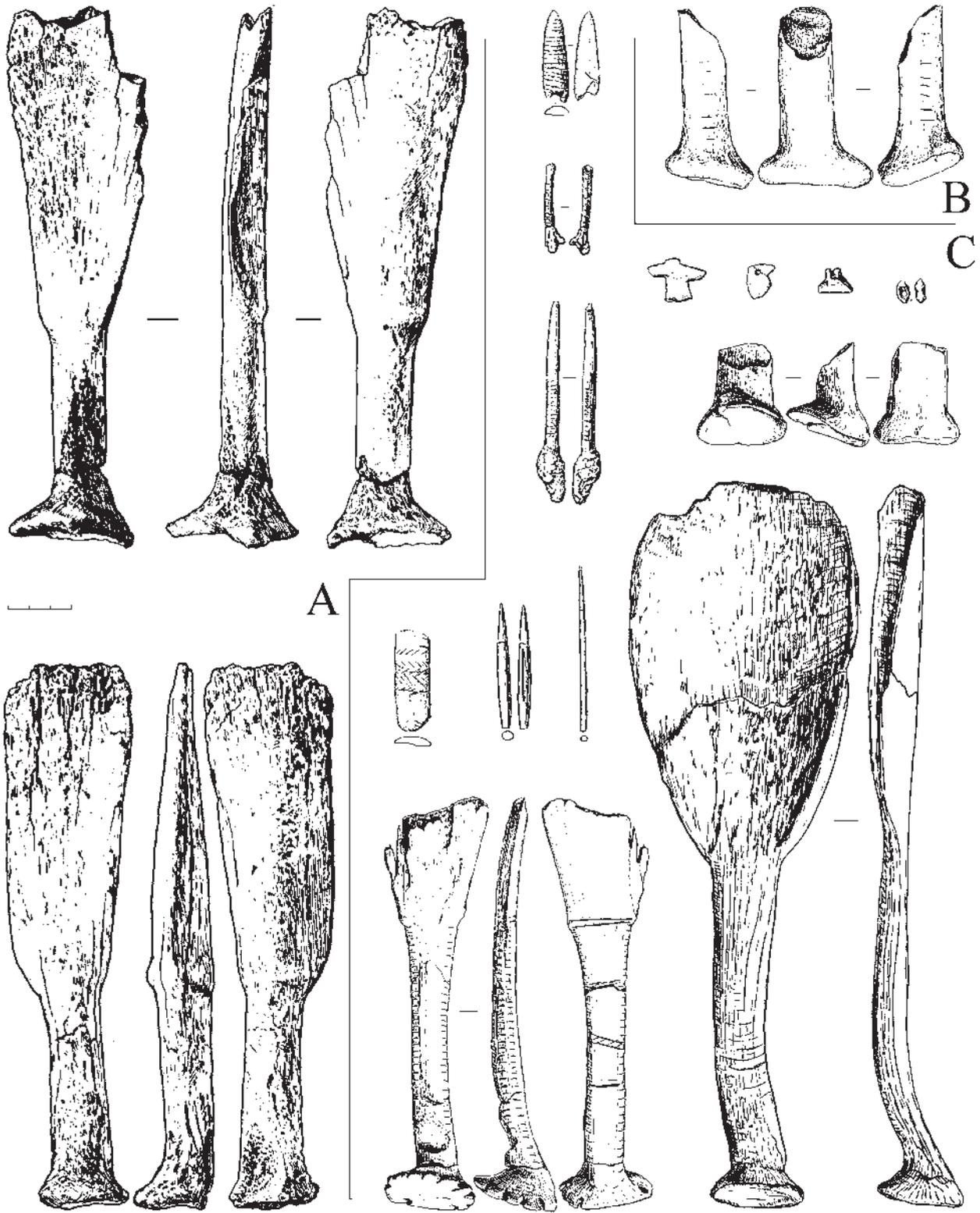


Fig. 12: Gorodtsovian. Bone assemblages: A – Kostenki 15; B – Kostenki 12, I cultural layer; C – Kostenki 14, II cultural layer.

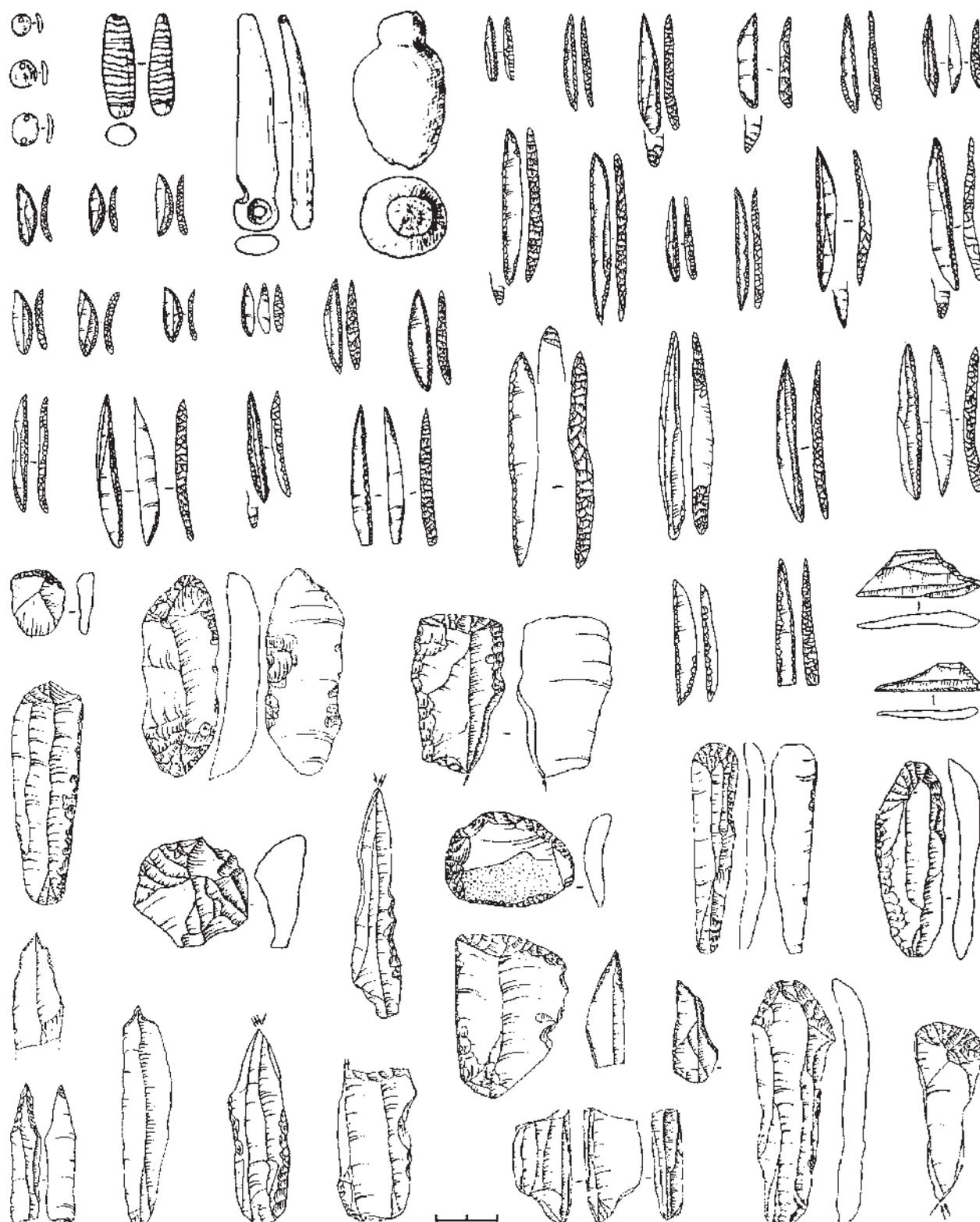


Fig. 13: Gravettian. Kostenki 8 (Telmanskaya site), II cultural layer.