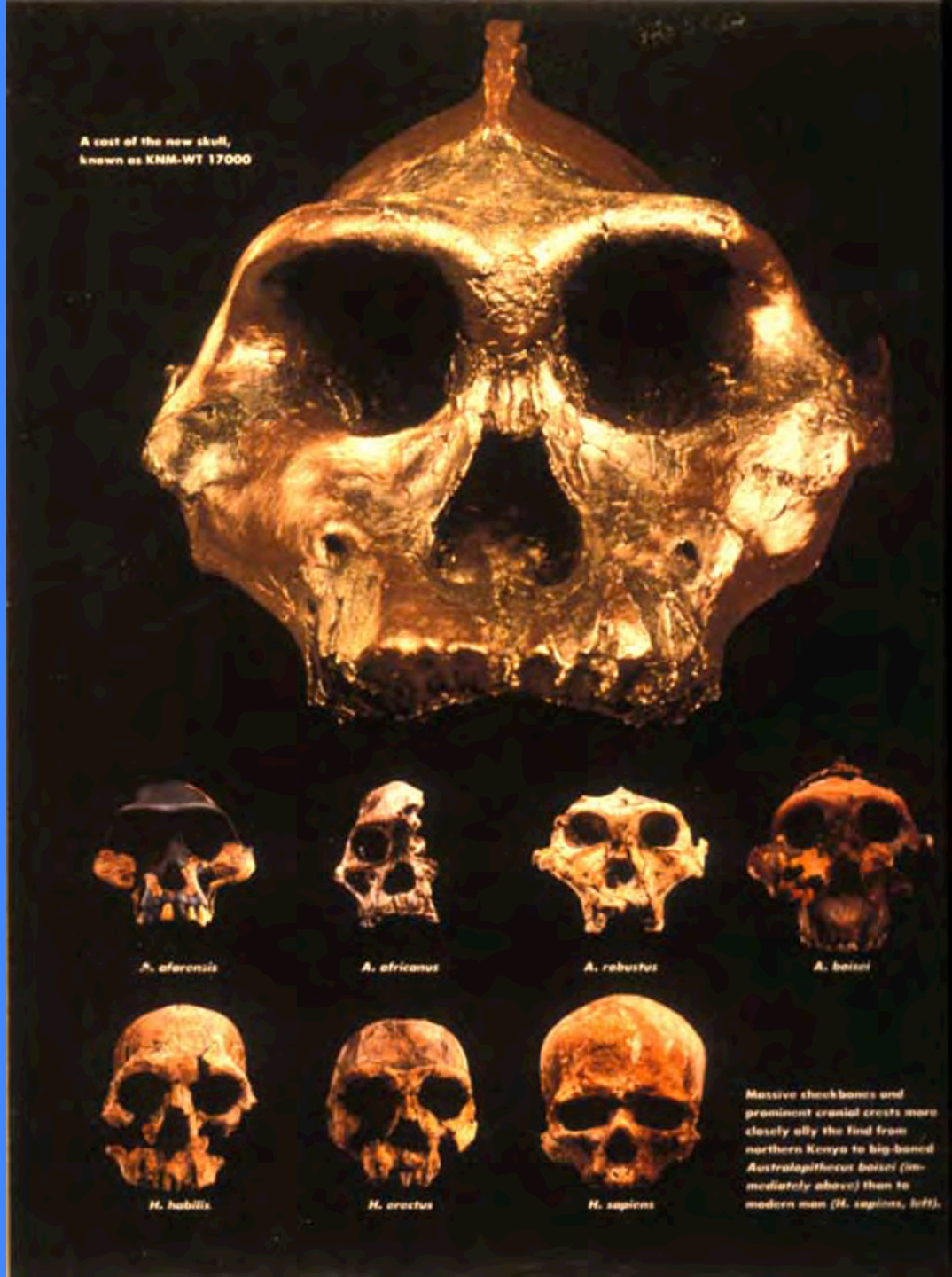
Modern Humans

Major questions

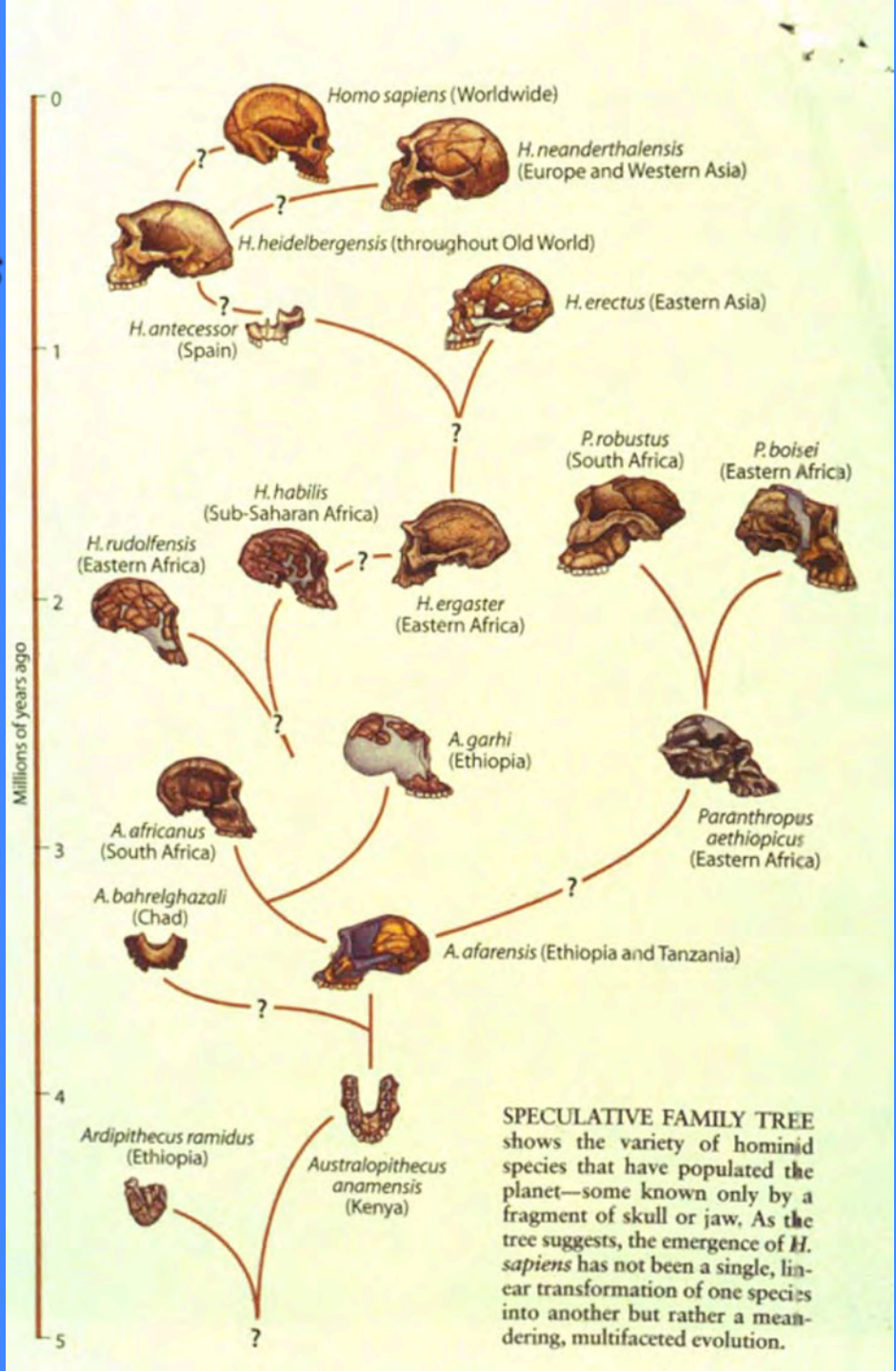
Homo sapiens sapiens: What, Why, How, When and Where?



Evolutionary model illustrates the multifacted evolution leading to the emergence of ***Homo sapiens***

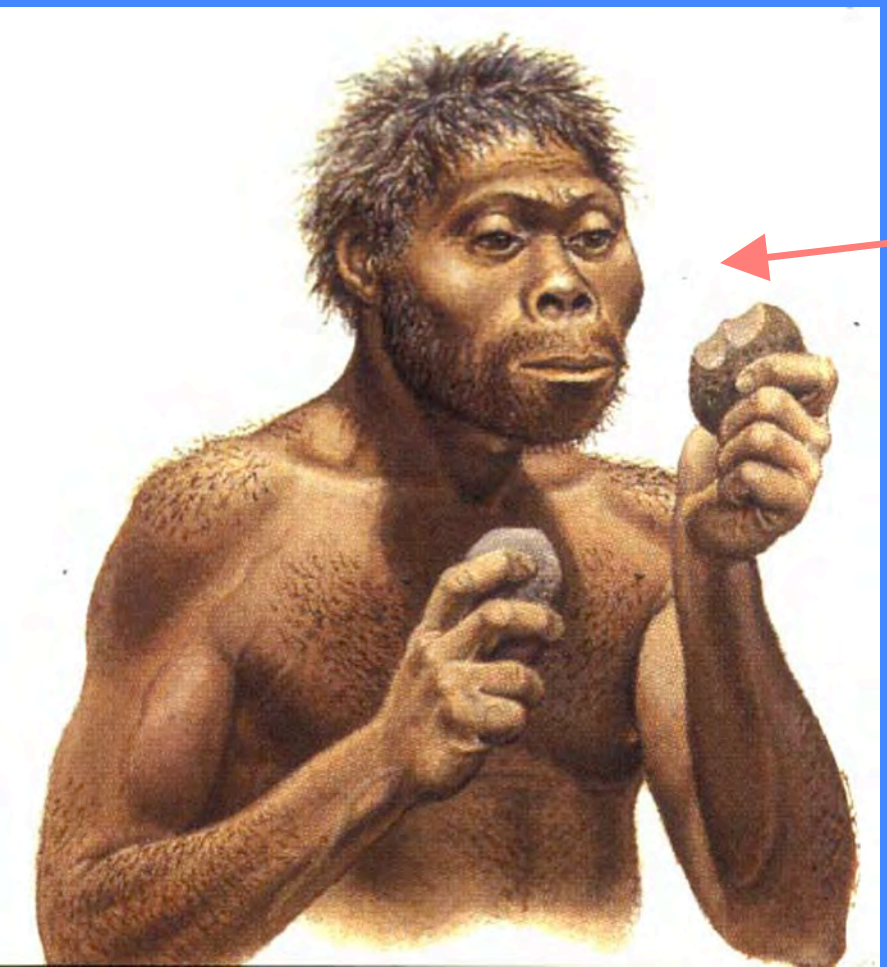
BUT - the total sample for H. ergaster/erectus, early H. sapiens and early H. neanderthalensis is about **130+ individuals** and the **behavior** of these species is **interpreted** on the basis of fewer than **50 reasonably well-excavated sites** (c.f. Klein 1999:343).

More samples today but not enough to explain modern diversity.



"Black-hole" in the fossil record between 3 MYA and 2 MYA ; this is the gap between *A. afarensis* and *Homo habilis*

Homo rudolfensis (earliest Homo line?) Koobi Fora, 2 MYA, Baringo 2.4 MYA

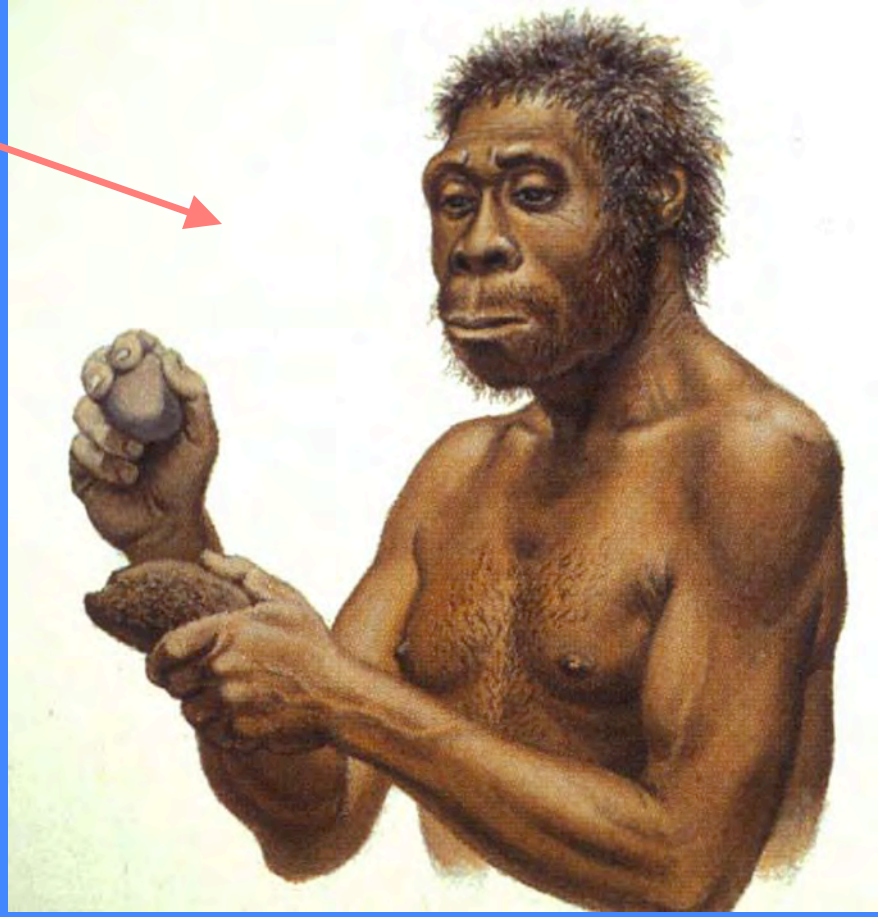


Hominin !

Homo habilis (early Homo line) Koobi Fora, Olduvai 2 to 2.5 MYA, tool use, home bases

Homo sp. ? Longgupo, Sichuan, China , 1.9 MYA

Homo ergaster **(later Homo line in Africa only)**
Koobi Fora, Olduvai, 1.5 MYA



Homo erectus **(later Homo line throughout Eurasia)**
Java, Sangiran, 1.9 -1.8 MYA

- **larger brains**
- **use of tools, stone, bamboo, shell, etc.**
- **omnivorous - meat and veggies**
- **use of fire ?**
- **home bases, structures**

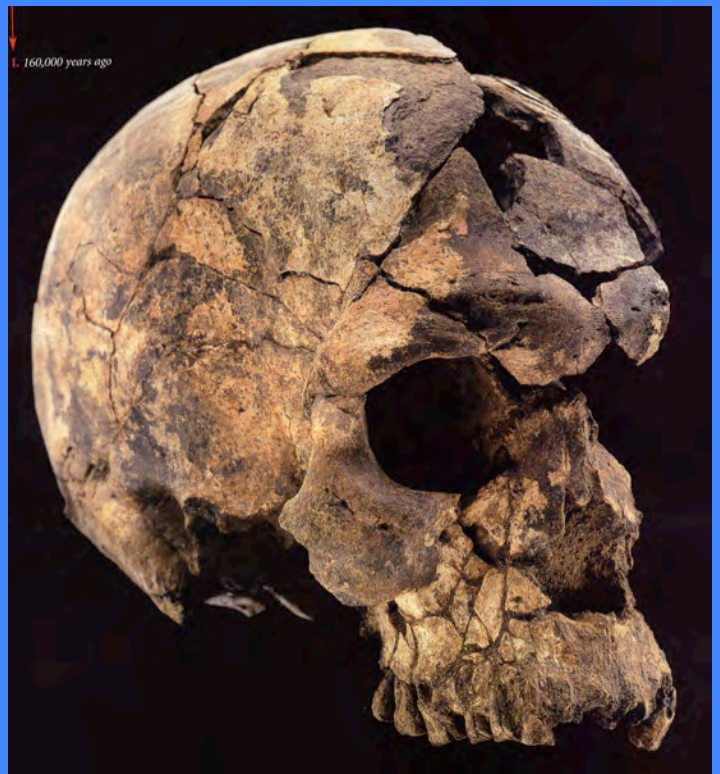
Intermediate forms between
H. erectus and archaic H. sapiens
***H. antecessor* (Spain) 900,000 YA,**
***H. heidelbergensis* (Germany) 500,000 YA**
***Homo rhodesiensis* (Africa) 600,000 to 125,000 YA**

Homo sapiens **(archaic or early forms)**

- Africa - 0.16-0.154 MYA

H. s. idaltu **(Herto, Ethiopia) 160 -154,000,**

H. s. *rhodesiensis* (Africa) 130,000 YA

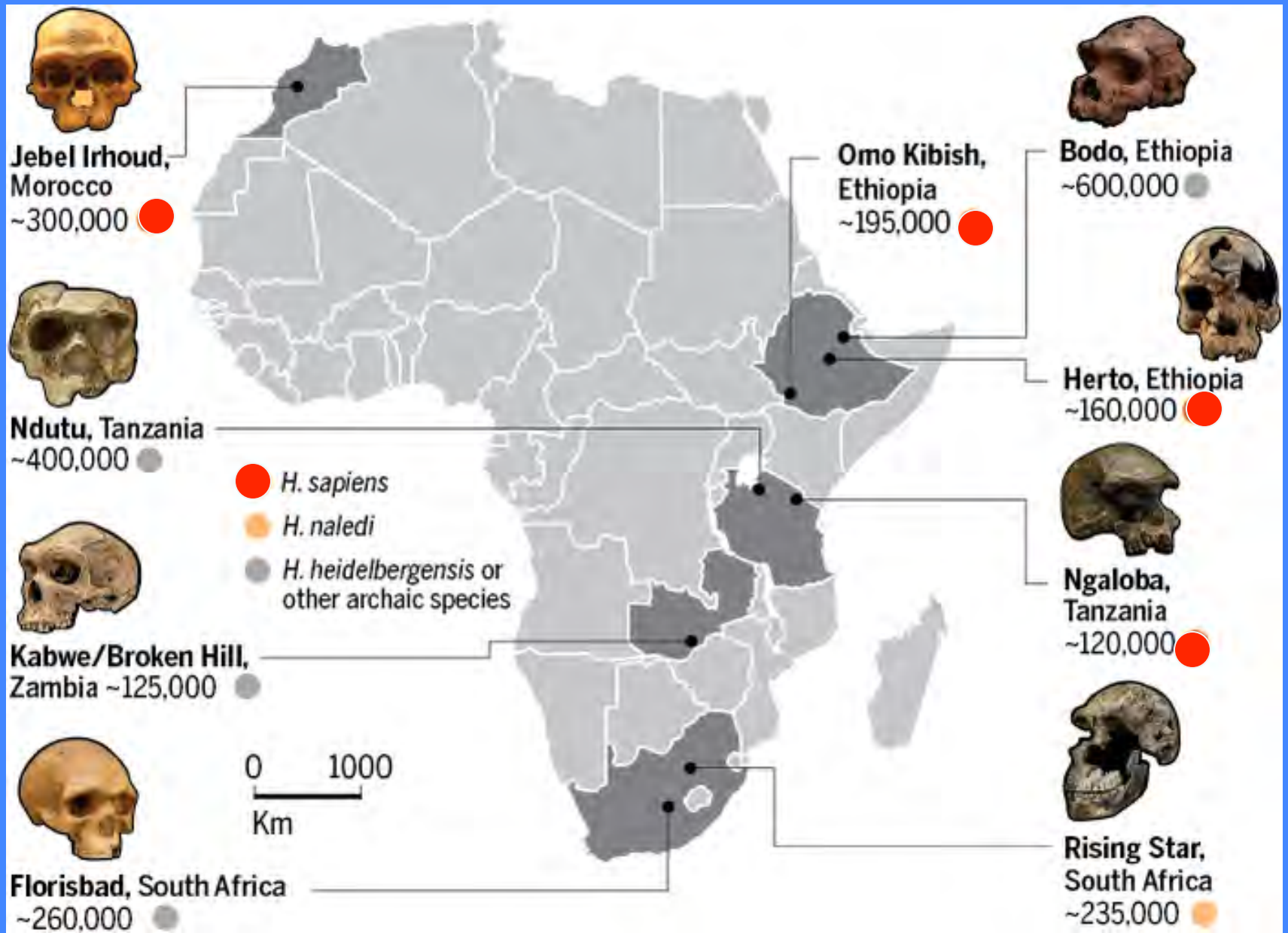


Homo sapiens neanderthalensis

Europe and Near East

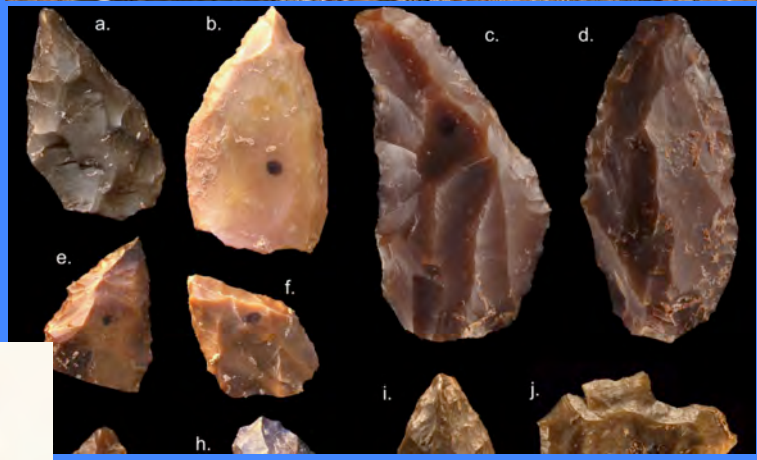
- 100 or 70,000 to 35,000 B.P.

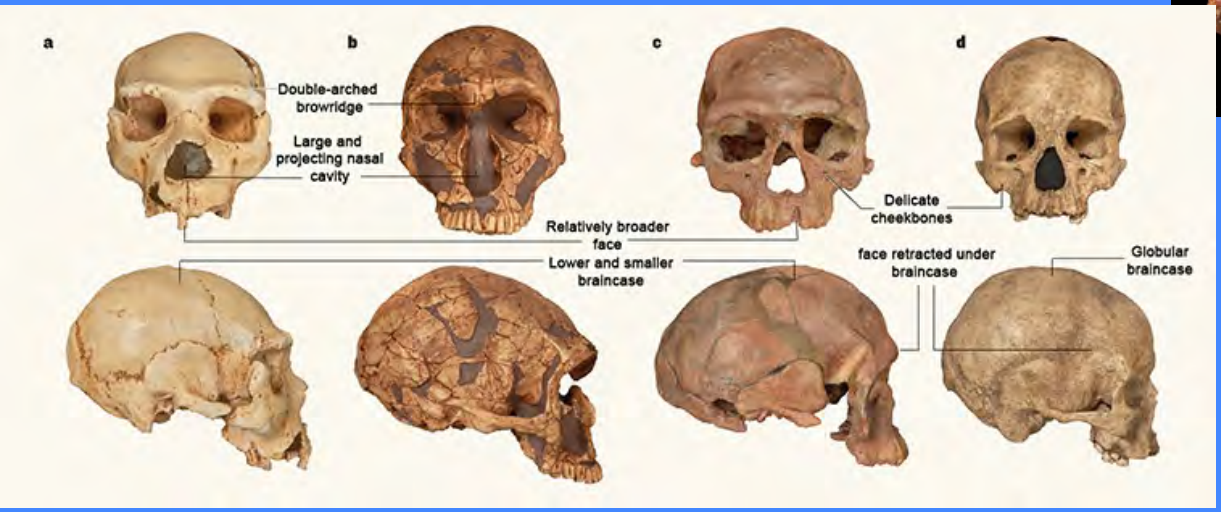
Major discoveries in Africa – ● are Homo sapiens



Earliest evidence for *Homo sapiens*

Jevel Irhoud, Morocco, the fossils were first discovered in 1961 along with stone tools and thought to date to around 160,000 YA. New excavations and re-dating of flint tools using TL dating techniques indicate that they are **383-247,000 YA. Uranium/Electron Spin Resonance** dating of enamel on animal teeth dates to around 281,000 YA which confirms the TL dates.





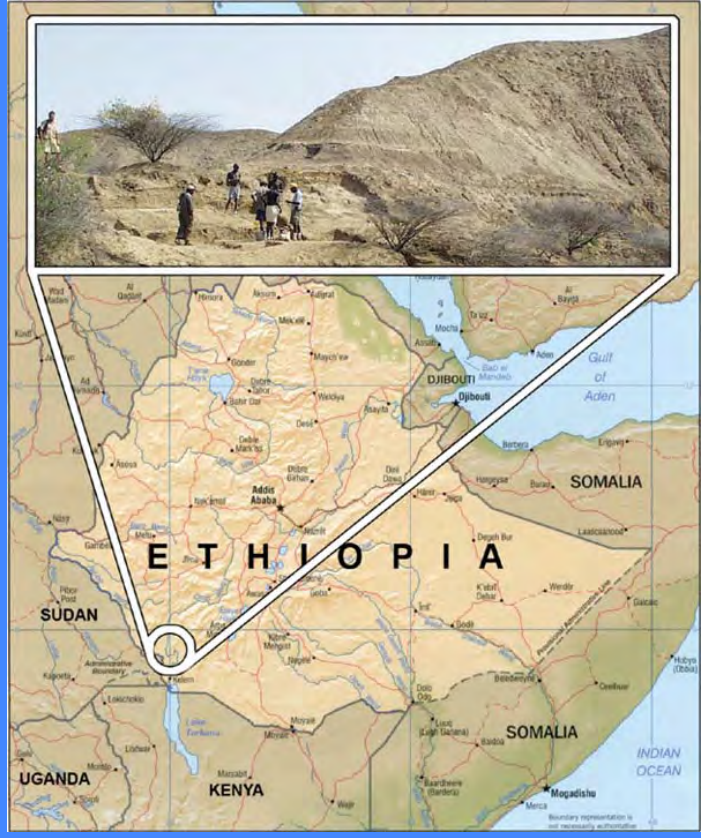
Jebel Irhoud, H. s.

Modern H.s.

Levallois/Mousterian heat treated stone tools used for Thermoluminesence dating -

Other early evidence for *Homo s. s.*

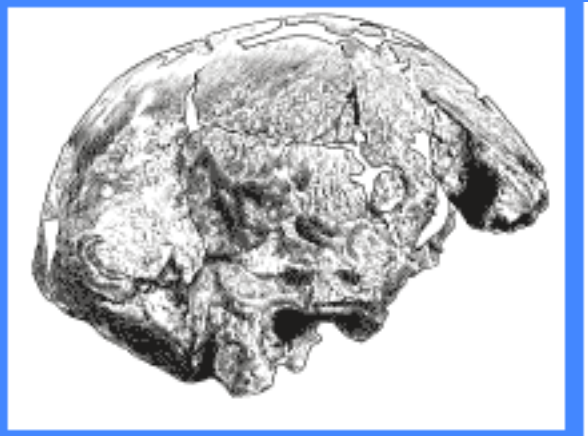
Omo 1 and 2 – Kibish Formation, Ethiopia, originally found in 1967 by Richard Leakey and dated to around 130,000 based on molluscs, but now the overlying rocks have been dated and the skulls are thought to be around **195,000 ya**



Omo 1

(a) Omo 1

Omo 2



(b) Omo 2

Herto (160,000 YA

(c) BOU-VP-16/1

New data shows that various forms of *Homo sapiens* are found in many parts of Africa (and Asia!) --- no single location can be confirmed as the area of origin.

Herto, Middle Awash, Ethiopia – 160,000-154,000 YA, Homo sapiens, morphologically and chronologically between archaic Homo sapiens and modern Late Pleistocene humans. **Possible immediate ancestors of anatomically modern humans**

Klasie's River Mouth, South Africa- Important fossils of H. s. sapiens with cut marks, dated to around **100,000 by amino acid racemization**

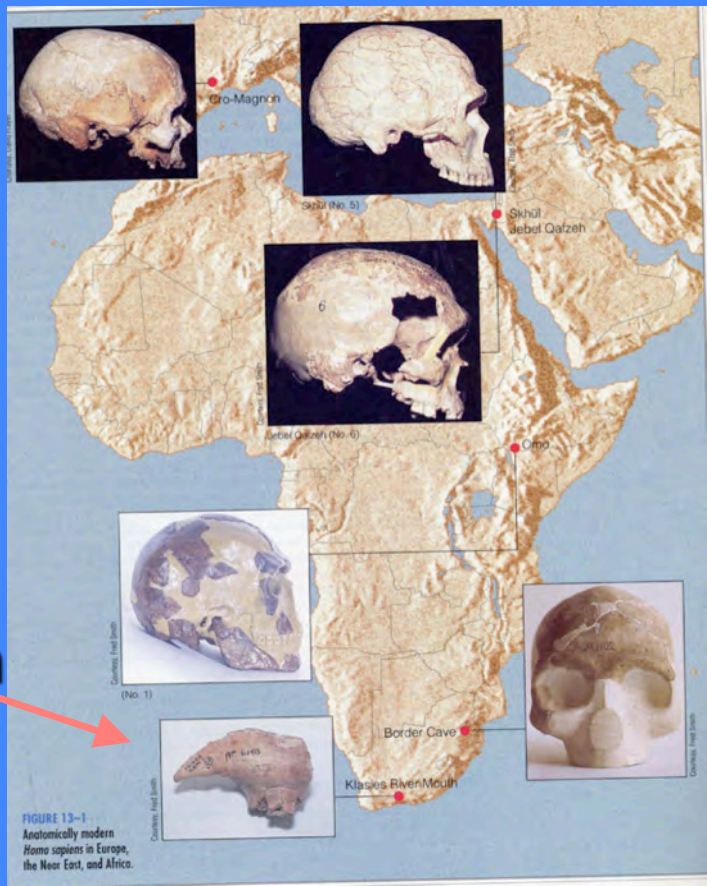
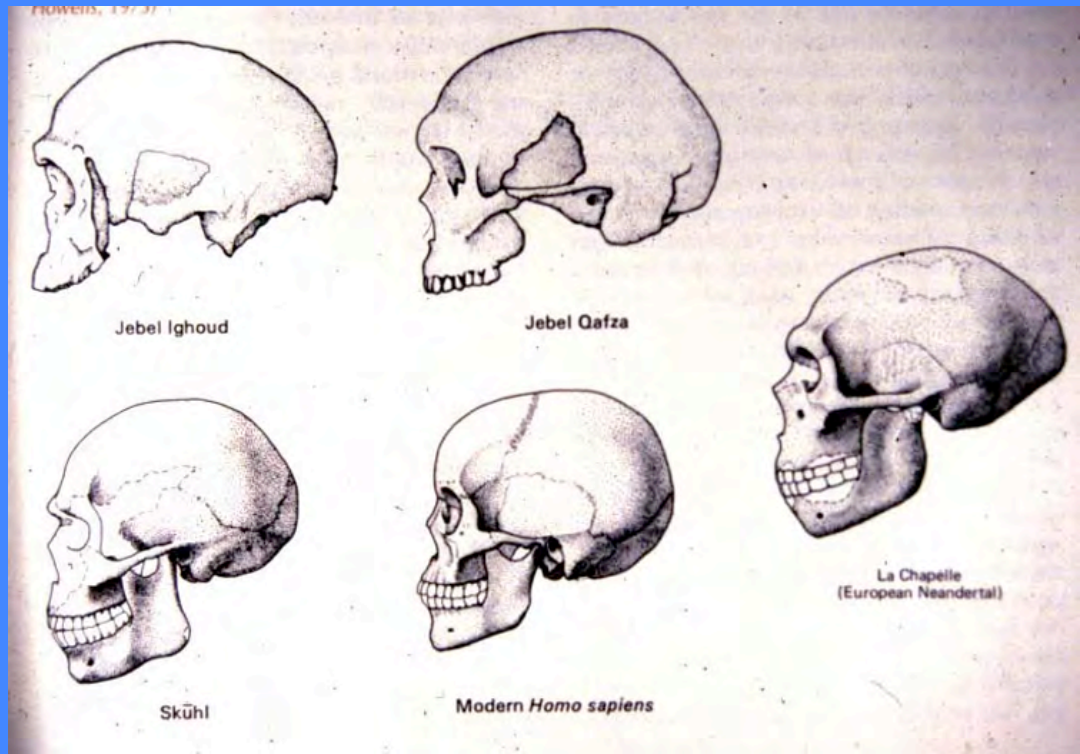


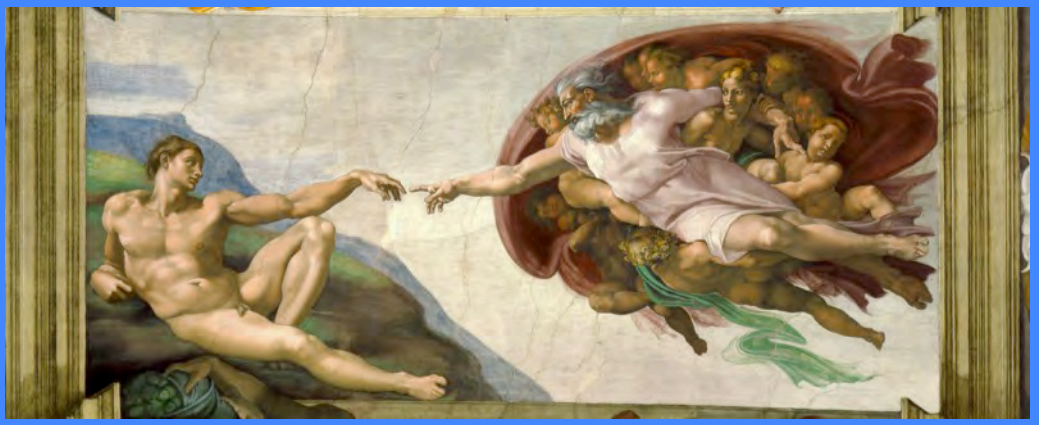
FIGURE 13–1
Anatomically modern *Homo sapiens* in Europe, the Near East, and Africa.

Kebara Cave, male burial, 60,000 YA, well preserved **hyoid bone** identical to modern H. sapiens indicates **modern speech abilities in Neandertals.**

Qafzeh, Israel- fully modern **Homo sapiens sapiens** (around 20 individuals) associated with **Levallois-Mousterian** tool types, circa 100,000 YA

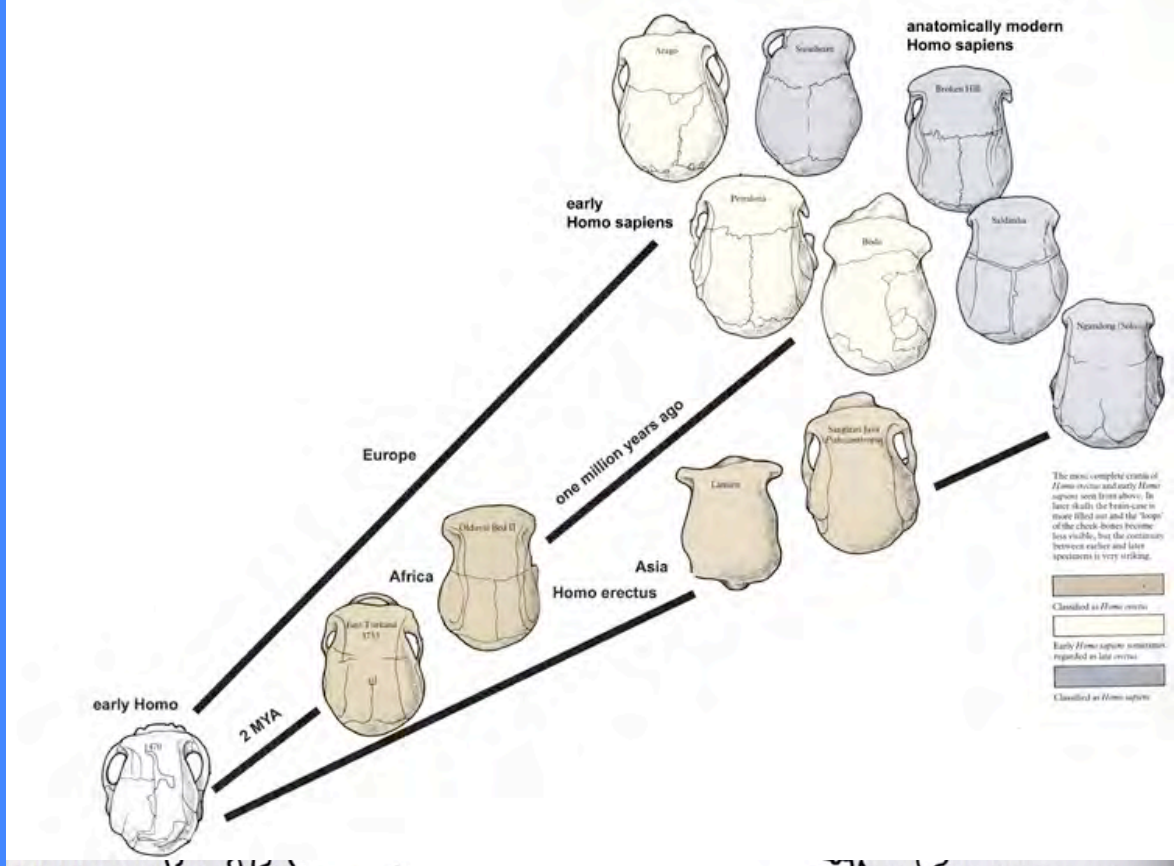


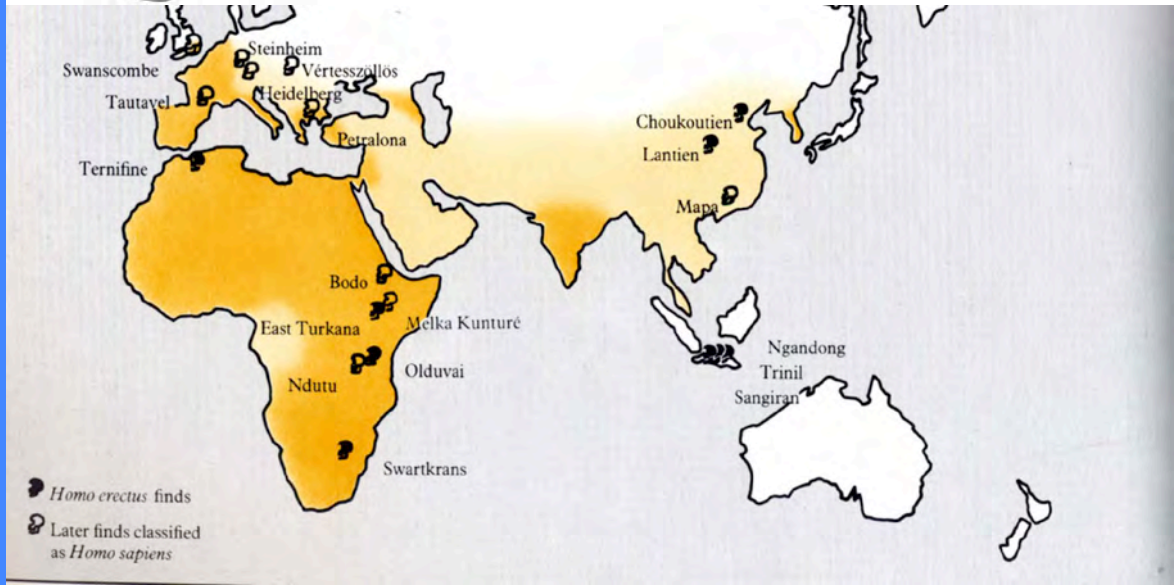
How did H. sapiens come to dominate the world? **Creationism - modern humans were created by some form of god/goddess or great spirit**

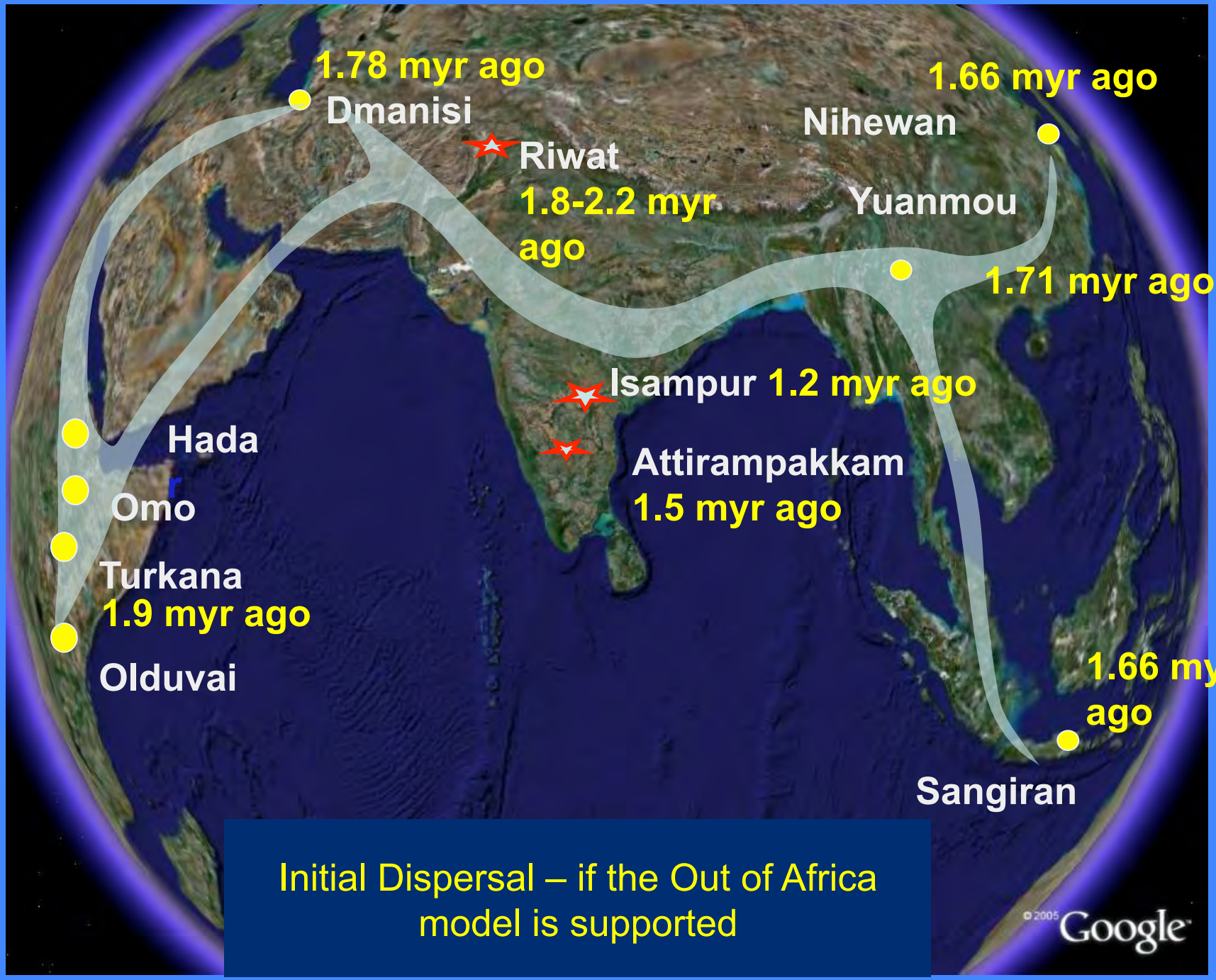


OUT OF AFRICA?

Replacement Model (Out of Africa Theory) all *Homo* originated in Africa, spread throughout the old world, then **modern Homo sapiens sapiens** originated in a distinct locality in Africa and spread out over the world replacing other existing Hominid populations.



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Dmanisi
Riwat
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Nihewan
Yuanmou
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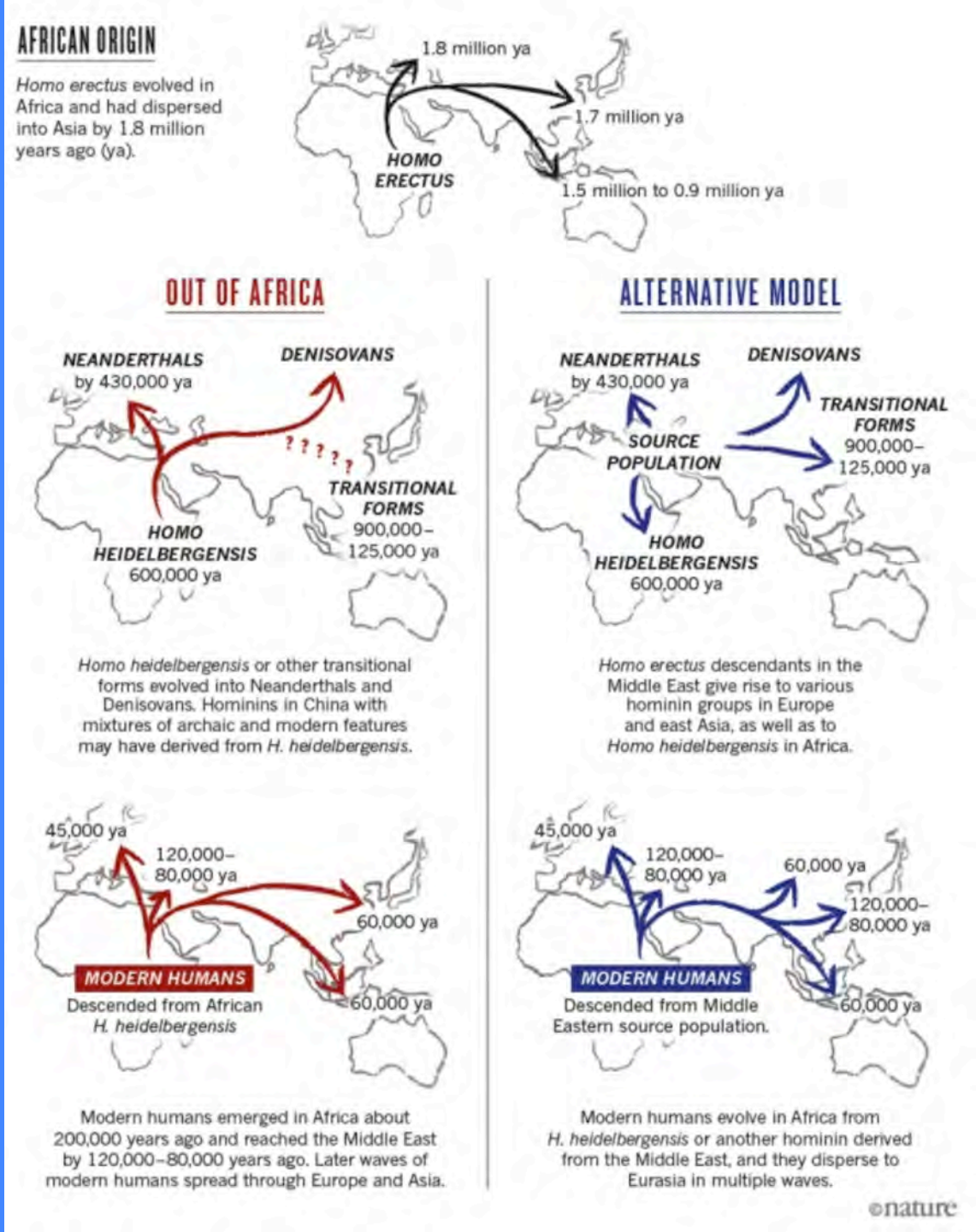
Isampur 1.2 myr ago
Attirampakkam
1.5 myr ago
Hada
Omo
Turkana
1.9 myr ago
Olduvai
1.66 myr ago
Sangiran
Initial Dispersal – if the Out of Africa model is supported
© 2005 Google

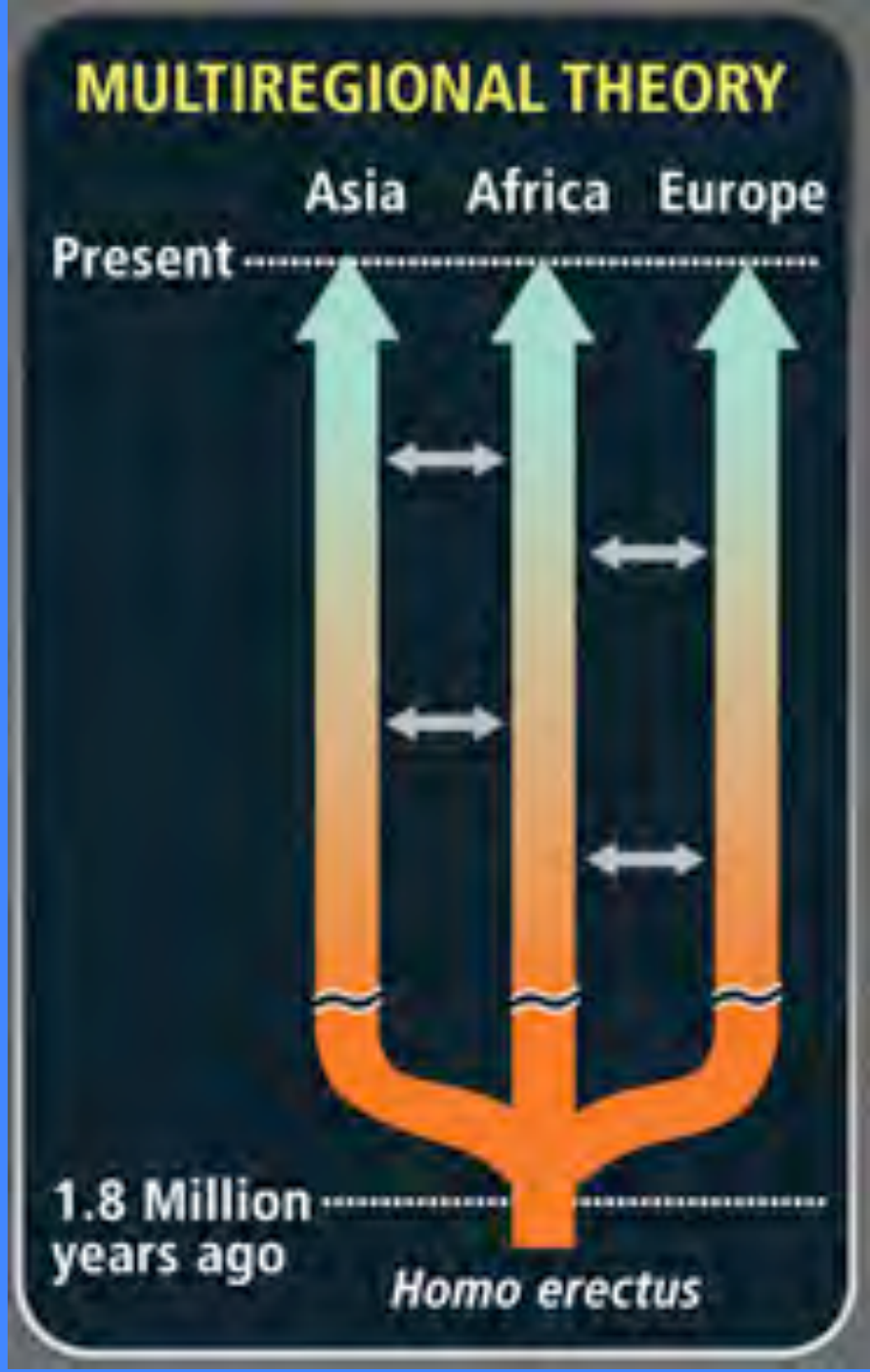
Out of Africa Again and Again with Gene Flow

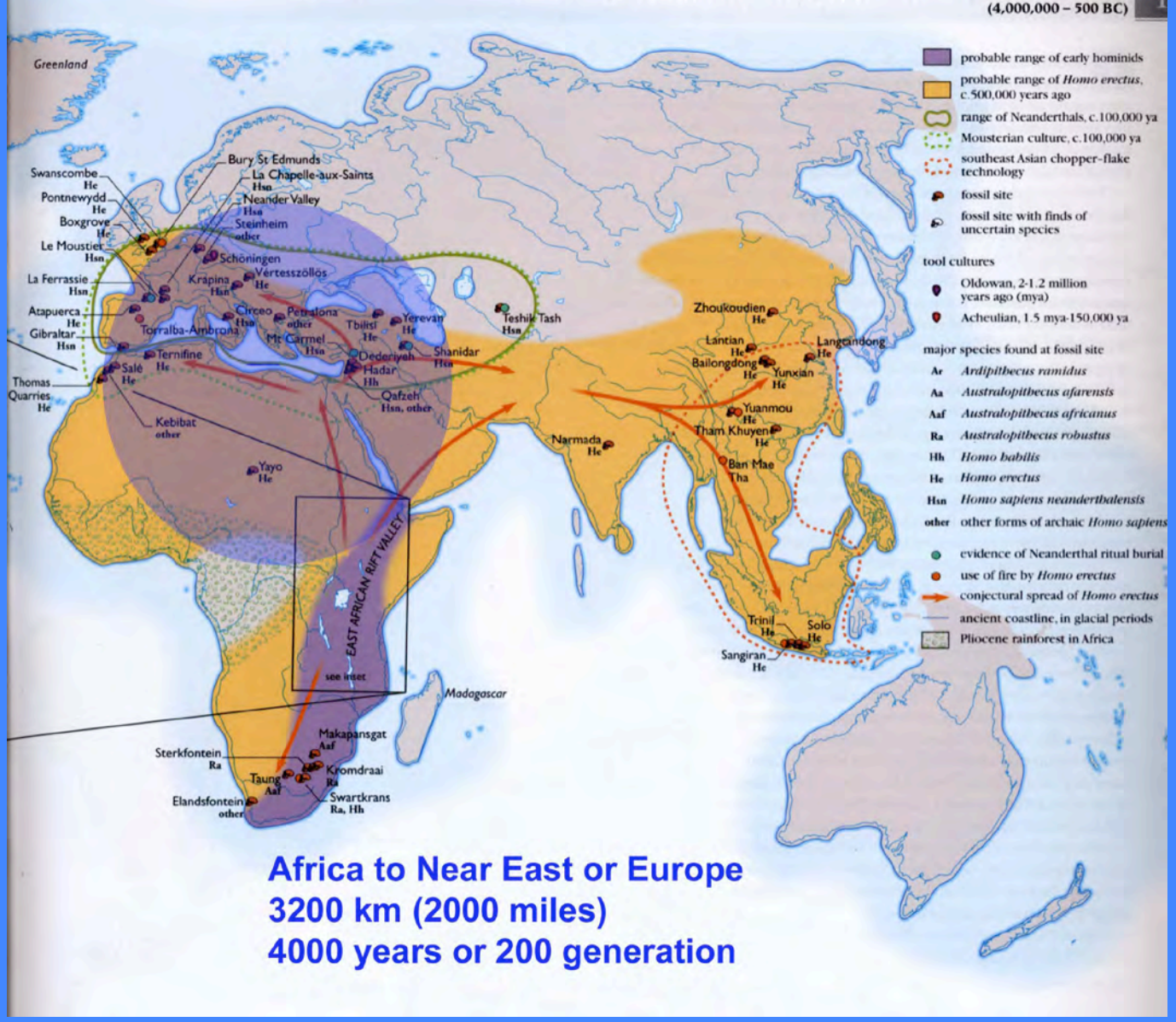
major genetic roots derive from Africa, with early dispersal of human lineage around 1.7 MYA, followed by gene flow between more or less isolated populations throughout the Old World.

Later dispersals of populations from Africa between 800,000-600,000 YA, and 300,000? Or 120,000-80,000 YA, with gene flow.
But no concrete evidence for replacement of earlier populations.



Regional Continuity Model (Multilinear Evolution with Gene Flow) all modern *Homo sapiens sapiens* evolved out of Homo ergaster/erectus in several interconnected lines when **H. erectus** migrated throughout the Old World. These lines were regionally distinct although there has been some gene flow between them.

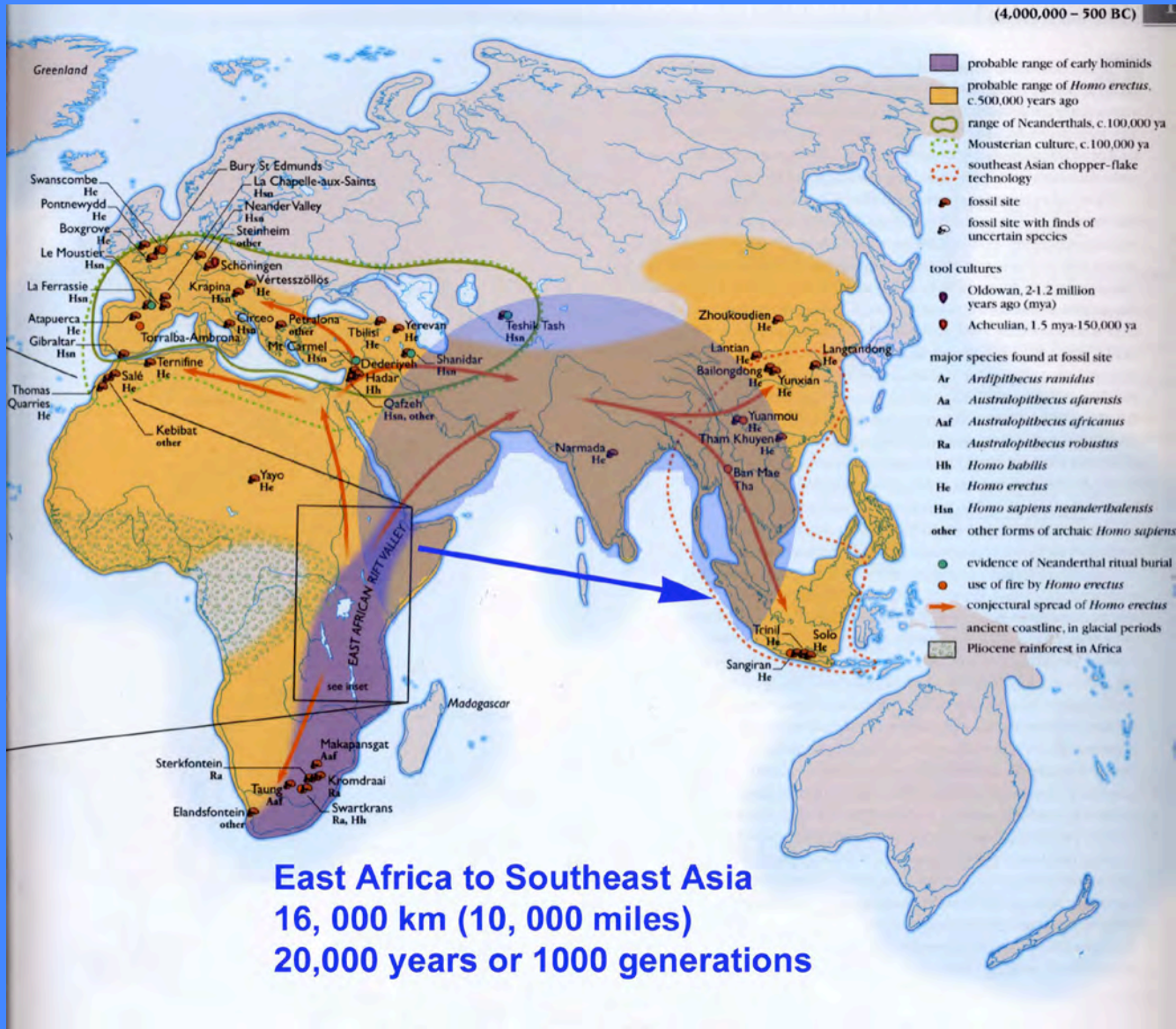




Hypothetical Minimum Diffusion Rates:
16 km (10 miles) per generation of approximately 20 years

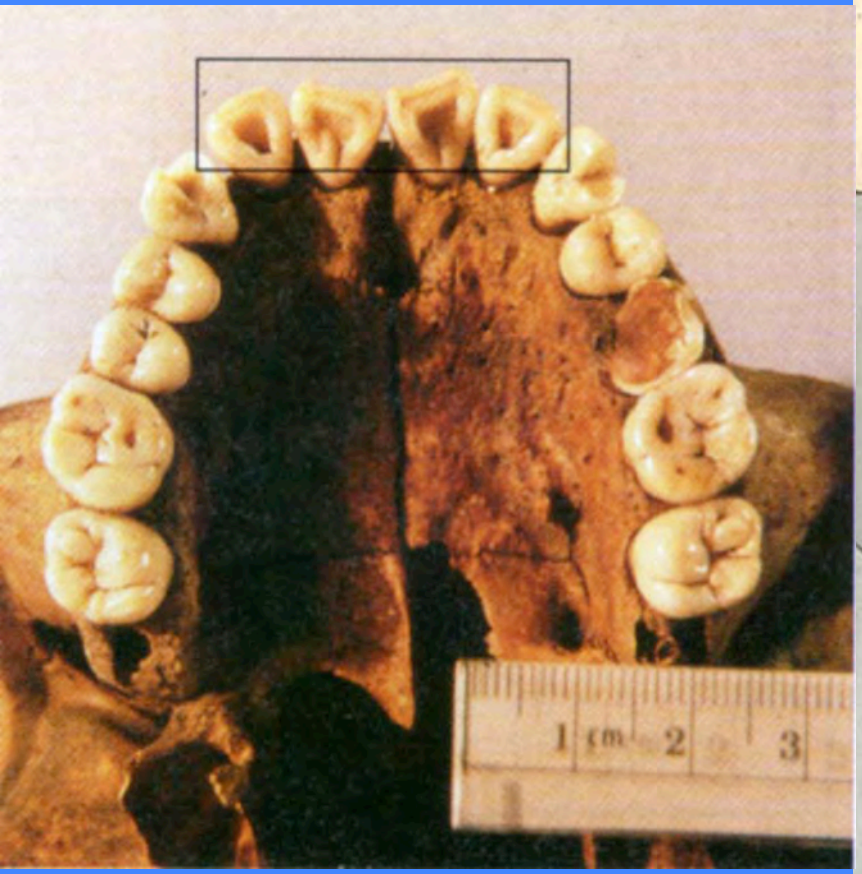
Homo erectus - in Java earliest H. erectus date to around 1.9-1.8 MYA and China to around 500,000 to 300,000 YA

Java - earliest cutmarks on animal bone, 1.8-1.6 MYA - derived from **shell tools and coarse volcanic rock** - but no stone tools found



Multilinear Evolution with Gene flow

Supported by important hominid Sites in South, Southeast and East Asia



Shovel shaped incisors

Mitochondrial DNA clock for defining the origins of fully modern Homo sapiens sapiens traced through the female line - speciation event occurred in Africa around 200,000 years ago (between 140,00 and 290,00) and that this population derived from an **"African Eve"** replaced all other hominid populations.

Other scholars calculate the date to around 400,000 years ago **(taking the speciation event back to the time of *H. erectus/archaic Homo sapiens*)**, other critiques of the analysis show that the **speciation event could just as well have taken place in Asia or Europe.**

Y chromosome clock – the male equivalent of the Mitochondrial DNA – studies are now suggesting that there was an **"African Adam"** sometime between 200,000 and 50,000 YA. Both studies have been criticized heavily on the rate of mutation and the directionality out of Africa.

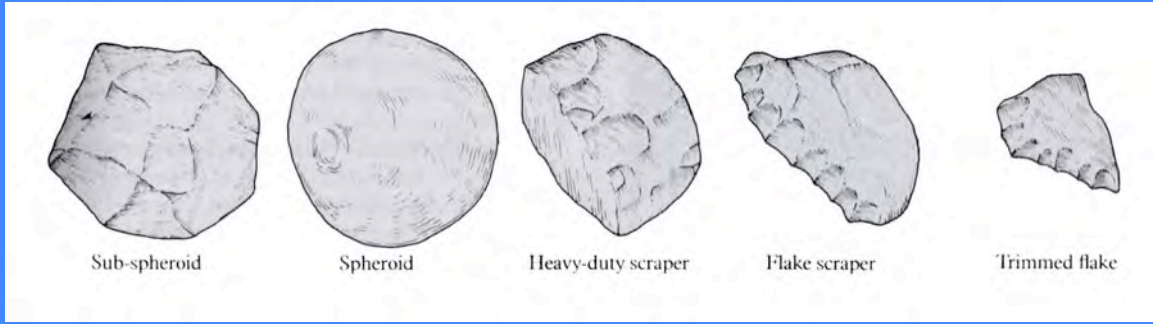
Cro-magnon Reconstruction

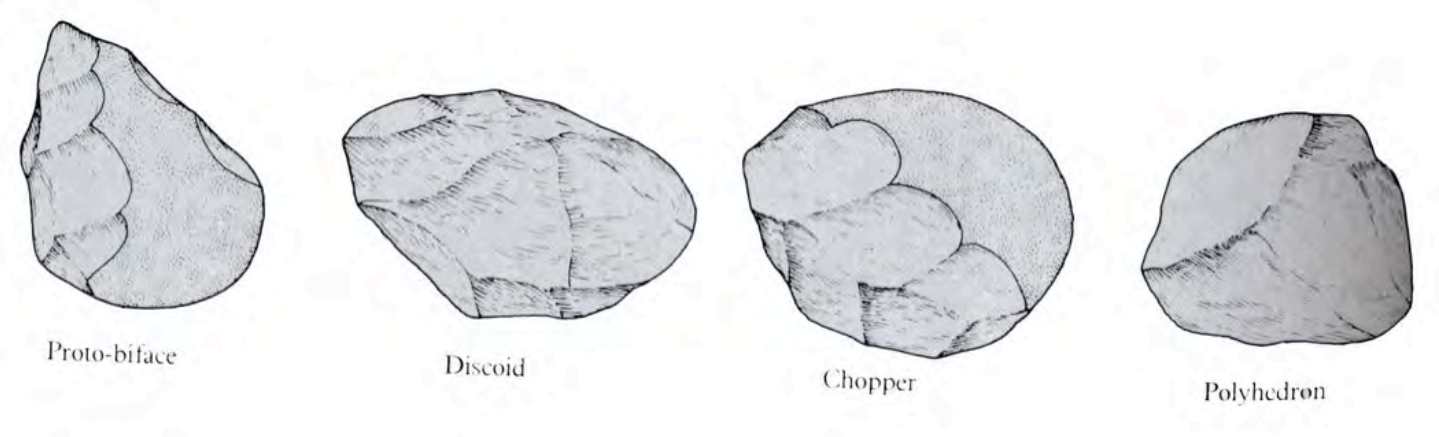
and modern Bushman from South Africa

Earliest stone tools in Africa – **Lomekwi 3,** West Turkana, Kenya, 3.3 MYA Kenya – species?? *A. afarensis*?

Kada Gona and Bouri Peninsula sites, Ethiopia - earliest evidence for flakes and flaked cobbles 2.5-2.7 MYA - possibly *H. habilis?*

Oldowan - 2.4 MYA
Acheulian – 1.7 to 0.5 MYA





Africa – Oldowan

Africa – Europe- Asia
Acheulian

Piaget's studies of children's mental development shows that ability to create objects with bilateral symmetry reflects **adult human intelligence >**
H. erectus had adult modern human intelligence?

Tool Making - irregular tools and bilaterally symmetrical handaxe - cutting whittling, scraping, shredding and butchering of a wide range of materials based on microwear analysis - bone, antler, meat, hide, wood and non-woody plant tissues and also for digging.

SOUTH ASIA

Riwat, Potwar Plateau, Pakistan - discovery of stone flakes, dated by palaeomagnetic studies to around +2 MYA

Uttarbani, Jammu, Kashmir early stone tools dating to +2.8 MYA

Attirampakkam, Tamil Nadu, Lower Palaeolithic, Acheulian tools, dated 1.07 to 1.5 MYA, living floors with **hand axes** and cores

NEANDERTHAL CULTURE

Technology - Mousterian stone tool tradition (first seen in Africa around **300,000 YA**) prepared core technology, **Levallois techniques,** small hand axes, various types of scrapers, etc.
Stone raw materials from local sources. **No long distance transport of raw materials.**

Stone tools for wood working, hide processing, rare bone or antler carving. Use of fire, **use of red ochre** (possibly in hide processing), possibly collected medicinal herbs and flowers for **ritual use.**

UPPER PALAEOLITHIC - EUROPE - Dated from the Würm Glacial to the Holocene, 35,000 to 12,000 B.P.

New dominant human species, **Homo sapiens sapiens** (known as **Cro-Magnon** in parts of Europe), taller and less robust that Neanderthal

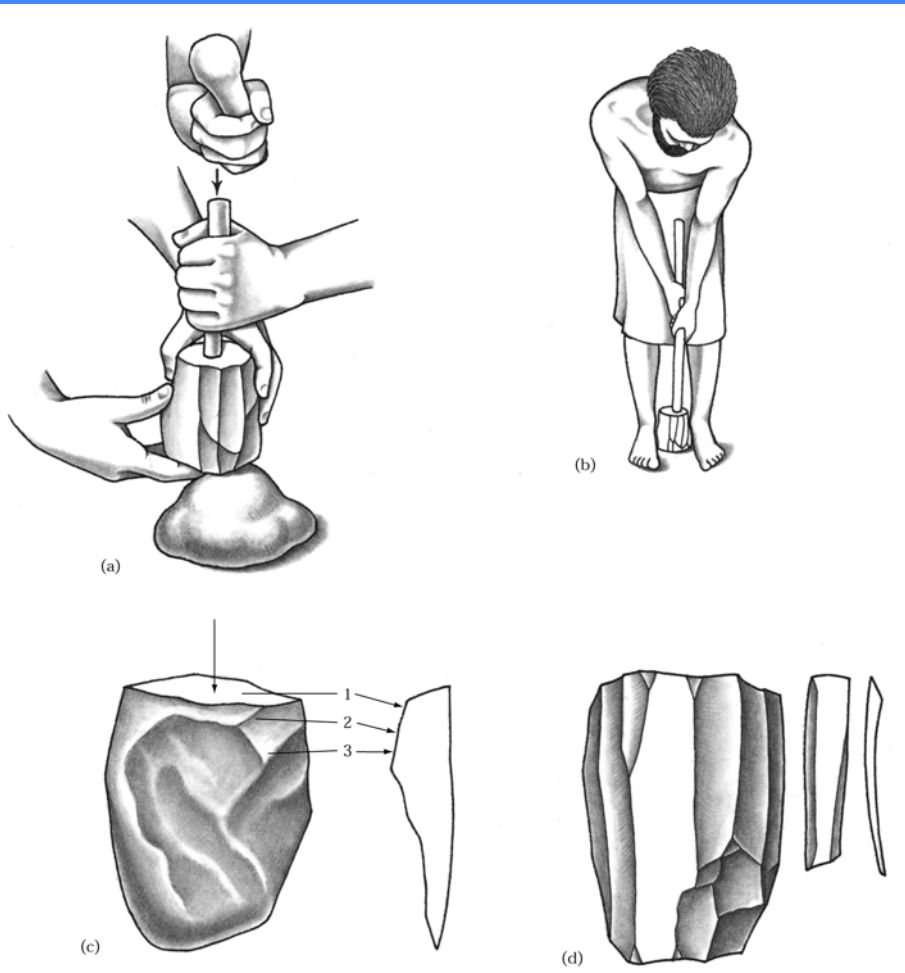
Characteristics of H.s.s. -

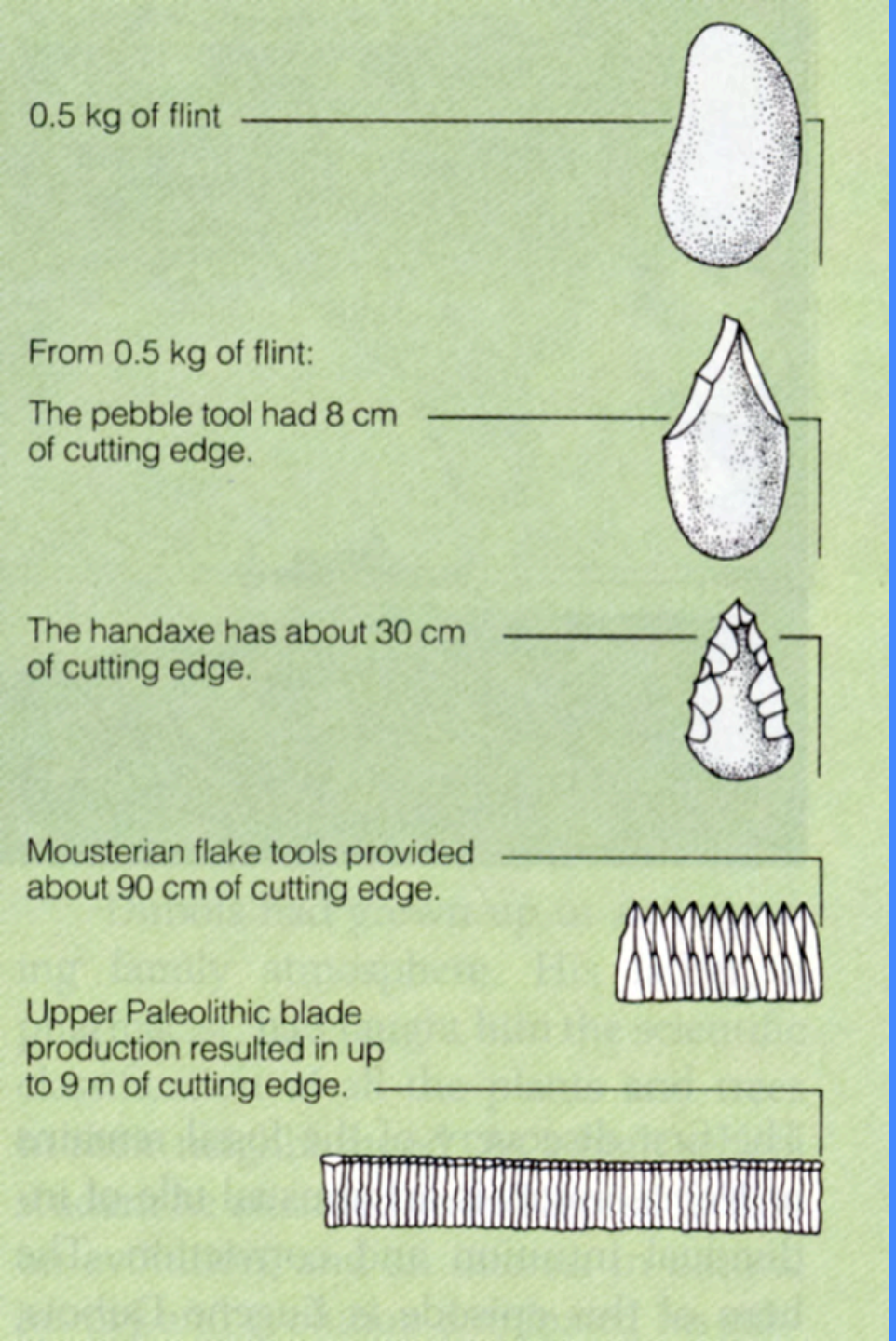
-taller, less robust, flatter face (lack of prognathism), chin, brain capacity generally greater than 1350 BC.

- overall high variation within early H.s.s. skeletal remains

bifacial points made with soft (antler) hammer percussion and pressure flaking

Upper Palaeolithic sees a gradual change in lithic technology, punch and pressure techniques, blade tools, burins for working bone/antler, bone/antler tools,

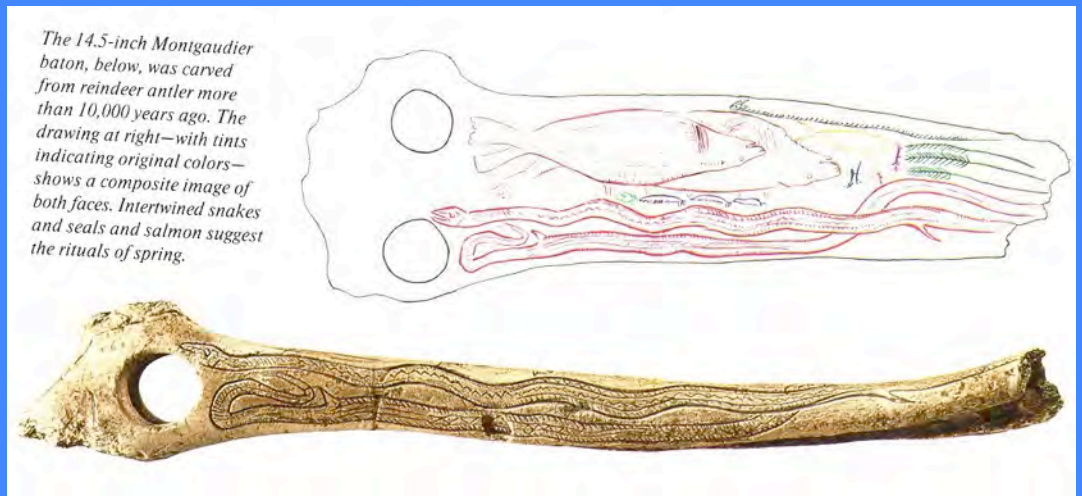




Blade technology produces the maximum number of tools or tool blanks and cutting

Bone and antler tools and ornamental objects

- grooving and incising with burins and engravers



more evidence for symbolic expression in the form of ornaments, mobilary art,

Atlatl with carved horse head for ritual or simply decoration?

Burials

Sunghir, Russia, 28,000-22,000 BP, adult male and two young boys with decorated outfits and tools

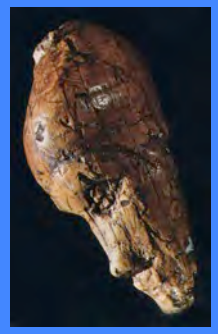
Arene Candinde, Italy- 20,000 BP, ivory pendants, flint blade, red ochre

- burial goods indicate belief in afterlife and need of ornaments, tools and food

- symbols of status are also taken into the afterlife

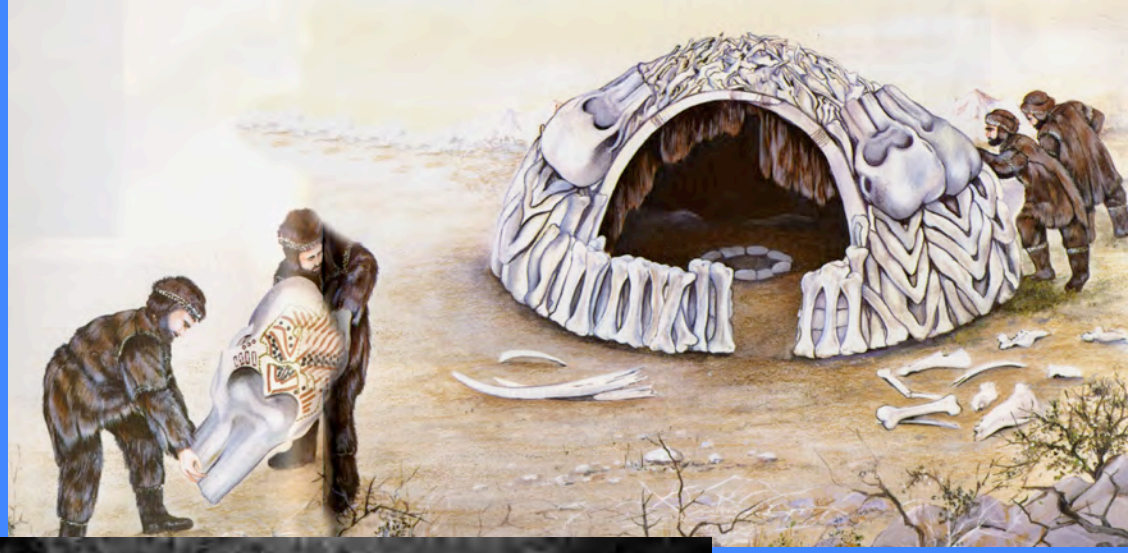
In Europe there are changes in subsistence, with reindeer and horse being favored in SW France, mammoth hunted in the north steppes and tundra. **Increased settlement size** and possible **increase in population.**

Dolni Vestonice, Czech Republic,
27,000-26,000 ya Semi-subterranean houses



Clay, bone, & ivory figurines

Mezhirich, Ukraine, mammoth bone and tusk hut, with painted mammoth skull drum?



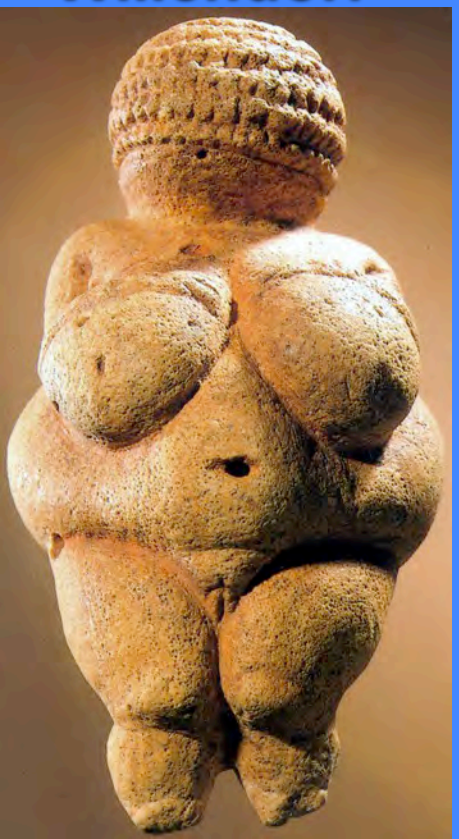
22,000
-19,000 YA

UPPER PALAEOLITHIC SYMBOLIC/GRAPHIC EXPRESSION

1) mobilary art- ornaments, utilitarian objects, ritual objects

Female figurines, thought to represent some form of fertility beliefs or rituals

Venus of Willendorf

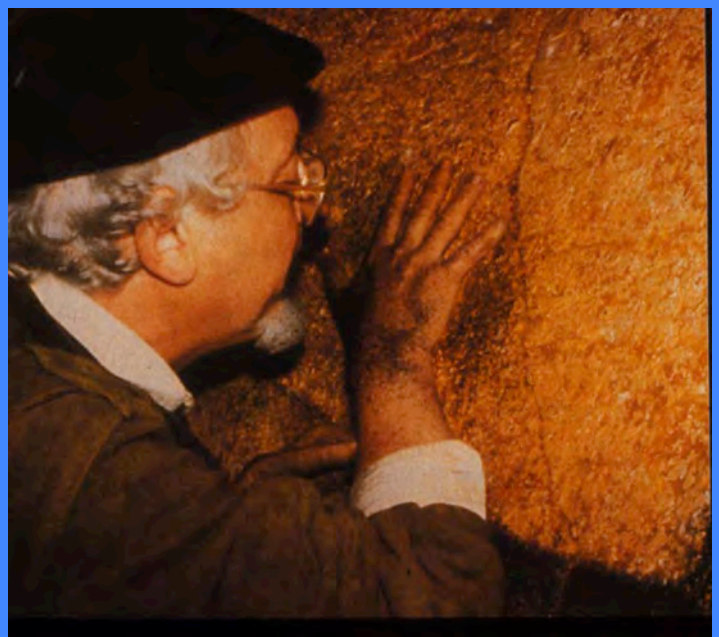


2) sculpture in the 1/2 round-engraved stone blocks,

Le Tuc d'Audoubert, France- 13,000 BC deep inside a cave were found 4 sculpted figurines of bison, a smashed bears skull, necklace of bear’s teeth, and some footprints of three children, some stone tools and other clay objects.

3) **parietal or cave art-** incised or painted figures , geometric, animal, human or mythical beings.

Peche Merle
Cave and replication of hand prints by blowing pigment from the mouth



Lascaux Cave, France

Chronology of paintings defined by super position and colors used, Lascaux Cave, France

Two possible assumptions: 1) that there is no formalized repetitive system of visual imagery- if this is the case than all we can do is describe each different case.

2) that there is a formalized and repetitive system and we must first define the chronological and then the contextual occurrences before we can define these systems.

Hunting magic? Niaux Cave, France