

Chapter 1

Prehistoric Art



Learning Objectives

- 1.a** Identify the visual hallmarks of Paleolithic, Neolithic, and Bronze Age art for formal, technical, and expressive qualities.
- 1.b** Interpret the meaning of works of Paleolithic, Neolithic, and Bronze Age art based on their themes, subjects, and symbols.
- 1.c** Relate Paleolithic, Neolithic, and Bronze Age artists and art to their cultural, economic, and political contexts.
- 1.d** Apply the vocabulary and concepts used to discuss Paleolithic, Neolithic, and Bronze Age art, artists, and art history.
- 1.e** Interpret Prehistoric art using appropriate art historical methods, such as observation, comparison, and inductive reasoning.
- 1.f** Select visual and textual evidence in various media to support an argument or an interpretation of Prehistoric art.

This detail shows one of two horses positioned back-to-back on the wall of a chamber within the Pech-Merle Cave, located in the Dordogne region of France (**FIG. 1-1**). The tapering head of this horse follows the natural shape of the rock. Black dots surround portions of its contours and fill most of its body, a striking feature that was believed to be decorative until DNA analysis of the remains of prehistoric horses, published in 2011, proved that one species flourishing at this time actually was spotted. In this instance, at least, prehistoric painters were painting what they saw.

At a later date, a large fish (58 inches long and very difficult to see here) was painted in red on top of the spots. Yet the painters left more than images of horses and fish; they left their own handprints in various places around the animals. These images, and many others hidden in chambers at the ends of long, narrow passages within the cave, connect us to an almost unimaginably ancient world of 25,000 BCE.

Prehistory includes all of human existence before the emergence of writing. When our ancestors were carving objects, painting images, and creating shelters and other structures 30,000 years ago, they were not making “works of art,” and there were no “artists” as we use the term today. They were flaking, chipping, and polishing flint into tools—spear points, knives, and scrapers—not sculptures, even if we find these artifacts pleasing to the eye and to the touch

today. Wall paintings must have seemed equally important to their prehistoric makers in terms of everyday survival, not visual delight.

For art historians, archaeologists, and anthropologists, prehistoric “art” provides significant clues—along with fossils, pollen, and other artifacts—to understanding early human life and culture. Specialists continue to discover more about when and how these works were created. In 2012, for instance, an international team of scientists used a refined dating technology known as the uranium-thorium method (see “How Early Art is Dated” on page 12) to prove that some paintings in a Spanish cave known as El Castillo are at least 40,000 years old and probably much older—raising the possibility that they could have been painted by Neanderthals rather than *Homo sapiens*.

We may never know exactly why prehistoric paintings were made. In fact, there may be no single meaning or use for any one image on a cave wall; perhaps it meant different things to different people, depending on their age, their experience, or their specific needs and desires. And the sculpture, paintings, and structures that survive are but a tiny fraction of what must have been created over a very long time span. The conclusions and interpretations we draw from them are only educated guesses, making prehistoric art one of the most speculative, but dynamic and exciting, areas of art history.

The Stone Age

What are the cultural and historical contexts that led to the first artistic impulses of the Stone Age?

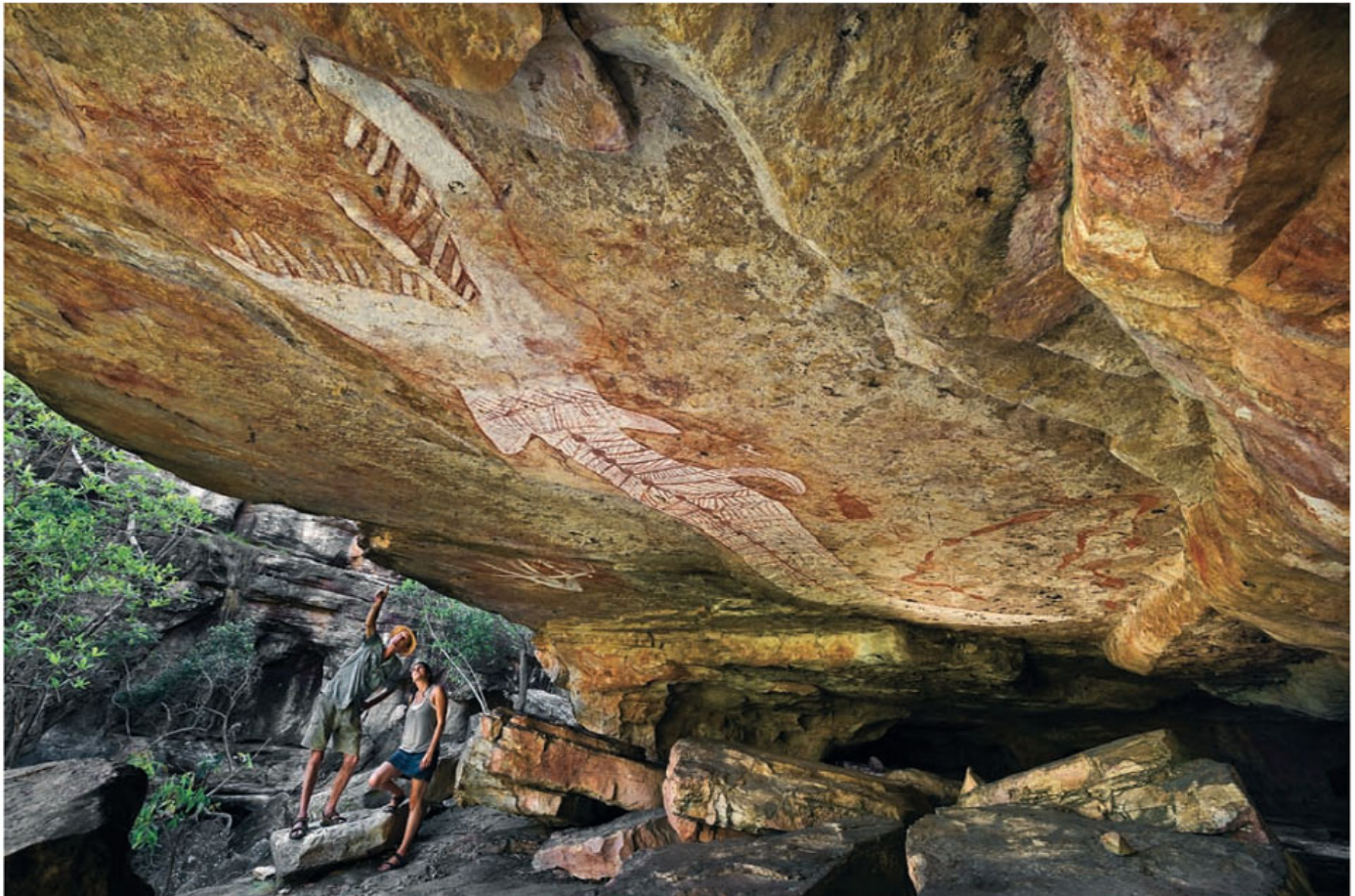
How and when modern humans evolved is the subject of ongoing debate, but anthropologists now agree that the species called *Homo sapiens* appeared about 400,000 years ago and that the subspecies to which we belong, *Homo sapiens sapiens* (usually referred to as modern humans), evolved as early as 120,000 years ago. Based on archaeological evidence, it is now clear that modern humans spread from Africa across Asia, into Europe, and finally to Australia and the Americas. This vast movement of people took place between 100,000 and 35,000 years ago.

Scholars began the systematic study of prehistory only about 200 years ago. Nineteenth-century archaeologists, struck by the wealth of stone tools, weapons, and figures found at ancient sites, named the whole period of early human development the Stone Age. Today, researchers divide the Stone Age into two parts: Paleolithic (from the

Greek *paleo-*, “old,” and *lithos*, “stone”) and Neolithic (from the Greek *neo-*, “new”). They divide the Paleolithic period into three phases reflecting the relative position of objects found in layers of excavation: Lower (the oldest), Middle, and Upper (the most recent). In some places archaeologists can identify a transitional, or Mesolithic (from the Greek *meso-*, “middle”), period.

The dates for the transition from Paleolithic to Neolithic vary with geography and with local environmental and social circumstances. For some of the places discussed in this chapter, such as Western Europe, the Neolithic way of living did not emerge until 3000 BCE; in others, such as the Near East, it appeared as early as 8000 BCE. Archaeologists denote time in numbers of years BP (“before present”). However, to ensure consistent style throughout the book, which reflects the usage of art historians, this chapter uses the notations BCE (before the Common Era) and CE (the Common Era) to mark time.

Much is yet to be discovered about prehistoric art. In Australia, some of the world’s very oldest images have been dated to between 50,000 and 40,000 years ago, and



1-2 RAINBOW SERPENT ROCK

Western Arnhem Land, Australia.

Appearing in Australia as early as 6000 BCE, images of the Rainbow Serpent play a role in rituals and legends of the creation of human beings, the generation of rains, storms, and floods, and the reproductive power of nature and people.



MAP 1-1 PREHISTORIC EUROPE

As the Ice Age glaciers receded, Paleolithic, Neolithic, Bronze Age, and Iron Age settlements increased from south to north.

the tradition of transient communities who marked the land in complex, yet stunningly beautiful ways continues into historical time. In western Arnhem Land (**FIG. 1-2**), rock art images of the Rainbow Serpent have their origins in prehistory. They were perhaps first created during times of substantial changes in the environment.

Africa, as well, is home to ancient rock art in both its northern and southern regions. And most recently, archaeologists have dated cave paintings on the Indonesian island of Sulawesi to between 35,000 and 40,000 years ago, including stenciled hands very similar to those appearing in Europe at Pech-Merle (SEE **FIG. 1-1**).

It is the cognitive capability to create and recognize symbols and imagery that sets modern humans apart from all our predecessors and all our contemporary animal relatives. We are defined as a species by our abilities to make and understand art. This chapter focuses primarily on prehistoric European art from the Paleolithic and Neolithic periods and into the Bronze Age (**MAP 1-1**). Later chapters

consider some prehistoric art on other continents and from other cultures, such as China (Chapter 11) and sub-Saharan Africa (Chapter 14).

Tools or Art?

Human beings made tools long before they made what today we call “art.” Art, in the sense of image making, is the hallmark of the Upper Paleolithic period and the emergence of our subspecies, *Homo sapiens sapiens*; representational images appear in the archaeological record beginning about 38,000 BCE in Australia, Africa, and Europe. Before that time, during the Lower Paleolithic period in Africa, early humans made tools by flaking and chipping (knapping) flint pebbles into blades and scrapers that had sharp edges. Dating to 2.5 million years ago, the earliest objects made by our human ancestors were simple stone tools used to cut animal skin and meat, smash open bones to reveal the marrow, and cut wood and other plant



1-3 PALEOLITHIC HAND-AXE

From Isimila Korongo, Tanzania. 60,000 years ago. Stone, height 10" (25.4 cm).

Credit: Werner Forman Archive

materials. These first tools have been found at sites such as Olduvai Gorge in Tanzania. Although not art, they document a critical development in our evolution: humans' ability to create specific tools and objects that could be used to complete a task.

By 1.65 million years ago, significant changes in our ancestors' cognitive abilities and manual dexterity can be seen in sophisticated stone tools, such as the teardrop-shaped hand-axes (**FIG. 1-3**) that have been found at sites across Eurasia. These extraordinary objects, symmetrical in form and produced by a complex multistep process, were long thought of as nothing more than tools (or perhaps even as weapons)—but the most recent analysis suggests that they had a social function as well. Some sites (such as Olorgesailie in Kenya) contain hundreds of hand-axes, far more than would have been needed in functional terms, suggesting that they served to announce an individual's skills, status, and standing in his or her community. Although these ancient hand-axes are clearly not art in the representational sense, it is important to see them in terms of performance and process. These concepts, so central to modern Western art, have deep prehistoric roots.

The Paleolithic Period

What do we know about the shelters and representational images from the Paleolithic period?

By 400,000 years ago, during the late Middle Paleolithic period, a *Homo sapiens* subspecies called Neanderthal inhabited Europe. Its members used a wider range of stone tools and may have carefully buried their dead with funerary offerings. Neanderthals survived for thousands of years and overlapped with modern humans, *Homo sapiens sapiens*, which had evolved and spread out of Africa some 300,000 years after the Neanderthals and eventually replaced them, probably between 38,000 and 33,000 BCE.

Critical cognitive abilities set modern humans apart from their predecessors; *Homo sapiens sapiens* outlasted Neanderthals as a species because they had the mental capacity to solve problems of human survival. The new cognitive abilities included improvements in recognizing

and benefiting from variations in the natural environment and in managing social networking and alliance making—skills that enabled organized hunting. The most important new ability, however, was the capacity to think symbolically: to create representational analogies between one person, animal, or object, and another and to recognize and remember those analogies. This cognitive development marks the evolutionary origin of what we call art.

1-4 DECORATED OCHER

From Blombos Cave, southern Cape coast, South Africa. 77,000 years ago.

Credit: Image courtesy of Prof Christopher Henshilwood, University of Bergen, Norway





1-5 RECONSTRUCTION DRAWING OF MAMMOTH-BONE HOUSES

Ukraine. c. 16,000–10,000 BCE

Credit: Jack Unruh/National Geographic Creative

The world's earliest examples of art come from South Africa: two 77,000-year-old, engraved blocks of red ocher (probably used as crayons) found in the Blombos Cave (FIG. 1-4). Both blocks are engraved in an identical way with cross-hatched lines on their sides. Archaeologists argue that the similarity of the engraved patterns means these two pieces were intentionally made and decorated following a common pattern. Thousands of fragments of ocher have been discovered at Blombos; there is little doubt that people were using it to draw patterns and images, the remains of which have long since disappeared. It is highly likely that the ocher was used to decorate peoples' bodies, as well as to color objects such as tools or shell ornaments. In an earlier layer on the same site, archaeologists uncovered more than 36 shells, each of which had been perforated so that it could be hung from a string or thong, or attached to clothing or a person's hair; these shells would have been used for personal decoration. An ostrich eggshell bead from the same site would have served the same purpose. The Blombos finds are enormously important. Here our early ancestors, probably modern humans but possibly their predecessors, used the earth's raw materials to decorate themselves with jewelry and body art.

Shelter or Architecture?

"Architecture" usually refers to the enclosure of spaces with some aesthetic intent, and building even a simple shelter requires a degree of imagination and planning deserving of this term. In the Upper Paleolithic period, humans in some regions used great ingenuity to build shelters that were far from simple. In woodlands, evidence of floors indicates that our ancestors built circular or oval huts of light branches and hides that measured

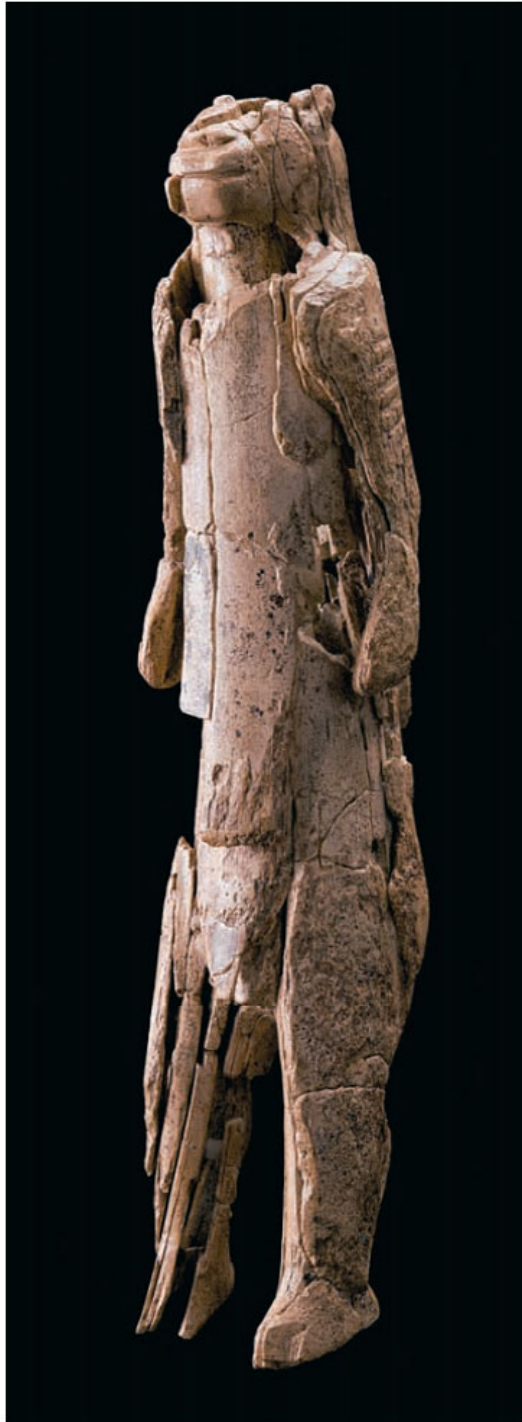
as much as 15 to 20 feet in diameter. (Modern tents to accommodate 6 people vary from 10- by 11-foot ovals to 14- by 7-foot rooms.)

In the treeless grasslands of Upper Paleolithic Russia and Ukraine, builders created settlements of up to ten houses using the bones of the now extinct woolly mammoth, whose long, curving tusks made excellent roof supports and arched door openings (FIG. 1-5). This bone framework was probably covered with animal hides and turf. Most activities centered around the inside fire pit, or hearth, where food was prepared and tools were made. Larger houses might have had more than one hearth, and spaces were set aside for specific uses—working stone, making clothing, sleeping, and dumping refuse. Inside the largest dwelling on a site in Mezhirich, Ukraine, archaeologists found 15 small hearths that still contained ashes and charred bones left by the last occupants. Some people colored their floors with powdered ocher in shades that ranged from yellow to red to brown. These Upper Paleolithic structures are important because of their early date: The widespread appearance of durable architecture concentrated in village communities did not occur until the beginning of the Neolithic period in the Near East and southeastern Europe.

Artifacts or Works of Art?

As early as 30,000 BCE small figures, or figurines, of people and animals made of bone, ivory, stone, and clay appeared in Europe and Asia. Today we interpret such self-contained, three-dimensional pieces as examples of **sculpture in the round**. Prehistoric carvers also produced **relief sculpture** in stone, bone, and ivory. In relief sculpture, part of the surrounding material is retained to form a background for the projecting figure.

THE LION-HUMAN An early and puzzling example of a sculpture in the round is a human figure—probably male—with a feline head (**FIG. 1-6**), made about 30,000–26,000 BCE. Archaeologists excavating at Hohlenstein-Stadel, Germany, found broken pieces of ivory (from a mammoth tusk) that they realized were parts of an entire figure. Nearly a foot tall, this remarkable statue surpasses most early figurines in size and complexity.



1-6 LION-HUMAN

From Hohlenstein-Stadel, Germany. c. 40,000–35,000 BCE. Mammoth ivory, 12¼" × 2⅞" (31.1 × 7.3 cm). Ulmer Museum, Ulm, Germany.

Credit: Photo: Yvonne Mühleis © Landesamt für Denkmalpflege im RP Stuttgart

Instead of copying what he or she saw in nature, the carver created a unique creature, part human and part beast. The figure may have been intended to represent a person wearing a ritual lion mask—or someone who had actually taken on the appearance of an animal. Archaeologists now think that the people who lived at this time held very different ideas than ours about what it meant to be a human and how humans were distinct from animals; it is quite possible that they thought of animals and humans as parts of one common group of beings who shared the world. What is absolutely clear is that the Lion-Human is evidence of the uniquely human ability to conceive and represent a creature never seen in nature.

FEMALE FIGURES While a number of figurines representing men have been found recently, most human figures from the Upper Paleolithic period are female. The most famous of these, the **WOMAN FROM WILLENDORF** (**FIG. 1-7**), Austria, dates from about 24,000 BCE (see "The Power of Naming" opposite). Carved from limestone and originally colored with red ocher, the statuette's swelling,



1-7 WOMAN FROM WILLENDORF

Austria. c. 24,000 BCE. Limestone, height 4⅜" (11 cm). Naturhistorisches Museum, Vienna.

Credit: © akg-images/Erich Lessing

Art and its Contexts

THE POWER OF NAMING

Words are only symbols for ideas, and it is no coincidence that the origins of language and of art are often linked in human evolutionary development. But the very words we invent—or our ancestors invented—reveal a certain view of the world and can shape our thinking. Today, we exert the power of naming when we select a name for a baby or call a friend by a nickname. Our ideas about art can also be affected by names. Before the twentieth century, artists usually did not name, or title, their works. Names were eventually supplied by the works' owners or by art historians writing about them, and thus often express the cultural prejudices of the labelers or of the times in which they lived.

An excellent example of such distortion is the naming of the hundreds of small prehistoric statues of women that have been found. Earlier scholars called them by the Roman name Venus. For example, the sculpture in **FIGURE 1-7** was once called the

Venus of Willendorf after the place where it was found. Using the name of the Roman goddess of love and beauty sent a message that this figure was associated with religious belief, that it represented an ideal of womanhood, and that it was one of a long line of images of “classical” feminine beauty. In a short time, most similar works of sculpture from the Upper Paleolithic period came to be known as Venus figures. The name was repeated so often that even experts began to assume that the statues had to be fertility figures and Mother Goddesses, although there is no proof that this was so.

Our ability to understand and interpret works of art responsibly and creatively is easily compromised by distracting labels. Calling a prehistoric figure a woman instead of Venus encourages us to think about the sculpture in new and different ways.

rounded forms make it seem much larger than its actual 4⅜-inch height. The sculptor exaggerated the figure's female attributes by giving it pendulous breasts, a big belly with a deep navel (actually a natural indentation in the stone), wide hips, and dimpled knees and buttocks. By carving a woman with a well-nourished body, the artist may have been expressing health and fertility, which could ensure the ability to produce strong children, thus guaranteeing the survival of the clan.

The most recent analysis of the Paleolithic female sculptures, however, has replaced the traditional emphasis on fertility with more nuanced understandings of how and why the human figure is represented in this way, and who may have had these kinds of objects made. According to archaeologist Clive Gamble, these little sculptures were subtle forms of nonverbal communication among small, isolated groups of Paleolithic people spread out across vast regions. Gamble noted the tremendous (and unusual) similarity in the shapes of figures, even among those found in widely distant parts of Europe. He suggested that when groups of Paleolithic hunter-gatherers did occasionally meet up and interact, the female statues may have been among several signature objects that signaled whether a group was friendly and acceptable for interaction and, probably, for mating. As symbols, these figures would have provided reassurance of shared values about the body, and their size would have demanded engagement at a close personal level. It is not a coincidence, then, that the largest production of these figurines occurred during a period when climatic conditions were at their worst and the need for interaction and alliance building would have been at its greatest.

Another figure, the **WOMAN FROM DOLNÍ VĚSTONICE** (**FIG. 1-8**), takes our understanding of these objects further



1-8 WOMAN FROM DOLNÍ VĚSTONICE

Moravia, Czech Republic. 23,000 BCE. Fired clay, 4¼ × 1⅞" (11 × 4.3 cm). Moravske Museum, Brno, Czech Republic.

Credit: © akg-images/De Agostini Picture Lib./A. Dagli Orti

still. The site of Dolní Věstonice is important because it holds evidence of a very early date (23,000 BCE) for the use of fire to make objects out of mixtures of water and soil. What makes the figures from this site in the Czech Republic and others in the region (Pavlov and Předměstí) unusual is how they were made. But by mixing soil with water according to a very particular recipe and then placing the wet figures in a hot kiln to bake, the makers were not intending to create durable, well-fired statues. On the contrary, the recipe and firing procedure indicate that the intention was to make the figures explode in the kilns before the firing process was complete—before a “successful” figure could be produced. There are very few complete figures, but there are numerous fragments that bear the traces of explosions at high temperatures at these sites. The Dolní Věstonice fragments are records of performance and process art in their rawest and earliest forms.

Another remarkable female image, discovered in the Grotte du Pape in Brassempouy, France, is the tiny ivory head known as the **WOMAN FROM BRASSEmpouy** (FIG. 1-9). Though the finders did not record its archaeological

context, recent studies prove it to be authentic and date it as early as 30,000 BCE. The carver captured the essence of a head, or what psychologists call the memory image—those generalized elements that reside in our memory of a human head. An egg shape rests on a long neck. A wide nose and strongly defined browline suggest deep-set eyes, and an engraved square patterning may be hair or a headdress. The image is an abstraction (what has come to be known as **abstract art**): the reduction of shapes and appearances to basic yet recognizable forms that are not intended to be exact replications of nature. The result in this case looks uncannily modern to contemporary viewers. Today, when such a piece is isolated in a museum case or as a book illustration we enjoy it as an aesthetic object, but we lose its original cultural context.

Cave Painting

Art in Europe entered a rich and sophisticated phase well before 40,000 years ago, when images began to be painted on the walls of caves in central and southern France and northern Spain. No one knew of the existence of prehistoric cave paintings until one day in 1879, when a young girl, exploring with her father in Altamira in northern Spain, crawled through a small opening in the ground and found herself in a chamber whose ceiling was covered with painted animals (SEE FIG. 1-13). Her father, a lawyer and amateur archaeologist, searched the rest of the cave, told authorities about the remarkable find, and published his discovery the following year. Few people believed that these amazing works could have been made by “primitive” people, and the scientific community declared the paintings a hoax. They were accepted as authentic only in 1902, after many other cave paintings, drawings, and engravings had been discovered at other places in northern Spain and in France.

TECHNIQUE OF PREHISTORIC WALL PAINTING In a dark cave, presumably working by the light of an animal-fat lamp, prehistoric artists chewed a piece of charcoal to dilute it with saliva and water. Then they blew out the mixture on the surface of a wall, using their hands as stencils. This drawing demonstrates how cave archaeologist Michel Lorblanchet and his assistant used this step-by-step process of the original makers of a cave painting at Pech-Merle (SEE FIG. 1-1) in France to create a complex design of spotted horses.

By turning himself into a human spray can, Lorblanchet produced clear lines on the rough stone surface much more easily than he could with a brush. To create the line of a horse’s back, for example, with its clean upper edge and blurry lower one, he blew pigment below his hand. To capture its angular rump, he placed his hand vertically against the wall, holding it slightly curved. To produce the sharpest lines, such as those of the upper hind leg and tail,



1-9 WOMAN FROM BRASSEmpouy

Grotte du Pape, Brassempouy, Landes, France. Probably c. 30,000 BCE. Ivory, height 1¼" (3.6 cm). Musée des Antiquités Nationales, Saint-Germain-en-Laye, France.

Credit: © akg-images/De Agostini Picture Lib./G. Dagli Orti



MICHEL LORBLANCHET SIMULATING THE TECHNIQUE OF PREHISTORIC CAVE PAINTERS

he placed his hands side by side and blew between them. To create the forelegs and the hair on the horses' bellies, he fingerpainted. A hole punched in a piece of leather served as a stencil for the horses' spots. It took Lorblanchet only 32 hours to reproduce the Pech-Merle painting of spotted horses, his speed suggesting that a single artist could have created the original.

Homo sapiens sapiens artists used three painting techniques: the spraying demonstrated by Lorblanchet, drawing with fingers or blocks of ocher, and daubing with a paintbrush made of hair or moss. In some prehistoric caves, three other stages of image creation can be seen: engraved lines using flakes of flint, followed by a color wash of ocher and manganese, and a final engraving to emphasize shapes and details.

THE MEANING OF CAVE PAINTINGS What caused people to paint such dramatic imagery on the walls of caves? The idea that human beings have an inherent desire to decorate themselves and their surroundings—that an aesthetic sense is somehow innate to the human species—found ready acceptance in the nineteenth century. Many believed that people create art for the sheer love of beauty. Scientists now agree that human beings have an aesthetic impulse, but the effort required to accomplish the great cave paintings suggests their creators were motivated by more than simple visual pleasure. Since the discovery at Altamira, anthropologists and art historians have devised several hypotheses to explain the existence of cave art. Like the search for the meaning of prehistoric female figurines, these explanations depend on the cultural views of those who advance them.

In the early twentieth century, scholars believed that art has a social function and that aesthetics are culturally relative. They proposed that cave paintings might be products both of rites to strengthen clan bonds and of ceremonies to enhance the fertility of animals used for food. In 1903, French archaeologist Salomon Reinach suggested that cave paintings were expressions of sympathetic magic: the idea, for instance, that a picture of a reclining bison would ensure that hunters found their prey asleep. Abbé Henri Breuil took these ideas further and concluded that caves were places of worship and settings for initiation rites. During the second half of the twentieth century, scholars rejected these ideas and rooted their interpretations in rigorous scientific methods and then-current social theory. André Leroi-Gourhan and Annette Laming-Empeire, for example, dismissed the sympathetic magic theory because statistical analysis of debris from human settlements revealed that the animals used most frequently for food were not the ones traditionally portrayed in caves.

Researchers continue to discover new cave images and to correct earlier errors of fact or interpretation. A study of the Altamira Cave in the 1980s led anthropologist Leslie G. Freeman to conclude that the artists had faithfully represented a herd of bison during the mating season. Instead of being dead, asleep, or disabled—as earlier observers had thought—the animals were dust-wallowing, common behavior during the mating season. Similar thinking has led to a more recent interpretation of cave art by archaeologist Steve Mithen. In his detailed study of the motifs of the art and its placement within caves, Mithen argued that hoofprints, patterns of animal feces, and hide colorings were recorded and used as a “text” to teach novice hunters within a group about the seasonal appearance and behavior of the animals they hunted. The fact that so much cave art is hidden deep in almost inaccessible parts of caves—indeed, the fact that it is placed within caves at all—suggested to Mithen that this knowledge was intended for a privileged group and that certain individuals or groups were excluded from acquiring that knowledge.

South African rock-art expert David Lewis-Williams has suggested a different interpretation. Using a deep comparative knowledge of art made by hunter-gatherer communities that are still in existence, Lewis-Williams argued that Upper Paleolithic cave art is best understood in terms of shamanism: the belief that certain people (shamans) can travel outside of their bodies in order to mediate between the worlds of the living and the spirits. Traveling under the ground as a spirit, particularly within caves, or conceptually within the stone walls of the cave, Upper Paleolithic shamans would have participated in ceremonies that involved hallucinations. Images conceived during this trancelike state would likely combine recognizable (the animals) and abstract (the nonrepresentational) symbols. In addition, Lewis-Williams interprets the stenciled human handprints

on the cave walls (SEE FIG. 1-1) as traces of the nonshaman participants in the ritual reaching toward and connecting with the shaman spirits traveling within the rock.

Although the hypotheses that seek to explain cave art have changed and evolved over time, there has always been agreement that decorated caves must have had a special meaning because people returned to them time after time over many generations, in some cases over thousands of years. Perhaps Upper Paleolithic cave art was the product of rituals intended to gain the favor of the supernatural. Perhaps because much of the art was made deep inside the caves and nearly inaccessible, its significance may have had less to do with the finished painting than with the very act of creation. Artifacts and footprints suggest that the subterranean galleries, which were far from living quarters, had a religious or magical function. Perhaps the experience of exploring the cave may have been significant to the image-makers. Musical instruments, such as bone flutes, have been found in the caves, implying that even acoustical properties may have had a role to play.

CHAUVET One of the earliest known sites of prehistoric cave paintings is the Chauvet Cave (named after one of the persons who found it) near Vallon-Pont-d'Arc in southeastern France. Discovered in December 1994, it is a trove of hundreds of paintings (FIG. 1-10). The most dramatic of the images depict grazing, running, or resting animals, including wild horses, bison, mammoths, bears, panthers, owls, deer, aurochs, woolly rhinoceroses,

and wild goats (or ibex). Also included are occasional humans, both male and female, many handprints, and hundreds of geometric markings such as grids, circles, and dots. Footprints in the Chauvet Cave, left in soft clay by a child, go to a "room" containing bear skulls. The charcoal used to draw the rhinos has been radiocarbon-dated to 32,410 years old, plus or minus 720 years.

LASCAUX The abundant cave paintings found in 1940 at Lascaux, in the Dordogne region of southwest France, have been dated to about 15,000 BCE.

Opened to the public after World War II, the prehistoric "museum" at Lascaux soon became one of the most popular tourist sites in France—too popular, because the visitors brought heat, humidity, exhaled carbon dioxide, and other contaminants. The cave was closed to the public in 1963 so that conservators could battle an aggressive fungus. Eventually they won, but instead of reopening the site, authorities created a facsimile of it. Visitors to what is called Lascaux II may now view copies of the paintings without harming the precious originals.

The scenes they view are remarkable. Lascaux has about 600 paintings and 1,500 engravings. In the **HALL OF BULLS** (FIG. 1-11), the Lascaux painters depicted cows, bulls, horses, and deer along the natural ledges of the rock, where the smooth white limestone of the ceiling and upper wall meets a rougher surface below. They also used the curving wall to suggest space. The animals appear singly, in rows, face to face, tail to tail, and even painted on top of



1-10 WALL PAINTING WITH HORSES, RHINOCEROSES, AND AUROCHS

Chauvet Cave. Vallon-Pont-d'Arc, Ardèche Gorge, France. c. 32,000–30,000 BCE. Paint on limestone.

Credit: © J. Clottes - MCC.



1-11 HALL OF BULLS

Lascaux Cave. Dordogne, France. c. 15,000 BCE. Paint on limestone, length of largest auroch (bull) 18' (5.50 m).

Credit: © akg-images

one another. Their most characteristic features have been emphasized. Horns, eyes, and hooves are shown as seen from the front, yet heads and bodies are rendered in profile, in a system known as a **composite pose**. The animals are full of life and energy, and the accuracy in the drawing of their silhouettes, or outlines, is impressive.

Painters worked not only in large caverns, but also far back in the smallest chambers and recesses, many of which are almost inaccessible today. Over 100 small stone lamps have been found at Lascaux, indicating that the artists worked in flickering light obtained from burning animal fat. Although 1 pound of fat would burn for 24 hours and produce no soot, the light would not have been as strong as that created by a candle.

One scene at Lascaux was discovered in a remote setting on a wall at the bottom of a 16-foot shaft that contained a stone lamp and spears. The scene is unusual because it is the only painting in the cave complex that seems to tell a story (**FIG. 1-12**), and it is stylistically different from the other paintings at Lascaux. A figure who could be a hunter, greatly simplified in form but recognizably male and with



1-12 BIRD-HEADED MAN WITH BISON

Shaft scene in Lascaux Cave. c. 15,000 BCE. Paint on limestone, length approx. 9' (2.75 m).

Credit: Photo © Hans Hinz/ARTOTHEK

the head of a bird or wearing a bird's-head mask, appears to be lying on the ground. A great bison looms above him. Below him lie a staff and a spear-thrower, the outer end of which has been carved in the shape of a bird. The long, diagonal line slanting across the bison's hindquarters may be a spear. The bison has been disemboweled and will soon die. To the left of the cleft in the wall a woolly rhinoceros seems to run off. It is unknown why the man was portrayed as a sticklike figure while the bison was rendered with such accurate detail—or whether the painting illustrates a myth, an actual event, or the vision of a shaman.

ALTAMIRA The cave paintings at Altamira, near Santander in the Cantabrian Mountains in Spain—the first to be discovered and attributed to the Upper Paleolithic period—are now dated to about 12,500 BCE, as discussed below. The Altamira artists created sculptural effects by painting over and around natural irregularities in the cave walls and ceilings. To produce the herd of bison on the ceiling of the main cavern (**FIG. 1-13**), they used red and brown ocher to paint the large areas of the animals' shoulders, backs, and flanks, then sharpened the contours of the rocks and added the details of the legs, tails, heads, and horns in black and brown. They mixed yellow and brown from iron-based ocher to make the red tones, and they derived black from manganese or charcoal.



HOW EARLY ART IS DATED Since the first discoveries at Altamira, archaeologists have developed increasingly sophisticated ways of dating cave paintings and other excavated objects. Today, they primarily use two approaches to determine an artifact's age. **Relative dating** relies on the relationships among objects in a single excavation or among several sites. If archaeologists have determined, for example, that pottery types A, B, and C follow each other chronologically at one site, they can apply that knowledge to another site. Even if type B is the only pottery present, it can still be assigned a relative date. **Absolute dating**, on the other hand, aims to determine a precise span of calendar years in which an artifact was created.

The most accurate method of absolute dating is **radiometric dating**, which measures the degree to which radioactive materials have disintegrated over time. Used for dating organic (plant or animal) materials—including some pigments used in cave paintings—one radiometric method measures a carbon isotope called radiocarbon, or carbon-14, which is constantly replenished in a living organism. When an organism dies, it starts to lose its store of carbon-14 at a predictable rate. Under the right circumstances, the amount of carbon-14 remaining in organic material can tell us how long ago an organism died.

This method has serious drawbacks for dating works of art. Using carbon-14 dating on a carved antler or wood sculpture shows only when the animal died or when the tree was cut down, not when the artist created the work using those materials. Also, some part of the object must be destroyed in order to conduct this kind of test—something that is never desirable in relation to works of art. For this reason, researchers frequently test organic materials found in the same context as the work of art rather than sacrificing part of the work itself. Radiocarbon dating is most accurate for materials no more than 30,000 to 40,000 years old.

Potassium-argon dating, which measures the decay of a radioactive potassium isotope into a stable isotope of argon, an inert gas, is most reliable with materials over a million years old. **Uranium-thorium dating** measures the decay of uranium into thorium in the deposits of calcium carbonate that cover

1-13 BISON

Ceiling of a cave at Altamira, Spain.
c. 12,500 BCE. Paint on limestone, length approx.
8'3" (2.5 m).

Credit: Sisse Brimberg/National Geographic Creative

**1-14 BISON**

Le Tuc d'Audoubert, France.
c. 13,000 BCE. Unbaked clay,
length 25" (63.5 cm) and 24"
(60.9 cm).

Credit: Yvonne Vertut

the surfaces of cave walls, to determine the minimum age of paintings under the crust. **Thermo-luminescence dating** measures the irradiation of the crystal structure of a material subjected to fire, such as pottery, and the soil in which it is found, determined by the luminescence produced when a sample is heated. **Electron spin resonance** techniques use a magnetic field and microwave irradiation to date a material such as tooth enamel and the soil around it.

Recent experiments have helped to date cave paintings with increasing precision. Radiocarbon analysis has determined, for example, that the animal images at Lascaux are 17,000 years old—to be more precise, 17,070 years, plus or minus 130 years.

Cave Sculptures

Caves were sometimes adorned with relief sculpture as well as paintings. At Altamira, an artist simply heightened the resemblance of a natural projecting rock to a similar and familiar animal form. Other reliefs were created by modeling, or shaping, the damp clay of the cave's floor. An excellent example of such work in clay dating to 13,000 BCE is preserved at Le Tuc d'Audoubert, south of the Dordogne region of France. Here the sculptor created two bison leaning against a ridge of rock (**FIG. 1-14**). Although the beasts are modeled in very high relief (they extend well forward from the background), they display the same conventions as earlier painted ones, with emphasis on the broad masses of the meat-bearing flanks and shoulders. To make the animals even more lifelike, their creator engraved short parallel lines below their necks to represent their shaggy coats. Numerous small footprints found in the clay floor of this cave suggest that group rites took place here.

The Neolithic Period

How does the development of prehistoric art and architecture relate to the social and cultural changes of the Neolithic period?

Today, advances in technology, medicine, transportation, and communication change human experience in a generation. Many thousands of years ago, change took place much more slowly. In the tenth millennium BCE the world had already entered the present interglacial period; our modern climate was taking shape. The world was warming up, and this affected the distribution and stability of plant and animal life as well as marine and aquatic resources. However, the Ice Age ended so gradually and unevenly among regions that people could not have known what was happening.

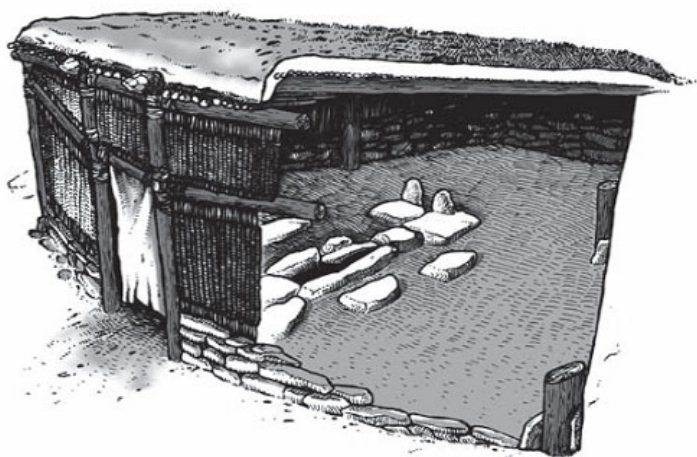
One of the fundamental changes that took place in our prehistoric past was in the relationship people had with their environment. After millennia of established interactions between people and wild plants and animals—ranging from opportunistic foraging to well-scheduled gathering and collecting—people gradually started to exert increasing control over the land and its resources. Seen from the modern perspective, this change in economy (archaeologists use “economy” to refer to the ways people gathered or produced food) seems abrupt and complete. Different communities adopted and adapted new sets of technologies, skills, and plant and animal species that allowed them to produce food. This was the origin of plant and animal domestication. Wheat and barley were cultivated; sheep, goats, cattle, and pigs were bred. This new economy appeared at different rates and to varying degrees of completeness in different parts of the Near East

and Europe, and no community relied exclusively on the cultivation of plants or on breeding animals. Instead they balanced hunting, gathering, farming, and animal breeding in order to maintain a steady food supply.

Architecture

At the same time as these new food technologies and species appeared, people began to establish stronger, more lasting connections to particular places in the landscape. The beginnings of architecture in Europe are marked by human social environments made up of simple but durable structures constructed of clay, mud, dung, and straw interwoven among wooden posts. While some of these buildings were simple huts used for no more than a season at a time, others were much more substantial, with foundations made of stone, set into trenches, and supporting walls of large timbers. Some were constructed from simple bricks made of clay, mud, and straw, shaped in rectangular molds and then dried in the sun. Regardless of the technique, the result was the same: People developed a new attachment to the land, and with settlement came a new kind of social life.

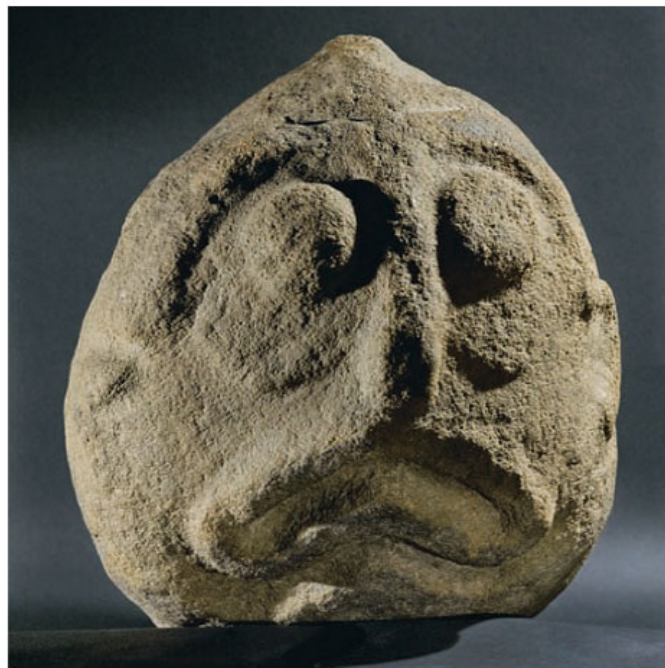
At the site of Lepenski Vir, on the Serbian bank of the Danube River, rows of trapezoidal buildings made of wooden posts, branches, mud, and clay—set on stone foundations and with stone-faced hearths—face the river from which the inhabitants took large fish (FIG. 1-15). Although this site dates to between 6300 and 5500 BCE, there is little evidence for the domestication of plants and animals that might be expected at this time in association with an architectural settlement. Archaeologists found human burials under the floors of these structures, as well as in the spaces between individual buildings.



1-15 RECONSTRUCTION DRAWING OF LEPENSKI VIR HOUSE/SHRINE

Serbia. 6300–5500 BCE.

Credit: Illustration: John Gordon Swogger



1-16 HUMAN-FISH SCULPTURE

From Lepenski Vir, Serbia. c. 6300–5500 BCE.

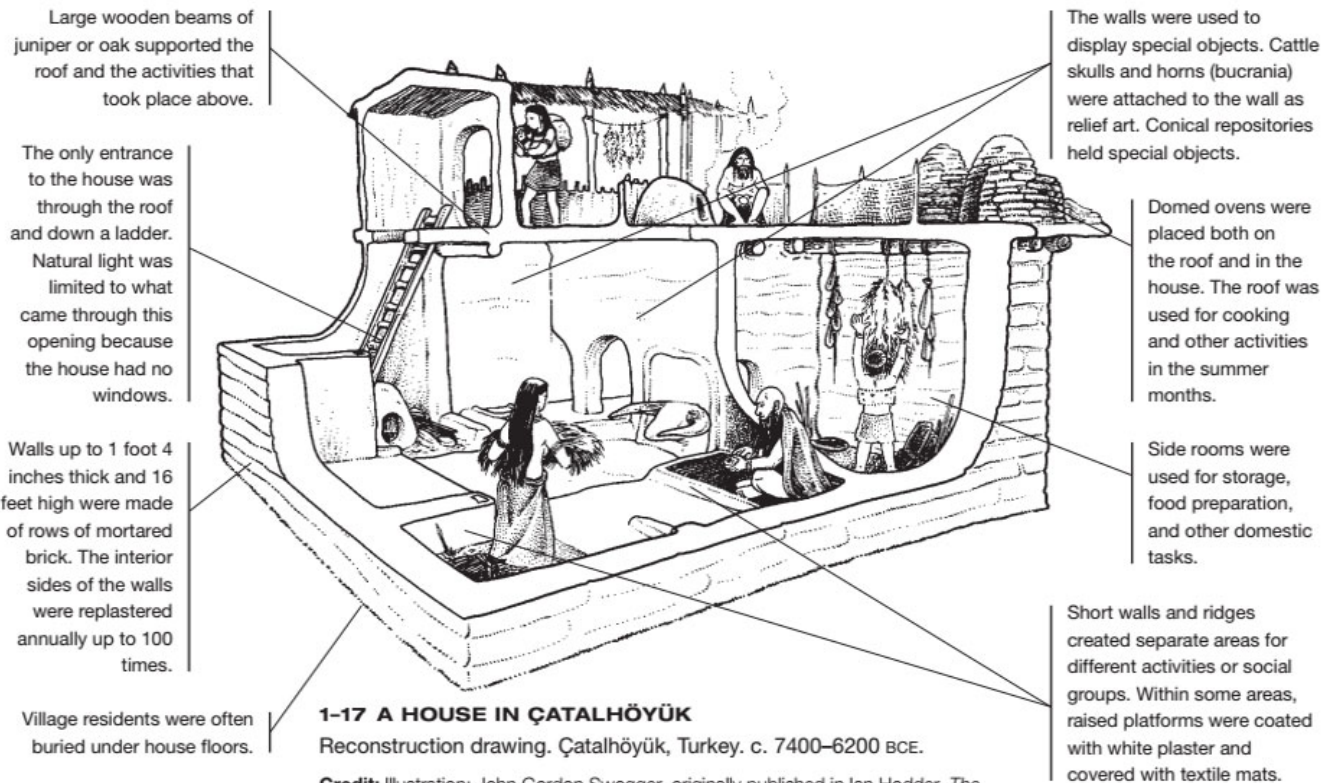
Credit: © akq-images/Erich Lessing

In some houses extraordinary art was found, made of carefully shaped river boulders (FIG. 1-16). Some of the boulders appear to represent human forms. Others look more like fish. A few seem to consist of mixtures of human and fish features. Here we have a site with a confusing combination of architecture with a nondomesticated economy, very distinctive art, and many burials. Archaeologists interpret such sites as temporary habitations where people carried out special rites and activities linked to death and to the natural and wild worlds.

In some places early architecture was dramatic and long-lasting, with the repeated building—sometimes over 1,000 years or more—of house upon house in successive architectural generations, resulting in the gradual rise of great mounds of villages referred to as tells or mound settlements. A particularly spectacular example is Çatalhöyük (Chatal Huyuk) in the Konya Plain in central Turkey, where the first traces of a village date to 7400 BCE in the early Neolithic period. The oldest part of the site consists of many densely clustered houses separated by areas of rubbish. They were made of rectangular mud bricks held together with mortar; walls, floors, and ceilings were covered with plaster and lime-based paint and were frequently replastered and repainted (see “Closer Look” opposite). The large site was home to as many as 3,000 people at any one time. Beyond the early date of the site and its size and population, the settlement at Çatalhöyük is important to the history of art for two reasons: the picture it provides of the use of early architecture and the sensational art that has been found within its buildings.

A Closer Look

A HOUSE IN ÇATALHÖYÜK



1-17 A HOUSE IN ÇATALHÖYÜK

Reconstruction drawing. Çatalhöyük, Turkey. c. 7400–6200 BCE.

Credit: Illustration: John Gordon Swogger, originally published in Ian Hodder, *The Leopard's Tale: Revealing the Mysteries of Çatalhöyük*. London: Thames & Hudson, 2006, fig. 5.8.

HOUSES AND COMMUNITIES Archaeologists and anthropologists often assume that the decision to create buildings such as the houses at Neolithic sites came from a universal need for shelter from the elements. However, as suggested by the special nature of the activities at Lepenski Vir, recent work at Çatalhöyük also shows clearly that while structures did provide shelter, early houses had much more significant functions. For the Neolithic people of Çatalhöyük, their houses were the key component of their worldview. Most importantly, they became an emblem of the spirit and history of a community. The building of house upon house created a historical continuity that outlasted any human lifetime; some house-rebuilding sequences lasted many hundreds of years. And the seasonal replastering and repainting of walls and floors only enhanced the sense of long-term continuity that made these buildings history-makers. In fact, Ian Hodder, the director of excavations at Çatalhöyük, and his colleagues call some of them “history houses” and have found no evidence to suggest that they were shrines or temples as earlier interpreters had mistakenly concluded.

As at Lepenski Vir, the dead were buried under the floors of many of the buildings at Çatalhöyük, another

way that the site connected the community’s past and present. While there were no burials in some houses, a few contained between 30 and 60 bodies (the average is about 6 per house), and one had 62 burials, including people who had lived their lives in other parts of the village. Periodically, perhaps to mark special community events and ceremonies, people dug down into the floors of their houses and removed the heads of the long-deceased, then buried the skulls in new graves under the floors. Skulls were also placed in the foundations of new houses as they were built and rebuilt, and in other special deposits around the settlement. In one extraordinary burial, a deceased woman holds in her arms a man’s skull that had been plastered and painted. Perhaps it, too, had been removed from an earlier underfloor grave.

The houses of Çatalhöyük were powerful places not only because of the (literal) depths of their histories, but also because of the art that decorated their interiors. Painted on the walls of some of the houses are violent and wild scenes. In some, humans are represented without heads as if they had been decapitated. Vultures or other birds of prey appear huge next to them, and narratives seem to highlight dangerous interactions between people

and animals. In one painting (**FIG. 1-18**) a huge, horned wild animal (probably a deer) is surrounded by small humans who are jumping or running; one of them is pulling on something sticking out of the deer's mouth, perhaps its tongue. There is an emphasis on maleness: some of the human figures are bearded and the deer has an erect penis. Archaeologists have interpreted this scene as a dangerous game or ritual of baiting and taunting a wild animal. In other paintings, people hunt or tease boars or bulls. Conservation of the wall paintings is highly complex, and since many of the most dramatic examples were excavated before modern preservation techniques existed, we must rely on the archaeologist's narrative descriptions or quick field sketches.

Other representations of wild animals, most frequently the heads and horns of bulls, are modeled in relief on the interior walls. In some houses, people placed boar tusks, vulture skulls, and fox and weasel teeth under the floors; in at least one case, they dug into previous house generations to retrieve the plastered and painted heads of bulls.

Sites such as Lepenski Vir and Çatalhöyük have forced archaeologists to think in new ways about the role of architecture and art in prehistoric communities. Critically, the mixture of shelter, architecture, art, spirit, ritual, and ceremony at these and many other Neolithic settlements

makes us realize that we cannot easily distinguish between "domestic" and "sacred" architecture. This point re-emerges from the recent work at Stonehenge in England. In addition, the clear and repeated emphasis on death, violence, wild animals, and male body parts at Çatalhöyük has challenged traditional interpretations of the Neolithic worldview that concentrated on representations of the female body, human fertility, and cults of the Mother Goddess.

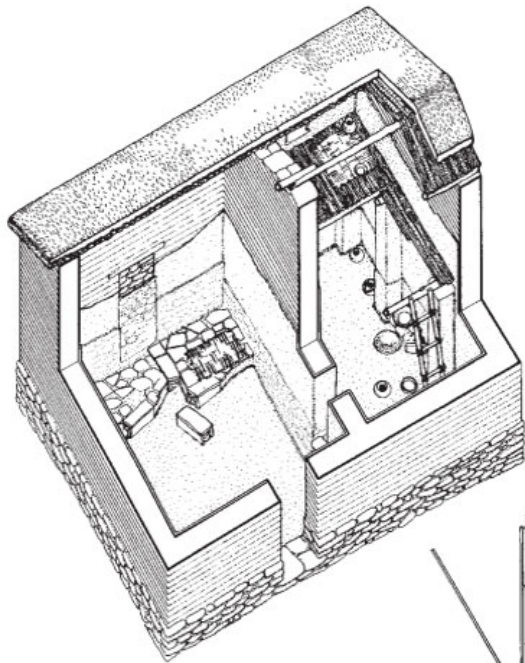
Most Neolithic architectural sites were not as visually sensational as Çatalhöyük. At the site of Sesklo in northern Greece, dated to 6500 BCE, people built stone-based, long-lasting structures (**FIG. 1-19**) in one part of a village and less substantial mud, clay, and wood buildings in another part. The stone-based buildings may have had a special function within the community—whether ritual, crafts-based, or political is difficult to determine. Since they were rebuilt again and again over a long period of time, the part of the village where they were located "grew" vertically into a mound or tell. Some buildings had parts with easily recognizable functions, such as a place for making ceramic vessels. The distinction between the area of the longer-lasting, often rebuilt buildings and the more temporary structures is clear in the style of architecture as well as in the quality of artifacts found. Finer, decorated pottery is more abundant in the former.



1-18 MEN TAUNTING A DEER (?)

Detail of a wall painting from Çatalhöyük, Turkey. c. 6000 BCE. Museum of Anatolian Civilization, Ankara, Turkey.

Credit: © akg-images/De Agostini Picture Lib./M. Seemuller



1-19 SESKLO STONE-FOUNDATION HOUSE
Sesklo, northern Greece. 6500 BCE.

Credit: From: Stella G. Souvatzi, *A Social Archaeology of Households in Neolithic Greece. An Anthropological Approach*. 2009, fig. 4.8b. Cambridge University Press. After D.R. Theodoridis, *Neolithiki Hellas*, National Bank of Greece, Athens, 1973

In different regions of Europe, people created architecture in different ways. The crowded buildings of Çatalhöyük differed from the structures at Sesklo, and these differed from the trapezoidal huts at Lepenski Vir. To the northwest, in Germany and central Europe, Neolithic villages typically consisted of three or four long timber buildings, each up to 150 feet long, housing 45 to 50 people. The structures were rectangular, with a row of posts down the center supporting a **ridgepole**, a long horizontal beam against which the slanting roof poles were braced. The walls were probably made of **wattle and daub** and roofed with **thatch**, plant material such as reeds or straw tied over a framework of poles. These houses also included large granaries, or storage spaces for the harvest; some buildings contained sections for animals and for people. Around 4000 BCE, Neolithic settlers began to locate their communities at defensible sites—near rivers, on plateaus, or in swamps. For additional protection, they also frequently surrounded their settlements with wooden walls, earth embankments, and ditches.

While much research has focused on the origins and construction technology of the earliest architecture—as at Çatalhöyük, Lepenski Vir, and other sites—some of the most exciting new work has come from studies of how Neolithic houses were destroyed. Excavations of settlements dating to the end of the Neolithic period in eastern and central Europe commonly reveal a level of ash and other evidence for great fires that burned down houses at these sites. The common interpretation had been that

invaders, coming on horseback from Ukraine and Russia, had attacked these villages and burned the settlements.

In one of the most innovative recent studies, Mira Stevanović and Ruth Tringham employed the methods of modern forensic science and meticulously reconstructed the patterns of Neolithic house conflagrations. The results proved that the fires were not part of village-wide destructions, but were individual events, confined to particular houses. Most significantly, they showed that each fire had been deliberately set. In fact, in order to get the fires to consume the houses completely, buildings had been stuffed with combustibles before they were set alight. Repeated tests by experimental archaeologists have supported these conclusions. Each intentional, house-destroying fire was part of a ritual killing of the house and a rupture of the historical and social entity that the house had represented for the community. Critically, even in their destruction, prehistoric buildings played important and complex roles in relation to the ways that individuals and communities created (and destroyed) social identities and continuities.

CEREMONIAL AND TOMB ARCHITECTURE In western and northern Europe, people erected huge stones to build ceremonial structures and tombs. In some cases, they had to transport these great stones over long distances. The monuments thus created are examples of what is known as **megalithic** architecture, the descriptive term derived from the Greek words for “large” (*mega-*) and “stone” (*lithos*).

Archaeologists disagree about the nature of the societies that created these monuments. Some believe they reflect complex, stratified societies in which powerful religious or political leaders dictated the design of these monuments and inspired (and coerced) large numbers of people to contribute their labor to such engineering projects. Skilled “engineers” would have devised the methods for shaping, transporting, and aligning the stones. Other interpreters argue that these massive monuments are clear evidence for collaboration within and between groups on a common project, the successful completion of which fueled social cohesion in the absence of a powerful individual.

Many of these megalithic structures are associated with death. Most recent interpretations stress the role of death and burial as fundamental, public performances in which individual and group identity, cohesion, and disputes were played out. In this reasoning, death and its rituals are viewed as theater, with the deceased as well as grave goods perceived as props, the monument as a stage, the celebrants and mourners as actors, and the entire event proceeding in terms of an (unwritten) script with narrative and plot.

Elaborate megalithic tombs first appeared in the Neolithic period. Some were built for single burials; others had multiple burial chambers. The simplest type was the **dolmen**, formed in **post-and-lintel** construction (construction in which two uprights—the posts—support a horizontal

element—the lintel). The tomb chamber was formed of huge upright stones supporting one or more tablelike rocks, or **capstones**. The structure was then mounded over with smaller rocks and dirt to form a **cairn** or artificial hill. A more imposing type of structure was the **passage grave**, in which narrow, stone-lined passageways led into a large room at the center.

At Newgrange, in Ireland, the mound of an elaborate passage grave (**FIG. 1-20**) originally stood 44 feet high and measured about 280 feet in diameter. The mound was built of sod and river pebbles and was set off by a circle of engraved standing stones around its perimeter. Its passageway, 62 feet long and lined with standing stones, leads into a three-part chamber with a **corbeled vault** (an arched structure that spans an interior space) rising to a height of 19 feet.

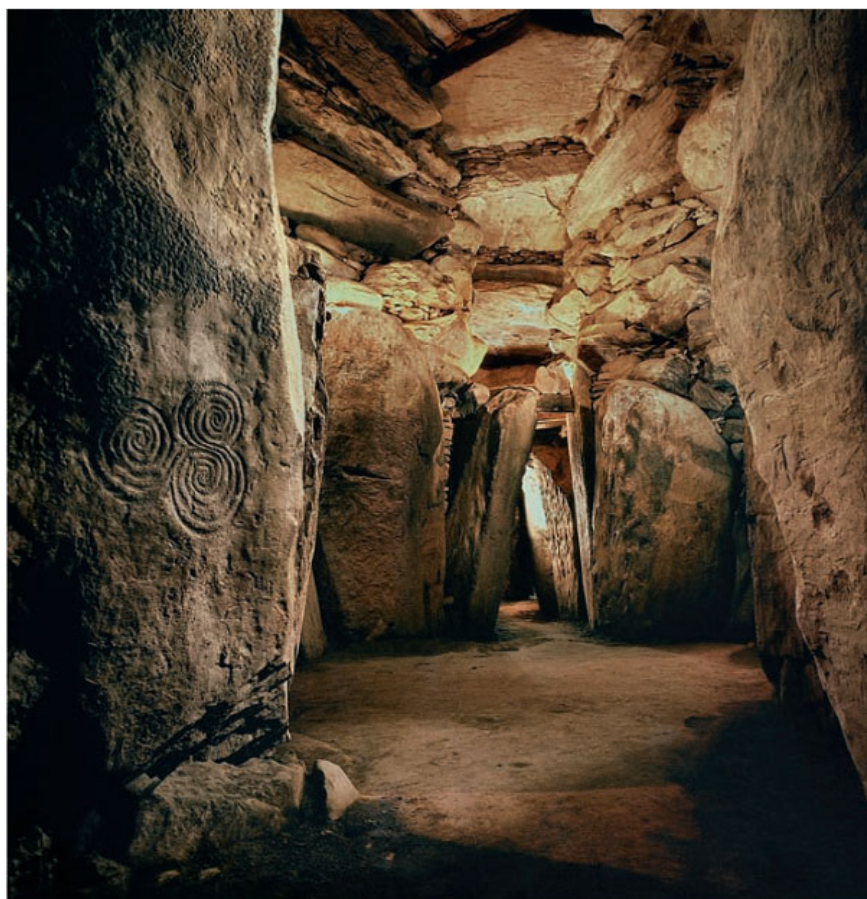
Some of the stones are engraved with linear designs, mainly rings, spirals, and diamond shapes. These patterns may have been marked out using strings or compasses, then carved by picking at the rock surface with tools made of antlers. Recent detailed analysis of the art engraved on passage graves like Newgrange, but also at Knowth in Ireland, suggest that the images are entoptic (meaning that their significance and function relate to the particularities of perception by the eye), and that we should understand them in terms of the neuropsychological effect they would have had on people visiting the tomb. These effects may

have included hallucinations. Archaeologists argue that key entoptic motifs were positioned at entrances and other important thresholds inside the tomb, and that they played important roles in ritual or political ceremonies that centered around death, burial, and the commemoration and visitation of the deceased by the living.

STONEHENGE Of all the megalithic monuments in Europe, the one that has stirred the imagination of the public most strongly is **STONEHENGE**, on Salisbury Plain in southern England (**FIGS. 1-21, 1-22**). A **henge** is a circle of stones or posts, often surrounded by a ditch with built-up embankments. Laying out such circles with accuracy would have posed no particular problem. Architects likely relied on the human compass, a simple but effective surveying method that persisted well into modern times. All that is required is a length of cord either cut or knotted to mark the desired radius of the circle. A person holding one end of the cord is stationed in the center; a coworker, holding the other end and keeping the cord taut, steps off the circle's circumference. By the time of Stonehenge's construction, cords and ropes were readily available.

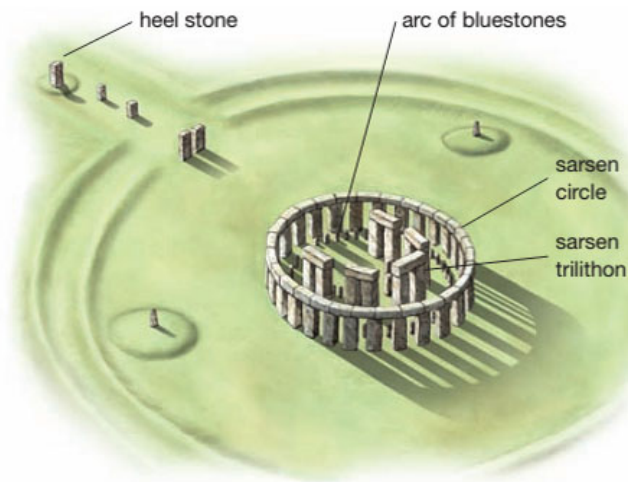
Stonehenge is not the largest such circle from the Neolithic period, but it is one of the most complex, with eight different phases of construction and activity, starting in 3000 BCE during the Neolithic period and stretching over a millennium and a half through the Bronze Age. The site started as a cemetery of cremation burials marked by a

circle of bluestones. Through numerous sequences of alterations and rebuildings, it continued to function as a domain of the dead. Between 2900 and 2600 BCE, the bluestones were rearranged into an arc. Around 2500 BCE, a circle of sarsen stones—sarsen is a gray sandstone—gave the site its well-known appearance using post-and-lintel construction. At the same time, the bluestones were rearranged within the sarsens. The center of the site was now dominated by a horse-shoe-shaped arrangement of five sandstone, post-and-lintel trilithons—pairs of upright stones topped by **lintels**. The one in the middle stood considerably taller than the rest, rising to a height of 24 feet, and its lintel was more than 15 feet long and 3 feet thick. This group was surrounded by the so-called sarsen circle,



1-20 TOMB INTERIOR WITH CORBELING AND ENGRAVED STONES
Newgrange, Ireland. c. 3000–2500 BCE.

Credit: ©National Monuments Service. Dept of Arts, Heritage and the Gaeltacht



1-21 RECONSTRUCTION DRAWING OF STONEHENGE FROM THE AIR

Salisbury Plain, Wiltshire, England. c. 3000–1500 BCE.

a ring of sandstone uprights weighing up to 26 tons each and averaging 13 feet 6 inches tall. This circle, 106 feet in diameter, was capped by a continuous lintel. The uprights taper slightly toward the top, and the gently curved lintel sections were secured by **mortise-and-tenon** joints, that is, joints made by a conical projection at the top of each upright that fits like a peg into a hole in the lintel. Over the next thousand years people continued to alter the arrangement of the bluestones, and cremation burials continued in pits at the site.

The differences in the types of stone used in the different phases of construction are significant. The use of bluestone in the early phases (and maintained and rearranged

through the sequence) is particularly important. Unlike the sarsen stone, bluestone was not locally available and would have been transported over 150 miles from the west, where it had been quarried in the mountains of west Wales. The means of transporting the bluestones such distances remains a source of great debate. Some argue that they were floated around the coast on great barges; others hold that they traveled over land on wooden rollers. Regardless, the use of this material tells us that the people who first transformed the Stonehenge landscape into a ceremonial site probably had their ancestral origins in the west. By bringing the bluestones and using them in the early Stonehenge cemetery, these migrants made a powerful connection with their homelands.

Through the ages, many theories have been advanced to explain Stonehenge. In the Middle Ages, people thought that Merlin, the legendary magician of King Arthur, had built it. Later, the site was erroneously associated with the rituals of the Celtic druids (priests). Because it is oriented in relation to the movement of the sun, some people have argued that it may have been an observatory or that it had special importance as a calendar for regulating early agricultural schedules. None of these ideas is supported by the current evidence.

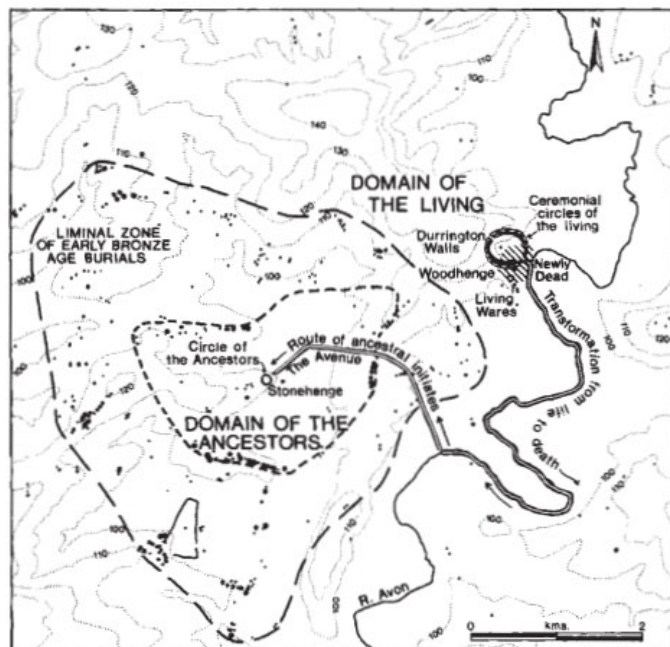
We now believe that Stonehenge was the site of ceremonies linked to death and burial. This theory comes from evidence that looks not only at the stone circles but also at the nearby sites dating from the periods when Stonehenge was in use (**FIG. 1-23**). A new generation of archaeologists, led by Mike Parker Pearson, has pioneered this contextual approach.

The settlements built near Stonehenge follow circular layouts, connecting them in plan to the ceremonial site



1-22 STONEHENGE FROM THE GROUND

Credit: © Peter Adams/The Image Bank/Getty Images



1-23 PLAN OF STONEHENGE AND ITS SURROUNDING SETTLEMENTS

Credit: © 1998 Antiquity Publications Ltd. Reprinted with the permission of Cambridge University Press

(FIG. 1-24). Unlike the more famous monument, however, these habitations were built primarily of wood, in particular large posts and tree trunks. A mile from Stonehenge is Durrington Walls, which was a large inhabited settlement (almost 1,500 feet across) surrounded by a ditch. Inside are a number of circles—made not from stone but from wood—and many circular houses constructed with wooden posts. The rubbish left behind at this and similar sites provides archaeologists with insights into the lives of the inhabitants. Chemical analysis of animal bone debris, for example, indicates that the animals consumed came from great distances before they were slaughtered, and therefore that the people who stayed here had come from regions far removed from the site.

Significantly, both Stonehenge and Durrington Walls are connected to the Avon River by banked avenues (SEE FIG. 1-23). These connected the worlds of the living (the wood

settlement) with the domain of the dead (the stone circle). Neolithic people would have moved between these worlds as they walked the avenues, sometimes bringing the deceased to be buried or cremated, other times approaching the stone circle for ceremonies and rituals dedicated to the memories of the deceased and the very ancient ancestors. The meaning of Stonehenge therefore rests within an understanding of the larger landscape that contained not only other ritual sites but also sites of habitation.

Ceramics

In addition to domestic and ceremonial architecture and a food-producing economy, the other critical component of the Neolithic way of life was the ability to make ceramic vessels. This “pot revolution” marked a shift from a complete reliance on skin, textile, and wooden containers to the use of pots made by firing clay. Pottery provided a new medium of extraordinary potential for shaping and decorating durable objects.

The terms pottery and ceramics may be used interchangeably—and often are. Because it covers all baked-clay wares, **ceramics** is technically a more inclusive term than pottery. Pottery includes all baked-clay wares except **porcelain**, which is the most refined product of ceramic technology.

Pottery vessels can be formed in several ways. It is possible, though difficult, to raise up the sides from a ball of raw clay. Another method is to coil long rolls of soft, raw clay, stack them on top of each other to form a container, and then smooth them by hand. A third possibility is simply to press the clay over an existing form, a dried



1-24 RECONSTRUCTION DRAWING OF DURRINGTON WALLS

The settlement at Durrington Walls, near Stonehenge, southern England. 2600 BCE. Private collection.

Credit: © Historic England/Bridgeman Images

gourd for example. By about 4000 BCE, Egyptian potters had developed the potter's wheel, a round, spinning platform on which a lump of clay is placed and then formed with the fingers while rotating, making it relatively simple to produce a uniformly shaped vessel in a very short time. The potter's wheel appeared in the ancient Near East about 3250 BCE and in China about 3000 BCE.

After forming, a pot is allowed to dry completely before it is fired. Special ovens for firing pottery, called **kilns**, have been discovered at prehistoric sites in Europe dating from as early as 26,000 BCE (as at Dolní Věstonice). For effective firing, the temperature must be maintained at a relatively uniform level. Raw clay becomes porous pottery when heated to at least 500° Centigrade. It then holds its shape permanently and will not disintegrate in water. Fired at 800° Centigrade, pottery is technically known as **earthenware**. When subjected to temperatures between 1,200° and 1,400° Centigrade, certain stone elements in the clay vitrify, or become glassy, and the result is a stronger type of ceramic called **stoneware**.

Pottery is relatively fragile, and new vessels were constantly in demand to replace broken ones, so fragments of low-fired ceramics—fired at a hearth, rather than a higher-temperature kiln—are the most common artifacts found in excavations of prehistoric settlements. Pottery fragments, or **potsherds**, serve as a major key in dating sites and reconstructing human living and trading patterns.

Ceramic technology emerged independently, at different times, across the globe. The earliest examples have



1-25 EARLY POTTERY FROM JAPAN'S JOMON CULTURE
Approx 7,000 BCE. Excavated at Choshichiyama Shell Midden, Hachinohe, Aomori prefecture.



1-26 EARLY POTTERY FROM THE FRANCHTHI CAVE, GREECE
6500 BCE.

Credit: Catherine Perlès

been excavated in southern China's Jiangxi Province and date from 20,000 years ago; surviving examples from Japan's Jomon culture date from 12,000 BCE (**FIG. 1-25**). It is extremely difficult to determine with certainty why pottery was first invented or why subsequent cultures adopted it. The idea that pottery would only emerge out of farming settlements has been disproven by recent archaeology. It seems that there was no one set of social, economic, or environmental circumstances that led to the invention of ceramics.

It is likely that the technology for producing ceramics evolved in stages. Archaeologist Karen Vitelli's detailed studies of the early Neolithic site of Franchthi Cave in Greece have shown that pottery making at this site started with an experimental stage during which nonspecialist potters produced a small number of pots. These early pots were used in ceremonies, especially those where medicinal or narcotic plants were consumed (**FIG. 1-26**). Only later did specialist potters share manufacturing recipes to produce enough pots for standard activities such as cooking and eating. A similar pattern may have occurred in other early potting communities.

SCULPTED HUMAN FIGURES In addition to firing clay to make pots, cups, pitchers, and large storage containers, Neolithic people made thousands of miniature figures of humans. While it was once thought that these figurines refer to fertility cults and matriarchal societies, archaeologists now agree that they had many different functions—for example, as toys, portraits, or votives. More importantly, specialists have shown that there are great degrees of similarity in figurine shape and decoration within distinct cultural regions. Such regional similarities, and the huge numbers of Neolithic figurines that would have been in circulation at any one place and time, have

Art and its Contexts

FIGURES OF A WOMAN AND A MAN

For all we know, the person who created these figurines in around 4500 BCE (**FIG. 1-27**) had nothing particular in mind—people had been modeling clay figures in southeastern Europe for a long time. Perhaps a woman who was making cooking and storage pots out of clay amused herself by fashioning images of the people she saw around her. But because these figures were found in the same grave in Cernavodă, Romania, they suggest to us an otherworldly message.

The woman, wide-hipped and big-bellied, sits directly on the ground, expressive of the mundane world. She exudes stability, and her ample hips and thighs seem to ensure the continuity of her family. But in a lively gesture, she joins her hands on one raised knee, curls up her toes, and tilts her head upward. Her upwardly tilted head could suggest that she is watching the smoke rising from the hearth, worrying about holes in the roof,

gazing adoringly at her partner, or communing with heaven. The man is rather slim, with massive legs and shoulders. He rests his head on his hands, evoking thoughtfulness, weariness, boredom, or sorrow.

We can interpret the Cernavodă woman and man in many ways, but we cannot know what they meant to their makers or owners. Depending on how they are displayed, we make up different stories about them, broadening the potential fields of meaning. When they are set facing each other, or side by side as they are here, we tend to think of them as a couple—a woman and man in a relationship. In fact, we do not know whether the artist conceived of them in this way, or even made them at the same time. For all their visual eloquence, their secrets remain hidden from us, but it is difficult not to speculate.



1-27 FIGURES OF A WOMAN AND A MAN

From Cernavodă, Romania. c. 4500 BCE. Ceramic, height 4½" (11.5 cm). National History Museum, Bucharest.

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