

Discovering Prehistory



You probably think your parents are pretty old. Well, think again.

They actually belong to the newest human species on the planet—*Homo sapiens*, or “wise man”—and so do you. We’ll begin our story with this species.

MAIN IDEA

The evidence uncovered by scientists helps us learn about our early human history.



Great Rift Valley

A rift valley is created in places where Earth’s outer layer, or crust, has split apart. In East Africa’s Great Rift Valley, this action has produced valleys that average 30 to 40 miles wide. The area has provided archaeologists with a wealth of human fossils because the soil in the valley helped preserve the remains.

mt GEOLOGIC AND ARCHAEOLOGICAL TIME

Earth is incredibly old: somewhere around 4.5 billion years old. Yet *Homo sapiens* (HOH-moh SAY-pee-uhn) has existed for only about the last 200,000 years. Scientists know this because they have found fossils and artifacts that belonged to this species. **Fossils** are the remains, such as bones and teeth, of organisms that lived long ago. **Artifacts** are human-made objects, such as stone tools. These items provide some of the best clues to prehistory, or the time before written records existed.

Scientists called **archaeologists** search for, discover, and then interpret fossils and artifacts left behind by *Homo sapiens*. Archaeologists are like the crime scene investigators of history.

They piece together evidence that tells the story of what happened at a site hundreds, thousands, or even hundreds of thousands of years ago.

Archaeologists sometimes use geologic techniques to find out how old fossils and artifacts are. For example, they can figure out how old an artifact is based on how deeply it is buried in layers of dirt. In a site that hasn’t been disturbed over time, dirt builds up in layers, with younger layers covering the older ones. Archaeologists know that fossils and artifacts lying in the deepest layers are the oldest.

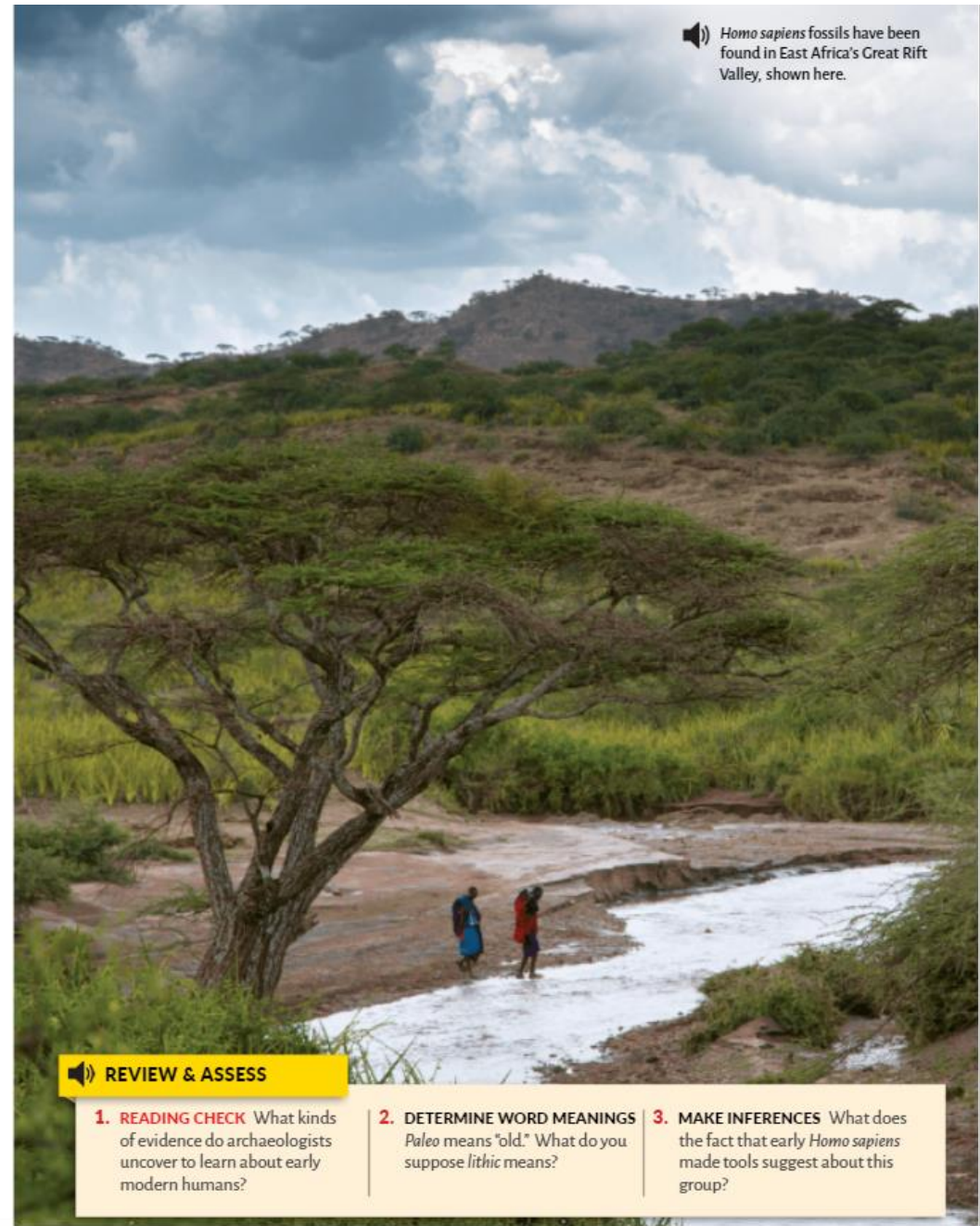
ORIGINS IN AFRICA mt

Early *Homo sapiens* looked very much like humans do today. It is now widely accepted that the species first appeared in Africa. Earlier homonins, or human-like species, are believed to have lived in Africa for millions of years before *Homo sapiens*.

In 1967, a team of archaeologists led by Richard Leakey found the earliest fossils of modern humans. The team discovered two *Homo sapiens* skulls near the Omo River in the Great Rift Valley of East Africa. The skulls were originally thought to be 130,000 years old, but a more recent dating has determined them to be about 195,000 years old.

Homo sapiens lived during the **Paleolithic** (pay-lee-uh-LIHTH-ihk) **Age**, a period that began around 2.5 million b.c. and ended around 8000 b.c. The period is also called the Old Stone Age because the people living then made simple tools and weapons out of stone. It was a time of dramatic changes in geography and climate. It was also a time when modern human development—and human history—began.

Homo sapiens fossils have been found in East Africa’s Great Rift Valley, shown here.



REVIEW & ASSESS

- 1. READING CHECK** What kinds of evidence do archaeologists uncover to learn about early modern humans?
- 2. DETERMINE WORD MEANINGS** *Paleo* means “old.” What do you suppose *lithic* means?
- 3. MAKE INFERENCES** What does the fact that early *Homo sapiens* made tools suggest about this group?



Critical Viewing Friends and neighbors in a community in China sit down to a lavish banquet. What do details in the photo tell you about the community's cultural behaviors?

1.2

The Elements of Culture



Maybe you've heard the saying "You are what you eat," but did you know that you are also what you speak, what you wear, and what you believe? All of these behaviors—and many others—help identify you with your particular blend of cultures.

MAIN IDEA

Studying the culture of *Homo sapiens* in the Paleolithic Age helps reveal how people lived.

mt WHAT IS CULTURE?

Culture is a big part of human development. All the elements that contribute to the way of life of a particular group of people make up culture. These elements include language, clothing, music, art, law, religion, government, and family structure. Culture is passed down from parents to children and greatly affects our behaviors and beliefs. It influences people to do things in a particular way, such as eating or avoiding certain foods. It unifies a group and distinguishes that group from others.

REVIEW & ASSESS

- 1. READING CHECK** What do artifacts, such as stone tools, reveal about the culture of early *Homo sapiens*?
- 2. SUMMARIZE** How do archaeologists and anthropologists work together?
- 3. DRAW CONCLUSIONS** What might the discovery of tools used primarily as weapons suggest about a group of early humans?

Language, art, toolmaking, and religion are the elements that were most important in defining early cultures. Even early *Homo sapiens* communicated through speech, created cave paintings, made and used tools, and buried the dead. However, groups of people often did things slightly differently. These differences reflect each group's technical knowledge, artistic styles, and available natural resources.

WHY STUDY CULTURE? mt

As you've learned, cultural behaviors are passed down from generation to generation, but they can also change over time or—like the ability to make stone tools—be nearly lost altogether. In part, scientists study prehistoric cultures to learn how these cultures differ from modern cultures and discover what they all have in common. Information about modern cultures is often provided by archaeologists called **anthropologists**.

The artifacts archaeologists uncover help them piece together a picture of early humans' cultural behavior and daily life. For example, by studying tools uncovered at a prehistoric site, archaeologists learn how advanced the people who made them were and what jobs they needed to do. In addition, comparing artifacts from different sites can explain why one group was more successful than another.

Comparing artifacts from different time periods helps explain how people changed and developed. This knowledge helps us see thousands of years into the past so we can better understand the present and predict the future.

1.3 Changing Environments



Today, climate change is forcing us all to make some adjustments—from switching off lights to turning off faucets. Still, we're not the first humans to be affected by shifting climate patterns. A big change in their environment drove Paleolithic people to take steps that would transform the world forever.

MAIN IDEA

A changing climate forced Paleolithic people to move to new places and develop new tools to survive.



Critical Viewing Paleolithic people first lived on savannas like this one. Savannas are areas of flat grassland where animals roam. What might have made the savanna a welcoming environment?



mt FINDING NEW HOMES

About 100,000 years ago, much of Africa had a very unstable climate. Some places became warmer and wetter, while others became hot and dry. These climate changes greatly altered the landscape in which Paleolithic people lived.

Archaeologists have discovered that East Africa suffered a terrible **drought** between 100,000 and 75,000 years ago. This long period of dry, hot weather had a huge impact on the landscape. Rivers and vast lakes shrank and left people struggling for survival. The plants they ate became scarce, and the animals they hunted disappeared. At the same time, previously

uninhabitable areas became livable and attractive. For example, the **Sahara**, which is one of the harshest deserts on Earth today, turned into an **oasis**, or a green area where plants can grow. These environmental changes may have encouraged some of the 10,000 Paleolithic people living in East Africa at the time to leave their homeland. They began their long **migration**, or movement, first to the Sahara in North Africa and then into the wider world.

ADAPTING TO NEW CONDITIONS mt

As people migrated, they responded to some of the challenges of their new environments by using technology. **Technology** is the application of knowledge, tools, and inventions to meet people's needs.

The ability to capture and control fire was a particularly valuable technology. In addition to providing much-needed warmth and light, fire helped Paleolithic people scare away enemies and drive animals into traps. Cooking meat made it easier to digest and killed bacteria.

Paleolithic people also used technology to develop tools that helped them adapt to new environments and climates. Simple tools had been used for millions of years, but *Homo sapiens* refined them to create

a really effective tool kit. A hard stone called flint was especially useful, as it could be split into hard, razor-sharp flakes. Early humans learned to design a tool to perform a particular task, such as chopping wood, carving meat, or skinning animals.

Over time, tools grew increasingly advanced. Humans crafted fishhooks out of bone and sewing needles out of ivory. These specialized tools helped our ancestors survive in an amazing range of new habitats and climates—from arctic areas to deserts.

REVIEW & ASSESS

- 1. READING CHECK** What led some Paleolithic people to leave their home in East Africa thousands of years ago and migrate to new places?
- 2. DETERMINE WORD MEANINGS** What context clues tell you that *uninhabitable* means "unlivable"?
- 3. MAKE INFERENCES** Think about the adaptations Paleolithic people made to survive in new conditions. What can you infer about their intelligence?

COMPARING TOOLS
The stone tool on the left was made about 100,000 years ago. The fishhook made from bone on the right dates back about 42,000 years. You can see that early humans' technical skill had come a long way in about 60,000 years.

1.4 Moving into New Environments



More than 60,000 years ago, the world witnessed movement on a scale never seen before as our restless ancestors began leaving Africa in waves. They set out on a worldwide migration that would permanently populate the entire planet.

MAIN IDEA

Between 70,000 and 10,000 B.C., Paleolithic people migrated from Africa and settled throughout the world.

SPREAD OF EARLY HUMANS

As you have learned, the changing climate made Paleolithic people search for homes outside of Africa. They first migrated into Southwest Asia around 70,000 years ago. The region was warm and tropical and provided lush vegetation and abundant wildlife.

In time, people spread across the rest of the world. From Asia they reached Australia around 50,000 years ago. By about 40,000 years ago, early humans

had arrived in Europe. Around 30,000 years ago, *Homo sapiens* reached Siberia on the edge of eastern Asia.

The last continents to be populated were the Americas. This final migration may have been made possible by the **Ice Age**. At its height around 20,000 years ago, the Ice Age trapped so much water as ice that the sea level was nearly 400 feet lower than it is today. This trapped ice created **land bridges** that allowed humans to walk across continents. Many scientists have proposed the theory that hunters crossed the **Beringia** (beh-RIN-gee-uh) land bridge, which connected Siberia with North America, in a series of migrations between 20,000 and 15,000 years ago.

Scientists believe that during a period of glacial melting around 12,000 years ago, more travelers pushed southward through Central America and South America. However, new evidence has emerged that challenges this timing. The genes of some South American people suggest that their ancestors arrived from Australia 35,000 years ago, and *Homo sapiens* footprints in Central America have been dated to 40,000 years ago. These findings might support the theory that the earliest Americans arrived in boats, rather than by land bridge.

IN SEARCH OF FOOD

People migrated to many of these places, possibly in hot pursuit of the animals they liked to eat. Some of these creatures were **megafauna**, which means "large animals." Megafauna included the woolly mammoth, giant ground sloth, and saber-toothed cat, which are shown below.

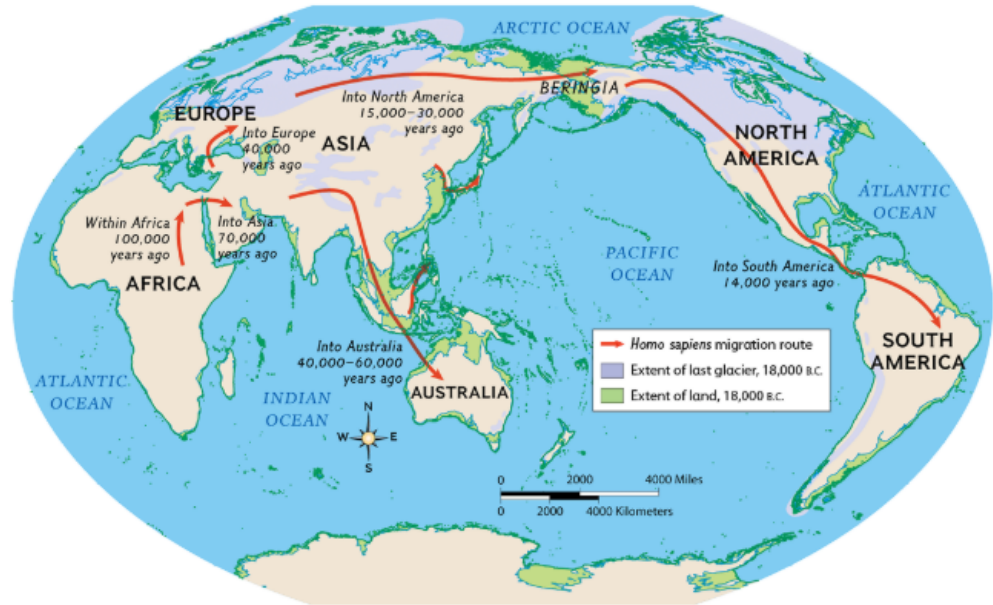
Megafauna

Humans hunted herds of woolly mammoths in northern Asia and parts of Europe and North America. The giant ground sloth and saber-toothed cat lived primarily in North and South America.



EARLY HUMAN MIGRATION: 100,000–14,000 YEARS AGO

This map shows what Earth might have looked like many thousands of years ago. The purple shading indicates areas that were covered in ice from the Ice Age. The green shading shows land that once existed but has since eroded, or worn away.



The woolly mammoth, a relative of the modern elephant, was one of the largest megafauna. It stood between 9 and 11 feet tall and weighed as much as six tons. Its curved tusks grew up to 13 feet long.

At five tons, the giant ground sloth wasn't much smaller than the woolly mammoth. However, the sloth was fairly harmless. It mostly used its long claws to tear leaves and bark, not other animals.

There was more reason to fear the saber-toothed cat with its two huge, swordlike teeth. This creature was smaller than a modern lion but much heavier, weighing more than 400 pounds.

These megafauna became extinct, or died out, about 11,000 years ago. Many scientists believe they were overhunted or wiped out by climate change as the Ice Age began to come to a close.

REVIEW & ASSESS

- READING CHECK** What food did Paleolithic people eat when they migrated to Asia and other parts of the world?
- INTERPRET MAPS** What challenges do you think people encountered as they moved into the new environments shown on the map?
- FORM OPINIONS** Do you think the Americas became populated by land bridge, by boat, or by a combination of the two? Explain your position.



Tracking Migration

Out of Africa mt

Archaeologist Jeffrey Rose lives in a desert truck stop in the Southwest Asian country of Oman. He spends his days with his team of experts, sifting through rocks in 100-degree heat. Occasionally, he finds what he's looking for: small, sharp, egg-shaped stones. That may not sound like much, but his finds may dramatically rewrite our earliest history. Rose is looking for evidence to support his theory about who first migrated out of Africa and what route was taken. After years of exploration, he thinks he might have found the answer.

Jeffrey Rose has conducted work in many parts of Southwest Asia, including this desert outside of Dubai, United Arab Emirates.

MAIN IDEA

Jeffrey Rose has found evidence to support a new theory about which Paleolithic people first left Africa and what route they took.

LOOKING FOR EVIDENCE mt

National Geographic Explorer Jeffrey Rose conducted his search in Oman. Geneticists—scientists who study DNA and heredity—have suggested that the first humans to leave Africa traveled through Ethiopia to Yemen and Oman, following the coast of the Arabian Peninsula. Rose went to Oman hoping to find archaeological evidence of this migration.

He recorded the earliest traces of humans: discarded flint tools. “Our geologist constantly reads the landscape to tell us where Paleolithic humans would have found water and flint. Find those and you find early people,” Rose says. However, after years of surveying, he’d found no African-style artifacts and no evidence of Paleolithic humans on the Arabian Peninsula coast.

HITTING THE JACKPOT mt

Then in 2010, on the final day at the last site on his list, Rose hit the jackpot. He found a stone spear point with a design unique to people of the Nubian Complex, who had lived in the Nile Valley in North Africa. “We had never considered that the link to Africa would come from the Nile Valley and that their route would be through the middle of the Arabian Peninsula rather than along the coast,” says Rose. Yet it made sense that people would migrate to Arabia from the Nile Valley. As Rose points out, “It’s logical that people moved from an environment they knew to another that mirrored it.”

By the end of 2013, he had found more than 250 Nubian Complex sites in Oman.

When Rose dated the artifacts, he discovered they were roughly 106,000 years old, a point in time when people of the Nubian Complex flourished in Africa. The puzzle pieces fit. “Geneticists have shown that the modern human family tree began to branch out more than 60,000 years ago,” says Rose. “I’m not questioning *when* it happened, but *where*. I suggest the great modern human expansion to the rest of the world was launched from

Arabia rather than Africa.” Rose’s evidence suggests that perhaps it was a two-stage process. Paleolithic people might have left North Africa for Arabia more than 100,000 years ago. Then about 40,000 years later, they left Arabia and began to settle the rest of the world.

Now Rose wants to know why it was people of the Nubian Complex who spread

from Africa. “What was it about their technology and culture that enabled them to expand so successfully,” he wonders, “and what happened next?” As Rose says, “We’ve always looked to the beginning and wanted to understand how we got here. That’s what it means to be human.”



REVIEW & ASSESS

- 1. READING CHECK** What theory has Jeffrey Rose proposed about the migration of Paleolithic people?
- 2. INTERPRET MAPS** What body of water did the Nubians cross to get to the Arabian Peninsula?
- 3. MAKE INFERENCES** Why would resources of water and flint have been important to early humans?

1.6

Cave Art



It wasn't all about tools in the Paleolithic Age. Early humans had an artistic side as well.

Prehistoric graffiti appears on cave walls all over the world. It turns out that the urge for artistic expression is almost as old as humankind itself.

MAIN IDEA

Cave paintings reveal much about Paleolithic people and their world.

mt ANCIENT ARTISTS

Art is an important part of culture. It shows a capacity for creativity, which separates humans from animals. Very early humans may have collected pretty rocks, carved wood, or painted pictures of themselves and their surroundings.

However, around 35,000 years ago, an artistic explosion occurred when humans began painting detailed images on cave walls. Examples have been found across the world, but it took archaeologists a long time to accept that the cave paintings had been created during the Paleolithic Age. They found it hard to believe that prehistoric people had the ability, time, or desire to produce such beautiful works of art.

The subjects of these cave paintings vary quite a bit, which is not surprising since they were created over a span of 25,000 years. The paintings often depict side-view images of animals, including woolly mammoths and horses. Some images feature everyday

scenes, such as deer being hunted by men with spears. Other images consist of lines, circles, and geometric patterns.

One type of image that appears all over the world is considered by many to be one of the most moving: handprints. An artist often created this image by blowing paint through a reed over the hands—leaving behind the imprint of people who lived thousands of years ago.

GLIMPSE INTO AN EARLY WORLD mt

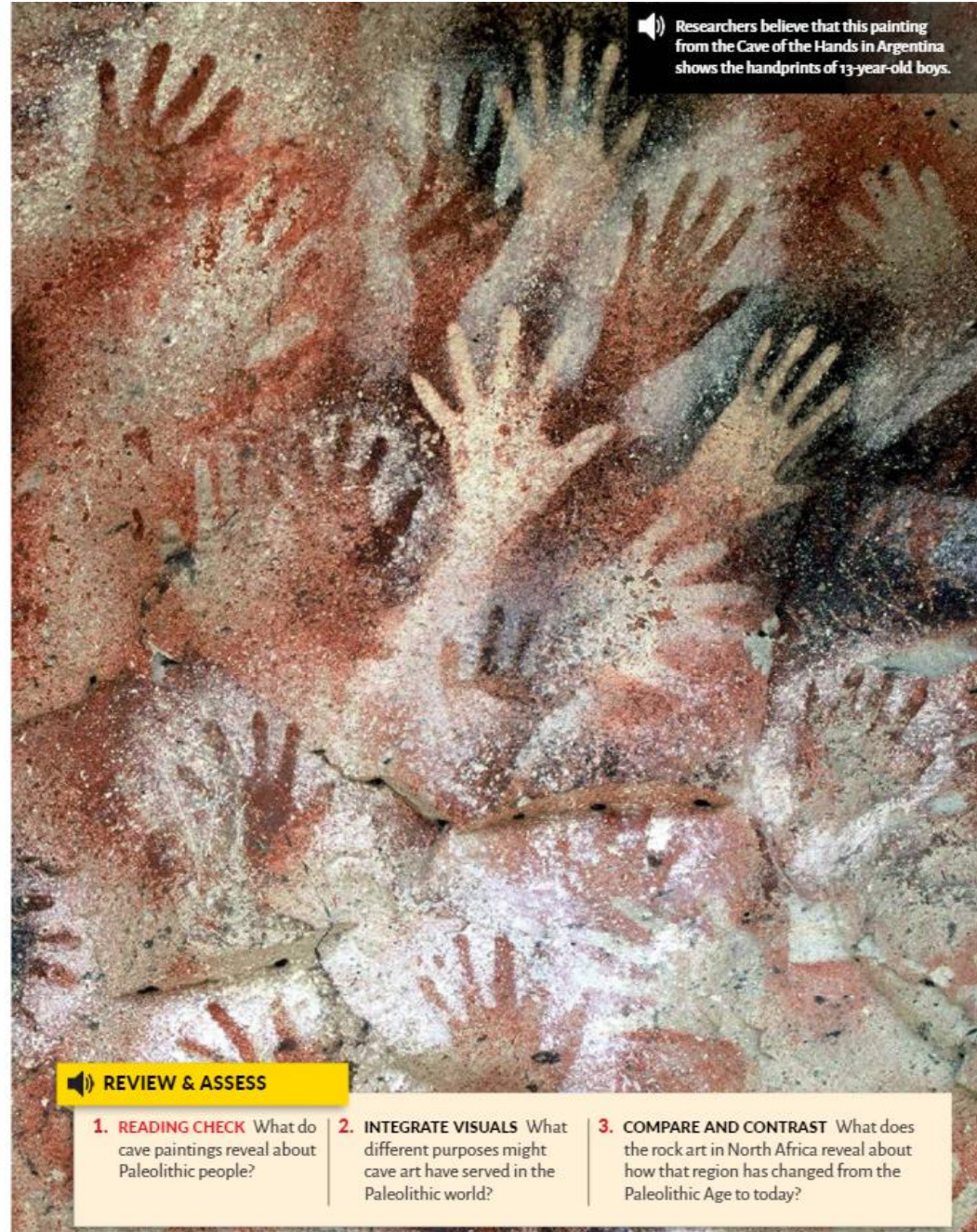
The **Lascaux Cave** in France has some of Europe's most amazing cave paintings, which were created about 17,000 years ago. The cave contains about 600 beautifully clear paintings, mostly of animals, many in shades of red, yellow, and brown. Some of the animals, including a nearly 17-foot-long bull-like creature, are now extinct.

Spectacular cave and rock paintings in Australia's Kakadu National Park show details of daily life and also reflect the spiritual beliefs of Aborigines, the earliest people who lived in Australia. These beliefs include a strong connection to the land and nature, which is still shared by the people who live in the region today.

The Sahara is also rich in rock art. The Tassili-n-Ajjer (tuh-sill-ee-nah-JAIR) mountain range in North Africa has spectacular paintings showing the once abundant wildlife and grasslands of this now barren desert. The Cave of the Hands in Argentina contains an incredible wall of handprints, as shown on the next page.

Despite many theories, it is unclear why Paleolithic people created such beautiful images in dark and hard-to-reach caves. Some researchers believe that most early art was actually created outdoors but has long since faded away. While we are unlikely to ever fully understand the meaning of Paleolithic art, it does provide insight into the lives and culture of our ancestors.

Researchers believe that this painting from the Cave of the Hands in Argentina shows the handprints of 13-year-old boys.



REVIEW & ASSESS

- 1. READING CHECK** What do cave paintings reveal about Paleolithic people?
- 2. INTEGRATE VISUALS** What different purposes might cave art have served in the Paleolithic world?
- 3. COMPARE AND CONTRAST** What does the rock art in North Africa reveal about how that region has changed from the Paleolithic Age to today?