

## Early Modern Humans

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October 19, 2021

1 / 73

## Outline

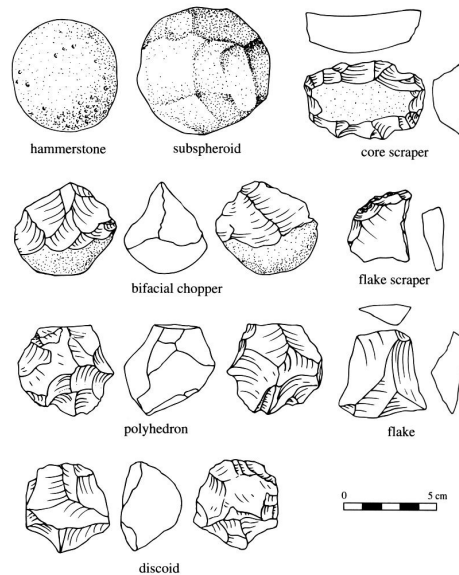
- ▶ Archaeology and paleontology
- ▶ Expansion out of Africa
- ▶ Paleolithic Eurasia
- ▶ Mesolithic Eurasia

2 / 73

## Moderns invade Eurasia



3 / 73



- ▶ Oldowan tools
- ▶ 2.6–1.7 mya
- ▶ Earliest stone tools
- ▶ Probably made by *Homo habilis/rudolphensis*

4 / 73



Oldowan tools  
2.6–1.7 mya

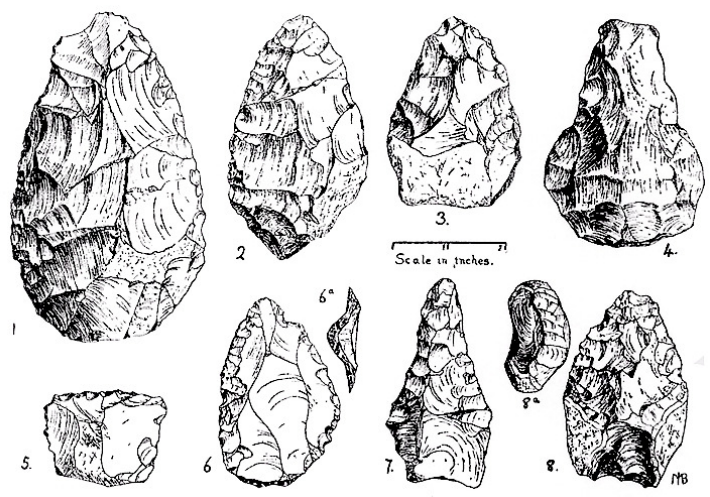
5 / 73

## Acheulean hand axe (1.5–0.3 mya)

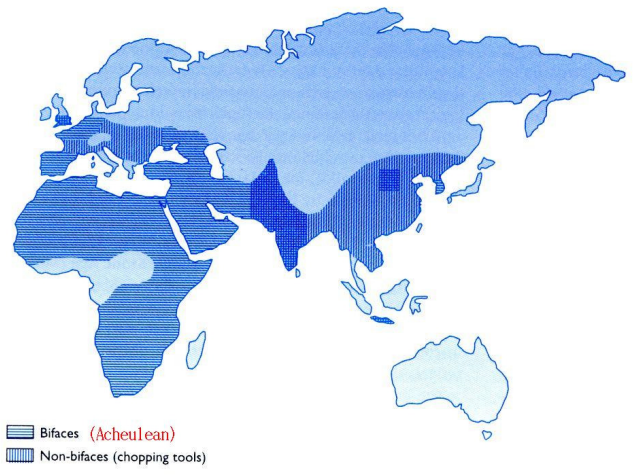


6 / 73

Acheulean tools (1.5–0.3 mya)



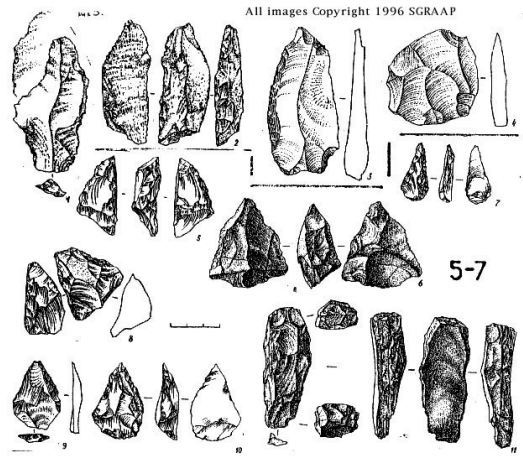
Distribution of Acheulean tools



Acheulean tools

- ▶ Associated with *Homo ergaster/erectus*
- ▶ 1.5–0.3 myr ago
- ▶ Essentially unchanged for 1.2 myr
- ▶ Wide distribution in space

Mousterian tools



- ▶ 300–30 kya
- ▶ Europe and western Asia
- ▶ Neandertals

Neandertal sites



Mousterian tools

- ▶ Neandertals
- ▶ 300–30 kya
- ▶ Little change in 270 kyr
- ▶ Wide distribution in space



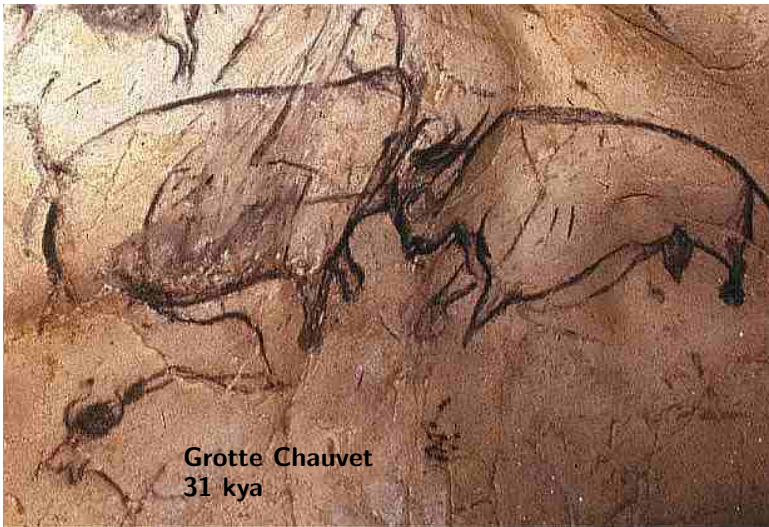
**Aurignacian tools**

- ▶ 43–26 kya
- ▶ Earliest Upper Paleolithic, Europe
- ▶ Modern humans

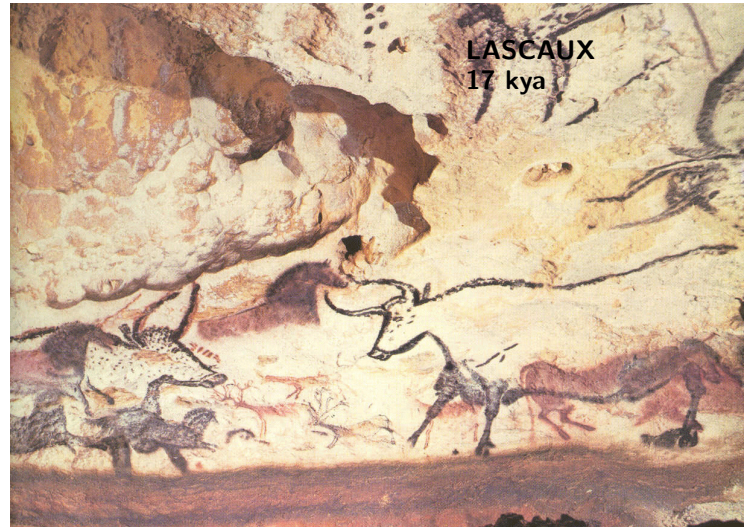


**Solutrean tools**

- ▶ 22–17 kya
- ▶ Laurel-leaf points
- ▶ Later Upper Paleolithic, Europe
- ▶ Modern humans



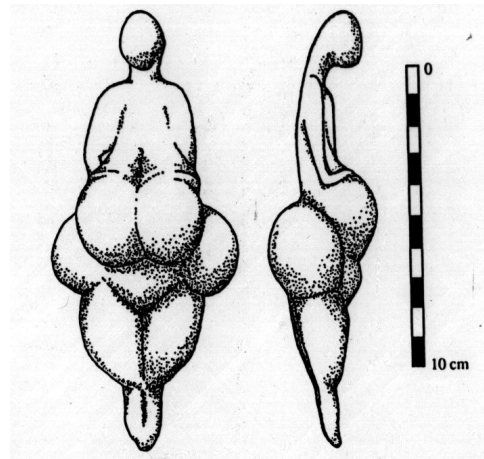
**Grotte Chauvet**  
31 kya



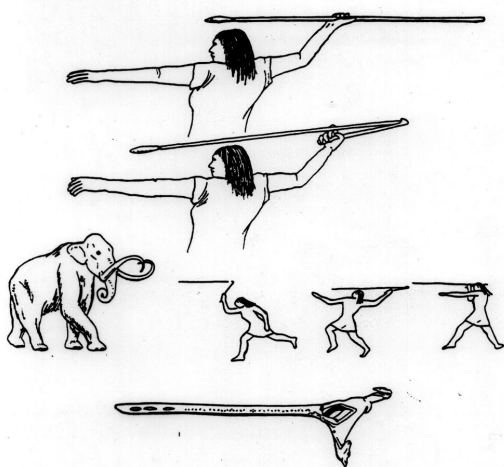
**LASCAUX**  
17 kya



**Art**  
Deer's head  
18–10 kya



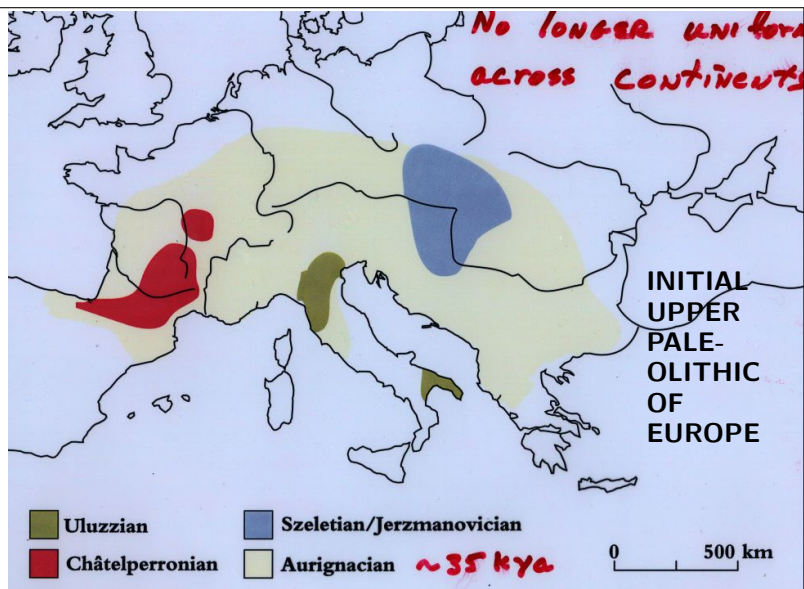
**Venus of Lespugue**  
(28 kya)



### Spear thrower

- ▶ increases force of throw
- ▶ penetrated Spanish armor
- ▶ kill at 70 m
- ▶ by 14 kya

19 / 73



20 / 73

## Tool traditions of the Upper Paleolithic

Age	Tradition
43–26 kya	Aurignacian
33–22 kya	Gravettian
22–17 kya	Solutrean
17–12 kya	Magdalenian

- ▶ Change is rapid.
- ▶ Each tradition occupies a small region.
- ▶ Culture varies in space.

21 / 73



### Neanderthal & Modern

Modern (at right):

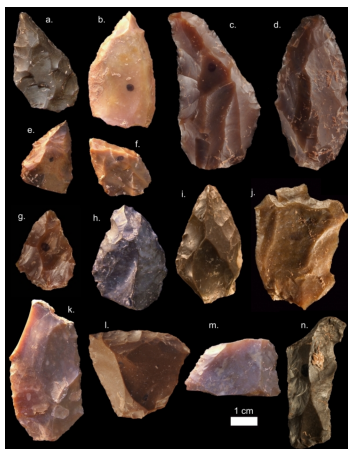
- ▶ small
- ▶ long-limbed
- ▶ gracile
- ▶ flat face
- ▶ chin
- ▶ forehead
- ▶ domed skull

22 / 73

## Jebel Irhoud, Morocco (300 kya)



Archaic brain case; brow ridges; modern face



Like Neanderthal tools

23 / 73

## Herto, Ethiopia (160 kya)



24 / 73

Manot, Israel (55 kya)

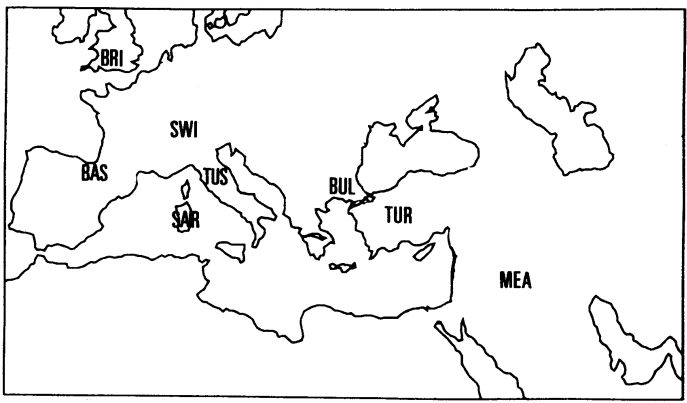


Modern  
But with archaic features, such as occipital bun.

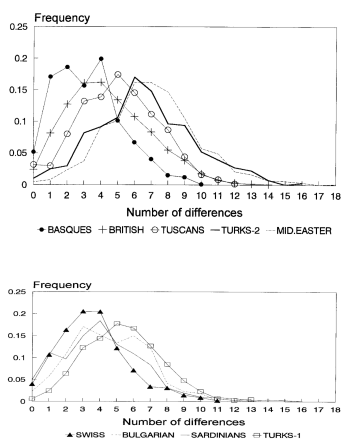
Outline

- Archaeology and paleontology
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Comas et al (1997) studied European mismatch distributions



Mismatch distributions suggest expansion across Europe



Mid-East and Turkey: early expansions.

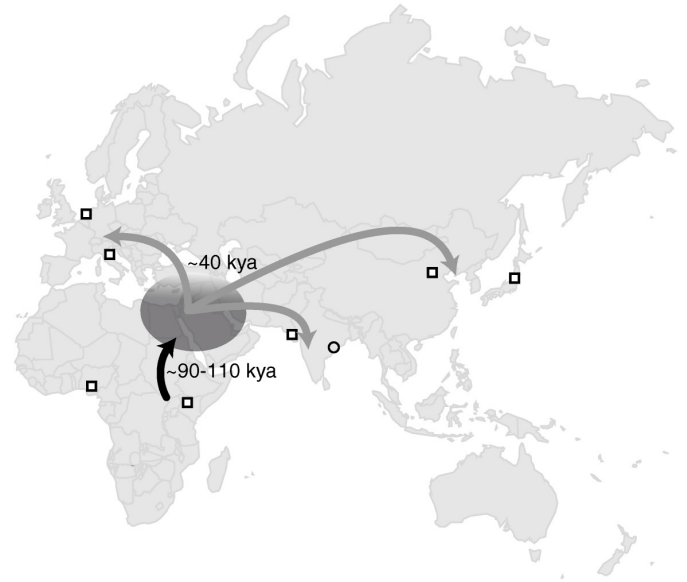
British, Basques: late expansions

Paleolithic or Neolithic?

Comas et al thought Paleolithic but may have been misled by mtDNA clock.

Nuclear DNA: Xing et al 2010

- ▶ Studied large sample of nuclear DNA from populations in Africa, Europe, East Asia, and India.
- ▶ Eurasian populations left Africa about 100 thousand years ago
- ▶ Did not separate until 25–40 thousand years ago



## Summary

- ▶ Archaics changed slowly both in time and space. Pace of change is faster for modern humans.
- ▶ Moderns appear first in Africa, 160 ky ago. Spread through Eurasia ~50 ky ago. Introduce art, blade tools, projectile weapons.