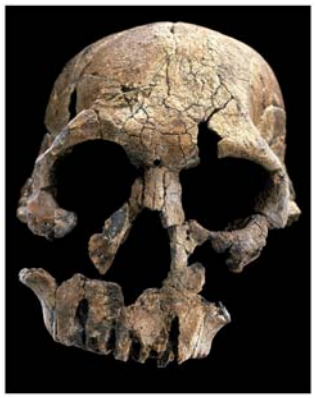
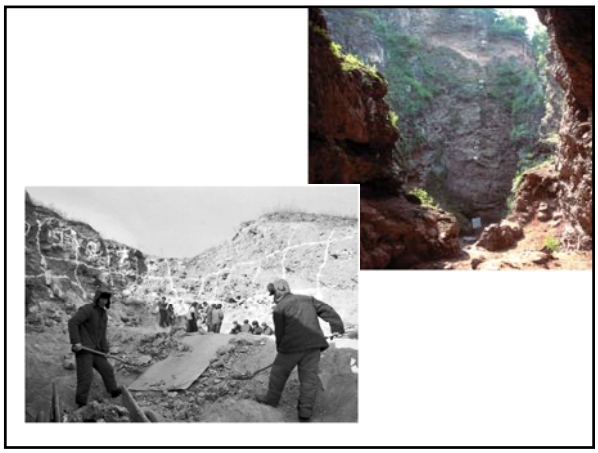
Chapter 11: The Origins and Evolution of Early *Homo*

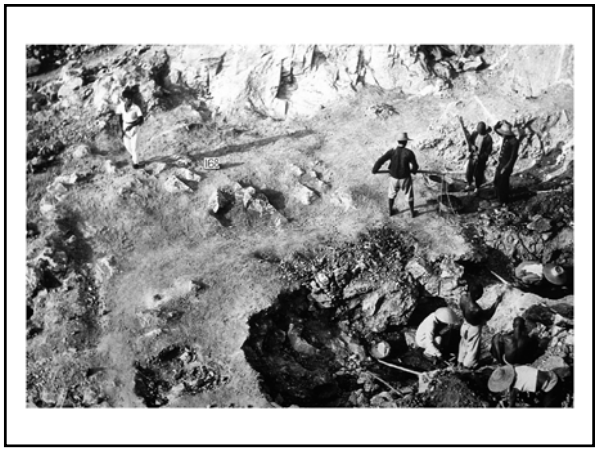
1. ***Homo habilis*: The First Species of the Genus *Homo***
   a. **The Path to Humanness: Bigger Brains, Tool Use, and Adaptive Flexibility**
      i. **First discovered by Louis Leakey at Olduvai Gorge**
      ii. **Change took place 3.0–2.5 mya**
      iii. **Found in Tanzania, Kenya, Ethiopia, Malawi, South Africa**
   b. ***Homo habilis* and *Australopithecus*: Similar in Body Plan**
      i. **Immediate ancestor unconfirmed (Tim White suggests *A. garhi*)**
      ii. **Bigger brain, smaller chewing complex**
      iii. **Body plan similar to that of australopithecines**

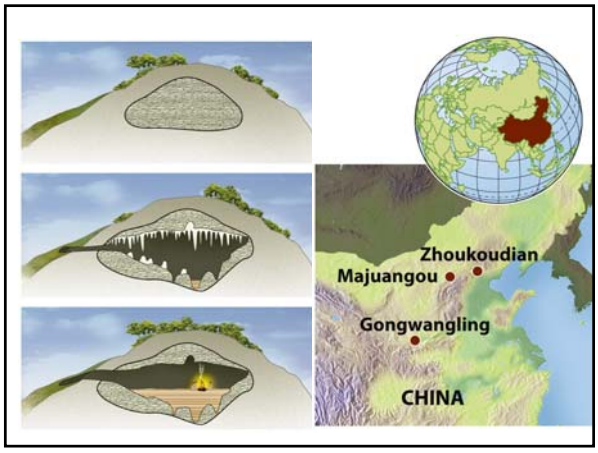


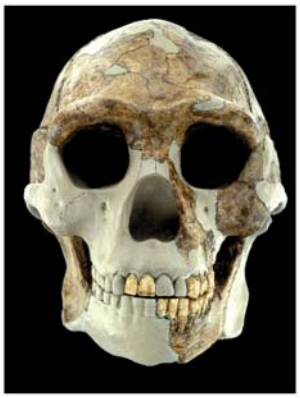
1. ***Homo habilis*: The First Species of the Genus *Homo***
   - c. ***Homo habilis*'s Adaptation: Intelligence and Tool Use Become Important**
     - i. **Anatomical evidence from the hand bones suggests precision grip.**
     - ii. **Tools becoming fundamental to survival, unlike for australopithecines**
   - d. **Habitat Changes and Increasing Adaptive Flexibility**
     - i. **Spread of warm season grasses and increasing habitat diversity.**
     - ii. **Skull and tooth morphology suggest dietary variability in *Homo habilis*.**
     - iii. **Stone tools important for obtaining food resources as well as for processing foods.**

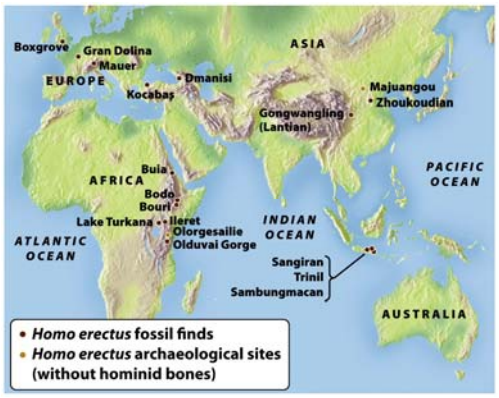
2. ***Homo erectus*: Early *Homo* Goes Global**
   a. **First discovered by Eugène Dubois in Java**
   b. **Fossils date from 1.8–0.3 mya**
   c. ***Homo erectus* in Africa (1.8–.3 mya)**
      i. **African fossils dated to 1.8–0.3 mya**
      ii. **Nariokotome skeleton**
         1) **An 80 percent complete skeleton**
         2) **Short arms, long legs**
         3) **Likely a young male**
         4) **Would have stood 6 feet tall in adulthood**
         5) **Cranial capacity over 900 cc**
      iii. **Bodo skull**
         1) **Stone tool marks on the left cheek, eye orbit, and nasal bones**
         2) **Ritual or cannibalism?**

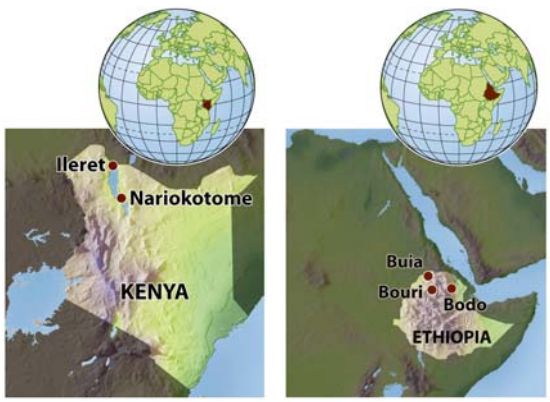


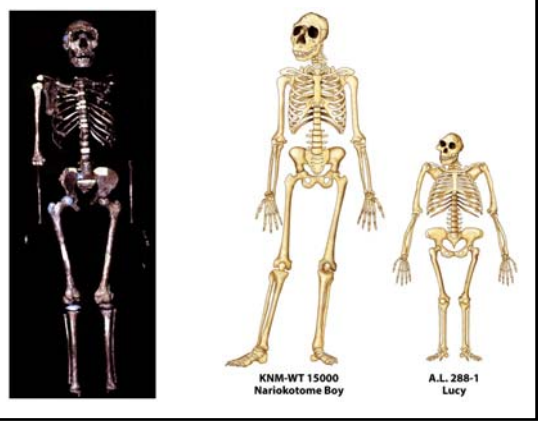


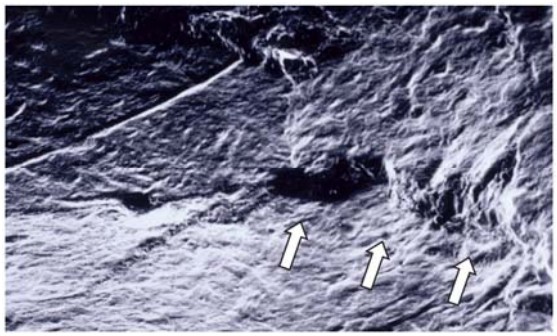

Zhoukoudian
Majuangou
Gongwangling
CHINA



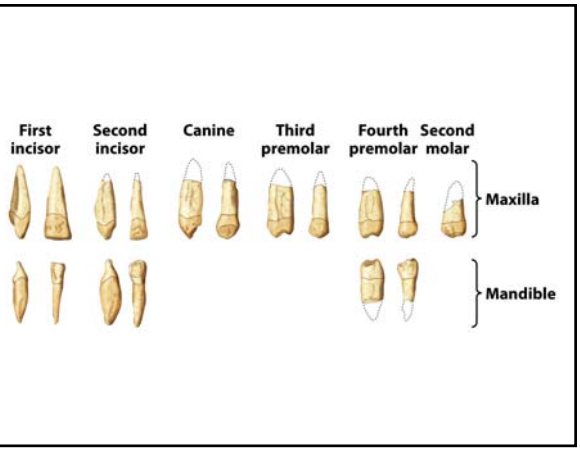

Boxgrove
Gran Dolina
Mauer
EUROPE
Dmanisi
Kocabaş
ASIA
Majuangou
Zhoukoudian
Gongwangling
(Lantian)
PACIFIC
OCEAN
Buia
AFRICA
Bodo
Bouri
Lake Turkana
Ileret
Olorgesailie
Olduvai Gorge
INDIAN
OCEAN
ATLANTIC
OCEAN
Sangiran
Trinil
Sambungmacan
AUSTRALIA
• Homo erectus fossil finds
• Homo erectus archaeological sites
(without hominid bones)


Ileret
Nariokotome
KENYA
Buia
Bouri
Bodo
ETHIOPIA

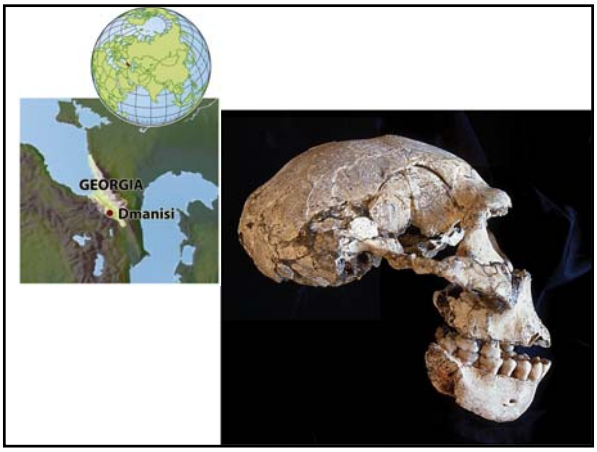

KNM-WT 15000
Nariokotome Boy
A.L. 288-1
Lucy

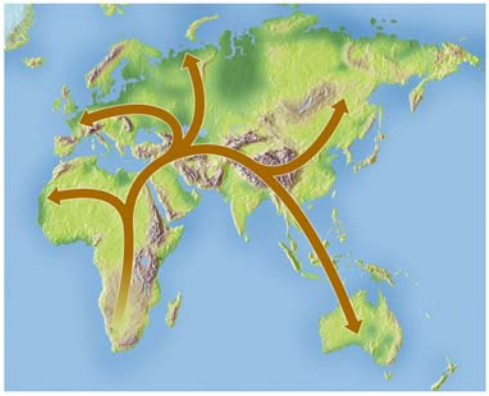



Australopithecus boisei
Homo erectus


First incisor
Second incisor
Canine
Third premolar
Fourth premolar
Second molar
Maxilla
Mandible

2. ***Homo erectus*: Early *Homo* Goes Global (cont'd)**
   - d. ***Homo erectus* in Asia (1.8–.3 mya)**
     - i. **Fossils dated to 1.8 mya–0.3 mya**
     - ii. **Earliest evidence found in Dmanisi, dated to 1.7 mya**
       1) **Resemblance to East African *Homo erectus***
     - iii. **Also found in Indonesia, Sangiran, and China, indicating a rapid spread through Asia**
   - e. **Fire: Expanding the Human World**
     - i. **Zhoukoudian cave site in China provided important evidence for *Homo erectus* development dated to 600,000–400,000 yBP.**
       1) **Evidence for controlled fire usage**
       2) **Burned stone tools, plants, charcoal, etc.**






JAVA
Sangiran
Sambungmacan
Trinil

2. ***Homo erectus*: Early *Homo* Goes Global (cont'd)**

f. ***Homo erectus* in Europe (800,000–400,000 yBP)**

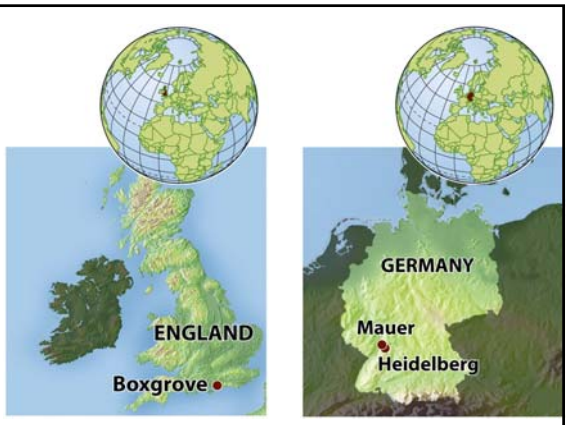
i. **Fossils dated to 800,000–400,000 yBP**

ii. **Earliest evidence from Gran Dolina, dated to 800,000 yBP**

1) **Stone tools, animal remains, hominid fossils**

2) **Stone-tool cut marks on animal and hominid fossils**


ITALY
Ceprano


ENGLAND
Boxgrove
GERMANY
Mauer
Heidelberg

2. ***Homo erectus*: Early *Homo* Goes Global (cont'd)**

g. **Evolution of *Homo erectus*: Biological Change, Adaptation, and Improved Nutrition**

i. **Increase in body size is one main difference between *H. erectus* and *H. habilis*.**

ii. **The increase took place rapidly, perhaps in as little time as 2.0–1.7 mya.**

iii. **Climate change and its impact on the food supply may be one reason for the change.**

iv. **Most significant impact was likely increased access to animal food sources (protein) from hunting.**

v. **Not limited to genus *Homo*: dating of stone tools indicates australopithecines may have been able to butcher animals as well.**

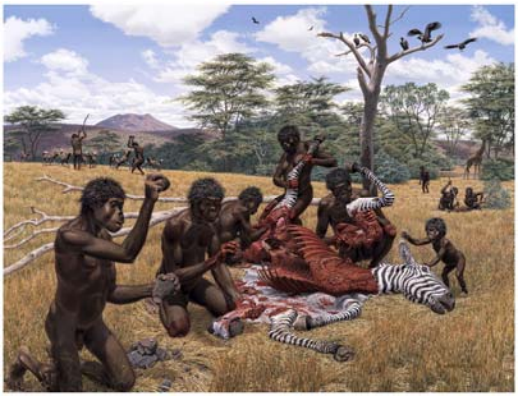
2. ***Homo erectus*: Early *Homo* Goes Global (cont'd)**

g. **Evolution of *Homo erectus*: Biological Change, Adaptation, and Improved Nutrition**

vi. **Tool manufacture and the development of social structures to facilitate group cooperation in hunting were critical.**

1) **Acheulian tool complex is represented by a variety of tools and tool materials.**

2) **Acheulian tools are more refined than the Oldowan tools.**



2. *Homo erectus*: Early *Homo* Goes Global (cont'd)

h. Patterns of Evolution

i. African fossils are the most robust and are similar to Dmanisi forms.

ii. Earlier forms have smaller brains than forms dated later.

1) Cranial capacity ranges from 650 cc to 1200 cc.

2) Skull robusticity declined.

iii. Reliance on tools and tool use changed structure of face and jaws as a result of food processing.

iv. Changes in social structure and dispersal patterns, and increasing reliance on culture for survival.

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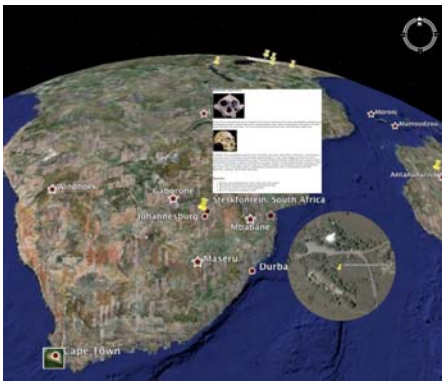

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Our Origins

Discovering Physical Anthropology

by
Clark Spencer Larsen