When modern humans first encountered prehistoric cave paintings in the 1870s, they literally could not believe their eyes. Although the evidence indicated that the site at Altamira in Spain dated to around 13,000 BCE, the paintings had been executed with such skill and sensitivity that historians initially considered them forgeries.

(see fig 1.1). Since then, some 200 similar sites have been discovered all over the world. As recently as 1994, the discovery of a cave in southeastern France (see fig. 1.2) brought hundreds more paintings to light and pushed back the date of prehistoric painting even further, to approximately 30,000 BCE. Carved objects have been discovered that are equally old.

These earliest forms of art raise more questions than they answer: Why did prehistoric humans spend their time and energy making art? What functions did these visual representations serve? What do the images mean? Art historians often use contemporaneous written texts to supplement their understandings of art; prehistoric art, however, dates to a time before writing, for which works of art are among our only evidence. Art historians therefore deploy scientific and anthropological methods in their attempts to interpret them. Archaeologists report new finds with regularity, so the study of prehistoric art continues to develop and refine its interpretations and conclusions.

Fully modern humans have lived on the earth for over 100,000 years. At first they crafted tools out of stone and fragments of bone. About 40,000 years ago, they also began to make detailed representations of forms found in nature. What inspired this change? Some scholars suppose that image making and symbolic language are the result of the new structure of the brain associated with *homo sapiens sapiens*. Art emerges at about the time that fully modern humans moved out of Africa and into Europe, Asia, and Australia, encountering—and eventually displacing—the earlier Neanderthals (*homo neanderthalensis*) of western Eurasia. On each of these continents, there is evidence of representational artwork or of body decoration contemporary with *homo sapiens sapiens*. Tens of thousands of works survive from this time before history, the bulk of which have been discovered in Europe. Many are breathtakingly accomplished.

The skill with which the earliest datable objects are executed may have been the product of a lengthy and lost period of experimentation in the techniques of carving and painting, so the practice of art making may be much older than the surviving objects. All the same, some scholars argue that a neurological mutation related to the structure of the brain opened up the capacity for abstract thought, and that symbolic language and representational art were a sudden development in human evolution. Whatever led to the ability to create art, whether a gradual evolutionary process, or a sudden mutation, it had an enormous impact on the emergence of human culture, including the making of naturalistic images. Such works force us to reevaluate many of our assumptions about art and the creative process, and raise fundamental questions, not least of which is why human beings make art at all.
PALEOLITHIC ART

Upper Paleolithic painting, drawing, and sculpture appeared over a wide swath of Eurasia, Africa, and Australia at roughly the same time, between 10,000 and 40,000 years ago (map 1.1 and Informing Art, page 9). This time span falls in the Pleistocene era, more commonly known as the Ice Age, when glaciers (the extended polar ice caps) covered much of the northern hemisphere. The Lower and Middle Paleolithic periods extend back as far as 2 million years ago, when earlier species of the *homo genera* lived. These cultures crafted stone tools, which they sometimes decorated with abstract patterns. The end of the most recent Ice Age corresponded with the movement of fully modern humans out of Africa and into Europe, newly habitable as the warming climate caused the glaciers to recede.

Prehistoric paintings first came to light in 1878 in a cave named Altamira, in the village of Santillana del Mar in northern Spain. As Count Don Marcelino Sanz de Sautuola scoured the ground for flints and animal bones, his 12-year-old daughter, Maria, spied bison, painted in bold black outline and filled with bright earth colors (fig. 1.1), on the ceiling of the cave. There, and in other more recently discovered caves, painted and engraved images predominantly depict animals. The greatest variety known is in the vast cave complex of Chauvet, near Vallon-Pont-d’Arc in southeastern France, named after one of the spelunkers who discovered it in 1994. Here, the 427 animal representations found to date depict 17 species, including lions, bears, and aurochs (prehistoric oxen), in black or red outlines (fig. 1.2), and are sometimes polychromatic (containing several colors). Abstract shapes may accompany the animals, or appear alone, such as those depicted.
1.1 *Wounded Bison*, Altamira, Spain.
ca. 15,000–10,000 BCE

1.2 *Bear*, Recess of the Bears,
Chauvet Cave, Vallon-Pont-d’Arc,
Ardèche Gorge, France.
ca. 30,000–28,000 BCE
next to the Chinese Horse at Lascaux in the Dordogne region of France (fig. 1.3). Scholars have interpreted these as weapons, traps, and even insects. Human hands occasionally feature on the cave walls, stamped in paint or, more usually, in negative silhouette (see Materials and Techniques, page 5). In rare instances, images depict human or partly human forms. At Chauvet, for instance, archaeologists identified the lower half of a woman painted on a projection of rock. At Les Trois Frères, a site in the French Pyrenees, a human body depicted with its interior muscles and anatomy supports an animal head with antlers. At Lascaux, a male stick figure with a birdlike head lies between a woolly rhinoceros and a disemboweled bison, with a bird-headed stick or staff nearby (fig. 1.4).

On first assessing the Altamira paintings toward the end of the nineteenth century, experts declared them too advanced to be authentic and dismissed them as a hoax. Indeed, though cave art may represent the dawn of art as we know it, it is often highly sophisticated. Like their counterparts at Chauvet and elsewhere, the bison of Altamira were painted from memory, yet their forms demonstrate the painters’ acute powers of observation and skill in translating memory into image. Standing at rest, or bellowing or rolling on the ground, the bison behave in these paintings as they do in the wild. The painters’ careful execution enhances the appearance of nature: Subtle shading (modeling) expresses the volume of a bison’s belly or a lioness’s head, and the forward contour of an animal’s far leg is often rendered with a lighter hue to suggest distance.

Initially, scholars assigned relative dates to cave paintings by using stylistic analysis, dating them according to their degree of naturalism, that is, how closely the image resembled the subject
Cave Painting

Paleolithic cave artists used a wide variety of techniques to achieve the images that have survived. Often working far from cave entrances, they illuminated the darkness using lamps carved out of stone and filled with fat or marrow. Archaeologists have found several of these lamps at Lascaux and elsewhere. Sometimes, when the area of rock to be painted was high above ground level, they may have built scaffolds of wood, which they stabilized against the wall by driving the poles into the limestone surface.

They prepared the surface by scraping the limestone with stone tools, bringing out its chalky whiteness as a background. They then engraved some images onto the wall, with a finger if the limestone was soft enough, or with a sharp flint. Sometimes they combined this technique with the application of color. They created black using vegetal charcoal and perhaps charred bones. Ocher, a natural iron ore, provided a range of vivid reds, browns, and yellows. For drawing—outlines of animals, for instance—they deployed charcoal and ocher in chunks, like a crayon; to generate paint, they ground the minerals into powder on a large flat stone. By heating them to extremely high temperatures, they could also vary the shades of red and yellow. They could then blow these mineral powders through tubes of animal bone or reed against a hand held up with fingers splayed to the rock surface to make hand silhouettes.

To fill in animal or human outlines with paint, they mixed the powders with blenders, which consisted of cave water, saliva, egg white, vegetal or animal fat, or blood; they then applied the colors to the limestone surface, using pads of moss or fur, and brushes made of fur, feather, or chewed stick. Some scholars understand, by experimentation, that pigment was often chewed up in the mouth and then blown or spat directly onto the walls to form images. In some cases, like the Spotted Horse of Pech-Merle or at Chauvet, artists applied paint in dots, leading to what some scholars describe as a “pointilliste” effect. They achieved this by covering the palm with ocher before pressing it against the limestone. Analysis of these marks has yielded rich results: Not only can archaeologists identify individual artists by their handprint, but they have even been able to determine that women and adolescents were at work as well as men.

Interpreting Prehistoric Painting

As majestic as these paintings can be, they are also profoundly enigmatic: What purpose did they serve? The simplest view, that they were merely decorative—“art for art’s sake”—is highly unlikely. Most of the existing paintings and engravings are readily accessible, while many more that once embellished caves that open directly to the outside have probably perished. But some, at Lascaux and elsewhere, lie deep inside extended cave systems, remote from habitation areas and difficult to reach (fig. 1.5). In these cases, the power of the image may have resided in its making, rather than in its viewing: the act of painting or incising the image may have served some ritual or religious purpose.

After the images’ initial discovery, scholars turned to approaches developed by ethnographers (anthropologists who study cultural behavior) to interpret cave paintings and engravings. Most often, they have attributed the inspiration for these works to magico-religious motives. Thus, early humans may have perceived an image as equivalent to the animal it represented; to
create or possess the image was to exert power over its subject, which might improve the success of a hunt. Gouge marks on cave walls indicate that in some cases spears were cast at the images (fig. 1.6). Similarly, artists may have hoped to stimulate fertility in the wild—ensuring a continuous food supply—by depicting pregnant animals. A magico-religious interpretation might explain the choice to make animals appear lifelike, and to control them by fixing them within outlines; conversely, human fear of falling victim to the same magic may account for the decidedly unnaturalistic, abstract quality of the “stick figure” at Lascaux.

More recent theories concerning shamanism—a belief in a parallel spirit world accessed through alternative states of consciousness—build upon the earlier ethnographic interpretations, arguing that an animal’s “spirit” was evident where a bulge in the wall or ceiling suggested its shape, as with the Spotted Horses (see fig. 1.6) at Pech-Merle in southwestern France. The artist’s or shaman’s power brought that spirit to the surface. Some scholars have cast the paintings in a central role in early religion, as images for worship. Others focus on a painting’s physical context—this means examining relationships between figures to determine, in the absence of an artificial frame, a ground-line or a landscape, whether multiple animal images indicate individual specimens or a herd, and whether these images represent a mythical past for early communities. Do Lascaux’s Rhinoceros, Wounded Man, and Bison (see fig. 1.4) constitute separate images or the earliest known narrative—the gory tale of a hunt, perhaps, or a shaman’s encounter with his spirit creature? Multiple animal engravings, one on top of another, as at Les Trois Frères (fig. 1.7), may have recorded animal migrations throughout the passing seasons.

Assessing physical context also means recognizing that a cave 15 feet deep is a very different kind of space from another over a mile deep, and was possibly used for different purposes. Paintings in the spacious Hall of the Bulls at Lascaux and the stick man at the same site, located at the bottom of a 16-foot well shaft, may have functioned differently. It means factoring in the experiential aspects of caves: In order to reach these images, a prehistoric viewer had to contend with a precarious path, eerie flickering lights, echoing sounds, and the musty smells that permeate subterranean spaces, all of which added texture to the viewing process (fig. 1.8). Most important, recent interpretations acknowledge that one explanation may not suffice for all times and places. For instance, even if sympathetic magic makes sense of the Chinese Horse from Lascaux with its distended belly (see fig. 1.3), it hardly explains the art at Chauvet, where fully 72 percent of the animals represented were not hunted, judging by organic remains found in the cave.
Paleolithic Carving

Prehistoric artists also carved and modeled sculptures in a variety of materials. At just under a foot high, a carved figure from Hohlenstein-Stadel in Germany (fig. 1.9) represents a standing creature, half human and half feline, crafted out of mammoth ivory. Although it is now in a poor state of preservation, the creation of this figure, with rudimentary stone tools, was clearly an arduous business. It involved splitting the dried mammoth tusk, scraping it into shape, and using a sharp flint blade to incise such features as the striations on the arm and the muzzle. Strenuous polishing followed, using powdered hematite (an iron ore) as an abrasive. Exactly what the figure represents is unclear. Like the hybrid figures painted on cave walls (see fig. 1.4), it may represent a human dressed as an animal, possibly for hunting purposes. Some prehistorians have named these composite creatures shamans or “sorcerers,” who could contact the spirit world through ritualistic behavior.

As in cave paintings, animals were frequent subjects for sculpture. A miniature horse from a cave in Vogelherd along the Danube River in Germany, and a pair of interlocked ibexes, date
to the beginning and end of the Upper Paleolithic era (figs. 1.10 and 1.11). The horse is one of many portable carvings in woolly mammoth ivory created around 28,000 BCE. A small hole between its front legs suggests that it was a pendant. The ibexes, carved from reindeer antler around 13,000 BCE, functioned as a spear-thrower. Once attached to a spear by the hook at the end of its shaft, it allowed a hunter to propel the weapon more effectively. The sculptor had an eye for strong outlines and finished the surface with painstaking care, marking the ibexes’ coats with nicks from a stone tool and working up a high polish.

Just as cave artists sometimes transformed bulges in rock walls into painted animals, so, deep within a cave at Le Tuc d’Audoubert in the French Pyrenees, around 13,000 BCE, a sculptor used clay to build up a natural outcropping of rock into two bison (fig. 1.12); a calf originally stood by the front legs of the right-hand figure. Each sculpture is about 2 feet long; their forms
**Telling Time: Labels and Periods**

While geologists have developed methods for dividing time based on the age of the Earth, historians have used the activity of tool-making as the defining feature when measuring human time. For the era before the written word (prehistory), patterns apparent in stone tools serve as the basis for distinguishing different cultures. The Stone Age stretches from about 2 million years ago to about 2000 BCE.

Prehistorians divide this broad span of time into the Paleolithic or Old Stone Age (from the Greek *palaio-* meaning “ancient,” and *lithos*, meaning “stone”), the Mesolithic or Middle (*meso-*) Stone Age, and the Neolithic or New (*neo-*) Stone Age. The Paleolithic era reaches from 2 million years ago to about 10,000 BCE and the Mesolithic from about 10,000 to 8000 BCE. The Neolithic era spans from about 8000 to about 2000 BCE. At some time during the third millennium BCE, humans in some parts of the world replaced stone tools with tools made of metal, ushering in the Bronze Age in Europe and Asia.

Specific human cultures reached these phases at different times: The beginning of the Neolithic era appears to start earlier in western Asia than in Europe, for example. Yet the broad span of the Paleolithic era requires further refinement, and excavations of Paleolithic sites provide another framework for dividing time. The oldest material is at the bottom of an excavation, so scholars call the oldest Paleolithic era the Lower Paleolithic (ending about 100,000 years ago). The middle layers of Paleolithic excavations—thus the Middle Paleolithic era—date from 100,000 to about 40,000 years ago. The most recent layers in such excavations are called the Upper Paleolithic, and date from about 40,000 to around 8000 BCE.

Archaeologists have used many sites and different types of tools and tool-making technologies to identify specific culture groups within the Upper Paleolithic period. For example, they name the Aurignacian culture for Aurignac, a site in western France. The objects from this culture date from about 34,000 to 23,000 BCE. The Gravettian culture is named for La Gravette, a site in southwestern France, and dates from about 28,000 to 22,000 BCE. The most recent of these cultures is the Magdalenian, named for a site in southwestern France called La Magdaleine, with dates ranging from around 18,000 to 10,000 BCE. Many of these terms were coined in the nineteenth century, when the study of prehistoric culture first took root.

**The Paleolithic Age**

<table>
<thead>
<tr>
<th>Period</th>
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<tr>
<td>Lower Paleolithic</td>
<td>2,000,000–100,000 BCE</td>
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<tr>
<td>Middle Paleolithic</td>
<td>100,000–40,000 BCE</td>
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<tr>
<td>Upper Paleolithic</td>
<td>40,000–10,000 BCE</td>
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<td>Aurignacian</td>
<td>34,000–23,000 BCE</td>
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<td>Gravettian</td>
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<td>Solutrean</td>
<td>22,000–18,000 BCE</td>
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<td>Magdalenian</td>
<td>18,000–10,000 BCE</td>
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<td>Mesolithic</td>
<td>10,000–8000 BCE</td>
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<tr>
<td>Neolithic</td>
<td>8000–2000 BCE</td>
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1.12  *Two Bison*, Le Tuc d’Audoubert Cave, Ariège, France. ca. 13,000 BCE. Clay, length 23⅜” (60 cm)
swell and taper to approximate the mass of a real bison. Despite
the three-dimensional character of the representations (notice the
fullness of the haunch and shoulder and the shaggy manes),
the sculptures share conventions with cave paintings: The artist
rendered them in fairly strict profile, so that they are viewable
from one side only, but once again the function of the object is
unclear to us. Among the human footprints found near this group
are those of a two-year-old child. Along with the baby’s hand-
print in a cave at Bedeilhac in France, and the women’s handprints
at Chauvet, these caution us against simply reconstructing
Paleolithic works of art as the ritual centerpieces of a male-
dominated hunting society.

Women were frequent subjects in prehistoric sculpture, espe-
cially in the Gravettian period (see Informing Art, page 9). In fact,
so far do female images outnumber male images at that time that
they may be evidence of a matrilineal social structure. In the late
nineteenth century, a group of 12 ivory figurines were found
 together in the Grotte du Pape at Brassempouy in southern
France. Among them was the Woman from Brassempouy (fig.
1.13) of about 22,000 B.C.E. The sculpture is almost complete,
depicting a head and long elegant neck. At a mere 1½ inches long,
it rests comfortably in the hand, where it may have been most
commonly viewed. Also hand-sized is the limestone carving of
the nude Woman of Willendorf of Austria, from about 28,000 to
25,000 B.C.E. (fig. 1.14). Discovered in 1908, her figure still bears
 traces of ocher rubbed onto the carved surface. Both figurines are
highly abstract. Instead of rendering the female form with the
naturalism found in the representations of animals, the artist
reduced it to basic shapes. In the case of the Woman from
Brassempouy, the artist rendered the hair schematically with deep
vertical gouges and shallow horizontal cross-lines. There is no
mouth and only the suggestion of a nose; hollowed-out, over-
hanging eye sockets and holes cut on either side of the bridge of
the nose evoke eyes. The quiet power and energy of the figure
reside in the dramatic way its meticulously polished surface
responds to shifting light, suggesting movement and life.

The abstract quality of the Woman of Willendorf appears to
stress a potent fertility. This kind of abstraction appears in many
other figurines as well; indeed, some incomplete figurines depict
only female genitalia. Facial features are not a priority: schemati-
cally rendered hair covers the entire head. Emphasis rests on the
figure’s reproductive qualities: Diminutive arms sit on pendulous
breasts, whose rounded forms are echoed in the extended belly
and copious buttocks. Genitalia are shown between large thighs.

The terminology applied to figures like the Woman from
Brassempouy and the Woman of Willendorf in the past has com-
 plicated our interpretations of them. At the time of the first dis-
cove ry of such female figurines in the mid-nineteenth century,
scholars named them “Venus” figures: Venus is the Roman goddess
of love (Aphrodite in the Greek world), whom ancient sculptors
portrayed as a nude female; nineteenth-century archaeologists
believed the prehistoric figures to be similar to the Roman god-
dess, in function if not in form. Today, we tend to avoid such
anachronisms in terminology. We do not know whether the

1.13 Woman from Brassempouy, Grotte du Pape, Brassempouy,
France. ca. 22,000 B.C.E. Ivory, height 1½” (3.6 cm).
Musée des Antiquités Nationales, Saint-Germain-en-Laye
Woman of Willendorf represents a specific woman, or a generic or ideal woman. Indeed, she may not represent the idea of woman at all, but rather the notion of reproduction or, as some have argued, the fertile natural world itself. The emphasis on the reproductive features has suggested to many that she may have been a fertility object; the intention may have been to ensure a successful birth outcome rather than an increase in the number of pregnancies. According to one feminist view, the apparently distorted forms of figures like this specifically reflect a woman’s view of her own body as she looked down at it. If so, some of the figures may have served as obstetric aids, documenting different stages of pregnancy to educate women toward healthy births. Moreover, this may indicate that at least some of the artists were women.

Paleolithic Houses

In the Paleolithic period, people generally built small huts and used caves for shelter and ritual purposes. In rare cases, traces of dwellings survive. At Mezhirich, in the Ukraine, a local farmer discovered a series of oval dwellings with central hearths, dating to between 16,000 and 10,000 BCE (fig. 1.15). The distinctive feature of these huts was that they were constructed out of mammoth bones: interlocked pelvis bones, jawbones and shoulder blades provided a framework, and tusks were set across the top. The inhabitants probably covered the frame with animal hides. Archaeological evidence shows that inside these huts they prepared foods, manufactured tools, and processed skins. Since these are cold-weather occupations, archaeologists conclude that the structures were seasonal residences for mobile groups, who returned to them for months at a time over the course of several years.

NEOLITHIC ART

Around 10,000 BCE, the climate began to warm, and the ice that had covered almost a third of the globe started to recede, leaving Europe with more or less the geography it has today. New vegetation and changing animal populations caused human habits to mutate, especially in relation to their environment. In the Neolithic period, or New Stone Age, they began to build more substantial structures, choosing fixed settlement places on the basis of favorable qualities such as a water supply, rather than moving seasonally. Instead of hunting and gathering what nature supplied, they domesticated animals and plants. This gradual change occurred at different moments across the world; in some places, hunting and gathering are still the way of life today.

Settled Societies and Neolithic Art

The earliest evidence of these adjustments to environmental shifts appears in the fertile regions of the eastern Mediterranean and Mesopotamia, between the Euphrates and Tigris rivers. A small settlement developed in the ninth millennium BCE by the Jordan River at the site of Jericho, of biblical fame, in the present West Bank territory. Over time its inhabitants built houses of
sun-baked mud brick on stone foundations. They plastered the floors and crafted roofs of branches and earth. Skeletal remains indicate that they buried the bodies of their dead beneath the floors; they displayed the skulls separately above ground, reconstructing them with tinted plaster to resemble flesh, and crafting eyes of seashell fragments (fig. 1.16). The subtlety of their modeling, and the close observation of the interplay between flesh and bone, make these works remarkably lifelike, each as individual as the skulls they encased. Perhaps these funerary practices reflect a concept of an afterlife; at the very least, they suggest a respect for the dead or even ancestor worship. Around 7500 BCE, the people of Jericho, now numbering over 2,000, dug a wide ditch and raised a solid stone wall around their town, which by this time had expanded to cover some 10 acres. Built with only the simplest stone tools, the wall was 5 feet thick and over 13 feet high. Into it they set a massive circular tower, perhaps one of several, 28 feet tall and 33 feet in diameter at the base, with a staircase inside providing access to the summit (fig. 1.17). The wall may have functioned as a fortification system against neighboring settlements, or as a barrier against rising floodwaters. With its construction, monumental architecture was born.
At Ain Ghazal, near Amman in Jordan, over 30 fragmentary plaster figures, dating to the mid-seventh millennium BCE, represent a starkly different sculptural tradition from the Jericho heads (fig. 1.18). Some are only bust-size, but the tallest statues, when restored, are 3 feet in height, and constitute the first known large-scale sculptures. Conservators have studied the construction technique of these figures, and conclude that large size was the motivating force behind their design, directly resulting in their flat, shallow appearance. These investigations have shown that artists applied plaster to bundles of fresh reeds, bound with cordage, which they kept horizontal during the assembly process. They added the legs separately, then applied paint and added cowrie shells for eyes, darkened with bitumen (a black, tarlike substance) for pupils. Once the plaster was dry, they stood the fragile figures upright and probably added wigs and clothing. Like the Jericho heads, the figures may have represented ancestors. Alternatively, as some of the bodies are two-headed, they may have had a mythical function.

ÇATAL HÜYÜK In Anatolia (modern Turkey), excavations since 1961 have revealed a Neolithic town at Çatal Hüyük, dating from about 7500 BCE, a thousand years later than Jericho (see map 1.1). Flourishing through trade in ores—principally obsidian, a highly valued glasslike volcanic stone, used to make strong, sharp blades—the town developed rapidly through at least 12 successive building phases between 6500 and 5700 BCE. Its most distinctive feature is that it lacked streets, and the mud-brick and timber houses had no doors at ground level: Each house stood side by side with the next, accessed by ladder through a hole in the roof that doubled as a smoke vent (fig. 1.19). The advantages of this design were structural—each house buttressing the next—and defensive, since any attacker would have to scale the outer walls before facing resistance on the rooftops. The design also made economic use of available building stone and provided thick-walled insulation. The rooms inside accommodated activities ranging from working and cooking to sleeping, on platforms lining the walls. As at Jericho, burials were beneath the floor.

In most of the rooms at Çatal Hüyük, plaster covered the walls; often it was painted. Many of the paintings depict animal hunts, with small human figures running around disproportionately large bulls or stags. The images have a static quality, quite
unlike the earlier cave paintings that seem to embody motion. One unusual painting in an early room appears to depict rows of irregular blocklike houses, and probably represents Çatal Hüyük itself (fig. 1.20). Above the town, a bright red feature spotted with black and topped with black lines and dots may represent Hasan Dag, a twin-peaked volcano in view of the town. If archaeologists have properly identified this site, the image is the first known landscape painting. It may indicate a sense of community in this early settlement, with inhabitants specifically identifying themselves with place. Some archaeologists speculate that the more ornate rooms at Çatal Hüyük functioned as shrines; in some of them, bulls’ horns and plaster breasts may have signified fertility (fig. 1.21).

**OVEN-FIRED POTTERY** A number of new technologies that developed during the Neolithic period collectively suggest the beginnings of specialization. As the community could count on a regular food supply, some of its members were able to devote time to acquiring special skills. These included pottery, weaving, and the smelting of copper and lead. Oven-fired pottery is extremely durable, and often survives in the form of discarded shards. Though absent from early Jericho, a great variety of clay vessels painted with abstract forms survive in regions stretching from Mesopotamia, where pottery may have originated in the sixth millennium BCE, to Egypt and Anatolia, where it was discovered at Çatal Hüyük (see map 1.1) and other settlements. Archaeologists have found pottery from this period in the Balkans, and by about 3500 BCE the technology of pottery making appeared in western Europe.
In Europe, artists also used clay to fashion figurines, such as a woman and man from Cernavoda in Romania, of about 3500 BCE (fig. 1.22). Like the Woman of Willendorf and the Ain Ghazal figurines, they are highly abstract, yet their forms are more linear than rounded: The woman’s face is a flattened oval poised on a long, thick neck, and sharp edges articulate her corporeality—across her breasts, for instance, and at the fold of her pelvis. Elbowless arms meet where her hands rest on her raised knee, delineating a triangle and enclosing space within the sculptural form. This emphasizes the figurine’s three-dimensionality, encouraging a viewer to look at it from several angles, moving around it or shifting it in the hand. The abstraction highlights the pose; yet, tempting as it may be to interpret this, perhaps as coquettishness, we should be cautious about reading meaning into it, since gestures can have dramatically different meanings from one culture to another. Found in a tomb, the couple may represent the deceased, or mourners; perhaps they were gifts that had a separate purpose before burial.

Architecture in Europe: Tombs and Rituals

Neolithic people of western and northern Europe framed their dwellings mostly in wood, with walls of wattle (branches woven into a frame) and daub (mud or earth dried around the wattle) and roofs of thatch, which rarely survive. At Skara Brae, on the island of Orkney just off the northern tip of Scotland, is a group of ten houses built of stone, dating to between 3100 and 2600 BCE. The builders sunk them into mounds for protection against the harsh weather, and connected them by covered passages. A typical house had a square room, with walls of flat unmortared stones (fig. 1.23). Driftwood and whalebone supported a roof of turf thatch. At the center of the room was a hearth for cooking, and the inhabitants built furniture—such as beds and shelving—out of large flat stones.

It was a concern for ceremonial burial and ritual, rather than for protection, that inspired Neolithic people of western and northern Europe to create monumental architecture. They defined spaces for tombs and rituals with huge blocks of stone
known as megaliths. Often they mounted the blocks in a trilithic (three-stone) post-and-lintel arrangement (with two upright stones supporting a third horizontal capstone) (see fig. 1.25) to construct tombs for the dead with one or more chambers. Termed dolmen tombs, they were both impressive and durable. At some sites, upright megaliths known as menhirs marked out horizontal space in distinct ways, and perhaps served as ritual centers. Between 4250 and 3750 BCE at Ménez, in the Carnac region on the south coast of Brittany (see map 1.1), over 3,000 megaliths set upright at regular intervals in long, straight rows stretch out over 2 miles (3 km). Typically, the smaller stones of about 3 feet in height stand at the eastern end, and, gradually, the height of the stones increases, reaching over 13 feet at the western end (fig. 1.24). Scholars argue that the lines, with their east–west orientation, gauged the sun’s position in the sky at different times of the year, functioning as a calendar for an agrarian people whose sustenance depended on the sun’s cycle. Quarrying, shaping, transporting, and erecting these blocks was an extraordinary feat. Quite apart from remarkable engineering expertise, it required a highly efficient organization of manpower. The resulting monument, with its simple repeated forms identical in shape yet diverse in size, static yet cast into motion by the sun’s slow and constant passage, has a calm grandeur and majesty that imposes quiet order on the open landscape.

Often, megaliths appear in circles, known as cromlechs. This is the prevalent arrangement in Britain, where the best-known megalithic structure is Stonehenge, on the Salisbury Plain (figs. 1.25 and 1.26). What now appears as a unified design is in fact the result of at least four construction phases, beginning with a huge ditch defining a circle some 330 feet in diameter in the white chalk ground, and an embankment of over 6 feet running around the inside. A wide stone-lined avenue led from the circle to a pointed gray sandstone (sarsen) megalith, known today as the Heel Stone. By about 2100 BCE, Stonehenge had grown into a horseshoe-shaped arrangement of five sarsen triliths, encircled by a ring of upright blocks capped with a lintel; between the rings was a circle of smaller bluestone blocks. Recent excavations exposed remains of a similar monument built of wood 2 miles (3 km) away, as well as remnants of a village. Archaeologists believe the structures are related.

Exactly what Stonehenge—and its nearby counterpart—signified to those who constructed them is a tantalizing mystery. Many prehistorians believe that Stonehenge, like Ménez, marked the passing of time. Given its monumentality, most also concur that it had a ritual function, perhaps associated with burial; its careful circular arrangement supports this conjecture, as circles are central to rituals in many societies. Indeed, these two qualities led medieval observers to believe that King Arthur’s magician, Merlin, created Stonehenge, and it continues to draw crowds on
Dating Techniques

One of the chief concerns of archaeologists and art historians, regardless of the period in which they conduct research, is to be able to place works of art in a historical context. This means that dating an object is of paramount importance. Scholars assign two types of date: relative dates and absolutes dates. A relative date indicates that one object is older or more recent than another. To determine these dates, archaeologists tend to use stratigraphy: An object found at a lower layer or stratum of an excavation is normally older than an object found above it. The relative chronology of one site can be transferred to another site if objects of a similar kind appear at both. Pottery is a useful indicator of relative date for most ancient cultures because it is so durable that it exists in great profusion, often in an uninterrupted sequence.

Absolute dating assigns a calendar date to an object. In historical cultures (those with written documents), written records might preserve a date. For instance, building inscriptions indicate that the Athenians constructed the Parthenon between 447 and 432 BCE. Researchers have developed numerous other methods for establishing absolute dates. These include radiometric dating, which works well for dating organic materials up to approximately 40,000 years old. Living organisms contain radioactive isotopes (such as carbon-14) that decay at a known rate after its death. By measuring the level of isotopes in organic material, archaeologists can gauge when it lived. Though effective, this method requires destroying part of the object, and can only establish when an organism died, not when an artist turned it into an artifact.

Some other techniques measure radiation levels. For instance, thermoluminescence is an effective dating technique for objects containing crystalline materials that have been exposed to high temperatures—such as pottery, which has been fired. Heat releases electrons trapped in the object’s crystalline lattice, resulting in a “zeroing” radiation moment. Thereafter, electrons accumulate again. By measuring the luminescence (light, which is proportional to the number of electrons released) of the object during a second heating, archaeologists can determine the length of time since the zeroing event.
summer solstices. What is certain is that, like Ménec, Stonehenge represents tremendous organization of labor and engineering skill. The largest trilith, at the center of the horseshoe, soars 24 feet, supporting a lintel 15 feet long and 3 feet thick. The sarsen blocks weigh up to 50 tons apiece, and traveled 23 miles (37 km) from the Marlborough Downs; the bluestones originated 200 miles (320 km) away, in the Welsh Preseli mountains. The blocks reveal evidence of meticulous stone working. Holes hollowed out of the capstones fit snugly over projections on the uprights (forming a mortise-and-tenon joint), to make a stable structure. Moreover, upright megaliths taper upward, with a central bulge, visually implying the weight they bear, and capturing an energy that gives life to the stones. The lintels are worked in two directions, their faces inclining outward by about 6 inches to appear vertical from the ground, while at the same time they curve around on the horizontal plane to make a smooth circle. Art historians usually associate this kind of refinement with the Parthenon of Classical Athens (see fig. 5.40).

Prehistoric art raises many questions. While we know humans began to express themselves visually during the prehistoric age, there are no written records to explain their intentions. Even so, by the end of the era, people had established techniques of painting, sculpting, and pottery making, and begun to construct monumental works of architecture. They developed a strong sense of the power of images and spaces: They recognized how to produce naturalistic and abstract figures, and how to alter space in sophisticated ways.
Prehistoric Art

- **40,000 BCE**
  - ca. 38,000 BCE Humans produce the earliest objects classed as "art"

- **30,000 BCE**
  - ca. 32,000 BCE Oldest-known cave paintings, at Chauvet

- **20,000 BCE**
  - ca. 28,000-25,000 BCE Woman of Willendorf

- **10,000 BCE**
  - ca. 13,000 BCE Clay sculpture of two bison crafted on a rock outcropping

- **5000 BCE**
  - ca. 10,000 BCE Earth’s climate gradually begins to warm

- **4000 BCE**
  - Sixth millennium BCE Pottery may have originated in Mesopotamia

- **3000 BCE**
  - ca. 3100-2600 BCE Stone houses at Skara Brae

- **2000 BCE**
  - ca. 2100 BCE Final phase of construction at Stonehenge

- **16,000-10,000 BCE**
  - Mammoth bone houses at Mezhirich

- **ca. 7500 BCE**
  - Jericho’s fortification system; beginning of monumental architecture

- **ca. 3500 BCE**
  - Pottery manufacturing appears in Western Europe