Università degli Studi di Ferrara

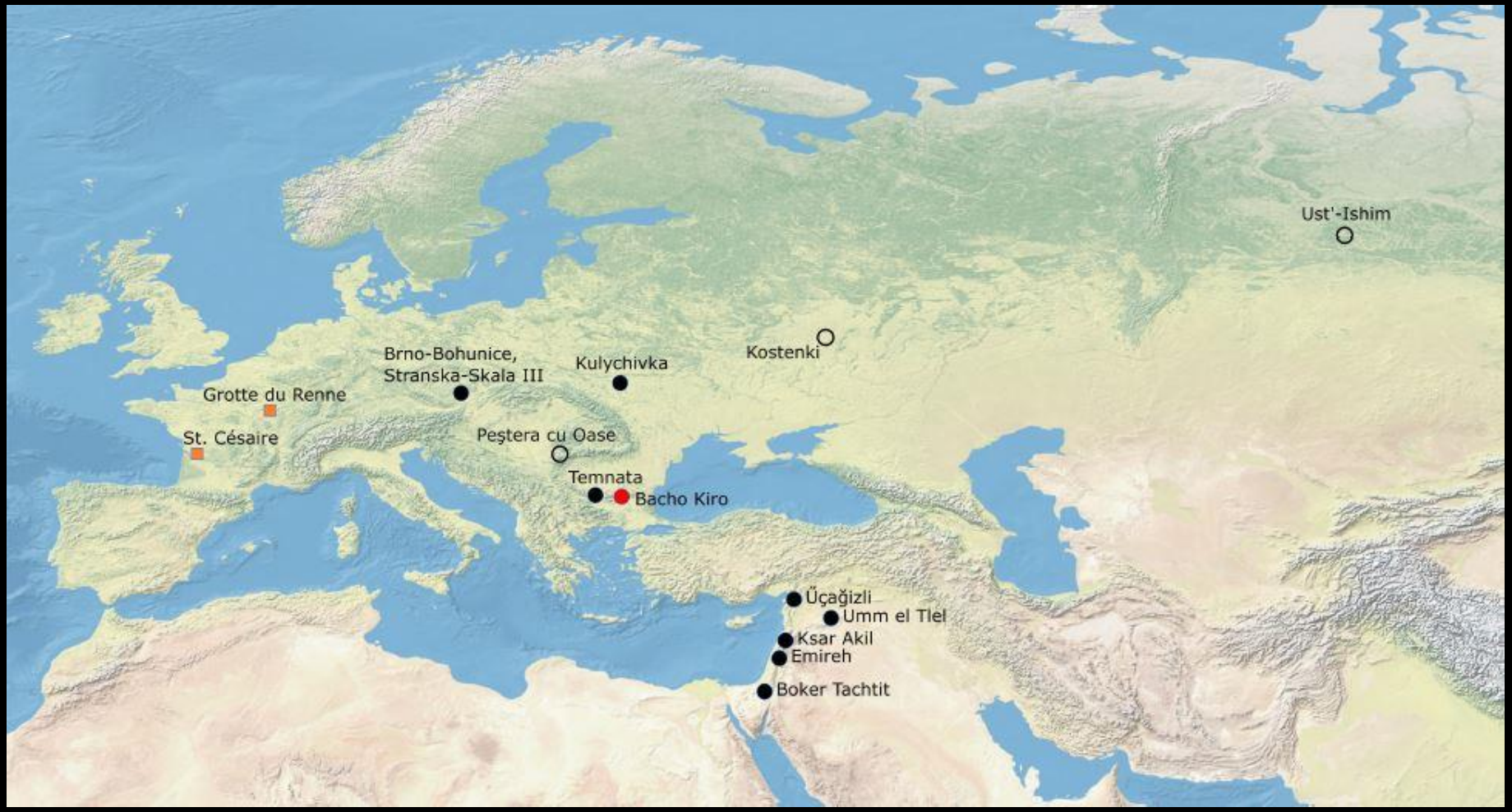
Marco Peresani

Cronologie e culture del Paleolitico
Lezione 11 – The extinction of Neanderthals

When did Neanderthals disappear?

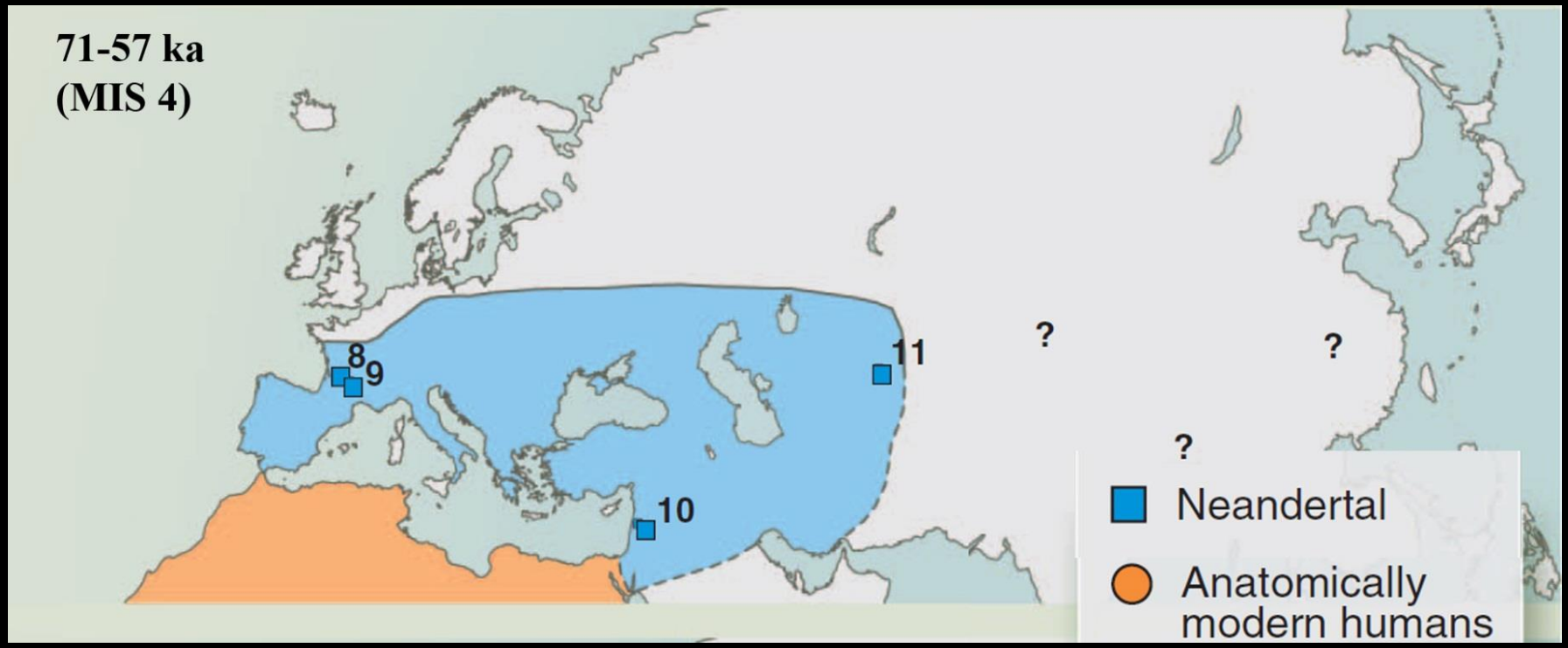
Kennis & Kennis

http://www.sci-news.com/genetics/science-neanderthals-interbred-eurasians-01837.html

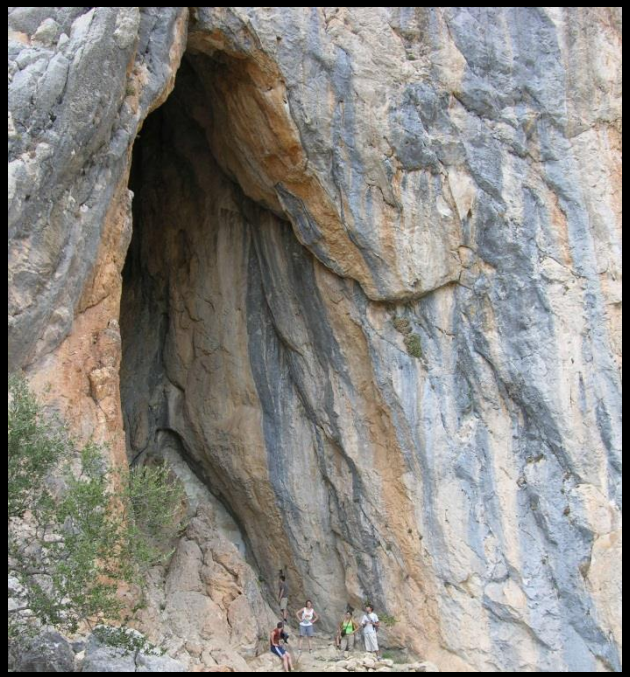


Geographical distribution of: the main Initial Upper Palaeolithic sites of western and central Eurasia (black dots); directly dated early H. sapiens predating 37,000 cal. bp (empty black dots); directly dated late Neanderthals associated with Châtelperronian assemblages (orange squares). Bacho Kiro Cave is represented by a red circle.

Marine Isotope Stage (MIS) 4, 71-57ka



Neanderthals of Zafarraya, Spain



Comparison of a single sample

OxA	Method	Date (BP)	C:N	%C	$\delta^{13}C$
8999	Filtered gelatin	33,300 ± 1,200	3.3	32.5	-18.9
23198	Ultrafiltration	> 46,700	3.3	44.5	-19.1
26440	Ultrafiltration	>46,700	3.2	44.0	-18.9
21810	Ultrafiltration	46,300 ± 2,500	3.3	44.6	-19.7
21813	Ultrafiltration	> 49,300	3.4	44.3	-18.9

55 Neanderthal and AMH bones
Radiocarbon ages of 33.4—28.9 ka BP on bones associated with lower Neanderthal group

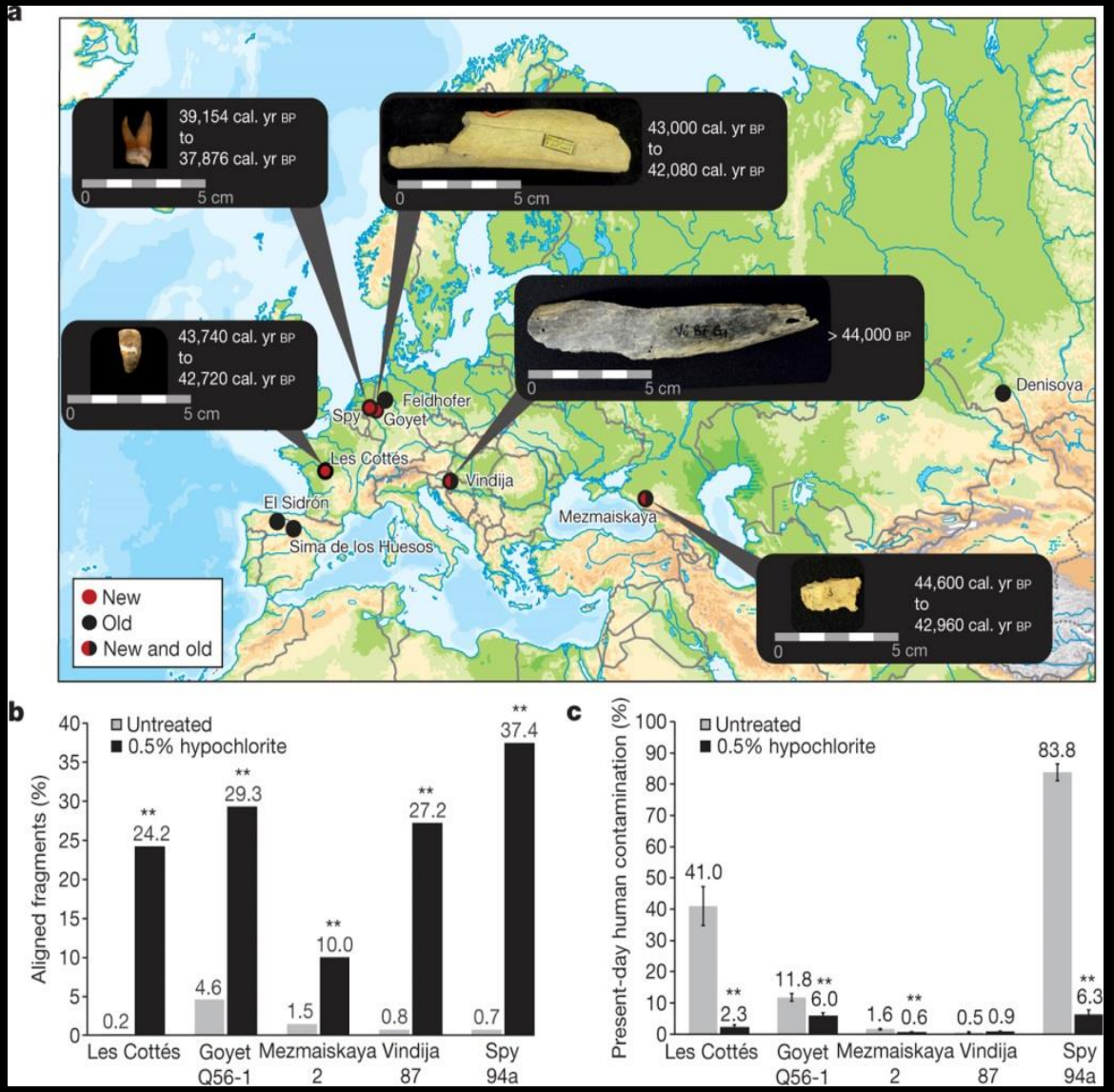
Wood et al. (2013) *PNAS*

Vindija Cave, Croatia

New dates / HYP dates

P Number	P Code	Used (mg)	CRA	±	OxA / OxA-X
Sample Vi-208 (SP3563)					
9663	AG	233.9	28,020	360	8295
9663	AG	229.9	29,200	360	2082-09
9663	AF	n/a	32,400	800	2089-06
41415	HYP	626.0	42,700	1,600	X-2689-09
Sample Vi-207 (SP3562)					
9665	AG	229.2	29,080	400	8296
9665	AG	128.8	29,100	360	2082-10
9665	AF	n/a	32,400	1,800	2089-07
41416	HYP	629.0	43,900	2,000	X-2689-10
Sample Vi-33.19 (SP2756)					
39039	AF	560	45,300	2,300	32278
39039	HYP	n/a	44,300	1,200	X-2717-11

Devièse *et al.*, 2017. *PNAS*

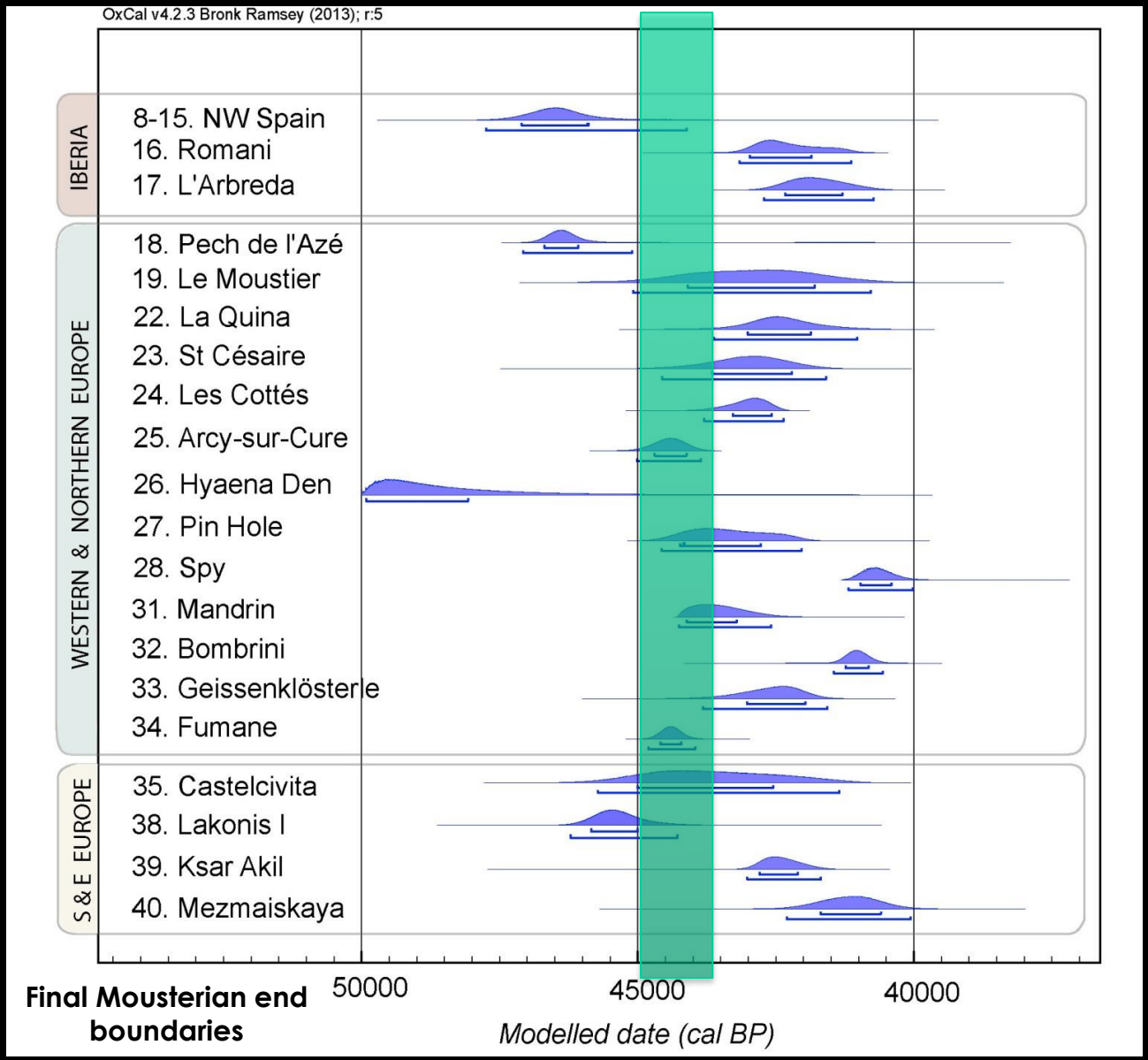


M Hajdinjak *et al.* *Nature* 1–5 (2018) doi:10.1038/nature26151

nature

When did Neanderthals disappear?

41,000-39,300 cal BP (at 95.4% probability)



Final Mousterian end boundaries

- Neanderthal sites in Europe end ~41,000-39,300 cal BP.
- Variability in the age of final Mousterian sites in Europe.
- Overlap in modern humans and Neanderthals for 2,600-5,400 years (95% prob.)

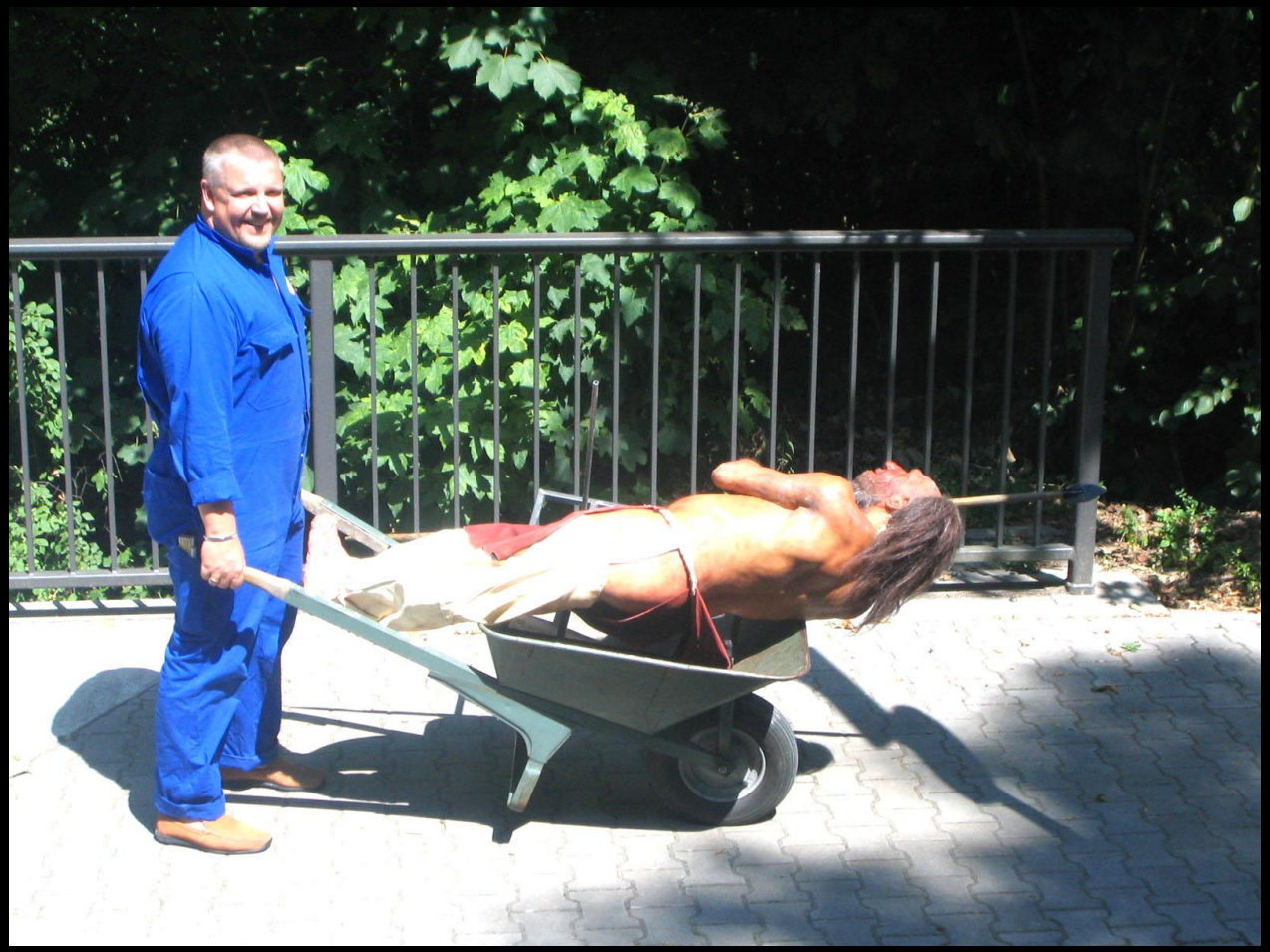
LETTER

doi:10.1038/nature13621

The timing and spatiotemporal patterning of Neanderthal disappearance

Tom Higham[1], Katerina Douka[1], Rachel Wood[1,2], Christopher Bronk Ramsey[1], Fiona Brock[1], Laura Basell[3], Marta Camps[4], Alvaro Arrizabalaga[5], Javier Baena[6], Cecillio Barroso-Ruíz[7], Christopher Bergman[8], Coralie Boitard[9], Paolo Boscato[10], Miguel Caparrós[11], Nicholas J. Conard[12,13], Christelle Draily[14], Alain Froment[15], Bertila Galván[16], Paolo Gambassini[10], Alejandro Garcia-Moreno[17,37], Stefano Grimaldi[18], Paul Haesaerts[19], Brigitte Holt[20], Maria-Jose Iriarte-Chiapusso[5], Arthur Jelinek[21], Jesús F. Jordá Pardo[22], José-Manuel Maíllo-Fernández[22], Anat Marom[1,23], Julià Maroto[24], Mario Menéndez[22], Laure Metz[25], Eugène Morin[26], Adriana Moroni[10], Fabio Negrino[27], Eleni Panagopoulou[28], Marco Peresani[29], Stéphane Pirson[30], Marco de la Rasilla[31], Julien Riel-Salvatore[32], Annamaria Ronchitelli[10], David Santamaria[31], Patrick Semal[33], Ludovic Slimak[25], Joaquim Soler[24], Narcís Soler[24], Aritza Villaluenga[17], Ron Pinhasi[34] & Roger Jacobi[35,36]‡

Is *Homo sapiens*: The cause of extinction of Neandertals ?



OPEN ACCESS Freely available online

PLOS ONE

Neandertal Demise: An Archaeological Analysis of the Modern Human Superiority Complex

Paola Villa[1,2,3]*, Wil Roebroeks[4]

Neandertals are the best-studied of all extinct hominins, with a rich fossil record sampling hundreds of individuals, roughly dating from between 300,000 and 40,000 years ago. Their distinct fossil remains have been retrieved from Portugal in the west to the Altai area in central Asia in the east and from below the waters of the North Sea in the north to a series of caves in Israel in the south. Having thrived in Eurasia for more than 250,000 years, Neandertals vanished from the record around 40,000 years ago, when modern humans entered Europe. Modern humans are usually seen as superior in a wide range of domains, including weaponry and subsistence strategies, which would have led to the demise of Neandertals. This systematic review of the archaeological records of Neandertals and their modern human contemporaries finds no support for such interpretations, as the Neandertal archaeological record is not different enough to explain the demise in terms of inferiority in archaeologically visible domains. Instead, current genetic data suggest that complex processes of interbreeding and assimilation may have been responsible for the disappearance of the specific Neandertal morphology from the fossil record.

«Linear» evolutionary model

Neandertals → **Mousterian Industry**

Homo s. sapiens → « Transitional industries » and Aurignacian

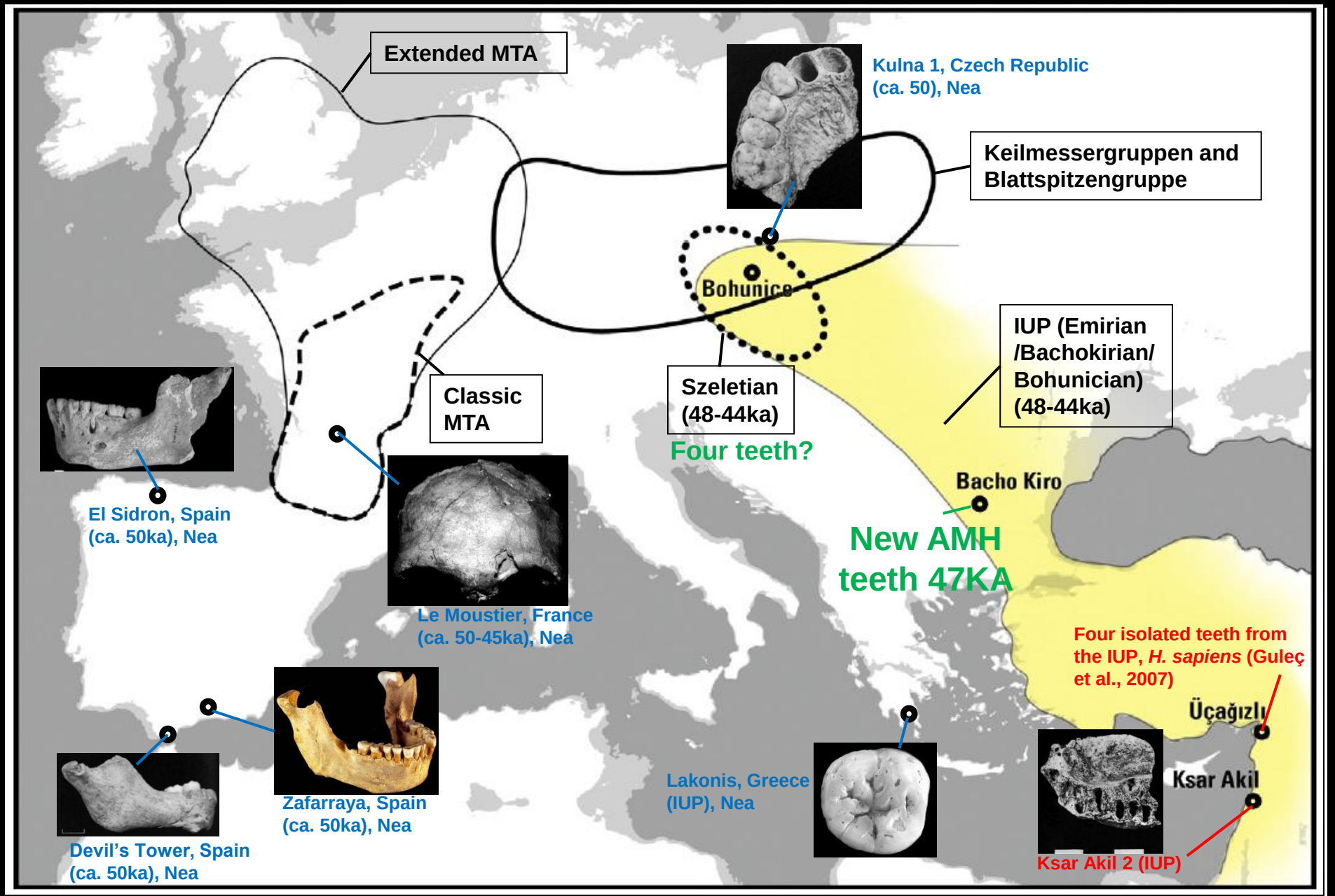
- Through new fossil discoveries (St Césaire)
- Through new fossil studies (Qafzeh fossils)
- Through new dating methods (TL, ESR, radiocarbon AMS)

«Complex» evolutionary model

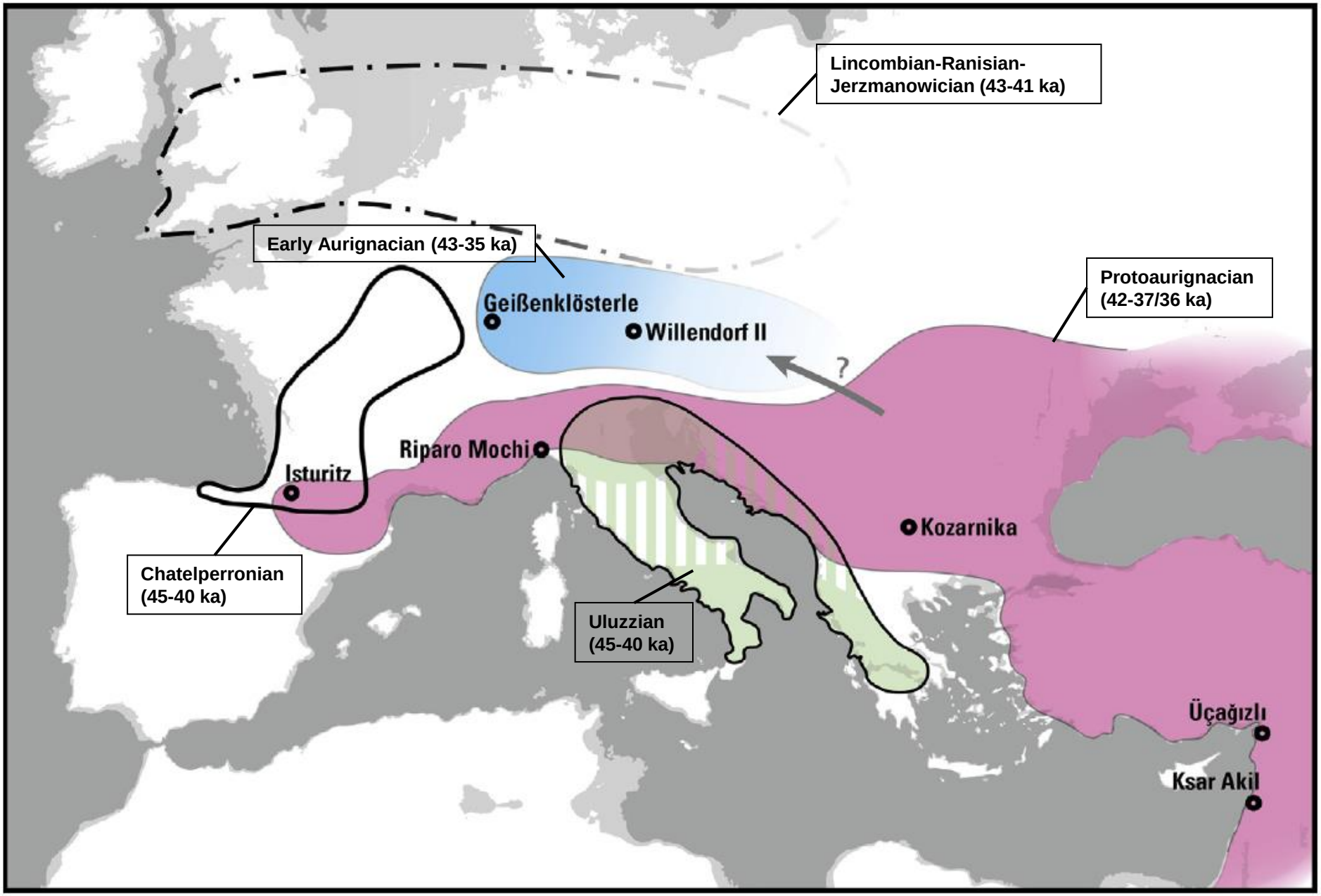
Neandertals → Mousterian and « Transitional industries » (Europe)

Homo s. sapiens → Mousterian (Levant) and Aurignacian Industry (Europe)

Between 50 and 45 ka cal BP



Between 45 and 40 ka cal BP

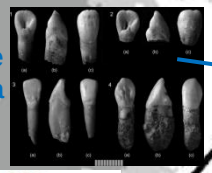


Between 45 and 40 ka cal BP

Kent's Cavern (44-41.5 ka) *H. sapiens*

Spy, Belgium (41 ka) Nea

Istállóskő Cave (Hungary), lower M1 (44-43 ka), *H. sapiens*



Arcy-sur-Cure (45-42 ka) Nea

Saint-Cesaire (42-40 ka) Nea

Geißenklösterle

Willendorf II

?

Oase, Romania (ca. 40 ka), *H. sapiens*

Riparo Mochi

Isturitz

Vindija,Croatia (39ka?), Nea

Kozarnika

Sima de las Palomas (43-40 ka) Nea

Six isolated teeth, Ahmarian, *H. sapiens* (Guleç et al., 2007)

Üçağızlı

Ksar Akil

Ksar Akil 1 (Ahmarian)

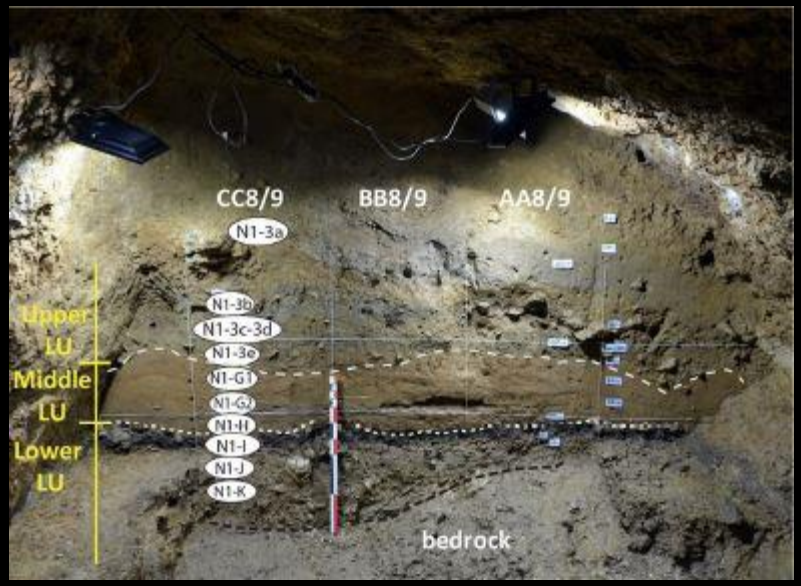
The Initial Upper Paleolithic (IUP)

The term Initial Upper Paleolithic (IUP) describes the earliest Upper Paleolithic assemblages characterized by forms of blade production that combines elements of Levallois method (faceted platforms, hard hammer percussion, flat-faced cores) with features more typical of Upper Paleolithic blade technologies.

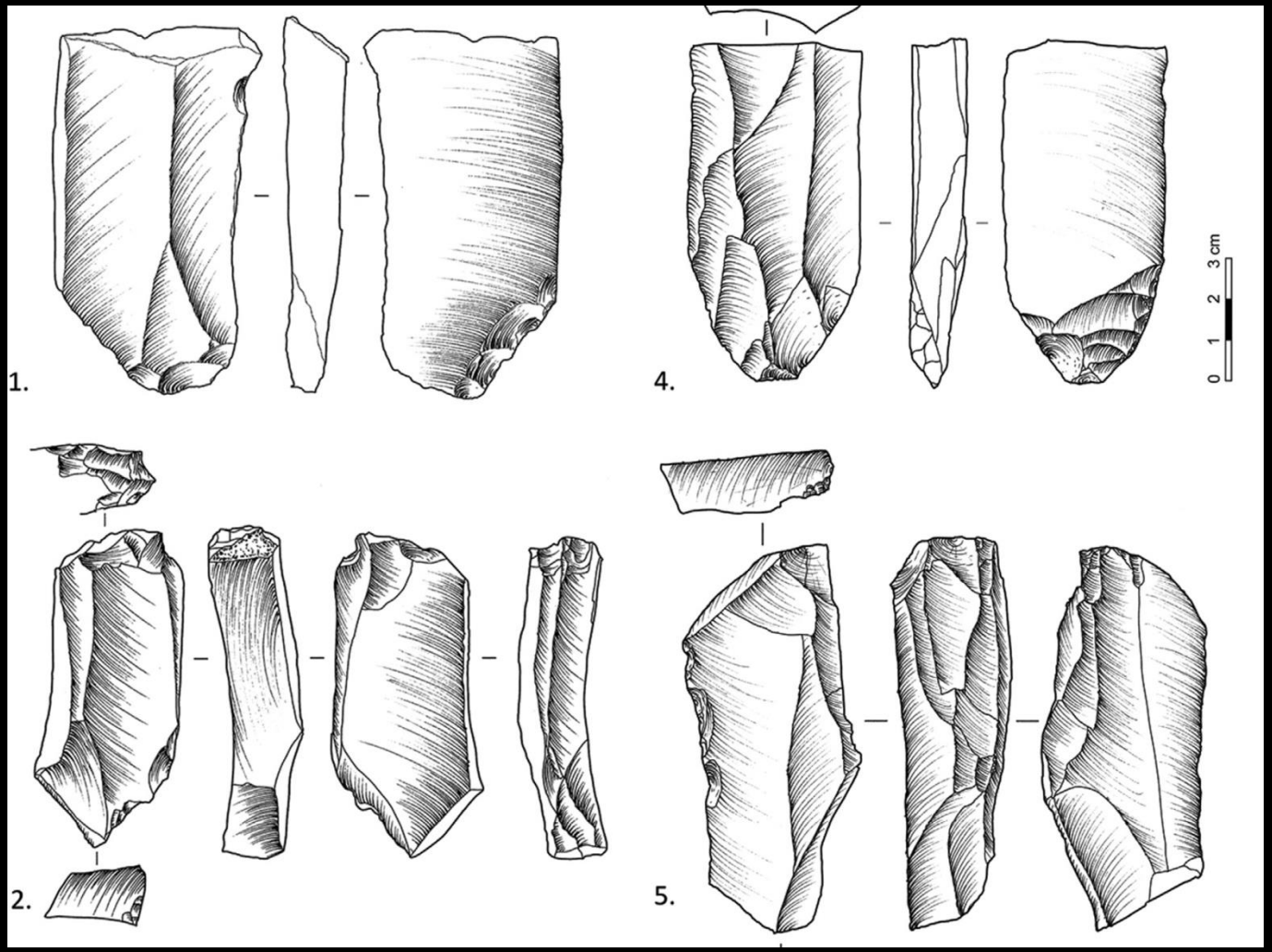
Hs tooth, 47ky cal BP

Article

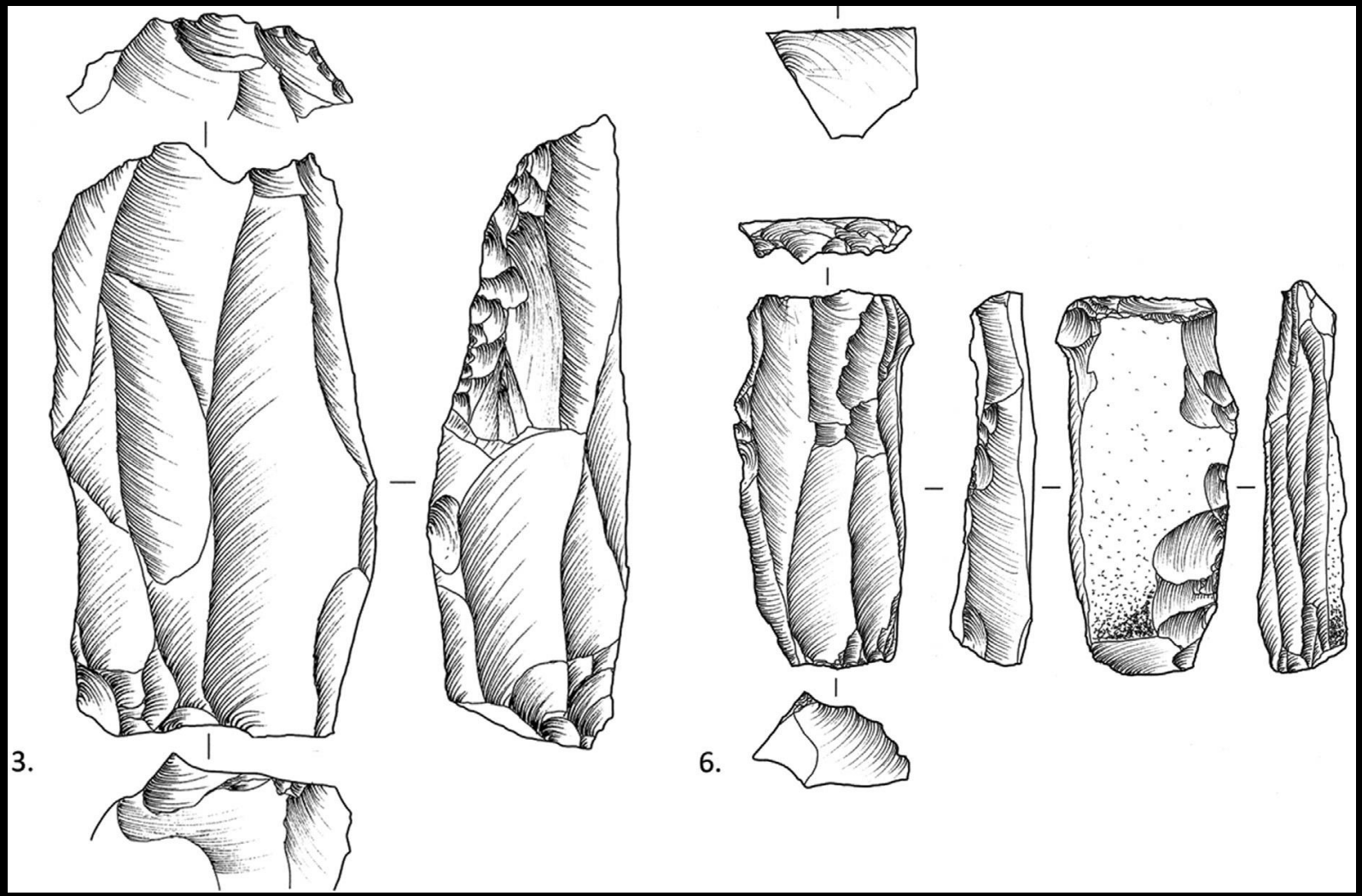
Initial Upper Palaeolithic *Homo sapiens* from Bacho Kiro Cave, Bulgaria



Global distribution of IUP sites. 1. Brno-Bohunice; 2. Str ansk a Sk ala III; 3. Bohunice-Kejbaly I, II; 4. Temnata; 5. Bacho-Kiro; 6. Kulychyvka; 7. Korolevo I, 2; 8. Shlyakh; 9. Haua Fteah; 10. Hagfet ed Dabba; 11. Üça gızlı; 12. Kanal Cave; 13. Umel'Tlel; 14. Jerf Ajlah; 15. Yabrud II; 16. Antelias; 17. Abou Halka; 18. Ksar Akil; 19. Emireh; 20. ElWad; 21. Raqefet; 22. Mughur al Hamamah; 23. Tor Sadaf; 24. Boker Tachtit; 25. Kara-Bom; 26. Ust-Karakol 1; 27. Kara-Tenesh; 28. Makarovo 4; 29. Kamenka A-C; 30. Khotyk; 31. Podzvonkaya; 32. Tolbor 4; 33. Tolbor 16; 34. Tsagan-Agui; 35. Shuidonggou 1; 36. Shuidonggou 2, 9

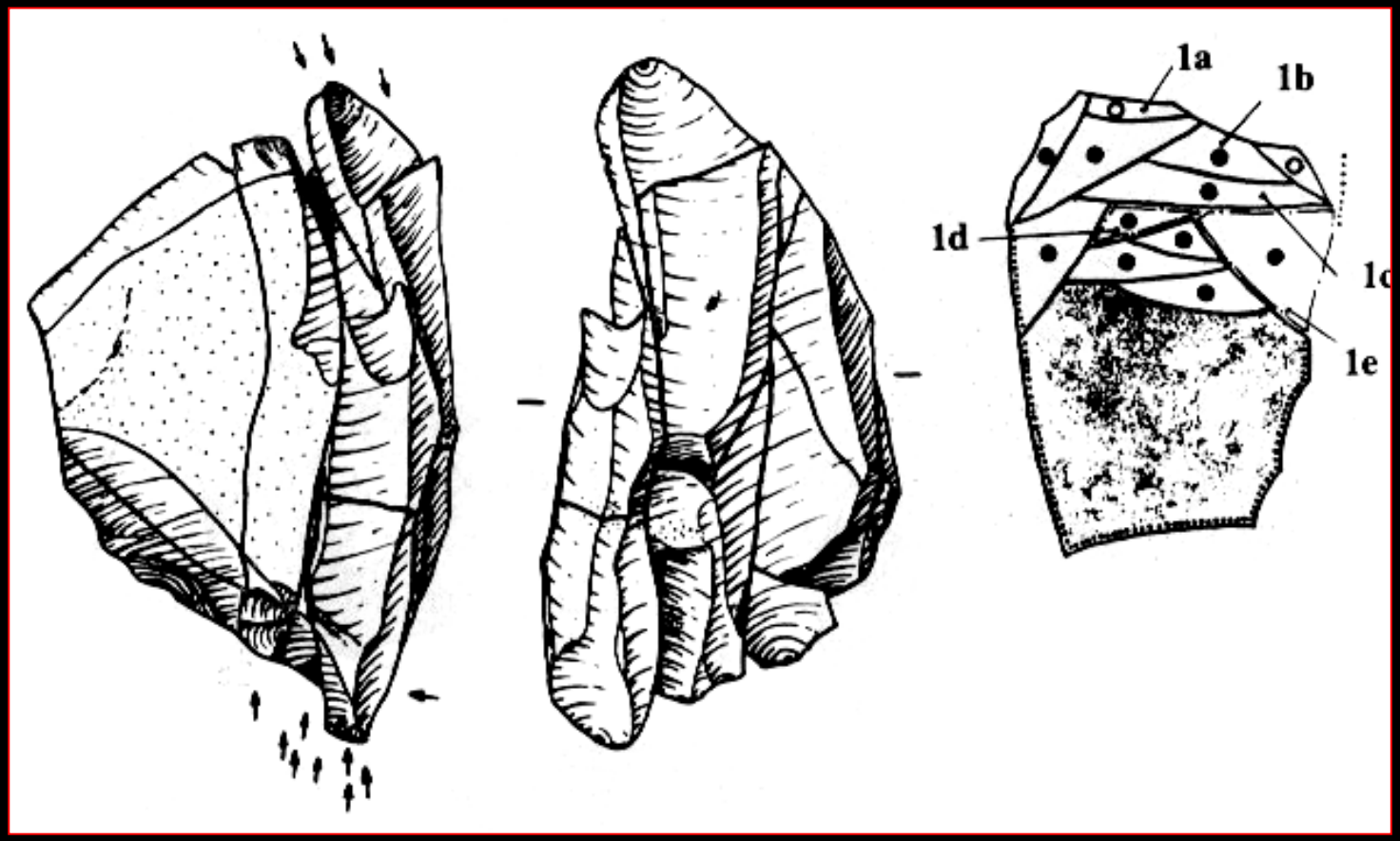


Artifacts from IUP sites in North Asia.

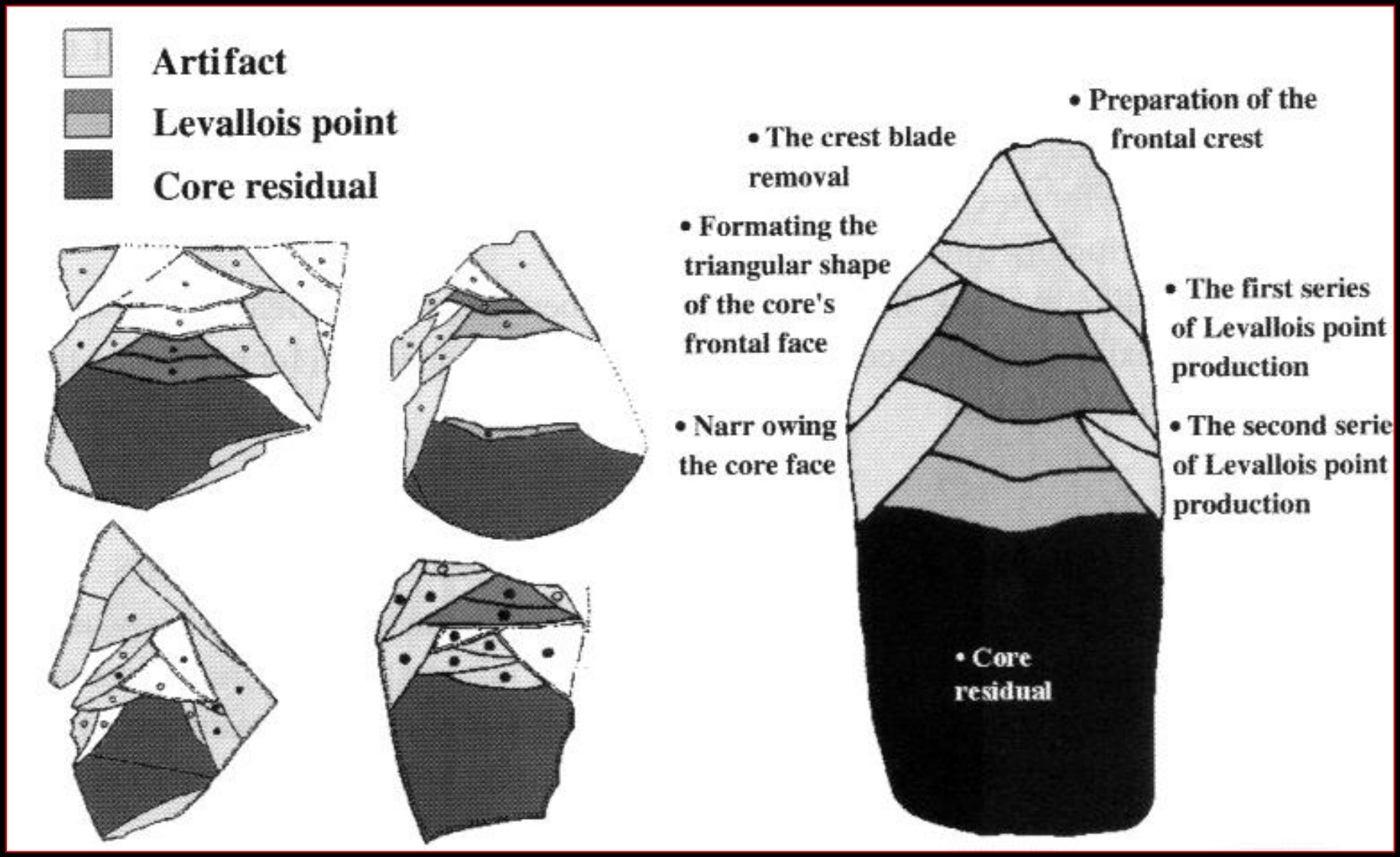


Artifacts from IUP sites in North Asia.

The Bohunician



Scheme of the Bohunician reduction strategy in cross-section. The Levallois artefacts are marked with a darker raster (Skrdla, 2003).

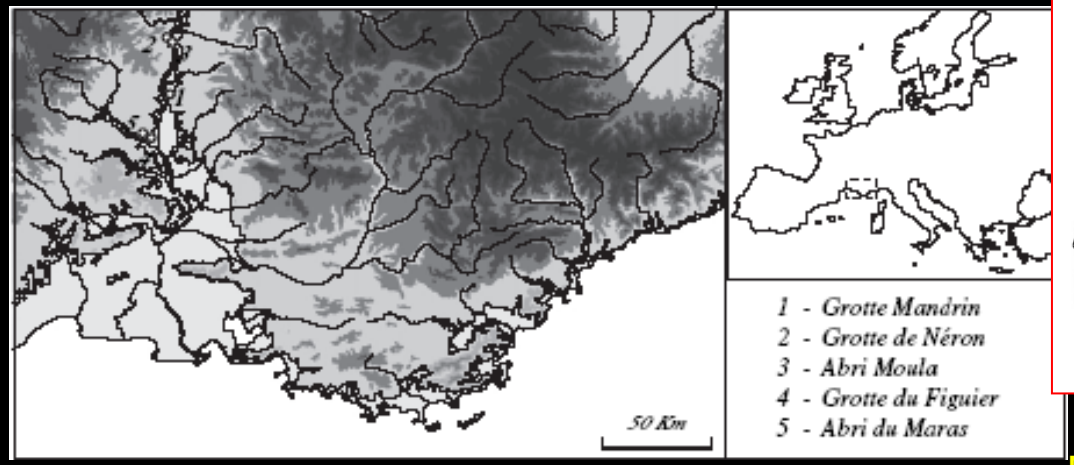


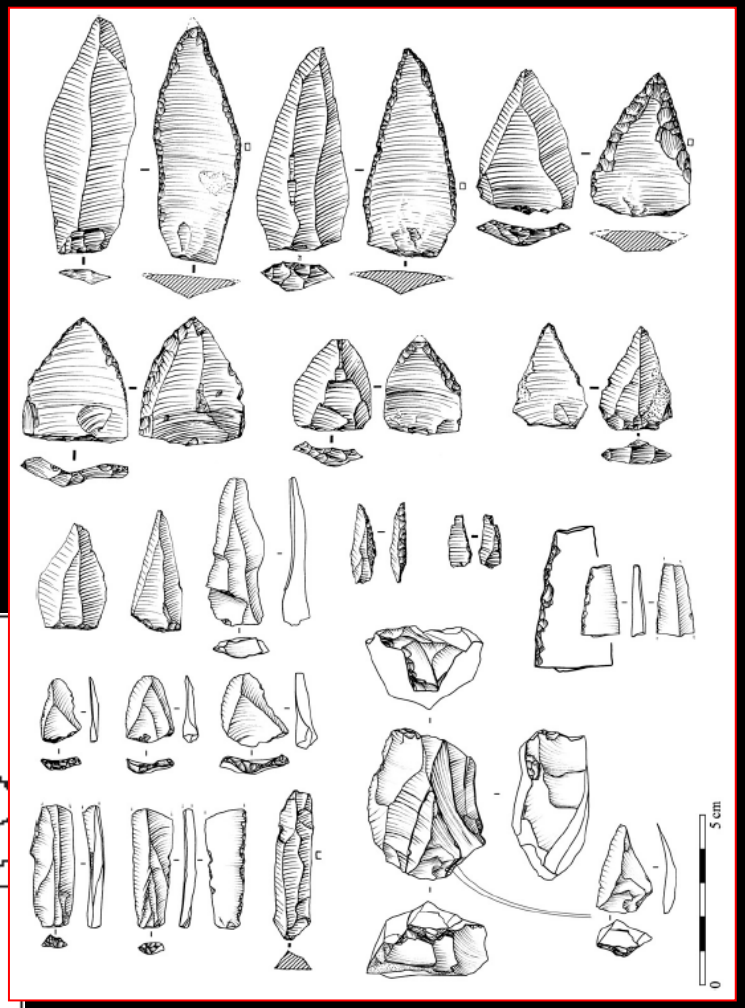
The Neronian and the historical structure of cultural shifts from Middle to Upper Palaeolithic in Mediterranean France

Ludovic Slimak

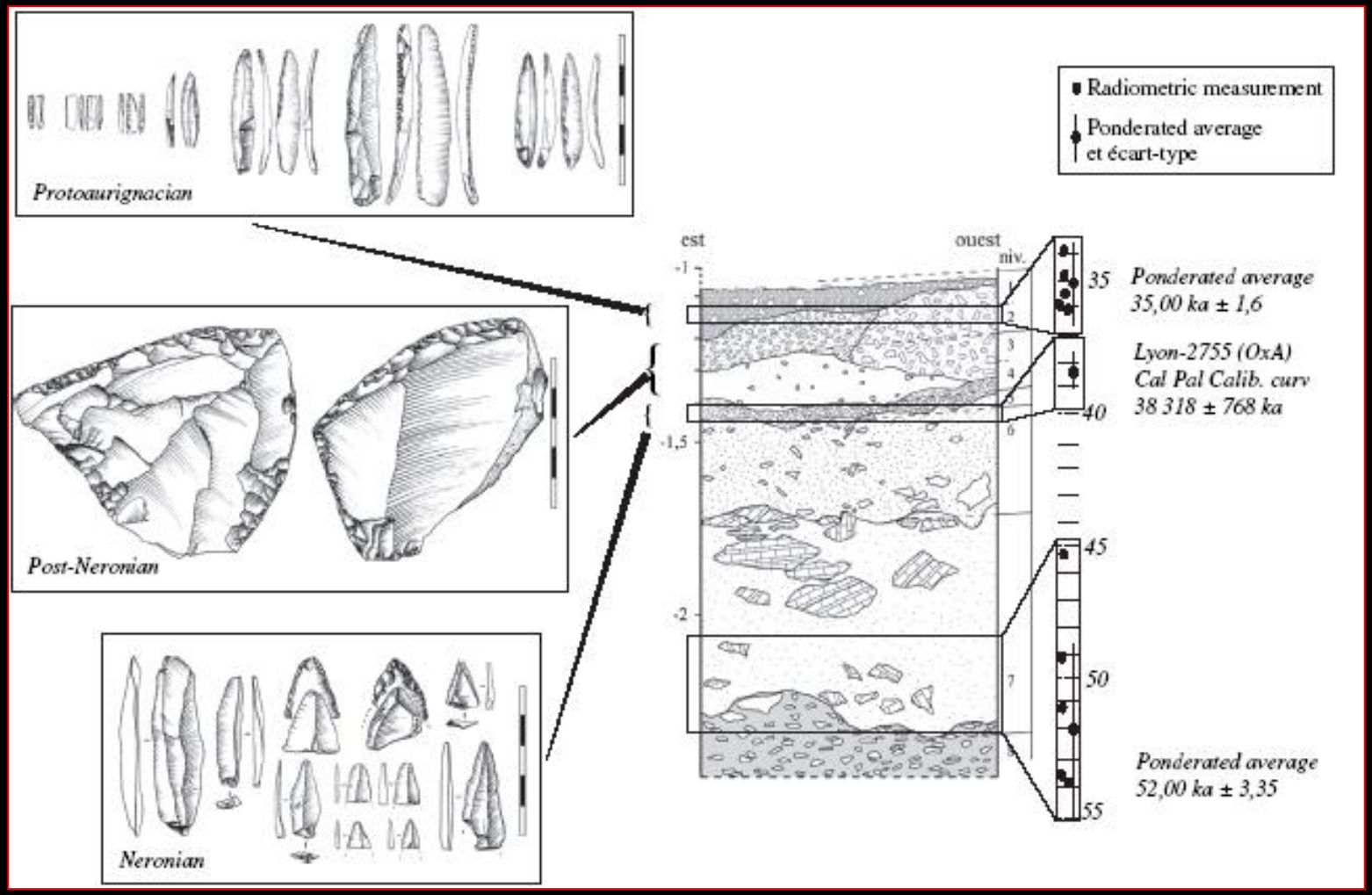
Journal of Archaeological Science 35 (2008)

The Neronian





Neronian from the Maras rock shelter.



The cultural sequence of Mandrin cave.

Gravettian

Aurignacian

Proto-Aurignacian

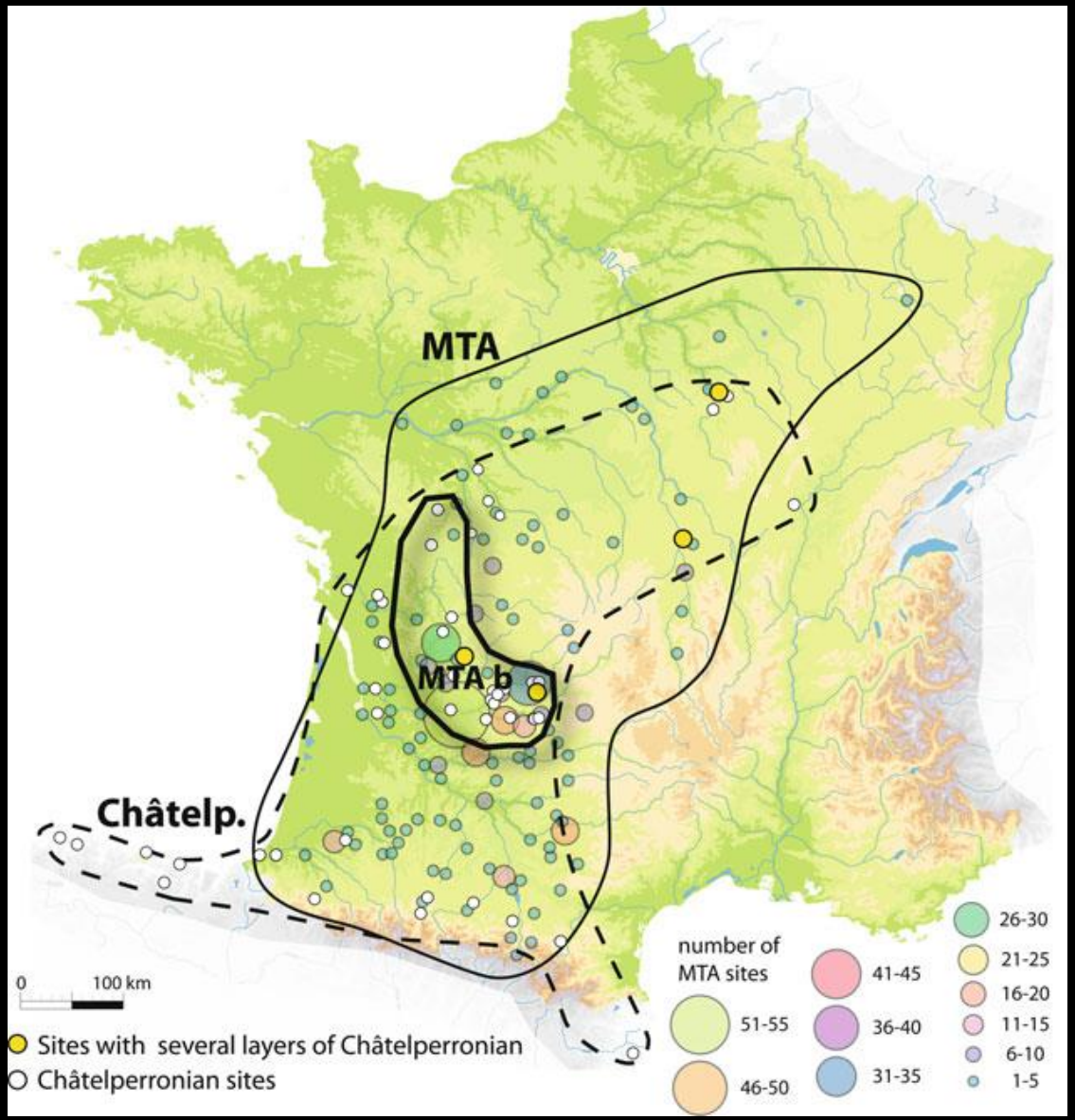
Castelperronian, Neronian, Uluzzian, Jerzmanovician, Bohunician, Szeletian, bladelets tecnocomplexes

Mousterian/Micocchian

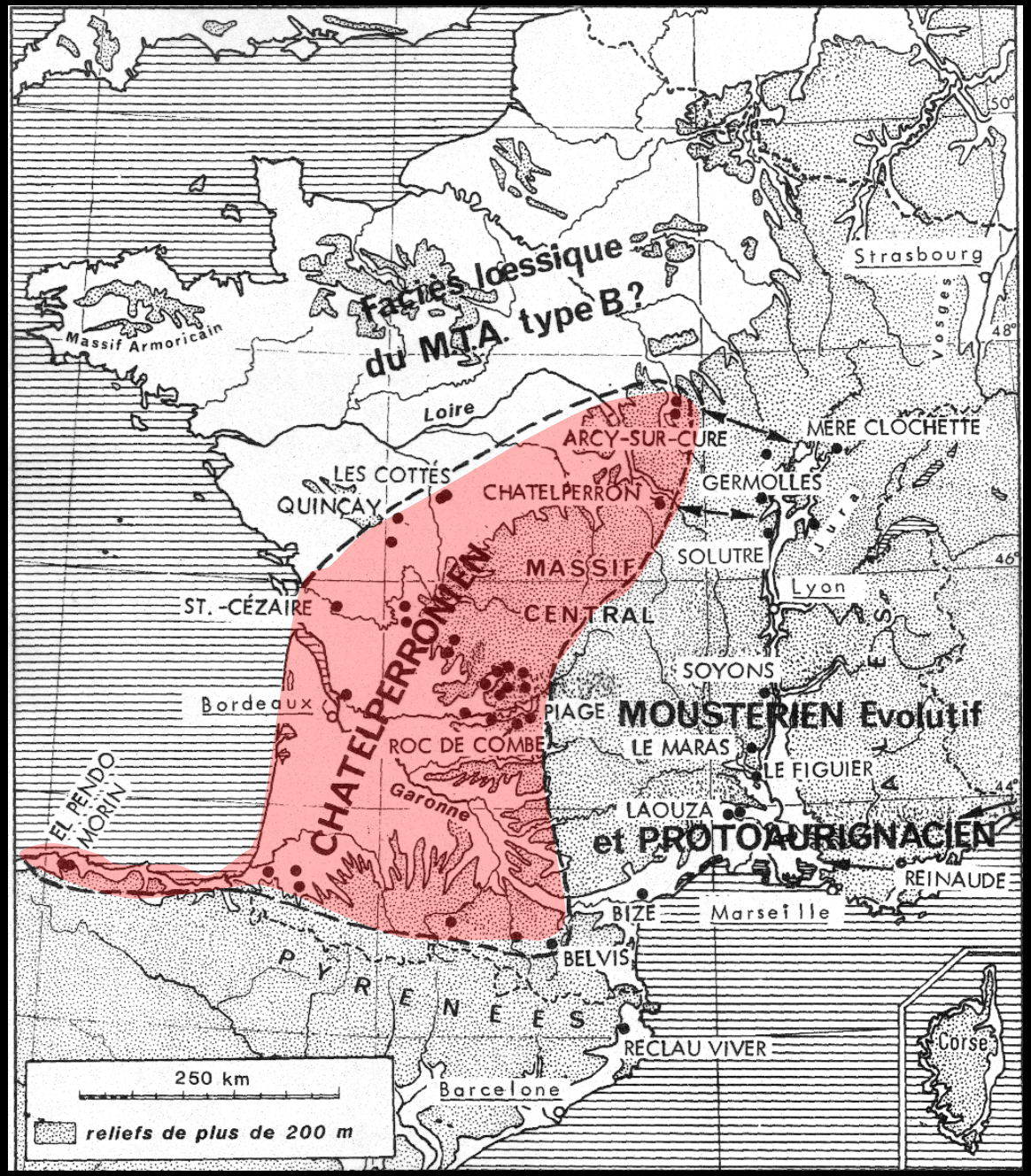
The Middle – Upper Palaeolithic transition and the levels of cultural diversity

Cultures of the last Neandertals?

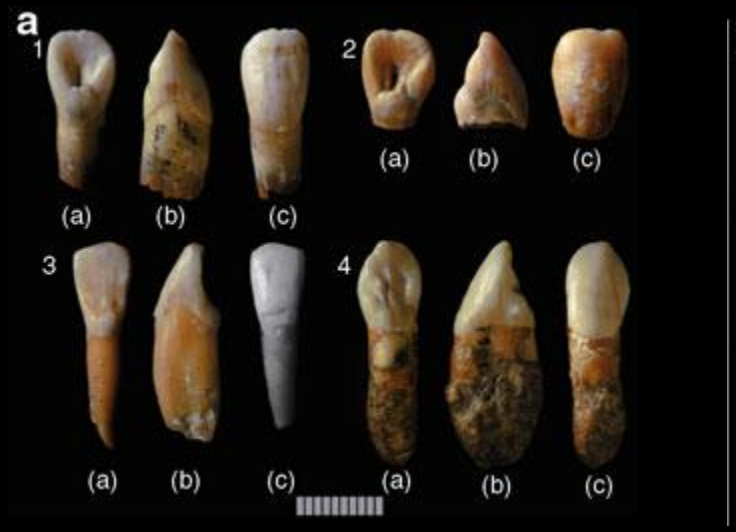
Complessi “di transizione”



Map of the distribution of the Mousterian of Acheulean Tradition (MTA; bolded line), the Mousterian of Acheulean Tradition type B (shaded line) and the Chatelperronian (dotted line)

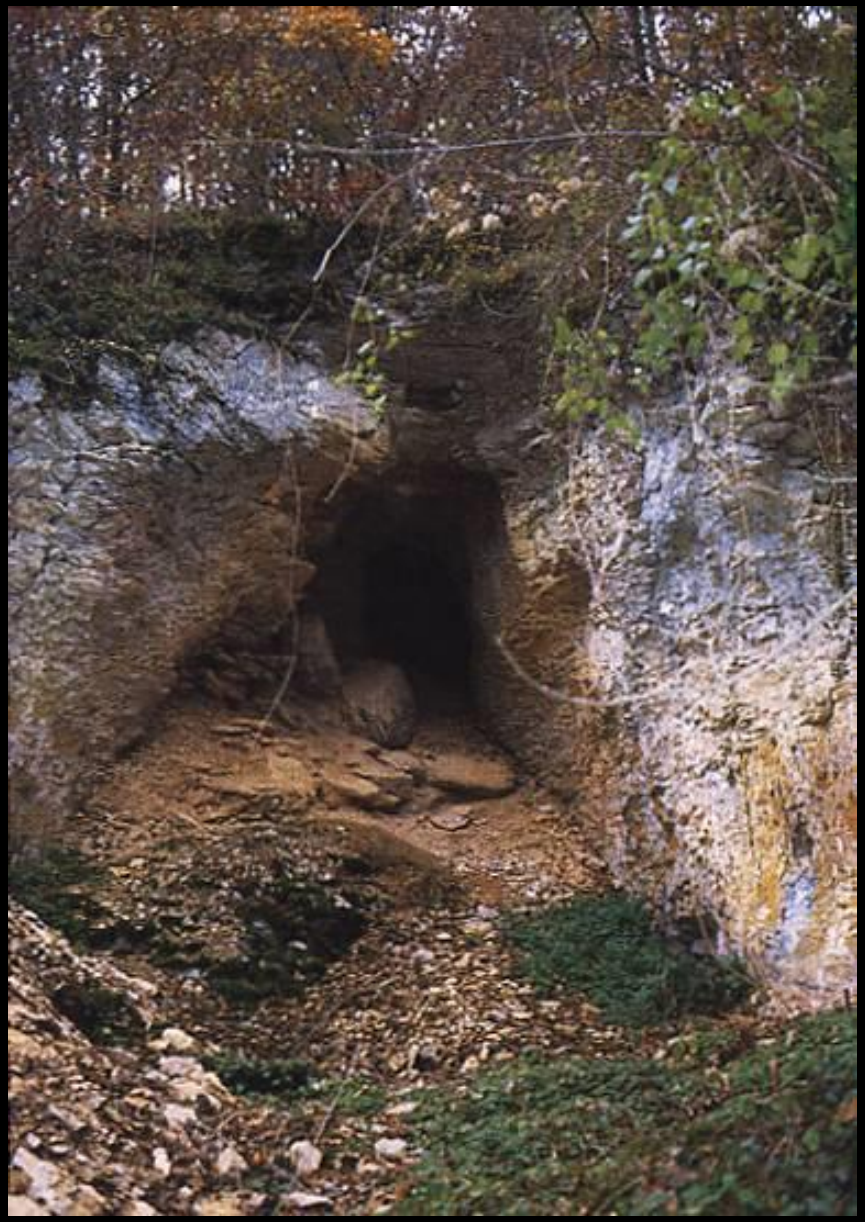


Map of the distribution of the Chatelperronian



Chatelperronian human remains from Grotte du Renne at Arcy-sur-cure (a: teeth and b: temporal bone), and from Saint-Cesaire (c: in-situ skeleton and d: close up of the skull of the skeleton after reconstruction)

(After Bailey & Hublin 2006; Hublin et al. 1996; photo of the cast of the in-situ skeleton # Soressi)



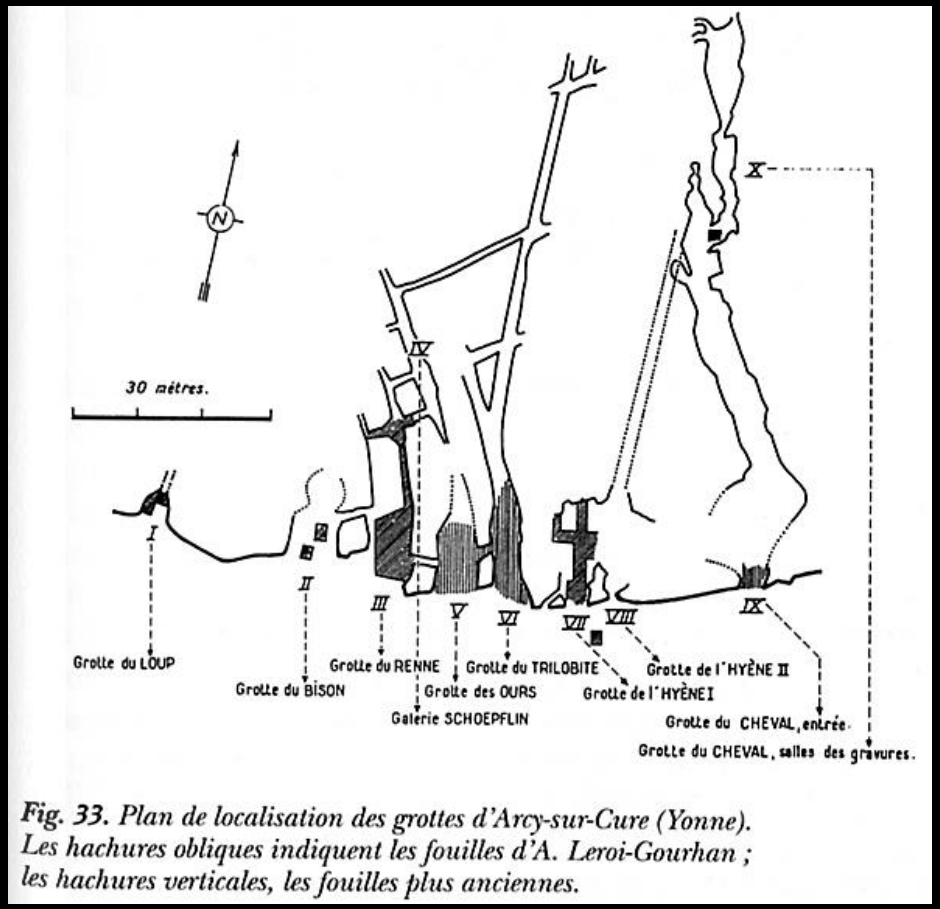
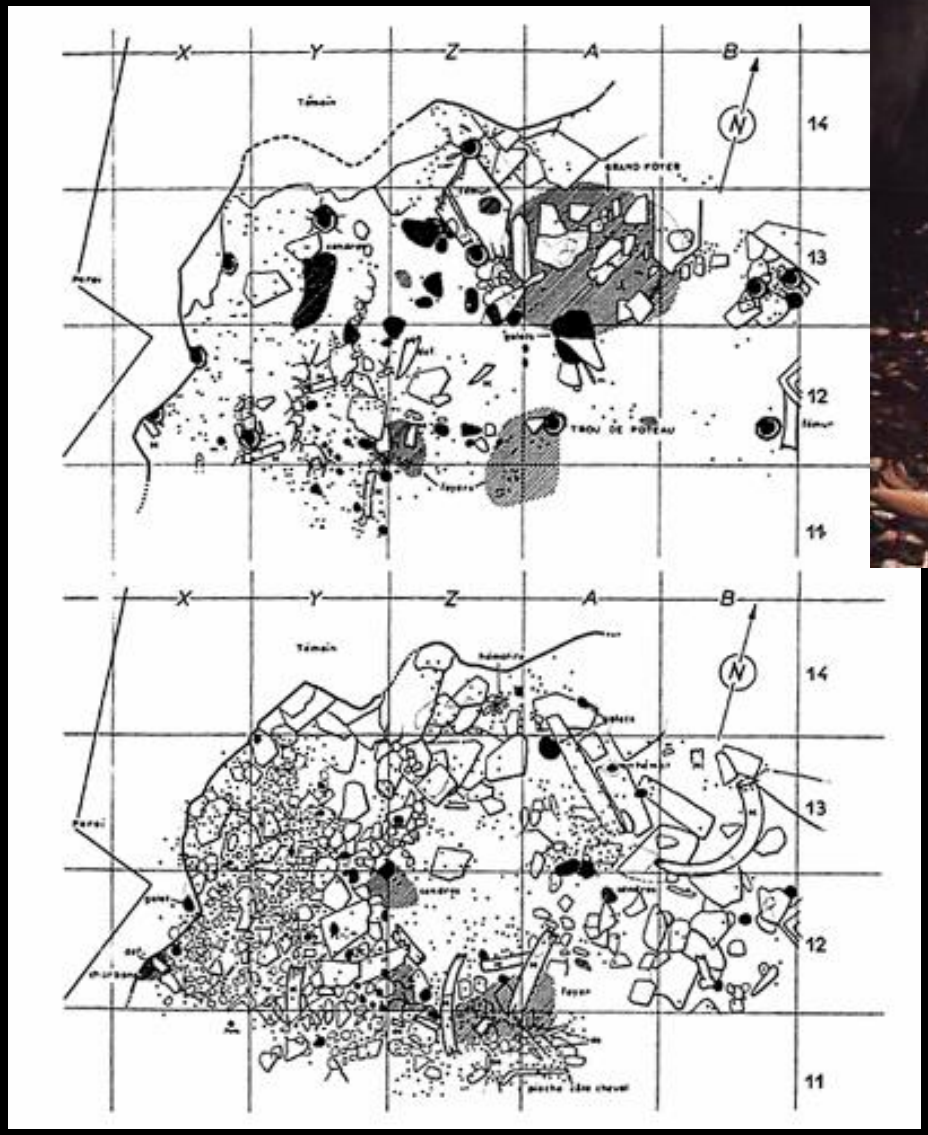
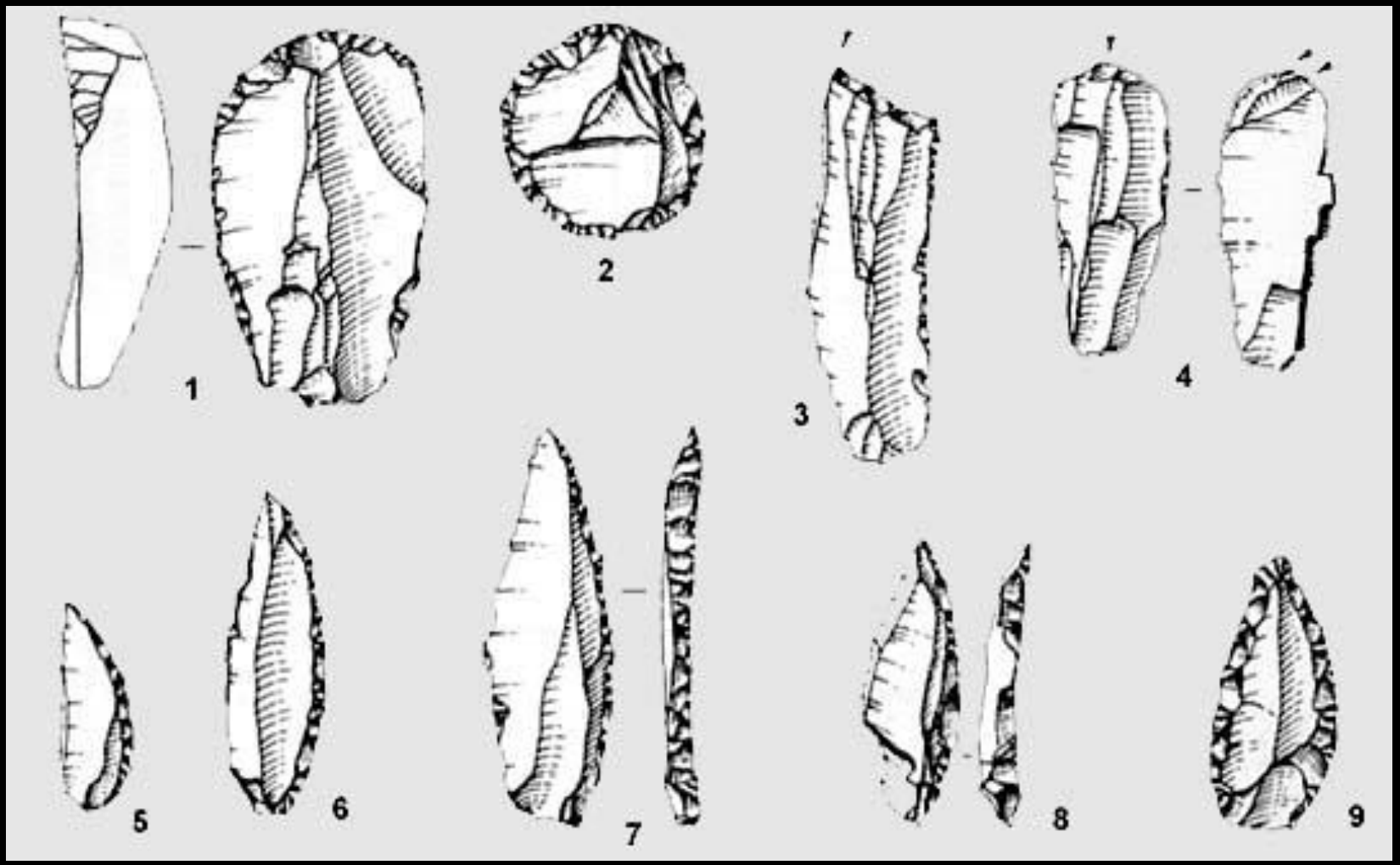


Fig. 33. Plan de localisation des grottes d'Arcy-sur-Cure (Yonne). Les hachures obliques indiquent les fouilles d'A. Leroi-Gourhan ; les hachures verticales, les fouilles plus anciennes.

Arcy-sur-Cure, Grotte du Renne

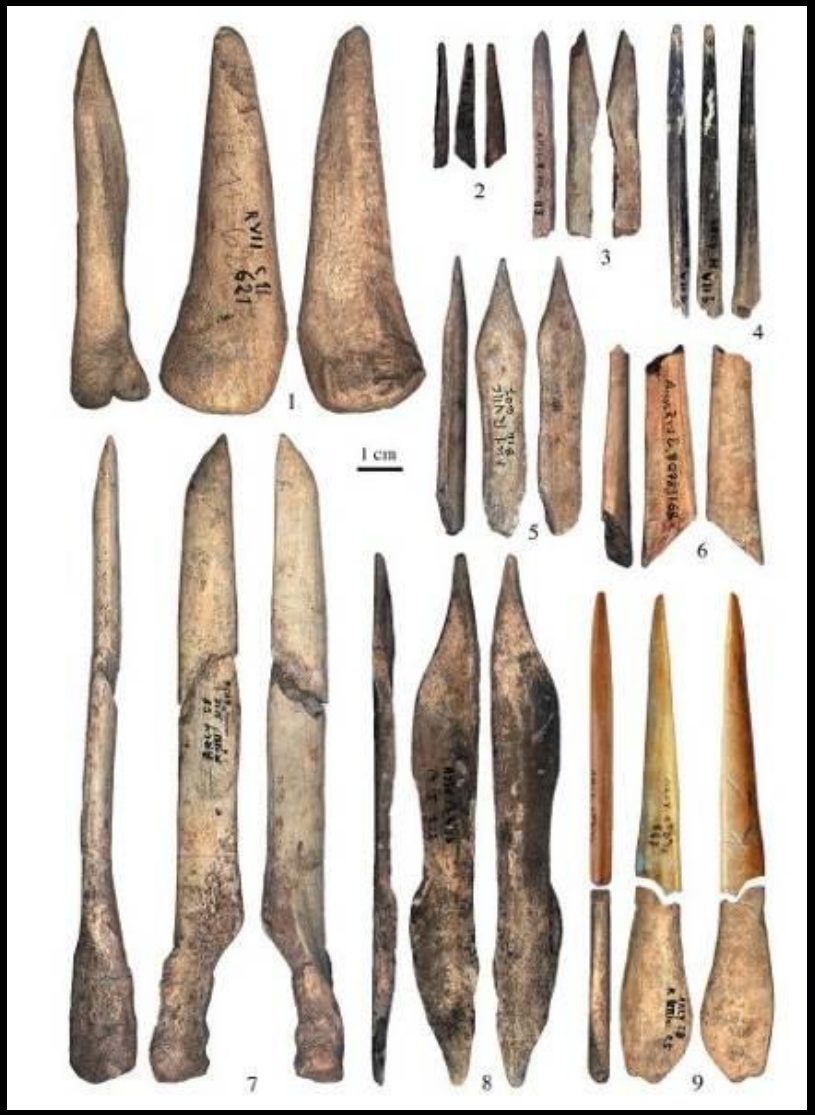


Arcy-sur-Cure, Grotte du Renne, layer X

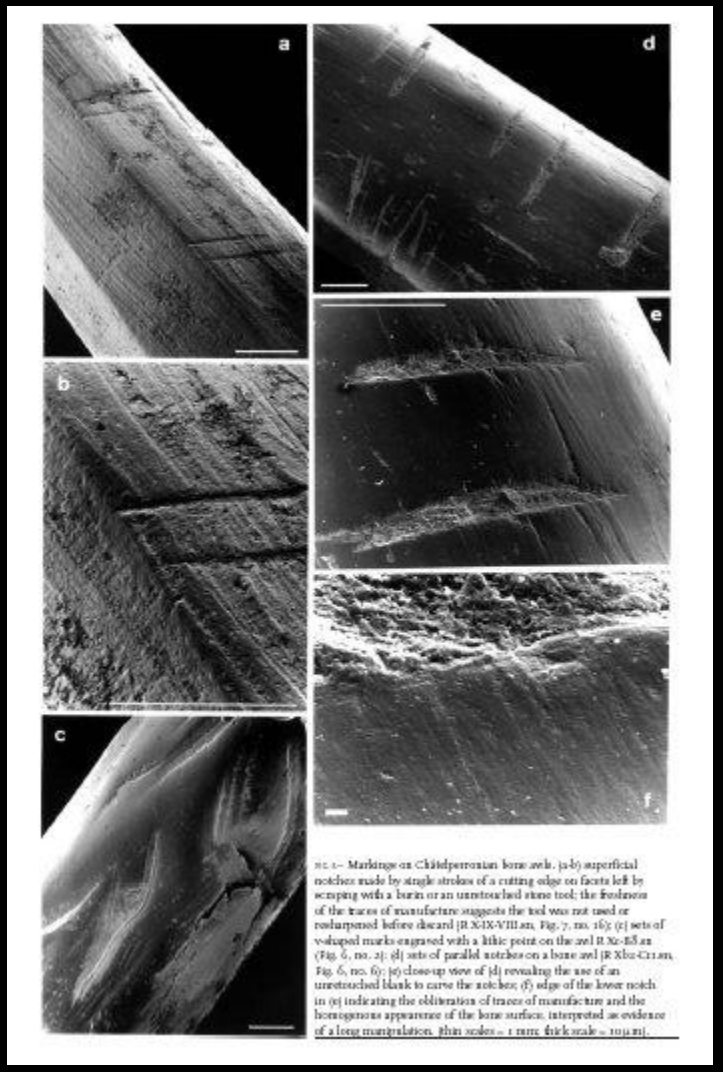


Grotte du Renne. 1-2: end-scrapers, 3-4: burins, 5-8: Châtelperron points, 9: point

Bone awls



Arcy-sur-Cure, Grotte du Renne, strato VII



Grotte du Renne, Arcy-sur-Cure

Ivory ring

Vestigial phalanx

Fox canines

Marmot upper incisor

Bison incisor

Rhynconella

Neanderthal Acculturation in Western Europe?

A Critical Review of the Evidence and Its Interpretation[1]

by Francesco d'Errico, João Zilhão, Michèle Julien, Dominique Baffier, and Jacques Pelegrin

Many awls in our argument. Bone tool manufacture and use in the Châtelperronian and Aurignacian levels of the Grotte du Renne at Arcy-sur-Cure

FRANCESCO D'ERRICO ▮ MICHÈLE JULIEN ▮ DESPINA IOLIOS
MARIAN VANHAEREN ▮ DOMINIQUE BAFFIER

The Reality of Neandertal Symbolic Behavior at the Grotte du Renne, Arcy-sur-Cure, France

François Caron[1], Fr[illegible] d'Errico[2,3*], Pierre Del Moral[1], Frédéric Santos[2], João Zilhão[4]

Chronology of the Grotte du Renne (France) and implications for the context of ornaments and human remains within the Châtelperronian

Thomas Higham[a,1], Roger Jacobi[b,c,2], Michèle Julien[d], Francine David[d], Laura Basell[a], Rachel Wood[a], William Davies[e], and Christopher Bronk Ramsey[a]

Journal of World Prehistory, Vol. 17, No. 1, March 2003 (© 2003)

Archaeological Evidence for the Emergence of Language, Symbolism, and Music—An Alternative Multidisciplinary Perspective

Francesco d'Errico,[1,11] Christopher Henshilwood,[2,3,4] Graeme Lawson,[5] Marian Vanhaeren,[1] Anne-Marie Tillier,[6] Marie Soressi,[1] Frédérique Bresson,[6] Bruno Maureille,[6] April Nowell,[7] Joseba Lakarra,[8] Lucinda Backwell,[9] and Michèle Julien[10]

development of conscious symbolic storage, the emergence of musical traditions, and the archaeological evidence for the diversification of languages during the Upper Paleolithic. This critical reappraisal contradicts the hypothesis of a symbolic revolution coinciding with the arrival of anatomically modern humans in Europe some 40,000 years ago, but also highlights inconsistencies in the anatomically–culturally modern equation and the potential contribution of anatomically "pre-modern" human populations to the emergence of these abilities. No firm evidence of conscious symbolic storage and musical traditions are found before the Upper Paleolithic. However, the oldest known European objects that testify to these practices already show a high degree of complexity and geographic variability suggestive of possible earlier, and still unrecorded, phases of development.

In recent years, there has been a tendency to correlate the origin of modern culture and language with that of anatomically modern humans. Here we discuss this correlation in the light of results provided by our first hand analysis of ancient and recently discovered relevant archaeological and paleontological material from Africa and Europe. We focus in particular on the evolutionary significance of lithic and bone technology, the emergence of symbolism, Neandertal behavioral patterns, the identification of early mortuary practices, the anatomical evidence for the acquisition of language, the

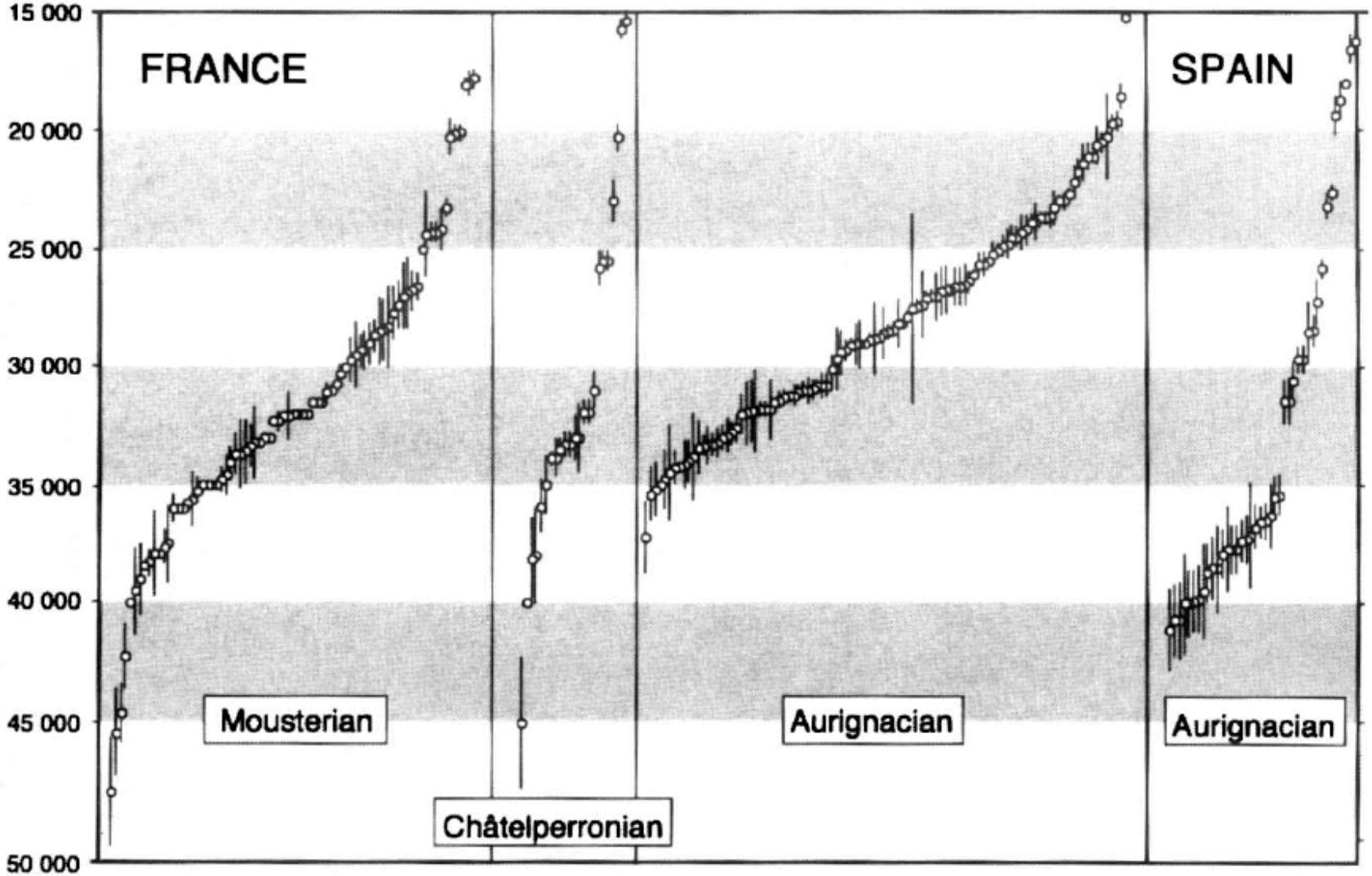
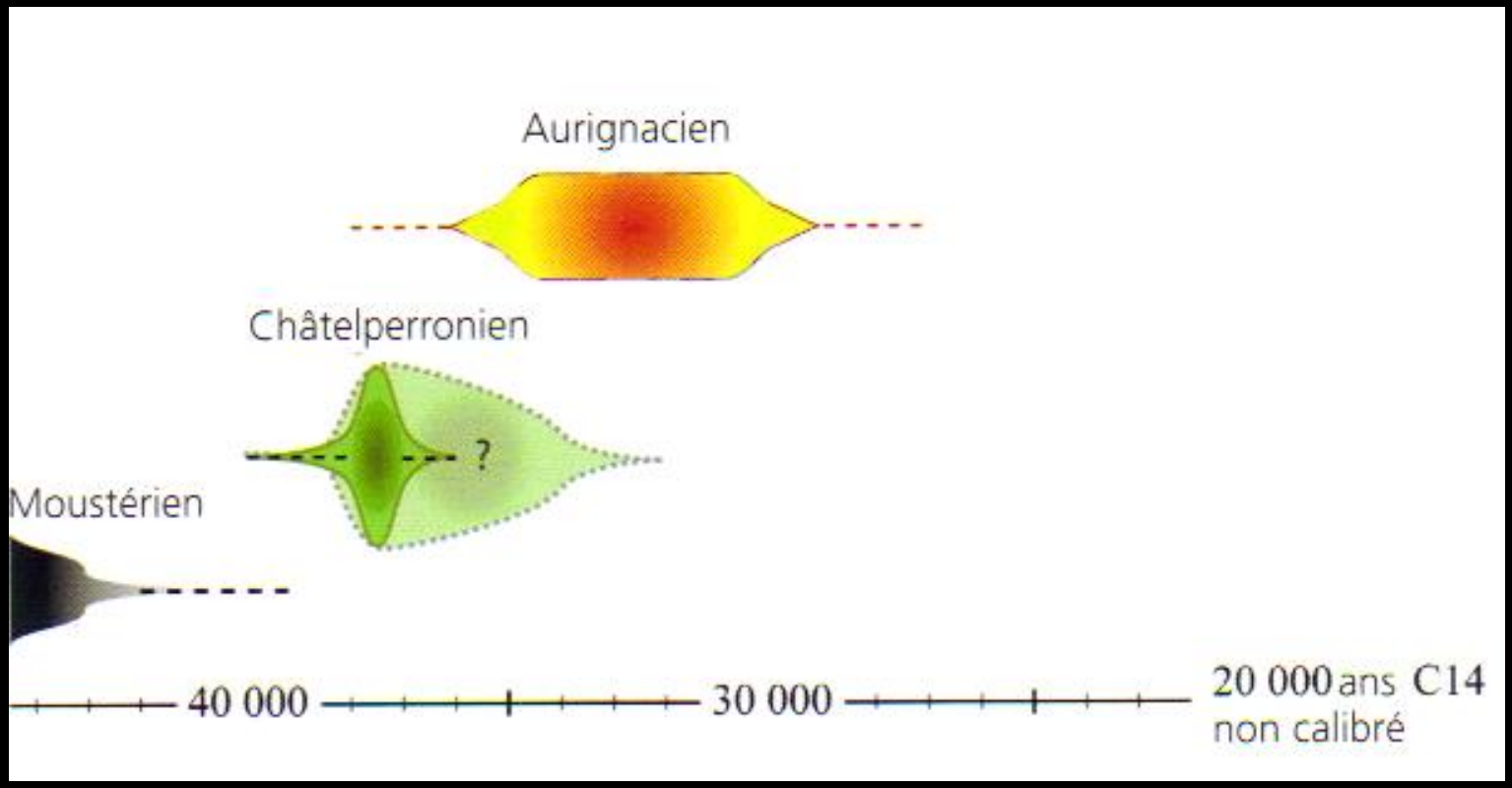
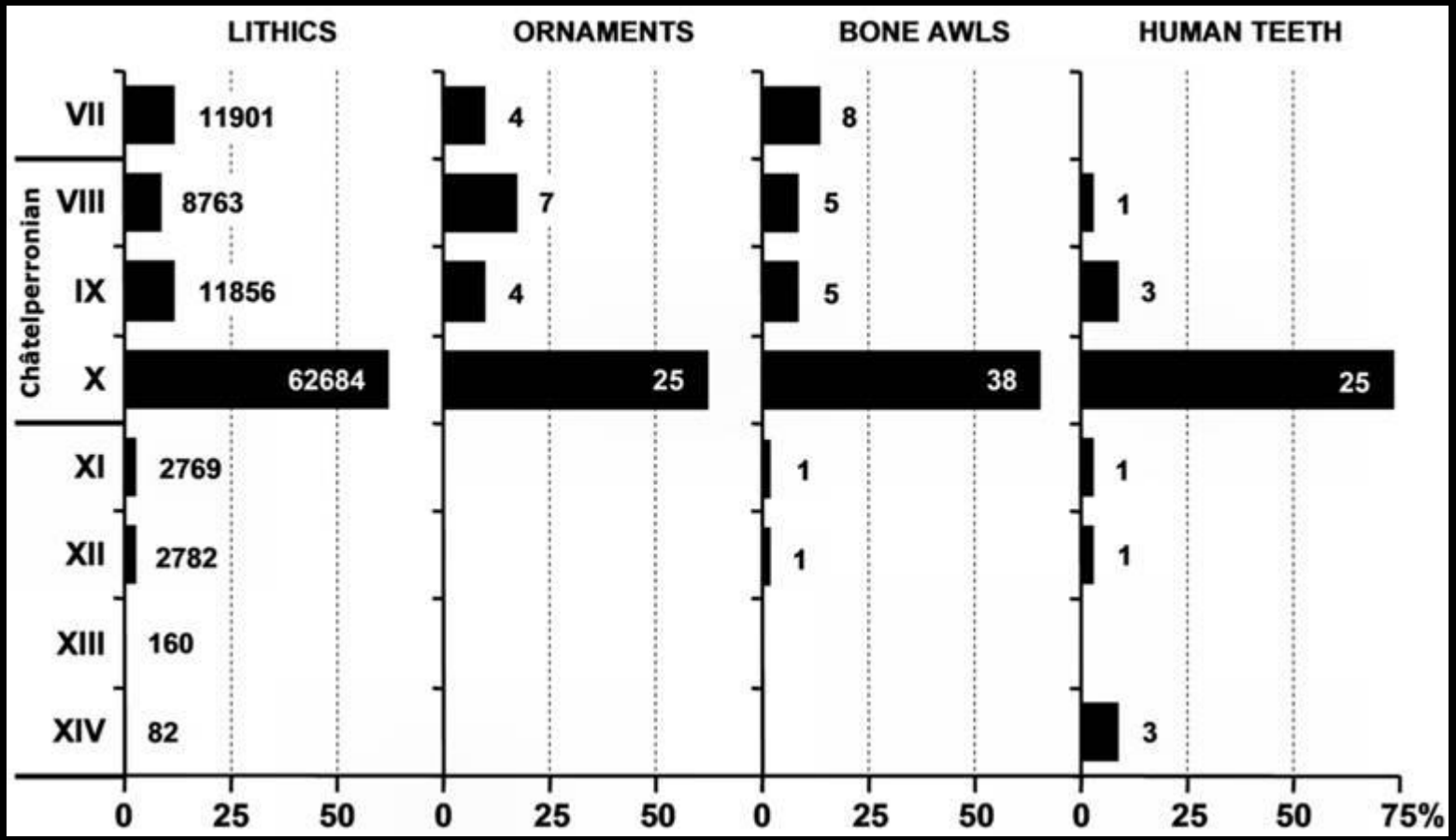


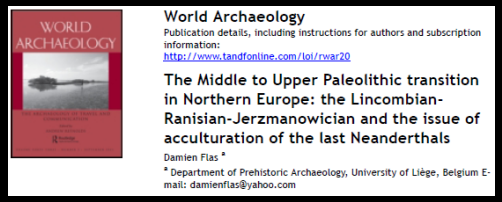
Fig. 3. Plot of the 249 conventional and AMS C-14 dates available for the Mousterian and the Châtelperronian in France and for the Aurignacian in France and Spain (various sources).


Aurignacien
Châtelperronien
?
Moustérien
40 000
30 000
20 000 ans C14
non calibré

Neanderthal acculturation?
No evidence of mixing at Grotte du Renne – Arcy sur Cure



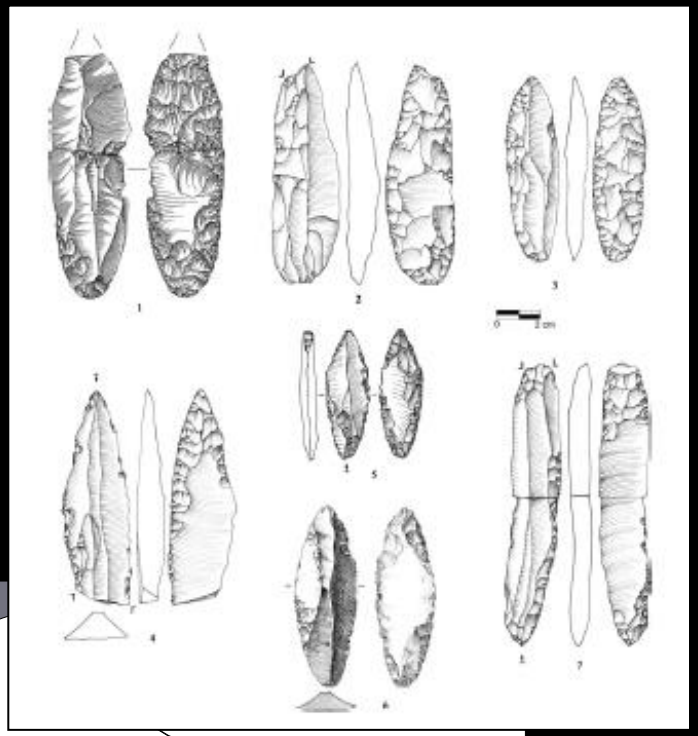
Lincombian - Ranisian - Jerzmanowician
≈ 36 000 BP in NW Europe

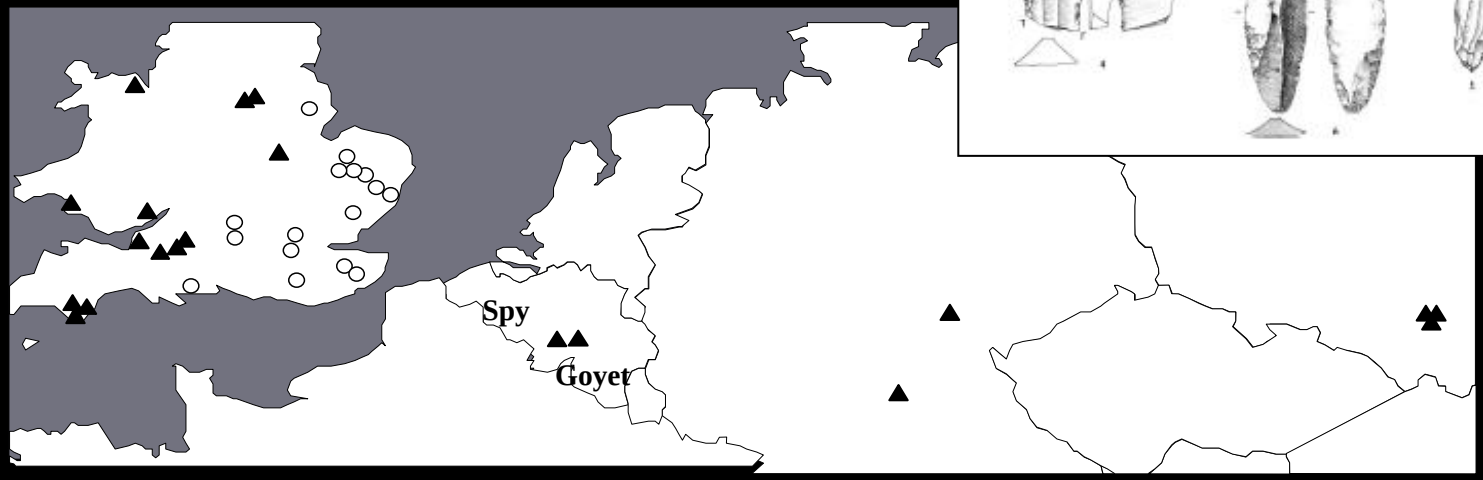


World Archaeology
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/rwar20

The Middle to Upper Paleolithic transition in Northern Europe: the Lincombian-Ranisian-Jerzmanowician and the issue of acculturation of the last Neanderthals

Damien Flas [a]
[a] Department of Prehistoric Archaeology, University of Liège, Belgium E-mail: damienflas@yahoo.com





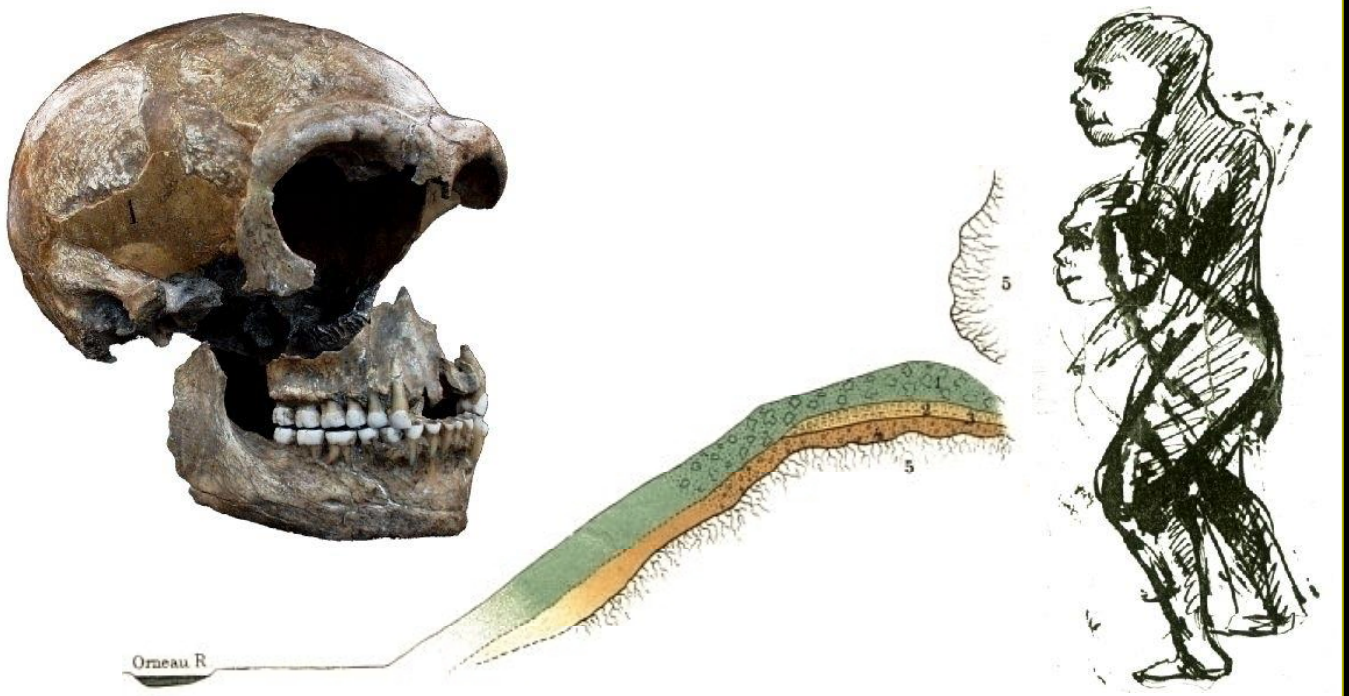
Distribution of LRJ (*after Flas, 2006*)

1886 : Discovery of two Neandertals in a “secure?” stratigraphic context and associated? with tools and Pleistocene cold fauna


M. Lohest

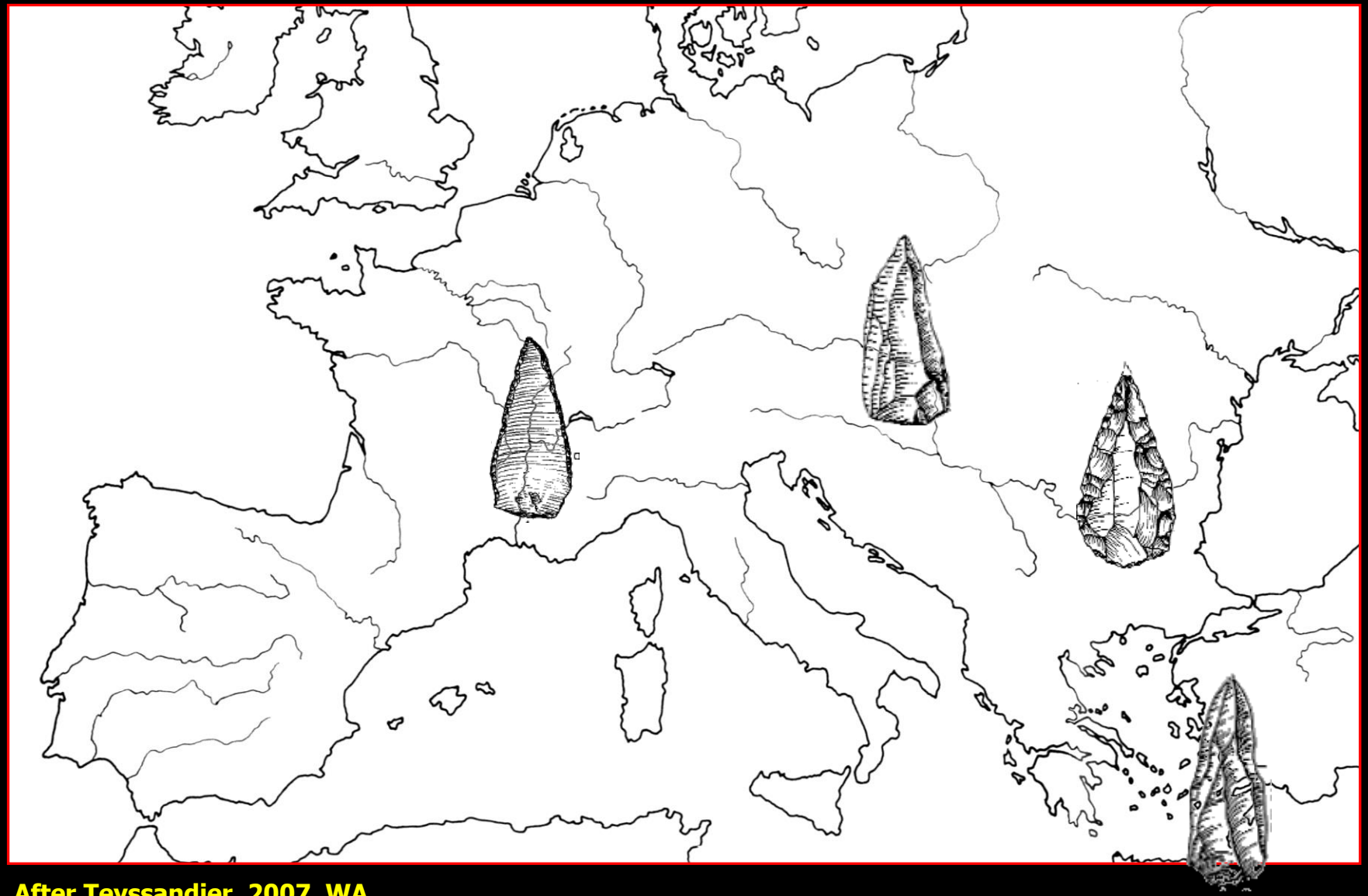

M. De Puydt


J. Fraipont



De Puydt & Lohest, 1886. Exploration de la grotte de Spy. *Ann. de la Soc. Géol. de Belg.*, **III** : 34-39

Chatelperronian, Neronian, Bohunician, Bachokirian and the near east..



After Teyssandier, 2007, WA