Chapter 1

What Archaeology Is

In This Chapter

- Defining archaeology
- Distinguishing the different types of archaeological evidence
- Understanding the site-formation processes
- Checking out the players and developments on the road to modern archaeology

Archaeology is exciting adventure and romantic intrigue as well as amazing scientific investigation. That's how you see it in movies and the news, and even if the excavation is downtown under the sidewalk or in the middle of some farmer's field, that adventure is still there because you're trying to make the unknown known. The dig unearths not only neat artifacts from ancient times but also the often-dramatic stories of how past humans got along in the world — maybe with some lessons for the present day.

Because confusion and misconceptions about the nature of archaeology are everywhere, in this chapter I define archaeology and show you how it really is detective work on a big scale. Here you discover how archaeological sites are formed, how modern archaeology developed, and even how you yourself probably do archaeology all the time without realizing it!

COPYRIGHTED MATERIAL

So What Is Archaeology Anyway?

A simple definition: *Archaeology* is finding out about past human behavior by studying the material evidence left behind.

Archaeology doesn't necessarily look at the people themselves, but always examines their stuff. Archaeology is very distinctive among all the *social sciences* (studies of humans and their behavior) for its unique method: studying people not by watching or reading about or talking to them but by analyzing what material things they left behind. *Material things* means people's possessions, residues, and anything else visible or tangible — from the tiniest seed bead or corn kernel to the tallest pyramid, from the most

nondescript kitchen garbage to the most beautiful gold craftwork. Today it also means people's hair and DNA as well as dark stains and other features in the soil left from burying, building, and so on.

The method: It's detective work

Archaeology is exactly like detective work — in fact, it *is* detective work! Most police or private detectives use all the methods archaeologists use:

- Carefully measuring, recording, and photographing the evidence at the (crime) scene.
- Using painstakingly accurate techniques to recover, process, and analyze the evidence.
- Getting background information on all the people, places, and times involved.
- Interviewing knowledgeable people about what happened and what other evidence they may have or know about.
- Using techniques from other sciences like physics and chemistry to learn more about the evidence.
- Stopping for coffee and doughnuts (or a cold beer) at a little place close by to see what else you can find out.
- Compiling all the information to describe what happened.
- Stating your case and arguing it, sometimes involving other experts, politicians, journalists, and the public.
- Continuing to investigate if you can't tie up all the loose ends.

Everyone does archaeology sometimes

Archaeological knowledge is about us. You can do the archaeology of the far distant past or the very recent past. Everyone does some archaeology, probably nearly every day. For example, you may know by the car in the driveway who is home, or by the things thrown around the living room what the roommate or kids have been doing in there. Parents, especially, do a lot of archaeology ("Did you brush your teeth before bed?" "Sure, Mom. Always, Mom." "Then why is the toothbrush still dry?").

The goal: Understand people

When you do archaeology, you don't dig just to get some cool artifact (that's treasure hunting or looting). You don't really want the finds for yourself, anyway — they go into collections or museum exhibits for all to enjoy and study further, if desired. No, you want to understand past people through what they left on and in the ground (or elsewhere). You examine the once-lost traces of the past for several good reasons. The goals of archaeology are to

- Study the human past across space and time.
- Reconstruct past human behavior and ways of life.
- Understand past cultural systems (social, economic, political, religious) and how they changed through time.
- Help conserve the fragile material record of past peoples and interpret this heritage for people today.
- Bring the story of the human past to the public for enjoyment, education, and even practical use.

The Nature of Archaeological Evidence

Anything made by humans is an artifact, including a thought, a song, or a smile. In archaeology, artifacts are human-made material objects — you have to be able to see or measure them and retrieve information from them.

Your *materials* are all the physical items you dig up or otherwise obtain from the archaeological sites, and your *data* are all the bits of information you retrieve from the dig, the sites, and all the physical remains. So you may wash, sort, and identify your archaeological materials in the laboratory. Then when you list each type of artifact and ecofact (more on these in the following sections) on a table, you create data. The same is true for all the information you record as you excavate a feature or make a map — these are more data, as are all your notes, files, photos, and other information. The following sections describe some categories of these material remains.

Artifacts

Any object made by humans is an *artifact.* Usually you think of ancient ceramic pots or arrowheads, and indeed these items are everywhere at archaeological sites. But a temple or palace is an artifact too — one made up of individual artifacts such as bricks or stone blocks. A stone used to hammer and chip other stone to make the arrowhead is also an artifact; even though it's not deliberately shaped, it's covered with grinding and chipping marks and thus modified by human activity. Finally, the flakes of stone chipped while making stone tools are also artifacts, though they may or may not have been discarded. Most often, artifacts are portable objects excavated and brought back to a laboratory for study.

Ecofacts

Ecofact is a term archaeologists invented to classify natural objects used by humans without modification. Animal bones left from dinner or pollen from gathered plants are ecofacts. But if a bone has been modified to become a harpoon point, that modification makes it an artifact. Even phosphates or other chemicals in the soil are ecofacts showing that people threw their organic waste on the ground.

Features

Anything that's made by humans but is too big to bring back (intact) to the laboratory is a *feature.* Features can be garbage pits, hearths, *post holes* or *postmolds* (where poles were once in the ground), graves, roads, drip lines from roofs of old buildings, building foundations, storage pits, clusters of artifacts, and even footprints. Technically you can cut out a block of soil around a feature such as a footprint and bring it back to study under better conditions in the lab, but most features have to be excavated (or studied and then preserved) where they're first uncovered.

Sites

Archaeological sites are places where human habitation or other activity took place and where artifacts, features, and ecofacts are all found. You can have sites of different sizes, shapes, and time periods, from a small stone quarry where bits of chipped rock are lying around to the ruins of a big palace where bits of the quarried stone blocks are left lying around. Depending upon what's preserved, a site can be small or large, shallow or deep.

Components and boundaries

When people of one time period use a place that people of an earlier time already used, they add another *component* to a site. A multicomponent site at a prime location such as a shoreline can have cultural deposits going back thousands of years, one component overlying the next. The ideal site has a nice, culturally sterile layer between each component so you can tell them apart. In reality it seldom works out like this. Later people come in and dig into the site and mix the older stuff with their stuff and never even think of how the archaeologist of the future is going to figure it all out!

Not all sites are visible. Sometimes you do archaeological survey to locate sites, including using special techniques if remains are buried or underwater. (See Chapter 6 for more on survey.) Finding the boundaries of sites is also sometimes tricky and may be impossible without digging.

Regions and isolated finds

You can investigate archaeological sites within a whole natural region, such as a river valley or island. Or you may do archaeological survey within an arbitrary project area, such as someone's property lines; in this case, you do your best to see where the actual past archaeological site extends, but you may never know exactly.

Individual artifact finds of just one or two items are also sometimes called sites if they may indicate a specific activity there. But one arrowhead isn't enough — it may have fallen from a deer who galloped away after being shot. Criteria for what qualifies as a site can vary according to the archaeologist doing the work and the project guidelines. Many professionals now record specific *isolated finds* (IFs) or *artifact occurrences* (AOs) to indicate something was going on in the past, even if they don't have enough evidence to make it a site.

How Archaeological Sites Form

Archaeological sites can develop over great or small amounts of time and space, and through large or small actions of humans and of nature. What archaeologists call *site formation processes* can be divided into two categories: cultural and natural processes.

Cultural processes

The cultural activities that contribute to the formation of archaeological sites are simply everything that humans do that results in material evidence. The following list gives you some examples:

- **Finding raw materials and making artifacts:** Making everything from chipped stone tools to pyramids (and the waste these processes leave behind).
- **Leaving evidence of activity:** Using material items and physical spaces, moving objects around, leaving residues, repairing and remaking things — basically, leaving any marks or debris in an area where you performed some activity.
- **Discarding things (deliberately or by accident):** Making garbage dumps, dropping things, or storing items and forgetting about them.
- **Reusing past things:** Taking old pyramids apart to get blocks or bricks for new construction.
- **Digging into or disturbing ground containing past things:** Plowing up old sites and/or bulldozing them to construct new ones.

Natural processes

Mother Nature also contributes to the formation of archaeological sites. Here are some of the ways:

- **Physical processes** such as wind, gravity, rain, storms, drought, volcanoes, and other climate and local weather conditions.
- **Biological processes** such as animals burrowing into the site and bacteria and other organisms causing decay.
- **Chemical processes** such as weathering stone, rusting iron, and decomposing dead plants and animals in acidic soils.

All these processes affect the way the archaeological site is composed and looks. They can be large scale (volcanic ash covering the whole city of Pompeii) or very small scale (an iron artifact rusting beyond recognition). They can be destructive (wooden buildings decaying completely and leaving only dark stains where posts were in the ground), or they can actually preserve the site (the Pompeii ash). Sometimes they both preserve and destroy at the same time: Where I work in the southeastern U.S., I often see the effects of river floods washing away parts of prehistoric riverbank villages, but covering up other parts with several feet of new sand, and thus preserving them better (and making me have to dig deeper to find them).

You have to be sure to distinguish the effects of all these processes as you're doing archaeology. It helps to know something about the physical sciences and be a good anthropologist who understands human behavior too. In fact, to be an archaeologist you often need to be a jill- or jack-of-all-trades! If you're not already, a few seasons of fieldwork will help you see what soils indicate human use, what a decayed wooden post looks like in the ground, or how a big orange heavy thing may just be a rusted iron artifact.

How Archaeology Became a Modern Science

Archaeology has had so many colorful figures and astounding discoveries that you really don't need Hollywood to invent fictitious ones! Here I briefly review the history of archaeology, its finds and adventurers, and how the field developed into the sophisticated modern science it is today. Many famous, flamboyant, and fascinating personalities were pioneers in the development of archaeology (and models for characters like Indiana Jones). I've included some of my favorites. Most of them have biographies if you're interested in reading more — you don't need made-up Indiana Jones stuff to get armchair adventure!

Early diggers

Historical records say that a sixth-century B.C. Babylonian king and princess were the first to dig up remains of their own society's glorious past, restore a by-then ancient Sumerian temple-pyramid, and display artifact finds in the palace. Later historians told tales and legends of the ancients, and people have probably always dug things up, especially to sell as souvenirs and treasures of the glorious past of someone somewhere.

But real archaeology is only traceable (so far) back to the Renaissance (14th through 17th centuries), when a passion for learning about the classical past developed. Wealthy folks traveled to ancient lands like Egypt and Mesopotamia and collected *antiquities* (old items, usually sculptures) dug out of ruins. Also, European antiquarians explored monuments (Roman buildings, Stonehenge, and so on) on their own lands. Antiquarian societies and collectors accumulated loads of items and began to establish museums to display them by the 18th century. Pompeii was accidentally discovered in the late 1500s, and digging was conducted in earnest as early as 1738.



Most of the knowledge of the past that people had until modern times came from historical writings or myth and legend until real science began to emerge in the Western world. The Bible told people what had happened in the past, and folktales supplied the rest. As early as the 1500s, northern Europeans who found Stone Age arrow points were calling them elf-shot or elf-arrows!

Nineteenth-century archaeology

By the early 1800s, naturalists and early scientists had accumulated a good body of artifacts and archaeological knowledge and were using it to interpret humanity's past in an orderly fashion. With historical models, they charted the progress of human society through time.

Early classification

Two important Danish guys played a major role in early classification efforts. Christian Thomsen organized the finds at the national museum and wanted to exhibit stages of human achievement (and also apparently figure out how to divide the stuff up into display cases). He picked a three-age sequence: stone, bronze, and iron. Jens Worsaae excavated sites and found that stone tools were indeed deepest and therefore oldest; bronze tools were on top of them, and iron artifacts on top of the bronze. Later, the Stone Age was subdivided into Old (Paleolithic) and New Stone Age (Neolithic); the deepest-oldest idea became known as the *law of superposition.*

These cultural classifications became popular all over Europe, and the terms are still used today — with the following big differences, however:

- A single age can fall under different calendar years in different places.
- Human "progress" and "stages of development" are misnomers because a single universal path of cultural development doesn't exist; different cultures change to become more or less complex through time in their own ways.
- Archaeologists recognize that these cultural classifications are biased and based purely on technology, as if that's the only important aspect of human development (ignoring art, literature, architecture, math, religion, and so on). On the other hand, technology *is* easier to see in the archaeological record!

Explorers, adventurers, and looters

Many fascinating early archaeologists sought adventure and intrigue in searching out the remains and exquisite artifacts of the ancient past. They didn't really "discover" various sites because local people always led them there. But the good archaeologists published the information and drawings and brought back antiquities for display. The more crass among them grabbed ancient treasures to sell for profit or display on their own estates. You've probably heard of some of these colorful people and their exploits:

- With Napoleon's 1798 invasion of Egypt came scientists and artists to document the remnants of ancient civilization. One find was the Rosetta Stone, with a second-century B.C. text in Greek and two Egyptian languages. French scholar Champollion used it to decipher ancient Egyptian writing systems.

- Giovanni Belzoni was a strong man in the circus before he became famous for his Egyptian tomb-robbing exploits from about 1817 to 1820. He blasted, dragged, and levered away monuments to capture giant statues, mummies, and other relics to display and garner fame.
- Travel writer John Lloyd Stephens and artist Frederick Catherwood studied and produced works on the wonderful pyramids and other monuments of the Maya civilization in Mexico and Central America in 1841 and 1843.
- Ephraim G. Squier and Edwin H. Davis surveyed burial mounds, earthworks, and temple platforms of the Mississippi and Ohio valleys (1848) and published their detailed descriptions for all to see.
- U.S. president Thomas Jefferson excavated a prehistoric Native American burial mound on his estate at Monticello, Virginia, with the intellectual goal of finding out scientific details (1788).
- Wealthy businessman Heinrich Schliemann thought Homer's classical story of the Trojan War was really true and went to find and excavate Troy in northwestern Turkey (1871). Then he dug another site from Homer's legends: Mycenae in southern Greece, which was possibly the citadel of King Agamemnon.

Late 19th and early 20th-century improvements

The goals of archaeological pursuits became more sophisticated and scientific by the late 19th century as investigators realized they needed systematic study to make sense of the wealth of finds. Here are some notable figures of this time in archaeology's history when more careful digging developed:

- **General Pitt Rivers** excavated on his country estate in southern England in the 1880s, opening Bronze-Age burial mounds, an Iron-Age fort, and a Roman military camp. He meticulously measured, drew, and even photographed his work and finds, laying the foundations for the modern archaeological method.
- **Sir Flinders Petrie** accurately surveyed Egyptian pyramids and excavated tombs, mummies, and cemeteries with precision. He devised a method to discern cultural chronologies by examining changes in artifact styles through time.
- **Sir Arthur Evans** excavated (and partially restored) the palace ruins at Knossos, on the Greek island of Crete, beginning in 1900. His discoveries brought to light the Minoan civilization (3000 to 1200 B.C.) that predated the Mycenaean state made famous by Heinrich Schliemann (discussed in the preceding section).
- **Cyrus Thomas,** head of the Smithsonian Institution's Division of Mound Exploration, collected information on thousands of mounds then being looted like crazy, especially in the U.S. Mississippi Valley. He had thought the mounds were built by a vanished people, but his findings changed his mind, and he reported in 1894 that the mounds were indeed made by ancestors of diverse Native American groups.

The early 20th century: Fabulous finds and academic advances

Sensational finds and colorful figures continued to make amazing discoveries in the early 20th century. Archaeologists did more orderly excavation, and synthesis of the results became more commonplace during that period.

Famous early figures

As you've probably realized, archaeology was a leisure-time pursuit for the wealthy, those with time to travel, and many British colonial-type holdovers investigating the pasts of various intriguing destinations during the early 1900s. Here are a few of these characters:

- **Howard Carter,** who had worked with Flinders Petrie in Egypt (see the preceding section), was funded by the Earl of Carnarvon to explore the Valley of the Kings. He discovered the spectacular tomb of King Tut, a relatively unimportant pharaoh whose burial place is notable because it *wasn't* looted like all the others, so it was full of glorious wealth.
- **Sir Leonard Woolley** dug in Syria in 1912, assisted by T.E. Lawrence (Lawrence of Arabia), with whom he also engaged in spy activities for the British government. After World War I, he excavated the famous Mesopotamian city of Ur in Iraq (see Chapter 14) and took 50 years to write a ten-volume report on all the everyday mud-brick houses and the royal graves full of gold, silver, and other riches.
- **Gertrude Bell,** an Arabic-speaking British travel writer and fascinating political figure in the Middle East, investigated Mesopotamian ruins and was also involved in British intelligence. She organized the Iraqi Department of Antiquities and Museum and was instrumental in the emergence of the modern country of Iraq.
- **Gertrude Caton-Thompson** worked in Egypt and then excavated at Great Zimbabwe in southern Africa in 1929. She said those ruins originated with indigenous African people, a view that the colonial government later outlawed until investigators eventually proved it to be true.
- **Sir Mortimer Wheeler** was a major British archaeologist by the 1920s. He followed and improved the exacting techniques pioneered by Pitt Rivers and dug sites of many kinds, from Roman towns to the famous Iron-Age hill fort Maiden Castle in southern England. Then he went to India and brought to light the ancient cities of the lost Indus Valley civilization in Pakistan. (See Chapter 14 for a discussion of these civilizations.) He was a dashing public figure and early television personality as well; many think he was one of the real-life models for Indiana Jones.

Archaeology gets more academic

Scholars realized that their major goal should now be to organize some of the vast amounts of information that digs were providing. V. Gordon Childe, an Australian who delved into archaeology across Europe, produced the first major syntheses of prehistory. He talked about the processes of change in the deep human past that led to the Agricultural Revolution and the Urban Revolution — in other words, food production and later the emergence of early states. His many works include *The Danube in Prehistory* (1929), *New Light on the Most Ancient East* (1934), and one of my very favorite archaeological titles, *Man Makes Himself* (1939).

In the early 20th century lots of fossil finds that show that early humans first appeared in Africa came to light. Most of this study wasn't archaeological but the subject of human paleontology or paleoanthropology. But the famous Louis Leakey did go to Olduvai Gorge in Tanzania to look for the earliest human evidence because he had seen crude-looking chipped stones there that he thought were early tools (and they were — see Chapter 12 for more).

During the Great Depression of the 1930s, U.S. president Franklin Roosevelt began programs to bring jobs to the country, including a great deal of archaeological work, especially in the poor region of the South. Hundreds of mounds and other sites were dug and thousands of bags of artifacts retrieved and piles of data accumulated. By then, academic institutions were beginning to train archaeologists who could supervise workers and then synthesize the findings for major regions. They used conveniently-named archaeological cultures (usually based on a pottery type or other characteristic artifact) and time periods (ditto) to organize the information and tell the story of the past, one time period after the next. This descriptive approach is called *culture history* (even when it concerns prehistory or the time before writing). Archaeologists still use this approach today, of course, but with much more than just simple description. I discuss it more in Chapter 11.



Early developments in explaining the past

Many 19th-century antiquarians studying relics of the past saw finds of stone tools with bones of extinct forms of animals, demonstrating the great antiquity of humans. They noticed that Native Americans were still making stone arrow points, easily comparable to chipped stone tools elsewhere in the world to see the work of the human hand. Geologist Sir Charles Lyell demonstrated the great age of the Earth and how its past processes were the same as the ones acting today (the principle of *uniformitarianism*). Charles Darwin used that knowledge to develop a systematic scientific theory of evolution, accounting for the development of all life forms (in his *On the Origins of Species* in 1859), later extending it to human development too.

New archaeology of the mid-20th century

After World War II, several intellectual currents came together to influence a mini-revolution in archaeology. The technologies developed in wartime combined with the growing desire to be more scientific. Some archaeologists were dissatisfied with simply describing what was found and where (producing culture history). They wanted to understand how past cultures functioned and answer questions about how human systems were organized. The movement they originated was called the New Archaeology. Here are some of its influences:

- New technologies like aerial photography and computers.
- Other scientific breakthroughs like radiocarbon dating.
- Growing concerns about civil rights, human rights, and the natural environment.
- Growing concerns about historic preservation and loss of archaeological sites to growth and development or new farming practices.

Late 20th-century archaeology

After New Archaeology had been around for a couple of decades, archaeologists decided they couldn't call it new anymore and started using the term *processual archaeology* because the method explores cultural processes. Most archaeology done today is processual archaeology, as I discuss at greater length in Chapter 11.

Of course, every action has a reaction, and the response to scientific archaeology in the 1980s was that it was too ethnocentric or biased in favor of the dominant culture (which it is) and ignored the human story and meaning of the past. This response was a more humanistic archaeological approach (clumsily) called *postprocessual archaeology;* I describe it more in Chapter 11. Postprocessual archaeology contributes a lot to modern practice and is valuable for making you understand how you know what you know about the archaeological record.

Modern 21st-century archaeology

Today you combine the description of culture history with the scientific approach and an awareness of biases you may have in your research. You must be acutely aware of the issues of heritage (whose ancestors are you digging up?), political uses of archaeology (to forward someone's land claims, for example), and conservation of the resource (or *historic preservation* — saving sites and monuments from destruction).

Many laws enacted in the late 20th century now protect archaeological remains all over the world's lands and seas. They also generate more archaeological investigation in the path of construction and development. Many new techniques and precise methods may mean you spend more time filling out forms and other paperwork (or computer work) than digging. But it's all worth it because you also have the glory of the discovery!

In the rest of Part I, you see how contemporary archaeology has become enormously professional, what it really studies, and all the many specialties that have blossomed. I also show you how archaeologists use scientific method to come to logical conclusions about the materials and data they discover.

Archaeology in the field

Fieldwork has always been the special tradition of archaeology, no matter what type you're doing. You go out there and find the lost traces of past peoples (archaeological survey) and dig them up (excavation), and, yes, possibly encounter adventure along the way. But you're also aware of far more ethical and safety considerations these days than were some of the historic figures I described earlier in this section, who barged into another country and hired local natives to dig huge trenches that sometimes collapsed on them!

Because you have so much more to think about and plan in doing modern archaeology, in Part II I describe all the steps in accomplishing fieldwork, from the research design and list of supplies and equipment to bring to the strategies for deciding where to dig and careful procedures for excavating in very small increments. I show you how to record everything you do and find so that you offset the destruction you cause by digging with the value of your new information about human behavior in the past.

Archaeology in the lab

The largest part of archaeological work is what you do after you excavate: process, analyze, and care for your finds and for all the information you've gleaned about the past. To get a handle on what is for some an overwhelming amount of labor and responsibility, Part III gives you a rundown of all the steps in laboratory work, from the time you bring in your bags of dirty artifacts to the preparation of your final report. I describe what a good archaeology lab should be and list many of the fancy ways you can analyze artifacts and draw out of them fascinating bits of information about their makers and users. You also see how to put all the bits together and use different theoretical orientations to tell the story of the past in different ways.

Archaeology's human story

Combining the accumulated knowledge of centuries of investigation, archaeology gives you the story of the entire human past on this planet. In Part IV, I relate this story for you, showing how the material finds and exciting sites indicate what people have been doing over the last couple of million years (and sometimes why!). New digs and new scientific methods incorporated into archaeology have brought alive astounding details about our prehistoric ancestors who moved around the landscape hunting Ice-Age big game, settled down after the Ice Age to grow crops, and invented true civilization in many places a few thousand years ago. These big steps in the human career changed society enormously and had serious consequences for us today. Even in historic times, when you have written records of what people were doing and thinking, archaeology — the material remains — shows a lot of what you didn't know before about your ancestors and yourself.

Archaeology in the public sphere

The greatest shift moving into the 21st century has been the awareness that all archaeology is public archaeology. The work is usually paid for by the public, and the findings are part of the whole human heritage. Archaeology has gone from being a fun hobby or rich man's pursuit to being a scientific method for understanding human nature over the long term.

You can walk in the footsteps of the renowned and sometimes infamous characters who pioneered excavation methods and unearthed sensational finds. But today you also realize that archaeological findings really matter. Not only are they important in the (smaller) world of professional archaeology and interpretation of human systems and activities, but they also have meaning in the wider world of humanity at large.

In order to show you archaeology's importance to the general public and why you care about it, Part V explains all the political and social connections of archaeology today, including relating past people to living descendants and preserving archaeological sites and antiquities from looting so that they're there for everyone. I note some of the latest controversies in the field and how you can have competing interpretations but also practical uses of the past. I also list many ways you yourself can participate in archaeology and get you ready for the experience. This book has thick layers rich with information, so dig in!