Earliest archaeological sites
Contexts of early artifacts

South African cave sites
East African open-air sites

Killer Apes!

Alternative hypotheses?

Bob Brain's alternative:
- How can bones get into caves?
- Images text pp 24-26

Interpretive criteria

- Dart
  - Abundance of bones not natural
  - Bones deliberately modified as tools
  - Bones damaged by tools
  - Association with hominids

- Brain
  - Bones accumulate naturally in caves
  - Bones broken naturally
  - Bones damaged by carnivores
  - Association: all are prey

Summary

- Osteo-donto-keratic “culture” & Killer Ape hypothesis not supported

- Australopithecus africanus was not a mighty hunter, but more likely one of the hunted
Key = context

- Cave deposits
- Bones washed into cavities
  - jumbled together
  - secondary context

Cave deposits
- Bones washed into cavities
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Rift Valley
- East Africa
- Tectonic
  - Faulting
  - Volcanos

Sedimentary basins
- Shallow, fluctuating lakes
- Streams draining basin margins
- Sediments washed in

Stratigraphy
- Superposition
  - Oldest on...?
  - Bottom!
- Old layers exposed
  - Faulting
  - Erosion
Gona site, Ethiopia
- Layers of fine sediments
  - Lake & stream margins
- Earliest known site
  - Stone artifacts

First Sites in East Africa
- Stone tools
  - How do we recognize them?
- How can we date the sites?
- Next week:
  - Who made the tools?
  - What were they used for?

Why are these “artifacts”?
- Flaked by hand
  - Sharp flakes
  - Cores with several flake scars

Why are these “artifacts”?
- Unnatural context
  - Big rocks in fine sediments

Rift Valley sites
- How old?
- Volcanos
  - Eruptions of ash
How can we date site?

- Paleomagnetic correlations

How can we date site?

- Stratigraphic sandwich
- Radiometric Dates

How can we date site?

- Radiometric Dating
  - Radioactive decay
    - Volcanic rocks
    - Potassium - Argon
    - $^{40}\text{K}$ --> $^{40}\text{Ar}$
    - Half-life = 1.3 billion years
- Images pp 22-23

K/Ar demo