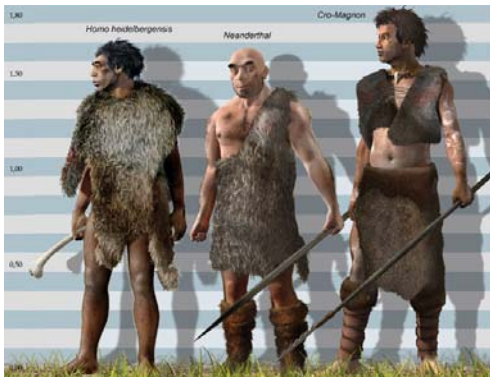


## ARCHAIC HOMO



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## 1. EARLY HOMO

- 2 MYA: two distinct hominin groups: early *Homo* and *A. boisei*
  - *Homo* evolved into *H. erectus* by 1.9 m.y.a.
  - generalized subsistence: hunting of large animals, gathering vegetation and scavenging
  - *Australopithecus* specialized in coarse and gritty vegetation (490 cm<sup>3</sup>)



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## H. RUDOLFENSIS AND H. HABILIS

- *H. rudolfensis*: KNM-ER 1470 Leakey & Ngeneo, Koobi Foora, 1972
  - Brain size 775 cm<sup>3</sup>, molars like *Australopithecus*, but no skeleton
  - 2.4 (?) to 1.8 mya
- *H. habilis*: KNM-ER 1813 Leakey and Kimeo at Koobi Foora, 1973
  - Brain size 510 cm<sup>3</sup>, 1.8-1.9 mya, small, modernish rounded skull
  - (OH 24) "Twiggy" – 1.8 mya, 590 cm<sup>3</sup> Olduvai, 1968
  - The only sure conclusion: several different kinds of hominin lived in Africa before and after the advent of *Homo*



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## H. HABILIS AND H. ERECTUS

- Most *H. habilis* dated to ~1.8 m.y.a.
- OH 62: small, with longer apelike arms
  - greater tree-climbing ability than later hominins
  - Cranial capacity: between 600 and 700 cm<sup>3</sup>
  - By 1.6 m.y.a., *H. erectus* attained cranial capacity of 900 cm<sup>3</sup> and modern body shape and height




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- Ileret, Kenya, finds show that *H. habilis* and *H. erectus* overlapped

- *H. habilis* (1.9–1.44 m.y.a.)
- *H. erectus* (1.9–.3? m.y.a.)
- 1,000 cm<sup>3</sup> cranial capacity
- Sexual dimorphism in *H. erectus* is greater than expected
- Likely that both share common ancestor, rather than ancestral relationship
- Probably occupied separate ecological niches (hunting)
- Increase in brow ridges and cranial thickness in *H. erectus* possibly due to increased reliance upon front teeth and protection while hunting larger animals




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## OUT OF AFRICA I: H. ERECTUS

- Biological and cultural changes enabled *H. erectus* to exploit gathering and hunting strategies
  - Small groups broke off from larger ones
  - *H. erectus* gradually spread and changed




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## PALEOLITHIC TOOLS

- **Paleolithic:** Old Stone Age, includes:
  - Lower Paleolithic (*H. habilis*, *H. erectus*)
  - Middle Paleolithic (archaic *H. sapiens*, including Neandertals)
  - Upper Paleolithic (anatomically modern humans)
- **Acheulean:** associated with *H. erectus*
  - Hand axes
    - Advanced over pebble tools
    - greater efficiency, manufacture of tools for specific tasks, more complex technology



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**FIGURE 9.1** Evolution in Toolmaking.

Finds at Olduvai Gorge and elsewhere show how pebble tools (the first tool at the left) evolved into the Acheulean hand ax of *H. erectus*. This drawing begins with an Oldowan pebble tool and moves through crude hand axes to fully developed Acheulean tools associated with *H. erectus*.

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## ADAPTIVE STRATEGIES OF *H. ERECTUS*

- Interrelated changes in biology and culture increased human adaptability
  - Improved tools increased range
  - Biological changes permitted long-distance stalking and endurance during hunt
    - Longer legs
  - *H. erectus* average cranial capacity doubled australopithecine average
  - *H. erectus* face, teeth, and jaws smaller than australopithecines'
- Hearths confirm that fire had become part of the human adaptive kit by this time
  - Protection
  - Survive winter cold
  - Cooking
- Was language an additional advantage?
  - Cooperative hunting
    - Evidence of elephants, horses, rhinos and giant baboons

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## ADAPTIVE STRATEGIES OF *H. ERECTUS*

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## THE EVOLUTION AND EXPANSION OF *H. ERECTUS*

- Dmanisi fossils suggest rapid spread of early *Homo* out of Africa and into Eurasia by 1.7–1.77 m.y.a.
- Fossils also found in Tanzania, China, and Europe
  - Probably increased range in pursuit of meat




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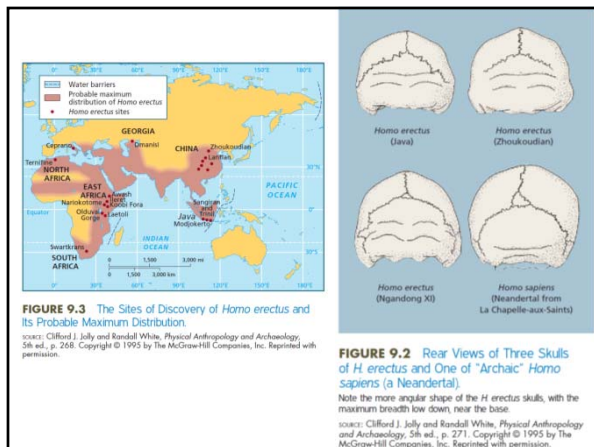
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## ARCHAIC *H. SAPIENS*

- Africa joined by Asia and Europe during *H. erectus* and *H. sapiens* periods
- **Archaic *Homo sapiens*** (300,000? to 28,000 B.P.) encompasses earliest members of species along with **Neanderthals** (130,000 to 28,000 B.P.)
  - Brain size in archaic *H. sapiens* was within modern human range (1,350 cm<sup>3</sup>)
  - Rounding out of the brain case



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## ICE AGES OF THE PLEISTOCENE

- Several **glacials**: major advances of continental ice sheets in Europe and North America during second million years of Pleistocene
  - Separated by **interglacials**: extended warm periods between glacials
  - *Würm*: last glacial, 75,000 to 12,000 B.P.
  - *Interstadials*: brief periods of relative warmth during the Würm glacial

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## *H. ANTECESSOR* AND *H. HEIDELBERGENSIS*

- *H. antecessor*, from Spain's Atapuerca mountains, possible common ancestor of Neanderthals and anatomically modern humans (AMHs)
- *H. heidelbergensis*—fossil found in Heidelberg, Germany—may refer to group of hominins described as either late *H. erectus* or archaic *H. sapiens*



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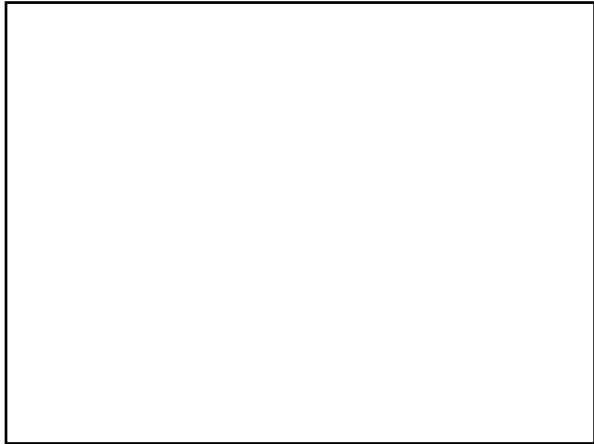
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**H. ANTECESSOR AND H. HEIDELBERGENSIS**

- Stone flakes found on England's Suffolk seacoast show that humans reached northern Europe 700,000 years ago
- Terra Amata, France, shows bands of 15 to 25 people made regular visits during late spring and early summer some 300,000 years ago
- *Homo's* tolerance of environmental diversity increased
  - Archaic *H. sapiens* occupied Arago cave in southeastern France when Europe was bitterly cold
  - Arago fossils have mixed features that seem transitional between *H. erectus* and the Neandertals

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**THE NEANDERTALS**

- First discovered in western Europe in Germany's Neander Valley
- Fossils that are not Neandertals but have similar features are found in Africa and Asia
- Identification of Neandertal mtDNA announced in bones from central Asia and Siberia




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## COLD-ADAPTED NEANDERTALS

- Neandertals were stocky, with large trunks relative to their limb length
  - Phenotype minimizes surface area and conserves heat
- Massive nasal cavities- long, broad noses to expand the area for warming and moistening air



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## COLD-ADAPTED NEANDERTALS

- Neandertals' front teeth: extremely large, show evidence of wear
  - Probably used for many jobs later done by tools
- Later Neandertals show decrease in robust features
  - Neandertal technology, a Middle Paleolithic tool tradition called **Mousterian**, improved during Würm



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Figure 9.5: Middle Paleolithic Tools of the Mousterian Toolmaking Tradition

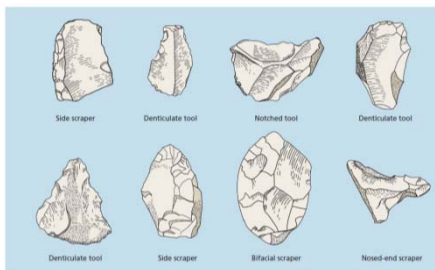


FIGURE 9.5 Middle Paleolithic Tools of the Mousterian Toolmaking Tradition  
The manufacture of diverse tool types for special purposes confirms Neandertal specialization.

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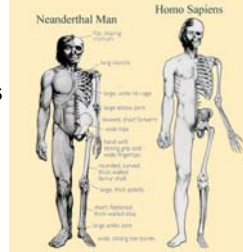
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## THE NEANDERTALS AND MODERN PEOPLE

- Prevailing view says that *H. erectus* split into separate groups, one ancestral to Neandertals, the other ancestral to **AMHs**
  - Neandertals differed from AMHs
    - Heavy brow ridges and slanting foreheads
    - Larger cranial capacity
    - Comparatively rugged skeletons
    - Greater sexual dimorphism



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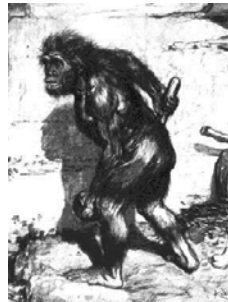
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## THE NEANDERTALS AND MODERN PEOPLE

- Errors helped create inaccurate stereotype of Neandertals
  - Differences exaggerated on basis of misinterpretation of La Chapelle-aux-Saints find that had osteoarthritis
  - Some argue Neandertals contributed to ancestry of anatomically modern Europeans



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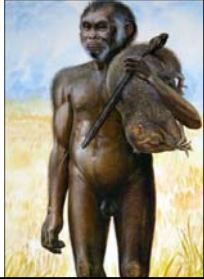
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## HOMO FLORESIENSIS

- Discovery of bones and tools of group of tiny humans in Flores, Indonesia
- Shows that archaic humans survived much later than had been thought
  - Remains date from 95,000 to 13,000 B.P.
  - Appear to have controlled fire
  - Tools found were more sophisticated than known *H. erectus* tools
  - Population wiped out by volcanic eruption around 12,000 B.P.



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