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Anthropology

Ninth Edition

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who provided their patience, support, and guidance for us to complete this project.

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Anthropology

A Global Perspective

Ninth Edition

Raymond Scupin

Lindenwood University

Christopher R. DeCorse

Syracuse University

SAGE

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BRIEF CONTENTS

DETAILED CONTENTS

PREFACE

EDUCATIONAL GOALS AND ORIENTATION OF THIS TEXTBOOK

The world has become a small place. This textbook is grounded in the belief that an enhanced global awareness is essential for people preparing to take their place in the fast-paced, interconnected world of the twenty-first century. Through exploring the range of human diversity, the subfields of anthropology broaden students' views and enable students to appreciate the full sweep of the human condition.

The anthropological perspective, which stresses critical thinking, the evaluation of competing hypotheses, and the skills to generalize from specific data, contributes significantly to a well-rounded education. This text engages readers in anthropology by delving into both classic and current research in the field. This reflects a commitment to anthropology's holistic and integrative approach. It spells out how the four subfields of anthropology—biological anthropology, archaeology, linguistics, and cultural anthropology—together yield a comprehensive understanding of humanity. The full range of anthropological insights are woven together to reveal both the distinctive fabrics of individual societies and the threads uniting all of humanity.

Anthropological research is inherently interdisciplinary, and this text often refers to research in other fields. Anthropologists draw on the findings of biologists, paleontologists, geologists, economists, historians, psychologists, sociologists, political scientists, religious studies specialists, philosophers, and researchers in other areas whose work sheds light on anthropological inquiry. Exploring interactions between anthropology and other fields sparks the critical imagination that brings the learning process to life.

A comparative approach, another cornerstone of anthropology, is also highlighted in this text. Whether assessing fossil evidence, ancient artifacts, languages, or cultural beliefs, anthropologists weigh comparative evidence, while acknowledging the unique elements of each archaeological site, fossil locality, society, or culture.

This book casts an inquiring eye on materials from numerous geographical regions and historical eras to enrich students' understanding. In evaluating human evolution, prehistoric events, language divergence, or developments in social structure, anthropologists must rely on models that reflect changes through time, so this diachronic orientation suffuses the text.

FOUR UNIFYING THEMES OF THIS TEXT

Four unifying themes structure the material presented in this textbook. The first two themes we introduce students to are the *diversity of human societies* and the *similarities that make all humans fundamentally alike*. We examine commonalities in human physical and cultural characteristics, as well as the local contexts and conditions that have shaped human origins and cultures. We emphasize the growing interconnectedness of humanity and both the positive and negative consequences of this reality. We draw on anthropological studies to discover how people are responding to the omnipresent processes of globalization.

Our third theme deals with the unique intersection of the sciences and humanities within anthropology. We call this the *synthetic-complementary approach*, which views the scientific method and the methods in the humanities as complementary and suggests that one is incomplete without the other. Decades ago, in another anthropology textbook, the late Eric Wolf emphasized that anthropology has always had one foot in the sciences and one foot in the humanities. This observation is evermore true today. Wolf (1964, 88) said, "Anthropology is both the most scientific of the humanities and the most humanistic of the sciences." We carry on the tradition that he accentuated in his work.

One of the prime goals in this edition is to further highlight the fundamental importance of the synthetic-complementary approach to science and the humanities in anthropology.

Some anthropologists have argued that the scientific approach is not suitable for assessing and interpreting human behavior and culture, whereas others believe that the humanistic approach is not appropriate for developing general cross-cultural and causal explanations about human behavior and culture. This has led to textbooks that focus on either one or the other approach. In this book, we highlight how the humanistic-interpretive perspective provides insight into the specifics of human behavior within different cultures, while the scientific approach offers the means to systematically test causal explanations that allow for insight into universal aspects of human origins and behavior.

The fourth theme we draw on is emphasized in a new Critical Perspectives box in Chapter 1 on essentialism. We explain the meaning of psychological essentialism: the flawed beliefs that members of certain categories or classifications

such as "species," "races," "ethnic groups," "genders," or "cultures" share an underlying invisible essence. Extensive psychological and anthropological research has demonstrated that psychological essentialism appears to be universal and is prevalent in human cognition and thinking throughout the world. One of the missions of anthropology and this textbook is to counter pervasive and often horribly misconstrued essentialist beliefs regarding ethnic or "racial" groups, cultures, civilizations, societies, and religions. Anthropologists have revealed enormous variation within these supposed categories. Essentialist thinking has resulted in many widespread simplistic misconceptions and distorted perceptions. In different sections of the textbook, we illustrate essentialist perceptions, and use anthropological research to demonstrate the problems of such facile generalizations and essentialist beliefs.

FEATURES OF THIS TEXT

Boxes

Critical Perspectives boxes are designed to stimulate independent reasoning and judgment. Students take on the roles of anthropologists and engage in the critical analysis of specific problems that arise in anthropological research. A successful holdover from the first edition, these boxes push students to think about the rigorous standards of evidence needed to evaluate scientific and philosophical questions that often have no easy answers. We have updated our discussions in the Critical Perspectives boxes for this edition. By probing beneath the surface of various assumptions and hypotheses in these exercises, students stand to discover the excitement and challenge of anthropological investigation.

Anthropologists at Work boxes, profiling prominent anthropologists, humanize many of the issues covered in the chapters. These boxes—another carryover from the first edition—go behind the scenes to trace the personal and professional development of some of the field's leading anthropologists.

Pedagogical Aids

In this textbook, we provide some key teaching and learning aids. Each chapter opens with Learning Objectives that guide students to the most important issues addressed in the chapter. And each chapter ends with a Summary and Review of Learning Objectives, which helps the students better comprehend the content in the chapter. In addition, each chapter has a list of Key Terms with page numbers that helps the students focus on the important concepts introduced in the chapter. The Key Terms are also found with succinct definitions in the Glossary.

DIGITAL RESOURCES

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SAGE Edge

A password-protected resource site is available at edge.sagepub.com/scupin9e, which supports teaching, providing high-quality content to create a rich learning environment for students. The SAGE Edge for this book includes the following instructor resources:

- **Test banks** built on Bloom's Taxonomy provide a diverse range of test items
- Editable, chapter-specific **PowerPoint slides** offer flexibility for creating a multimedia presentation for lectures
- **Lecture notes** align with the PowerPoint slides to summarize key concepts and help with preparation for lectures and class discussion
- Carefully selected **video and multimedia content** enhance exploration of key topics
- Chapter-specific **discussion questions** help launch engaging classroom interaction while reinforcing important content
- Sample **Course syllabi** provide suggested models for structuring your course
- **Tables and figures** from the book are available for download
- SAGE **Coursepacks** provide easy LMS integration

SAGE Edge for students

The open-access companion website helps students accomplish their coursework goals in an easy-to-use learning environment, featuring:

- **Learning objectives** reinforce the most important material
- **eQuizzes** encourage self-guided assessment and practice
- **eFlashcards** that strengthen understanding of key terms and concepts.
- Chapter-specific **video and multimedia content** enhance exploration of key topics

SAGE Coursepacks

SAGE Coursepacks make it easy to import our quality instructor and student resource content into your school's learning

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In addition to the content available on the Edge site, the coursepacks include:

- Pedagogically robust assessment tools that foster review, practice, and critical thinking:
  - Chapter tests identify opportunities for student improvement, track student progress, and ensure mastery of key learning objectives.
  - Instructions on how to use and integrate the comprehensive assessments and resources provided.
- Assignable video tied to learning objectives with corresponding assessments bring concepts to life to increase student engagement
- Integrated links to the eBook version that make it easy to access the mobile-friendly version of the text, which can be read anywhere, anytime.

What's New to This Edition

- The discussion of the volume's key themes, drawn on in previous editions, has been revised and expanded, and we have added essentialism as a fourth theme. Essentialism is explored in several parts of the text and is the focus of a new Critical Perspectives box in Chapter 1.
- The book has a dramatic new look: Many new photos and figures have been added, and others have been deleted or modified to better illustrate key points in the text.
- New Anthropologists at Work boxes illustrate current research directions of an archaeologist who explores both the past and the present in Mesomerica and a linguistic anthropologist who is assisting people in Papua New Guinea in preserving and developing their native language. We also have Anthropologists at Work boxes dealing with cultural anthropologists who are exploring topics such as psychiatric treatments, the psychology of religion, and how adolescents use YouTube. Other boxes tell the stories of anthropologists who are applying their skills in jobs outside of academia in fields such as space travel, the high-tech industry, and the global financial world.
- Chapter 2 on the record of the past has new or expanded sections dealing with some of the current field methods used in archaeological research, such as geophysical surveys, satellite imagery, LIDAR, and GIS.
- The Chapter 2 figures illustrating archaeological dating concepts have been newly revised.
- Chapter 3 on evolution has been slightly shortened, some of the more detailed discussions of evolutionary theory have been trimmed, and the number of key terms has been reduced to better underscore core concepts and make the discussion more appropriate for a four-field text.
- The reviews of recent fossil and archaeological evidence in the Chapter 5 discussion of hominin evolution and in the Chapter 7 discussion of the Paleolithic have been considerably revised and updated, to incorporate an array of new findings and studies. The Chapter 5 discussion on hominin phylogeny has also been substantially tightened to underscore key points and make the discussion easier to follow.
- New sections of *Australopithecus sediba*, *Homo floresiensis* (the "Hobbit"), and *Homo naledi* have been added in Chapter 5.
- Sections on the evolution of anatomically modern humans, the Neandertals, and the Denisova hominins have been significantly revised and updated.
- The discussion of hominin phylogeny in Chapter 5 benefits from a new, updated illustration program that incorporates new finds and interpretations.
- Sections dealing with the increasing role of genomic data in the interpretation of hominin evolution and modern human origins have been added throughout.
- New updated and expanded discussions of anthropological research on color perception in various societies.
- New discussions and developments of the anthropological research on enculturation and emotions.
- New discussion of twenty-first-century "cultural evolution theories": dual-inheritance models and cultural attraction theory.
- New discussions of anthropological research on inequality and debt for economic anthropology.
- New discussion of life history projects in South America by various anthropologists.
- A new chapter on gender and sexuality that explores the complexities of topics such as transgender and LGBTQ issues in various societies throughout the world.

- New discussions of political power, kingships, and warfare as understood by recent research in anthropology.
- New discussion of extreme "high-arousal rituals" by Dimitris Xygalatas in the religion and aesthetics chapter.
- New discussion of shamanism and examples among the Ju/'hoansi and the Inuit.
- New discussion of anthropological explanations of human sacrifice rituals in agricultural states.
- New discussion of the Human Generosity Project as established by Lee Cronk.
- New discussions of the recent impact and reactions to globalization by indigenous communities.
- New condensed chapter on globalization, colonialism, and postcolonialism.
- New discussion of research on essentialism as it is related to "race" classification.
- New discussion of anthropological contributions to genomic research in Mexico in the ethnicity chapter.
- New discussion of the roles of applied anthropologists in their various activities.
- New discussion of ethnomedicine in Africa in the applied anthropology chapter.
- New discussion of how anthropologists are actively doing research on the impact of climate change on various societies throughout the world.
- New discussion of recent applied archaeology and developments in garbology.
- In addition to the changes described above, we have expanded and updated many other sections of the textbook, paying close attention to the readability and coherence of the content for the undergraduate student.

ACKNOWLEDGMENTS

A textbook like this one requires the enormous effort of many people. First, we would like to offer thanks to our colleague, Christina Pomianek, a faculty member at Lindenwood University. She provided in-depth and helpful comments for various sections of this textbook. We would also like to thank the following reviewers for their valuable comments on the various editions of this textbook: Susan Abbott-Jamieson, University of Kentucky; Kelly D. Alley, Auburn University; Hoyt Alverson, Dartmouth College; Barbara Gallatin Anderson, Southern Methodist University; Robert Bee, University of Connecticut; Harumi Befu, Stanford University; John E. Blank, Cleveland State University; Barry Bogin, University of Michigan–Dearborn; Donald E. Brown, University of California–Santa Barbara; Susan Brownell, University of Missouri–St. Louis; Tom Brutsaert, Syracuse University; Robert Carmack, State University of New York–Albany; A. H. Peter Castro, Syracuse University; Miriam S. Chaiken, New Mexico State University; Gail W. Cromack, Onondaga Community College; James Duvall, Contra Costa College; Allen S. Ehrlich, Eastern Michigan University; Dale Eickelman, Dartmouth College; Adam D. Frank, University of Central Arkansas; Michele Ruth Gamburd, Portland State University; Josef Gamper, Monterey Peninsula College; Alan Goodman, Hampshire College; Leonard Greenfield, Temple University; Joan Gross, Oregon State University; Raymond Hames, University of Nebraska; W. Penn Handwerker, Humboldt State University; Richard D. Harris, University of Portland; Robert W. Hefner, Boston University; Lawrence A. Hirschfield, New School for Social Research; Robert Hitchcock, University of New Mexico; Benita J. Howell, University of Tennessee–Knoxville; Arian Ishaya, DeAnza Community College; Howard Kress, University of Connecticut; Norris Johnson, University of North Carolina–Chapel Hill; Rita S. Kipp, Kenyon College; Nancy B. Leis, Central Michigan University; William Leons, University of Toledo; James Lett, Indian River Community College; Kenneth E. Lewis, Michigan State University; Scott Madry, University of North Carolina–Chapel Hill; Ester Maring, Southern Illinois University–Carbondale; Ann P. McElroy, State University of New York–Buffalo; Robert R. McIrvin, University of North Carolina–Greensboro; Nancy P. McKee, Washington State University; Barry H. Michie, Kansas State University; David Minderhout, Bloomsburg University; Katherine Moore, Bentley College; Robert Moorman, Miami-Dade Community College–North; Henry Munson, University of Maine; James Myers, California State University–Chico; Tim O'Meara, World Bank Pacific Islands; Thomas O'Toole, St. Cloud State University; John W. Page, Kirkland, Washington; Curt Peterson, Elgin Community College; Leonard Plotnicov, University of Pittsburgh; Paul (Jim) Roscoe, University of Maine; James L. Ross, University of Akron; Susan D. Russell, Northern Illinois University; L. Schell, State University of New York–Albany; Edwin S. Segal, University of Louisville; Paul Shankman, University of Colorado–Boulder; David H. Spain, University of Washington; John Townsend, Syracuse University; Robert B. Townsend, College of Lake County; Trudy Turner, University of Wisconsin–Milwaukee; Stephen A. Tyler, Rice University; Virginia J. Vitzthum, University of California–Riverside; Alaka Wali, University of Maryland; William Wedenoja, Southwest Missouri State University; Melford S. Weiss, California State University–Sacramento; Ronald K. Wetherington, Southern Methodist University; Aubrey Williams, University of Maryland; Pamela Willoughby, University of Alberta; Dimitris Xygalatas, University of Connecticut–Storrs; and Larry Zimmerman, University of South Dakota.

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Anyone with comments, suggestions, or recommendations regarding this textbook is welcome to send email messages to the following addresses: rscupin@lindenwood.edu or crdecors@maxwell.syr.edu.

Christopher R. DeCorse
Raymond Scupin

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Raymond Scupin is a professor of anthropology and international studies at Lindenwood University. He received his BA degree in history, Asian studies, and anthropology from the University of California–Los Angeles. He completed his MA and PhD degrees in anthropology at the University of California–Santa Barbara. Dr. Scupin is truly a four-field anthropologist. During graduate school, he did archaeological and ethnohistorical research on Native Americans in the Santa Barbara region. He did extensive ethnographic fieldwork in Thailand with a focus on understanding the ethnic and religious movements among the Muslim minority. In addition, Dr. Scupin taught linguistics and conducted linguistic research while based at a Thai university.

Dr. Scupin has been teaching undergraduate and graduate courses in anthropology for more than thirty years at a variety of academic institutions, including community colleges, research universities, and a four-year liberal arts university. Thus, he has taught a very broad spectrum of undergraduate students. Through his teaching experience, Dr. Scupin was prompted to write this textbook, which would allow a wide range of undergraduate students to understand the holistic and global perspectives of the four-field approach in anthropology. In 1999, he received the Missouri Governor's Award for Teaching Excellence. In 2007, Dr. Scupin received the Distinguished Scholars Award at Lindenwood University.

Dr. Scupin has published many essays, book chapters, and review essays based on his ethnographic research in Thailand. He returned to Thailand and other countries of Southeast Asia to update his ethnographic data on Islamic trends in that area, an increasingly important topic in the post-9/11 world. He is a member of many professional associations, including the American Anthropological Association, the Association for Asian Studies, and the Council on Thai Studies. Dr. Scupin has authored *Religion and Culture: An Anthropological Focus*, *Race and Ethnicity: The United States and the World*, and *Peoples and Cultures of Asia*.

Christopher R. DeCorse is a professor and past chair of the Department of Anthropology in the Maxwell School of Citizenship and Public Affairs, Syracuse University. He received his BA in anthropology with a minor in history from the University of New Hampshire, before completing his MA and PhD degrees in archaeology at the University of California–Los Angeles. His research interests include African archaeology and history, general anthropology, and archaeology in popular culture. Dr. DeCorse has excavated a variety of prehistoric and historic period sites in the United States, the Caribbean, and Africa, but his primary area of research has been in the archaeology, history, and ethnography of Africa. Dr. DeCorse has taught archaeology and general anthropology in undergraduate and graduate programs at the University of Ghana, Indiana University of Pennsylvania, and Syracuse University. His academic honors and awards include the Daniel Patrick Moynihan Award for Outstanding Teaching, Research, and Service; the William Wasserstrom Award for Excellence in Graduate Teaching; and the Syracuse University Excellence in Graduate Education Faculty Recognition Award.

Dr. DeCorse is particularly interested in making archaeology more accessible to general audiences. In addition to the single-authored physical anthropology and archaeology textbook *The Record of the Past: An Introduction to Physical Anthropology and Archaeology*, he coauthored, with Brian Fagan, the eleventh edition of *In the Beginning: An Introduction to Archaeology*. He is currently completing a book examining the presentation of archaeologists and archaeology in popular culture.

Dr. DeCorse's academic publications include more than sixty articles, book chapters, and research notes in a variety of publications, including the *African Archaeological Review*, *Historical New Hampshire*, *Historical Archaeology*, the *Journal of African Archaeology,* and *Slavery and Abolition*. Volumes on his research in Africa include *An Archaeology of Elmina: Africans and Europeans on the Gold Coast 1400–1900 (Smithsonian Institution Press, 2001)* and the edited volume, *West Africa During the Atlantic Slave Trade: Archaeological Perspectives* (Bloomsbury, 2016). His most recent books are edited volumes that deal with Europe's entanglements with the non-Western World: *Power, Political Economy, and Historical Landscapes of the Modern World: Interdisciplinary Perspectives* (Fernand Braudel Center Studies in Historical Social Science, SUNY Press, 2019) and *British Forts and Their Communities: Archaeological and Historical Perspectives*, with Zachary J. M. Beier (University Press of Florida, 2018).

Courtesy of Raymond B. Hames

1 INTRODUCTION TO ANTHROPOLOGY

LEARNING OBJECTIVES

After reading this chapter, you should be able to:

- **1.1** Compare and contrast the four major subfields of anthropology.
- **1.2** Describe how the field of anthropology is holistic, interdisciplinary, and global.
- **1.3** Explain how the scientific method is used in anthropological explanations.
- **1.4** Discuss how the field of anthropology bridges both the sciences and the humanities.
- **1.5** Describe why students should study anthropology.

Anthropology is the study of humankind. The discipline ranges from studies of human origins and ancient societies, to the history and diversity of languages, to the customs and beliefs of modern humans. The word *anthropology* is derived from the Greek words *anthropo*, meaning "human beings" or "humankind," and *logia*, translated as "knowledge of" or "the study of." Of course, scholars in many other fields also systematically study humankind in one way or another, but anthropology stands apart because it integrates four subfields that bridge the natural sciences, the social sciences, and the humanities. These four subfields—biological anthropology, archaeology, linguistic anthropology, and cultural anthropology—constitute a broad approach to the study of humanity the world over, both past and present.

Anthropologists use varied methods, techniques, and theoretical approaches in their investigations, which have two major goals: to understand the *uniqueness and diversity* of human behavior and human societies around the world and to discover the *fundamental similarities* that connect human beings throughout the world. To accomplish these goals, anthropologists undertake case studies across the globe that examine human populations in both the past and the present. These studies have broadened our understanding of humanity, from the earliest human societies to the present. This chapter introduces the distinctive approaches used in anthropology to achieve these goals. Figure 1.1 shows these subfields and the various specializations that make up each one.

ANTHROPOLOGY: THE FOUR SUBFIELDS

1.1 Compare and contrast the four major subfields of anthropology.

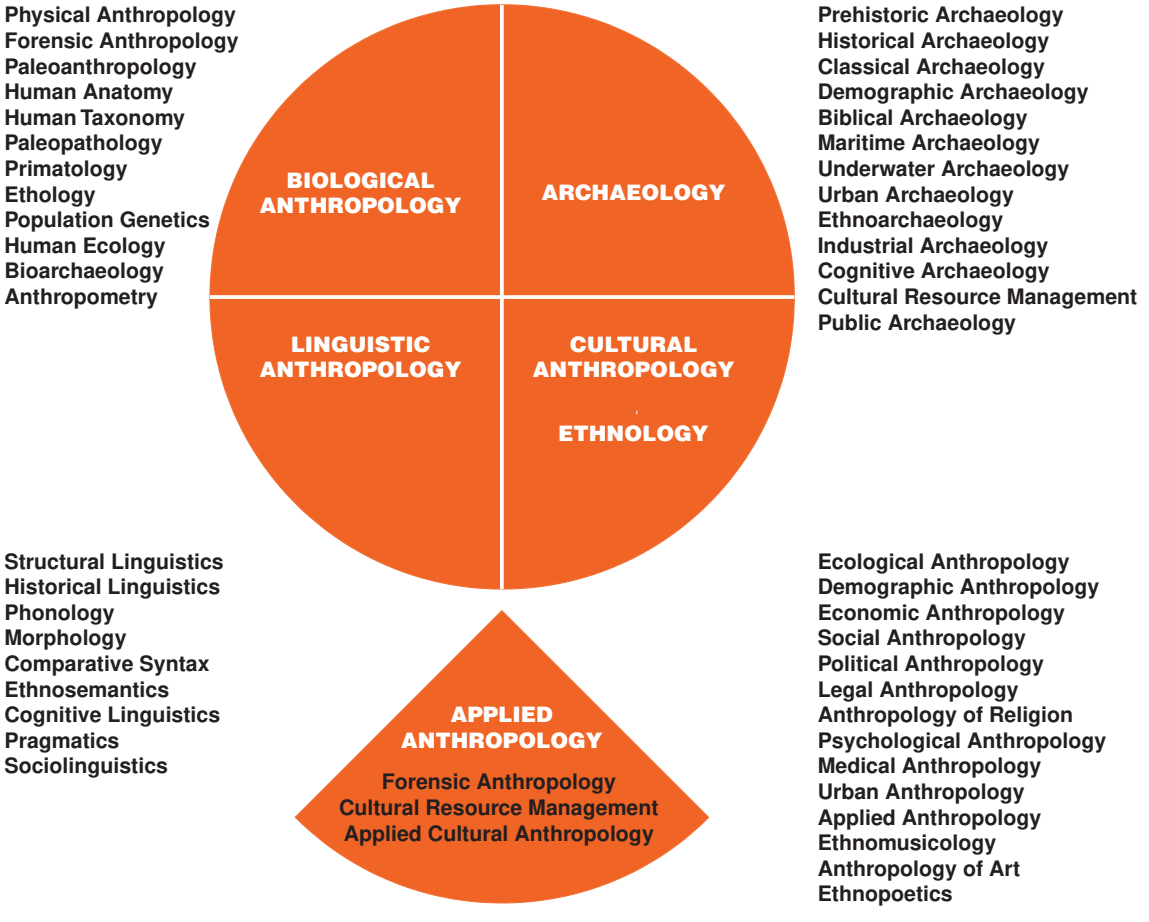
The origins of the four subfields of anthropology go back to the scientific revolution between the sixteenth and eighteenth centuries. During this period, Western scholars increasingly sought to understand the world around them, and to document the natural and cultural diversity they observed. Antiquarians collected ancient stone tools and pottery, and started to document the ancient monuments that dotted the landscape. European travelers, missionaries, and government officials described the native peoples they encountered in the Americas, Africa, the Middle East, and Asia, providing a record of their physical appearances, customs, beliefs, and languages. Many of these early observations were unsystematic and largely descriptive. They offered little if any explanation of the ancient relics that were discovered and demonstrated little if any understanding of the various cultural traditions represented. However, these studies laid the foundation for the discipline of anthropology.

During the nineteenth century, the subdiciplines of anthropology developed into the primary means of studying the human past and for understanding non-Western societies and cultures. The major questions that these nineteenth-century anthropologists sought to answer dealt with the basic differences and similarities of human societies and cultures, their past, and the physical variation found in peoples throughout the world. Modern anthropologists conduct studies the world over, unraveling the past and present, and continue to grapple with the basic questions of human diversity and similarities through systematic research. The subfields of anthropology are discussed as follows.

Biological Anthropology

Biological anthropology (also referred to as physical anthropology) is the subfield of anthropology concerned with humans as a biological species. As such, it is the subfield most closely related to the natural sciences. Biological anthropologists conduct research to understand both human evolution and modern human variation. The investigation of human evolution presents one of the most tantalizing areas of anthropological study. Research has now traced the African origins of humanity back over 6 million years, while fieldwork in

FIGURE 1.1 The Four Core Subfields of Anthropology and Applied Anthropology



other world areas has sketched the expansion of early human ancestors throughout the world. Much of the evidence for human origins consists of *fossils*, the traces and fragmentary remains of once-living creatures preserved from earlier periods. The study of human evolution through analysis of fossils is called **paleoanthropology** (the prefix *paleo* from the Greek word *palaios* meaning "old" or "ancient"). Paleoanthropologists use a variety of scientific techniques to date, classify, and compare fossilized bones to determine the links between modern humans and their biological ancestors. Paleoanthropologists often work closely with archaeologists, who study ancient tools and activity areas, to more fully understand the behaviors of early human ancestors.

Other biological anthropologists explore human evolution through **primatology**, the study of primates. **Primates** is a diverse order of mammals that includes humans, as well as other species such as chimpanzees, gorillas, gibbons, and orangutans that share an evolutionary history and, therefore, have many physical characteristics in common with us. Studies of nonhuman primates in their natural habitats help anthropologists ascertain the similarities and differences between these primates and humans. Observations of living primates also provide insight into the behaviors of early human ancestors.

Other biological anthropologists focus their research on the range of physical variation within and among modern human populations. These anthropologists study human variation by measuring physical characteristics—such as body size, variation in blood types, or differences in skin color—or genetic traits. Their research aims at explaining *why* such variation occurs, as well as documenting the differences in human populations.

Skeletal structure is also the focus of anthropological research. Human *osteology* is the area of specialization within biological anthropology dealing with the study of the human skeleton. Skeletal remains are crucial in studies of human evolution, prehistoric societies, and individual life histories. For example, on one hand, the fossilized skeletal remains of early human ancestors provide clues to the evolutionary relationships between different human ancestors. On the other hand, osteological studies can be used to determine social and gender inequalities, which affect diet and living conditions, traces of

which are preserved in an individual's bones (Klaus, Harvey, and Cohen 2017). Osteological studies have wide-ranging applications, from the identification of murder victims from fragmentary skeletal remains, to the design of ergonomic airplane cockpits. Biological anthropologists are also interested in evaluating how disparate physical characteristics reflect evolutionary adaptations to different environmental conditions, thus shedding light on why human populations vary.

An increasingly important area of research within biological anthropology is *genetics*, the study of the biological "blueprints" that dictate the inheritance of physical characteristics. Genetic research examines a wide variety of questions. It has, for instance, been important in identifying genetic diseases, such as sickle cell anemia, cystic fibrosis, and Tay-Sachs disease. Genetic research has also provided important clues into human origins. Through the study of the genetic makeup of modern humans, biological anthropologists have calculated the genetic distance among modern humans, thus providing a means of inferring rates of evolution and the evolutionary relationships within the species (Kitchen 2015). These data have helped provide independent evidence for the African origins of the human species.

Courtesy of Zachary J. M. Beier

Staff and students from The University of the West Indies, Mona, document a human burial discovered during excavations at White Marl in Jamaica. One of the largest pre-Columbian settlements on the island, it has been continuously inhabited from AD 850 to the Spanish conquest in the 16th century.

ANTHROPOLOGISTS AT WORK

JOHN HAWKS, BIOLOGICAL ANTHROPOLOGIST

Courtesy of John Hawks

John Hawks

John Hawks is a biological anthropologist who works on the border between paleoanthropology and genetics. He got his start teaching evolution in his home state of Kansas, followed by doctoral training and teaching in Michigan and Utah and then at his current home, the University of Wisconsin. Hawks feels that it is especially important for biological anthropologists to be trained in human anatomy—especially *bone* anatomy, or osteology, to interpret evidence from the fossil record. They have to understand the anatomical differences between humans and other primates, and the way these anatomies relate to habitual behaviors. The social and ecological behaviors of primates vary extensively in response to their unique ecological environments. Understanding the relationship of anatomy, behavior, and environment gives biological anthropologists a way to interpret ancient fossils and place them in their environmental contexts. Hawks has also incorporated recent genetic data to better understand human origins.

Hawks has made substantial contributions in the understanding of the Neandertals, an extinct species of humans or human relatives (discussed in Chapter 5). The evolutionary relationship between Neandertals and humans has been a source of debate among researchers since the first fossil finds in the mid-nineteenth century. In many respects, these debates highlight the challenges anthropologists face in classifying species on the basis of fragmentary fossil finds. How much physical variation was present within ancient populations? By integrating genetic evidence with studies of the physical difference of living primates, Hawks and his colleagues have provided a more nuanced view of how physical differences do not necessarily mirror differences in genetic relatedness (Ahern, Hawks, and Lee 2005).

Hawks has also studied the relationships between the genes of living and ancient people to discover the ways that natural selection has affected them. In 2007, Hawks and his coworkers scanned the genome, finding evidence for widespread selection on new, advantageous mutations during the last 40,000 years (Hawks et al. 2007). The breadth of this selection across the genome indicated that human evolution accelerated as larger populations and

new agricultural subsistence patterns exerted pressures on human populations. Far from slowing down human evolution, culture created new opportunities for adaptive change.

More recently, Hawks has collaborated on studies of *Homo naledi*, a previously unknown species discovered in the Rising Star cave system in South Africa (L. Berger et al. 2015). Dated to approximately 250,000 years ago, *Homo naledi* is particularly interesting as the species would have overlapped temporally with early modern humans. While the species shares many physical characteristics with other members of the genus *Homo*, including its cranial capacity, it also processes more primitive features, similar to earlier species. For this reason, it is placed in a side branch on the human family tree. The story of this find is told in Hawks's recent coauthored book *Almost Human: The Astonishing Tale of* Homo naledi *and the Discovery That Changed Our Human Story* (L. Berger and Hawks 2017).

Hawks is widely known for his blog, which is visited by several thousand readers every day. Describing new research from an expert's perspective, he has shown the power of public outreach as an element of the scientific process. This aspect of his work has made him a leader in "open science," a movement to expand public accessibility to scientific research and open access to scientific data. Hawks welcomes everyone who is interested in human evolution based on a scientific approach to go to his blog at http://johnhawks.net/.

Archaeology

Archaeology, the branch of anthropology that examines the material traces of past societies, informs us about the culture of those societies—the shared way of life of a group of people that includes their values, beliefs, and norms. *Artifacts*, the material products of former societies, provide clues to the past. Archaeological sites—places of past human activity—occasionally reveal spectacular treasures such as those found by archaeologists in film and fiction. Most archaeological finds, however, are not so spectacular. Despite popular images of archaeology as an adventurous, romantic pursuit, it usually consists of methodical, time-consuming, and somewhat tedious research. Archaeological excavation, or "scientific digging," involves the careful recovery and recording of the material record of the past. Archaeologists often spend hours sorting through ancient trash piles, or *middens*, to discover how members of past societies ate their meals, what tools they used, and what beliefs gave meaning to their lives. They collect and analyze the broken fragments of pottery, stone, glass, and other materials. It may take years to fully complete the study of an archaeological excavation. Unlike fictional archaeologists, who experience glorified adventures, real-world archaeologists thrive on the challenges of scientific research that enlarge our understanding of the past.

Archaeologists have examined sites the world over, from ancient campsites to modern landfills. Some archaeologists investigate past societies whose history is primarily told by the archaeological record. Known as **prehistoric archaeologists**, they study the artifacts of groups such as the ancient inhabitants of Europe and the first human settlers of the Americas. Because these researchers have no written documents or oral traditions to help interpret the sites they examine and the artifacts they recover, the archaeological record provides the primary source of information for their interpretations of the past. **Historical archaeologists**, on the other hand, draw on documentary records and oral traditions to investigate the societies of the more recent past. Some historical archaeologists have probed the remains of plantations in the southern United States to gain an understanding of the lifestyles of enslaved Africans and slave owners during the nineteenth century. Other archaeologists, called **classical archaeologists**, conduct research on the ancient civilizations of Greece and Rome.

There are many more areas of specialization within archaeology that reflect the geographic area, topic, or time period on which the archaeologist works. **Ethnoarchaeologists** study the material artifacts of the past along with the observation of modern peoples who have knowledge of the use and symbolic meaning of those artifacts. Another distinctive area of focus is underwater archaeology, distinguished by the equipment, methods, and procedures needed to excavate under water. Underwater archaeologists investigate a wide range of time periods and sites throughout the world, ranging from sunken cities to shipwrecks. The array of other areas of archaeological specialization are listed in Figure 1.1.

Robert Fried/Alamy Stock Photo

Archaeologists excavating at the Santo Domingo Monastery, Guatemala, an important colonial site dating back to the sixteenth century.

ANTHROPOLOGISTS AT WORK

ARCHAEOLOGIST KATHRYN SAMPECK

Courtesy of Kathryn Sampeck

Kathryn Sampeck

Kathryn Sampeck's career was not a single path, but a voyage that has led to many places. Growing up on a Texas ranch fostered a love of the outdoors, hard physical work in varied conditions, and coming up with clever ways to solve everyday problems: how to get that reluctant colt into the pen in the pouring rain, how to soothe a mare giving birth, or the best way to stack all those bales of hay. Sampeck became enchanted with archaeology because it offered a similar array of challenges. She was left with a hunger for both the physical activity and solving problems.

Sampeck found the best of both worlds in archaeology, particularly the study of the recent past. She came to this conclusion through experience. From one field school in archaeology to the next, she moved from some of the most ancient evidence of humanity at Koobi Fora, Kenya, to the remarkable Paleolithic cave art of Altamira, Spain. Sampeck's first graduate work at the University of Chicago and then at Tulane University focused on palatial complexes in the great pre-Columbian cities of Tiwanaku in the Bolivian Andes and the Mayan site of Copán, Honduras. What increasingly captured her attention, however, was European colonialism and the extraordinary meeting of different worlds in fifteenth- and sixteenth-century Latin America. Sampeck's research reveals how pre-Columbian practices and material worlds at once shaped and were transformed by colonial dynamics and their lasting legacies. Her research questions may seem simple: Why do so many people today enjoy chocolate? How did ideas of race become part of people's lives? When do people use money? How old are current place names and territorial boundaries? Sampeck's diverse interests share the same goal: understanding the development and maintenance of inequalities as a first step toward a more equitable future. She is a champion of archaeology's unique perspectives, methods, and information as a crucial part of this endeavor. She sees archaeological methods as not just survey or excavation, but a way of interpreting information.

Sampeck's archaeological research provides an intimate view of the living and working spaces of producers of cacao, the tree seed that people use to make chocolate. The connections between those first producers and local consumers in Central America, and eventually consumers in the rest of the world, are visceral and tangible. The taste, texture, appearance, and meanings of chocolate today are the product of a long colonial history. Sampeck analyzed the ingredients of historic recipes to create dendrograms, rather like family trees, as a systematic way to evaluate when and where strong differences in taste occurred, providing insight into the gastropolitics of the past.

In a different vein, her studies of where and when people used colonial tin-glazed earthenware, *maiolica*, affords a way to evaluate how Spanish colonial city neighborhoods—some segregated by racial and ethnic categories—differed from one another. Dissecting these material histories pushes to the forefront the assumptions that continue to impact people's lives. With this knowledge, we can recognize inequalities that disproportionately affect the lives of people of African descent in Latin America.

Sampeck notes that not only the results of archaeology but the very process of investigation and the subsequent sharing of results can promote fairness, transparency, and respect. She believes that archaeological research is a program of partnership with local stakeholders, including decisions about what to investigate, how, and ways to share results. While changes in today's economy or political system may be slow, archaeology can move rapidly by creating digital humanities environments to share insights and information. She feels fortunate to work on digital projects in close partnership with Maya colleagues in Central America, the Eastern Band of Cherokee Indians Tribal Historic Preservation Office in North Carolina, and numerous colleagues across Latin America who participate in the Afro-Latin American Archaeological Consortium, an organization she founded to support activities and agendas that promote understanding and conservation of resources relating to the culture and history of peoples of African descent in Latin America.

Sampeck's publications attest to her wide-ranging interests. Some of her recent publications include "Early Modern Landscapes of Chocolate: The Case of Tacuscalco," in *Power, Political Economy, and Historical Landscapes of the Modern World*, edited by Christopher R. DeCorse (SUNY Press, 2019); "An Archaeology of Indigo: Modernity and the Landscape of Obrajes in the Izalcos Region of Western El Salvador," in *Technology and Tradition After the Spanish Invasion*, edited by Rani T. Alexander (University of New Mexico Press, 2019); "Archaeology in Post-war El Salvador," in *Post-Conflict Archaeology and Cultural Heritage: Rebuilding Knowledge, Memory and Community From War-Damaged Material Culture*, edited by Paul Newson and Ruth Young (Taylor & Francis, 2018); and *Substance and Seduction: Ingested Commodities in Early Modern Mesoamerica*, edited with Stacey Schwartzkopf (University of Texas Press, 2017).

Linguistic Anthropology

Linguistics, the study of language, has a long history that dovetails with the discipline of philosophy, but is also one of the integral subfields of anthropology. **Linguistic anthropology** focuses on the relationship between language and culture, how language is used within society, and how the human brain acquires and uses language. Linguistic anthropologists seek to discover the ways in which languages are different from one another, as well as how they are similar. Two wide-ranging areas of research in linguistic anthropology are structural linguistics and historical linguistics.

Structural linguistics explores how language works. Structural linguists compare grammatical patterns or other linguistic elements to learn how contemporary languages mirror and differ from one another. Structural linguistics has also uncovered some intriguing relationships between language and thought patterns among different groups of people. Do people who speak different languages with distinct grammatical structures think about and perceive the world differently from each other? Do native Chinese speakers think about or view the world and life experiences differently from native English speakers? Structural linguists are attempting to answer these types of questions.

Linguistic anthropologists also examine the connections between language and social behavior in different cultures. This specialty is called **sociolinguistics**. Sociolinguists are interested both in how language is used to define social groups and in how belonging to a particular group leads to specialized kinds of language use. In Thailand, for example, there are thirteen forms of the pronoun *I*. One form is used with equals, other forms come into play with people of higher status, and some forms are used when males address females (Scupin 1988).

Another area of research that has interested linguistic anthropologists is historical linguistics. **Historical linguistics** concentrates on the comparison and classification of different languages to discern the historical links among them. By examining and analyzing grammatical structures and sounds of languages, researchers are able to discover rules for how languages change over time, as well as which languages are related to one another historically. This type of historical linguistic research is particularly useful in tracing the migration routes of various societies through time by offering multiple lines of evidence—archaeological, paleoanthropological, and linguistic. For example, through historical linguistic research, anthropologists have corroborated the Asian origins of the Native American populations.

Courtesy of Christina Pomianek

Anthropologist Christina Pomianek doing linguistic research in West Kalimantan, Borneo, Indonesia.

ANTHROPOLOGISTS AT WORK

LINGUISTIC ANTHROPOLOGIST LISE DOBRIN

Courtesy of Lise Dobrin

Linguistic anthropologist Lise Dobrin with Martin Maitana, an Abu' Arapesh speaker from East Sepik Province, Papua New Guinea.

Lise Dobrin is an associate professor of anthropology and director of the interdepartmental Program in Linguistics at the University of Virginia. She began her career as a PhD student in linguistics at the University of Chicago, a field that she discovered during coursework as an undergraduate psychology major at the University of Illinois at Urbana-Champaign. While in graduate school at Chicago, Dobrin became interested in morphology, the subfield of linguistics that studies how the words in a language are composed and related with other words. Dobrin became fascinated by the Arapesh languages of Papua New Guinea. According to the available records, Arapesh has an elaborate set of noun classes, akin to the grammatical genders of European languages, that depends not on what the words mean, but on how they sound: What determines a noun's class is its final consonant.

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These same consonants were also used to mark grammatical agreement (associating an adjective with a noun, as in *dəbei**t**i nɨmba**t*** "big dog" or *dəbei**hʷ**i uro**hʷ*** "big house"), which means that "raw" sounds are getting grammatically propagated around sentences in ways that are much freer than linguists generally thought possible. Dobrin made an extended field trip to an Arapesh village in order to directly study and audio-record this interesting grammatical phenomenon. You can read about the results of this study in her 2012 book *Concreteness in Grammar: The Noun Class Systems of the Arapesh Languages*.

When Dobrin arrived in Papua New Guinea, it became evident to her that the language she had come so far to study was no longer being learned by children. In other words, Arapesh, like many other small languages throughout the world, was heading toward extinction. So she began to create and preserve what knowledge could still be gleaned about how Arapesh was spoken. In addition to taking field notes, Dobrin made and transcribed audio-recordings in order to create a lasting documentary record of the language. In collaboration with specialists in the digital humanities, Dobrin has continued to curate these recordings, extracting information about Arapesh words into a lexicon to which the recordings are linked. She also worked with a missionary linguist who studied a related variety of Arapesh to archive his materials. Some of this work can be seen at the Arapesh Grammar and Digital Language Archive (www.arapesh.org). Dobrin and her collaborators have designed a system that allows the recordings and associated transcripts to be played together on a web browser, even without access to the internet, since many people in Papua New Guinea are not online. She is currently working on a grammatical description of the language that refers to all these materials.

Knowledge production always builds upon work done by other scholars. In the 1930s, Arapesh language and culture were studied by two researchers, Margaret Mead and Reo Fortune, who carried out their fieldwork together as a married couple but who came to opposite conclusions about Arapesh culture. Together with her husband, Ira Bashkow, a cultural anthropologist who was with her during her own fieldwork, Dobrin has written about what led to these earlier researchers' differences of interpretation. Blending methods drawn from history, ethnography, and linguistic anthropology, Dobrin and Bashkow's analysis emphasizes the way personal factors play a role in ethnographic interpretation. This collaborative research is described in their coauthored 2010 essay "'Arapesh Warfare': Reo Fortune's Veiled Critique of Margaret Mead's *Sex and Temperament*" published in the *American Anthropologist*.

Dobrin's experiences in Papua New Guinea led her to try to understand how and why communities shift their linguistic allegiance away from a traditional language to another language of wider communication, and how cultural factors shape the revitalization activities communities engage in as they attempt to address language shift. Cultural contact plays a role in all aspects of endangered language documentation, since this activity is motivated by the way social difference is interpreted by both those in communities undergoing shift and outsiders doing research that responds to it—though it may not mean the same thing to each of these groups. These problems are discussed in her 2008 journal article "From Linguistic Elicitation to Eliciting the Linguist: Lessons in Community Empowerment From Melanesia" (*Language* 84, no. 2: 300–324) as well as several other essays, including "Language Shift in an 'Importing Culture': The Cultural Logic of the Arapesh Roads," which appeared in a volume about endangered languages (Austin and Sallabank 2014).

Currently, Dobrin is preparing to annotate and publish a historical document that was composed by an important Arapesh intellectual, Bernard Narokobi. Narokobi was one of the founding fathers of the modern nation of Papua New Guinea, which only underwent decolonization in the 1970s. The document tells the history of Narokobi's village from mythical times to the present. The goal of the project is to preserve local knowledge while also shedding light on Narokobi's published writings in which he promoted a conception of the new nation as a "village writ large." This work will be important not only for anthropologists and historians, but also for the Papua New Guinean people, who have so generously welcomed her into their communities.

Dobrin's interests in linguistic anthropology are not limited to Arapesh and Papua New Guinea. For example, in 2016 she coauthored a review essay with Americanist anthropologist Saul Schwartz on "The Cultures of Native North American Language Documentation and Revitalization." Finally, Dobrin has a more general interest in the ethical issues that arise during fieldwork in anthropology. She has served on her university's Social and Behavioral Sciences Institutional Review Board (IRB), the American Anthropological Association's Committee on Ethics, and the Linguistic Society of America's Committee on Endangered Languages and Their Preservation.

Cultural Anthropology

Cultural anthropology is the subfield of anthropology that examines contemporary societies and cultures. Cultural anthropologists do research the world over, from tropical rainforests to the Arctic, and from remote farming villages to urban centers. The first professional cultural anthropologists focused on non-Western cultures in Africa, Asia, the Middle East, Latin America, and the Pacific Islands and on the Native American

populations in North America. Today, however, many cultural anthropologists have turned to research on their own societies in order to gain a better understanding of their institutions and cultural values.

Cultural anthropologists (sometimes the terms *sociocultural anthropologist* and *ethnographer* are used interchangeably with *cultural anthropologist*) use a unique research strategy in conducting their fieldwork. This research strategy is referred to as **participant observation** because cultural anthropologists learn the language and culture of the group being studied by participating in the group's daily activities. Through this intensive participation, they become deeply familiar with the group and can understand and explain the society and culture of the group as insiders. We discuss the methods and techniques of cultural anthropologists at greater length in Chapter 14.

The results of the fieldwork of the cultural anthropologist are written up as an **ethnography**, a description of a society. A typical ethnography details the environmental setting, economic patterns, social organization, political system, and religious rituals and beliefs of the society under study. This description is based on what anthropologists call *ethnographic data*. The gathering of ethnographic data in a systematic manner is the specific research goal of the cultural anthropologist. Technically, **ethnology** refers to anthropologists who focus on the cross-cultural aspects of the various ethnographic studies done by the cultural anthropologists. Ethnologists analyze the data that are produced by the individual ethnographic studies to produce cross-cultural generalizations about humanity and cultures. Many cultural anthropologists use ethnological methods to compare their research from their own ethnographic fieldwork with the research findings from other societies throughout the world.

ANTHROPOLOGISTS AT WORK

SCOTT ATRAN, CULTURAL ANTHROPOLOGIST

Courtesy of Scott Atran

Scott Atran

Born in 1952 in New York City, Scott Atran went to Columbia University as a Westinghouse mathematics scholar. At a student demonstration against the Vietnam War in 1970, he met the famous anthropologist Margaret Mead, and she invited him to work as her assistant at the American Museum of Natural History. In 1970, Atran also traveled to the Middle East for the first time, conducting fieldwork in Palestinian villages. As a graduate student in 1974, Atran organized a famous debate at the Abbaye de Royaumont in France on the nature of universals in human thought and society, with the participation of some well-known scholars such as the linguist Noam Chomsky, the psychologist Jean Piaget, the anthropologists Claude Lévi-Strauss and Gregory Bateson, and the biologists François Jacob and Jacques Monod, a conference that many consider a milestone in the development of the field known as cognitive science.

Atran continued observing societies as he traveled overland from Portugal to China, via Afghanistan and Pakistan. Landing again in the Middle East, he conducted ethnographic research on kinship and social ties, land tenure, and political economy among the Druze, a religious group in Israel and Lebanon. Later, Atran became a pioneer in the study of the foundations of biological thinking in Western science and other Native Americans such as the Itzá Maya in Mexico. This research became the basis of his well-known books *Cognitive Foundations of Natural History: Towards an Anthropology of Science* (Cambridge University Press, 1990), *The Native Mind and the Cultural Construction of Nature* (MIT Press, 2008), and *Plants of the Petén Itzá Maya* (University of Michigan Museum of Anthropological Archaeology, 2004), which illustrate how people throughout the world classified biological species of plants and animals in very similar ways.

Later, Atran began an investigation of the cognitive and evolutionary foundations of religion, which resulted in his widely acclaimed book *In Gods We Trust: The Evolutionary Landscape of Religion (Oxford University Press, 2002).* In this book, Atran explores the psychological foundations of religion and how it has become a universal feature of all human societies. He has also contributed toward an understanding

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of the characteristics associated with suicide bombers and political and religious terrorism in different areas of the world. Atran has been funded by the National Science Foundation and other agencies to study the phenomena of terrorism; this has included fieldwork and interviews with al-Qaeda associates and other militant groups, as well as with political leaders in conflict zones in Europe, the Middle East, Central and Southeast Asia, and North Africa. His book *Talking to the Enemy: Faith, Brotherhood and the (Un) Making of Terrorists* (HarperCollins, 2010) is based on this long-term research.

More recently, in 2015, Atran and a team of anthropologists went to Iraq to interview combatants fighting against the Islamic State (ISIS, ISIL) as well as captured ISIS fighters to investigate the spiritual and cognitive motivations that led them to become militant insurgents. There were feature stories of this research on the spiritual dimension of these human conflicts in the *Chronicle of Higher Education, Science,* and *Nature*. Also, in that year Atran was the first anthropologist to formally address the United Nations Security Council discussing how young people can promote peace and security in those conflict zones.

Atran has taught at Cambridge University, Hebrew University in Jerusalem, and the *École des hautes études en sciences sociales* (School for the Advanced Studies of the Social Sciences) in Paris. He is currently a research director in anthropology at the *Centre national de la recherche scientifique* (French National Center for Scientific Research, CNRS) based in Paris and is a member of the Jean Nicod Institute at the *École normale supérieure*. He is also visiting professor of psychology and public policy at the University of Michigan and cofounder of ARTIS Research and Risk Modeling. Most recently, Atran has become Senior Fellow and cofounder of the Centre for the Resolution of Intractable Conflicts, at Harris Manchester College and the Department of Social Anthropology, Oxford University.

Atran's broadly interdisciplinary scientific studies on human reasoning processes and cultural management of the environment, and on religion and terrorism, have been featured around the world in science publications, such as *Science, Nature, Proceedings of the National Academy of Sciences USA,* and *Brain and Behavioral Sciences*, as well as the popular press, including feature stories with BBC television and radio, NPR, *the Wall Street Journal,* and *Newsweek.* He has been the subject of a cover story in the *New York Times Magazine* ("Darwin's God," 2007) and has written numerous op-eds for the *New York Times* and the magazine *Foreign Policy*.

Atran has teamed up with psychologists and political scientists, including Douglas Medin and Robert Axelrod, to experiment extensively on the ways scientists and lay people categorize and reason about nature, on the cognitive and evolutionary psychology of religion, and on the role of sacred values in political and cultural conflict. Based on recent fieldwork, he has testified before the U.S. Congress and has repeatedly briefed National Security Council staff at the White House on paths to violent extremism among youth in Southeast and South Asia, the Middle East, North Africa, and Europe. Atran has utilized his knowledge and research as a cultural anthropologist to help understand some of the basic questions of human life and also to contribute to solving some of our current problems with globally sponsored political and religious terrorism.

Applied Anthropology

The four subfields of anthropology (biological anthropology, archaeology, linguistic anthropology, and cultural anthropology) are well established. However, anthropologists also recognize a fifth subfield. **Applied anthropology** is the use of anthropological data to address modern problems and concerns, ranging from interventions in the treatment of disease to the management of cultural resources and assisting the police in murder investigations. Anthropologists have played an increasing role in creating government policies and legislation, the planning of development projects, and the implementation of marketing strategies. An increasing number of anthropologists see the application of anthropological data as the central part of their careers and find employment outside of universities and museums. Indeed, approximately half of the people with doctorates in anthropology currently are employed outside of academic institutions.

Each of the four major subfields of anthropology has applied aspects. Biological anthropologists, for example, sometimes play a crucial role in police investigations, using their knowledge of the human body to reconstruct the appearance of murder victims on the basis of fragmentary skeletal remains or helping police determine the cause of death. Archaeologists deal with the impact of development on the archaeological record, working to document or preserve archaeological sites threatened by the construction of housing, roads, and dams. Some linguistic anthropologists work with government agencies and indigenous peoples to document disappearing languages or work in business to help develop marketing strategies. Cultural anthropologists have played key roles in planning of government programs so that they take people's cultural beliefs and needs into consideration. These applied aspects of anthropological research are highlighted in Chapter 24.

ANTHROPOLOGISTS AT WORK

A. PETER CASTRO, APPLIED ANTHROPOLOGIST

Courtesy of A. Peter Castro

A. Peter Castro with olive growers in Jordan.

Conflict over use of the environment is a theme that unites A. Peter Castro's work as an applied cultural anthropologist, including his service as a consultant for the Near East Foundation, the Food and Agriculture Organization of the United Nations (FAO), the United States Agency for International Development (USAID), the United Nations Development Programme (UNDP), CARE International, and other organizations. Conflict is a ubiquitous aspect of human existence. Disputes offer an important means for people to assert their rights, interests, and needs, yet conflicts can escalate into violence that threatens both lives and livelihoods. Castro has used his perspective, skills, and knowledge as a cultural anthropologist to address environmental conflicts in participatory and peaceful ways. Besides his ongoing work as a consultant, he incorporates conflict issues into his classes in the anthropology department of the Maxwell School of Citizenship and Public Affairs at Syracuse University, where he is an associate professor. He is also a Robert D. McClure Professor of Teaching Excellence.

Castro's interest in environmental conflicts reflects his rural California upbringing, where farmworker unionization struggles, debates about offshore oil development, and conflicts over housing and commercial expansion were everyday occurrences. He credits his professors at the University of California–Santa Barbara, where he obtained his undergraduate and graduate degrees, with giving him the inspiration and training to use cultural anthropology to address pressing social and environmental issues. As an undergraduate, Castro was a research assistant on a number of applied anthropology projects. In classes and through long discussions outside of class, he learned invaluable lessons about the importance of linking local, national, and global dimensions of human and environmental crises. Castro's PhD advisor, David Brokensha, a distinguished applied anthropologist, was instrumental in providing opportunities for Castro to develop contacts in international agencies. Brokensha was a founder of the Institute for Development Anthropology, a nonprofit research and educational organization dedicated to applying anthropological theories and methods to improve the condition of the world's poor (A. P. Castro and Chaiken 2018).

Castro's early applied work for international organizations focused on social aspects of planning, managing, and evaluating community forestry programs and projects. Although disputes between rural people and forest agencies often propelled the rise of community-oriented programs and projects, conflict itself was not initially seen by officials and technical officers as a topic of concern. Nonetheless, Castro found that, whether carrying out applied fieldwork on deforestation in Kenya for USAID or preparing a literature-based review of indigenous forest management practices for the FAO, one needed to take conflict into account. For example, Castro discovered through ethnographic interviews and archival research that numerous, sometimes violent, conflicts had existed over forest resources in Central Kenya, yet the contending parties sometimes in the past had negotiated agreements calling for their co-management of local resources that still had relevance today (for example, see Castro's book *Facing Kirinyaga: A Social History of Forest Commons in Southern Mount Kenya*, 1995). Castro's concern with integrating historical analysis, as well as conflict analysis, into international development planning is illustrated in his edited collection of articles on the theme "Historical Consciousness and Development Planning" in the interdisciplinary journal *World Development* (1998).

The importance of dealing with environmental conflicts became starkly clear when Castro was asked by UNDP in 1992 to serve as team leader for the midterm evaluation of Bangladesh's Social Forestry Project, a countrywide effort being implemented at a cost of $46 million. The UNDP's decision to select an anthropologist, rather than forester, to head the mission underscored its commitment to participatory development. The project was supposed to create the capacity for Bangladesh's Forest Department to engage in community-oriented training, tree planting, and resource protection. The project had many accomplishments but also widespread problems due to its lack of public participation (see A. P. Castro and Nielsen 2001, 2003). Sadly, a project meant to address long-standing conflicts between the Forest Department and the public sometimes served to intensify them.

Castro worked as a consultant for the FAO, writing and editing a number of publications aimed at providing information and practical training on natural resource conflict management. He coedited a useful book with Antonio Engel called *Negotiation and Mediation Techniques for Natural Resource Management* in 2007. He also coedited a book on *Climate Change and Threatened Communities: Vulnerability, Capacity and Action* with Brokensha and anthropologist Dan Taylor (A. P. Castro et al. 2012). Among its fifteen case studies is one written by Castro based on his fieldwork in the north-central Ethiopian highlands, a drought- and hunger-prone area, with the BASIS-CRSP Horn of Africa Program. Another case study is by Castro and Sudanese scholar

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Yassir Hassan Satti on agricultural change in Zalingei, Central Darfur State, Sudan.

Recently, Castro has been a consultant for the Near East Foundation. He served as lead trainer for workshops on collaborative natural resource conflict management in Zalingei in 2012 and 2014; in Sévaré, Mopti Region, Mali, in 2013; and in Amman, Jordan, in 2017. These areas have suffered from prolonged conflicts. For more than a decade, Darfur, an area the size of France, has suffered from large-scale violence and instability. National political instability and violence in Mali's North and West have had a severe impact on Mopti, including its world-renowned tourist areas at Djenné and in the Dogon area. The Amman training brought together Jordanians and Palestinians as part of its Olive Oil Without Borders project that also involves Israelis. These Near East Foundation projects seek to foster livelihood restoration and peace building. Trainees at the workshop included local members of the Near East Foundation staff, as well as members from local partner organizations and other nongovernmental organizations. Castro (2018) recently published a study of the impacts of the Darfur projects, recording its accomplishments, especially regarding local conflict resolution and reconciliation activities, but also highlighting the limitations of working in a conflict-prone and illiberal setting.

HOLISTIC ANTHROPOLOGY, INTERDISCIPLINARY RESEARCH, AND A GLOBAL PERSPECTIVE

1.2 Describe how the field of anthropology is holistic, interdisciplinary, and global.

Anthropology is inherently an interdisciplinary, holistic field. Most anthropologists receive some training in each of the four subfields of anthropology. However, because of the wide-ranging scope of these different subfields—more than 300 journals and hundreds of books are published every year—no one individual can keep abreast of all the developments across the entire discipline. Consequently, anthropologists usually specialize in one of the four subfields. Nevertheless, most anthropologists are committed to a **holistic** approach to understanding humankind—a broad, comprehensive vantage that draws on all four subfields under the umbrella of anthropology. This holistic approach integrates the analyses of biological, environmental, psychological, economic, historical, social, and cultural conditions of humanity. In other words, anthropologists study the physical characteristics of humans, including their genetic makeup, as well as their prehistoric, historic, and social and cultural environments. Through collaborative studies across the four subfields, anthropologists can ask broadly framed questions about humanity.

Anthropology does not limit itself to its own four subfields to realize its research agenda, and it has strong links to other social sciences. Cultural anthropology, for instance, is closely related to sociology. The two fields explore many of the same questions using similar research approaches. For example, both rely on statistical and nonstatistical data whenever appropriate in their studies of different types of societies. Similarly, cultural anthropologists also draw on psychology when they assess people's behavior. Psychological questions bearing on perception, learning, and motivation all figure in ethnographic fieldwork. As we shall discover in later chapters, cultural anthropology also overlaps the fields of economics, and political science.

Anthropology dovetails especially closely with the field of history, which, like anthropology, investigates the human past. Historians describe and explain human events that have occurred throughout the world; anthropologists place their biological, archaeological, linguistic, and ethnographic data in the context of these historical developments. As noted, historical and classical archaeologists draw on documentary records and may work closely with historians in reconstructing the past. Another important area of anthropological research that overlaps with history is the field of ethnohistory. **Ethnohistory** is the study of the history of a particular ethnic group. Ethnohistory may be based on written historical documents, or more often oral narratives that are recorded by ethnographers working in various regions of the world.

Through the four subfields and the interdisciplinary approach, anthropologists have emphasized a *global perspective*. The global perspective enables anthropologists to consider the biological, environmental, psychological, economic, historical, social, and cultural conditions of humans at all times and in all places. Anthropologists do not limit themselves to understanding a particular society or set of societies, but attempt to go beyond local conditions and demonstrate the interconnections among societies throughout the world. This global perspective is used throughout this text to show how anthropologists situate their findings in the interconnecting worldwide context.

ANTHROPOLOGICAL EXPLANATIONS

1.3 Explain how the scientific method is used in anthropological explanations.

How do anthropologists evaluate the varied social, cultural, or biological data they gather? Far from haphazard, anthropological research relies on the systematic collection of information

and careful assessment. This can be challenging. Human knowledge is rooted in personal experience, as well as in the beliefs, traditions, and norms maintained by the societies in which people live. This includes such basic assumptions as putting on warm clothing in cold weather and bringing an umbrella if it is going to rain, for example. Yet, it also includes notions about how food should be prepared, what constitutes "appropriate" behavior, and what the correct social and cultural roles are for men and women.

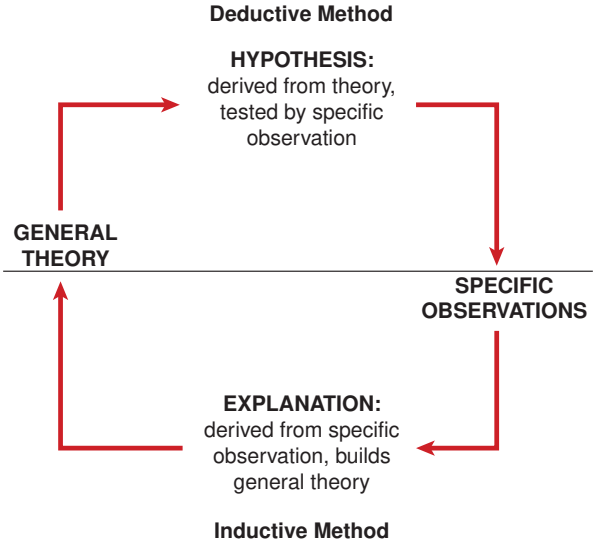
Religion constitutes another source of human knowledge. Religious beliefs and faith are most often derived from sacred texts, such as the Bible, Qur'an, and Talmud, but they are also based on intuitions, dreams, visions, and extrasensory perceptions. Most religious beliefs are cast in highly personal terms and, like personal knowledge, span a wide and diverse range. People who do not accept these culturally coded assumptions may be perceived as different, abnormal, or nonconformist by other members of their society. Yet, ethnographic and cross-cultural research in anthropology demonstrates that such culturally constituted knowledge is not as general as we might think. This research indicates that as humans, we are not born with this knowledge. Rather, it is culturally coded, and learned through socialization. Such knowledge varies both among different societies and among different groups within the same society.

Popular perceptions about other cultures have often been based on ethnocentric attitudes. **Ethnocentrism** is the practice of judging another society by the values and standards of one's own society. As humans learn the values, beliefs, and norms of their society, they tend to think of their own culture as preferable, and as what is normal, while ranking other cultures as less desirable. Members of a society may be so committed to their own cultural traditions that they cannot conceive of any other way of life. They may view other cultural traditions as strange or alien, perhaps even inferior, crazy, or immoral. Such deeply ingrained perceptions are difficult to escape, even for anthropologists. Nineteenth-century anthropologists, for example, often reinforced ethnocentric beliefs about other societies. The twentieth century saw the co-opting of anthropological data to serve specific political and social ends. As the twentieth century progressed, however, anthropologists increasingly began to recognize the biases that prevented the interpretation of other cultures in more valid, systematic ways.

Evaluating Anthropological Data

Given the preceding concerns, it is critical to understand how anthropological interpretations are evaluated. In contrast to personal knowledge and religious faith, anthropological knowledge is not based on traditional wisdom or revelations. Rather, anthropologists employ the **scientific method**, a system of logic used to evaluate data derived from systematic observation. Through critical thinking and skeptical thought, scientists strive to suspend judgment about any claim for knowledge until it has been verified.

FIGURE 1.2 Deductive and Inductive Research Methods



While the specific methodologies anthropologists follow are extremely varied, *testability* and *verifiability* lie at the core of the scientific method. There are two ways of developing testable propositions: the inductive method and the deductive method. In the **inductive method**, the scientist first makes observations and collects data (see Figure 1.2).

The data collected are referred to as variables. A **variable** is any piece of data that changes from case to case. For example, a person's height, weight, age, and sex all constitute variables. Researchers use the observations about variables to develop hypotheses about their data. A **hypothesis** is a testable proposition concerning the relationship between particular sets of variables in the collected data. The practice of testing hypotheses is the major focus of the scientific method, as scientists test one another's hypotheses to confirm or refute them. If a hypothesis is found to be valid, it may be woven together with other hypotheses into a more general theory.

Theories are statements that explain hypotheses and observations about natural or social phenomena. Because of their explanatory nature, theories often encompass a variety of observations and hypotheses. One of the most comprehensive theories in anthropology is the theory of evolution (see Chapter 3). This theory explains diverse hypotheses about biological and natural phenomena, as well as discoveries by paleoanthropologists and geneticists.

In contrast to the inductive method, the **deductive method** of scientific research begins with a general theory from which scientists develop testable hypotheses. Data are then collected to evaluate these hypotheses. Initial hypotheses are sometimes referred to as "guesstimates" because they may be based on guesswork by the scientist. These hypotheses are tested through experimentation and replication. As with the inductive method, scientists test and retest hypotheses and theories to ensure the reliability of observations made.

This photo shows a blind Yalunka musician from Sierra Leone in West Africa. Ethnomusicologists study musical traditions from every area of the world.

Theories always remain open to further testing and evaluation. They are assessed in light of new data and may be invalidated by contradictory observations. The systematic evaluation of hypotheses and theories enables scientists to state their conclusions with a certainty that cannot be applied to personal and culturally construed knowledge.

Despite the thoroughness and verification that characterize the research, anthropologists must grapple with a myriad of complex, interwoven variables that influence human society and biological processes. The complexities of the phenomena being studied make it difficult to assess all of the potential variables, and disagreements about interpretations are common. Consequently, conclusions are frequently presented as tentative and hypothetical. The point here, however, is not that progress is impossible. Rather, interpretations can be verified or discarded by making assumptions explicit and weeding out contradictory, subjective knowledge. Inadequate hypotheses are rejected and replaced by better explanations. Explanations can be made stronger by drawing on independent lines of evidence to support and evaluate theories. This process makes the scientific method much more effective than other means of acquiring knowledge.

HUMANISTIC-INTERPRETIVE APPROACHES IN ANTHROPOLOGY

1.4 Discuss how the field of anthropology bridges both the sciences and the humanities.

The scientific method is not the only means used by anthropologists to study different societies and cultures. Anthropologists also employ more humanistic-interpretive approaches in studying cultures. Think of this analogy: When botanists examine a flower, they attempt to understand the different components of the plant within a scientific framework; they analyze the biochemical and physical aspects of the flower. However, when painters, poets, or novelists perceive a flower, they understand the plant from an aesthetic standpoint. They might interpret the flower as a symbolic phenomenon that represents nature. The scientist and the humanist use different approaches and perspectives when examining the natural world. Anthropologists employ a humanistic-interpretive approach in many circumstances.

Anthropologist James Peacock (1986) uses another type of analogy to discuss the difference between the scientific and the humanistic-interpretive approaches in anthropology. Peacock draws from the field of photography to construct his analogy. He discusses the "harsh light" of the rigor of scientific analysis, used to study the biological and material conditions of a society, versus the "soft focus" used when interpreting the symbols, art, literature, religion, or music of different societies. Peacock concludes that both the "harsh light" and the "soft focus" are vital ingredients of the anthropological perspective.

In order to comprehend the different practices and institutions they observe, anthropologists often have to interpret them just as one might interpret a literary, poetic, or religious text. Cultural beliefs and practices may not be easily translatable from one society to another. Practices and institutions may have meaning only within a specific language and culture. Thus, anthropologists endeavor to understand cultural practices or institutions that may have rich, deep, localized meaning within the society being examined, but that are not easily converted into transcultural or cross-cultural meaning. We focus more thoroughly on this humanistic-interpretive approach in Chapter 13 on anthropological explanations.

Many anthropologists explore the creative, cultural dimensions of humanity, such as myth, folklore, poetry, art, music, and mythology. **Ethnopoetics** is the study of poetry and how it relates to the experiences of people in different societies; for example, a provocative study of the poetry of a nomadic tribe of Bedouins in the Middle East has yielded new insights into the concepts of honor and shame in this society (Abu-Lughod 1987). **Ethnomusicology** is devoted to the study of musical traditions in various societies throughout the world. Ethnomusicologists record and analyze music and the traditions that give rise to musical expression,

exploring similarities and differences in musical performance and composition. Ethnomusicologist Dale Olsen (2004) completed a fascinating study of music in Japanese minority populations in the countries of Peru, Brazil, Argentina, Paraguay, and Bolivia. Olsen has studied the musical forms, both popular and classical, of these minorities and how they reflect the maintenance of Japanese ethnicity and culture in South America. Other anthropologists study the art of particular societies, such as pottery styles among Native Americans or masks in different African ethnic groups.

Studies of fine art conducted by anthropologists have contributed to a more richly hued, global portrait of humankind. As a result, we now have a keener appreciation of the diverse creative abilities exhibited by humans throughout the world. As anthropologists analyze these humanistic and artistic traditions, they broaden our understanding of the economic, social, political, and religious conditions that prevail within these societies. Thus, in addition to its interconnections with the natural and social sciences, the discipline of anthropology is aligned with the humanistic fields of inquiry.

There is a fundamental difference between the scientific and the humanistic-interpretive aspects of anthropology. This difference pertains to how knowledge is accumulated within these two different but complementary enterprises. Science has produced a cumulative increase in its knowledge base through its methodology. Thus, in the fields of astronomy, physics, chemistry, biology, and anthropology, there has been significant progress in the accumulation of knowledge; we know much more about these fields of science than our ancestors knew in the fifteenth or even the nineteenth century. As a result of scientific discoveries and developments, the scientific knowledge in these areas has definitely become more effective in offering explanations regarding the natural and social world. As we shall see in Chapter 13 on anthropological explanations, anthropologists today have a much better understanding of human behavior and culture than did anthropologists in the nineteenth century. Through the use of the scientific method, anthropology has been able to make great strides in assessing human behavior and cultural developments.

In contrast, one cannot discuss the progress in the humanities in the same manner. As we shall see, the various humanistic endeavors involving beliefs, myths, and artistic expression in small-scale and ancient civilizations are extremely sophisticated and symbolically complex, and one cannot assess modern societies as "superior" or more "progressive" in those domains.

Anthropological explanation is not dependent on a single approach, but rather requires peaceful coexistence between scientism and humanism, despite their differences. In a recent discussion of this issue within anthropology, Agustin Fuentes and Polly Wiessner (2016) call for a reintegration of the scientific and humanistic approaches. Both perspectives have been extremely valuable in contributing to our knowledge of humanity. Anthropologists recognize their differences in perspectives. This is helpful, as they continue to criticize and challenge one another's assumptions and orientations, which results in a better understanding of both the scientific explanations and the humanistic understandings.

CRITICAL PERSPECTIVES

ESSENTIALISM

One term or phrase that will frequently be mentioned throughout this textbook is *essentialism* or *essentialist views*. **Essentialism** is the misguided idea that members of certain categories or classifications (e.g., animal and plant species, "races," ethnic groups, genders, even cultures and some objects) share an underlying invisible "essence."

Although biologists no longer believe that species have essences, lay people and especially children seem to have a strong willingness to believe in essences. Developmental psychologist Susan Gelman (2003) has studied young children and finds that by the age of two, they distinguish between males and females and expect them to behave differently. Her research indicates that children easily acquire an ability to think in essentialist ways regarding the classification of animals, plants, and inanimate objects. Children acquire this essentialist reasoning to form generalizations and cognitive habits in order to make sense of the world. Humans appear to be predisposed to become essentialists.

Gelman has collaborated with a number of anthropologists including Lawrence Hirschfeld to show how children by the age of four to six years old classify people into "races" and "ethnicities" as if these groups have an inner quality—an invisible essence—that explains why each member of the group have so much in common (Hirschfeld and Gelman 1994; see also Hirschfeld 1996). This essentialist thinking results in people assuming that various groups share some invisible essence that is supposedly inherited and allow people to make inferences that go beyond their personal experience about how the members of those groups behave, what their inner dispositions might be, and how well they might perform particular kinds of tasks. The cognitive process involving essentialist thinking is universal and anthropologists find it throughout the world (Atran 1990; Boyer 2018).

Like biologists, who have abandoned the idea of inner essences, anthropologists have also rejected essentialist

(*Continued*)

(Continued)

explanations for social categories such as gender, so-called races, ethnic groups, religious groups, cultures, civilizations, and many other types of phenomena. Indeed, much research in paleoanthropology has shown that there is often more variation within a social (or biological) category than between them. Thus, in Chapter 5, we will find that early species of humans that are classified as Neandertals or archaic *Homo sapiens* exhibit a great deal of variation. In fact, modern humans have a small percentage of Neandertal genes, suggesting that interbreeding between the two populations was not only possible but did occur. Paleoanthropologists have similarly found that essentialist classifications of the early species of modern humans are also erroneous (Athreya 2018). Biologists and biological anthropologists agree that species do not have an internal, unobservable "essence" that creates uniformity. Instead, diversity and variation are evident within these species.

We will also be discussing "race," and the faulty essentialist views of "race," that have been perpetuated over the centuries and are still prevalent today. For example, in the United States, many believe that there are three or four different "races," such as Whites, Blacks, and Asians, and that these different "races" have some inherited internal essential features that result in not only specific physical characteristics, but also mental or behavioral patterns. As we will see, anthropologists have been studying the concepts of race for over a century and have demonstrated through many lines of evidence that these essential views of so-called races are unfounded and invalid.

Archaeologists also find that past understandings of artifacts and other phenomena associated with various groups, cultures, or civilizations were based on faulty essentialist thinking. Thus, when discussing Maya, Aztec, Inca, Chinese, Japanese, African, or Middle Eastern groups or past civilizations, many archaeologists and historians in the past believed that these societies, cultures, and civilizations had an internal "essence" that provided uniform features and human behaviors. Contemporary archaeologists are careful not to categorize these societies as if they have an underlying reality or true "essence" that determines their characteristics and stereotypical behaviors.

Throughout this textbook, we will be discussing many different societies, tribes, cultures, ethnic groups, and civilizations. As we will see later, essentialist views of these societies are still prevalent today in some academic fields. For example, some political scientists have discussed Western, Asian, and Islamic societies, cultures, and civilizations as having uniformities and essentialist characteristics that make them incompatible and in conflict with one another. These views have influenced the media, government, and popular understandings of these societies. Contemporary cultural anthropologists have discovered through extensive ethnographic studies that these societies, tribes, ethnic groups, cultures, and civilizations have a great deal of diversity and hybridity (mixtures of cultural values, beliefs, and norms) and are tremendously varied and cannot be described in monolithic essentialist terms.

Later in this textbook, we will be discussing sex and gender as studied by anthropologists. Essentialist thinking about gender is widespread, leading to simplifications regarding how males and females are easily categorized biologically and result in universal generalizations such as "men are aggressive and women are gentle." As we will see, anthropological research on gender has debunked these simplistic essentialist and stereotypical generalizations.

Additionally, we will be discussing religion and religious groups throughout the world. Cultural anthropologists have been studying the religious beliefs and practices within tribal and small-scale religions as well as Judaism, Christianity, Islam, Buddhism, Hinduism, Sikhism, and other traditions. In contrast to some essentialist views of these religions, ethnographic studies have shown there are many different kinds of Jews, Christians, Muslims, Buddhists, Hindus, or Sikhs based on socioeconomic or class background, sect, denomination, or region of the world. None of these religions has an internal essence that determines its specific beliefs and practices. Instead, within these traditions, ethnographers find a multiplicity of different religious beliefs and practices.

Although anthropologists find that essentialism is widespread and universal and it is easily learned by young children as a means to comprehend and classify the world around them, these cognitive habits are faulty and lead to many misperceptions. In addition, these essentialist views of peoples, cultures, ethnic groups, and societies are difficult to overcome and often lead to stereotypical perceptions that can be harmful. As we will discuss, contemporary anthropologists have revealed through careful study that these essentialist views are too simplistic to understand the peoples and societies around the world.

Questions to Ponder

1. Have you ever had essentialist beliefs about groups of people, including your own group?
2. In what ways can essentialist views be harmful?
3. Do you find it difficult to unlearn essentialist beliefs?

WHY STUDY ANTHROPOLOGY?

1.5 Describe why students should study anthropology.

Anthropology gives students a chance to delve into a discipline whose roots lie in both the sciences and the humanities. The study of anthropology offers a wide array of practical applications for students in the modern world. As part of a liberal arts education, it helps students develop intellectually and personally, as well as professionally. Studies indicate that a well-rounded education contributes to a person's success in any chosen career, and because of its broad interdisciplinary nature, anthropology is especially well suited to this purpose (Briller and Goldmacher 2008). We live in an increasingly interconnected world—through email, smartphones, social media, and

the web, as well as by the ease of international travel. How do we view peoples of other societies and their behaviors? In today's globalized world, these questions are growing more and more important. Anthropology students have diverse and widely applicable skill sets that include research, critical thinking, speaking foreign languages, and an understanding of law, politics, history, biology, and economics, just to name a few. Further, anthropology students understand fundamental aspects of what it means to be human—an understanding that can be applied to multiple areas of life. Because students of anthropology can see the "whole picture," they can generate creative solutions to the problems that face humanity today.

Critical Thinking and Global Awareness

Anthropology and anthropological research is particularly important in developing critical thinking skills. As discussed, the scientific method relies on the constant evaluation of, and critical thinking about, interpretations. By being exposed to the cultures and lifestyles of unfamiliar societies, students adopt a more critical and analytical stance toward conditions in their own society. Critical thinking skills enhance students' reasoning abilities wherever life takes them.

Anthropology also fosters global awareness and an appreciation for cultures other than our own. In this age of rapid communication, worldwide travel, and increasing economic interconnections, young people preparing for careers must recognize and show sensitivity toward the cultural differences among peoples, while understanding the fundamental similarities that make us all distinctly human. In this age of cultural diversity and increasing internationalization, sustaining this dual perception of underlying similar human characteristics and outward cultural differences has both practical and moral benefits. Nationalistic, ethnic, and racial bigotry are rife today in many parts of the world, yet our continuing survival and happiness depend upon greater mutual understanding. Anthropology promotes a cross-cultural perspective that allows us to see ourselves as part of one human family in the midst of tremendous diversity. Our society needs world citizens who can work cooperatively in an inescapably multicultural and multinational world to solve our most pressing problems of bigotry, poverty, and violence.

Viewing life from the anthropological perspective, students will also gain a greater understanding of their personal lives in the context of the long period of human evolution and development. In learning about behavior patterns and cultural values in distant societies, students question and acquire new insights into their own behavior. Thus, anthropology nurtures personal enlightenment and self-awareness, which are fundamental goals of education.

While these general goals are laudable, the study of anthropology also offers more pragmatic applications (Nolan 2017). As seen in the discussion of applied anthropology, all of the traditional subfields of anthropology have areas of study with direct relevance to modern life. Many students have found it useful to combine an anthropology minor or major with another major. For example, given the increasingly multicultural and international focus of today's world, students preparing for careers in business, management, marketing, or public service may find it advantageous to have some anthropology courses on their résumés. The concepts and knowledge gleaned from anthropology may enable students to find practical applications for dealing with issues of cultural and ethnic diversity and multiculturalism on a daily basis. Similarly, policymakers in federal, state, and local governments may find it useful to have an understanding of historic preservation issues and cultural resource management concerns. In education, various aspects of anthropology—including the study of evolution, the human past, and non-European cultures and the interpretation of cultural and social phenomena—are increasingly being integrated into elementary and secondary school curricula. Education majors preparing for the classroom can draw on their background in anthropology to provide a more insightful context for some of these issues.

SUMMARY AND REVIEW OF LEARNING OBJECTIVES

1.1 Compare and contrast the four major subfields of anthropology.

Anthropology consists of four subfields: biological anthropology, archaeology, linguistic anthropology, and cultural anthropology or ethnology. Each of these subfields uses distinctive methods to examine humanity in the past and in the world today. Biological anthropologists investigate human evolution and the physical variation of modern human populations throughout the world. Archaeologists study past societies by analyzing the material remains they left behind. Linguistic anthropologists focus their studies on languages, seeking out historical relationships among languages, pursuing clues to the evolution of particular languages, and comparing one language with another to determine differences and similarities. Cultural anthropologists conduct fieldwork in human societies to examine people's lifestyles. They describe these societies in written studies called ethnographies, which highlight behavior and thought patterns characteristic of the people studied. In examining societies, cultural anthropologists use systematic research methods and strategies, primarily participant observation, which involves participating in the daily activities of the people they are studying.

1.2 Describe how the field of anthropology is holistic, interdisciplinary, and global.

Through the combination of the four subfields in anthropology, many different variables are investigated, ranging from biological factors such as genetics to material artifacts, language, and culture, to provide a holistic view of humankind. Anthropology is inherently interdisciplinary and connects with other fields of research such as biology, sociology, psychology, and history, as well as the fine arts and humanities. By its nature, anthropology takes a global approach with its studies of humanity everywhere throughout the world, both past and present.

1.3 Explain how the scientific method is used in anthropological explanations.

Central to anthropological inquiry is the systematic collection and evaluation of data. This includes employing both inductive and deductive methods to evaluate hypotheses and develop theories. Theories explain natural or social phenomena. The conclusions reached are always open to reevaluation and further testing in light of new data. In this way, faulty interpretations and theories are discarded.

1.4 Discuss how the field of anthropology bridges both the sciences and the humanities.

Anthropologists draw on the scientific method to investigate humanity, while recognizing the limitations of science in grasping the subtleties of human affairs. Anthropology is, therefore, also a humanistic discipline that focuses on such cultural elements as art, music, and religion. By bridging the sciences and the humanities, anthropology enables us to look at humanity's biological and cultural heritage with a broad perspective.

1.5 Describe why students should study anthropology.

For students, anthropology creates a global awareness and a deep appreciation of humanity past and present. By evaluating anthropological data, students develop critical thinking skills. And the process of anthropological inquiry—exploring other cultures and comparing them to one's own—sheds light on one's personal situation as a human being in a particular time and place.

KEY TERMS

anthropology, p. 2
applied anthropology, p. 10
archaeology, p. 5
biological anthropology, p. 2
classical archaeologists, p. 5
cultural anthropology, p. 8
deductive method, p. 13
essentialism, p. 15
ethnoarchaeologists, p. 5
ethnocentrism, p. 13
ethnography, p. 9
ethnohistory, p. 12
ethnology, p. 9
ethnomusicology, p. 14
ethnopoetics, p. 14
historical archaeologists, p. 5
historical linguistics, p. 7
holistic, p. 12
hypothesis, p. 13
inductive method, p. 13
linguistic anthropology, p. 7
linguistics, p. 7
paleoanthropology, p. 3
participant observation, p. 9
prehistoric archaeologists, p. 5
primates, p. 3
primatology, p. 3
scientific method, p. 13
sociolinguistics, p. 7
structural linguistics, p. 7
theories, p. 13
variable, p. 13

National Geographic Image Collection/Alamy Stock Photo

2 THE RECORD OF THE PAST

LEARNING OBJECTIVES

After reading this chapter, you should be able to:

- **2.1** Explain how archaeological research is used to answer questions about past societies.
- **2.2** Define paleoanthropology and discuss what we can learn about the past from fossil evidence.
- **2.3** Discuss what the archaeological record can tell us about past societies.
- **2.4** Recall the basic techniques used to locate archaeological sites and fossil localities.
- **2.5** Summarize the basic techniques of archaeological excavation.
- **2.6** Compare and contrast how archaeologists and paleoanthropologists date their discoveries.
- **2.7** Discuss the challenges of interpreting the past and how these are overcome.

Why study the human past? During the early history of anthropology, the answer to this question was straightforward. The study of fossils and relics of the past sprang out of a curiosity about the world and the desire to collect and organize objects. This curiosity was, in part, a reflection of the increasing interest in the natural world that arose with the Western scientific revolution beginning in the fifteenth century (see Chapter 3). For early collectors, however, the object was often an end in itself. Items were placed on shelves to look at, with little or no interest expressed in where the fossils might have come from or what the stone tools or ancient pottery might tell about the people who produced them. Collectors of this kind are called *antiquaries*.

Early antiquarian collections often incorporated many different items in addition to fossils and archaeological materials. For example, the museum of Olaus Wormius, a seventeenth-century Danish scholar, included uniquely shaped stones, seashells, ethnographic objects, and curiosities from around the world, along with fossils and ancient stone tools. While these objects were sometimes described and illustrated with great care, they were not analyzed or interpreted to shed light on the evolution of life or on the lifeways of ancient humans. Ancient coins, metal artifacts, and jewelry were recognized for what they were, but stone tools and even ancient pottery were generally regarded as naturally occurring objects or the work of trolls, elves, and fairies (Stiebing 1994).

By the late eighteenth century, scholars started to move beyond the simple description of objects to an increasing appreciation of the significance of fossil remains and the material traces of ancient human societies. This appreciation fell within the context of a host of new observations in the natural sciences, including many about the geological record and the age of the Earth. In 1797, an English country gentleman named John Frere published an account of stone tools he had found in a gravel quarry in Suffolk. Although brief, the description is tantalizing in terms of the changing attitude toward traces of the past. Fossilized bones of extinct animals and stone tools—actually Paleolithic hand axes—were found at a depth of more than twelve feet in a layer of soil that appeared undisturbed by more recent materials. Frere correctly surmised that the tools were "from a very remote period indeed, even beyond that of the present world" (Daniel 1981, 39). This was a recognition of prehistoric archaeology.

The nineteenth century saw the first fossil finds of ancient human ancestors. They included the bones found in the Neander Valley of Germany in 1856, now recognized as an archaic human species, *Homo sapiens neanderthalensis*, or Neandertal man (see Chapter 5). Although this was a historic discovery, the significance of the fossils was not realized at the time. Interpretations were diverse. While some scholars correctly interpreted the finds as an early human ancestor, others variously dismissed the bones as those of a Cossack soldier, an elderly Dutchman, a powerfully built Celt, or a pathological idiot (Trinkaus and Shipman, 1993)! Information continued to accumulate, however, and by the end of the nineteenth century, the roots of modern archaeological and paleoanthropological study were well established.

In this chapter, we examine the material record of the past and some of the techniques used by modern anthropologists to locate, recover, and date their discoveries. On one hand, this includes the bones and preserved remains used by paleoanthropologists to trace human origins. On the other hand, it deals with the material traces of human behavior that archaeologists focus on to interpret past cultures. In reality, the subdisciplines are often intertwined. Paleoanthropologists use excavation and surveying techniques similar to those used by archaeologists—or they rely on archaeologists—to locate and recover their finds. As will be discussed in Chapter 24, archaeological methods have also played an important role in forensic anthropology.

This book provides an overview of the techniques used by paleoanthropologists and archaeologists in their research. It also deals with some of the major questions that have been addressed by anthropologists, including the evolution of the human species,

the human settlement of the world, the origins of agriculture, and the rise of complex societies and the state. In reading these discussions, it is important to remember that interpretations are constantly being revised. New fossils are constantly being uncovered and new archaeological sites explored. Improved methods and analytical techniques also modify the amount and kind of information available to researchers. Each discovery adds to the amount of information available to interpret the past—and to evaluate and revise existing interpretations.

ANSWERING QUESTIONS

2.1 Explain how archaeological research is used to answer questions about past societies.

Few modern archaeologists or paleoanthropologists would deny the thrill of finding a well-preserved fossil, an intact arrow point, or the sealed tomb of a king, but the romance of discovery is not the primary driving force for these scientists. In contrast to popular movie images, modern researchers are likely to spend more time in a laboratory or in front of a computer than looking for fossils or exploring lost cities. Their most fundamental desire is to reach back in time to understand our past.

Although anthropologists make an effort to document the record of bygone ages as fully as possible, they clearly cannot locate every fossil, document every archaeological site, or even record every piece of information about each artifact recovered. Despite decades of research, only a minute portion of such important fossil localities as those in the Fayum Depression in Egypt and Olduvai Gorge in Tanzania have been studied (see Chapters 4 and 5). In examining an archaeological site or even a particular artifact, many different avenues of research might be pursued (see the box "Engendering Archaeology: The Role of Women in Aztec Mexico"). For example, when investigating pottery from a particular archaeological site, some archaeologists might concentrate on the technical attributes of the clay and the manufacturing process (Rice 2015). Others might focus on the decorative motifs on the pottery and how they relate to the myths and religious beliefs of the people who created them. Still other researchers might be most interested in where the pottery was found and what this conveys about ancient trade patterns.

Research is guided by the questions about the past that the anthropologists want to answer. To formulate these, the researchers review existing data that help place their research in a wider context. Anthropologists also begin by being well grounded in different theoretical perspectives that help frame their questions and evaluate their interpretations. With this background, anthropologists plan a research project. This is done in a systematic way, as outlined in the discussion of the scientific method in Chapter 1. To ensure that the data recovered are relevant to their questions, paleoanthropologists and archaeologists begin a project by preparing a **research design** in which the objectives of the project are set out and the strategies for recovering the relevant data are outlined. The research design must take into account the types of data that will be collected and how those data relate to existing anthropological knowledge. Within the research design, the anthropologist specifies what methods will be used for the investigation, what regions will be surveyed, how much of a site will be excavated, and how the materials recovered will be analyzed. Generally, the research design is then reviewed by other anthropologists, who provide feedback and recommend it for funding by various government agencies or private research foundations.

CRITICAL PERSPECTIVES

ENGENDERING ARCHAEOLOGY: THE ROLE OF WOMEN IN AZTEC MEXICO

Florentine Codex I, fol 347 right

An Aztec codex showing a woman blowing on maize before putting it in the cooking pot.

The interpretation of the material record poses a challenge to archaeologists. It provides excellent evidence on some subjects—ancient technology, diet, hunting techniques, and the plan of an ancient settlement—but some topics are more difficult to address. What were the marriage customs, the political system, or the religious beliefs of the ancient inhabitants of a site? These factors are by nature nonmaterial and are not directly preserved archaeologically. Even if documentary records exist, these may offer only limited insight on some topics.

In a fascinating study of gender among the Aztecs of ancient Mexico, archaeologist Elizabeth Brumfiel (1991, 2005) utilized both the archaeological and the documentary record to provide new insights into the past. The Aztec civilization was flourishing in central Mexico when the Spanish reached the Americas. It had emerged as the principal state in the

(*Continued*)

(Continued)

region by the fifteenth century, eventually dominating an area stretching from the Valley of Mexico to modern-day Guatemala, some 500 miles to the southwest. The capital, Tenochtitlán, was an impressive religious center built on an island in Lake Texcoco. The city's population numbered tens of thousands when the Aztec leader, Montezuma, was killed during fighting with Spanish *conquistadores* led by Hernán Cortés (Cortez) in 1520. Within decades of the first Spanish contact, the traces of the Aztec empire had crumbled and been swept aside by European colonization. Records of the Aztec civilization survive in documentary accounts recorded by the Spanish. The most comprehensive is a monumental treatise on Aztec life, from the raising of children to religious beliefs, written by Fray Bernardino de Sahagún (Brumfiel 1991). It is the most exhaustive record of a Native American culture from the earliest years of European contact. For this reason, it has been a primary source of information about Aztec life and culture.

Brumfiel was particularly interested in reconstructing the roles of women in Aztec society. Sahagún's description of women focuses on weaving and food preparation. Regrettably, as Brumfiel points out, his work offers little insight into how these endeavors were tied to other economic, political, and religious activities. In addition, Sahagún does not comment on some of his own illustrations that show women involved in such undertakings as healing and marketing. Interpretations based solely on Sahagún's descriptions seemed to marginalize women's roles in production as nondynamic and of no importance in the study of culture change.

To obtain a more holistic view of women in Aztec society, Brumfiel turned to other sources. The Aztecs also possessed their own records. Although most of these were sought out and burned by the zealous Spanish priests, some Aztec codices survive. These sources indicate that textiles were essential as tribute, religious offerings, and exchange. Many illustrations also depict women in food production activities. In addition to various categories of food, the codices show the griddles, pots, and implements used in food preparation.

Independent information on these activities is provided by the archaeological record. For example, the relative importance of weaving can be assessed by the number and types of spindle whorls (perforated ceramic disks used to weight the spindle during spinning) that are found in large numbers on archaeological sites. Archaeological indications of dietary practices can be inferred from ceramic griddles, cooking pots, jars, and stone tools used in the gathering and preparation of food.

Brumfiel notes that the most interesting aspect of archaeological data on both weaving and food preparation is the variation. Given the static model of women's roles seen in the documentary records, a uniform pattern might be expected in the archaeological data. In fact, precisely the opposite is true. Evidence for weaving and cooking activities varies in different sites and over time. Brumfiel suggests that the performance of these activities was influenced by a number of variables, including environmental zones, proximity to urban markets, social status, and intensified agricultural production.

Food preparation, essential to the household, was also integral to the tenfold increase in the population of the Valley of Mexico during the four centuries preceding Spanish rule. As population expanded during the later Aztec period, archaeological evidence indicates that there was intensified food production in the immediate hinterland of Tenochtitlán. Conversely, the evidence for weaving decreases, indicating that women shifted from weaving to market-oriented food production. These observations are not borne out at sites farther away from the Aztec capital, though. In more distant sites, women intensified the production of tribute cloth with which the Aztec empire transacted business.

Brumfiel's research provides insights into the past that neither archaeological nor documentary information can supply on its own. She was fortunate to have independent sources of information that she could draw on to interpret and evaluate her conclusions. Her interpretation of Aztec life provides a much more dynamic view of women's roles. The observations are also consistent with the view of the household as a flexible social institution that varies with the presented opportunities and constraints. Brumfiel's work underscores the importance of considering both women's and men's roles as part of an interconnected, dynamic system.

Questions to Ponder

1. In the absence of any documentary or ethnographic information, how can archaeologists examine gender in past societies?
2. Can we automatically associate some artifacts with men or with women?
3. How would interpretations of gender vary in different cultural and archaeological settings? Discuss several examples.

PALEOANTHROPOLOGICAL STUDY

2.2 Define paleoanthropology and discuss what we can learn about the past from fossil evidence.

As discussed in Chapter 1, paleoanthropology is the field within biological anthropology that focuses on human evolution and the behavior of early human ancestors. The behavior, diet, and activities of these early humans were very different from those of modern humans. Determining their behavior, as well as the age of the finds and the environment in which early humans lived, is dependent on an array of specialized methods. Interpretation depends on the holistic, interdisciplinary approach that characterizes anthropology (these topics are examined in detail in Chapter 5).

As in all anthropological research, a paleoanthropological project begins with a research design outlining the objectives of the project and the methodology to be employed. This would include a description of the region and the time period

to be examined, the data that will be recovered, and an explanation of how the proposed research would contribute to existing knowledge. For example, researchers might target geological deposits of a specific location and age for examination because of the potential to discover the origins of the common ancestors of humans and apes (see Chapter 4), the earliest branches on the human lineage, or the fossil record of the first modern humans (see Chapter 5). The initial survey work for a paleoanthropological project often relies on paleontologists and geologists, who provide an assessment of the age of the deposits within the study area and the likely conditions that contributed to their formation. Clues about the age may be determined through the identification of distinctive geological deposits and associated floral and faunal remains (see the discussion of dating methods and faunal correlation later in this chapter). Such information also helps in the reconstruction of the paleoecology of the region and, hence, the environment in which early human ancestors lived. **Paleoecology** (*paleo*, from the Greek, meaning "old," and *ecology*, meaning "study of environment") is the study of ancient environments.

Based on the information provided by paleontologists and geologists, more detailed survey work is undertaken to locate traces of early humans. Looking for such traces has been likened to looking for a needle in a haystack, except in this case the "looking" involves the scrutiny of geological deposits and the careful excavation of buried skeletal remains and associated material. This stage of the research may draw on the skills of the archaeologist, who is trained to examine the material remains of past societies (see later discussion of archaeological excavation).

Fossils and Fossil Localities

Much of paleoanthropological research focuses on the locating and study of fossil remains. **Fossils** are the preserved remains, impressions, or traces of living creatures from past ages. They form when an organism dies and is buried by soft mud, sand, or silt (see Figure 2.1). Animals also leave tracks or footprints that may be preserved. Over time, the sediments with these traces harden, preserving the remains of the creature or its tracks within. Occasionally, conditions may be such that portions of an organism are preserved—actual fragments of shells, teeth, or bones. But most fossils have been altered in some way, the decayed parts of bone or shell having been replaced by minerals or surrounding sediment. Even in cases in which fragments of bone or shell are present, they have often been broken or deformed and need to be carefully reconstructed. The challenge faced by paleoanthropologists is what criteria to use to distinguish species from a number of closely related taxa on the basis of these fragmentary remains. Despite the imperfection of the fossil record, a striking history of life on Earth has survived.

Paleoanthropologists refer to places where fossils are found as **fossil localities**. These are spots where predators dropped animals they had killed, places where creatures were naturally covered by sediments, or sites where early humans lived. Of particular importance in interpreting fossil localities is the **taphonomy** of the sites—the study of the variety of natural and behavioral processes that led to the formation of the deposits uncovered. The taphonomy of an individual fossil locality is complex and the unraveling of the history that contributed to its formation very challenging (Grupe and Harbeck 2015). The fossil locality may include traces of early humans' behavior, tool manufacture, and discarded food remains, as well as the remains of the early humans themselves. On the other hand, these traces may have been altered by natural processes, such as decay, wind and rain erosion, and destruction and movement by animals.

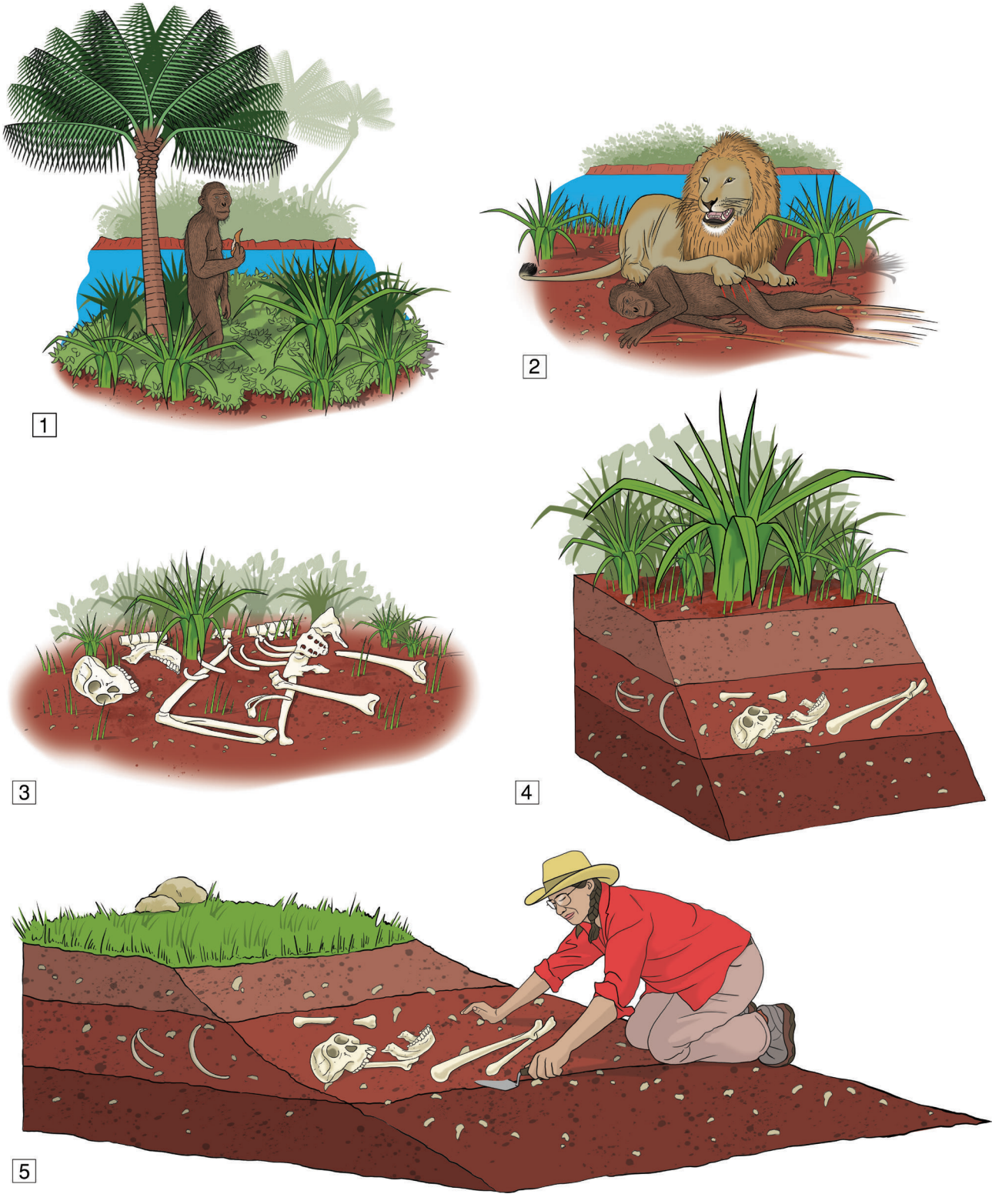
Only a small number of the once-living creatures are preserved in the fossil record. After death, few animals are left to lie peacefully, waiting to be covered by layers of sediment and preserved as fossils. Many are killed by predators that scatter the bones. Scavengers may carry away parts of carcasses, and insects, bacteria, and weather quickly destroy many of the remains that are left. As a result, individual fossil finds are often incomplete. Moreover, some areas might not have had the right conditions to fossilize and preserve remains, or the remains of early human ancestors that are present might be so fragmentary and mixed with deposits of other ages that they are of limited use.

Another consideration is the accessibility of fossil deposits. Fossils may lie buried under deep deposits that make them difficult to locate and impossible for researchers to study. In other instances, however, erosion by wind or water exposes underlying layers of rock that contain fossils, thus providing the paleoanthropologist the chance to discover them—even as they are weathering away.

Once a fossil locality is found, systematic excavations are undertaken to reveal buried deposits. In excavating, paleoanthropologists take great pains to record a fossil's context. **Context** refers to a fossil or artifact's exact position in relation to the surrounding sediments and any associated materials. Understanding a find's context is particularly important in paleoanthropological and archaeological research. Only if the precise location and associations are known can a fossil be accurately dated and any associated materials be fully interpreted.

After fossils have been removed from the ground, the detailed analysis of the finds begins. This starts with the careful cleaning of the fossils and associated materials. Fossils are often preserved in hardened, mineralized deposits, and cleaning may be tedious and time-consuming. Careful study of fine-grained sediments sometimes reveals the preservation of minute fossils of shellfish, algae, and pollen. Improved techniques, such as computer and electronic scanning equipment, have revealed

FIGURE 2.1 ■ **Only a small number of the creatures that have lived are preserved as fossils. After death, predators, scavengers, and natural processes destroy many remains, frequently leaving only fragmentary traces for researchers to uncover.**



that images of the delicate structure in bones or the interior of a skull may be preserved in a fossil. The materials recovered from the excavations are labeled and described, and the fossil remains of early humans reconstructed.

Drawing on all of the geological, paleontological, archaeological, and physical anthropological information, paleoanthropologists then attempt to place the discoveries in the context of other discoveries and interpretations. The anatomical characteristics and the ages of the fossils of the early humans are compared to other fossils to assess their evolutionary relationships. Other data will be brought to bear on the reconstruction of the ancient environment and models of the way they lived.

ARCHAEOLOGICAL RESEARCH

2.3 Discuss what the archaeological record can tell us about past societies.

As seen in Chapter 1, archaeology is the subdiscipline of anthropology that deals with the study of past human cultures through the material traces they left behind. Culture is a fundamental concept in the discipline of anthropology. In popular use, most people use the word *culture* to refer to "high culture": Shakespeare's works, Beethoven's symphonies, Michelangelo's sculptures, gourmet cooking, imported wines, and so on. Anthropologists, however, use the term in a much broader sense. A general contemporary definition of **culture** is that it is a shared way of life that includes the material products and nonmaterial products (values, beliefs, and norms) that are transmitted within a society or social group. Culture encompasses all aspects of human activity, from the fine arts to popular entertainment, from everyday behavior to the most deeply rooted religious beliefs. Culture contains the plans, rules, techniques, and designs for living.

In seeking to understand past cultures through their physical traces, archaeologists face an inherent difficulty. By its very nature, culture is *nonmaterial*—that is, it refers to intangible products of human society (such as values, beliefs, religion, and norms) that are not preserved archaeologically. Hence, archaeologists must rely on material culture—the physical remains of past societies. **Material culture** consists of the physical products of human society (from broken pots and weapons to monumental structures). The earliest traces of material culture are stone tools dating back more than 3 million years: simple choppers, scrapers, and flaked stones. Modern material culture consists of all the physical objects that a contemporary society produces or retains from the past, including our cities, streets, buildings, automobiles, toys, and medicines. Archaeologists investigate these material traces to examine the values, beliefs, and norms that represent the patterned ways of thinking and acting within past societies.

Archaeological interpretation has historically been strongly influenced by cultural anthropology theory (M. Johnson 2020; Praetzellis 2016; Trigger 1996). *Cultural anthropology*—the study of modern human populations—helps archaeologists understand how cultural systems work and how the archaeological record might reflect portions of these systems. On the other hand, archaeology offers cultural anthropology a time depth that cannot be obtained through observations of living populations; it provides a record of past human behavior. The archaeological record furnishes important insights into past technology, providing answers to such questions as "When did people learn to make pottery?" and "How was iron smelted?" However, material culture also offers clues to past ideals and belief systems. Consider, for example, what meanings and beliefs are conveyed by such objects as a Christian cross, a Jewish menorah, or a Hopi *kachina*. Other objects convey cultural beliefs in more subtle ways. Everyday items, such as the knife, fork, spoon, and plate used in Americans' meals, are not the only utensils suitable for the task; they are cultural choices. Indeed, food preferences themselves are culturally shaped choices.

The objectives of archaeological research vary tremendously in terms of the time periods, geographical areas, and research questions considered. Many researchers have examined the themes dealt with in this book: the behavior of early human ancestors, the initial settlement of the Americas, the origins of agriculture, and the emergence of complex political systems. These broad topics have been approached in a variety of ways, and revealed an array of information about the lifeways, art, and religion of prehistoric populations. Other archaeologists rely on early written texts such as Egyptian hieroglyphics or cuneiform writing, as well as the archaeological record, in their interpretations. In studies of the more recent past, archaeologists may be able to draw on observations of contemporary peoples, written records, or oral traditions to aid in their interpretation (see the box "Historical Archaeology"). Researchers have examined topics from the archaeological record of European colonization over the past 500 years to nineteenth-century American society. They have even shed light on modern society by sifting through garbage bags and contemporary landfills.

The Archaeological Record

Archaeological preservation varies (Lucas 2012; Schiffer 1987). Look at the objects that surround you. How long would these artifacts survive if left uncared for and exposed to the elements? As is the case with the fossil record, the archaeological past is a well-worn and fragmentary cloth rather than a complete tapestry. Stone artifacts endure very well, and thus it is not surprising that much of our knowledge of early human lifeways is based on stone tools.

CRITICAL PERSPECTIVES
HISTORICAL ARCHAEOLOGY

Bill Bachman/Alamy Stock Photo

An ethnobotanist interviewing Aboriginal Australian elders.

Some archaeologists have the luxury of written records and oral histories to help them locate and interpret their finds. Researchers delving into ancient Egyptian sites, the ancient Near East, Greek and Roman sites, Chinese civilization, Mayan temples, Aztec cities, Islamic sites, biblical archaeology, and the settlements of medieval Europe can all refer to written sources ranging from religious texts to explorers' accounts and tax records.

Why dig for archaeological materials if written records or oral traditions can tell the story? Although such sources may provide a tremendous amount of information, they do not furnish a complete record (Deetz 1996; Orser 2017). Whereas the life story of a head of state, records of trade contacts, or the date of a temple's construction may be preserved, the lives of many people and the minutiae of everyday life were seldom written down. In addition, documentary sources are often biased by the writer's personal or cultural perspective. For example, much of the written history of Native Americans, sub-Saharan Africans, Australian Aborigines, and many other indigenous peoples was first recorded by European missionaries, traders, and administrators, who frequently provided only incomplete accounts viewed in terms of their own interests and beliefs.

Information from living informants and oral traditions may also provide important information about some populations, particularly societies with limited written records. In recognizing the significance of such nonwritten sources, however, it is also necessary to recognize their distinct limitations. The specific roles oral traditions played (and continue to play) varied in different cultural settings. Just as early European chroniclers viewed events with reference to their own cultural traditions, so oral histories are shaped by the worldviews, histories, and beliefs of the various cultures that employ them. Interpreting such material may be challenging for individuals outside the originating cultures. The study of the archaeological record may provide a great deal of information not found in other sources and provide an independent means of evaluating conclusions drawn on the basis of other sources of information (see the box "Engendering Archaeology: The Role of Women in Aztec Mexico"). For example, it has proven particularly useful in assessing change and continuity in indigenous populations during the past 500 years (DeCorse 2016; Lightfoot 2005; Orser 2017).

In the Americas, during the past several decades, an increasing amount of work has concentrated on the history of immigrants who arrived in the last 500 years from Europe, Asia, Africa, and other world areas. Archaeological studies have proven of great help in interpreting historical sites and past lifeways, as well as culture change, sociopolitical developments, and past economic systems. Among the most significant areas of study is the archaeology of slavery (L. Ferguson 1992; Singleton 1999). Although living in literate societies, slaves were prohibited from writing, were often illiterate, and thus left a very limited documentary record of their own. Archaeological data have been used to provide a much more complete picture of plantation life and slave society.

Questions to Ponder

1. What are some different sources of written and orally preserved accounts that you can think of? How are these different from one another in terms of the details they might provide?
2. Consider a particular activity or behavior important to you (for example, going to school, participating in a sport, or pursuing a hobby). How would evidence of the activity be presented in written accounts, oral histories, and the archaeological record?

Ceramics and glass may also survive very well, but iron and copper corrode, and organic materials, such as bone, cloth, paper, and wood, generally disappear quickly.

In some cases, environmental conditions that limit insect and microbial action and protect a site from exposure to the elements may allow for the striking preservation of archaeological

ANTHROPOLOGISTS AT WORK

GEORGE FLETCHER BASS: UNDERWATER ARCHAEOLOGIST

George Fletcher Bass is one of the pioneers of underwater archaeology—a field that he actually did not set out to study and, indeed, a field that was virtually unrecognized as a discipline when he entered it. Although he was always fascinated with the sea and diving, Bass began his career working on land sites, earning a master's degree in Near Eastern archaeology at Johns Hopkins University in 1955. He then attended the American School of Classical Studies at Athens and excavated at the sites of Lerna, Greece, and Gordion, Turkey. Following military service in Korea, Bass began his doctoral studies in classical archaeology at the University of Pennsylvania. It was there, in 1960, that he was asked by Professor Rodney S. Young if he would learn to scuba dive to direct the excavation of a Bronze Age shipwreck discovered off Cape Gelidonya, Turkey. Bass's excavations of this site marked the first time an ancient shipwreck was excavated in its entirety under the water.

During the 1960s, Bass went on to excavate two Byzantine shipwrecks off Yassi Ada, Turkey. At these sites, he developed a variety of specialized methods for underwater excavation, including new mapping techniques, a submersible decompression chamber, and a two-person submarine. In 1967, his team was the first to locate an ancient shipwreck using side-scan sonar. In addition to setting standards for underwater archaeological research, these excavations captured popular imagination and revealed shipwrecks as time capsules containing a spectacular array of artifacts, many unrecovered from terrestrial sites (Bass 1963, 1973; Throckmorton 1962).

After completing his doctorate in 1964, Bass joined the faculty at the University of Pennsylvania. He remained there until 1973, when he left to found the Institute of Nautical Archaeology (INA), which has been affiliated with Texas A&M University since 1976. Under his guidance, the INA has become one of the world's premier programs in underwater archaeology. The institute has conducted research throughout the world on shipwrecks and sites of a diversity of time periods. Bass has continued to focus on shipwrecks in Turkey, where he is an honorary citizen of the town of Bodrum. Some of his more recent projects include a fourteenth-century B.C. wreck with a cargo of copper, ivory, tin, glass, and ebony, and a medieval ship with a large cargo of Islamic glass (Bass et al. 2009). Bass has written or edited more than a dozen books and is the author of over 100 articles. Through his publications, he has introduced both archaeologists and the wider public to the potential and excitement of underwater archaeology.

Images & Stories/Alamy Stock Photo

George Fletcher Bass, father of underwater archaeology, on a survey trip with a submarine, Foça, Turkey.

Because of his unique contribution to underwater archaeology, Bass has been widely recognized and has received awards from the National Geographic Society, the Explorers Club, the Archaeological Institute of America, and the Society for Historical Archaeology. President George W. Bush presented him with the National Medal for Science in 2002.

materials. Some of the most amazing cases are those in which items have been rapidly frozen. An illustration of this kind of preservation is provided by the discovery in 1991 of the 5,300-year-old frozen remains of a Bronze Age man by hikers in Italy's Tyrol Mountains (Fowler 2000). With the body were a wooden backpack, a wooden bow, fourteen bone-tipped arrows, and fragments of clothing. In other instances, underwater sites, waterlogged environments, very dry climate, or rapid burial may create conditions for excellent preservation. Such unique instances provide archaeologists with a much more complete record than is usually found.

Places of past human activity that are preserved in the ground are called **archaeological sites**. Sites reflect the breadth of human endeavor. Some are settlements that may have been occupied for a considerable time—for example, a Native American village or an abandoned gold mining town in the American West. Other sites reflect specialized activities—ceremonial centers, burial grounds, or places where ancient hunters killed and butchered animals. To reconstruct the human past, archaeologists excavate ancient structures, temples, tombs, and burials. However, they frequently seek out far less prominent traces of past life. **Middens**, ancient piles of trash or domestic refuse, provide particularly important information on what ancient peoples ate, their technologies, and their beliefs.

Much of the archaeologist's time is devoted to the study of **artifacts**—any object made or modified by humans. They

include everything from chipped stone tools and pottery, to plastic bottles and computers. Nonmovable artifacts, such as an ancient fire hearth, a pit dug in the ground, or a wall, are called **features**. In addition to artifacts and features, archaeologists examine items recovered from archaeological sites that were not produced by humans, but nevertheless provide important insights into the past. Animal bones, shells, and plant remains recovered from an archaeological

CRITICAL PERSPECTIVES
UNDERWATER ARCHAEOLOGY

Ian Dagnall/Alamy Stock Photo

The remains of the *Mary Rose* on display at the Mary Rose Museum, Portsmouth Historic Dockyard, Hampshire, England.

Sunken ships, submerged settlements, and flooded towns: This wide variety of sites of different time periods in different world areas shares the need for specialized techniques to locate, excavate, and study them (Bass 2005; Menotti 2004). Although efforts were occasionally made in the past to recover cargoes from sunken ships, it was only with the invention and increasing accessibility of underwater breathing equipment during the twentieth century that the systematic investigation of underwater sites became feasible. Often artifacts from underwater sites are better preserved and so present a wider range of materials than those from land. Even more important, underwater sites are often immune to the continued disturbances associated with human activity that are typical of most land sites. Shipwrecks can be compared to time capsules, containing a selection of artifacts that were in use in a certain context at a specific time. Archaeologists working on land seldom have such clearly sealed archaeological deposits.

A tantalizing example of an underwater archaeological project is the excavation and raising of the preserved remains of the *Mary Rose*, the pride of the young English Navy and the flower of King Henry VIII's fleet. The 700-ton warship, which was probably the first English warship designed to carry a battery of guns between its decks, foundered and sank in Portsmouth Harbor on a warm July afternoon in 1545. Henry VIII, camped with his army at Southsea Castle, is said to have witnessed the disaster and heard the cries of the crew. In the 1970s, the site of the *Mary Rose* was rediscovered and was systematically explored by volunteer divers from around the world. The ship produced a spectacular array of over 14,000 artifacts, ranging from massive cannons to musical instruments, famed English longbows, and navigational equipment. Finds from the *Mary Rose* and the preserved portions of the hull can be seen at the Mary Rose Ship Hall and Exhibition at Her Majesty's Naval Base, Portsmouth, England (Marsden 2003, 2009).

Most people associate underwater archaeology with sunken ships, and this, in fact, represents an important part of the subdiscipline. However, rising sea levels or natural disasters may also submerge cities and towns. Research on settlements now underwater is providing increasing insight into early human settlement (Bass 2005; Menotti 2004). As in the case of shipwrecks, the lack of oxygen and the sealed nature of the archaeological materials present special challenges in excavation, but also remarkable preservation. Such is the case of Port Royal, Jamaica, a flourishing trade center and infamous gathering place for pirates during the seventeenth century. In 1692, a violent earthquake and tidal wave submerged or buried portions of the city, preserving a record for future archaeologists. Excavations at the site spanning the last three decades have recovered a wealth of materials from seventeenth-century life (Hamilton and Woodward 1984).

Questions to Ponder

1. Archaeological excavation on land is a meticulous and careful process. Discuss how excavation and recording methods would have to be modified to conduct archaeological research underneath the water.
2. Given the unique location and preservation found at underwater sites, why might they be more appropriate or important than land sites for considering certain types of research questions?

Alex Segre/Alamy Stock Photo

A natural mummy from the Egyptian Predynastic period buried around 3500 B.C.

site furnish information on both the past climatic conditions and the diet of the early inhabitants. The soil of a site is also an important record of past activities and the natural processes that affected a site's formation. Fires, floods, and erosion all leave traces in the earth for the archaeologist to discover. All of these data may yield important information about the age, organization, and function of the site being examined. These nonartifactual organic and environmental remains are referred to as *ecofacts*.

As is the case with the recovery of fossils, archaeologists take special care to record the *contexts* in which archaeological materials are found, the artifacts' specific location in the ground, and associated materials. Without a context, an artifact provides limited information. By itself, a pot may be identified as something similar to other finds from a specific area and time, but it provides no new information. If, however, it and similar pots found are associated with particular types of graves, contain offerings of a particular kind, and are associated with female burials, a whole range of other inferences may be made about the past. By removing artifacts from sites, laypersons unwittingly cause irreparable damage to the archaeological record.

LOCATING SITES AND FOSSIL LOCALITIES

2.4 Recall the basic techniques used to locate archaeological sites and fossil localities.

In 1940, schoolboys retrieving their dog from a hole in a hillside near Montignac, France, found themselves in an underground cavern. The walls were covered with delicate black and red paintings of bison, horses, and deer. The boys had discovered Lascaux Cave, one of the finest known examples of Paleolithic cave art. Chance findings such as this sometimes play a role in the discovery of archaeological remains, as well as paleoanthropological research, but researchers generally have to undertake a systematic examination, or **survey**, of a particular area, region, or country to locate archaeological sites or fossil localities. They will usually begin by examining previous descriptions, maps, and reports of the area for references to archaeological sites. Informants who live and work in the area may also be of great help in directing archaeologists to discoveries.

Of course, some archaeological sites are more easily located than others; the great pyramids near Cairo, Egypt; Stonehenge in southern England; and the Parthenon of Athens have never been "lost." Though interpretations of their precise use may differ, their impressive remains are difficult to miss. Unfortunately, many sites, particularly some of the more ancient, are marked by only ephemeral traces and are difficult to locate. In many instances, sites are buried beneath many feet of sediment. Examination of the ground surface may reveal scatters of artifacts, discolorations in the soil, or exposed fossils, which provide clues to buried deposits. Sometimes nature inadvertently helps researchers, as erosion by wind or rain may expose sites. Archaeologists can also examine road cuts, building projects, and freshly plowed land for archaeological materials. Fossils are often deeply buried, resting beneath layers of sediment, making locating them especially difficult. For this reason, paleoanthropologists often cannot employ many of the techniques that archaeologists use to locate shallower archaeological deposits.

In the field, the researcher defines what areas will be targeted for survey. These areas are identified in the research design, which considers the research questions to be asked, as well as environmental and topographical considerations, and the practical constraints of time and money. Surveys can be divided into *systematic* and *unsystematic* approaches (Renfrew and Bahn 2016). The latter are less methodical as the researcher might take advantage of trails, riverbanks, and plowed fields within the survey area, recording any archaeological materials encountered. In a similar way, paleoanthropologists searching for fossils may examine places where buried sediments have been exposed by erosion. These unsystematic survey methods avoid the challenges of climbing through thick vegetation or rugged terrain. Unfortunately, they may also produce a biased sample of the remains present; ancient land uses might have little correspondence with modern trails or plowed fields.

To ensure more systematic results, researchers often employ more structured survey methods. For example, rather than following existing paths or roadways, an archaeologist may divide a region, valley, or archaeological site into a *grid*, which is then walked systematically. In other instances, transects may provide useful information, particularly where vegetation is very thick. In this case, a straight line, or *transect*, is