The Record of the Past

Chapter Outline

The Goals of Archaeology
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Context

The Egyptian pharaoh Seti (c. 1280 B.C.) presents lotus flowers to the god Horus.
In 7000 B.C., a small group of foragers camped in a sandy clearing near Meer, in northern Belgium. One day, someone walked away from camp, sat down on a convenient boulder, and made some stone tools, using some carefully prepared flakes and lumps of flint he or she had brought along. A short time later, a second artisan sat down on the same boulder. This person, who had also brought along a prepared flint cobble, struck off some blanks and made some borers. Later, the same two stoneworkers used their finished tools to bore and groove some bone. When they finished, they left the debris from their work lying around the boulder.

When Belgian archaeologist David Cahen excavated the site 9,000 years later, all he found were some scatters of stone debris. He plotted the clusters and painstakingly refitted the stone flakes onto their original stone cobbles. After months of work, he reconstructed the stoneworkers’ activities and showed that the second worker was left-handed. A greater contrast in research with Austen Henry Layard’s large-scale diggings at Nineveh is hard to imagine.

This chapter describes the goals of archaeology and the basic processes of archaeological research that lead to remarkable studies like Cahen’s and to the writing of the prehistory described in these pages. The chapter also defines the so-called archaeological record and discusses the all-important issue of archaeological context in time and space.

The Goals of Archaeology

The archaeologist has one primary and overriding priority: to preserve and conserve the material remains of the past for future generations. Archaeological sites and their contents are a unique record of our forebears in every part of the world. Unlike trees, this archive of the past, the archaeological record, is finite. Once disturbed or excavated, the record is gone forever. Conserving this priceless asset is our greatest responsibility to the past, whether we are professional archaeologists or laypeople.

(Ethics is all-important in archaeology. This is the first in a series of ethical statements in this chapter, all of which are set in italics.)

All archaeological research has three important goals, each of which builds on the others.

Constructing Culture History

Culture history is an approach to archaeology that assumes that artifacts can be used to build up generalized pictures of human culture in time and space and that these can be interpreted. Culture history is the record of the human past described and classified in a context of time and space across the changing ancient landscape (see Box 2.1). In other words, it answers the fundamental question: What happened where and when?

Culture history relies on careful excavation, detailed classifications of finds of all kinds, and accurate sequences of human cultures defined through time and by spatial distribution. Until the 1950s, culture history dominated archaeological research. For example, during the 1930s, teams of archaeologists surveyed major river valleys in the southeastern United States in advance of dam construction. They found hundreds of archaeological sites, which they dated using sequences of stone tool and pottery forms. These now-classic surveys tell us a great deal about what happened in these river valleys and when, but they tell us little about the ways in which the
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various river valley societies lived or why they became more complex and took up maize (corn) agriculture over the past 2,000 years.

Culture history is the vital first stage of all archaeological research. You cannot examine more detailed questions until you have a clear idea about what happened in a region and when. In many parts of the world—Southeast Asia, for example—archaeological research has hardly begun. Many archaeologists working in Cambodia or Thailand still have a primary concern for culture history. This focus will change once the basic framework of the past is in place. The principles of culture history are discussed in Chapter 4.

Box 2.1

The Folsom Bison Kill Site, New Mexico

One fine spring morning in 1908, cowboy George McJunkin rode slowly along the edge of a dry gully near the small town of Folsom, New Mexico. He was casting over the range for a lost cow. When he looked down, he saw some sun-bleached bones projecting from the soil. McJunkin dismounted and pried at the bones with his knife. A sharp stone fragment came loose in his hands, somewhat like the stone spear points he had seen lying on the ground on the ranch. The bones were much larger than those of a cow. McJunkin puzzled over his finds and took them back to the ranch house, where they lay around for 17 years.

In 1925, the bones ended up on the desk of Jesse Figgins, director of the Colorado Museum of Natural History and one of the few paleontologists in the West. He identified the bones as those of a long-extinct bison that had roamed the plains at the end of the Ice Age. But the stone point was another matter. Was it associated with the extinct bison or a much later time? In 1926, Figgins dug into the Folsom arroyo and recovered more bison bones and stone tools, including a spear point directly associated with bison fragments (see Figure 2.1).

He cut out the associated point and bone in a lump of soil to show his colleagues, but they were skeptical. Few experts believed that people had lived in the Americas for more than a few thousand years. Figgins returned to Folsom a year later, inviting several colleagues to observe his excavations.

Archaeologist Frank Roberts arrived just as Figgins was brushing the soil away from a projectile point still embedded between two ribs of a bison skeleton. He realized that this was definitive proof of Native Americans living in North America perhaps as early as 10,000 years ago.

FIGURE 2.1 A Paleo-Indian Folsom projectile point from Folsom, New Mexico, lying next to two ribs of an extinct bison. This find proved that humans were contemporary with extinct animals in the Americas.
Reconstructing Ancient Lifeways

Archaeology is also the study of ancient human behavior, of people, not their artifacts. Stone tools, potsherds, iron weapons, dwellings, and other material remains are indeed the raw materials for classifying the past, but we should never forget that they were made by people—men and women, adults and children, members of different households, communities, and societies. Logically, then, our second major goal is the reconstruction of how people made their living, the study of ancient lifeways.

The word lifeways, covers many human activities, everything from hunting and gathering to agriculture, interactions between individuals and groups, social organization, and religious beliefs. Some of archaeology’s most ingenious detective work reconstructs these activities, which, for convenience, can be grouped into broad categories.

**Subsistence** How people make their living or acquire food is studied by using fragmentary animal bones, seeds, and other surviving evidence for ancient human diet and subsistence activities (see Chapter 4).

**Environmental Modeling** Subsistence activities depend heavily on a society’s relationship with the natural environment. This means that studying ancient subsistence goes hand in hand with reconstruction of changing prehistoric environments (see Chapter 5).

**Human Interactions** People act out their lives at many levels: as individuals; as men, women, and children; as members of families, communities, and cultures. They may be divine rulers, merchants, artisans, common farmers, or slaves. Reconstructing lifeways means examining evidence for changing gender roles, assessing the importance of social ranking within societies, or reconstructing the complex mechanisms by which people exchanged exotic raw materials or precious artifacts over enormous distances.

Much cutting-edge research revolves around people questions, especially such issues as changing gender roles and the distinctive activities of inconspicuous and often historically anonymous minorities in large cities. We identify people from their artifacts, which are the products of cultural traditions handed down over many generations (see Chapter 6).

For instance, the great city of Teotihuacán in the Valley of Mexico attracted traders from every corner of the Mesoamerican world. The Teotihuacános ran a vast urban market where people came to trade everything from gold dust to tropical bird feathers. So lucrative and essential were some of these trading activities that the city authorities allowed foreigners from the distant Veracruz lowlands and the Valley of Oaxaca to live in their own compounds in Teotihuacán. We know this because the distinctive clay vessels characteristic of these two areas have come to light in several of the city’s neighborhoods (see Chapter 15).

**Social Organization and Religious Beliefs** Archaeologists are increasingly concerned with such intangibles as social organization and religious beliefs. Of course, we can never hope to capture the transitory events of the past, such as the ecstasy of a shaman’s trance or a colorful dance performed in a plaza at Teotihuacán. However, artifacts, art styles, and even entire temples and cities are mirrors of the intangible, allowing us a fleeting glance into the social and spiritual worlds of ancient societies (see Chapter 7 and Box 2.2).
Box 2.2

Sounds of the Past

The past comes down to us in silence—long abandoned temples, city mounds, small farming villages, often mere scatters of stone tools or pot fragments. We often forget that these places were once alive with people—shrines and palaces adorned with bright colors, chants, dances, drumming, and all kinds of sounds. Many of the world’s most famous archaeological sites had potent acoustics, sound-bearing qualities that amplified human voices or created awe. These properties came from architecture, or from musical instruments. It’s only in recent years that archaeologists have begun to study the importance of acoustics and sound in the past.

In 2001, archaeologists working at the ancient ceremonial center at Chavín de Huantar in the foothills of the Andes mountains in Peru unearthed 20 complete conch shell trumpets, *pututus*, dating to about 3,000 years ago (see Figures 16.5 and 16.6 on pp. 446 to 447). *Strombus galeatus* flourishes in shallow water off the Pacific coast of Ecuador, far from the shrine down steep mountain tracks, so every shell was imported. Polished, painted, and etched with symbols, the shells became trumpets with well-formed mouthpieces and V-shaped cuts that may have been intended for the player’s thumb. The cuts would also allow the player to see ahead while playing.

Conch shell trumpets were widely used in ancient societies and are still played at festivals in many parts of the world. The Greek fish-tailed sea god Triton was said to control the waves by blowing his conch trumpet. An ancient Hindu text, the *Bhagavad Gita*, a Song of God, describes how the Lord Krishna and the Prince Arjuna blew conch shell horns as they rode into battle seated in a giant chariot pulled by white horses. The Maya considered conches sacred. Queen conch shells from shallow water bounding the Eastern Sea traveled far inland to Tikal and other Maya cities. The U.S. Coast Guard even lists conch horns as a legitimate sound-making device in its official *Navigation Rules*. However, at places like Chavín de Huantar, the conch was far more than a trumpet. It served an important acoustical role in subterranean rituals.

Chavín is a maze of subterranean passages and water channels, a shrine where rituals of transformation turned humans into animals such as the jaguar, transformations depicted on the temple walls (Figure 2.2). The shaman priests who conducted these rituals used hallucinogenic plants to induce deep trances. Such substances caused mucus to flow from the subject’s nostrils, frequently depicted in Chavín and other Andean art. However, Chavin ritual also involved powerful acoustic effects produced by conch trumpets that echoed through narrow passageways, where the only light came from sunlight directed down air ducts. A research group at Stanford University in computers and acoustics retained an expert musician to blow into a conch trumpet with four tiny microphones placed inside his mouth, the trumpet mouthpiece, the main body of the shell, and

FIGURE 2.2 A Chavín de Huantar shaman transforms himself into a jaguar.
the large opening. A conch trumpet will only sound one or two tones, but, like a trumpet, if you place your hand into the large opening, the pitch changes.

The researchers then took the musician to the chamber where the trumpets were found. This time, they placed microphones around him, as he played in the stone chamber surrounded by twisting corridors and ventilator shafts. The results were startling. The trumpet’s drone sounded as if it came from several directions simultaneously, an effect magnified by the dim lighting in the room. The effect was disorienting, confusing—a powerful sensory experience that may have been combined with the distorted, changing shadows of the participants projected on the surrounding walls by sun beams from the air shafts.

Acoustic effects of all kinds were an important part of public rituals in many ancient societies. An acoustic engineer, David Lubman, has spent 12 years studying the acoustics at the Maya city of Chichen Itza (see Figure 2.3). He believes that the Maya used the acoustic effects of the steep stairway of the Kukulcan temple, where sound produces an eerie birdlike echo. Lubman compared the acoustic sound print of the quetzal bird, much revered by the Maya, with that of the Kukulcan echo. They are identical. Here, as elsewhere in the ancient world, the natural and supernatural worlds, animals, humans, and mythic creatures, formed part of the cosmos, which was why reproducing evocative sounds was so important.

Today, rock bands use elaborate acoustic systems at their concerts with audiences of thousands; politicians rely heavily on state-of-the-art public address systems. How did ancient priests control crowds and make themselves heard in front of large audiences? Again, it appears they relied on acoustics. The great Ball Court at Chichen Itza has smooth stone walls carefully positioned to reflect sound, somewhat akin to today’s band shells (Figure 2.3). Carefully designed galleries pushed sound waves down the court, somewhat like speaking through a long tube. These would have allowed a ruler to address crowds of up to 3,000 people without using a microphone, visitors to hear whispers from 460 feet (140 meters) away. Ball games were important rituals, so the sound effects on the court would have added an eerie dimension to the ceremony, perhaps compounded with hallucinogenic drugs. According to some sources, the sounds from the court are said to have been the voices of the Lords of the Underworld. According to Lubman, a ball striking the court would have echoes four times a second, producing an effect somewhat like that of the rattles of a rattlesnake.

The study of ancient acoustics has hardly begun, but clearly our forebears were experts at producing exotic caves, whether in the depths of late Ice Age painted caves in Europe, or in Greek and Roman amphitheaters like that at Epidaurus, Greece, where soft voices travel long distances.

FIGURE 2.3 The Great Ball Court at Chichen Itza, Mexico.
Explaining Cultural Change

Archaeology is a search for both facts and explanations. The third major objective of archaeology is to study and explain processes of cultural change (see Chapter 7). Such research addresses fundamental questions: After tens of thousands of years of hunting and gathering, why did people living in a huge area of southwestern Asia change over to agriculture around 9000 B.C.? What caused Maya civilization in the southern Mesoamerican lowlands, with its huge cities and powerful lords, to collapse in A.D. 900? Why did no one settle the offshore islands of the Pacific until about 3,000 years ago?

Studying cultural process is among the most challenging of all archaeological research. Chapter 7 describes some of the complex theoretical approaches that attempt to reconstruct such major developments as the origins of agriculture and the development of complex, urban civilizations. In recent years, archaeological theory has moved in new directions, away from the study of changing cultural systems to new perspectives in which researchers focus more and more on the role of people as agents of change.

Stewardship: Preserving the Past

The most fundamental objective of archaeology is to conserve, manage, and preserve the archaeological record of the past for future generations. This overriding objective has assumed major importance in recent years. Archaeological sites are precious, finite resources, and they are vanishing at a breathtaking speed. Already, most archaeological fieldwork around the world is devoted to salvage work and general management of the surviving archives of the past, often called Cultural Resource Management (CRM). It is now the dominant paradigm in archaeology.

The four main objectives of archaeology flow one into the other. A study of ancient lifeways depends on precise culture history, and an explanation of cultural processes requires large quantities of culture historical, environmental, and lifeway data to be meaningful. And none of this research would be possible without responsible stewardship.

How, then, do archaeologists go about their work?

The Process of Archaeological Research

All archaeologists have an ethical responsibility to carry out their research according to established scientific procedures. Our research methods, however refined, destroy the archive of the past for future generations. This activity must include both full publication of the results of the work and proper conservation and storage of the finds.

In other words, the ethics of archaeology demand a process of rigorous and well-planned research (see Figure 2.4). (For more on ethics, see Box 2.3 on p. 37.)

I vividly remember my first solo excavation, on a 1,000-year-old farming village in Central Africa. My field training was rudimentary at best: a few digs in Great Britain, where you learned the basics as you worked as a student laborer. Now I was to dig on my own, a long way from anywhere, with six unskilled laborers and an occupation mound 400 meters (one-quarter mile) long and 3 meters (10 feet) deep in front of me (see Figure 2.5). The only advice I received was to dig into the highest point, on the grounds that it would yield the longest occupation sequence. I had no formal research plan or any idea of what I would find. In any event, my first trench did indeed find
Design Formulation → Implementation → Data Acquisition → Processing and Analysis → Interpretation → Publication

Background research and Research design

Fund raising Research team recruitment Permissions and so on

Field research Conservation Initial artifact processing

Laboratory analysis

Interpretative synthesis

Final report

**Figure 2.4** The process of archaeological excavation.

**Box 2.3**

**An Archaeologist’s Ethical Responsibilities**

Professional archaeologists live by multiple formal and informal codes of ethics that govern the ways in which they go about their business. The Society for American Archaeology’s code is simple and to the point. It calls for professional archaeologists to do the following:

- Practice and promote the stewardship of the archaeological record for the benefit of all people.
- Consult effectively with all groups affected by their work.
- Avoid activities that enhance the commercial value of archaeological objects that are not readily available for scientific study or cared for in public institutions.
- Educate the public as to the importance of their findings and enhance public understanding of the past.
- Publish their findings in a widely accessible form.
- Preserve their collections, records, and reports properly, as part of a permanent record of the past for future generations. They must also allow other archaeologists access to their research materials without any legal or other compelling restrictions.
- Never undertake research without adequate training, experience, and facilities to complete the task at hand.
the deepest occupation in the village. But I made many mistakes and destroyed a lot of valuable artifacts and other finds before I found my scientific feet. Many years later, I shudder at the casual way in which I first went digging. It was irresponsible and ethically wrong, both on my part and on the part of those who sent me into the field.

Any time you disturb an archaeological site, you are effectively destroying it. Unlike in physics or chemistry, you cannot replicate your experiment again and again. As archaeologist Kent Flannery once remarked, we are the only scientists who murder our informants in the course of our research. As a result, every archaeological survey, every excavation, each laboratory project unfolds according to a carefully formulated but flexible research plan.

The process of archaeological research unfolds in five general stages, as follows.

## Research Design

The ethics of archaeology require that you work closely with the people affected by your work, be they landowners, native peoples, or government agencies.

The formulation of a research design is the most important part of any archaeological project, large or small. Such a design is the formal blueprint that lays out the goals of the inquiry and the steps to be taken and the methods to be used to meet them. Preparing the design begins with the acquisition of as much background information as possible about the site or area to be investigated. What previous research has been done there? What collections and publications provide a starting point for you? What environmental and topographic data are on hand? You formulate initial questions that you hope to answer and develop general theoretical models that will frame the research. Your research design also spells out the strategies you will follow to test your hypotheses and meet the objectives of the research. Of course, these change as the fieldwork unfolds, but they provide a vital framework for the entire inquiry.

CRM projects are normally designed and carried out within tightly drawn boundaries, to ensure that they comply with legal requirements that the client, perhaps...
a developer or state roads department, has to fulfill; this is known as **compliance**. Some such projects have elaborate research designs. The one for the Federal Aid Interstate-270 Archaeological Mitigation project in southern Illinois in the 1980s revolved around no less than twelve basic questions and the processing of enormous amounts of data, much of it uncovered by using earthmoving machinery.

In a sense, a research design is like a flowchart, for it is created both to monitor the validity of research results and to maximize efficient use of money, people, and time.

In the case of my African village, I read up on everything known about the people and that kind of site (which turned out to be next to nothing). Then, I began to formulate the questions that my dig would investigate. I also raised funds for the excavation, acquired permission to dig from the landowner and relevant government agencies, and assembled the necessary equipment and staff to carry out the work.

**Data Acquisition**

Now it is time to go into the field for your survey or excavation, depending on the nature of your project. Data acquisition may take a few days, several weeks, months, or years, depending on the scope of the project. Dozens of archaeologists have collaborated on a long-term, multiyear investigation of the famous Maya city of Copán, Honduras (see Figure 15.8). The complex projects there include a major investigation of the main ceremonial complex, where tunnels have revealed pyramids built by successive rulers stacked one upon the other between A.D. 400 and 800 (see Chapter 15). Another large-scale project has surveyed the hinterland of the city and chronicled major changes in settlement in the Copán Valley over many centuries (see Box 15.2).

At the other end of the spectrum, a single archaeologist may spend a day surveying and excavating a scatter of 5,000-year-old stone tools on a 0.4-hectare (1-acre) building site in the Chicago suburbs. As noted earlier, field survey is more important than excavation in contemporary archaeology as nonintrusive fieldwork designed to conserve the past becomes the norm.

Whether excavation or field survey, data acquisition is a process of observation and recording information in which meticulous records, combined with the finds, whether potsherds or animal bones or house foundations, provide the data sets for the next stage: analysis.

**Analysis**

Data analysis is the most fundamental of archaeological tasks, the classification and description of everything recovered from the field. The **analysis** of artifacts and food remains is described in Chapter 4. However, in these days, when many researchers try to excavate as little undisturbed archaeological deposit as possible, many projects are purely laboratory undertakings. Often, modern experts work with notes left by their predecessors. For example, Smithsonian Institution anthropologist John Harrington spent a lifetime studying the customs and language of the few surviving **Chumash** Indians of southern California in the early 1920s. Harrington was a pack rat who assembled an extraordinary database on vanished Chumash culture—recorded on file cards, in notebooks, and on isolated slips of paper in Chumash, English, and Spanish. He died in 1961 without publishing any of them.

Harrington’s unpublished notes lay in government offices all over the country at the time of his death. They constitute a priceless archive of a culture that effectively became extinct in the nineteenth century. Using Harrington’s notes, anthropologists
Thomas Blackburn and Travis Hudson succeeded in building a replica of a Chumash planked canoe. At the same time, they became archaeological sleuths in an attempt to track down hundreds of Chumash artifacts looted over a century earlier and now residing in collections scattered throughout the world. William Blackmore, a wealthy businessman, acquired many Chumash artifacts in the late nineteenth century. He donated his collections to the Salisbury Museum, a local organization in southern England. After his death in 1929, the museum disposed of the collection, with the archaeological finds going to the British Museum in London. Henry Beasley, a private collector, purchased the ethnographic artifacts. Upon his death, they ended up in museums in Cambridge, Liverpool, and London. Blackburn and Hudson tracked down Chumash baskets, stone tools, and weapons in Oxford, England; Edinburgh, Scotland; Ghent, Belgium; Göteborg and Stockholm, Sweden; Helsinki, Finland; and Saint Petersburg, Russia. The two scholars documented an international archive of Chumash culture that amplified Harrington’s firsthand observations and archaeological excavations.

**Interpretation**

At this important stage in the process, the researcher pulls together all the data and tests the propositions in the research design. The interpretation represents the conclusions drawn from the data in the context of the theoretical model developed and then modified as the project unfolded. In the case of my African village, I assembled all the chronological and stratigraphic information and the artifact analyses with their information on changing pottery styles and the subsistence data and then wrote a detailed interpretation of the site. As part of the process of explanation, I argued that changes in pottery styles toward globular pots and a rapid increase in the percentage of cattle bones were signs of an economic shift toward cattle herding and milk consumption around A.D. 1000, at the very end of the site’s occupation.

**Publication and Curation**

An archaeologist’s primary responsibility is to publish a complete record of his or her research that is accessible to all.

Most important of all, the researcher publishes the results of the project in full. Many CRM excavations are covered by contracts and requirements dictated by legally mandated compliances. The completion of a formal report is part of that contract. However, whether academic- or contract-driven, full reporting in a form accessible to everyone is essential, for any excavation is destruction. Final publication, whether an elaborate monograph or a paper in a scientific journal, is the only permanent record of a now-vanished archive. As part of the publication process, the collections, basic data, photographs and drawings, and field notes should be archived in a proper curation facility, as they are part of the permanent record, to be consulted by future researchers.

One of the great scandals of archaeology is the lax way in which many field-workers shrug off their ethical responsibilities to publish their results. Many of the world’s most important and extensively excavated sites are virtually unpublished, often because their excavators have continued digging elsewhere instead of fulfilling their basic archaeological responsibilities. Unfortunately, it’s a reality of archaeological life that we receive more credit for making interesting discoveries than for...
the responsible behavior of writing them up! A glowing example of full publication is the monograph on the Abu Hureyra farming village in Syria (see Chapter 11), written over many years by Andrew Moore and his research team.

Archaeology is the study of ancient human behavior, of ancient cultures. The concept of culture is at the center of all archaeological inquiry.

What Is Culture?

On an intensely hot, windy day on the shores of Lake Turkana, East Africa, 2.5 million years ago, a small group of hominins (members of the family Hominidae, represented today by one species, Homo) runs up a dry streambed, carrying the bloody limbs of a recently killed antelope stolen from a lion kill. The females clasp their young to their bosoms and then set them on the ground under a shady thorn tree so they will be protected from the wind. They join the males in cutting up the fresh meat with sharp-edged stone tools, which were flakes struck from lumps of lava carried to this place weeks before. The small band eats quickly, always alert for lurking predators, breaking bones with stone lumps, sucking succulent marrow from the limb bones. They throw stones at hovering vultures and then drop the cleaned bones and stone tools as they move away to climb trees as the sun sets.

Two-and-a-half million years ago, these tool-making hominins numbered but a few thousand, scattered over an enormous area of open grassland in eastern and southern Africa. They were unlike any other animal on Earth, for they used a simple culture of manufactured stone and wood tools to butcher animals and dig up roots.

Humans are unique. We are the only animals that use our culture as the primary means of adapting to our natural environment. Culture is our adaptive system. Biological evolution has protected the polar bear from arctic cold with dense fur and has given the duck webbed feet for swimming. Only humans make layered, tailored clothes and igloos in the Arctic and live with minimal clothing under light, thatched shelters in the tropics. We use our culture as a buffer between ourselves and the environment, a buffer that became more and more elaborate through the long millennia of the past. We are now so detached from our environment that removal of our cultural buffer would render us almost helpless and probably lead to our extinction in a short time.

Archaeologists, like anthropologists, study ancient human cultures. Few concepts in anthropology have generated as much controversy as culture. The great Victorian anthropologist Sir Edward Tylor wrote one of the best definitions for this concept: “That complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society” (1871, 2). To Tylor’s words archaeologists would add the statement that culture is our primary means of adapting to our environment. Tylor’s definition and all other such formulations agree on one important point: Culture and human behavior are shared ideas a group of people may hold.

Human cultures are made up of human behavior and its results, a mix of complex and constantly interacting variables. Human culture is never static and is always adjusting to both internal and external change, whether environmental, technological, or social.

Culture can be subdivided in all sorts of ways—into language, economics, technology, religion, political or social organizations, and art, to mention only a few categories.
But human culture as a whole is a complex, structured amalgam in which all the categories shape one another. All cultures are made up of myriad tangible and intangible traits that result from complex adaptations to a wide range of ecological, social, and cultural factors.

We transmit much of human culture from generation to generation by sophisticated communication systems: by word of mouth and oral tradition, by practical example, and sometimes in writing. Culture’s transmissibility allows us to forge ceaseless and complex adaptations to aid survival and help rapid cultural change take place, as happened, for example, when Western explorers and settlers came in contact with non-Western societies during the European Age of Discovery. Within two or three generations after the first European contacts in 1768 and 1769, Tahitian society changed rapidly as a result of connections with Western culture. At first, local chiefs tolerated missionaries, who were perceived as politically advantageous owing to their access to firearms. Within a half century, Tahitian culture had been transformed by Christianity, and for the worse, as traditional customs and beliefs went underground and many people fell into grinding poverty.

We all live within a culture of some kind, and every culture is qualified by a label, such as “middle-class American,” “Inuit,” or “Maya.” The qualification conjures up characteristic attributes or behavior patterns typical of people associated with the cultural label. One attribute of a middle-class American might be the enjoyment of hamburgers or an enthusiasm for football; of the Inuit, the kayak or skin boat; of the elite members of Maya society, elaborate cities and intricate hieroglyphs, an ancient writing featuring pictorial or ideographic symbols. Every culture has its individuality and recognizable style that shape its political and judicial institutions and its morals.

Unfortunately, cultural labels often become simplistic and sometimes demeaning stereotypes, such as that of the Native Americans as “feathered braves” or of the French as romantic, consummate lovers. Cultural reality is much more complex and often deeply challenging for an outsider to penetrate and comprehend.

For working purposes, archaeologists often think of culture as possessing three components:

- The individual’s own version of his or her culture: the diversified individual behavior that makes up the myriad strains of a culture. Individual decisions play a vital role in changing even elaborate cultures.
- Shared culture: the elements of a culture shared by everyone. These can include cultural activities such as human sacrifice or warfare, as well as the body of rules and prescriptions that make up the sum of the culture. Language is critical to this sharing, and so is the cultural system.
- The cultural system: the system of behavior in which every individual participates. The individual not only shares the cultural system with other members of society but also takes an active part in it.

You can think of culture as either a blend of shared traits or a system that permits a society to interact with its environment. To do anything more than just study sequences of ancient human cultures, archaeologists have to view culture as a group of complex, interacting components. These components remain static unless you define the processes that operate the system.

Archaeologists are deeply involved with the study of cultural process, how ancient human societies changed through time (see Chapter 6).
The Archives of the Past: The Archaeological Record

The foragers came in early fall, just as the acorns and pistachios ripened. They camped on a small ridge close to the river, at the foot of a low cliff, with a fine view of the surrounding floodplain. While the men erected small brush shelters, the women collected wild grass seeds from the edges of a nearby swamp where a meander of the stream had left a shallow lake. They returned to camp with laden baskets, lit fires, and pounded the seeds for the evening meal. As the sun went down, some of the men stalked deer from the nearby forest as the timid animals came down to the water to drink. Dogs barked; children shouted and played; families sat by the fires in the gathering dark. The same daily routine unfolded for several weeks as each family spent its days in the forest gathering thousands of ripe acorns and nuts for the winter ahead. But as the days shortened and the leaves fell, the band moved on to a more permanent and better-sheltered winter camp upstream.

The abandoned shelters slowly collapsed under the weight of rain and winter snow. Small mudflows covered the hearths where families once sat. Within a few years, the small camp was invisible, the brush dwellings rotted away. The few discarded wooden artifacts had also vanished. Only a scatter of broken stone tools, some fractured deer bones, and thousands of minute seeds survived, buried under several inches of soil.

The soil weathered, centuries and millennia passed, and a dense woodland grew where the foragers once lived. Then European farmers came and cleared the trees, sinking their horse-drawn plows into the fertile soil. The plow blades cut through an ancient hearth, bringing some stone tools and charcoal to the surface of the plowed field. By chance, an archaeologist walked across the field, searching for artifacts and traces of human occupation. The ancient camp, once alive with people, became an archaeological site—part of the archives of the past.

Archaeological data like these consist of any material remains of human activity. The archaeologist recognizes them as significant evidence. All are collected and recorded as part of the research. Data are different from facts, which are simply bits of observable information about objects, conditions, and so on.

The data chronicling prehistory result from human activity. A hunter-gatherer band decides on a location for a temporary camp. The people gather building materials—sticks and grass, sod, mammoth bones—and then build dwellings and occupy them. Eventually, they abandon their houses, perhaps destroying them in the process. The archaeologist reconstructs the camp and the activities that unfolded there from the surviving material remains, discovered after centuries or millennia; this is what we call the archaeological record, a generic name for traces of ancient human behavior, reflected by a more or less continuous distribution of artifacts over the Earth’s surface, in highly variable densities.

Human behavior is the first step in the formation of the archaeological record. But what happens when people abandon their camps, bury the dead, and move elsewhere? The collapsed brush shelters, a scatter of stone tools, the remains of a meal are of no further use to their owners. All manner of humanly caused (cultural) and natural (noncultural) transformation processes then come into play as time passes. Such transformation processes (sometimes called site transformation processes) are continuous, dynamic, and unique cultural or noncultural occurrences that affect archaeological sites after their abandonment (Figure 2.6). The bodies of the buried dead decay; toppled shelters rot away in the sun. Perhaps a nearby lake rises and
artifacts  Objects manufactured or modified by humans.

artifact assemblage  All the artifacts found at a site.

covers the abandoned settlement with fine silt. Windblown sand may accumulate over stone artifacts, objects manufactured or modified by humans. Another completely different society may come and build a farming village on the same spot or simply pick up and reuse the stone artifacts left by their ancient predecessors. (A collection of artifacts found at a site is known as an artifact assemblage.)
Transformation processes vary from one location to another, for the archaeologist’s data are always biased and incomplete, altered by a variety of such processes that can affect the state of preservation of artifacts and other finds. For example, World Wars I and II destroyed thousands of archaeological sites, whereas wet conditions in northern European swamps preserve even 3,000-year-old corpses in perfect condition.

Archaeological data resulting from human behavior and transformation processes make up the archaeological record. The archaeological record is a finite and precious chronicle of the human past, an archive of all our pasts, whether kings, queens, merchants, nobles, or commoners. Our archives are not dusty files, letters, or microfilms but archaeological sites, artifacts, and ecofacts (a term sometimes used to refer to food remains, such as animal bones, seeds, and other finds, that throw light on human activities)—all the material remains of ancient human behavior. A scatter of broken bones, a ruined house, a gold mask, a vast temple plaza—these are all part of the archaeological record. All the elements in this enormous archive, the common cultural heritage of all humankind, have a context in time and space. Once destroyed, an archaeological site can never be replaced. Once disturbed, the context of an artifact, or any form of human behavior, is gone forever. The archaeological record is perishable, irreplaceable, and vanishing daily.

The archaeological record can include unusually high densities of artifacts or other traces of human activity, which are subsumed under the term site, any place where objects, features, or other traces of human behavior are found. A site can range from a small camp to a city, from a quarry to a tiny scatter of stone artifacts. It can be defined by its function, such as a cemetery.

Such, then, are the finite archives of the past, which have come down to us in lamentably incomplete form. Fortunately, however, exceptional preservation conditions sometimes provide us with remarkably detailed portraits of ancient lives.

**Preservation Conditions**

He lay on his left side in a crouched position, a serene expression on his face, his eyes tightly closed. He wore a pointed skin cap and a hide belt—nothing else except for a cord knotted tightly around his neck. He had eaten a gruel of barley, linseed, and several wild grasses and weeds 12 to 24 hours before his death. Tollund Man was choked or hanged about 2,000 years ago and then laid to rest in a Danish bog, where peat cutters found his well-preserved body in 1950 (Figure 2.7).

The archives of the past come down to us in the form of a frustratingly incomplete archaeological record, consisting for the most part of an endless array of stone tools, potsherds, and more durable artifacts such as grindstones and lava hammers. The sharp edges of stone choppers fabricated more than 2 million years ago may be as sharp as on the day they were made, but such inorganic objects tell us little about their makers beyond details of their technology.

Just occasionally, though, the veil lifts when favorable preservation conditions bring us organic objects made of once-living substances, such as wood, leather, bone, or cotton. We know a great deal about Tollund Man, the manner of his death, his health, and his diet simply because his corpse survived under waterlogged conditions. Peat bogs, damp lake beds, and other wet sites can preserve wood and plant remains in near-perfect condition. So can ultradry climates, such as that of Egypt: Witness the well-preserved tomb of the pharaoh Tutankhamun. The preservative effects of both arctic cold, in which permafrost literally refrigerates archaeological sites, and volcanic ash provide us with opportunities to explore past societies. Let us
look at four examples of truly exceptional preservation that demonstrate the potential for spectacular discoveries.

**A Waterlogged Site: Ozette, Washington**

For more than 2,500 years, the ancestors of modern-day Makah Indians hunted whales and other sea mammals from a village at Ozette, on Washington’s Olympic peninsula. About 200 years ago, a sudden mudslide buried much of the village of cedar plank houses. Liquid mud cascaded over the dwellings, preserving their contents as the inhabitants abandoned them. Archaeologist Richard Daugherty of Washington State University used high-pressure hoses and fine sprays to tease the still-waterlogged soil from the remains of four perfectly preserved cedar log houses. The wet muck that had engulfed the houses had mantled them in a dense, wet blanket that preserved everything except flesh, feathers, and skins. One house was 21 meters long and 14 meters wide (69 feet by 46 feet). There were separate hearths and cooking platforms. Low walls and hanging mats served as partitions. More than 40,000 artifacts came from the excavations, including conical rain hats made of spruce root fibers, baskets, wooden boxes, wooden bowls still impregnated with seal oil, mats, fishhooks, bows and arrows, and fragments of looms (see Figure 2.8).

The Ozette site is a classic example of how much can be recovered from a waterlogged archaeological site. Ozette is important in other ways, too, for the ancestors of the Makah Indians who lived there flourished along the coast for more than 2,500 years. Archaeology extended their known cultural heritage far into the remote past.

**A Dry Site: Puruchuco-Huaquerones, Peru**

The Inka Empire extended far from its Andean homeland to the arid Pacific coast, one of the driest environments on Earth. As we will see in Chapter 16, the coast was home to several important pre-Inka states, which became part of the empire during
the fifteenth century A.D. We know little about life in the outlying provinces of Inka domains, but a recent important discovery on the outskirts of Lima, Peru, throws new light on the subject. The Puruchuco-Huaquerones cemetery, which dates to Inka times (A.D. 1438–1532), lies under the Tupac Amaru shantytown on the outskirts of the city.

Tupac Amaru came into being when fugitives from guerrilla activity in the highlands settled outside Lima in 1989. Almost at once, the squatters found ancient mummies, burning many of them in fear that an archaeological investigation would hinder development of the town. The surge of urban development caused sewage and water to sink into the dry soil, decomposing the mummies underground. Guillermo Cock, of Peru’s Institute of Culture, started work on the cemetery in 1999. In three seasons, he recovered more than 2,200 mummies of all social ranks, buried within 75 years of one another.

The mummy bundles survived virtually intact in the arid soil, buried in graves sealed with sand, rubble, and potsherds. Many bear false heads made of textiles and cotton. Magnificent woven garments adorn many mummies, some of which bear elaborate headdresses of bird feathers, with ear flaps and a long panel that drapes down the back of the neck. Sometimes as many as seven people lie in one bundle. Nearly half the burials in the cemetery were of children who had died of anemia.

One spectacular mummy bundle, wrapped with 130 kilograms (over 300 pounds) of cotton, contained the body of a man and that of a baby, perhaps one of his children. He was buried with food and 170 exotic and everyday artifacts, together with a mace and sandals of a type worn by the elite. Exotic spondylus shells from distant Ecuadorian waters lay with the body, eloquent testimony to his social status (see Figure 2.9).

Unfortunately, only a small fraction of the cemetery can be investigated. The thousands of mummies
still underground are decomposing rapidly, owing to the shantytown above them. But once studied, the Puruchucho mummies will reveal many details of life in a province of the Inka domains. In particular, the mummies show how people living in the provinces of the empire aped Inka customs, adopting their costume and ornaments.

**Cold Conditions: Nevado Ampato, Peru**

Freezing conditions in an arctic environment or at high altitudes can literally dry out or refrigerate a corpse and preserve the finest of clothing. Anthropologist Johan Reinhard and his Peruvian assistant, Miguel Zarate, found the mummy bundle of a young girl at an altitude of 6,210 meters (20,700 feet) in the Peruvian Andes. The 14-year-old Inka girl died as a sacrificial victim five centuries ago and was buried on a summit ridge of the sacred **Nevado Ampato** mountain (see Figure 2.10). Her well-preserved body was wrapped in a rough outer garment and then a brown-and-white-striped cloth. Underneath, she wore a finely woven dress and shawl fastened with a silver pin. Her feet wore leather moccasins, but her head was bare. She may originally have worn a fanlike feather headdress, which was dislodged when the summit ridge collapsed and her mummy bundle fell down a slope. Computerized tomography (CT) scans of her skull revealed fractures by the right eye. She died of a massive hemorrhage resulting from a swift blow to the head. Blood from the wound pushed her brain to one side of her skull.

![Figure 2.10 The Nevado Ampato mummy, Peru.](Image 134x123 to 543x374)
Volcanic Ash: Cerén, El Salvador

Everyone has heard of Herculaneum and Pompeii, flourishing Roman towns buried by a massive eruption of Mount Vesuvius in A.D. 79. The smothering ash even preserved body casts of fleeing victims (see Figure 2.11). Similarly, in the sixth century A.D., at Cerén in El Salvador, a volcanic eruption buried a small Maya village without warning. The people had eaten their evening meal but had not yet gone to bed. Upon the eruption, they abandoned their homes and possessions and fled for their lives. Archaeologist Payson Sheets and a multidisciplinary research team have recovered entire buildings, outlying structures, and their contents exactly where they were dropped (see Box 2.4).

The Cerén excavations reveal Maya farmers going about their daily business, the men working in the fields and making obsidian tools, the women weaving cotton garments, making agave rope and twine, and fashioning clay vessels. Theirs was a life dictated by the passage of the seasons, by wet and dry months, by the cyclical demands of planting and harvest. By chance, the volcanic ash rained down just after supper, so their artifacts, including bowls smeared with food, preserve a chronicle of life at the end of a farmer’s day.

Such well-preserved finds as Cerén or Ozette are few and far between, but they show the enormous potential for minute reconstruction of the past from wet sites and other exceptional locations. For the most part, however, the archaeologist works with an archaeological record that is a thing of shreds and patches, where preservation conditions militate against detailed portraits of ancient cultures. Our knowledge of human prehistory depends not only on good preservation but also on careful observation of the contexts of artifacts, occupation layers, and archaeological sites in time and space.

Context

Archaeologists have an ethical responsibility not to collect artifacts or buy and sell them for profit. They are students of the past and, as such, have a responsibility to acquire information, not artifacts wrenched from their context in time and space.

I remember once examining a superb Mimbres painted bowl from the American Southwest (see Figure 2.13 on page 51). The funerary vessel depicted a man fishing and had clearly come from a grave. Unfortunately, an anonymous looter plundered the burial, scattered the bones, and carried away the bowl, which he sold to the highest bidder. I admired the superb artistry of the painter, but the bowl was useless as archaeological data, for we had no information as to where it came from or about its precise age and cultural associations.

Ancient artifacts are not just objects to be displayed like paintings or sculpture. They come from precise contexts in time and space. Archaeological data do not consist of artifacts, features, structures, and ecofacts alone. They also include the context, the exact position of these finds in time and space.
We would know little of the lives of commoners but for an ancient natural disaster. One August evening in the sixth century A.D., a sudden rumble shook a quiet Maya village at Ceren in El Salvador. An underground fissure less than a mile away had erupted without warning. A fast-moving cloud of ash darkened the twilight sky. The villagers fled for their lives, leaving everything behind. Minutes later, their houses lay under a thick layer of volcanic debris. Fifteen hundred years later, archaeologist Payson Sheets used **subsurface radar** to locate several houses buried deep under the ash. He then excavated the dwellings. Plotting every artifact, even individual wall fragments, seeds, and pieces of thatch, he discovered households where the people at the end of the evening meal had fled the cascading ash.

One household lived in a complex of four buildings—a kitchen, a workshop, a storehouse, and a residence—where the residents socialized, ate, and slept (see Figure 2.12). The residence had a front porch open on three sides. The main room covered 4 square meters (43 square feet), with storage pots against the back wall. One pot contained a spindle whorl for making cotton thread. A large adobe bench on the east side of the room served as a sleeping place. During the day, people rolled up their mats and stored them among the rafters. Even the sharp-edged obsidian knife blades, stored high in the roof for safety, still lay among the thatch.

A walkway linked the dwelling to a nearby storehouse, passing by a food-grinding area where a metate (grinding stone) still stood on forked sticks about 50 centimeters (20 inches) above the ground. The household owned a well-tended garden along the side of the storehouse with carefully spaced rows of three species of medicinal herbs about a meter (three-and-a-quarter feet) apart, each plant standing in a small mound of soil. Just to the south, an ash-covered field contained ridges of young maize plants about 20 to 40 centimeters (8 to 15 inches) high, typical corn growth for August in this environment. Some of the maize plants were doubled over, the ears still attached to the stalk, a “storage” technique still used in parts of Central America today.

**FIGURE 2.12** Reconstruction drawing of Maya houses at Ceren, El Salvador.
using trowels and then paintbrushes. Three large boulders appeared in the soil. I brushed them off, exposing a patch of charcoal between them, as well as a broken ox jaw and the broken fragments of a small clay pot. The exposed floor was about 3 meters (10 feet) across, with the hearth set near the center of the house.

Before we lifted the hearth, artifacts, and hut floor, I recorded the provenance by measuring the exact position of every find and feature three-dimensionally and tying our measurements into a site grid linked in turn to the map of the area. I remember thinking as we took up the boulders that in and of themselves, they were just three large stones, but taken together, plotted in relationship to the charcoal and artifacts, they told a story of long-forgotten household behavior. The finds had a context.

However, context is far more than just a find spot, a position in time and space. How, for example, did the find get to its position, and what has happened to it since its original users abandoned it? Three general factors can affect context:

- The manufacture and use of the object, house, or other find by its original owners: For instance, the builders may have oriented a dwelling to a southwestern exposure to achieve maximum warmth from the afternoon sun. Why is this important? Because archaeologists study not only houses but also the behavior that affected every aspect of their building and use.

- Ancient human behavior: Some discoveries, such as royal burials or caches of artifacts, were deliberately buried under the ground by ancient people; others vanished as a result of natural phenomena. Dilapidated houses that have been abandoned are slowly covered by blowing sand or rotting vegetation. Others vanish in natural disasters.

- What happened to the find after its abandonment or use: For example, was a 2,000-year-old burial from a burial mound in the Midwest disturbed by later interments in the same mound?

To add to the complication, you can come across both primary context (the original context of an archaeological find, undisturbed by any factor, human or natural, since it was deposited by the people involved with it) and secondary context (the context of a find whose original position has been disturbed by later activity). In A.D. 43, a Roman attack attacked a strongly fortified native British hill fort at Maiden Castle in southern England. The legion attacked the weakest point of the defenses at the eastern end, advancing under a hail of slingshots and arrows. Protected by their long hide shields, the Roman soldiers fired iron-tipped arrows at the defenders atop the wooden palisades. As the attackers advanced, an arrow felled a tribesman in his tracks. The iron head penetrated his spine, killing him instantly (see Figure 2.14). The Romans sacked and burned the fort and then retreated to their camp a short distance away. Under cover of darkness, the defenders crept back to the ramparts and buried their dead in shallow graves. One of those buried was the casualty with the arrow in his spine. More than 1,900 years later, archaeologist Mortimer Wheeler uncovered the body in its primary context, curled up, fetuslike, in its hastily dug sepulcher.
Secondary contexts can occur when a group allows a corpse to remain exposed until the corpse has decomposed, and then buries the bones in a bundle in a communal burial chamber, like a British Stone Age long barrow (a burial mound) or a Hopewell mound in the Ohio Valley. Secondary context also refers to burials deposited in the same place at a later date. For example, in A.D. 500, a group of Chumash Indians camped by a rocky peninsula on the south side of Santa Cruz Island off southern California. Their ancestors had collected shellfish and hunted sea mammals at this location for untold generations. They camped for several days, nursing a sick man. After he died, they buried his body in the large shell heap downwind of their camp and moved away. Fifty years later, another group visited the same spot and buried two children in the same mound. As they dug their graves into a corner of the original sepulcher, they disturbed the bones of the long-forgotten ancestor. When archaeologists uncovered the burials centuries later, they referred to the later interments as secondary burials.

Secondary contexts are common occurrences. For example, the tomb robbers who entered the sepulcher of Egyptian pharaoh Tutankhamun soon after his interment in 1342 B.C., searched frantically for gold and precious oils. They scattered other items of grave furniture into secondary contexts before being frightened away. In still other instances, finds can be shifted by the natural forces of wind and weather. Many of the Stone Age tools found in European river gravels have been transported by floodwaters to locations far from their original place of deposition. All of these disturbed finds are in secondary contexts.

Time and Space
Every human artifact has a provenance in time and space. The dimension of time can range from a radiocarbon date of 1400 ± 60 years B.P. for a Maya temple to a precise reading of A.D. 1623 for a historic building in a colonial village in Virginia. Frequently, it can simply be an exact position in an archaeological site whose general age is known. Provenance in space is based, finally, on associations between tools and other items that were results of human behavior in a culture. Provenance is determined by applying two fundamental archaeological principles: the laws of association and of superposition.

The Law of Association
The Han dynasty ruled China from 206 B.C. to A.D. 220, a time of great wealth and prosperity, especially for emperors, their families, and the nobility. Their enormous wealth survives in a series of remarkable burials. Dou Wan, the wife of Prince Liu Sheng, elder brother of Emperor Wu-di, died about 103 B.C. She was buried in
a tomb over 51 meters (170 feet) long, dug by hand by hundreds of laborers. She lay in a central chamber with wooden walls and tiled roof, once hung with finely embroidered curtains. Dou Wan lay in a magnificent jade suit sewn together with gold thread. Han emperors and their nobles believed in Taoist magical traditions, which taught that jade prevented body decay (Figure 2.15). All that remained was a jumble of jade plaques and gold thread. Her bones had vanished.

A gilt-bronze lamp modeled in the form of a young serving girl watched over the corpse. The serving girl was kneeling, a lamp in her hands. Both the lamp and its shade were adjustable so that the direction and intensity of its rays could be changed at will. The direct association between the corpse and the lamp made it certain that the lamp belonged to Dowager Dou, especially since it bore the inscription “Lamp of the Palace of Eternal Trust.” The dowager’s grandmother lived in a residence of that name, so Chinese archaeologists believe that the lamp may have been a wedding gift from the grandmother to her granddaughter.

The archaeological principle of association (see Figure 2.16) came into play in Dou Wan’s sepulcher. This principle, sometimes called the law of association, is one of the foundations of all archaeological research. In 1859, association linked the bones of long-extinct animals in river gravels with human-made stone axes found in the same levels. This discovery provided indisputable evidence of a very ancient humanity. The association showed that humans and such beasts had lived on Earth at the same time, hundreds of thousands of years earlier than the mere 6,000 years suggested by the biblical Creation story. The Meer stoneworkers described at the beginning of this chapter are known to us because of Daniel Cahen’s meticulous plotting of hundreds of stone chips around the associated boulders where they sat. Association is a barometer of ancient human behavior, recorded in the intricate patterns of artifacts, food remains, and other finds in the soil.

**FIGURE 2.15** The reconstructed jade suit of Dou Wan, c. 103 B.C.
Middens Accumulations of domestic garbage, shells, or other occupation debris.

Pecos Pueblo, New Mexico Important Pueblo settlement from about A.D. 1140 to 1540, the deposits of which yielded a long sequence of Pueblo culture, which became a yardstick for a wide area; subsequently became a major Catholic mission center.

**Figure 2.16** Law of association. Some archaeological associations: (a) The burial pit, dug from the uppermost layer, contains not only a skeleton but also a dagger that lies close to its foot. The dagger is associated with the skeleton, and both finds are associated with the burial pit and the layer from which the grave pit was cut into the subsoil. (b) In contrast, a pot and a stone ax are found in two different layers, separated by a sterile zone, a zone with no finds. The two objects are not in association. (c) Two different household clusters with associated pits and scatters of artifacts. These are in association with one another. (d) An association of two contemporary communities.

**The Law of Superposition**

Archaeologist Alfred Kidder dug into the deep *middens* at Pecos Pueblo, New Mexico, in 1915. The pueblo had flourished centuries before, when the first Spanish conquistadors arrived in the Southwest in 1540. Kidder trenchied into the historic levels and then dug through deep occupation horizons until he reached sterile bedrock. His huge trenches yielded over 750 burials in sealed graves with groups of pots and thousands of painted potsherds, whose designs changed considerably as he dug deeper into the
ash and occupation debris. Kidder worked from the historic known back into the prehistoric unknown, using graves and potsherds to develop a long sequence of Pueblo culture, with the oldest at the base and the most recent at the top of the middens.

Kidder used a fundamental principle of archaeology, the law of superposition, which comes from stratigraphic geology (see Figure 2.17). The principle of superposition states that the geological layers of the Earth are stratified one upon another, like the layers of a cake. Cliffs by the seashore and quarries are easily accessible examples. Obviously, any object found in the lowermost levels, whether a stone or something made by humans, was deposited there before the upper levels were accumulated. In other words, the lower strata are earlier than the upper strata. The same principle applies to archaeological sites. The order of deposition of tools, houses, and other finds in the layers of a site can be dated relative to the other layers by their association with the stratum in which they are found. But it should be noted that archaeological finds can become jumbled in archaeological layers for all manner of reasons, among them human activities.

**Figure 2.17** Law of superposition. Superposition and stratigraphy: (a) A farming village built on virgin subsoil. After a time, the village is abandoned and the huts fall into disrepair. Their ruins are covered by accumulating soil and vegetation. (b) After an interval, a second village is built on the same site, with different architectural styles. This is abandoned in turn; the houses collapse into piles of rubble and are covered by accumulating soil. (c) Twentieth-century people park their cars on top of both village sites and drop litter and coins, which when uncovered reveal to the archaeologists that the top layer is modern. An archaeologist digging this site would find that the modern layer is underlain by two prehistoric occupation levels, that square huts were in use in the upper of the two, which is the later under the law of superposition. Round huts are stratigraphically earlier than square ones here. Therefore, village I is earlier than village II, but the exact date of either, or how many years separate village I from village II, cannot be known without further data.
The basis of all scientific archaeological excavation is the accurately observed and carefully recorded stratigraphic profile, or *stratigraphy*, which we discuss in Chapter 3.

**Summary**

- This chapter focused on the fundamental principles of archaeology.
- Archaeologists have a primary responsibility to conserve the past for future generations. Archaeology’s other goals are to construct culture history, reconstruct ancient lifeways, and study processes of cultural change.
- The process of archaeological research begins with a research design and then proceeds to data collection, analysis, interpretation, and publication of the results.
- Archaeologists study ancient cultures, with culture being, in part, the shared ideas that human societies hold. Culture is also our primary way of adapting to our environment.
- Many archaeologists think of human cultures as cultural systems made up of many interacting subsystems, these cultures being part of much larger ecosystems.
- The study of cultural process involves interpreting the ways in which cultures change over long periods of time.
- The archaeological record consists of the material remains of human behavior, a finite archive of the past, which has a context in time and space.
- The chapter defined some of the components of the archaeological record and the widely differing preservation conditions that can affect our knowledge of the past.
- All archaeological finds have a context in time and space, defined by the laws of association and superposition.

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Critical-Thinking Questions

1. Why is the concept of culture so important in archaeology and what makes archaeology unique in studying cultural change?

2. Why do you think research design is central to the process of archaeological research? Use an example from the chapter to illustrate your points.

3. Archaeology has three major goals. Which of them, in your view, is the most important, or do they have equal significance?