

**Patterns in Prehistory:
Humankind's First
Three Million Years,
Fifth Edition**

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TODAY

- A.D. 1500s — Spanish arrival in the Americas
- A.D. 1476 — Beginning of the Inka empire in South America
- A.D. 1150 — Beginning of the Aztec state in Mexico
- A.D. 1000 — Beginning of Hohokam, Ancestral Pueblo and Mogollon complex society in the North American Southwest
- A.D. 800 — Beginning of Mississippian complex society in the North American Southeast
- A.D. 600 — Initial date for colonization of Hawai'i
- A.D. 600 — Appearance of Wari and Tiwanaku states in South America
- A.D. 300 — Beginning of Classic Maya civilization in Mesoamerica
- A.D. 1 — Beginning of the Teotihuacán state in the Valley of Mexico and Moche civilization in South America
- 15 B.C. — Roman conquest of Europe
- 475 B.C. — Beginning of La Tène complex society in Europe
- 800 B.C. — Beginning of Halstatt complex society in Europe
- 1000 B.C. — Beginning of Mycenaean civilization in the Aegean
- 1300 B.C. — Appearance of Olmec complex society in Mesoamerica
- 1500 B.C. — Beginning of spread of Lapita Complex in the Pacific
- 1600 B.C. — Appearance of Shang civilization in China
- 2000 B.C. — Appearance of Minoan civilization in the Aegean
- 2000 B.C. — Origins of agriculture in Eastern North America
- 3100 B.C. — Beginning of Egyptian civilization
- 3200 B.C. — Beginning of Harappan civilization in the Indus Valley
- 3600 B.C. — Beginning of Mesopotamian civilization in the Middle East
- 5700 B.C. — Origins of agriculture in South America
- 6000 B.C. — Agriculture begins to spread into Europe from the Middle East

- 6500 B.C. — Origins of agriculture in Asia
- 7500 B.C. — Origins of agriculture in Africa
- 8000 B.C. — Origins of agriculture in Mesoamerica
- 8500 B.C. — Origins of agriculture in the Middle East
- 20–15,000 years ago — Beginning of colonization of the Americas by Paleoindians
- 32,000 years ago — Neandertals become extinct
- 40,000 years ago — Modern humans begin to colonize Europe; explosion of art and symbolism
- 60,000 years ago — Beginning of colonization of Australia by modern humans
- 100,000 years ago — Early modern humans begin to radiate out of Africa to the Middle East and Asia
- 160,000 years ago — Early modern humans (*Homo sapiens*) appear in Africa
- 230,000 years ago — Neandertals (*Homo neanderthalensis*) appear in Western Eurasia
- 1.7 million years ago — *Homo erectus* grade begins to migrate out of Africa to Eurasia
- 2.5 million years ago — Genus *Homo* appears in Africa
- 2.6 million years ago — First stone tools appear in Africa
- 3 million years ago — Beginning of radiation of Australopiths in Africa
- 5 million years ago — Australopith hominins appear in Africa

Prehistory, History, and Archaeology

History is philosophy teaching by examples.

Dionysius of Halicarnassus (c. 40 B.C.)

History is bunk.

Henry Ford

The archaeologist-adventurers of film and fiction never seem too concerned about what they are looking for or why they want it. “It” is usually something like a curse-protected pharaoh’s tomb treasures or the biblical Ark of the Covenant—something intrinsically interesting and protected by enough snakes, traps, or villains to require a romantic hero for its discovery.

In this prosaic age it will come as no surprise to the reader that contemporary archaeology differs considerably from these fictional versions, as this book will make clear. Yet, in a sense, archaeology is in fact a uniquely interesting science. And certainly its origins are in rather romantic bygone eras. In the early 1800s, for example, the Italian adventurer Giovanni Belzoni looted dozens of ancient Egyptian tombs in Thebes (near modern Luxor) and sold their riches in Europe. Belzoni crept and crawled through miles of tunnels in the stinking, dusty air of these crypts, smashing hundreds of mummies as he went:

[A]lthough, fortunately I am destitute of the sense of smelling, I could taste that the mummies were rather unpleasant to swallow. After the exertion of entering into such a place, through a passage of . . . perhaps six hundred yards, nearly overcome, I sought a resting place. . . . [B]ut when my weight bore on the body of an Egyptian, it crushed like a band-box. . . . I sank altogether among the broken mummies, with a crash of bones, rags, and wooden cases. . . . [E]very step I took I crushed a mummy. . . . I could not pass without putting my face in contact with that of some decayed Egyptian; but as the passage inclined downwards, my own weight helped me on: however, I could not avoid being covered with bones, legs, arms, and heads rolling from above. . . . The purpose of my researches was to rob the Egyptians of their papyri.¹

Even the more scholarly of the early archaeologists, if not so candidly larcenous as Belzoni, at least had a clear simple vision of what it was they were after and a rather romantic reason for their quest. In 1876, for example, the German Heinrich Schliemann, his imagination fired by his schoolboy readings of Homer (in the original Greek), ravaged the archaeological site of Hissarlik, in western Turkey, looking for the home of the heroes of the Trojan



FIGURE 1.1 In the eighteenth and nineteenth centuries, archaeology was often more like organized looting of antiquities than scientific research. Here, workmen at a site near Les Eyzies, France, destroy a Paleolithic site while looking for nicely fashioned stone tools.

War, as chronicled in *The Iliad*. Schliemann's notebooks show that he made careful records of his finds and that he even had a primitive sense of analytical methods of archaeological excavation. He was ecstatic when he found gold masks affixed to decayed bodies in a cemetery at Hissarlik and concluded that these were the Trojan warriors. When he died, many years later, he was still happily unaware that what he had thought were the remains of Troy were probably of an altogether different era, and that he may have hacked right through the settlement occupied during the presumed period of the Trojan War.

The archaeology of today is significantly different from that of these nineteenth-century practitioners. If a professional archaeologist today were to excavate, for example, the parts of Troy that Schliemann left, she or he would make a detailed map so that everything found could be located to exact three-dimensional coordinates. And the actual excavations would require many more years than Schliemann spent, so that technical specialists could analyze pottery, animal and plant remains, architecture, and every other kind of find.

The most profound difference between the archaeology of Belzoni's and Schliemann's times and that of the present, however, is in research *objectives*: Almost all early archaeologists were looking for specific *things* (Figure 1.1). They seem to have had little sense of the importance of their finds except as curious and valuable relics of bygone ages. Most contemporary archaeologists, on the other hand, try to look beyond the objects they find to seek a more profound understanding of the past—and of ourselves in relation to the past.

WHAT ARE ARCHAEOLOGISTS LOOKING FOR? (THE MEANING OF THE PAST)

Archaeology is about Facts; if you want the Truth, go next-door to the Philosophy Department!

Professor Indiana Jones (dialogue from the film *Indiana Jones*)²

Most archaeologists spend years gathering small bits of stone, bone, and pottery that would not arrest the attention of a museum-goer for more than a few seconds; they then spend much of the rest of their lives in Hamlet-like reflection, asking themselves an endless and largely unanswered series of questions, such as: “What does all this stuff mean?” “What do these things tell me about what happened in the past and why it happened?” “What is the point of investigating the past?” “What can I hope to know about the people who made these things?” “Are there causal factors that we can identify that explain the course and nature of human history?” “Does the past have any relevance for our own lives?” “What does the past *mean*?”

This concern with the meaning of the past is one of the most difficult concepts for the non-archaeologist to understand about contemporary professional archaeology—and for many people it shatters an illusion that archaeology is just the pleasant pursuit of interesting relics in exotic locales. Most non-archaeologists, unsurprisingly, would be much more interested in, for example, viewing the gold masks that Schliemann found at Troy than in listening to professional archaeologists debate the inferred socioeconomic and political organization of the first millennium B.C. town at Tepe Hissarlik, where these masks were found. And yet it is just such debates, not the gold masks, that involve the kinds of questions central to contemporary archaeology.

Yet no one can comprehend what contemporary archaeology—or this book—is all about until one understands this relentless search for not just the artifacts of the past, but the patterns and meaning of our past. Most archaeologists are not just trying to answer specific questions, such as what our hominin ancestors first used stone tools for, or why the Neandertals disappeared, or how the ancient Egyptians built pyramids. In every archaeological excavation or research project many specific questions such as these are at issue, but the context of this research often involves the more abstract goals of trying to understand the factors that have determined the course of human history and the nature of our cultures, and thus not only to see patterns in the past but also to understand why those patterns appeared—and to explain in some sense the great variability in the world’s long history of cultures.

It may seem odd that archaeologists even consider the possibility that something apparently so chaotic as human history may have some underlying pattern or meaning or explanation. How could a history that can be so radically affected by a single person like Adolph Hitler, or a blind yet potent natural process such as the end of the last Ice Age, ever be “explained” in general terms? But scholars throughout the ages have sought just such an explanation. The questions they have asked in this regard are many, difficult, and important for understanding ourselves and humanity: Is there some factor, for example, that explains why we seem to have evolved in the direction of ever greater brain size while our primate relatives, such as the chimpanzee, and all other animals seem to have retained relatively tiny brain-to-body size ratios? Why, after humans had lived for about two and a half million years as simple hunter-foragers, did some of our ancestors “suddenly” become farmers soon after about 10,000 years ago, and not just in the Old World but “independently” in the New World as well and at about the same time? Why were all ancient civilizations strictly organized in terms of social classes instead of according to the democratic ideals espoused by many philosophers over the millennia? Why does warfare seem to have been so common in history when there are such apparent advantages to cooperation and peace? Why did large cities appear in ancient civilizations in Mexico, China, Pakistan,

Mesopotamia, and elsewhere but not in aboriginal Australia, North America, England, or Hawaii? Does the archaeological record of the world indicate that human “races” differ in innate abilities and that cultures vary in their “accomplishments”? Do economic forces really “drive” history, as Karl Marx argued,³ so that we can understand forms of religions and governments merely as by-products of these basic economic dynamics, or do great ideas and powerful individuals *decide* the course of history? Does “the past” really exist in some analyzable form and sense, or is what we call the past just our evanescent and unanalyzable imaginings about something irretrievably lost? Does the past tell us anything of interest about where we are going, about our future, and do we have any control over our future, or are we just “leaves on the stream” of time and circumstance?

Libraries around the world are filled with books that represent several millennia of attempts to answer these and related questions. Many complex theories of history have been propounded, but none has been shown to be a complete and powerful explanation of the human past. Reasonable people might suspect that, if these questions about the meaning and explanation of the past have not yielded powerful answers in all these millennia of study, then perhaps we are asking the wrong questions or perhaps the questions we are asking have no real answers. This book, in fact, is largely an attempt to chronicle part of the world’s past and then review attempts to answer these many questions about the meaning of the past.

The very idea that we can aspire to understand and explain why history has turned out the way it has is one of the most hotly debated and complex issues in contemporary

archaeology. British archaeologists Michael Shanks and Christopher Tilley, for example, argue that the human past can never be analyzed in terms of an empirical science that “explains” history, in the sense of answering in a scientific fashion the kinds of questions just posed about *why* history has turned out the way it has.⁴ They argue first that the material remains of the past are just another “text,” and thus, like any novel, the past can be understood differently by different people and also that every “reader” of every text, including the archaeologist who reads the archaeological record, is so bound by his or her own cultural biases and forms that there can be no such thing as an objective or definitive understanding of the past (Figure 1.2).



FIGURE 1.2 This sixteenth-century engraving of Florida Indians exemplifies ethnocentrism, or interpreting other cultures in one’s own terms. The four women on the right are highly reminiscent of Italian Renaissance renderings of Venus and the Three Muses. Many European scholars of the last three centuries were ethnocentric in their analyses of ancient non-European cultures—most of which they assumed had incompletely evolved to the high level of European civilization.

Other scholars argue that the past can be analyzed scientifically and that with the future development of powerful theories, archaeology can be as much a science as geology, paleontology, or biology.⁵

Although we frequently shall return to these issues in this book, one thing seems clear—the primary problem in answering questions about the meaning of the past is not a lack of evidence. All over the world, museum shelves groan under the weight of ceramic pots, stone tools, and the broken skulls of our ancestors. Archaeologists have excavated everything from the first known human camps of two and a half million years ago to early twentieth-century Manhattan. And every year, archaeologists in the thousands spread out across the globe to excavate more remains of the past, and they then provide the results of their research to their colleagues and the world in the form of hundreds of thousands of books, articles, and lectures.

In the rest of this book, we will review thousands of these studies, but before wading into this sea of facts and figures, the reader should join archaeologists in musing on the point of all this sifting through the garbage of the past. These are complex issues, and to begin to analyze them it is necessary to consider the basic logical structure of archaeology as it traditionally has been practiced and some examples of archaeological analyses.

ARCHAEOLOGY AS THE RECONSTRUCTION OF EXTINCT CULTURES AND THEIR HISTORIES

The past is another country. They do things differently there.

L. P. Hartley⁶

Whether one views the past and the world's archaeological record as the product of a meaningless jumble of accidental events and concatenations of unrelated human decisions or as an explainable, even predictable developmental pattern, most scholars begin to try to understand the past by trying to reconstruct and describe it.

Reconstructions of the past are usually based on the principle known to the Romans as *ex ungue leonem*, literally, “from the claw, the lion,” or the notion that from a part we can know the whole through the processes of analogy and inference. If one looks closely, for example, at the dinosaurs on display in various museums one can see that some of them comprise a very small amount of fossilized bone and a very much greater amount of plastic that has been inserted hopefully in place of the missing parts. And as scholars find new fossils, it is quite common, even today after centuries of research, for them to change the dinosaur reconstructions on exhibits to reflect new ideas about the arrangements of bones.

When we look at attempts to reconstruct entire cultures, not just bones, the principles are the same as in dinosaur reconstructions: We use the preserved parts to infer missing elements, based on our knowledge and speculations. In some situations the inferences one must make seem so obviously accurate and the evidence available seems so comprehensive that our interpretations seem particularly compelling. Archaeologists, for example, have carefully studied the remains found in the tomb of Egypt's Tutankhamun (Figures 1.3 and 1.4), and through a process of scientific analysis and inference we seemingly can know a lot



FIGURE 1.3 The contents of Tutankhamun's tomb provided a vivid picture of many aspects of ancient Egyptian life.

about this pharaoh and his culture. Studies of his teeth,⁷ for example, indicate his genetic relationship to his relatives, some of whose mummified bodies have also been found; analyses of the food and wine with which his tomb was supplied appear to reflect both what he ate in this life and apparently hoped to eat in the next; analyses of the chariots, furniture, and jewelry reflect the arts and crafts of his age; and studies of the inscriptions on his tomb's walls and in contemporary documents offer descriptions of his religious beliefs and life-history.

What makes reconstructions such as that of Tutankhamun's life and times so vivid is not just the impressive preservation of objects; rather, it is that by analogy with our own lives we seem to understand so much about him. Most people of our own era, for example, still commit their dead to the earth with religious invocations offered in hope of some future resurrection. Even the thoughtful selection, in Tut's tomb, of dry and sweet wines from an impressive diversity of vineyards and vintages, all carefully labeled by estate, year, and chief vintner, seems so utterly human and part of the same fabric as our own lives.⁸

Reconstructions such as these, by means of analogy and inference based on our own lives and knowledge of history, offer satisfying accounts of the past in terms of our own experiences, and for many people they constitute all or most of what we can hope to learn about the past. We think we "know" Tutankhamun in a very real and personal sense. And for many people the "pleasures of ruins" they experience when they read about these reconstructions and interpretations require no great theoretical justification. Dull, indeed, would be the person insensitive to such pleasures. We do not know, and can never know, what really went on in Tutankhamun's mind, but by considering his tomb contents most of us think we can know a lot about his diet, the technology of his times, his place in the royal bureaucracy, and so on.

But are our analyses necessarily limited to these speculative reconstructions of Tutankhamun's life and times, or can we go further in attempting to understand Tutankhamun? We might, for example, consider him to have been just one example of the class-based state societies that existed all over the ancient world. Rich ancient tombs like Tutankhamun's have been found in

China, Peru, Mexico, Iraq, and many other places. Thus Tutankhamun is part of a historical pattern in which all of the more complex "civilizations" of antiquity and today have been and continue to be organized on the basis of wealth and social classes. And thus, Tutankhamun brings us back to the most basic and important questions of historical analysis, such as: Why did these societies, Old and New World alike, all—largely independently—evolve social systems based on inherited privilege and wealth, in which the great mass of humanity labored mainly for the benefit of a small elite class?

By asking these grand questions about the past we need not sacrifice the pleasures and rewards of simply trying to reconstruct past times and cultures and their peoples' lives—people for whom we can feel a great deal of kinship and even sympathy. But even reconstructions of cultures that we know a great deal about raise important questions about archaeological inferences and about the "point" of such reconstructions. On about August 24, A.D. 79, for example, a group of people in an Italian coastal town concluded a funeral

service for a friend by sitting down to a banquet. We can only wonder about what was said at the meal, but we know what food they ate, how they were dressed, and where they sat, because this town was Pompeii, and at some point in the banquet, poison gases from the eruption of the volcano of Vesuvius killed them all. They and their fellow citizens, and their neighbors in Herculaneum, were preserved in the midst of their daily activities (Figure 1.5). A half-cooked suckling pig, bread, and other foods were found in ovens; money was left near half-eaten meals in restaurants; wax tablets and papyri lay on library tables; bodies of townspeople were found curled over the children they were trying to protect; and in one case a woman's skeleton was found scattered over the floor of a room filled with volcanic ash, near the intact skeleton of a dog chained to a stake—suggesting that the dog slowly starved and eventually ate the body of its mistress.⁹

Written language aids greatly in “fleshing out” cultural reconstructions. Herculaneum's daily life was described in great detail in surviving documents; we even have graffiti on brothel walls describing the charms of particular prostitutes and other opinions common to such venues. In fact, Pompeii's and Herculaneum's destruction was recorded by people who took boats out to sea to watch it.

Whether an archaeologist is trying to reconstruct Pompeii or a two-million-year-old camp of early hominins in Africa, the intention is the same: Just as an ethnographer describes the daily life of the people he or she lives with and is studying, an archaeologist, substituting analogy and inference for direct observation, uses ancient objects to reconstruct as much as possible about the diet, technology, residences, burial practices, and beliefs—in short, the lifeways and cultures—of ancient peoples.



FIGURE 1.4 The entrance to the “Treasury” of Pharaoh Tutankhamun's tomb. The cloaked statue is a representation of Anubis, Lord of the West.



FIGURE 1.5 The eruption of Mount Vesuvius preserved Pompeii at a single moment in time. This is a rare occurrence that stands in contrast to how most archaeological sites are formed.

Compared to the riot of full life evident to the ethnographer, even analyses of towns like Pompeii may seem a pale and cold investigation into the dry stalks and stems of dead cultures. But the last several decades have seen major advances in the techniques of cultural reconstructionism (reviewed in chapter 2). An impressive array of electron microscopes, satellite imagery, chemical analyses, elaborate mathematical models, sophisticated computers, and other techniques are available to help the archaeologist make ever more persuasive inferences about the past.

But despite these many improvements, cultural reconstructions often include a large

measure of speculation, particularly when dealing with extremely ancient societies, whose artifacts and lifeways may have no historical analogs and thus may require even more than the liberal amounts of imagination that inferences about more recent societies involve. And the possibilities for cultural reconstructions are essentially infinite: One can always excavate another site and fill in one more tiny bit of knowledge. Once the thrill of discovery has worn off, most archaeologists begin to wonder just how important it is to know, for example, whether this or that group ate more salmon than reindeer, or vice versa.

And of course there is really no way ever to confirm—to be certain—about one's reconstructions. The reconstruction of the dog at Herculaneum eating the body of his mistress may seem compelling, but one can imagine alternative interpretations; and reconstructions of less well-preserved and earlier sites are much less persuasive than those concocted about the living dead of Pompeii and Herculaneum. In short, one can make up extremely convincing stories about what happened at some ancient place, or what some ancient artifacts were used for, but we'll never be able to confirm such inferences conclusively—at least not in the way an astronomer's understanding of celestial mechanics is confirmed by the exact prediction of eclipses.

In this same context consider, for example, the remains of crocodiles we (Wenke) found while excavating in Egypt in 1981.¹⁰ We discovered that one area that had been a few hundred meters from the shoreline of a lake in the late fifth millennium B.C. contained many crocodile bones but no crocodile skulls or teeth. Evidence indicated that this area was probably the site of a temporary camp, occupied in spring and fall, where people came to fish and hunt migratory birds. One evening, after a long day's field work, and inspired by one, perhaps two, "Stella" beers, we evolved the plausible notion that the ancient Egyptians were hunting these crocodiles for some unspeakable culinary purpose and, to aid in

transporting the “edible” parts of their kills back to camp, they gutted the animals, cut off their heads and discarded them to rot on the shore, and then brought the rest of the carcass back to the site. Therefore, we conjectured, we had found no head bones in our excavations, just cut-up body bones.

Now, we could go back and “test” this hypothesis by excavating other sites to see if the same pattern is found elsewhere on the lake shore, or by checking the crocodile body bones carefully for cut marks, or in any number of other plausible ways. We could also generalize this specific idea and test some hypotheses about general cultural processes, such as the notion that hunters and gatherers tended to transport the shortest distance those animal parts with the least meat on them. Or we could generalize still further and test the notion that people tend to avoid work as much as possible.

A crucial problem with cultural reconstructions such as these is *equifinality*: One can imagine many different alternative explanations for our finding few crocodile head parts at this site, and very different factors and combinations of factors could produce extremely similar archaeological records; and in the end all that one could do is show that one hypothesis is more probable than the others. And such hypotheses would really only be particularly interesting in the context of some theory about ancient cultures—some set of generalized principles about the factors that determine the course of cultures in general, including our rag-tag bunch of ancient Egyptian crocodile hunters.

Thus, archaeological reconstructions of ancient cultures are probably as close to that staple of science fiction, “time travel,” as humans are likely to achieve, and it is the powerful impulse to travel in time, at least cerebrally, that motivates many archaeologists. An archaeologist, given *one and only one* such time-travel opportunity, would probably have a difficult time choosing among so many interesting times and places. One could go, for example, to Africa’s Olduvai Gorge about 1.7 million years ago to see how our early hominin ancestors made a living (a problem to which much of chapter 3 is devoted); or to France at about 50,000 years ago to document the relationship of Neandertals and our more direct human ancestors (see chapter 4); or to Egypt to determine once and for all how the pyramids were built (chapter 9); or to Pakistan’s Indus Valley 4,000 years ago to learn what is contained in the thousands of Harappan written documents—one of the world’s undeciphered scripts (chapter 10); or perhaps to London of the later nineteenth century, just to share a pitcher of beer with Charles Darwin or Karl Marx or another of the founding fathers of modern historical sciences.

But the important point here is that even if one could go back in time and study an extinct culture as its people lived it, one is still faced with the limits of cultural reconstruction and left with great questions of *why*—why was that culture of that form, and how did it evolve from previous human adaptations?

Time, Causality, and Culture History

Very few things happen at the right time and the rest do not happen at all. The conscientious historian will correct these defects.

Attributed to Mark Twain, Herodotus, and others

Attempts to reconstruct the past may be “static” in the sense that in studying the long-dead citizens of Pompeii we may be interested only in how they lived on the day they were all killed.

But most attempts to analyze the past involve some sense of *sequence*, usually in the form of cultural changes over time. Reconstructing ancient cultures and putting them into chronological sequences are usually complementary parts of any archaeological research project.

The sense of time as infinitely stretching behind and ahead of us, as we ourselves flow along the stream of time, is very ancient. An accurate recognition of the awesome time-scale of the past, however, is relatively recent. Today nearly every educated person knows and accepts that our human ancestry extends back millions of years and that our civilizations have slowly evolved over thousands of years. But this sense of our place in time is really quite new. The recognition—or at least the widespread acceptance—of the idea that we, and our world, have been here for millions of years is only about a century old. Until the nineteenth century, most Western people accepted the biblical implication that the world was about 6,000 years old and that almost from the very beginning our ancestors had lived in towns, engaged in agriculture, and organized themselves in great states and empires. But nineteenth-century excavations deep below the ground levels of many European cities revealed the bones of animals long extinct, such as mammoths and cave bears—and amidst many of these bones were stone tools. By the early twentieth century the great antiquity of humankind was evident, and today almost all knowledgeable scientists accept that our earliest hominin, tool-using ancestors lived about two and a half million years ago.

This idea of reconstructing the histories of cultures works well when one is dealing with, say, the Roman Empire, where there are written records and the evidence of thousands of cities. But how do you write culture histories of prehistoric people who left no written records and of whom we have little more than the occasional skeleton and crude flint tools?

The main method of culture history is to make large collections of artifacts (the stone tools, pots, and everything else made or deposited by people) from each site (their houses, graves, or workplaces) and then make a lot of brave inferences about the cultural relationships among the people who made these pots, stone tools, or whatever.

Much culture history has been done on simple comparisons of artifacts. My associates and I (Wenke), for example, once walked the plains of southwestern Iran for five months, collecting bags of broken pottery from the thousands of ancient villages and towns to be found there. Most of these old settlements are now just mounds of decomposed mud bricks and garbage and are littered with thousands of scraps of broken pottery and stone. Through various dating methods (chapter 2), we knew the styles of pottery that were in use in different ancient periods in this part of the world. To the experienced analyst, for example, a fragment of a Sasanian (c. A.D. 225–640) clay pot is utterly different from a Late Uruk (c. 3200 B.C.) ceramic fragment (though both are impressively ugly). Each day we counted up the numbers of different types of pottery styles collected from each site. Sites that had very similar kinds of pottery were assumed to have been occupied at about the same time and to have interacted socially or economically; those with markedly different pottery styles were assumed to have been occupied at different times. On this basis, settlement maps for several successive periods of occupation in this area were inferred and a 3,000-year culture history reconstructed, complete with estimates of changes in population density, irrigation systems, possible wars, probable economic collapses—in other words, a rich, even emotionally moving, history of people known almost exclusively from 4,134 bags of pottery bits.

Such culture history “works” in the sense that through using these methods, we now know roughly what kinds of cultures inhabited most of the world during most of the past.

When we are dealing with the relatively slow change of styles in early stone tools, however, even with the help of modern chemical dating techniques we usually can form only rough categorizations of time into periods hundreds of thousands of years long.

It is unfortunate but probably inescapable that culture histories were often done in such a way that all the world's cultures were arranged like a giant ladder, leading to the pinnacle of Western societies. Because American and western European cultures of the nineteenth and early twentieth centuries were technologically the most "advanced," the archaeological record has often been viewed in terms of the way in which modern Western humans evolved from the first culture-bearing animals. Thus, cultural historical "explanations" of, for example, the appearance of agriculture and urban communities have tended to assume that these developments were the "natural" and inevitable products of prehistoric peoples who, like many Westerners, were constantly trying to improve their standard of living, and did so through technological development.

Such reconstructions of culture histories are prone to many problems. No histories, for example, are purely descriptive or entirely atheoretical. There cannot be an absolutely neutral and value-free history, particularly an archaeological "history," where interpretations frequently soar far beyond the evidence.

ARCHAEOLOGY AS A BODY OF THEORIES AND METHODS FOR EXPLAINING THE PAST

I shall certainly admit a system as empirical and scientific only if it is capable of being tested by experience. These considerations suggest that not the verifiability but the falsifiability of a system is to be taken as a criterion of demarcation. . . . It must be possible for an empirical scientific system to be refuted by experience.

Karl Popper¹¹

Simply arranging archaeological sites in time and making inferences about the extinct societies that created them does not "explain" the past. But *can* we explain the past? What would we be trying to explain, and how? Take, for example, something as apparently simple as the origins of agriculture—a topic discussed in detail in chapter 6. After two and a half million years as hunter-foragers, about 10,000 years ago our ancestors began to domesticate plants and cultivate them. Farming did not appear in one place and then spread to the rest of the world; it developed in many different places at about the same time, in both the Old World and the New, and involved thousands of species, from yaks to cats, leeks to beets. Surely, one would think, with patient archaeological research one should be able to find the *causes* of agricultural origins—perhaps a combination of, for example, increasing human population densities, climate changes after the end of the last Ice Age, and improvements in technology. Evidence of such changes might be sought to show that they caused agriculture to occur—that they explain in effect why agriculture appeared in Southwest Asia about 10,000 years ago, and not 20,000 or 5,000 years ago, and why it was practiced

first in Southwest Asia, and only much later in southwestern North America. And if we could explain agricultural origins in this fashion, it seems plausible that we might formulate similar explanations for the origins of writing, cities, warfare, state religions, and so on. And having constructed such explanations, one would think, we might be able to bring them together in a set of general propositions about people and history.

For centuries some scholars have worked on the premise that we can do more than just describe the past: We can understand it in terms of general principles—general principles to be formulated by some future Darwin of the historical sciences. After all, unlike ethnographers, who are limited to the study of societies as they exist today or existed in the recent past, archaeologists can study change over the long term, over the three million years of our history. It is this great time depth that is the primary resource and database of archaeology, for if it is ever possible to see the patterns in human history, and to define the determinants, it will likely require that we study the whole sweep of the human past in all its variety. When asked in the 1960s for his opinion about the overall historical impact of the French Revolution (almost 200 years earlier), Mao Zedong is reported to have said, “It’s too early to tell.” We expect major cultural dynamics to be long term. But we now have a vast and detailed knowledge about millions of years of the human past, and surely, one might assume, some major changes should be explainable.

In fact, however, as we will see in detail, there is nothing simple, nothing obvious about such attempts to explain the past. Archaeology is currently in the midst of a great identity crisis concerning such issues as whether or not we will ever be able to explain the past in these terms, and what “explanation” is. Physicist Steven Wolfram, for example, has recently argued that there are no simple cause-and-effect explanations of such phenomena as ancient civilizations.¹² Instead, he argues, complex systems that have a determinable time-span and an evolutionary trajectory can best be understood as algorithms. Many archaeologists have lost interest in older ideas of “explanation” and have focused instead on how we should *interpret* the past. These ideas will be considered at length throughout this book, but they are best understood in the context of their history.

A SHORT HISTORY OF ATTEMPTS TO UNDERSTAND THE PAST

It’s about love, death, torture, infinity. It’s a comedy.

Woody Allen

A hundred thousand lemmings can’t be wrong.

Anonymous

The reader anxious to get to the blood, sex, and pyramids of prehistory may at this point recoil from a plunge into the philosophy of science and history, but it is simply impossible to understand what contemporary archaeologists are doing and why without a brief excursion into Western intellectual history. What contemporary archaeologists think about world history and how they go about interpreting it are inextricably linked to

epistemological (i.e., studies of how we know and the nature and limits of our knowledge) traditions many centuries old. And beyond the relevance of these ideas to archaeology, the student will find that the ideas reviewed in this section permeate all of the humanities and social sciences in Western intellectual traditions.

The world's literature is littered with attempts to understand our place in the cosmos and make sense of our past. Ancient Near Eastern literature, especially as reflected in the comparatively late and derivative form of the Old Testament, envisioned a static, created world in which great changes came about through divine intercession, and where the ultimate explanation of events was in terms of God's will—which we see “as in a glass, darkly.” For the devout Christian, Muslim, and many others as well, even if we could see the divine design of history more clearly, we would see that it is predestined, beyond the realm of human initiative. If one truly believes that the course of the world's events and history is an unintelligible expression of Divine Will, then history becomes simple post hoc description, not analysis—for analysis implies the search for knowable, testable causes.

As far as we know, the ancient Greeks were the first people to think profoundly (or perhaps they were simply the first to record their thoughts) about the problem of cause and effect in a supposedly divinely directed world. “We are all Greeks,” it has been said, because so much of modern Western thought is ultimately traceable to ancient Greece. Some scholars feel that the Greeks were more deeply in debt to other cultures than we commonly suppose,¹³ but in many ways it seems as if the Greeks simply thought about the world differently from their predecessors. Herodotus, for example, was the first, as far as we know, to travel widely and compile extensive descriptions of the people, cultures, and places of his world in a way that was *analytical*. In the fifth century B.C., for example, Herodotus visited Egypt and became intrigued by the question of why the Nile flooded each and every spring. He asked Egyptian scholars everywhere he went and found that the Nile rose and fell according to the will of the gods. Herodotus then proceeded to analyze several reasonable alternative possibilities—all of them wrong—but all expressed mainly in terms of wind, rain, sun, and oceanic patterns, in other words, in terms of natural causes. In short, Herodotus analyzed, he did not just ascribe the Nile's flood to the inscrutable will of the gods. Similarly, in his late fourth-century B.C. history of the Peloponnesian War, Thucydides tried to explain how the struggle began. He described the personalities involved, the strategies of the warring powers, and the economic realities of the time. In short, by arranging the events and circumstances preceding the war in what he thought was a causal chain, he did what any modern historian would do in trying to explain the events of the past. Archaeologically based culture histories are founded precisely on this logic. Egyptians, Sumerians, and many others recorded aspects of their histories, but their surviving records do not treat the world or history in the same analytical fashion that the Greeks did. It is a mark of how culturally Greek most of us are that what Thucydides did seems so normal and natural to us as hardly to deserve comment. But in truth this sort of real-world explanation of the course of history seems to have been widely used first by the Greeks and became common in many other cultures only recently.¹⁴

Another central tenet of modern archaeology with Greek roots is evolution. Evolutionary theory was first clearly stated by Charles Darwin, and the ancient Greeks had only a vague sense of this idea. But already by the fifth century B.C. the Athenian scholar Empedocles had formulated a version of the principle of natural selection. And other Greek scholars developed rudimentary sciences of geomorphology and biology that contained



FIGURE 1.6 The ancient Greek view of the world was that it reflected the “perfection” of the gods in its symmetry and wholeness—attributes reflected in their art, as in this bronze figure from a Greek shipwreck of about 460 B.C.

glimpses of the fact that the world is very ancient and that plants and animals have changed over time.

These ideas of evolution and scientific analysis, however, were in some contrast to a concept much more central to the ancient Greek view of the world, the notion of the *Great Chain of Being*, or the *Scala Naturae*, which is founded on Greek ideas about the nature of God and “perfection.” Greek philosophers found it inconceivable that the world they knew could have arisen by chance, because there seemed to be such a precise design in its every part. The intricate interdependence among plants and animals, the regularity of the seasons—the whole natural world—exhibited to them proof of the existence of a Supreme Intelligence; they therefore defined God as the perfect being who created and controls the world. The Greeks’ conception of perfection, however, had a somewhat different connotation than it does for us, for they understood it to be in essence wholeness, or completeness (a concept vividly evident, for example, in classical Greek statues) (Figure 1.6).

Aristotle, in particular, formulated the idea of the world as a Great Chain of Being, perfect in its completeness (Figure 1.7). He concluded that the natural world was rationally ordered according to what he charmingly called “powers of soul,” representing different levels within the perfectly whole universe. Thus, a horse is higher than a sunflower because a horse can think, after a fashion, and a man is higher than a

horse because he can reason and apprehend God. Early European scholars were greatly influenced by the concept of the Great Chain of Being. They thought it impossible that there should be “missing links” in the chain or that any parts of the chain should cease to exist. God, being perfect, could not create an imperfect, that is, incomplete, universe; nor could His sustaining powers allow a whole level of this perfection to vanish. This notion was still at the very core of European culture when the English poet Alexander Pope (A.D. 1688–1744) wrote:

Vast chain of being! which from God began
Natures aethereal, human, angel, man,
Beast, bird, fish, insect, what no eye can see,
No glass can reach; from Infinite to thee,
From thee to nothing.—On superior pow’rs
Were we to press, inferior might on ours;
Or in the full creation leave a void,
Where, one step broken, the great scale’s destroy’d—
From Nature’s chain whatever link you strike,
Tenth, or ten thousandth, breaks the chain alike.

The idea of this Great Chain of Being pervades Western literature and science and continues well into our own time. It remains, for example, a major element in arguments by those who lead the repeated crusades to have the biblical story of Creation installed in American

elementary education as a worthy alternative to evolution.

The concept of the Great Chain of Being, however, is impossible to reconcile with evolutionary theories and the discoveries of modern archaeology. And it is not simply a matter of the great antiquity of the human past, which has been revealed in the past century. For if God had created and sustained every bacterium, every sparrow, every Neandertal, how could it have happened that thousands of species had come into existence, flourished, only eventually to vanish? How could humans possibly have evolved from lower primate species and lived for millions of years as “subhuman” races now long since extinct?

It is easy to understand the attractiveness of the idea of the Great Chain. It placed humanity, the masterwork of the Creator, “but little lower than the angels.” Furthermore, it “explained” why we are here and why the world seems so marvelously and intricately integrated and designed: God designed the world in every detail for His purposes and placed humankind in a position of stewardship over His creation. Yet in many ways, the last 200 years of Western philosophy have been a long struggle to come to terms with a gradual and profound loss of faith in the validity of the notion of the Great Chain of Being as evidence for the *Argument from Design*, as it came to be known in Western thought. This Argument from Design is the conviction that the intricacies and perfections of the world *prove* that humanity and history are under divine control—that such a perfectly ordered and operating universe necessarily implies the existence of a creator and sustainer. This conclusion still has great power in the world, in both the Christian West and the Islamic East, for example, but it has been under assault for centuries.

The Enlightenment

Not until the “Enlightenment” of the seventeenth and eighteenth centuries were the intellectual foundations of modern archaeology securely established. Then, primarily in the eighteenth and nineteenth centuries, the *scientific method* was combined with *determinism*, *materialism*, and *evolutionism* to try to explain the world and history.

There can be no absolute definition of the scientific method, for rather than a method it is a state of mind along with a few assumptions. The key ideas are that most, if not all, things and events can be understood in terms of identifiable, measurable, physical forces,



FIGURE 1.7 The Great Chain of Being placed humanity just lower than angels in a static view of the relationship between all living species.

and that the best way to identify and measure these forces is to conceive ideas and then expose them to rejection through scientific experimentation or data analysis.

Although this sounds to most people like nothing more than common sense, history shows that it is a rather late and rare perception of the world. For most ancients and for many moderns, the world swarms with phenomena and forces that can never be understood by science; to them, in fact, precisely those aspects of human existence that cannot be scientifically understood or explained, such as why we are here and the nature and destination of the human soul, are the most important.

But, building on Greek ideas, seventeenth- and eighteenth-century scholars observed natural, social, and historical phenomena, devised hypotheses about their causes, and then tested these ideas by dropping balls from the tops of buildings (Galileo), flying kites in lightning storms (Franklin), and so on. What was scientifically essential in these analyses was that the ideas be exposed to falsification or contradiction by some sort of experimentation or alternative interpretation, that, above all, the explanation of something be considered not absolute, eternal truth, but just the best current hypothesis, subject to correction in the light of new research.

The materialist and determinist elements in this kind of science were the assumptions that the phenomena of this world—including historical and cultural phenomena—had some ultimate causation, that is, were in some way determined by knowable, measurable, material factors such as population growth, genetic mutation, infections, or gravity. If one accepted this view of the world, then one should look for explanations in the causal relationships and processes governing the attributes of phenomena, not in human decisions or divine agency. The evolutionary component was the notion that over time there had been and would continue to be an increase in complexity in the biological, historical, and political world—an ancient notion.

There is no necessary conflict between these ideas of Western science and religion. Few of the scholars of the Enlightenment were avowed atheists. Benjamin Franklin did important scientific research in the eighteenth century, but he was largely serious when he said that “wine is a continuing proof that God loves us very much and wants us to be happy.” Thomas Jefferson, one of the most versatile intellects of the eighteenth and early nineteenth centuries, believed in God—as did many of his contemporaries—as a kind of a Great Clock-Maker, who set the universe in motion but does not often intrude upon its operation. Jefferson in fact “scientifically” edited the Bible to what he considered its essential and useful message, deleting everything he considered mythical and obscure, and produced *The Jefferson Bible*, a pamphlet of about forty-eight pages.

The Enlightenment scholars made brilliant advances in determining the physical mechanics of the universe and they avidly looked for the mechanics of human history, but most found no conflict between their science and their belief that God created these mechanics and set them into operation.

The Enlightenment was more than the crucible of modern science; it was in many ways the period in which the social perspective of the West first formed, particularly with regard to the notion of progress and conceptions of material culture. By the end of the eighteenth century, science had shown that the natural world was understandable in terms of the elegant (i.e., comprehensive yet reduced to the simplest possible terms) ideas of mathematics and physics. One result was that scholars everywhere began to apply the scientific method to the understanding of human history and the problem of cultural origins. For example,

the Marquis de Condorcet (1743–1794), a French philosopher, proposed a series of universal laws he thought governed the history of human social organizations, and he went so far as to use his analysis to try to predict the future of the world.

Such direct applications of the physical science model to history might seem strange, but one must understand the eighteenth-century mind. “Common sense” tells us that history and culture are far too complex to explain in terms of simple mathematical laws, but common sense also tells us that we walk about on a flat earth, around which revolves the sun. The scholars of the Enlightenment had only recently been shown how treacherous common sense was and how the mysteries of the universe were being reduced to the commonplaces of science. Meanwhile, all around them great advances in the biological and historical sciences were being made.

In France, Georges Cuvier (1769–1832) undertook an extensive analysis of fossilized bones and concluded that hundreds of animal species had become extinct and that there seemed to be an evolutionary trajectory to the biological world. The French naturalist Jean Lamarck (1744–1829) published various arguments that the world was much older than the 6,000 years described in the Bible, and he arranged the biological world in a sequence, from human beings to the smallest invertebrates, in a way similar to later evolutionary schemes.

Scientific archaeology based on evolutionary and materialist assumptions was also emerging in the late eighteenth century, when P. F. Suhm published in 1776 a *History of Denmark, Norway, and Holstein*, based on the recognition that in many parts of Europe ancient people first made tools of stone, then of bronze, and finally of iron. This Three-Age System was first clearly stated and then developed by the Danish archaeologist Christian Thomsen in 1836 and by J. Worsae (1821–1885).¹⁵ But its origins are much earlier. Lucretius (c. 98–55 B.C.), the great Roman scholar, wrote that “The earliest weapons were the hands, nails, and teeth; then came stones, and clubs. These were followed by iron and bronze, but bronze came first, the use of iron not being known until later.” And as K. C. Chang has noted,¹⁶ a near-contemporary of Lucretius, the Chinese scholar Yuan K’ang, stated essentially the same idea.¹⁷

Nineteenth-Century Evolutionism, Materialism, and Determinism

Excavations for the London Underground Railroad in the mid-1800s produced many curious finds, among them the bones of animals that sorely troubled the scientists of the time. Great elephant-like animals, standing 13 feet high at the shoulder, had left their skeletons amidst those of gigantic cave bears and many other animals that no longer lived in Britain—or anywhere else in the world. “Animals dead before the Noachian deluge,” some concluded. But others sought scientific explanations. In England in the 1830s, William “Strata” Smith and Charles Lyell, among others, attempted to show that the earth was formed through the action of slow geological processes—processes still in effect. Lyell’s contributions were particularly important because the dawning realization of the earth’s great age had led some scientists and clergy to a belief in a series of “catastrophes,” the last of which was Noah’s Flood. Adherents of this position saw the fossil animal bones deep in the earth’s strata as evidence that God had “destroyed” the world at various times with floods.

In 1848 John Stuart Mill published an evolutionary analysis of history that postulated a sequence of six stages: (1) hunting, (2) pastoralism, (3) Asiatic (by which he meant the great irrigation civilizations of China and the Middle East), (4) Greco-Roman, (5) feudal, and (6) capitalist. He complemented this classification with an extensive analysis of the economic factors determining these stages.

At about the same time Mill was writing, another Englishman, Herbert Spencer, applied the concepts of “natural selection” to human societies some years before Darwin applied them to the biological world, though his constructs were quite different from those eventually arising out of Darwinian thought.

Spencer was much influenced by Thomas Malthus, who in 1798 had noted that human societies—and indeed all biological species—tended to reproduce in numbers far faster than they increased the available food supply. For human groups, he postulated, this meant a life of struggle in which many were on the edge of starvation and more “primitive” societies lost out in the struggle for survival to the more “advanced” cultures. Spencer believed that eventually natural selection would produce a perfect society:

Progress therefore, is not an accident, but a necessity. Instead of civilization being artifact, it is part of nature; all of a piece with the development of the embryo or the unfolding of a flower. The modifications mankind have undergone, and are still undergoing, result from a law underlying the whole organic creation; and provided the human race continues, and the constitution of things remains the same, those modifications must end in completeness. . . . So surely must the things we call evil and immorality disappear; so surely must man become perfect.¹⁸

Spencer’s ideas permeated archaeological analyses of early civilizations and social forms, but they are now largely abandoned, for various reasons (see chapter 7). Some scholars consider Spencer to have been a racist whose notions of progress have misled a century of social science. But Spencer was a brilliant analyst, and he was operating on assumptions that seemed eminently reasonable in the nineteenth century: that history is subject to natural laws, that we can know these laws, and that—as Spencer’s whole life experience showed him—applications of science to human affairs could only lead to progress. Thomas Huxley read a draft of Spencer’s *Principles of Biology* (1864), and he and others convinced Spencer that “progress” was the wrong concept to apply to biological evolution, so Spencer used “persistence”; but in his ideas about human history he simply could not escape the notion that what history principally showed was “progress.”¹⁹

CHARLES DARWIN

How very stupid not to have thought of that.

T. H. Huxley (referring to Darwin’s ideas about evolution)²⁰

On a warm Saturday afternoon in June 1860, about a thousand people gathered in Oxford, England, to witness a debate on Charles Darwin’s (Figure 1.8) theory of biological evolution. For years Darwin had studied the animals and plants of South America, and he had formulated ideas about “descent with modification.” But for various reasons he was reluctant to publish his views. Only when he knew that others were about to publish similar evolutionary analyses did he advance his opinion that for centuries the biological sciences

had been in error concerning the origins and nature of biological species. Before Darwin, most scholars had assumed that all varieties of plants and animals were the direct product of God's creative might, and humankind itself was viewed as a special act of creation. In fact, as noted earlier, long before Darwin and continuing through his age and into our own, the Argument from Design, the idea that the intricacy, complexity, and interdependency of the universe point unmistakably to the existence of a Divine Creator, has been one of the major intellectual currents in Western civilization—and in other cultures as well.

But Darwin's research all but eliminated from educated Western thought the Argument from Design. On his travels through South America, Darwin had been particularly impressed by the great diversity of plant and animal life in the Galapagos Archipelago, near Ecuador. There he found islands geologically similar and within sight of one another, but nevertheless inhabited by significantly different species of plants and animals. Why should there be such diversity in such a small area?

It was evident (after some reflection) that such facts as these could only be explained on the supposition that species gradually become modified; and the subject haunted me. But it was equally evident that neither the action of the surrounding conditions, nor the will of the organism . . . could account for the innumerable cases in which organisms of every kind are beautifully adapted to their habits of life—for instance . . . a tree-frog to climb trees, or a seed for dispersal by hooks or plumes. I had always been much struck by such adaptations, and until these could be explained it seemed to me almost useless to endeavor to prove by indirect evidence that species had been modified.²¹

Darwin knew of course that for millennia farmers had used selective breeding to improve their animals in specific ways, such as increased milk production in cows. But these changes were the result of purposeful intervention in these animals' breeding patterns. How could such selection come about in the natural world?

Darwin was influenced by Malthus's idea of population and Adam Smith's concepts of economic competition, and he was much impressed with the importance of competition in all spheres of life: "Being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favorable variations would tend to be preserved and unfavorable ones to be destroyed."

With these observations and simple conclusions, Darwin provided the world with answers to a whole range of perplexing questions. Why was there such variety in the biological world? Because so many different environments were inhabited for so many millions of years, which allowed natural selection to shape biological populations to these varied environments. Why did animals and plants change over time? Because their environments had changed and some individuals were better equipped to survive and pass on their personal characteristics.

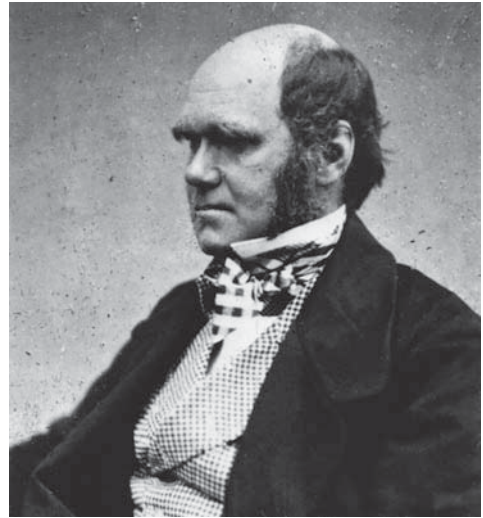


FIGURE 1.8 Charles Darwin (1809–1882) altered forever human conceptions of the dynamics of the physical world and the nature of history.

Darwin knew nothing about the genetic mechanisms we now recognize as the agencies through which biological diversity arises and on which natural selection operates, and he believed that characteristics acquired by an organism in its lifetime could be passed on to its offspring. We now know this to be a misconception. We also know that Darwin was deeply in debt intellectually to other scientists.²² Moreover, great debates currently rage in theoretical biology about the mechanisms of evolution. Some scholars believe, for example, that existing biological systems, whether they be organisms, populations, or species, “constrain” the possible directions of evolutionary change in a way that cannot be accounted for in classical Darwinian ideas about natural selection.²³ But all this does not detract from his great contribution.

Darwin put in motion an intellectual revolution that has continued to the present and has battered the very foundations of Western ideas about the nature of God, humanity, and history. Through logic and evidence, Darwin and his contemporaries showed there had been millions of years in which the world had been dominated by reptiles, eons in which there were no people. Thus he forced people to wonder how God could be glorified by countless generations of snakes and lizards and dinosaurs breeding, fighting, and dying in primeval swamps, and why they should consider humanity a special act of creation if people, too, developed from earlier, simpler forms, from ancestors who were no more imaginative, intelligent, creative, or religious than any other animal.

As noted earlier, it is important to recognize that there is no *necessary* conflict of these ideas with Christianity or other religions; indeed, many founders of Western science remained true believers until their deaths. They simply assumed that God used the natural processes of the world to work out His Divine and Unknowable Plan. Thus the Austrian monk Gregor Mendel (A.D. 1822–1884) could serenely work out the genetic basis of biological evolution and still die untroubled in his faith. And Darwin thought that through evolutionary processes people would eventually become altruistic and profoundly civilized, and he himself said that he had “never been an atheist in the sense of denying the existence of God” (although he professed a rather muddled agnosticism).²⁴

But the great mass of people were shocked and troubled by the implications of evolutionary theory. Evolutionary biology is now the only generally accepted theory of biology, and few scientists doubt its essential validity. But in that room at Oxford in 1860, Darwin and his advocate, Thomas Huxley, were reviled and ridiculed (Figure 1.9). This hostility characterized reaction to Darwinian ideas well into our own times, and it is not at all surprising that this should be so. In a sense, Darwin completed Galileo’s revolution. Galileo showed that the earth was just one among an inconceivable number of celestial bodies, without apparent special claim to centrality; Darwin showed that today’s human being is one of many related life-forms and is always a “transitional form,” constantly changing, with no apparent claim to centrality in the universe.

As Stephen Jay Gould points out, however, evolutionary theory makes no pretense of explaining the ultimate nature or purpose of human existence—if it is humanly possible, at all, ever to answer such questions. Evolutionary theory simply supplies powerful explanations of change over time in human biology and society—leaving the problem of ultimate causation to some other forms of inquiry or to faith.

But to understand the vehemence and loathing in the initial reaction to evolutionary theory and its persistent controversial status, one must recognize that evolutionary theory goes beyond simply calling into question the argument that the design of the universe

necessarily proves the existence of a divine creator and sustainer. The important point here is that the impact of evolutionary theory on how we view our universe and our past, present, and future has been profound and continues to reverberate through science and culture, and it calls into question some of the most cherished and ancient notions about human morality and worth.

It is important to note in this context, however, that evolutionary theory cannot *prove* that the Argument from Design is wrong. It simply provides an alternative explanation of how the biological and cultural history of earth might have happened. And as powerful as evolutionary, materialist, and determinist theories have been in shaping our world, they will probably never eradicate nonscientific “knowledge.” One of novelist G. García Márquez’s characters says, “I don’t believe in God but I’m afraid of Him,” and we can find vestiges of the same thought throughout modern cultures.

One reason for this is that from some perspectives the evolution of life is so extraordinarily improbable. If the earth’s orbit had been 5 percent closer to the sun, for example, the earth would have been far too hot for life to evolve; if the earth were 1 percent farther out, all the water on the planet would be locked in glacial ice. It is easy to understand why many people through the ages have concluded that the earth was designed for humans. Some scientists accept that the complex chemicals constituting the self-replicating compounds necessary for biological life *could* have evolved by random processes, but consider the few-billion-year history of organic earth life to be too short for this to be a probable occurrence. Hence, some hypothesize that the earth passed through a space cloud of organic molecules, from which we are all descended.

But such subtle points were unknown to people of Darwin’s age. Darwin and other evolutionists had posed cosmic questions and had provided compelling answers. Their arguments and research showed that not just biological species, but cities, ships, pyramids, farms, religions, parliaments—all things cultural—had evolved out of earlier, simpler forms; they implied that we have no special claim to centrality or exemption from the processes of the universe. And, perhaps most important, Darwin’s ideas made it reasonable to ask whether or not there were principles with which to understand our cultural as well as our physical evolution.

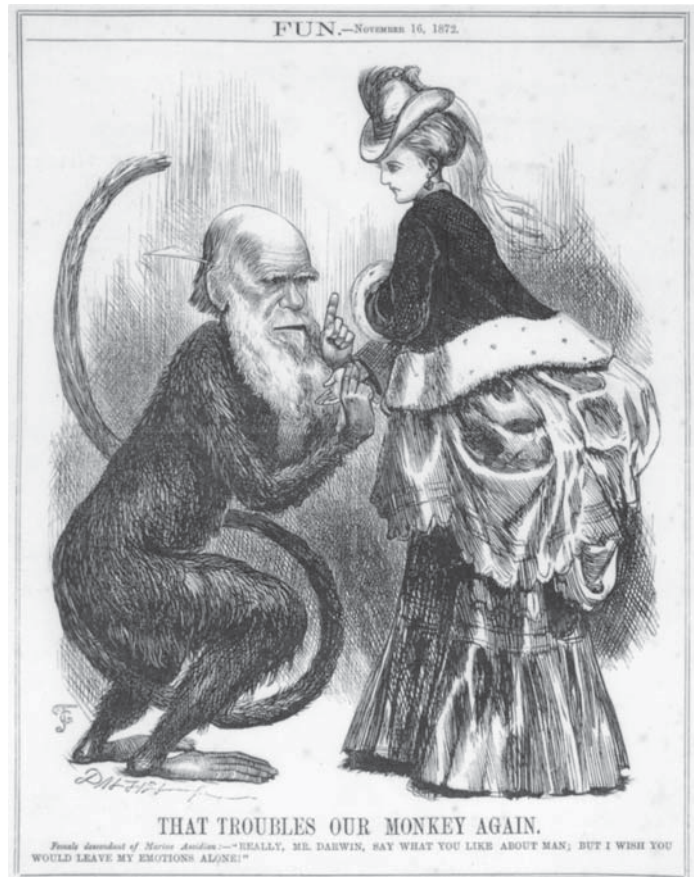


FIGURE 1.9 Many nineteenth-century cartoonists were amused by the idea of biological evolution.

It is important to recognize that Darwinian theory is more than just an abstraction about how the biological universe acquired its present form. In its application to cultures and history, Darwinian theory is profoundly political. When it was first widely accepted, in the late nineteenth century, some people justified rampant Western colonialism and exploitation in terms of the “survival of the fittest,” implying that it was somehow natural and right that “higher” social systems control, coerce, and replace “primitive” ones.

Darwin was in some senses a “gradualist,” who saw evolution operating at a constant rate, finely sifting through variations, perpetuating some, extirpating others. Biologists Niles Eldridge and Stephen Jay Gould countered the gradualist vision of evolutionary processes with a concept of “punctuated equilibrium,” or periods of rapid change interspersed with long periods of much slower change. Here, too, the possible applications of these ideas are not just to biology. Evolutionists such as Eldridge and Gould, for example, have argued that gradualism has been used implicitly by some to justify a slow, gradual pace of social reform.

As we shall see, Darwinian principles are simply indispensable to understanding the subjects of chapters 3, 4, and 5 of this book. They are the only scientific basis we have for trying to understand how we evolved out of early nonhuman hominins and how we converted plants and animals into the power sources on which our societies have been based.

Much less clear, however, is the extent to which Darwin can help us understand the origins of civilizations and the basic dynamics of human history and society.

HISTORICAL MATERIALISM

[The purpose of critical materialism is] to help men out of their self-made prison of uncomprehending economic determinism.

Alfred Schmidt²⁵

Schmidt’s observation is, if true, perhaps the most powerful justification one could make of the contemporary importance of archaeology and historical analysis. Marxists and other determinists conclude that slavery, poverty, violence, and other ills of the world through history have been the result of economic determinants that have never been fully understood. They suggest that if these determinants can be analyzed and applied, then these ills will eventually disappear.

Archaeological analyses of the past have been greatly influenced by various notions about “determinism.” Determinism, as applied to human history and culture, is the imprecise collective term for the idea that what happened in history was (partly, or largely, or entirely) the result of determining factors that are outside “free will” or the influences of divinities.

Although statues of Lenin and Marx have recently and literally been consigned to the “dustbin of history” in much of the world, along with the sociopolitical systems purportedly based on their philosophies, it does not necessarily follow that Marxist methods of historical analysis are entirely worthless. Even archaeologists who consider Marxism a bankrupt political ideology are in debt to Marxian thought in many of its elements of materialist determinism. Marxism, or at least materialist notions, are a “natural” for archaeology because archaeologists spend their lives amidst heaps of materials—the houses,

stone tools, storage bins, pots, weapons, irrigation canals, and other items that constitute the technology of a central Marxian concept of the “means of production.”

An early anthropological expression of evolutionary and materialist ideas that had considerable impact on studies of the past was the work of Lewis Henry Morgan (1818–1881), who divided history into a series of stages on the basis of initial uses of fire, bow and arrow, pottery, domesticated animals, writing, and so on. Karl Marx (1818–1883) (Figure 1.10) was influenced by Morgan and other earlier evolutionists, but the full impact of nineteenth-century evolutionism was achieved only when it was combined with Marx’s ideas about materialist determinism.

Certainly one of the most diverse—not to say solipsistic—associations of all time is that group of individuals who have tried to explain what Marx meant. People have killed each other in disputes over Marxian interpretations, and neo-Marxist variants on the basic Marxian ideology are so diverse as to defy summarization. The student with a sense of humor and a good German dictionary is invited to read Marx’s original description of the all-important “modes of production” and “relations of production,” and then to follow the exegesis of these terms into the contemporary era. Scholars of every inclination, from Platonic idealism to existentialism, have claimed inspiration from Marxist theory.

But what has all this got to do with archaeology? Precisely this: Some of the most influential archaeologists of our century have used Marxian ideas in their analyses.²⁶ Often these forms of Marxism are quite different from what Karl Marx himself professed, but they are derived from nineteenth-century ideas about historical materialism and determinism.

As we will see in chapter 7, Marx argued that much of human history could be understood on the basis of an analysis of how a society produces and distributes its wealth. He attempted to show that everything—wars, social classes, poverty, parliaments, religion, art—could be explained if one examined the technology, economy, and environment of a given society and the social relations people establish in relation to these economic and environmental factors. In recent years there have been numerous reworkings of Marxian theory, and the most recent archaeological expressions of these ideas stress the social relations that people enter into in producing and consuming goods. These, rather than just the blunt forces of climate, crops, and technology, are seen by Marxist archaeologists as the determinant factors of history. An important point of departure for some, more traditional, Marxists is that historical analyses must be *comparative*. They “contend that a



FIGURE 1.10 Karl Marx (1818–1883) profoundly influenced anthropology and archaeology by revealing the links between the economic basis of societies and their political institutions, social structures, and other cultural characteristics.

comprehensive view of all ancient societies, seen in relation to each other, will reveal general outlines of a regularity in the historical development of humanity²⁷; they assume that ancient human societies practiced an initial primitive communism, followed by the inevitable appropriation of surpluses in early agricultural communities, and the subsequent formation of “class society [by] strictly logical laws.” They conclude that analysis of the forces that resulted “in the stratification of society into antagonistic classes” provides “the key for our understanding of the course of the subsequent history of ancient society,” and that “all Marxist historians adhere to the concept that, in the final analysis, the relations of production are determined by the level of development of the means of production.”

In contemporary Marxist archaeology²⁸ many of these assumptions and ideas are being debated. Contemporary Marxist archaeologists differ greatly in their perspectives, but many of them consider social conflict as major determinants of cultural change; they also are trying to create a “human-centered” view of the past, in which people are not just passive, reacting elements whose actions and beliefs are not simple products of external economic and environmental forces, but instead are themselves the agents of social dynamics and cultural changes.²⁹

We will consider contemporary expressions of Marxist ideas in archaeology more fully in chapter 7. It is sufficient here to note that materialist determinism in various forms and philosophies has had a long and profound influence on archaeology. Moreover, Marxist ideas retain great potency in contemporary archaeology, especially among the post-processualists.

EARLY TWENTIETH-CENTURY ARCHAEOLOGY

To sum up: 1. The cosmos is a gigantic fly-wheel making 10,000 revolutions a minute. 2. Man is a sick fly taking a dizzy ride on it. 3. Religion is the theory that the wheel was designed and set spinning to give him the ride.

H. L. Mencken³⁰

From the mid-nineteenth century to the beginnings of the twentieth, archaeology entered a remarkable era of Discovery and Decipherment³¹—this was the period in which Egyptian hieroglyphs and Mesopotamian cuneiform were first deciphered and major archaeological excavations were undertaken everywhere. In 1922 Lord Carnarvon and Howard Carter opened the tomb of Pharaoh Tutankhamun in Egypt and in the same year Sir John Marshall began excavating the great Harappan civilization in the Indus Valley; in 1926 Sir Leonard Woolley discovered the Royal Tombs of Ur in Mesopotamia; and all over the world at this time other marvelous archaeological discoveries were being made.

Archaeology made great progress in this era, but it was also a time in which archaeology was dominated by Europeans and Americans in an ethnocentric and imperialist way that even today gives the discipline a negative image in many parts of the world. The French and British in particular, but all Western nations to some extent, looted the antiquities of other lands, especially Greece, Turkey, Egypt, Iraq, and Iran. European governments collaborated with archaeologists to extract antiquities concessions from weak governments. When the British and French controlled Egypt, they always made one of their own citizens the director of the Egyptian antiquities service. Archaeologists, in turn, sometimes acted as spies for their governments.³²

World War I with its horrible carnage, the Depression of the 1930s, and the other dismal events of this era disillusioned many intellectuals and caused them to doubt any notion of human social evolution—at least in the sense of a world growing more rational and moral, of *progress* in any sense. The first half of the twentieth century saw an age of existentialism and in many senses a rejection of rationalism. Darwinian notions of struggle and godlessness, the irrationality of world wars, all these destroyed for many people the last vestiges of the Argument from Design and resulted in a profound sense of cosmic isolation.

The philosophical currents of the early twentieth century produced in archaeology a largely nontheoretical discipline in which most scholars contented themselves with patient accumulation of artifacts and a minimum of interpretation. This period was the “Golden Age” of cultural reconstruction and culture history. In the United States the federal government invested considerable sums in archaeological investigations, in part as a way to employ people during the Depression. It was widely assumed that progress in explaining prehistoric cultural developments would be made only when much more archaeological evidence had been accumulated and the “facts be allowed to speak for themselves.” Even by the 1930s, however, there was a growing frustration with the idea of an archaeology limited just to an endless series of inferences about how ancient people lived and how they were related culturally. And many scholars, such as the Marxist archaeologist V. Gordon Childe, continued to work on a science of history.³³

One of the earliest and most influential attempts to move archaeology beyond simple data collection and description was Julian Steward’s 1949 classic article, “Cultural Causality and Law: A Trial Formulation of Early Civilization.”³⁴ Steward tried to relate worldwide similarities in the evolution of cities, writing, warfare, urbanism, and so on, to basic determinants of ecology, technology, and demography.

ARCHAEOLOGY 1960–1996

*Every decoding is another encoding.*³⁵

The New Archaeology After about 1960 there was a major revival of the idea of archaeology as a historical “science.” In the 1960s some archaeologists tried to introduce into archaeology the logical methods they saw in physics and chemistry, on the premise that even if archaeology could not be entirely the same kind of science as these “natural sciences,” they could at least use the same kinds of logic for analysis.³⁶

Why would physics and these other sciences be so attractive as models for archaeologists, to the extent that archaeologists were accused of “physics envy”? Primarily because physics and the other natural sciences offer powerful *explanations*. Natural scientists use a limited number of principles, such as the principles of relativity, thermodynamics, and so on, and powerful mathematical formulations to explain much of the workings of the physical universe. We *know* what causes eclipses, thermonuclear explosions, malaria, and other natural processes to the extent that we can control these forces and make televisions, nuclear reactors, and genetically engineered plants and animals.

Attempts to understand the human past in terms of principles like those of physics have a long history in Western culture. Archaeologists have wanted to know what *caused* the first vaguely human animals to use stone tools, what factors drove these early hominins into the northern temperate latitudes, why people changed from hunting-gathering to agriculture, what forces impelled people to establish cities, develop written languages, wage international wars—in short, why history has turned out the way it has.

One of the most influential scholars in the attempt to make archaeology a powerful science has been Lewis Binford. While a student at the University of Michigan, Binford was impressed by anthropologist Leslie White's evolutionary, materialistic vision of anthropology.³⁷ In an influential and programmatic series of papers Binford argued that archaeologists should turn their attention from endless excavations and attempts to reconstruct ancient cultures and culture histories and concentrate instead on the study of general cultural processes. Binford particularly stressed the importance of problem orientation and testing hypotheses. He argued, for example, that the initial appearance of agricultural economies independently in different areas of the world was the result of climate changes, population growth, and various cultural adaptations of peoples in certain environments. He then related a wide range of archaeological data to his hypothesis in an effort to explain why agriculture appeared when and where it did.

Binford and many others sought to make archaeology an objective, empirical science in which hypotheses about all forms of cultural variability could be tested. This *New Archaeology* (also called *processual archaeology*) includes many diverse perspectives, methods, and ideas, but there are some common elements.³⁸ First, many archaeologists believe that *mathematics* can play a powerful role in archaeological analyses. Mathematical analyses of many different types have been applied to archaeological data, and some of these will be reviewed in later chapters. Second, almost all attempts to make archaeology a science have assumed that this would be an *evolutionary* science—at least in the sense that important differences between cultures represent development from simple to complex. The application of Darwinian ideas of evolution to human societies has in many ways just begun, and some archaeologists see great potential in this approach. Third, the New Archaeology also has stressed *cultural ecology*, in the sense that it looks for the causes of major cultural changes primarily in factors like climate changes, variability in the agricultural productivity of different environments, technological changes, and demographic factors. But most of the archaeologists of this era assumed that ancient cultures were complex integrated *systems*—that is, the patterns of cause and effect are complexly interrelated and are rarely unidirectional. Thus, if one were to consider why people in ancient Iraq first began cultivating plants, one would expect that the answer would involve many different factors, such as changes in population densities, climate fluctuations, evolving technologies, the genetic properties of certain plant genera, and so on. Human societies are assumed to have regulating mechanisms that promote the group's adaptation. Most human societies, for example, have developed means of birth control to regulate their population-to-resources balance; the intensity with which birth control is practiced can change as the resources change. To some extent then, the systems view of cultures is that they are self-regulating entities, open to influences from their environments. Explanations based on this model are often *functional* explanations: Just as a biologist might account for the evolution of the mammalian heart as a way to circulate blood, an archaeologist might account for the rise of state religions in all early civilizations by the functional benefits of a low-cost, ideological mechanism like religion to organize and control the mass of the population for military and economic purposes.

The goal of reformulating archaeology as a mathematical, evolutionary, ecological science for analyzing extinct complex cultural systems remains a strong theme in contemporary archaeology, but there has been a widespread loss of faith in the possibility

of a “physics of history.” Most archaeologists recognize that human history is in some ways fundamentally different from some of the material phenomena of the world, such as atoms. For one thing, human history is the product of *natural selection* in a way that does not seem true of the history of galaxies and subatomic particles (this point is discussed in later chapters). The human past by definition is a specific sequence in time and through a particular space—the planet earth—while the principles of physics and chemistry are applicable (at least theoretically) to all times and places. That the volume of a gas is determined by its pressure and temperature is assumed to be true now and forever, here and in the farthest reaches of the universe.

But biology, population genetics, ecology—these and other life sciences deal with a historical sequence of life-forms in a particular place, earth. Yet these are powerful mathematical explanatory disciplines, and some archaeologists continue the quest to formulate a science of archaeology that is similar to these disciplines. Unlike the natural sciences, however, there is no “theory” that unites and focuses the research of the many practitioners of archaeology in the same way that evolutionary theory and population genetics unite biologists and thermodynamics unites physicists. Some scholars, nonetheless, see the potential for a unifying theory for archaeology in Darwinian evolutionary theory, and we will consider this approach in more detail in chapter 7.

POST-PROCESSUAL ARCHAEOLOGY

Il n’y a pas hors-texte. [There is nothing outside of the text.]

Jacques Derrida.³⁹

For the subjective idealism of scientific archaeology we substitute a view of the discipline [of archaeology] as an hermeneutically informed dialectical science of past and present unremittingly embracing and attempting to understand the polyvalent qualities of the socially constructed world of the past and the world in which we live.

Michael Shanks and Christopher Tilley⁴⁰

As these quotations illustrate, post-processual approaches to archaeology can be difficult to describe and understand. Indeed, it is one of the tenets of post-processualism that any attempt to summarize and capture the essence of the approach is doomed because there is no single approach, no unified perspective. The reader might wonder what all this theorizing has to do with the bones and stones of our ancient past: The point here is that many archaeologists say this theorizing has nothing to do with the study of our past, while, conversely, many post-processual archaeologists think it has everything to do with the study of the past.

The origins of post-processualism were described by Ian Hodder as an attempt to overcome perceived shortcomings in processual archaeology.⁴¹ These include that processualists neglect the influence of culture, that they concentrate on norms rather than

individuals, and that they rarely attempt to incorporate the ideas used by societies to structure how material culture fits into a society's world-view.

The post-processualists have found many different frameworks, but none that are "scientific" in the classical Western sense of that term. Most post-processualists believe that the search for an empirical science of artifacts is in essence a search for a unicorn, that archaeology can use a few scientific methods, such as radiocarbon dating, but that it will always be a humanistic enterprise and a fundamentally interpretive exercise, not an observational one.

The major flaw the post-processualists discern in the processualists is the assumption that archaeology can be a neutral, value-free, empirical science of artifacts. Young, for example, expresses this difference of opinion as, on the one hand, those who think that "history is what *happened* in the past," as opposed to the post-processualist notion that history "is what a living society *does* with the past."

Bruce Trigger,⁴² drawing on the works of philosopher Larry Laudan, has identified and analyzed four main tenets of post-processualism in American and British archaeology. The first is the proposition that "no one perceives the world objectively: what we perceive, and even more what we interpret what we perceive, is influenced, either to some degree or entirely, by what we believe." A second related premise is what Trigger characterizes as the assumption that "sensory data or observational evidence is rarely capable of refuting strongly held beliefs." A third premise involves "holism"—the idea that "in order to understand any part of a system or issue we must first understand the whole." The fourth premise is the principle that "science is a social activity. This implies that science is only one source of knowledge among many, including common sense, religious beliefs, and perhaps even delusions."

As Trigger notes in his analysis, all of these premises are at least somewhat true, and few archaeologists would reject them totally. Contemporary disputes in archaeology revolve around the extent to which these premises are true and their implications for archaeological method and theory.

The abstract philosophical points that Trigger discusses are perhaps best illustrated by the work of British archaeologists Michael Shanks and Christopher Tilley.⁴³ Shanks and Tilley, drawing on the ideas of Derrida, Foucault,⁴⁴ and others, have argued that, just as one cannot assign a definitive single meaning to a text, one cannot make an empirically verifiable and definitive interpretation of the archaeological record. We create the past, they argue, and our interpretations of the past are limited by, and arise out of, our own cultural context.

This may seem an obvious point, that archaeologists' interpretations of the past are in part a function of their own sociocultural context. Archaeologists regularly report temples, social stratification, intensified storage, social class, warfare, states, and other "things" that do not, technically, exist. Our own culture determines to some extent what we make of the past. We can dig up people, sort through their feces, measure their bodies, sift their garbage for their food remains, translate their writings, measure their buildings, and do all kinds of scientific things to them, but in the end what we make of them will have a lot to do with our own lives and personalities.

Indeed, just as some ethnographers have concluded that human life and society have "only meanings rather than causes," some archaeologists think that the emphasis of archaeology should be on assessing the meaning of the past for ourselves, rather than on futile attempts to understand the causes of the patterns and trajectory of the human past.

These post-processual forms of archaeological theory have had somewhat less influence in the United States than in Britain and Scandinavia, but the issues they raise have become prominent in theoretical circles everywhere. Indeed, some elements of post-processual archaeology derive from the *post-modernist* perspective that can now be found in many academic disciplines, such as literary criticism, architecture, and sociology. Exactly what post-modernism is in anthropology and archaeology is difficult to define.⁴⁵ As archaeologist Ian Hodder wrote:

It is thoroughly engrossing for an archaeologist, a student of cultural change, to be living through the apparent “birth” of a new cultural style. Yet it is surprising how difficult it is to define and understand what is happening. The more I try to tie down post-modernism, the less coherent it seems. . . . [T]he growth of the style seems bigger than any individual’s attempt to characterize it. Ultimately it engulfs any attempt to fix it.⁴⁶

Whatever else they have in common, post-processual archaeologists view archaeology as profoundly *political*. Archaeologist Mark Leone, for example, in his archaeological interpretations of the early history of Annapolis, Maryland, discusses how his archaeological work there has involved contemporary African Americans and how his interpretations of the archaeological data from that city do not necessarily match those of the African Americans. Of this experience he writes:

American archaeologists have only just begun to accept the constructivist view of knowledge, which implies that data are not neutral. . . . We are not at all accustomed to negotiating truth values with nonarchaeologists who are affected by our work. However, such negotiating does not debase archaeology. . . . The eventual result will be a much richer archaeology. It will produce not a single interpretation of data, but many interpretations; not one uniformly useful literature, but many incommensurable literatures.⁴⁷

The post-processual perspective raises many important issues and poses some significant problems. For example, if “science” cannot be applied to the archaeological record to evaluate competing claims to the truth, and if there can be many equally “true” readings of any text, then it would seem that one would have to accept that Native Americans who believe that the New World archaeological record shows that they originated in North America, not Asia, have a claim to the truth equal to that of the majority of archaeologists who believe that Native Americans first came to the New World between 10,000 and 20,000 years ago.

Are these equally valid ideas? Some post-modernists and post-processualists reject this absolute relativism, but if “positivist” ideas about scientific evaluation are inapplicable to archaeology, as some of these scholars believe, there can be no “correct” or most probably accurate reading of the past.

What archaeologists do may not be “science” in the classical sense of that term, but many archaeologists reject the idea that all readings of the past are equally valid in terms of their accuracy with regard to what actually happened in the past. All of the terms in the previous sentence are “loaded” in a sense. “Correct” does not necessarily have to be in relation to whether Native Americans originated in North America or not. Correctness, validity, and accuracy can be understood here to mean that they are both culturally constructed beliefs about the past.

In general, there seems little post-modernists and post-processualists agree on except, perhaps, their belief that archaeologists who think they are doing “science” are mistaken.

Agency and Landscape Archaeology One expression of the frustration many contemporary archaeologists feel with traditional processualist archaeology is the immense growth of interest in such topics as “agency,” and the use of this concept in such applications as Landscape Archaeology. These concepts are part of the post-processual movement in archaeology—although they need not entail a complete rejection of more traditional processual approaches.

The archaeological landscape in its simplest conception is the physical background and field on which ancient peoples lived and left their stones, bones, pots, houses, and so on. In contemporary archaeology, however, the notion of archaeological landscape goes beyond that sense, to emphasize the social and symbolic ways in which ancient peoples invested their worlds with meaning.⁴⁸ As Knapp and Ashmore note, “landscape is an entity that exists by virtue of its being perceived, experienced, and contextualized by people.”⁴⁹ As an example, consider Egyptologist Janet Richards’s analyses of landscapes in the Nile Valley. Richards notes that the ancient Egyptians used an area of the site of Abydos as a royal cemetery for many generations. She suggests that this location can be explained by the fact that it is in a dramatic setting, on the border between the two environments the Egyptians recognized as their world, the desert and the cultivated lands—Kemet and Deshret. She concludes that by intentionally positioning the cemetery in this area, they were reinforcing the ideology of the pharaoh as the unifier of Egypt. And in so doing they created a political arena that fostered the conservative ideology of ancient Egypt.

Many similar examples could be offered. Great tombs, temples, and other monuments often seem to have been placed, for example, with regard to their visibility. The implication is that these constructions were intended to remind the people living around them of the social interaction between people, the power of the state, and the ideologies of their societies. People of the early farming communities of the Neolithic in Europe, for example, built tombs, such as dolmens and passage graves. Although these were not necessarily highly visible in the landscape, they were intimately linked to daily activities in the settlements. Christopher Tilley proposes that these grave monuments were multilayered symbols “read” by the Neolithic people who constructed them.⁵⁰ The meaning of the tombs thus depends on the context in which they were perceived—tombs are markers for important landscape features such as the transition from a flat plain (low) to a mountain (high), or they can be seen as referents to ancestors and the past history of groups living in the area.

The notion of *agency* may seem obvious: It is the recognition that people are the agents of cultural construction and cultural change. The world’s archaeological record was created by the perceptions and activities of billions of people. To many archaeologists we cannot interpret the past by considering people as just constants in equations driven by ecology, environment, and technology. These are simply constraining factors; we must also consider how people intentionally shaped their cultural worlds. In the American Southwest, for example, Feinman, Lightfoot, and Upham have suggested that people living in pithouse communities had two major choices in sociopolitical organization.⁵¹ In some settlements, people adopted a corporate-oriented strategy that focused on rituals, ceremonies, and storage shared by the entire community, with few differences between households. People living in other pithouse settlements chose a network-oriented strategy that emphasized social differences between households through elaboration of architecture and accumulation of surpluses.

Sex and Gender in Archaeology Another example of how contemporary archaeology has developed from its traditional forms involves the ideas of sex and gender. One of the most evident impacts of post-processualism in contemporary archaeology is the growing interest in gender and in what some have called *feminist archaeology*. Concepts and discussions of gender and sex long predate the current interest in these subjects, of course, and not all discussions of this topic are part of post-processualism. As we shall see in chapter 3, for example, a pivotal concept in most hypotheses about how the first hominins evolved involves the relationship of males and females in economic and other behavior; and in later prehistory scholars have studied everything from the “goddess” female figurines of Neolithic Europe to the status of women in ancient Egypt. But contemporary feminist archaeological studies from the post-processual perspective diverge from these traditional studies in several ways. Biological sex is a relatively simple and useful dichotomy (although there are, of course, ambiguities), and a trained archaeologist can determine the sex of a well-preserved skeleton with considerable reliability. The exaggerated sexual characteristics of Pleistocene female figurines leave no doubt as to the sexual and reproductive capabilities of the person or idea represented. But gender is a cultural construct and not so easily defined. The terms “lesbian,” “homosexual,” and “bisexual” roughly fit sexual practices, but perceptions of these genders differ radically in different societies. Even more abstract are the long-term historical dynamics that have shaped perceptions of gender and the processes of interactions of different genders and sexes.

Perhaps the most important element in post-processualist expressions of feminist archaeology involves the rejection of some forms of empiricism. Traditional archaeology long neglected many aspects of sex and gender because it appeared difficult to relate the bones and stones of the archaeological record to gender or sex. In excavating an Egyptian archaeological site, for example, one finds what looks like the remains of villages. There are mudbrick walls, floors of compacted sand filled with the bits and pieces of daily life, such as fragments of burnt bone and wheat, small bits of pottery, and so on, and there are also things that look like hearths, latrines, animal pens, and a thousand other remnants of a 5,000-year-old residence. Reasonable archaeological analyses can estimate when people lived here, what foods they ate, what tools they used, whom they traded products with, how big the community was, how they buried their dead, and many other aspects of the culture of which these people were a part. Inferring the gender of the people who used particular artifacts and the relationship of males and females in this extinct community could begin with generalizations made from the many ancient Egyptian paintings and texts, which indicate that men and women did very different kinds of work. Other resources that might help decipher gender-related tasks in this ancient society could potentially be found in ethnohistoric or ethnoarchaeological studies of life in Egyptian villages of the recent past. Such interpretations, however, might be regarded by a processual archaeologist as mere speculation that is on a lot less secure ground than estimates of diet based on recovered archaeological materials.⁵²

Whatever the evidentiary basis of gender in the archaeological record, this topic carries with it some complex political and social implications. An enormous amount of evidence from archaeology, ethnography, and history shows that throughout the past women have been primary producers of much of the goods and services of all societies (Figure 1.11). Even in societies such as the Eskimo, where hunting is the primary source of food, women provide labor in the form of child care, food preparation, hide-processing, and many other



FIGURE 1.11 Both today and in the past, women have made substantial contributions to subsistence, goods, and services in society.

activities. In agricultural societies throughout history women have also provided much of the material wealth and available services in these societies, in the form of the toil of farming; the production of pottery, textile, and other craft goods; child care, and a thousand other activities.⁵³ Yet it also seems undeniable that throughout history these goods and services have often been appropriated by men outside the basic family unit, men who had the power to consume and redistribute this wealth. How does one explain this asymmetry, and is an attempt to explain it in terms of societal efficiency or biological factors necessarily an attempt to justify it? And if we write a world prehistory and history that concentrates on the people of power, the pharaohs, priests, and other male potentates, do we necessarily ignore and devalue the contribution of women?

These are important issues in contemporary archaeology, and whatever the ultimate long-term impact of post-processual ideas about archaeology as a political act and statement, considerations of gender have raised topics well worth contemplation.⁵⁴ Like all cultural elements, constructions of gender in societies, and their variations over time and place, cannot be treated in isolation. Gender roles can only be understood in relation to such other societal elements as social stratification, marriage and kinship systems, inheritance patterns, rituals, and so on.

SUMMARY AND CONCLUSIONS

So, where do we—and archaeology and world prehistory—go from here, in the midst of these contrasting ideas about the nature of inquiries into the past? What can we know about the past, and how should we go about knowing it?

As we have seen, answers have ranged from the notion that history is God's plan and ultimately unknowable to the idea that history can be the subject of scientific methods of analysis and ultimately can be explained in terms of general principles. Contemporary archaeologists include those who are working on complex computer models designed to extract historical processes, others who are trying to produce humanistic interpretations of ancient cultures, and others who believe they can't really scientifically "know" any thing about the past but are using it for contemporary political purposes.

In the face of these competing ideas about how the past should be analyzed, interpreted, and understood, many archaeologists have an eclectic position: They use ideas from many different sources and theoretical perspectives, on the assumption that a synthesis of this kind represents our best research strategy.

A good defense of an eclectic theoretical approach to archaeology is that offered by Bruce Trigger, in his recent calls for a "holistic" archaeology. Trigger notes:

I have argued that the future of archaeology lies not in replacing the ecological determinism of processual archaeology with the historical particularism that currently appears to be attracting many postprocessual archaeologists, but rather in effecting a synthesis of these seemingly opposed positions. The synthesis I have proposed involves trying to investigate as many of the factors that constrain human behavior as possible. These include not only the external factors championed by the processualists but also the cultural traditions without which human existence would be impossible.⁵⁵

Ian Hodder too has argued⁵⁶ that there is no necessary conflict between processual and post-processual archaeology. He suggests that processual archaeology has made the essential contribution of demonstrating the constraints that ecology, demography, and technology have on societies; post-processualism, on the other hand, offers a way to include in archaeological interpretations such elements as ideas, gender roles, power relations, ritual, and so on.

The approach taken in this book is a “holistic” one in this same sense. It is a blend of many different perspectives and analyses. It must be remembered, however, that the various kinds of “knowledge” that are provided are not all fundamentally the same. A statistical comparison of stone tools from European sites of 20,000 years ago can produce a different kind of knowledge by different methods from that of an interpretation of the symbols these people painted on cave walls and engraved on stones and bones (although post-processualists might see these as fundamentally similar at some levels). Yet each can give us at least a sense that we understand the past better, in a way, and each can be an interesting and instructive exercise. An underlying assumption and premise of this book is that an archaeological inquiry into the past can be usefully and productively done in the form of “science,” and that all interpretations of the past are not necessarily equally valid.⁵⁷

Who Owns the Past?

Who controls the past controls the future; who controls the present controls the past.

George Orwell⁵⁸

In contemporary archaeology the vast majority of field work and publication is done by Western European and American archaeologists. Some of these scholars have begun to question their “right” to interpret the pasts of so many different cultures and peoples around the world.

If one takes the view that archaeology is a science, then one could at least argue that, like biology, chemistry, demography, and any other science, what matters is the quality of the science, not the ethnic or cultural identity of the person doing the analyses. Given the various intellectual trends in post-processual archaeology (as reviewed earlier), however, the reader will not be surprised to know that many archaeologists think that it is unethical to “appropriate” the pasts of others. Randall McGuire, for example, in reviewing the archaeology of North America, suggests:

The time has come for archaeologists to reunite their object of study, the Indian past, with its descendants, and to ask about the needs of Indian people and address those needs. . . . [This will require] that all archaeologists initiate a process of dialogue with Indian peoples that will alter our perceptions of the past, how we deal with living Native Americans, . . .

and how we present our results to each other and the general public. . . . Most fundamentally, archaeologists need to recognize the contradictions between inclusion and exclusion and uniformity and diversity that are at the core of our national heritage. . . . Social evolutionists and material-culture analysts have failed to address these contradictions, the former by relegating Indian people to lower stages of evolution and the latter by refusing to acknowledge that artifacts from the past have power in the present because they present the image of a known past while their interpretation remains infinitely malleable.⁵⁹

Such calls to political action and socially constructed interpretations will probably have limited impact on the many archaeologists who are trying to study topics such as the date, routes, and adaptations of the first human occupations of the New World; the possible role of people in the extinction of mammoths and other large animals the New World; the processes by which maize agriculture was established in North America; and the hundreds of other research topics that dominate professional North American archaeology today. It should be noted, however, that an increasing number of North American archaeologists are establishing working relationships with Native Americans and that these collaborations have led to interesting alternative hypotheses about the past, many of which can be scientifically evaluated.⁶⁰

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NOTES

1. Quoted in Daniel, *The Origins and Growth of Archaeology*, p. 49.
2. From the film *Indiana Jones*, quoted in Bintliff, "Why Indiana Jones Is Smarter Than the Post-Processualists," p. 100.
3. See chapter 7 for a detailed discussion of this premise.
4. See, for example, Shanks and Tilley, *Social Theory and Archaeology*.
5. See, for example, Rindos, *The Origins of Agriculture*; Dunnell, "Evolution Theory and Archaeology."
6. Hartley, *The Go-Between*.
7. Harris and Weeks, *X-Raying the Pharaohs*.
8. Reeves, *The Complete Tutankhamun*, p. 203.
9. Ceram, *Gods, Graves, and Scholars*, pp. 8–9.
10. Wenke et al., "Epipaleolithic and Neolithic Subsistence and Settlement in the Fayyum Oasis of Egypt."
11. *The Logic of Scientific Discovery*, 1959.
12. *A New Kind of Science*, 2002.
13. Greek science and philosophy incorporated elements from other cultures. Metallurgy, geometry, mathematics, and many other arts and sciences all have long histories that predate classical Greek culture by millennia. Martin Bernal (*Black Athena*) and some other scholars have recently argued that Greek intellectual accomplishments were deeply and strongly rooted in Egyptian and Syro-Palestinian achievements, but few scholars agree with his conclusions. There simply is very little in ancient non-Greek cultures that seems to

presage the political brilliance of Pericles; the dramas of Aeschylus, Sophocles, and Aristophanes; the oratory of Demosthenes; the architecture of Mnesicles and Ictinus (designers of the Acropolis); the histories of Thucydides and Herodotus; and the philosophy of Socrates and Plato—among many other arts and sciences.

14. H. D. F. Kitto's *The Greeks* is a brilliant and literate summary of the ancient Greek contribution to Western thought.
15. Daniel, *The Origins and Growth of Archaeology*, p. 90.
16. Chang, *The Archaeology of Ancient China*, p. 5.
17. Reviewed in Graslund, *The Birth of Prehistoric Chronology*, p. 18.
18. Spencer, *Social Statics*, p. 80.
19. Desmond, *Archetypes and Ancestors*, pp. 100–101.
20. Attributed.
21. Darwin, quoted in Adams, *Eternal Quest*, p. 334.
22. Eiseley, *Darwin and the Mysterious Mr. X*.
23. *Evolution as Entropy*, by Brooks and Wiley.
24. Quoted in Desmond and Moore, *Darwin*, p. 636.
25. Schmidt, *The Concept of Nature in Marx*, p. 41.
26. E.g., V. G. Childe.
27. These and other quotes in this paragraph are from I. M. Diakonoff, *Early Antiquity*, pp. 1–27.
28. See, for example, R. McGuire, *A Marxist Archaeology*.
29. See B. Trigger's perceptive analysis, "Marxism in Archaeology: Real or Spurious?" Also see R. McGuire, *A Marxist Archaeology*; M. Spriggs, ed., *Marxist Perspectives in Archaeology*.
30. Menken, *Prejudices, Third Series*, "Ad Imaginem dei creavit illium," Coda.
31. Daniel, *The Origins and Growth of Archaeology*.
32. T. E. Lawrence (Lawrence of Arabia), for example, has been often been accused of spying for the British while working with Woolley in Mesopotamia (see Brown and Cave, *A Touch of Genius*).
33. G. Childe, *Man Makes Himself*.
34. *American Anthropologist* 51:1–27.
35. Variants of this postmodernist aphorism have been used by various scholars; see David Lodge's entertaining novel *Small World*, p. 328 and elsewhere.
36. See Watson, Redman, and LeBlanc, *Explanation in Archaeology*; also see Watson et al., *Archaeological Explanation*; Bamforth and Spaulding, "Human Behavior, Explanation, Archaeology, History, and Science"; Schiffer, "Some Issues in the Philosophy of Archaeology."
37. White, *The Science of Culture*.
38. Trigger, "Archaeology at the Crossroads: What's New?"; also see Bamforth and Spaulding, "Human Behavior, Explanation, Archaeology, History, and Science"; and Salmon, "Philosophy and Archaeology."
39. *Of Grammatology*.
40. Shanks and Tilley, *Re-Constructing Archaeology*, p. 243.
41. Hodder, "Postprocessual Archaeology."
42. See Trigger's "Post-Processual Developments in Anglo-American Archaeology," pp. 65–69.
43. See, for example, their *Social Theory and Archaeology*.
44. See, for example, Derrida, *Writing and Difference*, or Foucault, *The Foucault Reader*.
45. Ernst Gellner found it difficult to define post-modernism, but he leaves no doubt about his opinion of it, as seen in his *Post Modernism, Reason, and Religion*, pp. 22–23: "Post-modernism is a contemporary movement. It is strong and fashionable. Over and above this, it is not altogether clear what the devil it is. In fact, clarity is not conspicuous amongst its marked attributes. It not only generally fails to practise it, but also on occasion actually repudiates it. But anyway, there appear to be no 39 post-modernist Articles of Faith, no post-modernist manifesto, which one could consult so as to assure oneself that one has identified its ideas properly. . . . The movement and its ideas are . . . a little too ethereal and volatile to be captured and seized with precision: perhaps the acute awareness of the movement that all meanings are to be deconstructed in a way which also brings in their opposites, and highlights the contradictions contained in them . . . actually precludes a crisp and unambiguous formulation of the position."
46. Hodder, *The Meaning of Things*, p. 65.
47. Leone, "A Historical Archaeology of Capitalism," p. 213; see also Wylie, "Matters of Face and Matters of Interest."
48. Anschuetz et al., "An Archaeology of Landscapes: Perspectives and Directions."
49. Knapp and Ashmore, "Archaeological Landscapes: Constructed, Conceptualized, Ideational," p. 1.
50. Tilley, *An Ethnography of the Neolithic: Early Prehistoric Societies in Southern Scandinavia*, pp. 193–214. Tilley also notes that these Neolithic structures are "read" by modern observers, for example, as "sculptures" in the landscape.
51. Feinman et al., "Political Hierarchies and Organizational Strategies in the Puebloan Southwest," pp. 459–466.

52. As Dwight Read has observed, "Gender, as a cultural construct . . . is not observable; what is observable are its implications for how gender is embedded in the cultural system which leads, through the actions of individuals, to patterning in the observable world of material objects. The constant problem that archaeology faces is that the mapping from culture to patterning of material objects is never an isomorphism, is sometimes a homomorphism, and most often is a mapping which confounds multitudinous structuring processes. But this is a constant problem, not one peculiar to gender constructs."
53. Brumfiel, "A Review of *Prehistory of the Americas* (by S. J. Fiedel)."
54. For example, Gero and Conkey, *Engendering Archaeology*; Nelson, *Gender in Archaeology*.
55. Trigger, "Distinguished Lecture in Archaeology: Constraint and Freedom," pp. 562–563.
56. Hodder, "Postprocessual Archaeology and the Current Debate."
57. A similar position has been advocated by John Bintliff, who recently predicted the demise of most forms of post-processual archaeology, suggesting that "[t]he Theoretical Archaeology of the 1990s is undeniably going to be 'Cognitive Processualism,'" ("Why Indiana Jones Is Smarter Than the Post-Processualists," p. 100). The sense of cognitive Processualism as used by Renfrew and Bintliff is close to that of the holistic archaeology advocated by Bruce Trigger (see earlier) in that all useful methods of analysis are applied to the past, but in the context of an analytical science based on materialist perspectives.
58. *Nineteen Eighty-Four*.
59. McGuire, "Archaeology and the First Americans," p. 828.
60. Numerous examples of cooperative partnerships between archaeologists and Native peoples can be found in short contributions published in the "Working Together" section in *The SAA Archaeological Record* and its predecessor, *The SAA Bulletin*. See also Dongoske et al., eds., *Working Together: Native Americans and Archaeologists*.

Fundamentals of Archaeology

Though nothing can bring back the hour
Of splendour in the grass, of glory in the flower;
We will grieve not, rather find
Strength in what remains behind. . . .

William Wordsworth (1770–1850)

Jn *Intimations of Immortality*, Wordsworth recognized that humanity's hopes of immortality must lie elsewhere than in our physical selves or in our works; for these are transitory; and in the process of decay from the moment of conception. "Shades of the prison house begin to close upon the growing boy," he wrote, intimating that Death's grip is always there, always tightening.

Philosopher Bertrand Russell shared none of Wordsworth's hopes about our prospects of immortality, but he had the same sense of inevitable decay. When asked what he thought would happen to him after death, he cheerfully said, "When I die, I rot."

Perhaps the only people in the world who view the long record of the world's record of rot and decay with hope and optimism are archaeologists. In chapter 1 we reviewed some of the great theories of history and the past—the influential ideas about why history has turned out the way it has. Whatever one thinks of these theories, whatever one's view of the past, to assess these various ideas one must link them to the physical material remains of the past. In this chapter we shall consider the methods that have been developed to apply these great ideas to the material record of the past.

ARCHAEOLOGISTS AND THE PRACTICE OF ARCHAEOLOGY

Before considering in more detail how archaeology is done, let us consider who actually does it. When trapped in airplanes or up against the wall at a party, archaeologists who reveal their occupation often are told, "When I was growing up I wanted to be an archaeologist," or "It must be exciting to be an archaeologist!"

Few non-archaeologists realize, however, that most archaeologists have had to spend 10 years or more in college and graduate school in preparation for their profession, or that for every hour an archaeologist spends excavating, he or she spends hundreds of hours teaching university classes, raising money for research, analyzing artifacts, and writing research reports.