

Human Origins in Africa

MAIN IDEA

INTERACTION WITH ENVIRONMENT Fossil evidence shows that the earliest humans originated in Africa and spread across the globe.

WHY IT MATTERS NOW

The study of early human remains and artifacts helps in understanding our place in human history.

TERMS & NAMES

- artifact
- culture
- hominid
- Paleolithic Age
- Neolithic Age
- technology
- *Homo sapiens*

SETTING THE STAGE What were the earliest humans like? Many people have asked this question. Because there are no written records of prehistoric peoples, scientists have to piece together information about the past. Teams of scientists use a variety of research methods to learn more about how, where, and when early humans developed. Interestingly, recent discoveries provide the most knowledge about human origins and the way prehistoric people lived. Yet, the picture of prehistory is still far from complete.

Scientists Search for Human Origins

Written documents provide a window to the distant past. For several thousand years, people have recorded information about their beliefs, activities, and important events. Prehistory, however, dates back to the time before the invention of writing—roughly 5,000 years ago. Without access to written records, scientists investigating the lives of prehistoric peoples face special challenges.

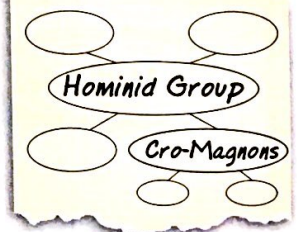
Scientific Clues Archaeologists are specially trained scientists who work like detectives to uncover the story of prehistoric peoples. They learn about early people by excavating and studying the traces of early settlements. An excavated site, called an archaeological dig, provides one of the richest sources of clues to the prehistoric way of life. Archaeologists sift through the dirt in a small plot of land. They analyze all existing evidence, such as bones and artifacts. Bones might reveal what the people looked like, how tall they were, the types of food they ate, diseases they may have had, and how long they lived. **Artifacts** are human-made objects, such as tools and jewelry. These items might hint at how people dressed, what work they did, or how they worshiped.

Scientists called anthropologists study **culture**, or a people's unique way of life. Anthropologists examine the artifacts at archaeological digs. From these, they re-create a picture of early people's cultural behavior. (See Analyzing Key Concepts on culture on the following page.)

Other scientists, called paleontologists, study fossils—evidence of early life preserved in rocks. Human fossils often consist of small fragments of teeth, skulls, or other bones. Paleontologists use complex techniques to date ancient fossil remains and rocks. Archaeologists, anthropologists, paleontologists, and other scientists work as a team to make new discoveries about how prehistoric people lived.

TAKING NOTES

Categorizing Use a diagram to list advances of each hominid group.



Early Footprints Found In the 1970s, archaeologist Mary Leakey led a scientific expedition to the region of Laetoli in Tanzania in East Africa. (See map on page 10.) There, she and her team looked for clues about human origins. In 1978, they found prehistoric footprints that resembled those of modern humans preserved in volcanic ash. These footprints were made by humanlike beings now called australopithecines (aw•STRAY•loh•PIHTH•ih•SYNZ). Humans and other creatures that walk upright, such as australopithecines, are called **hominids**. The Laetoli footprints provided striking evidence about human origins:

PRIMARY SOURCE

What do these footprints tell us? First, . . . that at least 3,600,000 years ago, what I believe to be man's direct ancestor walked fully upright. . . . Second, that the form of the foot was exactly the same as ours. . . . [The footprints produced] a kind of poignant time wrench. At one point, . . . she [the female hominid] stops, pauses, turns to the left to glance at some possible threat or irregularity, and then continues to the north. This motion, so intensely human, transcends time.

MARY LEAKEY, quoted in *National Geographic*

The Discovery of "Lucy" While Mary Leakey was working in East Africa, U.S. anthropologist Donald Johanson and his team were also searching for fossils. They were exploring sites in Ethiopia, about 1,000 miles to the north. In 1974, Johanson's team made a remarkable find—an unusually complete skeleton of an adult female hominid. They nicknamed her "Lucy" after the song "Lucy in the Sky with Diamonds." She had lived around 3.5 million years ago—the oldest hominid found to that date. **A**

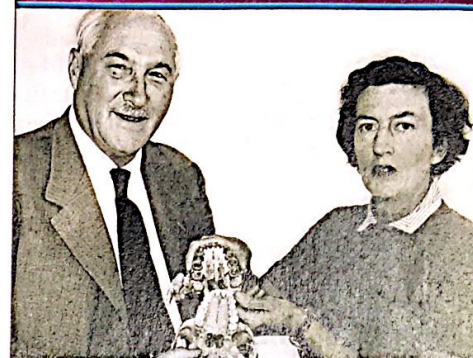
Hominids Walk Upright Lucy and the hominids who left their footprints in East Africa were species of australopithecines. Walking upright helped them travel distances more easily. They were also able to spot threatening animals and carry food and children.

These early hominids had already developed the opposable thumb. This means that the tip of the thumb can cross the palm of the hand. The opposable thumb was crucial for tasks such as picking up small objects and making tools. (To see its importance, try picking up a coin with just the index and middle fingers. Imagine all of the other things that cannot be done without the opposable thumb.)

The Old Stone Age Begins

The invention of tools, mastery over fire, and the development of language are some of the most impressive achievements in human history. Scientists believe these occurred during the prehistoric period known as the Stone Age. It spanned a vast length of time. The earlier and longer part of the Stone Age, called the Old Stone Age or **Paleolithic Age**, lasted from about 2.5 million to 8000 B.C. The oldest stone chopping tools date back to this era. The New Stone Age, or **Neolithic Age**, began about 8000 B.C. and ended as early as 3000 B.C. in some areas. People who lived during this second phase of the Stone Age learned to polish stone tools, make pottery, grow crops, and raise animals.

History Makers



The Leakey Family

The Leakey family has had a tremendous impact on the study of human origins. British anthropologists Louis S. B. Leakey (1903–1972) and Mary Leakey (1913–1996) began searching for early human remains in East Africa in the 1930s. Their efforts turned what was a sideline of science into a major field of scientific inquiry. Mary became one of the world's renowned hunters of human fossils.

Their son Richard; Richard's wife, Maeve; and Richard and Maeve's daughter Louise have continued the family's fossil-hunting in East Africa into the 21st century.

INTEGRATED TECHNOLOGY

RESEARCH LINKS For more on the Leakey family, go to classzone.com

MAIN IDEA

Drawing Conclusions

A Why were the discoveries of hominid footprints and "Lucy" important?

Hominid Development



Australopithecines

- 4 million to 1 million B.C.
- found in southern and eastern Africa
- brain size 500 cm³ (cubic centimeters)
- first humanlike creature to walk upright



Homo habilis

- 2.5 million to 1.5 million B.C.
- found in East Africa
- brain size 700 cm³
- first to make stone tools



Much of the Paleolithic Age occurred during the period in the earth's history known as the Ice Age. During this time, glaciers alternately advanced and retreated as many as 18 times. The last of these ice ages ended about 10,000 years ago. By the beginning of the Neolithic Age, glaciers had retreated to roughly the same area they now occupy.

Homo habilis May Have Used Tools Before the australopithecines eventually vanished, new hominids appeared in East Africa around 2.5 million years ago. In 1960, archaeologists Louis and Mary Leakey discovered a hominid fossil at Olduvai (OHL•duh•vy) Gorge in northern Tanzania. The Leakeys named the fossil *Homo habilis*, which means "man of skill." The Leakeys and other researchers found tools made of lava rock. They believed *Homo habilis* used these tools to cut meat and crack open bones. Tools made the task of survival easier.

Homo erectus Develops Technology About 1.6 million years ago, before *Homo habilis* left the scene, another species of hominids appeared in East Africa. This species is now known as *Homo erectus*, or "upright man." Some anthropologists believe *Homo erectus* was a more intelligent and adaptable species than *Homo habilis*. *Homo erectus* people used intelligence to develop **technology**—ways of applying knowledge, tools, and inventions to meet their needs. These hominids gradually became skillful hunters and invented more sophisticated tools for digging, scraping, and cutting. They also eventually became the first hominids to migrate, or move, from Africa. Fossils and stone tools show that bands of *Homo erectus* hunters settled in India, China, Southeast Asia, and Europe.

According to anthropologists, *Homo erectus* was the first to use fire. Fire provided warmth in cold climates, cooked food, and frightened away attacking animals. The control of fire also probably helped *Homo erectus* settle new lands.

Homo erectus may have developed the beginnings of spoken language. Language, like technology, probably gave *Homo erectus* greater control over the environment and boosted chances for survival. The teamwork needed to plan hunts and cooperate in other tasks probably relied on language. *Homo erectus* might have named objects, places, animals, and plants and exchanged ideas. **B**

MAIN IDEA

Recognizing Effects

B How did *Homo erectus* use fire to adapt to the environment?

The Dawn of Modern Humans

Many scientists believe *Homo erectus* eventually developed into **Homo sapiens**—the species name for modern humans. *Homo sapiens* means "wise men." While they physically resembled *Homo erectus*, *Homo sapiens* had much larger brains.



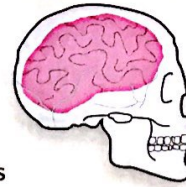
Homo erectus

- 1.6 million to 30,000 B.C.
- found in Africa, Asia, and Europe
- brain size 1,000 cm³



Neanderthal

- 200,000 to 30,000 B.C.
- found in Europe and Southwest Asia
- brain size 1,450 cm³
- first to have ritual burials



Cro-Magnon

- 40,000 to 8000 B.C.
- found in Europe
- brain size 1,400 cm³
- fully modern humans
- created art

2 million years ago

1 million years ago

Present

Neanderthal

Cro-Magnon

Scientists have traditionally classified Neanderthals and Cro-Magnons as early groups of *Homo sapiens*. However, in 1997, DNA tests on a Neanderthal skeleton indicated that Neanderthals were not ancestors of modern humans. They were, however, affected by the arrival of Cro-Magnons, who may have competed with Neanderthals for land and food.

Neanderthals' Way of Life In 1856, as quarry workers were digging for limestone in the Neander Valley in Germany, they spotted fossilized bone fragments. These were the remains of Neanderthals, whose bones were discovered elsewhere in Europe and Southwest Asia. These people were powerfully built. They had heavy slanted brows, well-developed muscles, and thick bones. To many people, the name "Neanderthal" calls up the comic-strip image of a club-carrying caveman. However, archaeological discoveries reveal a more realistic picture of these early hominids, who lived between 200,000 and 30,000 years ago.

Evidence suggests that Neanderthals tried to explain and control their world. They developed religious beliefs and performed rituals. About 60,000 years ago, Neanderthals held a funeral for a man in Shanidar Cave, located in north-eastern Iraq. Some archaeologists theorize that during the funeral, the Neanderthal's family covered his body with flowers. This funeral points to a belief in a world beyond the grave. Fossil hunter Richard Leakey, the son of Louis and Mary Leakey, wrote about the meaning of this Neanderthal burial:

PRIMARY SOURCE

The Shanidar events . . . speak clearly of a deep feeling for the spiritual quality of life. A concern for the fate of the human soul is universal in human societies today, and it was evidently a theme of Neanderthal society too.

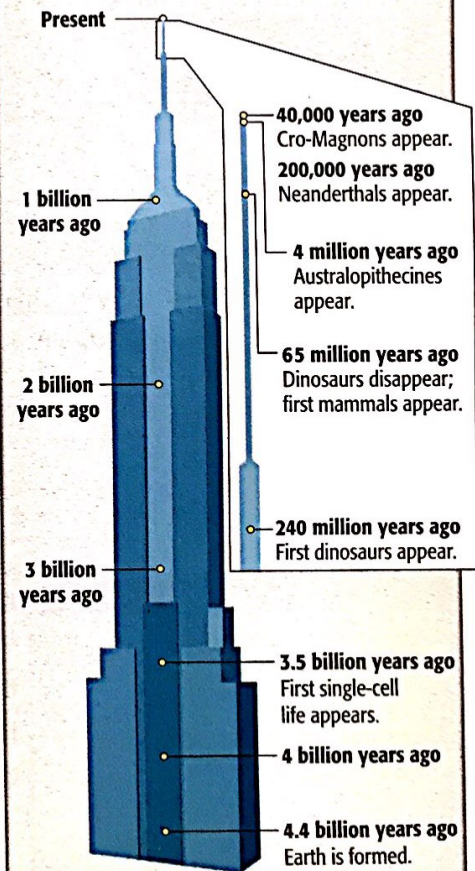
RICHARD E. LEAKEY, *The Making of Mankind*

Neanderthals were also resourceful. They survived harsh Ice Age winters by living in caves or temporary shelters made

History in Depth

Time Line of Planet Earth

Imagine the 102 stories of the Empire State Building as a scale for a time line of the earth's history. Each story represents about 40 million years. Modern human beings have existed for just a tiny percentage of the life of this planet.



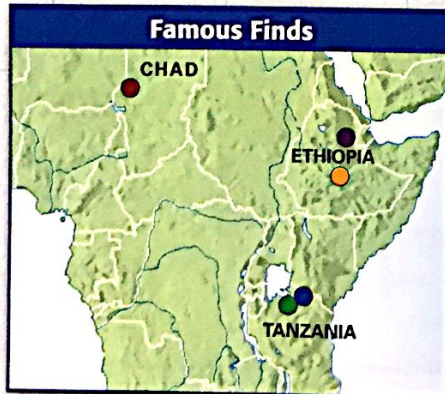
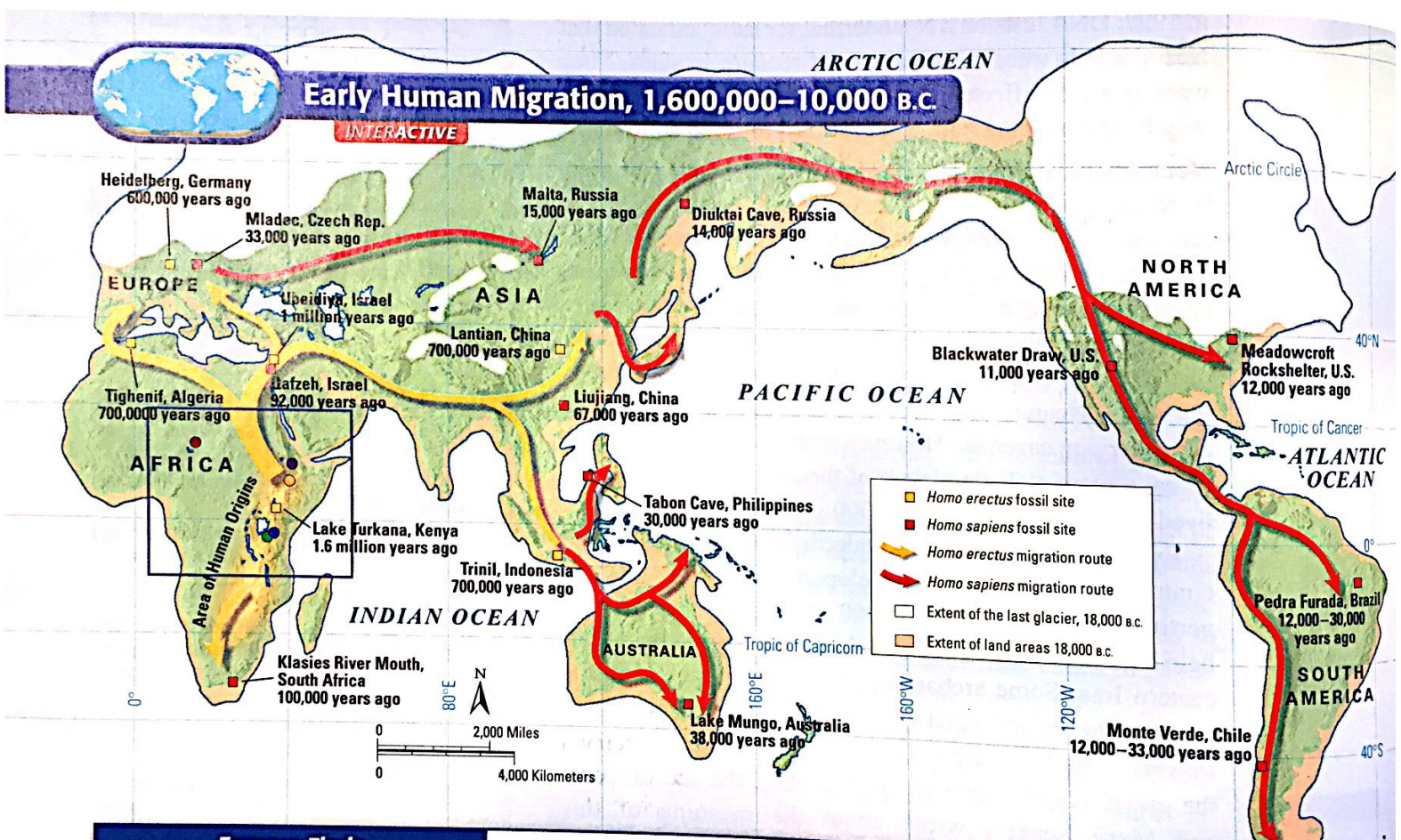
MAIN IDEA

Comparing
 How were Neanderthals similar to people today?

of wood and animal skins. Animal bones found with Neanderthal fossils indicate the ability of Neanderthals to hunt in subarctic regions of Europe. To cut up and skin their prey, they fashioned stone blades, scrapers, and other tools. The Neanderthals survived for some 170,000 years and then mysteriously vanished about 30,000 years ago.

Cro-Magnons Emerge About 40,000 years ago, a group of prehistoric humans called Cro-Magnons appeared. Their skeletal remains show that they are identical to modern humans. The remains also indicate that they were probably strong and generally about five-and-one-half feet tall. Cro-Magnons migrated from North Africa to Europe and Asia.

Cro-Magnons made many new tools with specialized uses. Unlike Neanderthals, they planned their hunts. They studied animals' habits and stalked their prey. Evidently, Cro-Magnons' superior hunting strategies allowed them to survive more easily. This may have caused Cro-Magnon populations to grow at a slightly faster rate and eventually replace the Neanderthals. Cro-Magnons' advanced skill in spoken language may also have helped them to plan more difficult projects. This cooperation perhaps gave them an edge over the Neanderthals.



- 1960 At Olduvai Gorge, Tanzania, Louis Leakey finds 2-million-year-old stone tools.
 - 1974 In Ethiopia, Donald Johanson finds "Lucy," a 3.5-million-year-old hominid skeleton.
 - 1978 At Laetoli, Tanzania, Mary Leakey finds 3.6-million-year-old hominid footprints.
 - 1994 In Ethiopia, an international team of scientists finds 2.33-million-year-old hominid jaw.
 - 2002 In Chad, scientists announce discovery of a possible 6-million-year-old hominid skull.
- GEOGRAPHY SKILLBUILDER: Interpreting Maps**
- 1. Movement** To what continents did Homo erectus groups migrate after leaving Africa?
 - 2. Human-Environment Interaction** What do the migration routes of Homo sapiens reveal about their survival skills and ability to adapt?

New Findings Add to Knowledge

Scientists are continuing to work at numerous sites in Africa. Their discoveries change our views of the still sketchy picture of human origins in Africa and of the migration of early humans out of Africa.

Fossils, Tools, and Cave Paintings Newly discovered fossils in Chad and Kenya, dating between 6 and 7 million years old, have some apelike features but also some that resemble hominids. Study of these fossils continues, but evidence suggests that they may be the earliest hominids. A 2.33-million-year-old jaw from Ethiopia is the oldest fossil belonging to the line leading to humans. Stone tools found at the same site suggest that toolmaking may have begun earlier than previously thought.

New discoveries also add to what we already know about prehistoric peoples. For example, in 1996, a team of researchers from Canada and the United States, including a high school student from New York, discovered a Neanderthal bone flute 43,000 to 82,000 years old. This discovery hints at a previously unknown talent of the Neanderthals—the gift of musical expression. The finding on cave walls of drawings of animals and people dating back as early as 35,000 years ago gives information on the daily activities and perhaps even religious practices of these peoples.

Early humans' skills and tools for surviving and adapting to the environment became more sophisticated as time passed. As you will read in Section 2, these technological advances would help launch a revolution in the way people lived.

Connect to Today

Chad Discovery

In 2002, an international team of scientists announced the discovery of a 6- to 7-million-year-old skull in northern Chad.

The skull is similar in size to a modern chimpanzee, with a similar brain capacity. (See photograph.)

The team reported that the skull, nicknamed *Toumai*, or "hope of life," was the earliest human ancestor so far discovered. Its date is, in fact, millions of years older than the previous oldest-known hominid. The skull dates from the time that scientists believe the ancestors of humans split from the great apes.

Whether the skull is actually human or ape will require further study.



INTEGRATED TECHNOLOGY

INTERNET ACTIVITY Create a TV news special on the Chad skull. Include conflicting theories on its origin. Go to classzone.com for your research.

SECTION

1

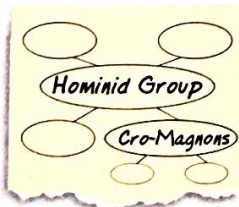
ASSESSMENT

TERMS & NAMES 1. For each term or name, write a sentence explaining its significance.

- artifact
- culture
- hominid
- Paleolithic Age
- Neolithic Age
- technology
- *Homo sapiens*

USING YOUR NOTES

2. Which advance by a hominid group do you think was the most significant? Explain.



MAIN IDEAS

3. What clues do bones and artifacts give about early peoples?
4. What were the major achievements in human history during the Old Stone Age?
5. How did Neanderthals and Cro-Magnons differ from earlier peoples?

CRITICAL THINKING & WRITING

6. **RECOGNIZING EFFECTS** Why was the discovery of fire so important?
7. **MAKING INFERENCES** Why will specific details about the physical appearance and the customs of early peoples never be fully known?
8. **SYNTHESIZING** How do recent findings keep revising knowledge of the prehistoric past?
9. **WRITING ACTIVITY** **INTERACTION WITH ENVIRONMENT**
Write a **persuasive essay** explaining which skill—toolmaking, the use of fire, or language—you think gave hominids the most control over their environment.

CONNECT TO TODAY CREATING AN ILLUSTRATED NEWS ARTICLE

Research a recent archaeological discovery. Write a two-paragraph **news article** about the find and include an illustration.