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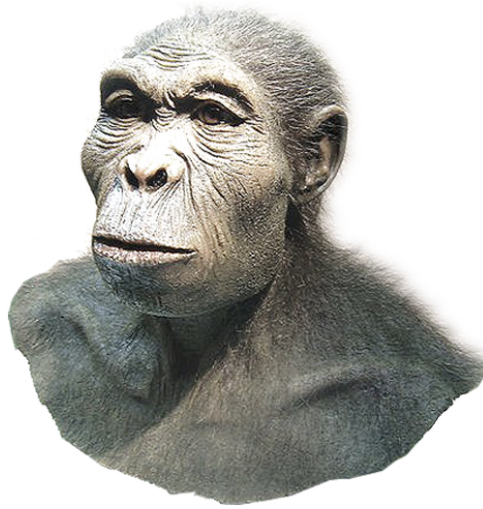
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## Archaic *Homo Sapiens* and Neanderthals

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## Homo Habilis

- first user of Oldowan Tools



**Figure 1:** Homo Habilis

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## H. Rudolfensis

- On the morphological boundary between the genera Homo and Australopithecus
- Only known through a handful of fossils gathered in 1972



**Figure 2:** Homo rudolfensis

## Homo Ergaster

### Characteristics:

- Thinner cranium
- Less brow ridge than *erectus*
- Very human like in many respects
- May have been first hominid to migrate out of Africa

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## Homo Erectus






- Nariokotome (Turkana) Boy in Kenya
  - 1.5 to 1.6 MYA
- Over time brain increased across range
  - From 640cc to 1200cc with a 900cc average



**Figure 3:** Homo Erectus

## Tools

- Early Stone Age
  - From 1.8 to 1.5 MYA only **Oldowan** tool (ASIA)
- Lower Paleolithic (Africa)
- Smashing rocks until the rocks become sharp tools
- Children most likely learned from their parents by watching and doing themselves
- **Oldowan Technology:**
  - New technology did not emerge for another million years
- **Acheulean:**
  - It took years to master this technique
  - Pressure flaking
- **Mousterian:**
  - Does not require labor intensive pressure flaking
  - Prepare a core and one perfectly placed blow will become a sharp edge

					
Stone tool industry	Oldowan	Acheulean	Mousterian	Aurignacian and others	Various
Age (in years)	2.6 million–1.7 million	1.7 million–200,000	200,000–40,000	40,000–12,000	12,000–7,000
Signature artifacts	Chopping tools	Large cutting tools	Flakes struck from cores	Rectangular flakes	Small, geometric flakes

**Figure 4:** Tool Lineage

- Middle Stone Age
  - This era gave rise to projectile tools, used to injure animals from afar



**Figure 5:** Oldowan Tool



**Figure 6:** Middle Age Spear Head

### **Homo Naledi**

- Very small brain (around 450cc)
- Long legs for distance walking
- Intentional “burial”
  - Intricate tunnels where bodies were placed
  - Lesedi Chamber
  - Dinaledi Chamber
  - People who were small enough were sent to excavate the chambers
  - It was apparent that this place was meant to be a site where people disposed of human remains but motive is unclear (religious ceremonies).

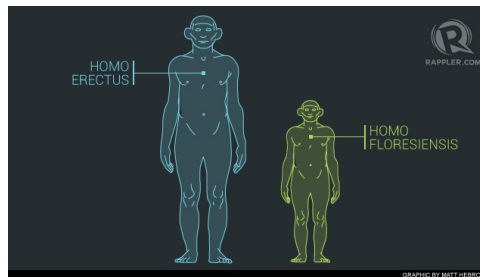
### **Homo Floresiensis (Hobbit)**

#### **Characteristics:**

- Wrist, ankle, humerus, femur, pelvis almost identical to chimps and *Au. africanus*
- Skull almost identical to small human skull, except teeth reduced for smaller jaw and brain case reduced for smaller ape-sized
- Lived in Flores from 94 KYA until 12,000 YA
- Co-existed with modern humans
- Some speculate descendants could exist today
- Stone tools associated

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## Height Comparison to Homo Erectus



**Figure 7:** Homo Floresiensis

## Origins of Humanity

- It is unclear which of the species we are learning about contributed the most to modern Homo Sapiens
- Glacier → River → Lake
- Coywolf example
  - A mixture of wolves, coyotes and domesticated dogs



**Figure 8:** Coywolf

## Types of Homo Fossils (Informal Labels)

### Finish this section

- Early Pleistocene
  - *Classic Homo Erectus* aka Homo Ergaster

- 
- Possibly extends into middle Pleistocene in China and Indonesia (the first hominid out of Africa)
  - Middle Pleistocene
    - *Advanced or late Homo Erectus*
      - \* *H. antecessor* link to *H. heidelbergensis*
    - Archaic Homo Sapiens
      - \* *H. heidelbergensis*, *rhodensis*
        - Evolved into Neanderthals in Europe, into Denisovans east through Asia, possibly in Africa into earliest Homo Sapiens
    - Late Pleistocene
      - \* Anatomically modern Homo Sapiens
      - \* Also *H. floresiensis*, *H. Neanderthalensis*, and Denisovans

### **European Archaic Homo Sapiens**

- Homo Heidelbergensis (found in Germany)
- Earliest to populate Europe
  - Possibly 600 KYA
- Atapuerca (N. Spain)
  - 28 skeletons
  - Burial w/ symbolic behavior (pink quartz along with a handaxe)
  - Species seems to be disposing of their dead
- Perhaps became Neanderthals, Denisovans and Homo Sapiens about 130 KYA

### **African Archaic Homo Sapiens**

- Homo Rhodesiensis
- Look different than the European sites
- 600 - 125 KYA
- 1300cc, others were smaller ~900cc
- Oldest signs of stone tool defleshing of conspecific (of their own kind) skull
  - Possible evidence of cannibalism or maybe ritual, there is no way of knowing
- Evolved into the earliest modern H. Sapiens
  - Not yet anatomically modern



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## Asian Archaic H. Sapiens

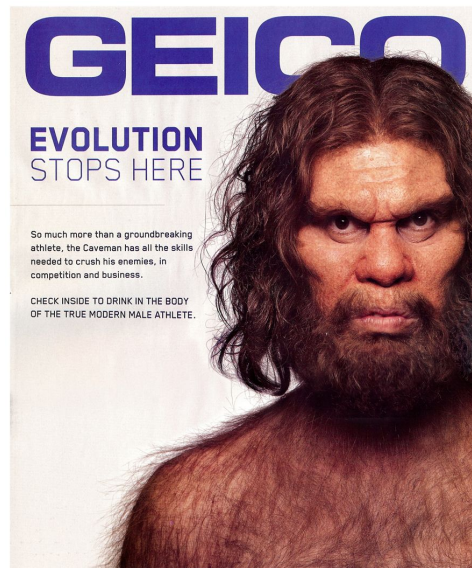
- Possibly related to Denisovans
- Up to 200 to 130 KYA
- 1150 to 1400cc (brain size)
- Less represented than European and African archaic H. Sapiens
- Not enough information to actually name them
- Site in China called Ngandong



**Figure 9:** Dali Skull

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## Homo Neanderthals



**Figure 10:** Geico Neanderthal

- Slightly larger brains
- Occipital bun
- Most of the remains were found in caves
- The most fossil evidence
- 100s of finds throughout Europe, Middle East, western Asia to Siberia
- More muscular, thicker bones, barrel chested, midfacial prognathism, double arched browridge, no chin, faster life-history
- Mousterian tools, later Chatelperronian blades, fire, cannibalism, adornment
- Exclusively carnivore, dangerous large mammal hunting
  - Healed fractures
- Reveals great similarities with us; differing in DNA by just 0.12%

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## Denisovans

- DNA extracted from molars
- Not yet named as a species, pending more fossils



**Figure 11:** Denisovan Molar

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## **Anatomically Modern Homo Sapiens**

- Emerging around 200 KYA, last human to evolve
- Move to omnivory (to cope with climate fluctuation)
  - Gathering shellfish, roots, berries already seen 200-70 KYA
- Population bottleneck around 140 KYA when only 600 individuals
  - We barely made it
- Showed symbolic culture
  - Blombos 75 KYA

## **Identification Activity**

### **This will be on the exam**

- one of these is not from the genus homo, can you identify
- identify the four different homo specimens
  - Look at skull case (dome, occipital bun, overall size), browridge, prognathism (lower, mid-facial), chin
  - Include from slides and identify each skull

## **Hominin/Human Evolution**

- Behavior associated with tool production, tool use, and subsistence
- Symbolic items and behaviors after ~40KYA
  - Beads, buttons
  - Ochre, symbolic carvings
  - Venus figurines, zoomorphic statuettes (early pornographic material possibly)
  - Grave goods, arranged burials, cremations
  - Cave paintings

## **Models of Human Origins**

- Hard to agree upon what was the first anatomically modern human
- Difference in body shapes that had to reflect with dietary adaptations)

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## **Replacement Model**

- Second migration outside of Africa
- Replacement of H. Erectus (not by a gradual change)
- This is where the evolution of anatomically modern humans
- Unknown in the disappearance of Neanderthals
  - Homo Sapiens were somehow superior to Neanderthals

## **Multiregional Model**

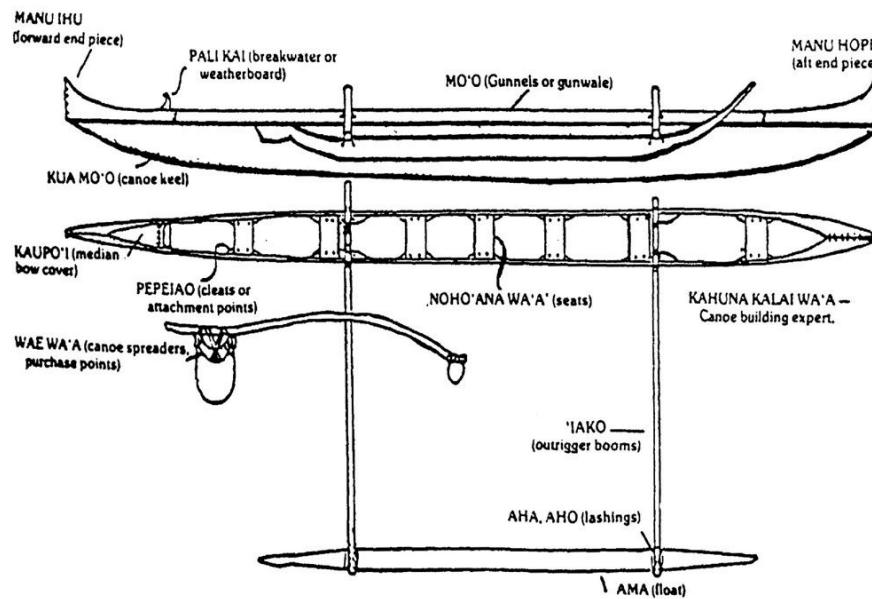
- A gradual flow of new species and interbreeding
- Movement inside and outside of Africa

## **Final Notes**

- Replacement: there are shared genes in Homo Sapiens (gene flow)
- Multiregional: there is an abrupt change in population (some places where there is interbreeding and other places shows abrupt change)
- There is a mixture of the two philosophy, based on what is most important to the scientist

## **Peopling of the New World**

- Bearing land bridge (from Siberia) open after 15 KYA interior corridor later 14-13 KYA
- Followed Pleistocene megafauna along ice-free corridors
- Preclavis
  - May have arrive by water craft (known @ 40KYA)
  - Monte Verde, Chile 13.9 - 14.2 KYA
  - Buttermilk Creek Texas 15-13.2 KYA
- Most Pacific Islands colonized ~3.5 KYA or late
  - Likely with outrigger canoes and supplies



**Figure 12:** Outrigger Canoe

## External Links

[Middle Age Stone Tools](#)