A New Framework for the Upper Paleolithic of Eastern Europe

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ABSTRACT. The results of field and laboratory research during the past decade require a new classificatory framework for the Upper Paleolithic in Eastern Europe. It is now apparent that people making artifacts assigned to the Ahmarian industry occupied both the southern and northern slopes of the Caucasus Mountains (i.e., Ortvale Klde, Layer 4d; Mezmaiskaya Cave, Layer 1C). Their sites probably indicate a separate movement of anatomically modern humans (AMH) from the Near East directly into Eastern Europe, establishing an independent line of development during the earlier Upper Paleolithic that parallels the Proto-Aurignacian and Aurignacian sequence in Western and Central Europe. This East European industry is most fully represented at the Kostenki-Borshchevo sites on the Don River before 40,000 cal BP (e.g., Kostenki 14, Layer IVb). It is followed by a closely related industry, also characterized by bladelet production, that is dated to the interval between 40,000 and 30,000 cal BP in Crimea and the East European Plain. The proposed new framework reflects recognition of these distinctive East European entities and of two environmental events that had significant impacts on human settlement in Eastern Europe: (1) the Campanian Ignimbrite (CI) volcanic eruption (40,000 cal BP); and (2) the Last Glacial Maximum (LGM) (~25,000 cal BP).

It has been suggested that the early Upper Paleolithic (EUP) industry present in Eastern Europe before 40,000 cal BP should be labeled an eastern variant of the contemporaneous Proto-Aurignacian of Mediterranean Europe. However, given the separate movement of people from the Near East via the Caucasus Mountains, and independent development of the East European EUP, this industry is more appropriately termed "Proto-Gravettian." The younger bladelet industry, which includes assemblages at Buran-Kaya III (Layer 6-1), Mira (Layer II/2), and probably Shlyakh (Layers 4C, 6), may be termed "Early Gravettian" to distinguish it from the classic Gravettian industry that dates to less than 30,000 cal BP (e.g., Avdeevo, Zaraisk). The upper temporal boundary of the Proto-Gravettian corresponds to the CI eruption (40,000 cal BP), while the classic Gravettian of the East European Plain appears to have been effectively terminated by the LGM (~25,000 cal BP).

Several sites that date to the 40,000–30,000 cal BP interval (e.g., Kostenki 1, Layer III) contain elements that suggest a connection with the Aurignacian technocomplex of Western-Central Europe. These assemblages may be placed into the category of "Eastern Aurignacian," which reflects differences in content with the West and Central European sites. The apparent spread of this industry into Eastern Europe from the Balkans may be related to the impact of the CI eruption on a large area of the East European Plain.

The chronology of the early Gravettian in Eastern Europe


KOSTENKI-BORSHCHEVO
Mira
Buran-Kaya III
Early Gravettian sites in Eastern Europe
Scale 1:20,700,000
Lambert Conformal Conic Projection, standard parallels 47°N and 62°N
300 Kilometers
300 Miles
Boundary representation is not necessarily authoritative.
RUSSIA
KAZAKHSTAN
UKRAINE
BELARUS
TURKEY
IRAN
IRAQ
AFGHANISTAN
SYRIA
CHINA
MONGOLIA
Black Sea
Caspian Sea
Aral Sea
Baltic Sea
Mediterranean Sea
Moscow
Kazan'
Volgograd
Astrakhan'
Rostov
Krasnodar
Sevastopol'
Yerevan
Baku
Tehrān
Mashhad
Kabul
Islāmābād
Tashkent
Bishkek
Almaty
Astana
Orenburg
Samara
Saratov
Voronezh
Kharkiv
Kiev
Minsk
Warsaw
Helsinki
Stockholm
Tallinn
Riga
Vilnius
St. Petersburg
Arkhangel'sk
Pechora
Krasnoyarsk
Novosibirsk
Omsk
Chelyabinsk
Ufa
Perm'
Kemerovo
Barnaul
Semey (Semipalatinsk)
Öskemen (Ust'-Kamenogorsk)
Qaraghandy (Karaganda)
Aqtöbe (Aktyubinsk)
Oral (Ural'sk)
Atyrau (Atyrau)
Aktau (Aktau)
Beyneu (Beyneu)
Qyzylorda (Kyzylorda)
Taldyqorghan (Taldykorgan)
Saryshaghan (Saryshagan)
Balqash (Balkhash)
Aral (Aral'sk)
Baykonur Cosmodrome
Taraz
Shymkent
Andijon
Nukus
Türkmenbashy
Sumqayit
Tabrīz
Herāt
Jerusalem
Amman
Baghdad
Beirut
Damascus
Nicosia
Aleppo
Adana
Konya
Ankara
Istanbul
Bursa
Samsun
Sokhumi
Bat'umi
Tbilisi
Groznyy
Makhachkala
Gora El'brus (highest point in Europe, 5633 m)
Caspian Sea (lowest point in Europe, -28m)
Dnipropetrovs'k
Zaporizhzhya
Donets'k
Mariupol'
Volgograd
Kryvyy Rih
Odesa
Mykolayiv
Chişinău
Bucharest
Constanţa
Homyel'
Mahilyow
Vitsyebsk
Brest
Hrodna
Rivne
L'viv
Chornobyl'
Chernivtsi
Tula
Ryazan'
Ul'yanovsk
Penza
Tol'yatti
Chelyabinsk
Petropavlosk
Pavlodar
Qostanay (Kostanay)
Ural Mountains
Caucasus Mts.
Carpathian Mts.
Dogukaradeniz Daglari
Taurus Mts.
Elbruz Mts.
Hindu Kush
Himalayas
Tien Shan
Pamir
Kyrgyzstan
Ustyurt Plateau
Qizilqum
Betpaqdala
Turkmenistan
Caspian Depression
Volga-Don Canal
Kuybyshevskoye Vodokhranilishche
Rybinskoye Vodokhranilishche
Lake Ladoga
Lake Onega
Lake Balkhash
Ysyk-Köl
Gulf of Finland
White Sea
Severnaya Dvina
Vychegda
Sukhona
Pechora
Ob'
Irtysh
Yenisey
Kama
Volga
Don
Dnepr
Dniester
Dnipro
Danube
Sea of Azov
Euphrates
Tigris
Indus
Line of Control
Chinese line of control
Khyber Pass
Peshawar
Islāmābād
Kabul
Herāt
Mashhad
Tehrān
Baghdad
Amman
Jerusalem
Nicosia
Aleppo
Beirut
Damascus
Adana
Konya
Ankara
Istanbul
Bursa
Samsun
Sokhumi
Bat'umi
Tbilisi
Yerevan
Baku
Türkmenbashy
Tabrīz
Nukus
Andijon
Tashkent
Shymkent
Taraz
Bishkek
Almaty
Qyzylorda
Aral
Aqtöbe
Oral
Qaraghandy
Astana
Semey
Öskemen
Omsk
Barnaul
Novosibirsk
Kemerovo
Krasnoyarsk
Pechora
Arkhangel'sk
Helsinki
Stockholm
Tallinn
Riga
Vilnius
Warsaw
Minsk
Kiev
Kharkiv
Dnipropetrovs'k
Zaporizhzhya
Donets'k
Mariupol'
Volgograd
Rostov
Krasnodar
Sevastopol'
Constanţa
Bucharest
Chişinău
Odesa
Mykolayiv
Kryvyy Rih
Homyel'
Mahilyow
Vitsyebsk
Brest
Hrodna
Rivne
L'viv
Chornobyl'
Chernivtsi
Tula
Ryazan'
Ul'yanovsk
Penza
Tol'yatti
Samara
Saratov
Voronezh
Kazan'
Moscow
Perm'
Ufa
Chelyabinsk
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Tien Shan
Pamir
Kyrgyzstan
Ustyurt Plateau
Qizilqum
Betpaqdala
Turkmenistan
Caspian Depression
Volga-Don Canal
Kuybyshevskoye Vodokhranilishche
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Lake Ladoga
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Severnaya Dvina
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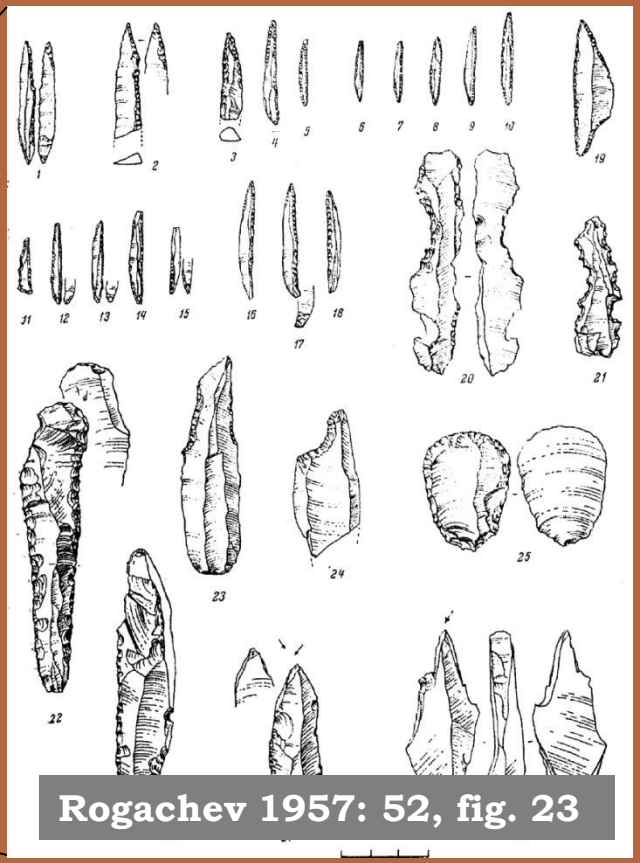
Sukhona
Pechora
Ob'
Irtysh
Yenisey
Kama
Volga
Don
Dnepr
Dniester
Dnipro
Danube
Sea of Azov
Euphrates
Tigris
Indus
Line of Control
Chinese line of control
Khyber Pass
Peshawar

Kostenki 8

Layer 2



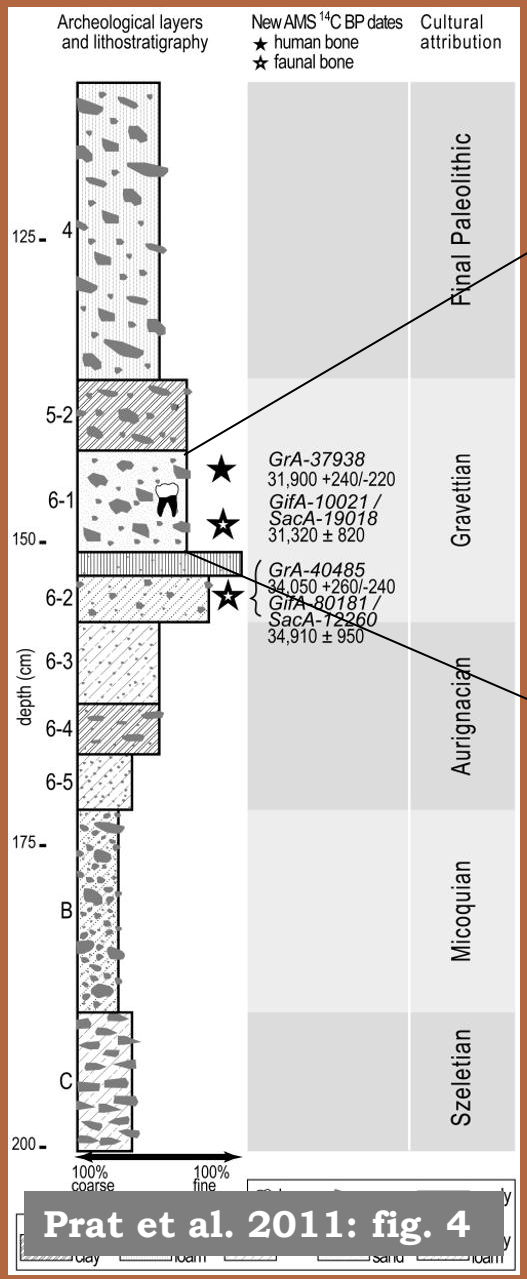
Rogachev 1957: 52, fig. 23

32,413 ± 649 cal BP
(GrN-10509)

Mira

Layer II/2

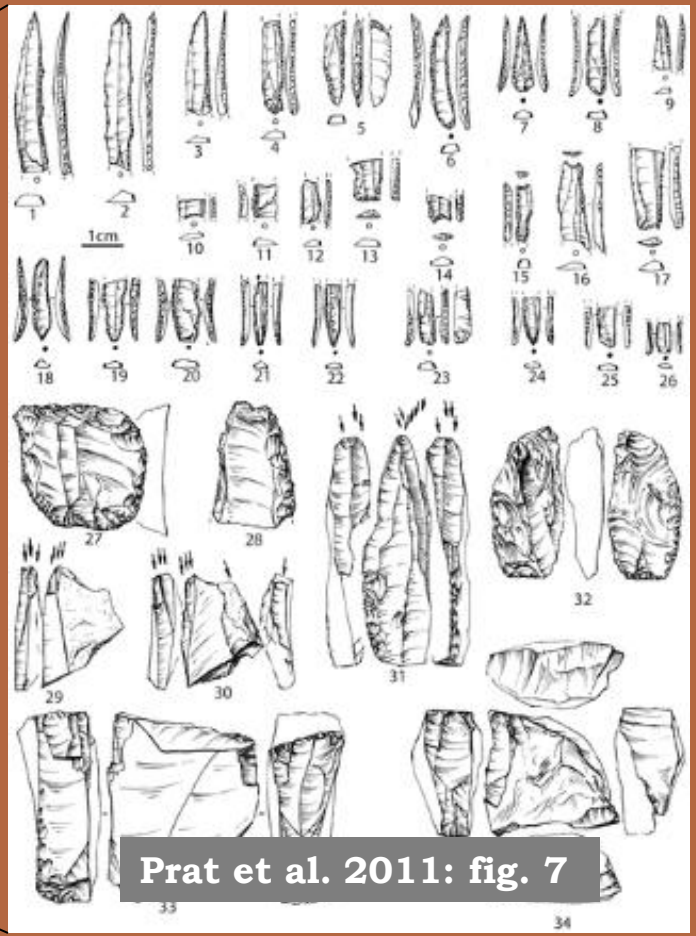
32,429 ± 519 cal BP
(GrA-20033)



Prat et al. 2011: fig. 4

Buran-Kaya III

Layer 6-1



Prat et al. 2011: fig. 7

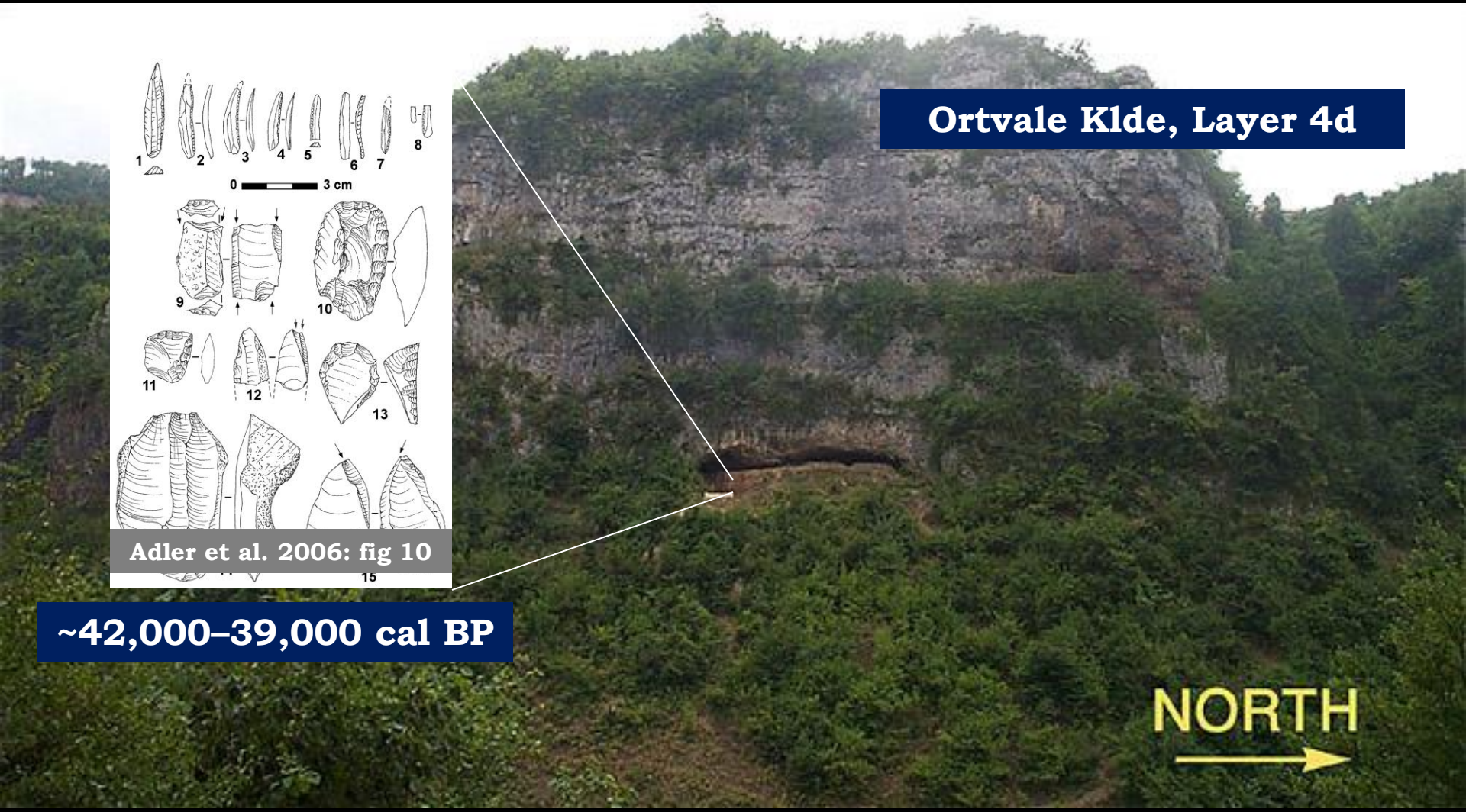
35,933 ± 392 cal BP
(GrA-37938)

Layer 6-2

39,602 ± 928 cal BP
(GrA-40485)

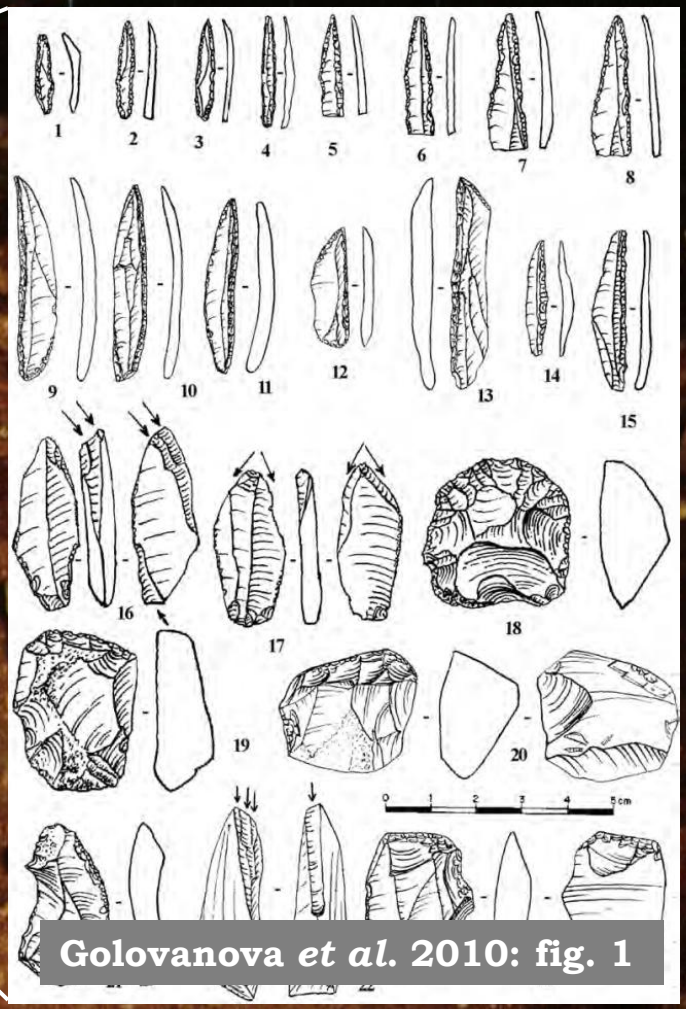
The Ahmarian in Eastern Europe


KOSTENKI-BORSHCHEVO
Mezmaiskaya Cave
Ortvale-Klde
Scale 1:20,700,000
Lambert Conformal Conic Projection, standard parallels 47°N and 62°N
Boundary representation is not necessarily authoritative.
RUSSIA
KAZAKHSTAN
UKRAINE
TURKEY
IRAN
Black Sea
Caspian Sea
CAUCASUS MTS.


Ortvale Klde, Layer 4d
1
2
3
4
5
6
7
8
0
3 cm
9
10
11
12
13
15
Adler et al. 2006: fig 10
~42,000–39,000 cal BP
NORTH


Mezmaiskaya Cave

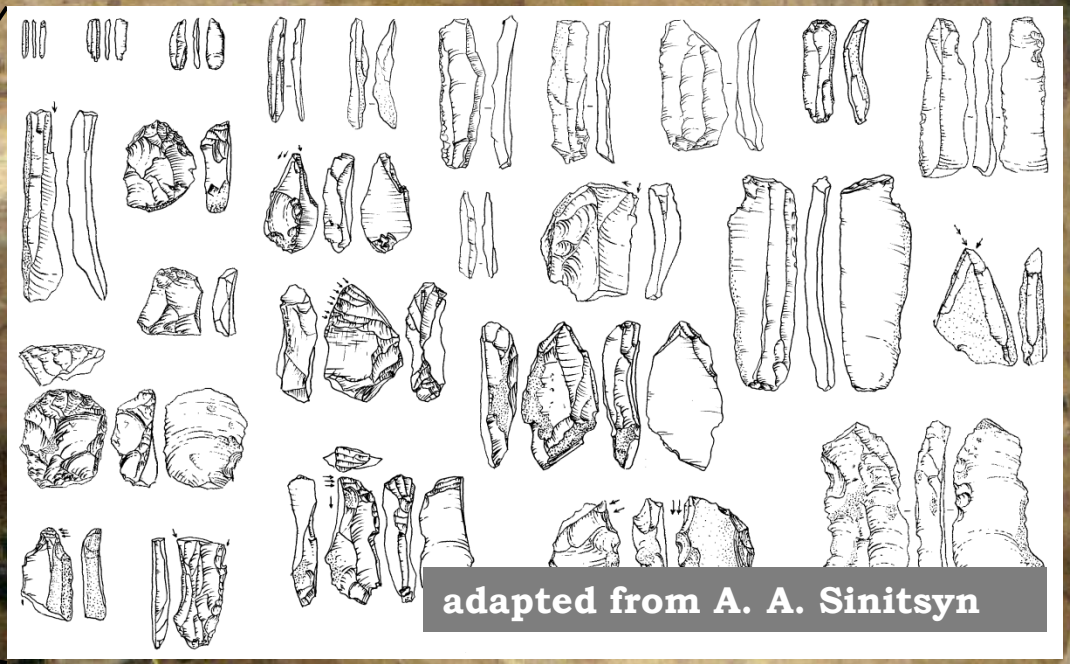
Mezmaiskaya Cave, Layer 1C



Golovanova *et al.* 2010: fig. 1

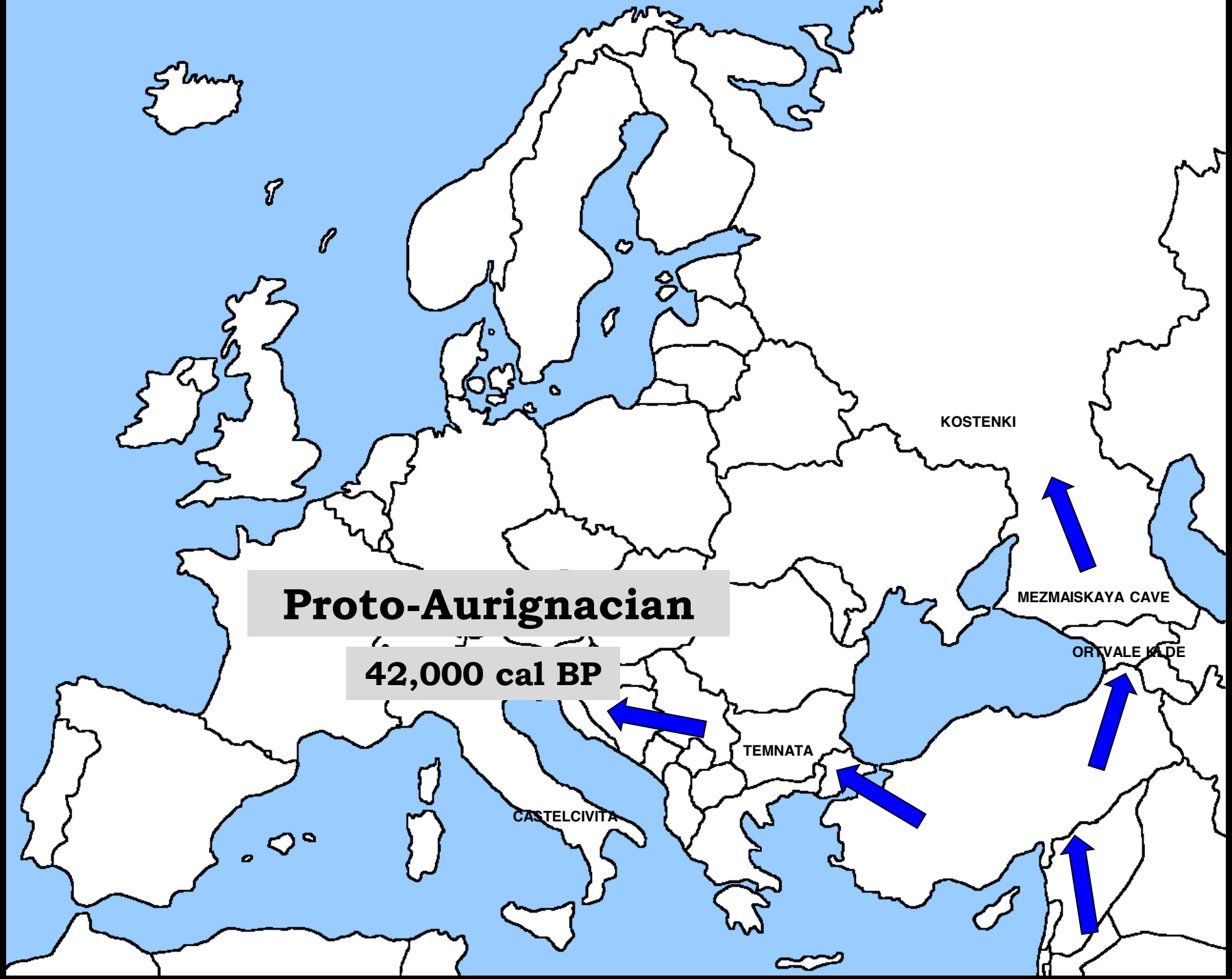
~38,000–37,000 cal BP

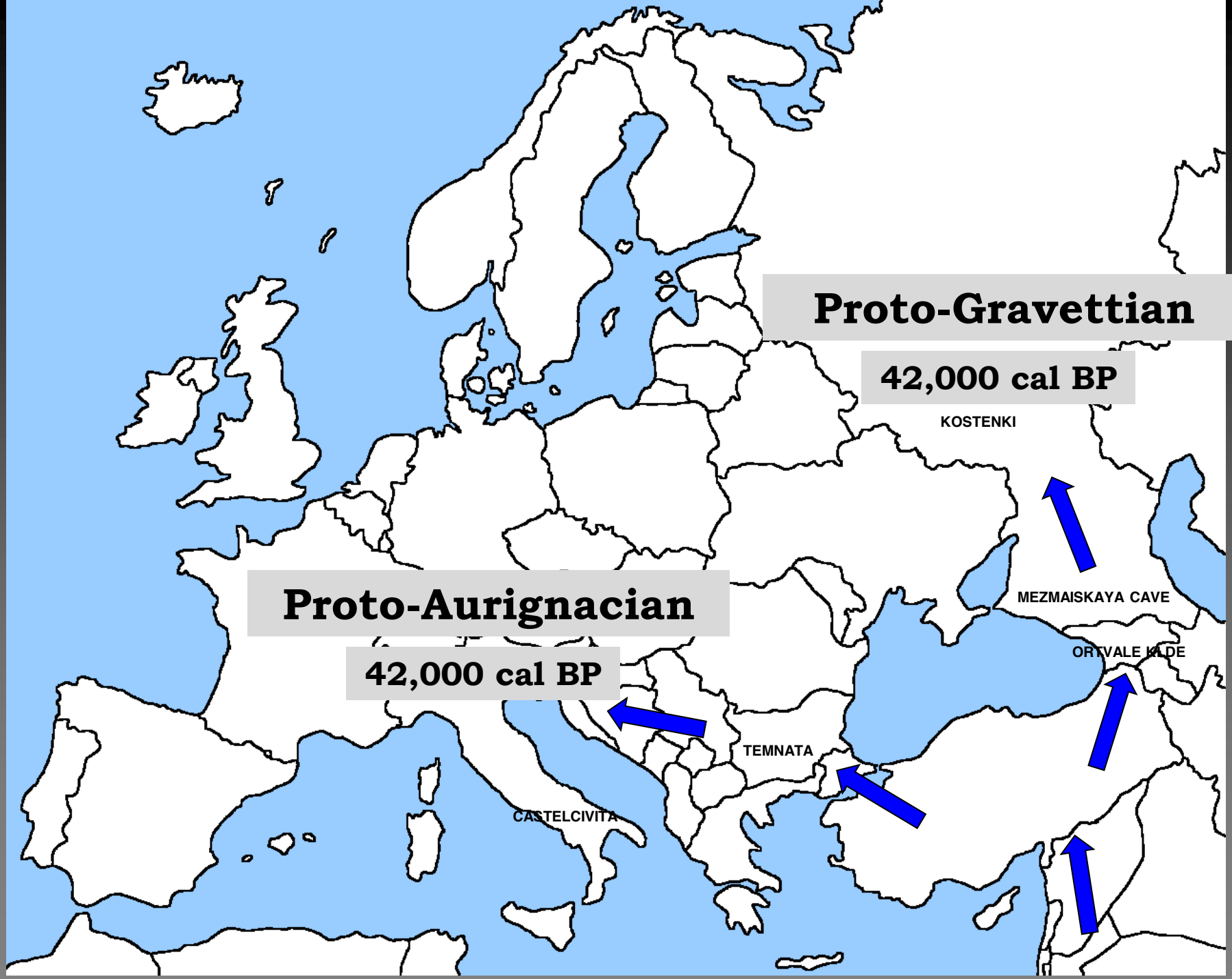
Kostenki 14, Layer IVb

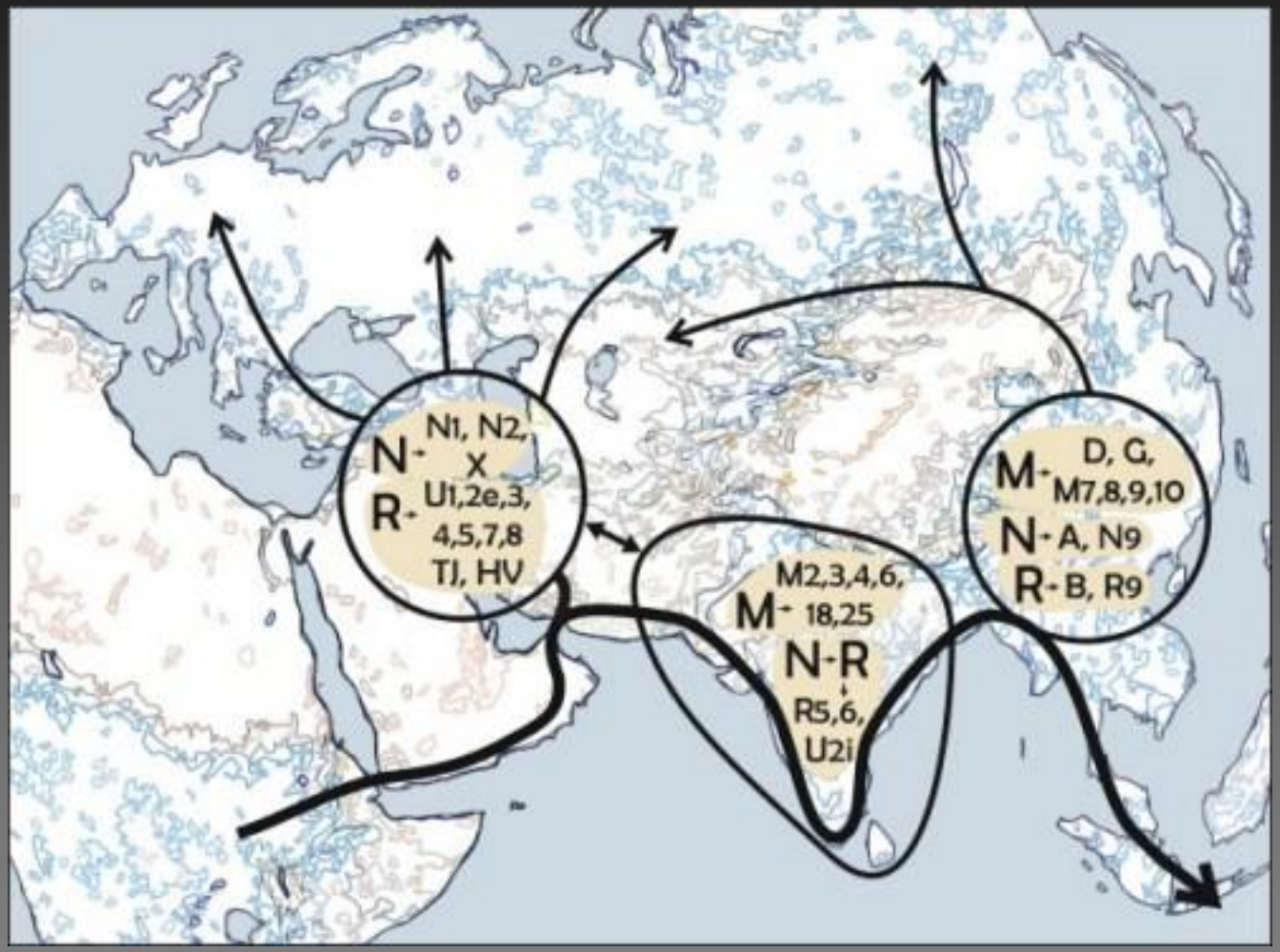


adapted from A. A. Sinitsyn

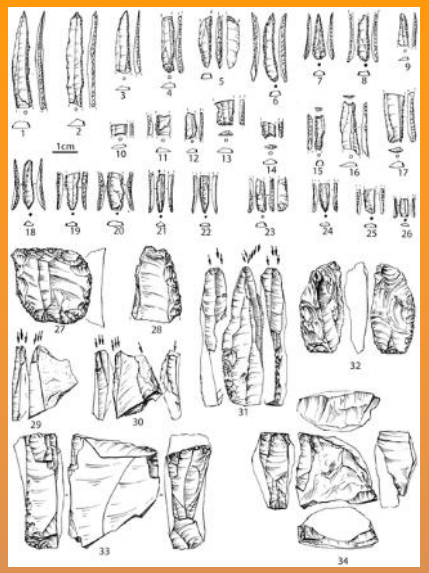
~44,000–42,000 cal BP

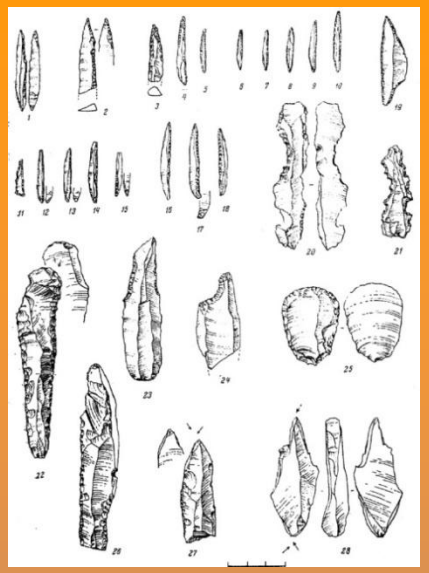

Proto-Aurignacian
42,000 cal BP
KOSTENKI
MEZMAISKAYA CAVE
ORTVALE KLDE
TEMNATA
CASTELCIVITA


Proto-Gravettian
42,000 cal BP
KOSTENKI
MEZMAISKAYA CAVE
ORTVALE KLDE
Proto-Aurignacian
42,000 cal BP
TEMNATA
CASTELCIVITA



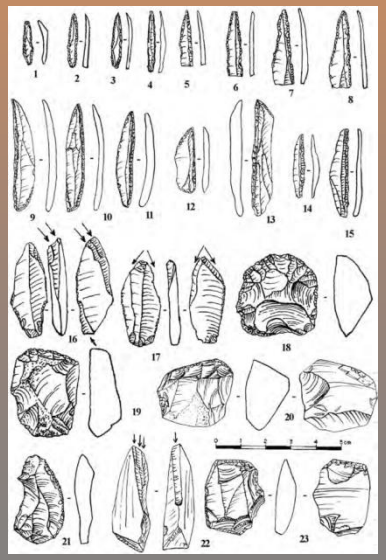
Source: Metspalu *et al.* (2004) *BMC Genetics* 2: 26 doi:10.1186/1471-2156-5-26

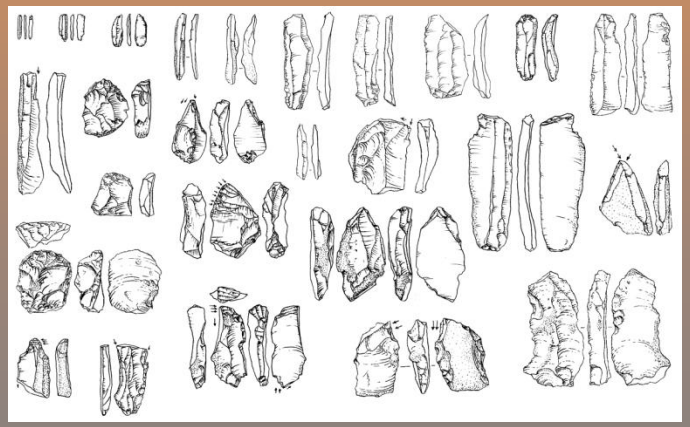




Early Gravettian

CI tephra — **40,000 cal BP**





Proto-Gravettian


Kostenki 1, Layer III
Kostenki 14, ash
Chulek I
Kamennomostskaya Cave
Syuren' I
Aurignacian sites in Eastern Europe: 40,000–30,000 cal BP
RUSSIA
KAZAKHSTAN
UKRAINE
BELARUS
TURKEY
IRAN
IRAQ
SYRIA
CHINA
Scale 1:20,700,000

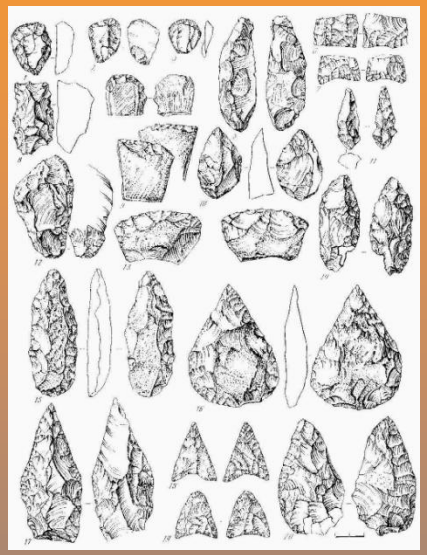
Landscape Archaeology of the East European Plain

Efimenko[1] proposed cultural stratigraphy for Kostenki-Borshchevo in 1928, using classificatory units defined in SW France

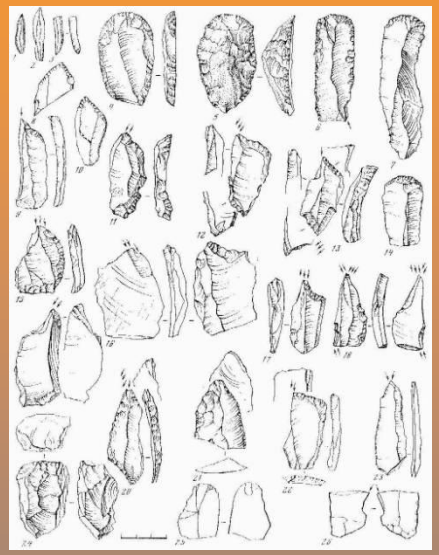
Site/Layer	Industry
Borshchevo 2, upper	Late Magdalenian
Borshchevo 2, lower	Middle Magdalenian
Kostenki 2/Kostenki 3	Early Magdalenian
Kostenki 1, Layer I	Early Solutrean
Borshchevo 1	Late Aurignacian

[1]Ефименко, П. П. (1928) Некоторые итоги изучения палеолита СССР. *Человек* 1: 52–56.

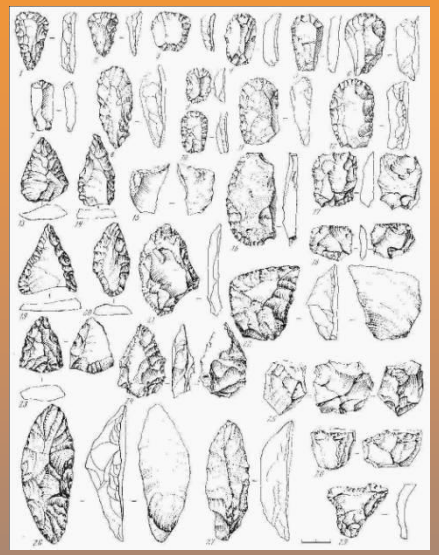
Rogachev and others subsequently defined local archaeological cultures at Kostenki-Borshchevo that were not recognized outside the central East European Plain . . .



streletskaya



spitsynskaya

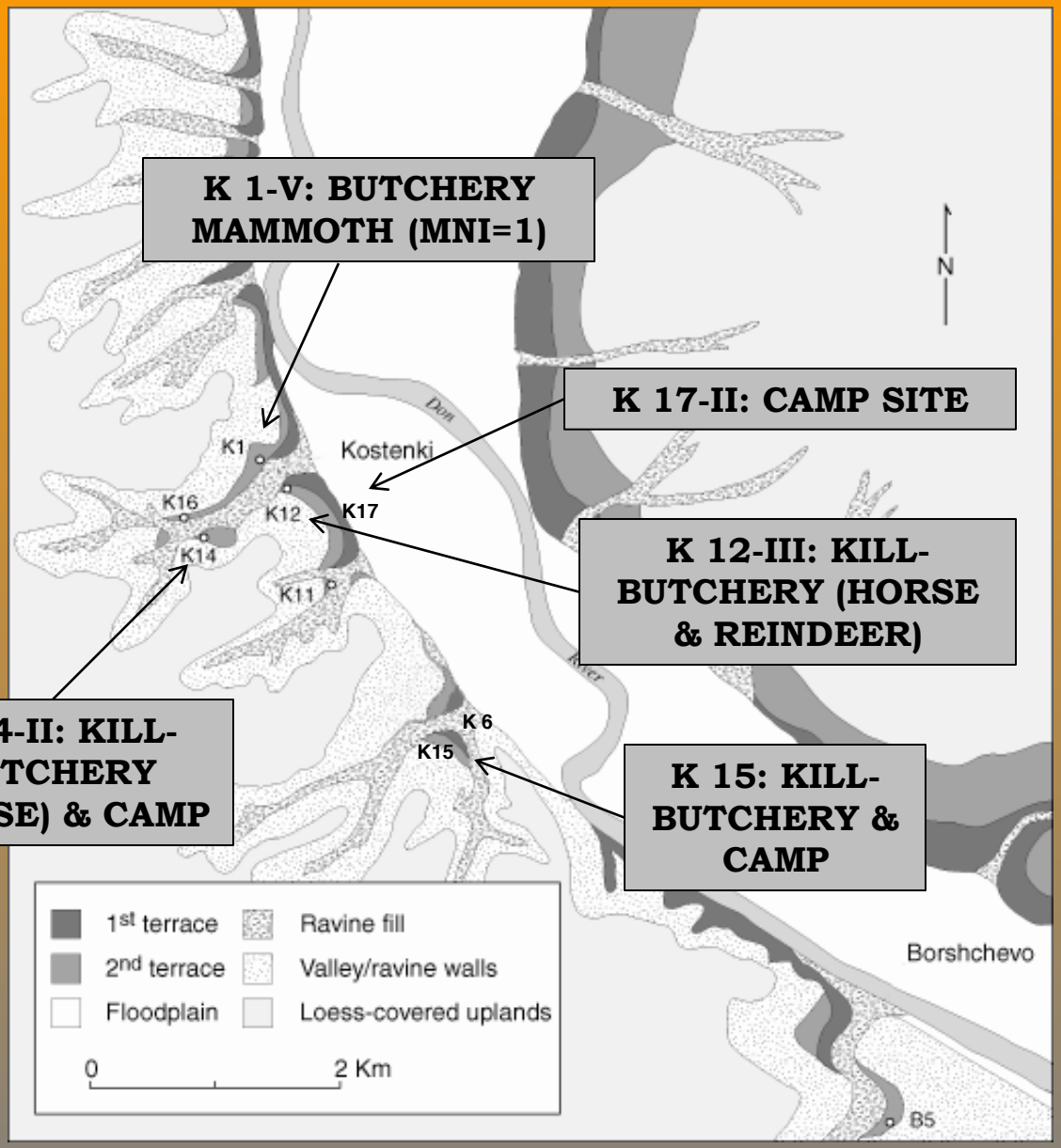


gorodtsovskaya

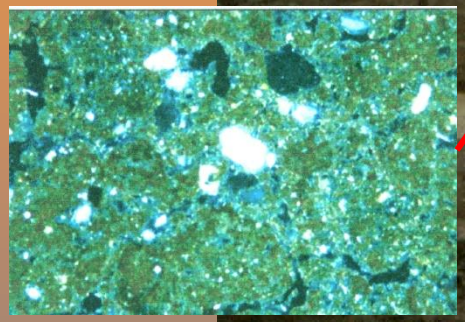

the landscape of the East European Plain differs significantly from that of SW France, and natural shelters are almost entirely absent on the central plain . . .

EUP sites on the East European Plain

Kostenki-Borshchevo contains an "EUP landscape" comprising various sites, including both habitation areas and functionally-specialized sites where large mammals were killed and/or butchered



CARBONATE LENS

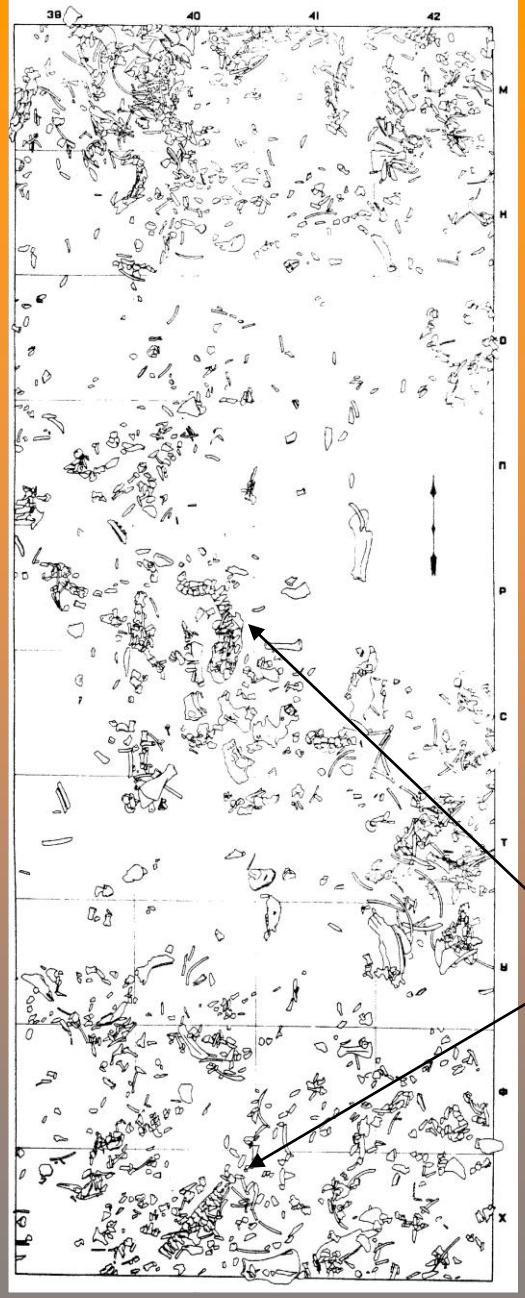


HUMIC LAYER

KOSTENKI 12

Soil micromorphology indicates spring activity associated with formation of the “humic beds” and EUP occupations (Holliday et al. 2007)

Kostenki 14 Layer II



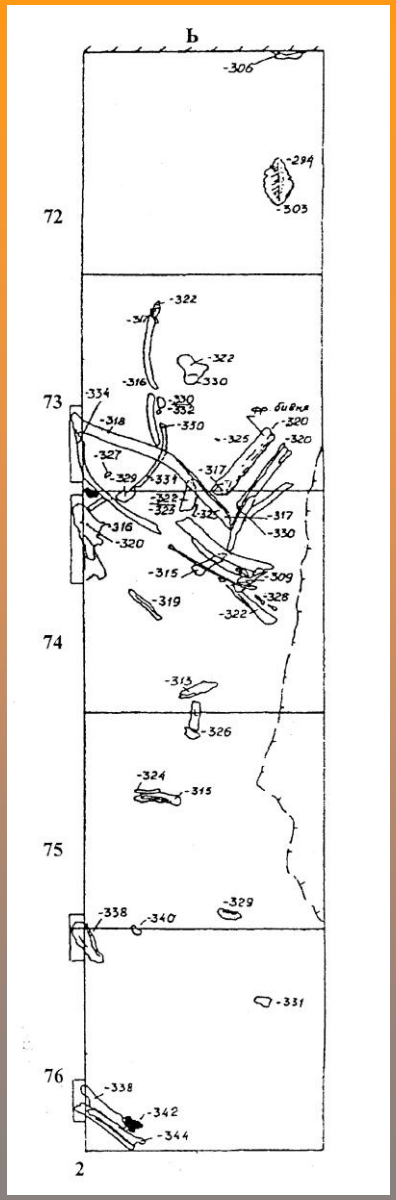
1954 excavations
A. N. Rogachev

- horse NISP = 1500
- all skeletal parts represented
- green breakage of long-bone shafts
- percussion marks on long-bone shafts
- cut marks on long-bones, ribs, other elements
- anatomical groups of foot bones and vertebrae

Kostenki 1 Layer V

- mammoth NISP = 517
- MNI = 1 adult mammoth
- most skeletal elements represented
- cut/gouge marks on some bones

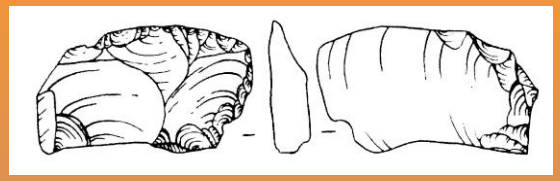
ulna with cut-marks

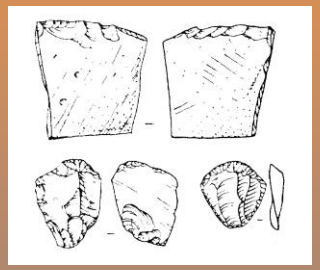


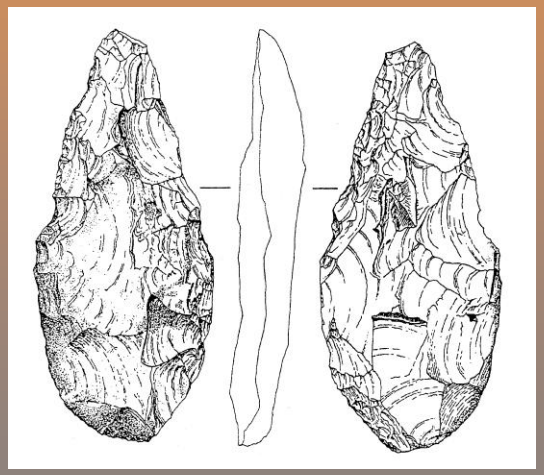
2004 trench

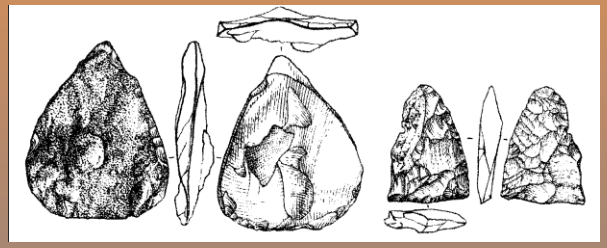
artifacts associated with evidence for large mammal kill-butchery at Kostenki

Kostenki 1 Layer V





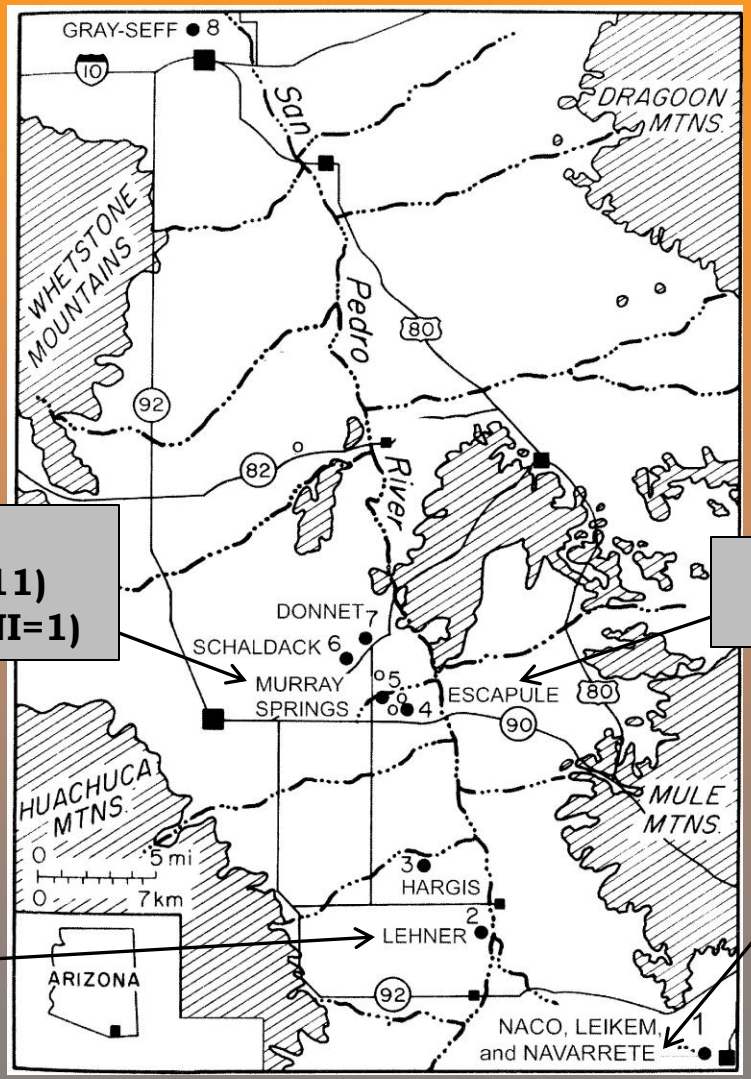




Kostenki 12 Layer III

Kostenki 14 Layer II

the “Clovis landscape” in the San Pedro Valley (SE Arizona) provides an analog to the EUP landscape at Kostenki . . .



CAMP SITE
BISON KILL (MNI=11)
MAMMOTH KILL (MNI=1)

KILL?
MAMMOTH (MNI=1)

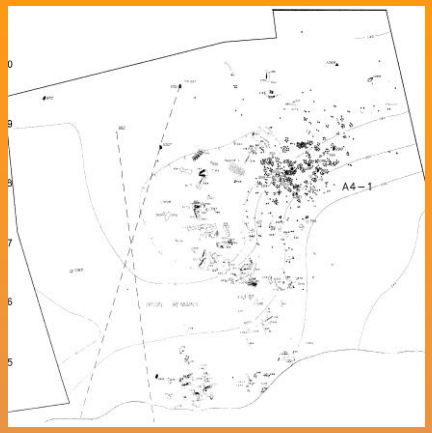
KILL-BUTCHERY
MAMMOTHS (MNI=13)

KILL-BUTCHERY?
MAMMOTHS (MNI=2)

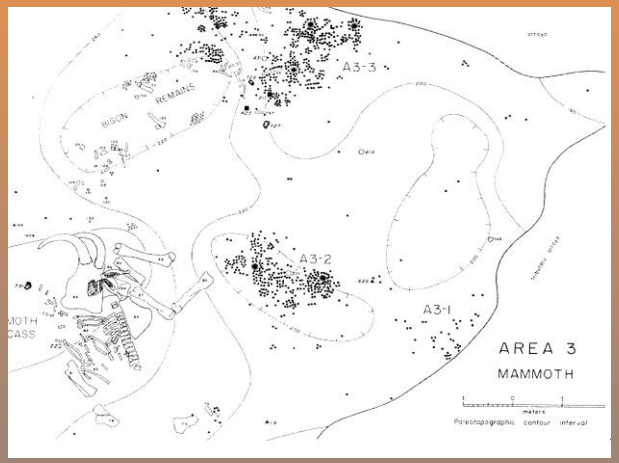
Haynes (2007:3)

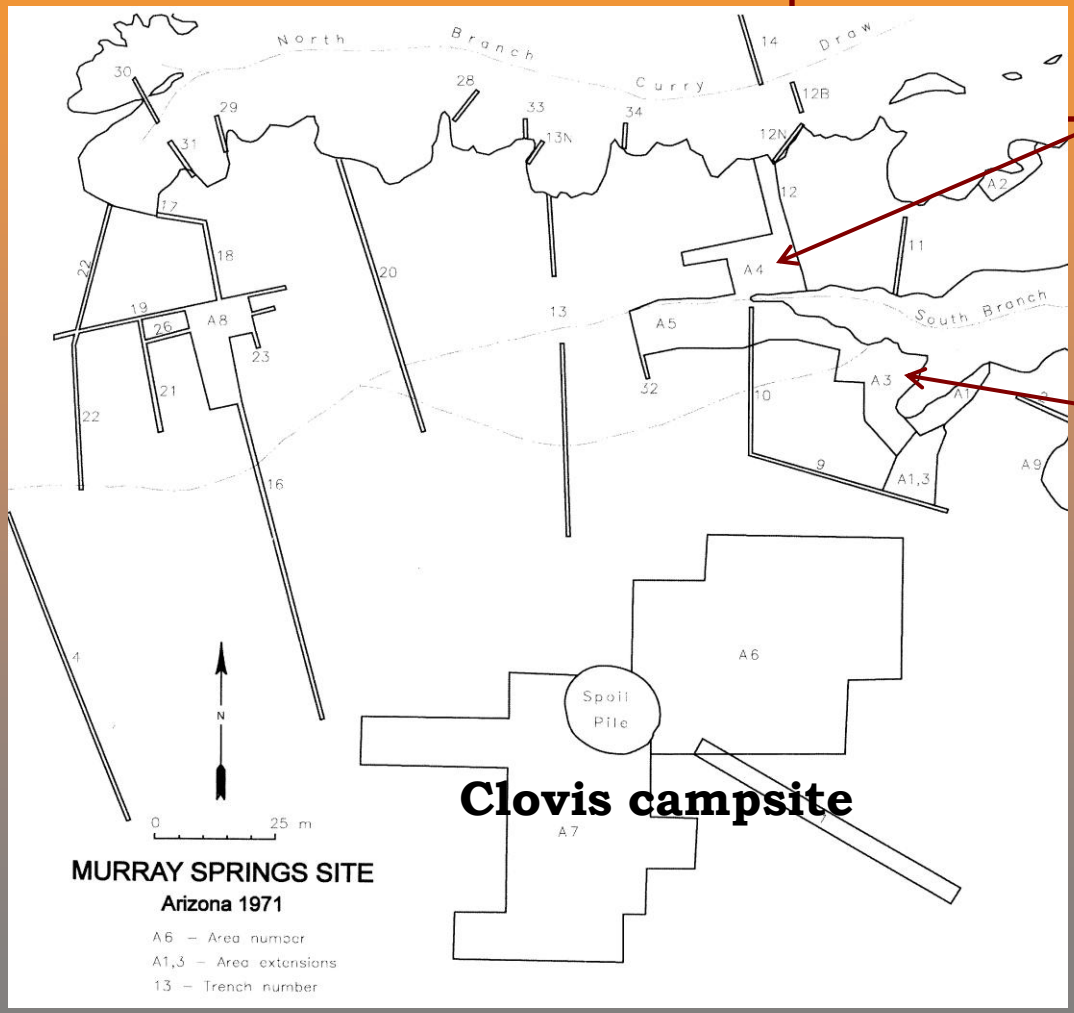
at Murray Springs, kill-butchery locations are situated near a campsite

multiple bison kill-butchery location

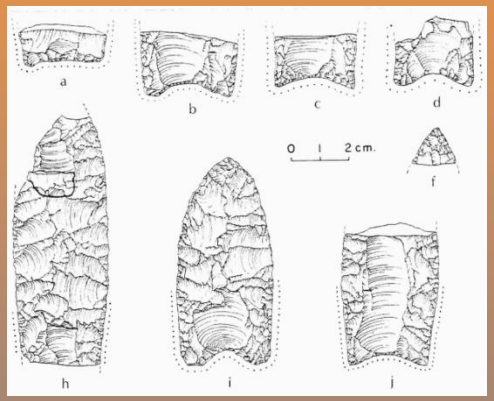


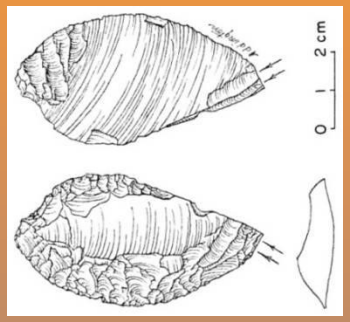
mammoth butchery location

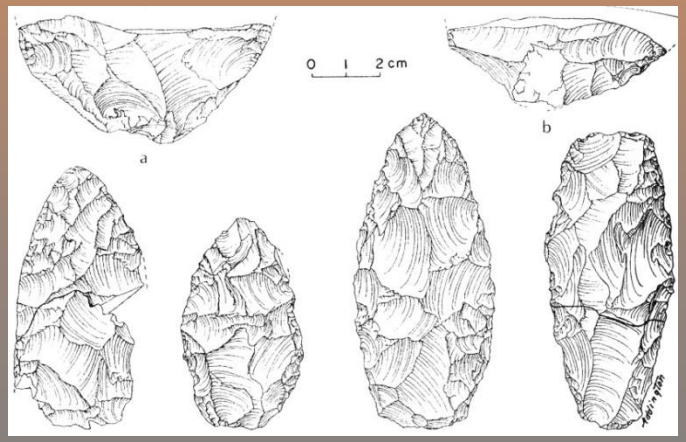




Murray Springs contains the same types of tools found in association with large-mammal butchery at Kostenki . . .

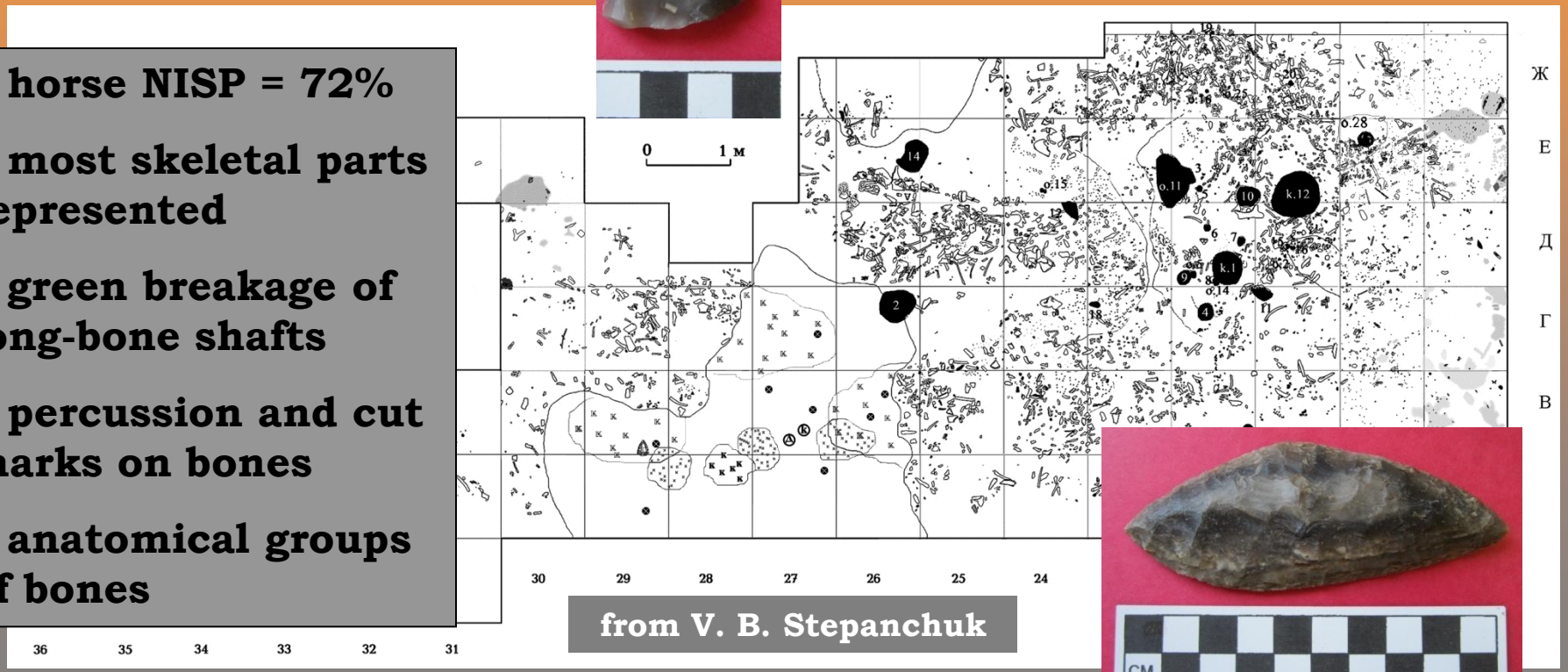






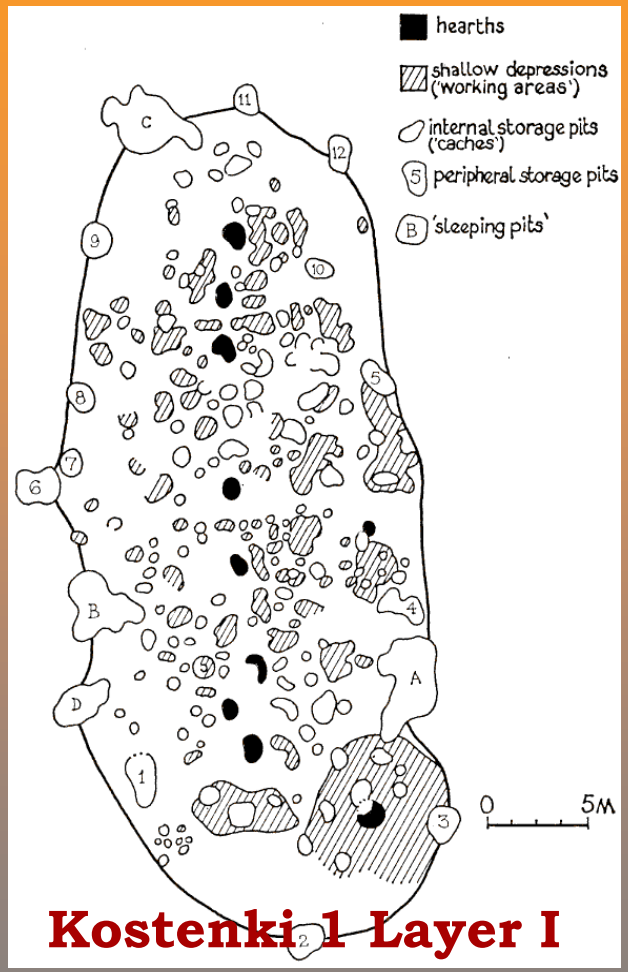
the pattern observed at Kostenki is also evident at other EUP sites on the East European Plain, such as Mira, Layer I

- **horse NISP = 72%**
- **most skeletal parts represented**
- **green breakage of long-bone shafts**
- **percussion and cut marks on bones**
- **anatomical groups of bones**

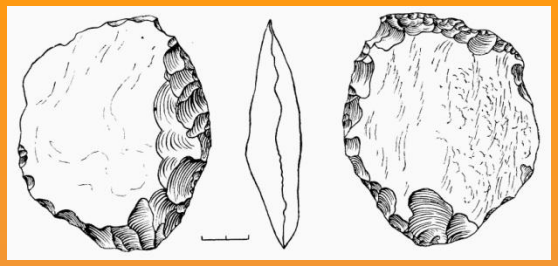


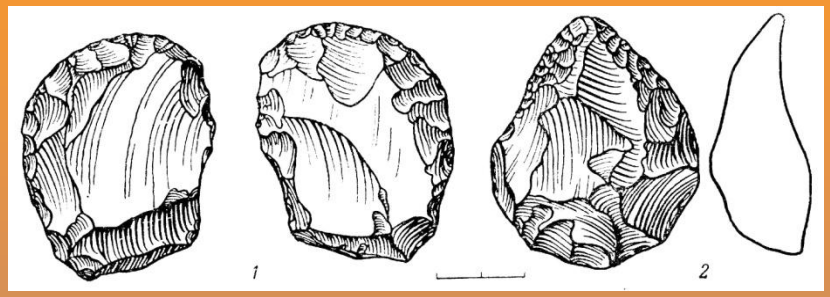
from V. B. Stepanchuk

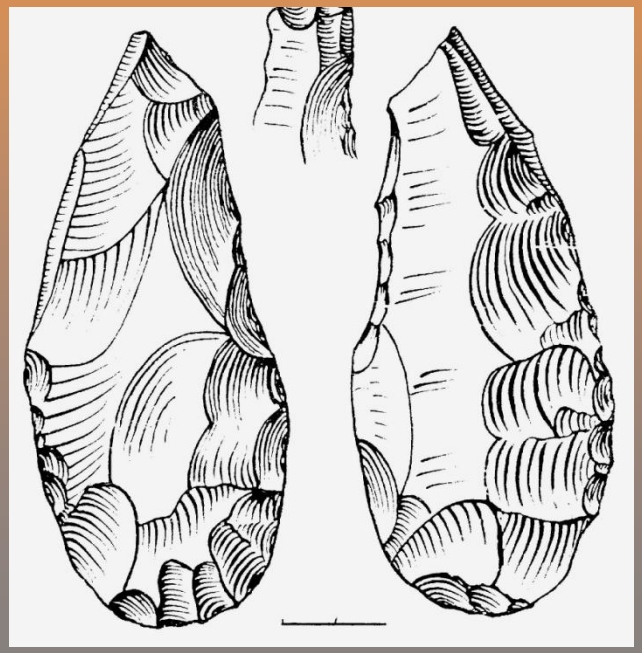
“archaic” or “Mousteroid” forms also found in later UP sites



Kostenki 1 Layer I



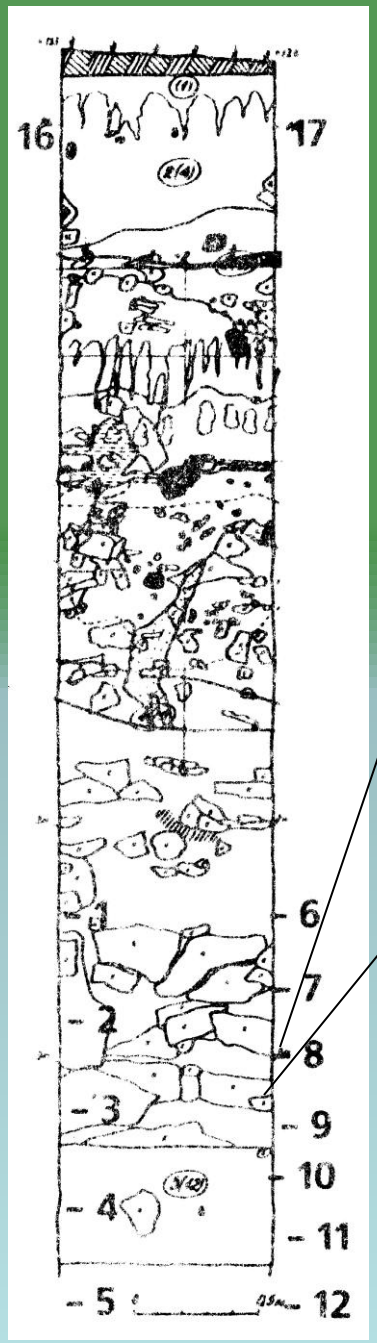




Efimenko 1958

The problem of the Initial Upper Paleolithic of Eastern Europe


Kulychivka
Zvanovka
Shlyakh
Molodova 5
Korman' 4
Initial Upper Paleolithic sites of Eastern Europe?
RUSSIA
UKRAINE
KAZAKHSTAN
TURKEY
IRAN
IRAQ
SYRIA
CHINA
FINLAND
SWEDEN
POLAND
ROMANIA
MOLDOVA
BELARUS
LATVIA
ESTONIA
LITHUANIA
Black Sea
Caspian Sea
Aral Sea
CAUCASUS MTS.
CARPATHIAN MTS.
URAL MOUNTAINS
CASPIAN DEPRESSION
USTYURT PLATEAU
QIZILQUM
TORGHAY ÜSTIRTI
BETPAQDALA
Moscow
Kiev
Minsk
Warsaw
Bucharest
Ankara
Tehrān
Baghdad
Astana
Tashkent
Bishkek
Almaty
Yekaterinburg
Volgograd
Rostov
Astrakhan
Baku
Yerevan
Tbilisi
Gora El'brus
(highest point in Europe, 5633 m)
Caspian Sea
(lowest point in Europe, -28m)



Shlyakh Layer 8 contains an industry similar to the Emiran and dating to ~45,000 cal BP

45,700±3000 (OxA-8307)
46,300±3100 (OxA-8306)

from Nekhoroshev 1999: 143, fig.21

A new framework for the Upper Paleolithic of Eastern Europe

Years cal BP	INDUSTRY	Caucasus Mountains	Crimea	Southwest Plain	Central Plain	
20,000 – 12,000 cal BP	Epi-Gravettian					
30,000 – 20,000 cal BP	Late Gravettian (formerly "Eastern Gravettian")			Molodova 5-VII	Kostenki 1-I Avdeevo Zaraisk	LGM
40,000 – 30,000 cal BP	Early Gravettian / Eastern Aurignacian?		Syuren' 1-G/F Buran-Kaya III	Molodova 5-X	Kostenki 8-II Kostenki 1-III Mira II/2 Shlyakh-6	CI tephra
42,000 – 40,000 cal BP	Proto-Gravettian	Mezmaiskaya Cave-1C Ortvale Klde-4d			Kostenki 14-IVb Kostenki 17-II	
50,000 – 42,000 cal BP	Initial Upper Paleolithic	Monasheskaya Cave?	Shaitan-Koba? Kabazi II?	Kulychivka-III Molodova 5-XI? Molodova 1-IV?	Shlyakh-8	

Mikhail Vasilyevich Anikovich (1947–2012)