ANTHROPOLOGIE • XXXVII/2 • pp. 115–123 • 1999

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THE FORMATION OF UPPER PALEOLITHIC CULTURES AND ANATOMICALLY MODERN HUMANS: THE EAST EUROPEAN PERSPECTIVE

ABSTRACT: This paper examines the chronostratigraphic and archaeological records of eastern Europe dating to the Late Middle and Early Upper Paleolithic. After an in-depth discussion of this record, it argues that, as elsewhere in Europe, the sum of the available data, together with paleoanthropological evidence, suggest an acculturation of indigenous Neanderthal groups to incoming anatomically modern humans.

KEY WORDS: Neanderthals – Anatomically modern humans – Eastern Europe – Archaeological cultures – Lines of development – Acculturation

INTRODUCTION

The last decade has significantly altered our notions about the evolution of anatomically modern humans and the formation of Upper Paleolithic cultures. These changes can be summed up as follows: 1) anatomically modern humans first appeared in Africa 130,000–150,000 years ago (Border Cave, Klasies River Mouth, and Omo) and, then in the Near East roughly 90,000–100,000 years ago (Skhul and Qafzeh Caves). These data argue not only for the greater antiquity of anatomically modern humans, but also their prolonged coexistence with morphologically more archaic forms, including the European Neanderthals. 2) The idea of uncompromisingly strict correlation of anatomically modern humans with Upper Paleolithic culture has failed. The industries associated with the remains of the early anatomically modern humans in Africa and western Asia belong to the Middle Paleolithic. On the other hand, there are some data suggesting that at least some of the Early Upper Paleolithic industries were produced by the Neanderthals. The remains of a typical Neanderthal found within a Châtelperronian level at Saint-Césaire represent a striking example of this. As Harrold (1989: 696) notes, the available data argues for a continuity between the Mousterian and Châtelperronian since both are associated with the Neanderthals.

Current data have provoked a new interest in the questions about the origin of European Upper Paleolithic cultures and the relationships between the Neanderthals and anatomically modern humans. Current views appear bipolar. Geneticists and some paleoanthropologists argue that African anatomically modern migrants forced out European archaics without any cultural assimilation. Other paleoanthropologists argue that modern Eurasian population appeared as a result of intensive assimilation of the archaics. The discussions have generally focused on anthropological and archaeological data from Africa, western Asia, and central and western Europe. Much less attention has been paid to the data from eastern Europe and attention to this part of the world is an exception rather than the rule (but see Soffer 1989, 1991). This can be explained by noting that Early Upper Paleolithic remains are less frequent in eastern Europe than in western and central Europe. They are, however, not as infrequent as it

KY	Carpathian Region	Prut and Dniester Regions	Crimea	Volyn' and Upper Dniester	Middle Don	Northeast
15	Lascaux		Siuren'1 mid-layer			Talitskogo
20	Tursac	Molodova 5, VII; Babin I, Korpach-Mys?	Siuren' 1 lower layer	Kulichivka Layer 1 Radomyshl'	Kostenki 8-I; Kostenki 11-III	
25	Bryansk Paudorf Stillfried B Denekamp	Molodova 5-VIII; Korman' 4, VII; Molodova 1-III; Korpach IV? Molodova 5-IX; Korman' 4-VIII		Zhornov Layer 1 Kulichivka Layer 2	Kostenki 16; Kostenki 17-1 Kostenki 12-I; Kostenki 1-III Kostenki 8-II; Kostenki 15 Kostenki 14-II	Sungir Byzovaia
30		Molodova 5-X, Korman' 4-IX Brynzeny 1-III?		Kulichivka Layer 3	Kostenki 1-V; Kostenki 11-V Kostenki 12-Ia; Kostenki 14-III	
35	Hengelo Pod Hradem	Molodova 5-Xa; Korman' 4-X			Kostenki 17-II; Kostenki 14-IV Kostenki 12-III; II; Kostenki 6	
40	Korolevo 1-1a Korolevo 2-II					
45	Poperinge Moershoofd					

FIGURE 1. Chronology of Early Upper Palaeolithic sites in eastern Europe.

has been portrayed in most publications. Data from eastern Europe can contribute to our understanding of these questions and are the subject of this article.

CHRONOLOGY

The most reliably dated Early Upper Paleolithic sites in eastern Europe are located in two major regions: in the area between the Dniester and the Prut rivers and along the middle Don river (Kostenki-Borshevo region). Site chronology is based on a complex of data from three multi-layered sites along the middle Dniester (Molodova 1, Molodova 5, and Korman' 4) as well as a series of multi-layered sites in the Kostenki-Borshevo region (Kostenki 1, Kostenki 8, Kostenki 11, Kostenki 12, Kostenki 14, Kostenki 17, and Kostenki 21). Their chronostratigraphic correlation with each other and with other European sites is based on tying the sites to specific phases of the scheme isolating middle Valdai (Würm) megainterstadial (50,000–24,000 years ago) with three warm episodes (from bottom to top: the Grazhdansk, the Kashino, and the Dunai). This scheme correlates well with the stratigraphic schemes used in central and in western Europe (*Figure 1*).

The reliably dated Upper Paleolithic industries from the Dniester region (Molodova 5, layer Xa; Korman' 4, layer X) are associated with the so-called "Molodova" buried soil, which corresponds to Hengelo-Pod Hradem interstadial. Unfortunately, the archaeological material from these levels is sparse and typologically indistinct. Archaeologically distinct materials (Molodova 5, layers X, IX, and VIII) come from the more recent "Dniester" buried soil, which corresponds to the Last Valdai (Dunai, Briansk) interstadial well represented in central and western Europe (Denekamp, Stillfried B, PK I, Arcy).

The majority of Early Upper Paleolithic sites from adjacent areas of Volyn' and northern Moldova, which have been dated on evidence other than typological (Kulichivka; Korpach, layer IV; Korpach-Mys), date to the same time period. The only site which can be indirectly dated to the pre-Briansk period is a very archaic layer III from the Brynzeny I rockshelter which contains the remains of "cold" fauna. The earliest Upper Paleolithic industries from the Transcarpathian region in Ukraine (Korolevo 1, layer Ia; Korolevo 2, layer II) are somewhat older and date to a time immediately preceding the Hengelo-Pod Hradem interstadial (Anikovich 1991: 12–14, 1992: 209–210). These sites, however, both geographically and archaeologically, belong to central rather than to eastern Europe.

The Early Upper Paleolithic sites from Kostenki-Borshevo area belong to two local chronological groups. The first is associated with the lower humisized level underneath volcanic ash lenses, while the second is associated with the upper humisized level above the lenses of volcanic ash. To date, many publications have dated them to middle Valdai (Briansk) interstadial in accordance with Velicko's hypothesis that only the Briansk interstadial,

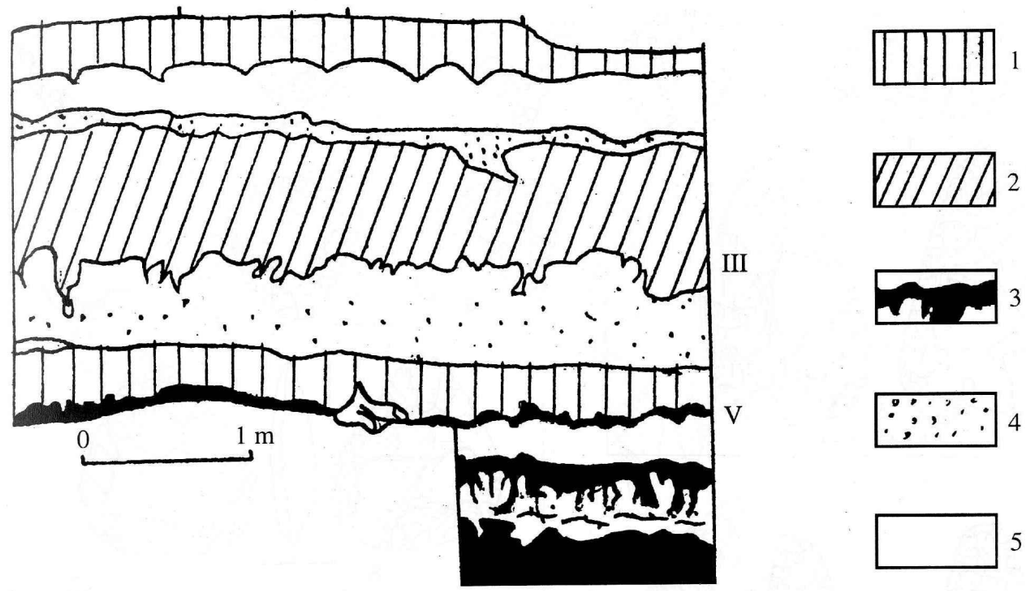

FIGURE 2. Stratigraphic profile at Kostenki I. Section top is on a base of cultural layer I: 1– loess-like loam; 2 – humified loam; 3– buried soils; 4– loam with limestone rubble; 5– marley loam; III, V – cultural layers.

characterized by a quite severe climate, can be distinguished in eastern Europe within the Valdai glaciation. This interstadial was initially dated to 29,000–25,000 years ago, but later its lower limit was redated to 32,000 years ago (Velichko *et al.* 1985). This scheme saw the entire Kostenki humus layer representing a redeposited single layer of the Briansk buried soil (Velichko *et al.* 1969: 478, Markov, Velichko 1967: 189, Grigor'ev 1970: 58, Debrosse, Koslowski 1988: 49, Soffer 1989: Fig. 34/2). Recent excavations at Kostenki, however, argue for a pre-Briansk age for the sites associated with the lower humisized level found under the lenses of volcanic ash (Anikovich 1993: 9–13).

Stratigraphic data

In the late 1970s, stratigraphic sections exposing the remains of true buried soils rather than redeposited humus lenses were first discovered at Kostenki. These were found in the so-called "stratigraphic columns" which contain no cultural remains (Praslov, Maliasova 1979, Praslov, Rogachev 1982: 19) as well as a more important section at Kostenki I (*Figure 2*) (Spiridonova 1989). Pollen data correlate these buried soils and the horizons of laminated deposits forming the upper and the lower humisized levels. Praslov (Praslov, Rogachev 1982: 265) noted that, in addition to the previously observed textural pattern within humisized levels, these strata also contained some permafrost deformations exhibiting the same character and stratigraphic position at the different sites. These preliminary observations suggest that the chronological range of the Kostenki sites assigned to both groups extends beyond the Briansk interstadial.

Pollen data

The study of pollen profiles from the Kostenki sites permit us to isolate seven interstadial episodes. Two of these are associated with the lower humisized level, three – with the upper one. Two other less distinct episodes correlate with the overlying loess-like loams. The profiles were obtained from the "stratigraphic columns" as well as from Kostenki 1, Kostenki 8, Kostenki 11, Kostenki 14, Kostenki 17, and Kostenki 21 (Praslov, Rogachev 1982: 234–245, Lavrushin *et al.* 1989, Spiridonova 1989, 1991). These pollen data clearly show that the Kostenki humus did not originate from a single Briansk buried soil.

Radiocarbon data

Over 100 radiocarbon dates are currently available for the Kostenki sites (Sinitsyn, Praslov 1997). One third of them are from sites associated with the humisized deposits, predominantly with their upper level. These dates indicate that only the sites from the second chronological group

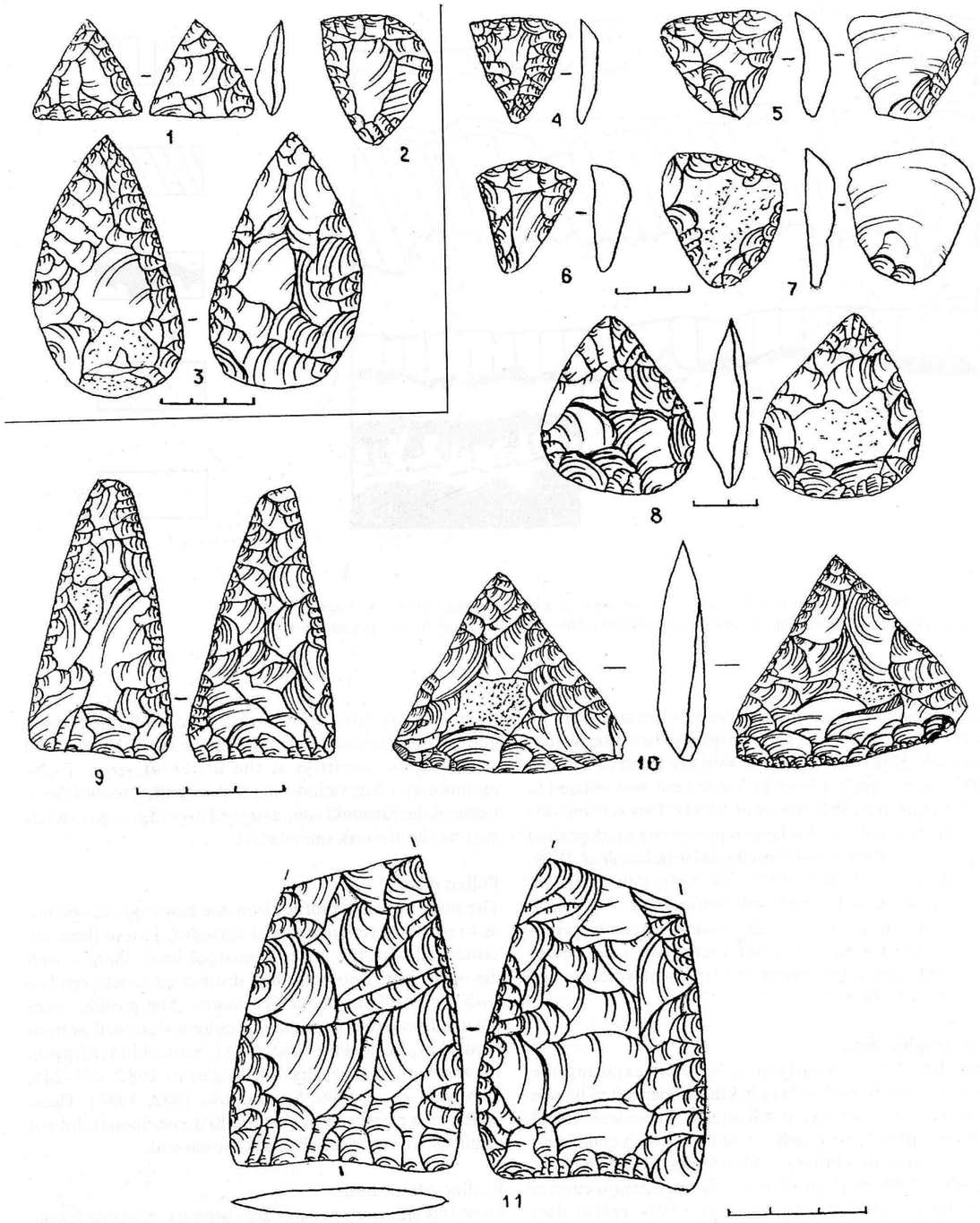

FIGURE 3. "Streletskaya" tool types in Mousterian industries in eastern Europe: Chokurcha (1–3); Zaskal'naia 5, layers II, III and IV (4–8, 10); Prolom (9); Trinka 3, layer III (11).

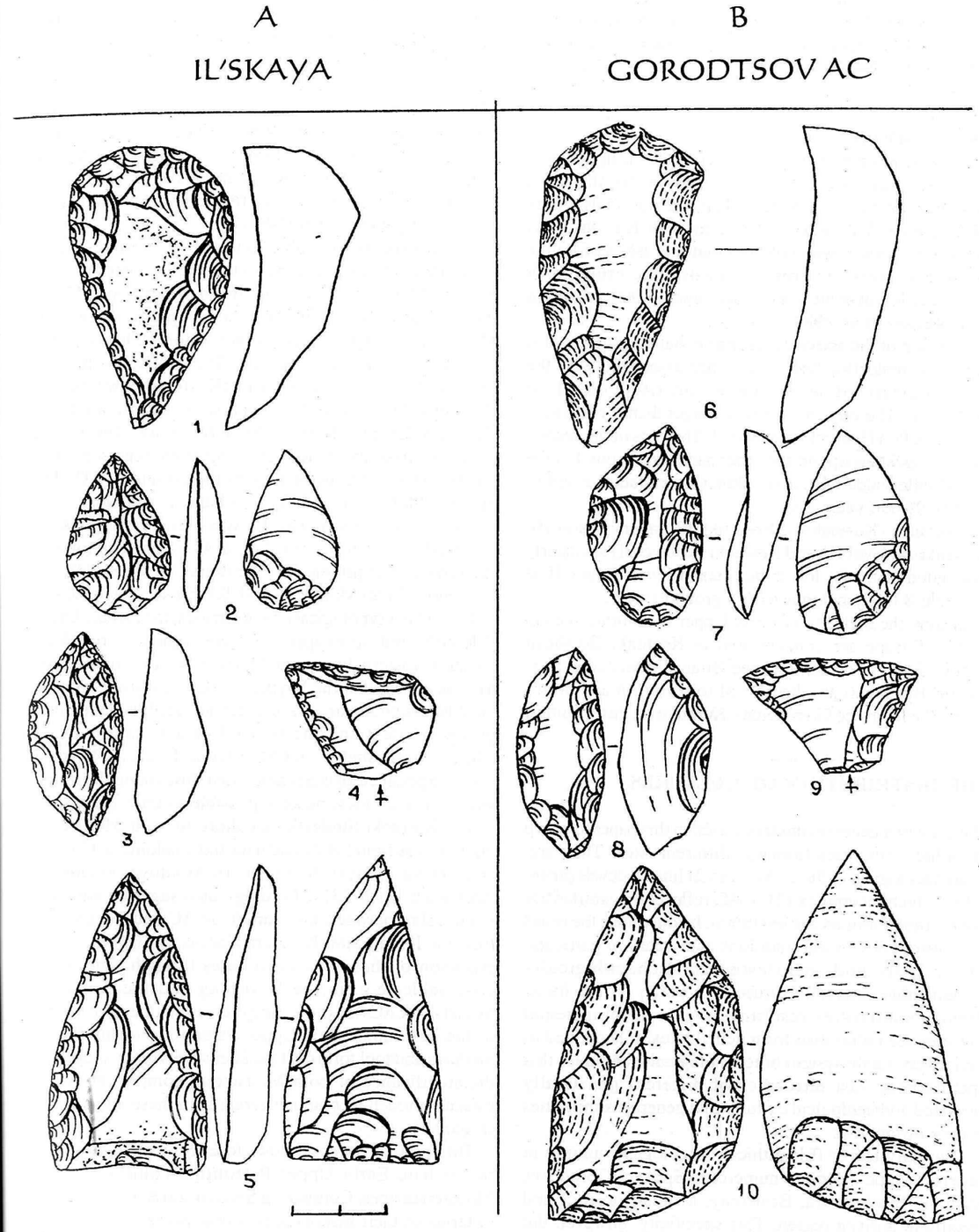

FIGURE 4. Similar tool forms from (A) the Il'skaia site (1–5) and (B) Kostenki 14, layer II (6) and Kostenki 15 (7–9), both belonging to the Gorodsov AC (archaeological culture).

correspond to the last middle Valdai (Briansk, Dunai) interstadial. The sites associated with the base of the upper humisized level (Kostenki 1, layer V; Kostenki 12, layer Ia) date to the beginning of this interstadial (Anikovich 1993: 11–12, Svezhentsev 1993: 27–29, Sinitsyn, Praslov 1997).

The volcanic ash

In the Kostenki area, volcanic ash separates the upper from the lower humisized levels and represents the most important stratigraphic feature. The ash was analyzed by the Institute of Volcanology (Petropavlovsk-Kamchatskiy) in the early 1980s, who reported that this ash is of Italian origins and resulted from a catastrophic eruption in Phlegrean Fields which occurred some 35,000 years ago (Melekestsev *et al.* 1984).

The sum of the above data suggest that the earliest sites in the Kostenki-Borshevo region are associated with the lower humisized level. They constitute the first chronological group and are no younger than the Kashino (Hengelo, Pod Hradem) interstadial. The sites of the second chronological group, on the other hand, correspond to the last Middle Valdai (Briansk, Dunai) interstadial dated to 32,000–24,000 years ago.

Five sites (Kostenki 6; Kostenki 12, layers II and III; Kostenki 14, layer IV; and Kostenki 17, layer II) are clearly associated with the lower humisized level. Layer II at Kostenki 8 likely belongs to this group as well.

In sum, the majority of Early Upper Paleolithic sites in eastern Europe are concentrated in Kostenki-Borshevo region. Some sites dating to the Briansk interstadial (e.g. Sungir, Byzovaia) are distributed to the north and north-east of the Don (see Gribchenko, Kurenkova, this volume).

THE DISTRIBUTION OF CULTURES

There are two generalizing terms used in this paper to group the lithic inventories from the different sites. They are: 1) archaeological culture (AC) and 2) line of development (LD) or technocomplex (TC). AC reflects the similarities due to similar origins and evolution. It constitutes the result of a system of cultural traditions elaborated in particular social units and manifested in archaeologically recognizable material culture. LD (TC), on the hand, denotes similarities resulting from a developmental convergence rather than from genetic ties. It is defined as a relatively stable system of technological techniques that operate over vast territories of different genetically unrelated archaeological cultures and generate similarities in their inventories.

The Early Upper Paleolithic archaeological cultures in eastern Europe are quite numerous (Spitsyn, Gorodtsov, Kostenki-Streletskaia, Brynzeny, Molodova, *etc.*) and specific to a given region. This specificity, however, did not prevent the penetration of some eastern European cultural traditions into central Europe and vice versa. Upper Paleolithic "lines of development" (LD), on the other hand, are fewer in number and uniform across the entire European continent. These are Szeletoid, Aurignacoid, and Gravettoid LDs (TCs), each bearing its own techno-typological characteristics (Anikovich 1991: 54–55). We can also distinguish other lines, like that of the Afontovo LD. While this LD is more typical for northern Asia, it is also represented in some Upper Paleolithic industries in eastern Europe such as the Gorodtsov AC. Although these Siberian and east European inventories show similarities to each other, there is no reason to interpret these similarity in terms of genetic relationship.

The coexistence of lithic industries exhibiting typical Upper Paleolithic characteristics together with well defined archaic (Mousterian) ones and those of developed Upper Paleolithic traits, along with a complete absence of Mousterian component, is distinctive for the Early Upper Paleolithic of eastern Europe. The archaic industries include ACs of Szeletoid LD (Kostenki-Streletskaia, Brynzeny, Prut) as well as some sites with isolated ACs (Korpach, layer IV; Korpach-Mys; Byzovaia). The archaic industries from the middle Don region are represented by the Gorodtsov AC belonging to the Afontovo LD. The Spitsyn, Molodova, and Tel'manskaia, as well as a series of isolated sites (Kostenki 4, layers III, IV; Kostenki 1, layer III), constitute developed ACs. They belong to Aurignacoid (Spitsyn AC; Kostenki 1, layer III) and Gravettoid LDs (Molodova and Tel'manskaia ago ACs).

Given their typological characteristics, the archaic Upper Paleolithic industries appear to have originated from local southern eastern European Mousterian. Borzijak (1980: 61) has argued that the Brynzeny AC originated from two local Mousterian variants: the denticulate bifacial (Stinka group of sites) and the bifacial of a Levallois facies (Buteshty rockshelter and Mousterian levels at Ripiceni-Izvor). Specific tool types here, including triangular points with concave bases, make it possible to trace the origins of the Kostenki-Streletskaia culture to such Mousterian industries as found at Zaskal'naia and Chokurcha (Crimea) and Trinka 3, layer III (northern Moldova) (*Figure 3*, Anikovich 1992: 231). Typology also suggests a genetic relationship between the Gorodtsov AC and the industry from the Il'skaia site (Northern Caucasus) (*Figure 4*). The evolution of these archaic cultures through time, when observable (e.g. in the Brynzeny and the Kostenki-Streletskaia ACs), exhibits the increase in the number and in the development of Upper Paleolithic technological methods and tool forms. At the later stages of development, the significance of both Mousterian component and of bifacial retouch technique decreases in these archaic ACs (*Figure 5*).

Different approaches show close relationships between the archaic Early Upper Paleolithic cultures and the Mousterian ones. Comparing Spitsyn and Streletskaia ACs in terms of their behavioural norms, Soffer (1989, 1991) concludes that "Mousterian" subsistence practices (food procurement within a site territory and exploitation of local

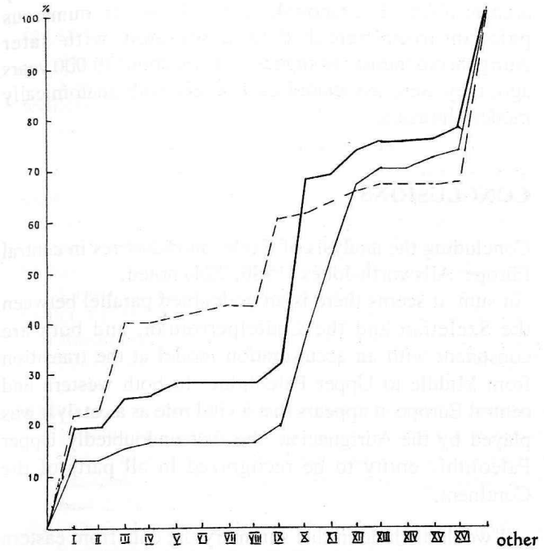

FIGURE 5. Quantitative distribution of basic tool categories from three sites of different ages of Kostenki-Streletskaia archaeological culture (Kostenki 12, layer III; Kostenki I, layer V; and Sungir):
I – scrapers; II – truncated blanks; III – burins; IV – chisels; V – awls; VI – points; VII – Aurignacian blades; VIII – backed bladelets and points; IX – chisel–like tools; X – bifaces; XI – knives; XII – racloirs; XIII – points; XIV –Quinson points; XV – limaces; XVI – denticulates.

raw materials) is a characteristic of Streletskaia AC, while a typical "Upper Paleolithic" subsistence practices oriented towards obtaining a particular food resource and exotic high-quality raw materials is distinctive for Spitsyn AC. It should be noted, however, that we need more faunal data to make a final conclusion about subsistence behavior. The pattern of raw material procurement appears to be not as simple as presented by Soffer. Although the oldest Streletskaia AC industry (Kostenki 12, layer III) was indeed exclusively based on local raw materials, small quantities of high-quality chalk flint, characteristic of Spitsyn AC's, were also utilized along with local raw materials at the contemporaneous site of Kostenki 6 as well as in later Streletskaia sites (Kostenki 1, layer V; Kostenki 11, layer V; and Kostenki 12, layer Ia). In neither case can one consider this raw material as a foreign inclusion since it was used to manufacture typical "Streletskaia" tool forms, including triangular points with a concave base.

It is more difficult to make inferences about the genesis of developed ACs. There are some reasons to assume that the relatively young Molodova AC (Gravettoid LD) appeared about 30,000 years ago as a result of a transformation of the Bükk Szeletian (Anikovich 1991: 17).

Currently we have no evidence about the origins of the earliest east European Aurignacoid Spitsyn AC, whose age exceeds 35,000 years. We can only state that its advanced technological level of achievement (e.g. typical prismatic reduction, burins, and drilling techniques used to drill stone and bone (Anikovich 1992) suggests its more ancient origins, probably outside of eastern Europe.

The scarcity of the available data does not permit us today to securely postulate the interactions between the developed and the archaic ACs in eastern Europe. Some evidence suggests, however, that they interacted with each other. We do have some "mixed" industries in south-western eastern Europe with typical Szeletoid and typical Aurignacoid characteristics (e.g. Korpach-Mys, Klimautsy 1). In addition, we do have the noted utilization of small quantities of high-quality exotic raw material at the sites belonging to the Streletskaia AC. We also have a sudden advance in the blade and burin techniques in one of the earliest industries of the latter AC (Kostenki 6). A comparison of archaeological materials from Kostenki 8, layer II (Tel'manskaia AC) to those from Kostenki 14, layer II (Gorodtsov AC) is also revealing. Their lithic industries vary in all respects: from primary reduction techniques to basic tool categories and types. Conversely, their bone industries are very similar in such details as ornamentation and in decorated forms – traits which are sufficient for integrating them into a single AC (Anikovich 1991: 31, 1992: 235-236).

THE HUMAN REMAINS

Although paleoanthropological data are sparser in eastern than in central and western Europe, they do offer some useful information which is seminal because the majority of east European human remains come from Early Upper Paleolithic sites. The oldest remains are represented by a tooth found at Kostenki 17, layer II, identified by Yakimov (1957) as belonging to an anatomically modern individual. This site, dating prior to 35,000 years ago, belongs to the Aurignacoid Spitsyn AC. A skeleton found at the base of upper humisized level at Kostenki 14, identified by Debets (1955) as a typical anatomically modern human also, appears to date between 28,000–32,000 years ago. Skeletal remains of anatomically modern children (a 5–7 years old and a newborn) were found at somewhat younger sites of the Gorodtsov AC (Kostenki 15; Kostenki 12, layer I). The human remains from Sungir (a final stage of Kostenki-Streletskaia AC) have been classified differently. Despite their relatively young age (24,000–25,000 years ago), they are believed to belong to anatomically modern humans but, at the same time, to exhibit some distinct Neanderthaloid traits (Zubov, Kharitonov 1984, Kosintsev, this volume). Thus a question arises whether we will find the remains of typical Neanderthals at the earliest

Streletskaia AC sites which are 10,000–15,000 years older than Sungir? Given the Neanderthal skeleton from the Châtelperronian level at Saint-Césaire, such a discovery seems quite possible.

COMPARISONS

Comparing the results of the above brief review to the Early Upper Paleolithic data from central and western Europe, we observe many similarities. The original coexistence of "archaic" and "developed" Upper Paleolithic industries appears to be a characteristic for both regions. The former include Châtelperronian in western Europe and cultures of the Szeletoid LD in central Europe. The latter also contain different variants of Aurignacoid LD industries, which, as in western Europe, are augmented by variants of Gravettoid LDs sometime around 30,000 years ago.

Searches for local Mousterian antecedents have been more or less successful everywhere (Harrold 1989, Vertes 1964, Valoch 1987, 1990). In all the regions, the evolution of archaic cultures led to the disappearance of Mousterian components and the reinforcement of Upper Paleolithic ones. However, this general tendency occasionally shows discontinuity. Harrold (1989: 694), for example, notes that the youngest Châtelperronian levels at Grotte du Renne and Grande-Roche appear to be technologically and typologically the most "primitive" or "regressive". There are some attributes, though not always clear, which reflect contacts and interrelationships between coeval archaic and developed cultures. The majority of scholars agree that it was the Aurignacian newcomers who were responsible for the emergence of the Châtelperronian. A thorough typological analysis of Châtelperronian and Aurignacian industries shows marked differences rather than similarities – features which can be interpreted as resulting from contacts. The widespread Aurignacoid elements within Szeletoid industries and vice versa in central Europe can represent such contacts (Allsworth-Jones 1986: 130). I have also presented a more detailed typological arguments for contacts between Bükk Szeletian and local "Aurignacian" of Istallosko (Anikovich 1991).

Châtelperronian paleoanthropological data (several teeth from Grotte du Renne in addition to the Saint-Césaire skeleton) show that the makers of these inventories were Neanderthals (Harrold 1989: 696). Szeletian data are even sparser, but the remains of typical Neanderthals from the Late Mousterian sites (Subalyuk and Kůlna), traditionally genetically associated with Szeletian, and two archaic teeth from the Szeletian levels at Dzerava Skala and Mariamet, support Vertes's (1994) view that the Szeletian industries were also produced by Neanderthals. Unfortunately, no human remains have been found at the Early Aurignacian sites and they are conventionally associated with anatomically modern humans based on indirect evidence (Harrold 1989: 704). Thus the noted anatomically modern tooth from Kostenki 17, layer II appears to be of particular interest here. One should also recall that the tooth from an even older Aurignacoid site (Bacho Kiro, layer 11) is very archaic (Glen, Kaczanowski 1982). However, numerous paleoanthropological data associated with later Aurignacoid industries suggest that, by about 30,000 years ago, they were associated exclusively with anatomically modern humans.

CONCLUSIONS

Concluding the analysis of Szeletian industries in central Europe, Allsworth-Jones (1986: 224) noted:
"In sum, it seems there is an undoubted parallel between the Szeletian and the Châtelperronian, and both are consonant with an acculturation model at the transition from Middle to Upper Paleolithic. In both western and central Europe, it appears that a vital role as a catalyst was played by the Aurignacian, the first undoubtedly Upper Paleolithic entity to be recognized in all parts of the Continent."

I would include in this summary the data from eastern Europe which show a gradual development of archaic Upper Paleolithic cultures from the local Mousterian ones under the influence of exogenous population who introduced the well-developed Aurignacoid traditions (Spitsyn AC). The archaic cultures, however, did not disappear without a trace. There are some substantial reasons to consider them as a basis from which the later Gravettoid cultures appeared in both central and eastern Europe.

The acculturation process was also accompanied by the sapienization of local Neanderthal populations through contacts with exogenous anatomically modern peoples. Available paleoanthropological data, especially seen in a broader context (Smith 1984, Wolpoff 1989), support such a scenario of gene flow. Neither the archaeological nor the paleoanthropological data suggest that the archaics were completely eliminated. The concept of broad contacts involving mating networks are more congruent with the data on hand. Anatomically modern people first appeared in one place – apparently in Africa – but modern humans resulted from their interbreeding with local archaics as they spread over the Old World. Thus, it appears that the Early Upper Paleolithic history of entire European continent was alike and that the formation of Upper Paleolithic cultures in all major European regions followed a single model of acculturation.

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