

Prehistoric Technology

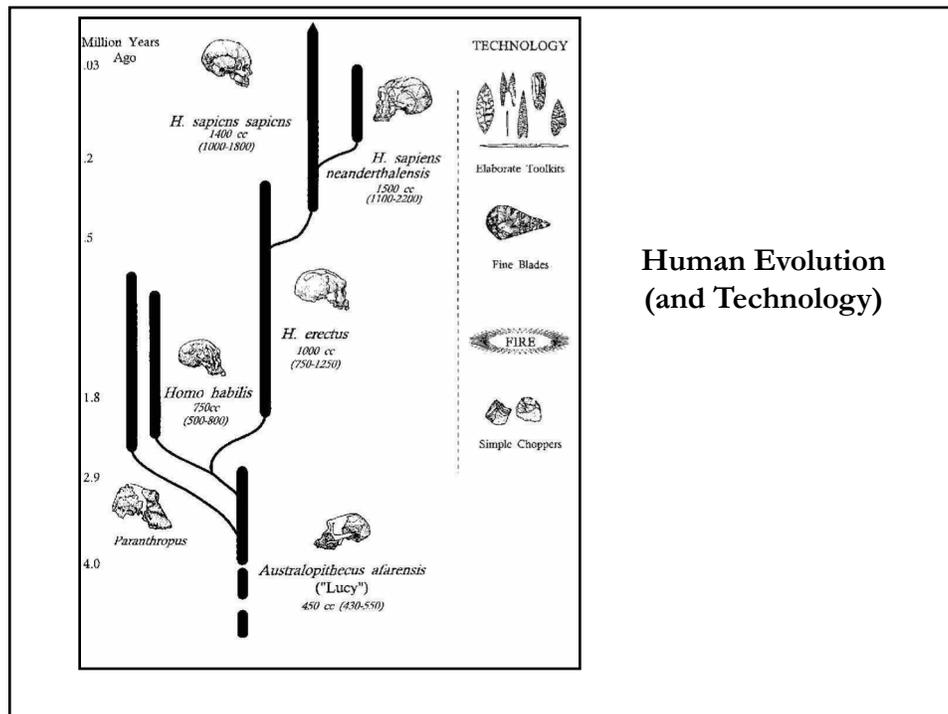


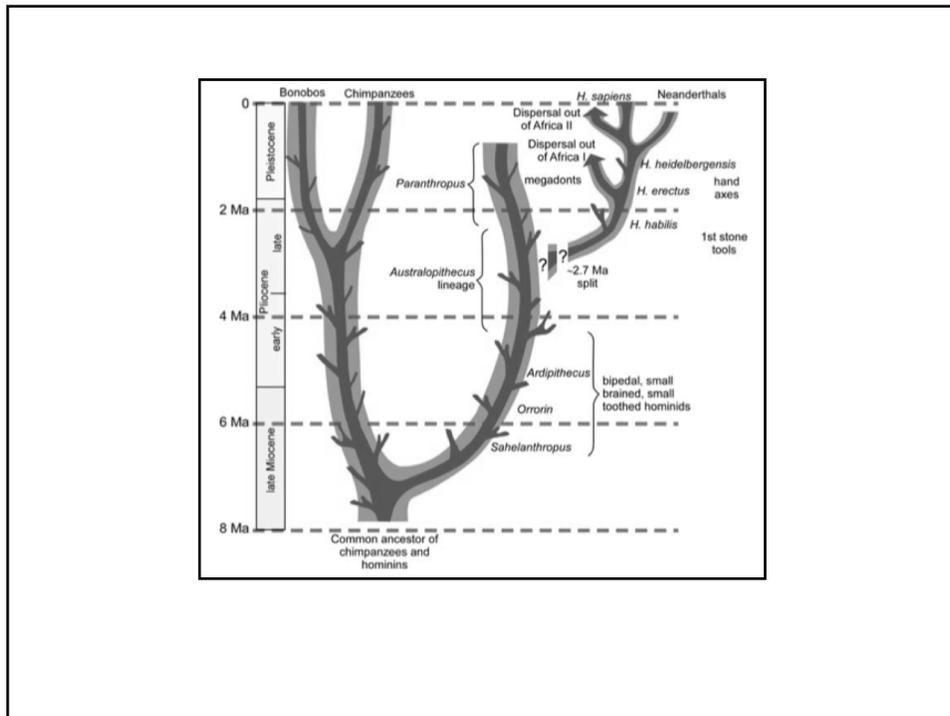
Human History

- Prehistory
 - generally associated with artifacts
 - 2 million years ago to 5,000 years ago
- History
 - generally associated with the emergence of written records
 - 5,000 years ago to now

Periodization based on Tools?

- Paleolithic
 - Old Stone Age
 - lasted around 2 million years
 - rudimentary stone tools designed for collecting and processing wild food sources
- Neolithic (and Mesolithic)
 - New Stone Age
 - began around 12,000 years ago, ends around 2,500 BCE
 - emergence of more complex stone implements for low-intensity food production

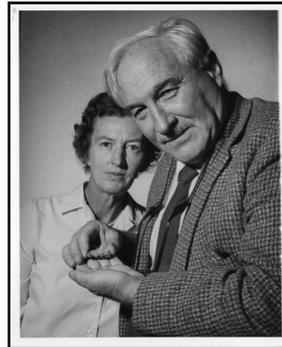
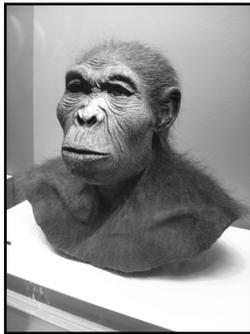




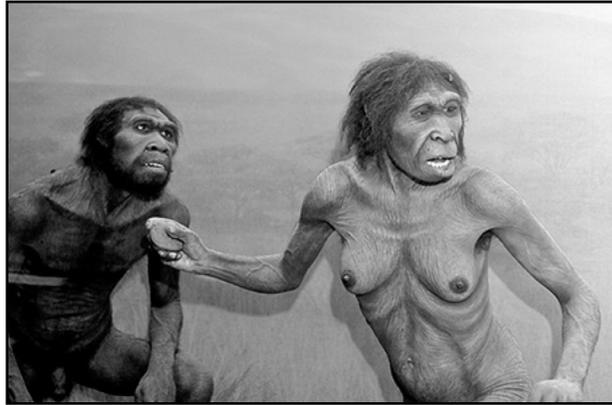
Paleolithic Era

- began 2 million years ago
- ended about 12,000 years ago
- Some features
 - food collecting
 - technology was for food-collecting
 - “hunter-gatherer” society
 - groups of < 100
 - nomadic
- ‘Science’ and ‘Technology’ in the Paleolithic Era

- *Australopithecus afarensis*
- 3.2 million years old
- Lucy



- *Homo habilis* (2.3 to 1.4 million years ago)
- Discovered by Louis & Mary Leakey in early 1960s
- cranial capacity about 1/2 of modern humans
 - intelligence/social organization more than modern chimps
- Used stone flakes
 - more for scavenging than hunting



- *Homo ergaster* (2.5 to 1.7 million years)
- Direct ancestor to us
- Use of more sophisticated tools (bifacial axes)
- First hominid to use human voice, some level of linguistic or symbolic communication

- *Homo heidelbergensis*
- 600,000 to 400,000 years ago
- used spears to kill (not simply scavenges)
- still limited by immediate perception
 - lack of anticipation/planning
- may have buried their dead
- 500,000 year ago, weather changes
 - ice age in the north
 - drought in the south
- split in species
- in the north: Neanderthals



Neanderthals

- 600,000 to 30,000 years ago
- cranial capacity as large or larger as modern humans
- physically stronger than modern humans
- became extinct
 - competition with modern humans?
 - volcanic super eruption?



- *Homo heidelbergensis* survives
- 110,000 years ago water returns to Africa
- tiny band of survivors
- 30,000 years ago becomes *homo sapiens*
 - at the same time Neanderthals die out

Neolithic Era (New Stone Age)

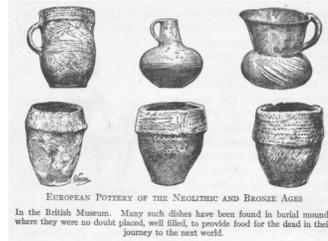
- Began c. 12,000 years ago
 - Ended about 5,000 years ago
- There was no sudden change, a slow overlap
- Two paths to the Neolithic
 - From gathering → cereal horticulture (gardening)
 - Hunting → herding & pastoral nomadism
 - why different pathways?
 - p. 18
- Not one revolution but several across the world
 - Some places remained in Paleolithic stage for a long time



- What brought about the Neolithic Revolution?
 - Population pressure
 - Greater nutritional value of wild and domesticated cereal grains
 - Wheat, rice, barley, oats, rye, maize, etc.
- What does “domestication” mean in this case?
 - For plants?
 - For animals?
 - read p. 19

Neolithic Technologies

- Toolkit
 - Agricultural implements (small chipped stones, axes, grinding stones, mortars and pestles)
- Skills need to exploit animal-related products
 - Food, eggs, milk, cheese, manure, hides
 - traction for agriculture
 - “animal factories”
- Textiles
 - driven by need for cloth and storage vessels
 - what kind of technologies did you need to produce textiles?
 - pp. 18-19
- Pottery
 - “pyrotechnology”
- Dwellings (wood, mud brick, stone)



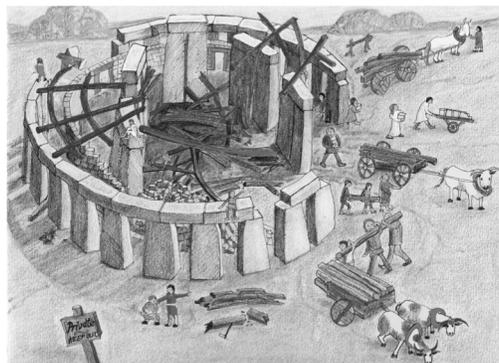
Neolithic dwelling reconstructions

- What about ‘science’ and the Neolithic?
- Astronomy
 - Based on observations
 - Was this the ‘prehistory of science’?
- Example of Stonehenge





- Stonehenge
 - “hanging stone”
 - multiple rings of standing stones
- Built in 3 major phases from 3100 BCE to 1500 BCE
- Major technological accomplishment of Neolithic people
 - transportation of stones
 - cutting of stones
 - different stones: Heel stones, blue stones, trilithons (30 tons each!)
 - land excavation



- Different stories attached to Stonehenge
 - King Arthur
 - Druids
- Probably both a ceremonial site and an astronomical installation
- Monument built to mark extreme and mean points of seasonal movement of sun and moon as they rose and set
 - a form of calendar
 - read p. 27
- What kind of knowledge & practices did it require?
 - detailed observation of Sun and Moon over long period of time
 - method of recording such observations
 - “ritual astronomy”
- What kind of social organization did it require?
 - some of form centralized authority
 - maintaining of food for laborers

Conclusions

- Neolithic marked transition of humans toward food production
 - this was enabled by tools (technologies)
 - but it was not necessarily caused by them
 - it led to two different pathways
 - gardening
 - pastoral nomadism
- we see the first social effects of the use of new technologies
 - tools required organization of social relations
 - science was absent but we can speak of “ritualized” forms of knowledge collection