

**Fourth
Edition**



Archaeology Essentials

Theories/Methods/Practice

**Colin Renfrew
& Paul Bahn**

Thames & Hudson

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Theories/Methods/Practice

With 303 illustrations

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Contents

Preface	6		
1 Searching for the Past The History of Archaeology	10	7 How Were Artifacts Made, Used, and Distributed? Technology, Trade, and Exchange	208
2 What Is Left? The Variety of the Evidence	38	8 What Were They Like? The Bioarchaeology of People	232
3 Where? Survey and Excavation of Sites and Features	62	9 What Did They Think? Cognitive Archaeology	252
4 When? Dating Methods and Chronology	107	10 Why Did Things Change? Explanation in Archaeology	276
5 How Were Societies Organized? Social Archaeology	142	11 Whose Past? Archaeology and the Public	297
6 What Was the Environment and What Did They Eat? Environment, Subsistence, and Diet	175	12 The Future of the Past Managing Our Heritage	316
		Glossary	338
		Illustration Credits	344
		Useful Websites	345
		Index	345

Preface

Archaeology Essentials is designed for college students taking an introductory course in archaeology. It aims to convey some of the excitement of archaeology in the twenty-first century and to give students a concise and readable account of the ways in which modern archaeologists investigate and understand our remote past. Archaeologists usually make the headlines when they find something spectacular: in 2013, for example, the discovery of the skeleton of King Richard III of England, buried in what remained of the former Greyfriars church in Leicester, now a parking lot, created a sensation. Here were the remains of Richard “Crouchback” (the deformity in the spine clearly visible), the last English monarch to die in battle, at Bosworth Field in 1485. However, most archaeologists spend their time engaged in research that rarely makes the news, but is nevertheless vitally important for our understanding of the past.

Archaeology is still often a matter of the painstaking excavation of an ancient site, but today archaeologists can use new techniques that sometimes avoid the need for excavation altogether. Advances in science and computing, as well as in methods for analyzing and evaluating archaeological finds, mean that archaeologists can reach conclusions that would have been impossible just fifteen or twenty years ago.

This book will introduce students to the methods, new and old, used by archaeologists: from the traditional shovel and trowel to satellite imaging, laser-based mapping using LIDAR (Light Detection and Ranging), and ground-based remote sensing. New technology has affected the work of archaeologists in the laboratory as well as in the field: we cover, for example, the use of genetic evidence.

But the story of modern archaeology is not just about technology. There have been enormous advances in the questions archaeologists ask and in the assumptions and theoretical models they apply to archaeological evidence. Some questions, which an earlier generation of archaeologists might have considered closed, have now been opened up for new examination.

In other words, whatever the focus of an individual college course, it is our intention that students will find in this book an authoritative, concise, and clear explanation of modern archaeological practice.

How to Use This Book

Archaeology Essentials is organized around the most important questions that archaeologists ask. **Chapter 1** looks at the history of archaeology, the kinds of questions asked by archaeologists in the past and the methods they used. In **Chapter 2** we ask the question What Is Left?: the evidence with which archaeologists work. **Chapter 3** examines the question Where?: archaeologists can learn a good deal from the context in which evidence is found, and have developed many techniques for locating and recovering evidence.

In **Chapter 4** the question is When?: how can we know whether something dates from a few hundred years or many thousands of years ago? **Chapter 5** examines the fascinating question of How Were Societies Organized?: the nature, scale, and analysis of past social organization and identity. In **Chapter 6** we look at the world in which ancient people lived: What Was the Environment and What Did They Eat? Technology was an important factor in changing both society and the lives of our ancestors, as were contact and trade with other ancient peoples: the key question for **Chapter 7** is How Were Artifacts Made, Used, and Distributed?

Chapter 8 looks at the archaeology of people: What Were They Like? **Chapter 9** addresses some of the more difficult questions that contemporary archaeologists explore, for instance the ways ancient peoples thought about their world and issues of identity: in other words, What Did They Think? An equally difficult question is the subject of **Chapter 10**: Why Did Things Change? In **Chapter 11** we address the often controversial question Whose Past?: the past may be remote in time but it can be very relevant today if it touches on the beliefs, identity, and wishes of the descendants of those who lived long ago. Finally, in **Chapter 12** we look at both the practice of applied archaeology (a profession that now employs more people than the academic archaeology pursued in universities) and more generally: The Future of the Past. At the end of that chapter we also include a section on building a career in archaeology.

If you follow the questions examined in this book you will understand how archaeologists work, think, analyze, and seek to understand the past. You will also discover that not all questions can be answered, or perhaps that there might be more than one answer.

To help you understand how archaeology works, we have provided some special features in this book. Case studies in boxes, shaded in blue and featured throughout the text, show you archaeology in action and will help you understand the issues that archaeologists deal with in their research and fieldwork. Key Concept boxes summarize and review important concepts,

methods, or facts about archaeology. At the end of every chapter there is a summary to recap what you have read and a suggested reading list to guide you to the most important and helpful publications if you want to research any subject further. Archaeological terms in the text that are defined in the glossary are highlighted in bold (e.g. **excavation**) when they first occur in the book.

New to This Edition

This new fourth edition of *Archaeology Essentials* has been updated throughout, to reflect recent advances in methodology, analysis, and understanding, and to highlight the importance of contemporary archaeological issues:

- In Chapter 1, the history of archaeology has been further opened up to new perspectives, with traditionally famous nineteenth-century male figures now balanced with neglected pioneering voices.
- The fast-developing field of digital data capture and 3D modeling is covered in Chapter 3 in a new section, “Excavating the Digital Age,” with a particular focus on the potential offered by drone technology.
- The study of isotopes is illustrated with a new case study on the Norse settlement of Greenland in Chapter 6.
- The rapid progress of DNA analysis is reflected throughout this fourth edition, with expanded sections on ancient DNA (aDNA) in Chapters 8 and 10.
- In Chapter 11, the increasing threat posed to the material record by ideological extremism is examined through the destruction of Palmyra by so-called Islamic State (IS), alongside the Taliban’s earlier demolition of the sandstone Buddhas at Bamiyan, Afghanistan.

In addition, this new edition of *Archaeology Essentials* includes a range of recent ground-breaking archaeological investigations, for instance the Cultural Resource Management (CRM) work conducted at Hohokam sites in Arizona, along with new and updated case studies on such sites as Mississippian Spiro in Oklahoma, the pyramids of Giza in Egypt, and Must Farm in eastern England.

Student and Instructor Resources

Fully revised student and instructor materials for this fourth edition of *Archaeology Essentials* are found on the website to accompany the book: <http://college.thameshudsonusa.com/college/archaeologyessentials4>. Readers outside North America should email education@thameshudson.co.uk for further information. *Archaeology Essentials* is also available as an ebook.

Resources for Students

Students benefit from a variety of resources designed to complement the knowledge and skills provided by *Archaeology Essentials*:

- **InQuizitive**, a powerful adaptive learning tool available for the first time in archaeology, and free to use with *Archaeology Essentials* at: <http://digital.wwnorton.com/archess4>. Developed specifically for introductory archaeology courses, this self-testing tool offers interactive, visually led questions that adapt to students' current knowledge.
- **Active Archaeology Notebook**, available free with purchase of a new copy of *Archaeology Essentials* by prior arrangement with your Norton sales rep. Written by a team of instructors from the SAA Curriculum Committee led by Leah McCurdy, each activity applies a key concept in archaeology and has been tried and tested in archaeology classrooms. Activities are accompanied by online guidance notes for instructors explaining how they can be linked to learning objectives, contribute to students' grades, and build fun and effective in-class activities.
- **Flashcards** of terminological definitions to aid students' learning.
- An online **glossary** that provides easy access to key terms.

Resources for Instructors

Instructors who adopt this fourth edition of *Archaeology Essentials* can get free access to a range of tools to enhance teaching and learning:

- To create visually engaging lectures, the **Archaeology Global Gallery** offers instructors a collection of hundreds of images not included in the book, sourced from museums, Thames & Hudson archives, and from fellow archaeologists, all carefully categorized and captioned. It can be accessed at: <http://college.thameshudsonusa.com/college/archaeologyessentials4>.
- A range of **videos** exploring ancient sites and featuring interviews with Professor Colin Renfrew and Dr. Kelly Knudson on key topics in archaeology.
- A **test bank** with over 400 multiple choice, true/false, and essay questions.
- **PowerPoint lectures** to help structure and organize teaching.
- **Images and diagrams** from *Archaeology Essentials* as JPEGs and PowerPoints.

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1

Searching for the Past The History of Archaeology

Archaeology as a Discipline 11

The Important Questions 15

Understanding the History
of Archaeology 15

The First Searchers: The Speculative Phase 16

The First Excavations 17

The Beginnings of Modern Archaeology 18

The Antiquity of Humankind and
the Concept of Evolution 19

The Three Age System 20

Ethnography and Archaeology 20

Discovering the Early Civilizations 21

The Development of Field
Techniques 22

Classification and Consolidation 25

The Ecological Approach 26

The Rise of Archaeological Science 27

A Turning Point in Archaeology 27

The Birth of the New Archaeology 28

The Postprocessual Debate of the
1980s and 1990s 30

Pluralizing Pasts 32

The Development of Public Archaeology 33

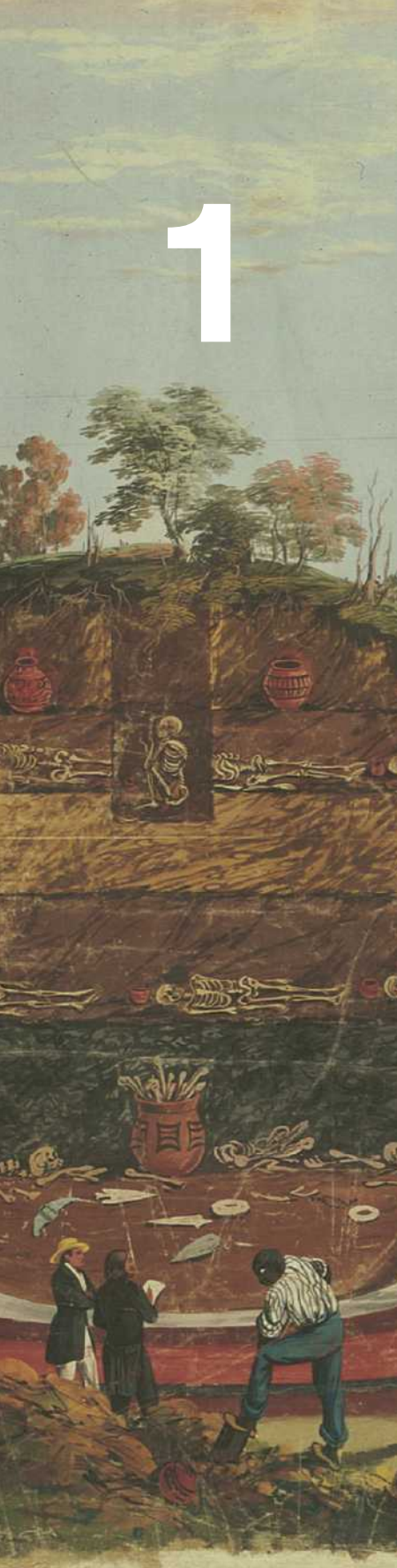
□ Further Women Pioneers
of Archaeology 34

Indigenous Archaeologies 35

Study Questions 36

Summary 37

Further Reading 37



About 5300 years ago, a forty-year-old man made his last journey on a mountain path in the European Alps. He lay undisturbed until his body was discovered in September 1991. Archaeologists were able to determine not only his age, but also the contents of his last meal: meat (probably ibex and venison), plants, wheat, and plums. The Iceman suffered from arthritis, and analysis of a fingernail showed that he had suffered serious illness before he died. At first it was thought that he died from exhaustion in a fog or blizzard. Later analysis, however, revealed what may be an arrowhead in his left shoulder and cuts on his hands, wrists, and ribcage, as well as a blow to the head, so he may well have died a violent death. These observations are just a sample of what archaeologists were able to learn about this long-dead man (see pp. 54–55).

The thrill of discovery and the ability of **archaeology** to reveal at least some of the secrets of our past have been the theme of many famous novels and movies, notably Steven Spielberg’s *Indiana Jones* series. But although many discoveries in archaeology are far less spectacular than either the Iceman or those represented in fiction—perhaps a collection of broken pieces of pottery—these kinds of remains too can tell us a lot about the past, through careful collection and analysis of the evidence.

Archaeology is unique in its ability to tell us about the whole history of humankind from its beginnings more than 3 million years ago. Indeed, for more than 99 percent of that huge span of time, archaeology—the study of past **material culture**—is the only source of information. It is the only way that we can answer questions about the **evolution** of our species and the developments in **culture** and society that led to the emergence of the first civilizations and to the more recent societies that are founded upon them.

Archaeology as a Discipline

Many archaeologists consider themselves as part of the broader discipline of **anthropology**. Anthropology in the most general sense is the study of humanity: our physical characteristics as animals, and our unique

The diversity of modern archaeology.

(Right) Urban archaeology: excavation of a Roman site in the heart of London.



(Below left) Working in the on-site archaeobotanical laboratory on finds from Çatalhöyük in Turkey.

(Below right) In the field in Siberia, an ethnoarchaeologist shares and studies the lives of modern Oroqen people, here making blood sausages from the intestines of a recently butchered reindeer.



(Right) Underwater archaeology: a huge Egyptian statue found in the now-submerged ruins of an ancient city near Alexandria.



(Below left) An Inca "mummy," now known as the "Ice Maiden," is lifted from her resting place high up on the Ampato volcano in Peru (see p. 56).



(Near left) Piecing together fragments of an elaborate mural from the early Maya site of San Bartolo in Guatemala.



(Below right) Archaeologists painstakingly excavate, record, and reconstruct some of the thousands of "terracotta warriors" at the tomb of the first emperor of China, near the city of Xi'an in Shaanxi province.

non-biological characteristics. Anthropology is thus a broad discipline—so broad that it is often broken down into different fields:

- **Physical or biological anthropology:** the study of human biological or physical characteristics and how they evolved.
- **Cultural (or social) anthropology:** the study of human culture and society.
- **Linguistic anthropology:** the study of how speech varies with social factors and over time.
- **Archaeology:** the study of former societies through the remains of their material culture and, in the case of such literate cultures as those of Mesopotamia or Mesoamerica, such written records as have survived.

Archaeologists who are interested in the societies of ancient Greece and Rome, their empires and neighboring territories, consider themselves Classical archaeologists. They study the material remains of the Greek and Roman worlds, but can also take into account the extensive written records (literature, history, official records, and so on) that survive.

Similarly, biblical archaeologists work in much the same way as anthropological archaeologists, but with reference to the events set out in the Bible. Like history, archaeology is concerned with documenting and understanding the human past, but archaeologists operate in a time frame much larger than the periods studied by historians. Conventional historical sources begin only with the introduction of written records in around 3000 BCE in Western Asia, and much later in most other parts of the world (not until 1788 CE in Australia, for example). The period before written records and history (meaning the study of the past using written evidence) is known as **prehistory**.

Although archaeologists spend much of their time studying **artifacts** and buildings, it is worth emphasizing that archaeology is about the study of humans and, in that sense, like history, it is a humanity. But although it uses written history, it differs from the study of written history in a fundamental way. Historical records make statements, offer opinions, and pass judgments (even if those statements and judgments themselves need to be interpreted). The objects that archaeologists discover, on the other hand, tell us nothing directly in themselves. It is we today who have to make sense of these things. In this respect the practice of archaeology is rather like a science. The scientist collects data, conducts experiments, formulates a hypothesis (a proposition to account for the data), tests the hypothesis against more data, and then devises a model (a description that seems best to summarize the pattern observed in the data). The archaeologist has to develop a picture of the past, just as the scientist has to develop a coherent view of the natural world. It is not found ready made.

Archaeology, in short, is a science as well as a humanity. That is one of its fascinations as a discipline: it reflects the ingenuity of the modern scientist as well as the modern historian. The technical methods of archaeological science are the most obvious, from **radiocarbon dating** to studies of food residues in pots. Equally important are scientific methods of analysis: archaeology is just as much about the analytical concepts of the archaeologist as the instruments in the laboratory. The illustrations on pp. 12–13 give some idea of the diversity of the work that a modern-day archaeologist might be involved in.

The Important Questions

Because the evidence of archaeology cannot speak for itself, it is important that archaeologists ask the right questions of the evidence. If the wrong questions are asked, the wrong conclusions will be drawn. For example, early explanations of the unexplained mounds found east of the Mississippi River assumed that they could not have been built by the indigenous American peoples of the region; it was believed instead that the mounds had been built by a mythical and vanished race of Moundbuilders. As explained in more detail below (p. 18), Thomas Jefferson, later in his career the third President of the United States, decided to test this hypothesis against hard evidence and dug a trench across a mound on his property. He was able to show that the mound had been used as a burial place on many occasions and found no evidence that it could not have been built by the indigenous peoples. In other words, Jefferson asked questions about what the evidence suggested: he did not simply reach a conclusion that fitted his prejudices and assumptions.

Traditional approaches tended to regard the objective of archaeology mainly as reconstruction: piecing together the puzzle. But today it is not enough simply to recreate the material culture of remote periods: how people lived and how they exploited their environment. We also want to know *why* they lived that way, why they had certain patterns of behavior, and how their material culture came to take the form it did. We are interested, in short, in explaining change.

Understanding the History of Archaeology

The history of archaeology is commonly seen as the history of great discoveries: the tomb of Tutankhamun in Egypt, the lost Maya cities of Mexico, the painted caves of the **Paleolithic**, such as Lascaux in France, or the remains of our human ancestors buried deep in the Olduvai Gorge in Tanzania. But even more than that it is the story of how we have come to look with fresh eyes at the material evidence for the human past, and with new methods to aid us in our task.

It is important to remember that just a century and a half ago, most well-read people in the Western world—where archaeology as we know it today was

first developed—believed that the world had been created only a few thousand years earlier (in the year 4004 BCE, according to the then-standard interpretation of the Bible), and that all that could be known of the remote past had to be gleaned from the earliest historians, notably those of the ancient Near East, Egypt, and Greece. There was no awareness that any kind of coherent history of the periods before the development of writing was possible at all.

But today we can indeed penetrate the depths of the remote past. This is not simply because new discoveries are being made. It is because we have learned to ask some of the right questions, and have developed some of the right methods for answering them. The material evidence of the archaeological record has been lying around for a long time. What is new is our awareness that the methods of archaeology can give us information about the past, even the prehistoric past (before the invention of writing). The history of archaeology is therefore in the first instance a history of ideas, of theory, of ways of looking at the past. Next it is a history of developing research methods, employing those ideas, and investigating those questions. And only thirdly is it a history of actual discoveries.

In this book it is the development of the questions and ideas that we shall emphasize, and the application of new research methods. The main thing to remember is that every view of the past is a product of its own time: ideas and theories are constantly evolving, and so are methods. When we describe the archaeological research methods of today we are simply speaking of one point on the trajectory of the subject's evolution. In a few decades' or even a few years' time these methods will certainly look old-fashioned and out of date. That is the dynamic nature of archaeology as a discipline.

The First Searchers: The Speculative Phase

Humans have always speculated about their past, and most cultures have their own foundation myths to explain why society is how it is. Most cultures, too, have been fascinated by the societies that preceded them. The Aztecs exaggerated their Toltec ancestry, and were so interested in Teotihuacan—the huge Mexican city abandoned hundreds of years earlier, which they mistakenly linked with the Toltecs—that they incorporated ceremonial stone masks from that **site** in the foundation deposits of their own Great Temple. A rather more detached curiosity about the relics of bygone ages developed in several other early civilizations, where scholars and even rulers collected and studied objects from the past.

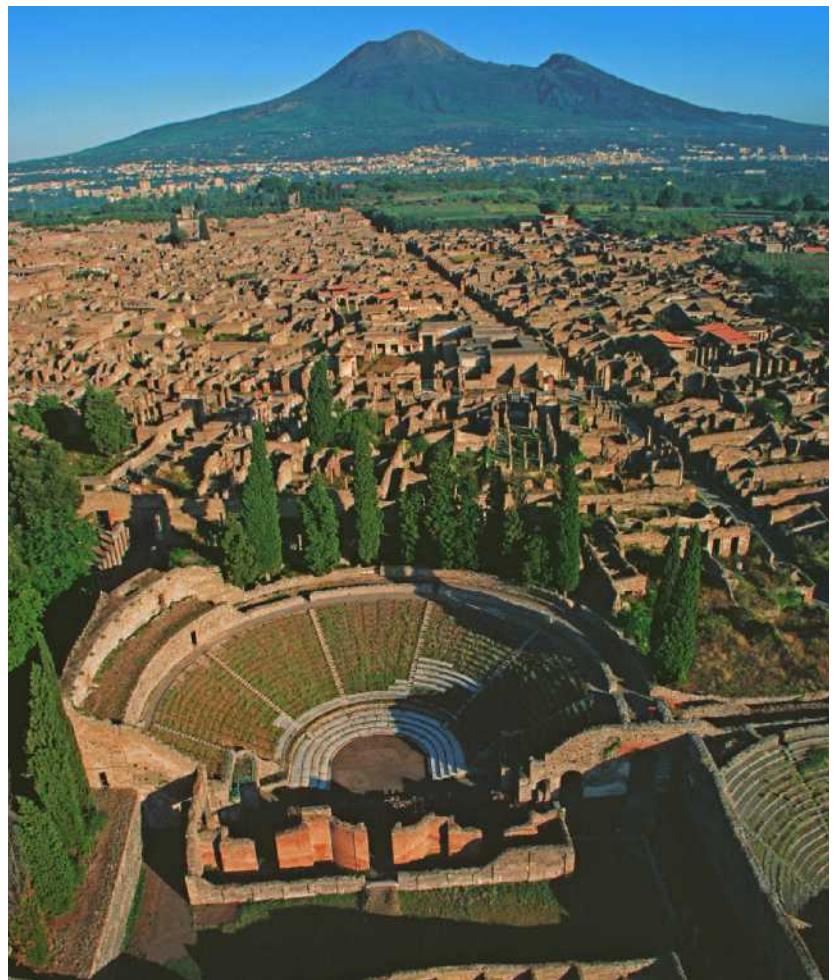
During the revival of learning in Europe known as the Renaissance (fourteenth to seventeenth centuries), princes and people of refinement began to form “cabinets of curiosities,” in which curios and ancient artifacts were displayed rather haphazardly with exotic minerals and all manner of specimens illustrative of what was called “natural history.” During the

Renaissance also, scholars began to study and collect the relics of ancient Greece and Rome. And they began too in more northern lands to study the local relics of their own remote past. At this time these were mainly the field monuments—those conspicuous sites, often made of stone, which immediately attracted attention, such as Stonehenge. Careful scholars, such as the Englishman William Stukeley, made systematic studies of some of these monuments, with accurate plans that are still useful today. Stukeley and his colleagues successfully demonstrated that these monuments had not been constructed by giants or devils, as suggested by such local names as the Devil's Arrows, but by people in antiquity. Stukeley was also successful in phasing field monuments, demonstrating that, since Roman roads intersected barrows, the former must have been built after the latter.

The First Excavations

In the eighteenth century more adventurous researchers initiated **excavation** of some of the most prominent sites. The Roman city of Pompeii in Italy was one of the first of these. Buried under meters of volcanic ash after the cataclysmic eruption of nearby Mount Vesuvius, Pompeii was only

The Roman city of Pompeii lies in the shadow of Mount Vesuvius in Italy. When the volcano erupted in 79 CE, the entire city was buried, all but forgotten until excavations began in the mid-eighteenth century. Such spectacular discoveries generated huge interest in the past, and greatly influenced the arts.



“The First Excavation”

Thomas Jefferson, later to become President of the United States, conducted the “first scientific excavation” in Virginia in 1784

By carefully digging a trench across a Native American burial mound, Jefferson was able to observe different layers and to draw reasoned conclusions from the data

rediscovered in 1748. Although to begin with the motivation of the excavators was to find valuable ancient masterpieces, it was not long before published finds from Pompeii were attracting enormous international attention, influencing **styles** of furniture and interior decoration, and even inspiring several pieces of romantic fiction. Not until 1860, however, did well-recorded excavations begin.

The credit for conducting what has been called “the first scientific excavation in the history of archaeology” traditionally goes to Thomas Jefferson, who in 1784 dug a trench or section across a burial mound on his property in Virginia. Jefferson’s work marks the beginning of the end of the Speculative Phase.

In Jefferson’s time people were speculating that the hundreds of unexplained mounds known east of the Mississippi River had been built not by the indigenous Americans, but by a mythical and vanished race of “Moundbuilders.” Jefferson adopted what today we would call a scientific approach, that is, he tested ideas about the mounds against hard evidence—by excavating one of them. His methods were careful enough to allow him to recognize different layers (or **stratigraphy**) in his trench, and to see that the many human bones present were less well preserved in the lower layers. From this he deduced that the mound had been reused as a place of burial on many separate occasions. Although Jefferson admitted, rightly, that more evidence was needed to resolve the Moundbuilder question, he saw no reason why ancestors of the present-day Native Americans themselves could not have raised the mounds.

Jefferson was ahead of his time. His sound approach—logical **deduction** from carefully excavated evidence, in many ways the basis of modern archaeology—was not taken up by any of his immediate successors in North America. In Europe, meanwhile, extensive excavations were being conducted, for instance by the Englishman Sir Richard Colt Hoare, who dug into hundreds of burial mounds in southern Britain during the first decade of the nineteenth century. None of these excavations, however, did much to advance the cause of knowledge about the distant past, since their interpretation was still within the biblical framework, which insisted on a short span for human existence.

The Beginnings of Modern Archaeology

It was not until the middle of the nineteenth century that the discipline of archaeology became truly established. Already in the background there were the significant achievements of the newly developed science of geology. The study of the **stratification** of rocks (their arrangement in superimposed layers or strata) established principles that were to be the basis of archaeological excavation, as foreshadowed by Jefferson. It was demonstrated that the stratification of rocks was due to processes that were still going on in