

In Conjunction with the



INTRODUCTION TO ARCHAEOLOGY

Nancy White

REQUIRED TEXTS

Ashmore, Wendy, and Robert J. Sharer

2000 *Discovering Our Past: A Brief Introduction to Archaeology*. 3rd edition. Mayfield Publishing Co., Mountain View, California (abbreviated A&S below)

Price, T. Douglas, and Gary M. Feinman

2000 *Images of the Past*. 3rd edition. Mayfield Publishing Co., Mountain View, California (abbreviated P&F below)

Session	Topics	Assigned Readings (pages)
1	Definition and kinds of archaeology , history of archaeology	A&S 1-34
2	Different theoretical approaches to archaeology; the nature of archaeological data and how we get them (site formation, etc.)	A&S 35-78
3	Archaeological survey and excavation : where, how to dig	A&S 79-113
4	MOVIES: <i>Archaeology in the Field and Lab</i> ; <i>Other People's Garbage</i>	
5	Archaeological classification and analysis of the remains	A&S 115-168
6	Archaeological interpretation and reconstruction	A&S 169-225 P&F 1-22

7	Public archaeology and modern society ; managing cultural resources. MOVIE: <i>Assault on Time</i>	A&S 227-242
	EXAM	
8	Human prehistory : the first people and culture, Lower Paleolithic	P&F 22-95
9	Middle and Upper Paleolithic hunter-gatherers; the emergence of modern humans ; Old World foragers, Mesolithic	P&F 96-195
10	Origins of food production . MOVIE: <i>Corn and the Origins of Settled Life</i>	P&F 196-255
11	North American , some Mesoamerican prehistory	P&F 256-363
12	Finish Mesoamerican , South American archaeology. MOVIE: <i>Peru, People of the Sun</i>	P&F 364-405
13	Old World prehistory, civilizations . MOVIE: <i>Pakistan, Mound of the Dead</i>	P&F 406-520
14	Review and relevance of twenty-first century principles of archaeology	
	FINAL EXAM	

COURSE GOALS AND EMPHASES

Archaeology is the study of past cultures and societies through their material remains. We will explore different varieties of archaeology and examine theory, methods, and techniques for investigating, reconstructing, interpreting, preserving, and ultimately, *learning from* the past. We will then briefly review human cultural chronology from the time of the first people, the earliest Paleolithic ages, to the present, and deal with not only the artifact remains but also important social, economic, and even ideological questions, such as those on the origins of food production, social inequality, and civilization. Two major emphases throughout the course are *archaeology as anthropology* and the *relevance of archaeology to modern human society and politics*. We will also examine exciting discoveries that make the news during the semester.

This year the Society for American Archaeology, the premier professional association, wishes to improve the archaeology curriculum, not only to help the student learn better, but also to convey seven important principles of GOOD ARCHAEOLOGY. This class is one of the case studies of the renewed curriculum project, and will be experimental and dynamic. The principles are listed below in terms of course goals you should aim toward. These principles are also a major part of

USF's public archaeology program. Thus we will discuss them throughout every aspect of the course, as associated with the material and ideas assigned for the week.

By or before the end of this course you should be able to do the following:

Describe the BASIC ARCHAEOLOGICAL SKILLS: how to locate, record, investigate, analyze, and interpret archaeological sites

Demonstrate good COMMUNICATION skills: written, oral, visual, and interactive, to understand and tell the story of the past

Discuss critically PROFESSIONAL ETHICS AND VALUES in archaeology: skills, honesty, responsibility to science and to the many different publics

Understand and compare DIVERSE INTERESTS IN THE PAST: different people's associations with prehistory and history

Describe the processes and methods of STEWARDSHIP: preserving nonrenewable cultural resources through policy, law, and public education

Discuss critically archaeology's SOCIAL RELEVANCE: connections of past human systems and adaptations with today's world

Describe not only specific case studies but general archaeological principles relating to REAL-WORLD PROBLEM SOLVING: practical application of knowledge from the human past

LEARNING OBJECTIVES

You will have succeeded in this course when you are able to:

1. Demonstrate knowledge of archaeological methods, theories, ethics and values, cultural resources preservation, conservation archaeology, and stewardship.
2. Evaluate a local archaeology lecture for content, research goals, philosophy, communication, and social relevance
3. Analyze details of past important cultures worldwide, describing major transitions in prehistory and how this knowledge is important for modern humans and interpreted differently by different interest groups
4. Demonstrate clarity in all assignments, indicating good preparation and organization
5. Understand the value of archaeology to your own individual life and to modern society

COURSE REQUIREMENTS

Classes include lectures, films, and slide presentations. Lectures include material *beyond* that in your texts for which you will be responsible on exams.

Exams: There will be two exams, a midterm and a final. Both include essay-type questions as well as so-called objective questions, and each will cover assigned readings for that time period as well as lectures and other class materials. The final will be cumulative to a small degree in that you will need to know the basic concepts of archaeology to interpret the record of prehistory and early history.

CLASS POLICIES

A grade of incomplete is given **ONLY** if there is sufficient reason that the work was not done and if the student signs a contract to complete the work.

TESTS AND ASSESSMENTS

Comments on tests are appropriate here. While ever-increasing class sizes (and ever-decreasing availability of teaching assistants) require more work from the instructor, I feel it is inappropriate at the college level to have straight multiple-choice tests. Many computer-graded exams by necessity do not offer the kinds of thinking opportunities that I wish to provide. The compromise is to redesign types of tests for both high expectations but not too labor-intensive a grading process. I also insist on essay questions on each test, for practicing those thinking and communications skills.

The following are examples of different test formats and assessment tools:

1. [PRE- AND POST-TEST ON ARCHAEOLOGY](#)

Questions can be adapted to any classroom situation and to computer-grading forms. They help students assess their strengths and set goals for learning when given at the beginning of the course, and evaluate how much they have learned at the end (or how much they need to cram for the final exam!). This kind of test is usually only for the students' own use and evaluation of their knowledge and does not count toward the course grade.

2. [MIDTERM](#)

The exam covers the entirety of archaeological practice, method, theory, and history—the first half of the course.

3. [FINAL EXAM](#)

Same as Midterm, above, but covering the second half of the class—world prehistory and more intensive exploration of archaeology in society.

Module Overview

These are CLASS LECTURE OUTLINES as I delivered them for the course, with suggestions for QUESTION-ANSWER AND DISCUSSION IN CLASS AND ONLINE, and with LEARNING or LESSON OBJECTIVES noted. Since MATRIX course designers were asked to include complete lectures, they are presented here in modular form according to the syllabus topics. Most new ideas begin with questions to ask the class to answer and discuss as they proceed through the subject matter. Each lecture is written with the considerations of :

1. Integrating all of the Seven Principles
2. Trying to lecture less
3. Making the story both intriguing and connected with the students' everyday lives

These lectures do NOT repeat what is in the two textbooks (Ashmore and Sharer 2000; Price and Feinman 2000), which students are supposed to read on their own, but integrate it into basic archaeological knowledge. They are fairly general, as the course is a broad survey of the field. Pictures from many archaeology books, my own slides, videos, and other visuals are shown throughout all the lectures. Especially useful are issues of *National Geographic* and their large-format book *The Adventure of Archaeology* (Fagan 1985), both of which have stunning photos. Coffee-table archaeology books that every archaeologist acquires are also good if you have a document camera (Elmo) that can project pictures onto the screen, or if you make slides of them or scan for a cd presentation.. This is important because archaeology is a visual discipline.

Using the Modules

The lectures/questions are organized into modules by syllabus topic. Lectures are very idiosyncratic to each instructor. Though these can certainly be used exactly as given, any instructor will change things constantly and probably use them as I do, merely as guides for each class. Modules can be expanded or contracted; they can be grouped by the two halves of the class and two textbooks:

1. Doing archaeology (first half of lectures, coordinated with Ashmore and Sharer 2000 book)
 1. What is Archaeology?
 2. Kinds of Archaeology
 3. History of Archaeology
 4. [Different Theoretical Approaches in Archaeology](#)
 5. [Types of Archaeological Data](#)
 6. [Archaeological Survey and Excavation](#)
 7. [Archaeological Classification and Analysis](#)

8. [Archaeological Interpretation and Reconstruction](#)

9. Public Archaeology and Modern Society

2. World prehistory, archaeology and society (second half of lectures, coordinated with Price and Feinman 2000 book)

10. The First People and Culture

11. [Middle and Upper Paleolithic Hunter-Gatherers and the Emergence of Modern Humans](#)

12. [Origins of Food Production](#)

13. [North American Prehistory](#)

14. [Mesoamerican Archaeology](#)

15. [South American Prehistory](#)

16. [Old World Prehistory, Origins of Civilizations](#)

17. [Course Review and Relevance of the Seven Principles](#)

Modules comprising the first half of the course build upon each other. The concepts and principles learned in the first half are used in the second half to examine culture history. This (incredibly brief) review of 2 million years of the human past does not pretend to be comprehensive. The New World is a little more emphasized because we live here. Culture process is always discussed, as is contextual archaeology when possible, and the Seven Principles are tied into details of individual sites in the book. Some book chapters are skipped, and details such as names of time periods and multitudes of dates are also not emphasized so as not to overwhelm the introductory student. The romance and adventure of finding the past, and how past people lived, needs to be conveyed with enthusiasm and the demonstration of the lecturer's own excitement in having done fieldwork and lab analysis and made discoveries. Some of this can be done using information from Allen 2002, Fagan 2002, Joyce 2002, Lipe 2002, and Young 2002. Instructors should of course bring in their own specific research and public archaeology, in field/lab stories, slides, and other ways.

Exercises Overview

Any of these can be chosen to provide active learning and ways of obtaining credit in the course beyond exams. Each can include a small portion on the problems encountered in doing the project, or how it might be modified for next time, as a way of evaluation of the idea. Each can include the individual experience and opinions of the student, so as to integrate the personal with the scholarly experience. For many of them, the student could keep a personal journal throughout the course of the project, either for self-edification or for turning in as part of the assignment (also see journal exercise). Be sure than any written submittal would not, if presented orally, exceed 5 – 10 minutes.

Exercises Cautions

Only one or two of the exercises can really be done within a semester, since they do take time. I chose the websites evaluation and artifact caption projects to add to exams as class requirements.

Students seem to like all the exercises, though field trips are always preferred (but much harder to schedule and accomplish).

The **student exercises** are the following:

1. [Instructor for a Day](#)
2. [Add to the Topic for the Day](#)
3. [Archaeology Websites Evaluation](#)
4. [Artifact Caption Exercise](#)
5. [Museum Display Critique](#)
6. [Cemetery Visit Field Trip](#)
7. [Your School Artifact Display](#)
8. [Garbology](#)
9. [Archaeology Lecture Critique](#)
10. [Ethnographer and Ethnoarchaeologist](#)
11. [Storytelling in Prehistory](#)
12. [Heritage Management](#)
13. [Local Societies or Avocational Groups](#)
14. [Material Culture Journal](#)
15. [Media Archaeologists](#)
16. [Field Trip](#)

Student Exercises

Student Exercise 1: INSTRUCTOR FOR A DAY

Think about how you would teach the class. Consider how you would lecture, discuss, and assign activities, and what quiz questions you would use that summarize the assigned work.

Student Exercise 2: ADD TO THE TOPIC OF THE DAY

Find additional material about the subject of one chapter of the texts (whether an archaeological technique or a specific site or research question) from the library, Internet, or any source. Or, consider one thought-provoking question on the topic. Reporting will be via email to Tour Institute.

Student Exercise 3: ARCHAEOLOGY WEBSITES EVALUATION

Evaluate information on two or more websites on archaeological projects (NOT artifact sales or archaeological associations or journals). You can pick any of the thousands on the Internet to describe and compare in terms of what is being learned from class (a printout of the website is not required unless desired). Email reports should include critique and comparison, stating the origins of the websites, the intended audience, graphics and ease of navigation, research goals, and theoretical perspectives. You can include how to redo the website to improve it (see syllabus description).

Student Exercise 4: ARTIFACT CAPTION EXERCISE

Pick an artifact from whatever is around you for which to write a museum caption of 50 words.

You must decide on who the targeted audience is for the display of this artifact and what to include in the caption to address that audience.

Student Exercise 5: MUSEUM DISPLAY CRITIQUE

Visit a museum and observe the displays of archaeological materials. Pick three exhibits for which to do the following:

1. Describe what is displayed and what is being portrayed about the human past; be sure to note the specific material items and the text accompanying them.
2. Identify what specific human cultural systems or aspects of life are being interpreted and which are not portrayed much or at all. What artifacts might be missing?
3. Determine the intended audience for the exhibit and another audience for whom this exhibit might say much less.
4. Decide what you would add, subtract, or change about the exhibit for different audiences.
5. Note what might be the values expressed in the exhibit and whether it is addressing any concerns that are pertinent to today's world as well.
6. Does the exhibit say anything about the preservation ethic?
7. Are the text and placement of artifacts, landscape, and other items clearly communicating the message?

Student Exercise 6: CEMETERY VISIT FIELD TRIP

Find a nearby cemetery to visit and do some social archaeology. Pick different areas of the cemetery to visit and observe the material evidence of graves, from monuments to landscaping. Compare this with the historic evidence written on gravestones, any documentation you can find on the cemetery and its history, and any other written information. Email a written report which, if given as an oral presentation would not exceed 5-10 minutes.

Student Exercise 7: YOUR LIFE ARTIFACT DISPLAY

Describe or actually do a display representing all aspects of a typical day in your life. Pick a target audience (e.g., spouse, children, friends, other relatives, business or social associates, etc.) and decide not only what to include but how it is displayed. Include what an archaeologist excavating later in time might find and use to interpret everything from your daily life.

Student Exercise 8: GARBOLOGY

Chooses two places to examine the garbage (one day's will do!) and compare techno, social, and ideological aspects of the inferred behavior at the two different places. What might be missing from one or both that is part of the activity at that specific place? Are all the different types of people and activities represented in this specific garbage area?

Student Exercise 9: ARCHAEOLOGY LECTURE CRITIQUE

Attend an archaeology lecture outside the classroom and do a written critique of the speaker's presentation, giving description of research goals, methods, theoretical orientation, presentation style, and targeted audience and noting how many of the [Seven Principles](#) were included in the lecture.

Student Exercise 10: ETHNOGRAPHER AND ETHNOARCHAEOLOGIST

Go somewhere to observe human behavior (restaurant/cafeteria, library; somewhere easy). Write a few paragraphs on the human behavior you observe for a designated period of time (which can be 15 minutes or more), describing the cultural behavior and surroundings. Do this from both the ethnographer and ethnoarchaeologist view points. Of course, the ethnoarchaeologist is more interested in focusing on the distribution of material culture. After the observing is done, each try to recreate technological, social, and ideological aspects of the people observed. What issues of local politics, problems, and/or economics of the situation can be reconstructed? What insights into improvement can be gained by looking at the material evidence?

Student Exercise 11: STORYTELLING IN PREHISTORY

Pick a particular prehistoric site or time period/geographic location. Write a description of a scene from the daily life of a person similar to you in age, gender, socioeconomic status, etc. Remember to incorporate material culture, descriptions of landscape, activities, etc. These fictional but archaeologically accurate descriptions can be two-three pages long and take five minutes to read. As an alternative, write a story of just everyday life.

Student Exercise 12: HERITAGE MANAGEMENT

Describe a typical kind of significant archaeological site being destroyed by unregulated development; make it a burial mound or cemetery so that laws covering unmarked human graves apply. Research what the concerned citizen can do and what laws apply for (1) different states, and (2) different landowners (federal, state, county, local, private, etc.).

Student Exercise 13: LOCAL SOCIETIES OR AVOCATIONAL GROUPS

Locate the nearest local archaeology societies or other groups that might work with professionals, have meetings and/or programs, or do other archaeological work. Find out what the group's mission, ethical standards, and activities are. This can be for the local region or for another state. There are not only local and state chapters of such societies, but also museum support groups, AIA chapters, and other such groups. What states have programs to train amateur archaeologists or certify them? How does the State Historic Preservation Office relate to amateurs and collectors?

Student Exercise 14: MATERIAL CULTURE JOURNAL

Keep a journal, whether hand-written (but ask for neatness and legibility) or word-processed, electronic or on paper, for the duration of the course or any portion thereof, in which material culture in everyday life is noted. You can comment on especially the social, ideological, and very personal aspects of the material culture around. You can respond to specific questions, such as: what different artifacts did you use or see today that you do not normally? How did an artifact take on new meaning today? What symbolism is inherent in some everyday artifacts in your life today that an archaeologist/outsider would not know about? What items did you use in the course of the day, and where were they deposited? What might be the most confusing for future archaeologists if your house (work place, neighborhood, etc.) were buried in a volcanic eruption right this minute?

Student Exercise 15 : MEDIA ARCHAEOLOGISTS

Pick an archaeologist character from the popular media. It can be a main character or a short

walk-on part. Indiana Jones and Lara Croft are the cinematically best-known, but other movie examples exist, in everything from the *The Mummy* (1936, with Boris Karloff) to modern remakes and other films such as *Stargate*. They could also pick a character in fiction, such as archaeologists in Agatha Christie's *Murder in Mesopotamia* and other novels; archaeologists who solve the mysteries in the novels of Aaron Elkins, Sharyn McCrumb, Elizabeth Peters, and others; or even the briefly appearing New York archaeologist in Rita Mae Brown's *Rubyfruit Jungle*. In a short paper give the following:

1. Description of the character and her/his actions, both in doing archaeology and in the action of the story
2. Description of stereotypical behaviors portrayed and whether they could actually be true given the character's place and time
3. Relationship of the character's behavior to any/all of the [Seven Principles](#). For example, what basic archaeological skills are shown? Is there any concern for preservation of sites and materials? For the relationship of past humans with moderns? Any ethical situations?

A good reference for this exercise or just to talk of media archaeology is *Digging Holes in Popular Culture: Archaeology and Science Fiction* (Russell 2002), with a preface by Douglas Adams and including a photo of 1950s handsome television personality Mortimer Wheeler looking like (and apparently ending up as the model for) Indiana Jones.

Student Exercise 16: FIELD TRIP

A field trip to a site and/or museum can be accompanied by a set of questions or things to look for relating to the [Seven Principles](#). Don't forget to check on logistics, vehicles, insurance, food and drink regulations/suggestions. Call site or museum ahead of time to ask for a tour (often one can get discounts or free entrance by calling in advance, not to mention lectures by curators, rangers, and other specialists).

What is Archaeology?

Lesson Objectives: Understand anthropology's role in the social sciences and archaeology's role in anthropology.



[enlargement / caption]

Definition of anthropological archaeology: First define anthropology, since archaeology is a part of it. It is the study of humanity from a bio-cultural perspective. How is anthropology different from all other social sciences? All social science was developed in the West; anthropology is the only one

traditionally studying non-Western people and cultures.

We need to know anthropological terms. How do we define *ethnocentrism*? The judging of one culture by the standards of another. Every culture does it; it is just a matter of degree, from the extremes of viewing other lifestyles as inferior to one's own to ethnic cleansing and holocaust. We can find many examples in the news every day. What is the antidote to ethnocentrism? *Cultural relativity*, or judging a culture in its own terms. A newer term, *multiculturalism*, is popular these days, but the meaning is different, implying a society made up of many different cultural traditions. Our Western culture is so obsessed with technology that we judge everyone by that standard, and those who don't have all our PalmPilots and cell phones are called underdeveloped or lesser developed. We have come up with silly abbreviations: LDCs are the Lesser-Developed Countries, and so on. What is *development*, exactly? To us it is technology. Well those folks are still plowing with an ox, so they are more "primitive" than we (even if the ox makes more sense to them because it is cheap and available). If we defined development in some other way, would we be the most "advanced" of all? What if we spoke of literary, architectural, or artistic development? Where would the U.S. be, say, in comparison with India and its Taj Mahal and thousands of years of beautiful poetry? Let's throw out those words "primitive" and "advanced" and just see different cultures as different, perhaps with systems more or less complex, but not higher or lower, better or worse.

Define *emic* and *etic*? They are terms originating from concepts in linguistic anthropology. Phoneme is the sound that has meaning to the native speaker, while phonetic analysis is the scientific study of the sounds made in a language by an outside expert, whether they are understood or not. By extension, *etic* is the study of a culture by an anthropological specialist, and *emic* is the understanding of the culture from the point of view of the native. Which is better? Both of course are important to do/have. Besides, *etic* is just someone else's *emic*.

What are the unique traditions of anthropology that differentiate it from other social sciences? First there is *participant observation*, in which the anthropologist who is doing the ethnographic study, for example, becomes a participant in the culture being studied, not just observing it from the outside. Another hallowed tradition is *cross-cultural comparison* of anthropological data so as to study humanity as a whole, not just "Western" (white, Judeo-Christian, Euroamerican) culture. Finally, anthropology is *holistic*, meaning it is inclusive of many different kinds of research, linking the biological and cultural and looking for the worldwide perspective. All this can relate to the modern world's different political agendas. *Applied anthropology* offers advocacy for people without power, without history. Anthropological views of current world problems can include studying the origins of civilization and the long history of violence in the Middle East, the imposition of Western technology and values upon other cultures, or the application of methods from within a culture to help alleviate poverty, disease, and other ills.

What are the *subdisciplines* of anthropology? See diagram on page 17 of Ashmore and Sharer text [project on screen]. First there is the twofold division of biological and cultural, with each overlapping the other. Can we separate biology and culture? Nature vs. nurture arguments are among the most crucial in many world issues today (whether in questions of gender, race, ethnicity, or other social stratification; medicine; and so forth).

Cultural anthropology includes specializations such as economic, political, social, folklore, kinship studies, anthropology of art, of dance, ethnomusicology, etc. The primary terms to know are *ethnography* and *ethnology*. The former is the recording of culture, the description and detail, while the latter is the use of ethnographic data for scientific study and cross-cultural comparison.

What is *linguistic anthropology*? A linguist is not the same thing as a polyglot (someone who knows many languages), but someone who studies language in its cultural context. Linguistic anthropology is considered a very large subdivision of cultural, or a subdiscipline on its own, with a huge body of knowledge and subject matter, including sociolinguistics (how the social setting influences language use), historical linguistics (important to see how languages evolve and originate), language and thought (how one influences the other and vice versa), and other specializations. *Biological anthropology* comprises two major areas of research: human evolution and human biological variation. These two overlap, and also include related areas such as studies of non-human primates.

Where does *archaeology* fit within all these? As the fourth major subdiscipline of anthropology, it does constitute a type of cultural anthropology. It is defined as the study of past humans based on investigation of their material remains. It is very different from the rest of anthropology because of its method. You do not need the people, only their stuff. Often, usually, the people are dead, but not always. The dead tell no lies, but often they do not tell anything: we must tease it out from the material evidence. Archaeology is detective work, with its own specialized techniques, piecing together what happened in the past based on not only the material items and residues, but also their relationships and contexts. And archaeology uses information from all the other subdisciplines of anthropology. It is easy to relate the practice of archaeology to some current case in the news media for identifying material evidence (OJ trial was great for this): testimony of witnesses can be compared with use of history (with its own biases) in historic archaeology.

Applied anthropology can be seen as a fifth major subdiscipline, or the applied focus can be viewed as something necessary to apply to all areas of anthropology. Applied anthropology can be done within or outside of academia, and includes more than research. It is the use of anthropological knowledge and methods to address modern human problems and issues. There are countless areas of applied focus, from medicine and health care to forensic anthropology to world economic development.

How is the anthropological viewpoint different? This is very important, and often stressed in the practice of applied anthropology. The perspective is from the bottom up, from the point of view of the culture or group being studied (an emic AND etic view) as presented to someone else. The anthropological viewpoint can explain culture to those outsiders making policy or otherwise affecting a particular group; it can be a position of advocacy as well.

Public archaeology is applied anthropology. It includes not only managing archaeological sites and other cultural resources, but also involvement in historic preservation planning and law, archaeology education from schoolkids to avocational archaeologists to the general public, archaeology in the popular media from cartoons to movies to literature, and understanding the politics of archaeological practice. It involves the anthropological viewpoint because it takes into

consideration landowners, descendants, and people with political, legal, and other interests in the archaeological record, as well as professional archaeologists.

Now we see that *all archaeology is public archaeology*. We need to account for how we use public funds to investigate the past; we need to define whose past we are investigating, and why it is important to save it when there are other more pressing world problems. All archaeology can/should be applied anthropology: for example, forensic archaeology, excavation of murder and genocide victims (e.g., Lloyd 2002) in Latin America, the Balkans, and elsewhere after ethnic conflict; excavation of World Trade Center victims and finding their artifact possessions. There can be practical, useful information derived from all archaeological work. Rathje's (2002) garbage studies are the most clearly practical in their applications of knowledge about what we throw away (up to 15 percent usable food in Americans' garbage), what ends up in landfills, and what does not degrade as expected (paper being the greatest component of landfills). Many archaeological studies of human effects upon natural environments, and vice versa, are useful today to see the consequences of various natural and cultural disasters, environmental depletion, and overuse/extinction of biotic and other natural resources.

Is modern anthropological anthropology without *bias*? A last caution, about archaeology or any other research: all science or other scholarly endeavor is a product of its time, with the political and other biases that might be expected. In this class we will try to do scientific archaeology, but also to have some of what has been called the postprocessual or postmodern viewpoint and look at the biases that might be present based on who is doing the research. What do you suppose might be some modern biases in archaeology? It is still dominated by elites, white upper- or middle-class males in a Western capitalist system. Does this matter? Will our interpretation of the past be different if African-American women are doing it? A prehistoric stone tool is a stone tool to whoever excavates it, but can you determine the sex, gender, age, other social information about who made it? Not so far! This does not stop us from doing it. Think of reconstructions such as are common in many museums where male figures hold the large stone tools and women and children are in the background. Diane Gifford-Gonzales's article entitled *The Real Flintstones?* (1985) [show cartoon from this article] warns us not to impose our modern views or someone's modern view upon reconstructions of the past. She notes how most museum exhibits portray prehistoric men doing useful, interesting things and standing up straight, while their women are in the role of "drudge on the hide," always bending over domestic tasks such as hide-scraping or cooking.

Kinds of Archaeology

Lesson Objectives: Compare different types of archaeology.



[enlargement / caption]

What are the different kinds of archaeology, how did each originate, and in what larger discipline? Many of them overlap, and many do not have a completely anthropological viewpoint. Some immediately think of archaeology in terms of Egypt or Rome, not realizing you can do it anywhere; someone probably has, right where you live.

Much of *classical archaeology* concerns what Western culture considers the classic civilizations of western Asia, Egypt, and Europe, and the study of these derives in large part from history, philology (study of ancient texts), and art history.

Prehistoric is often distinguished from *historic* archaeology, the latter being study of cultures who have written history. Sometimes it is difficult to distinguish the boundary between history and prehistory, since early writing systems do not tell us everything and that boundary is at radically different times in different places. When does history begin here in Florida? As soon as the first Spanish arrive in the early sixteenth century and write down what they see of the native people they encountered. Are these accounts biased? Of course; they are ethnocentric and concerned with specifics of the expeditions, getting food, gold, other needs, and often considered the natives as less than human. What are the biases of history? Who writes history? The winners, the elites. In the Americas there is a distinct body of methods and theory for historic archaeology, and we have now gone from investigating only the elite sites (such as plantations in the South, often much better-funded projects) to the sites of those without history (such as slave cabins at those plantations, or camps of imported Chinese railroad workers, or other minority peoples).



[enlargement / caption]



[enlargement / caption]

Clearly classical archaeology is historic archaeology as well. In Europe, archaeology is often considered by default to be classical materials and time periods, as distinguished from prehistory. So that, for example, in Florence, Italy, the prehistory museum goes from the first Paleolithic people hundreds of thousands of years ago to the Bronze Age, some 4,000 years ago, while the archaeology museum begins with the Bronze Age and goes through the classical civilizations of Greece and Rome. Prehistoric archaeology has its own difficulties, such as the possibility of past human systems with no modern analogs that we would have a hard time reconstructing. Sometimes we have to treat early civilizations as if they were prehistoric, if their writing systems cannot be understood. This is the case in the Indus River Valley of India and Pakistan, for example. Study of the great Maya civilization in Mesoamerica has lately been “transformed” into

historic archaeology because we can finally read their glyphic writing [show picture of glyphs]. The story of this breakthrough is given in *Breaking the Maya Code* (Coe 1999), which details how epigraphers (who studied the glyphs), linguists, historians and art historians, as well as archaeologists, disagreed or cooperated in the solving of the puzzles, and how political issues delayed progress, since the correct interpretations by a Russian linguist were ignored because of the Cold War.

Underwater archaeology is another specialization that requires a whole additional body of knowledge, and not only about diving. What else would be different? Specific techniques and methods adapted to the underwater environment, complex machinery and recording systems, various technologies, and also general knowledge of boats and ships, which you need to get out there even if you are not excavating shipwrecks. It is something like 100 times as expensive as terrestrial archaeology. Besides sunken watercraft, there is everything else imaginable underwater, from silted-in ports and docks to lost cities submerged during floods or earthquakes to prehistoric camps drowned after the end of the Ice Age when the

glaciers melted and sea levels rose.



[enlargement / caption]



[enlargement / caption]

Pseudoarchaeology is a

term given to non-scientific accounts based on real or imagined evidence. People are still looking for lost continents such as Atlantis, another one in the Pacific called Mu, evidence that Native Americans are the ten lost tribes of Israelites from the Bible, or that early forms of humans still exist (such as the Abominable Snowman, Yeti, or closer to home, the “Skunk Ape” still supposedly being sighted in Florida forests). This is the kind of phony archaeology seen on television's *In Search Of* or in bad-science movies such as *Stargate*. Is it harmless? Think of the pseudoarchaeology of Erik Van Daniken's *Chariots of the Gods* (1971) and other books, which claim that ancient astronauts arrived to teach people how to build pyramids and so on. This is the ultimate racism or ethnocentrism, indicating that ancient humans were not smart enough to think of complex technology such

as pyramids or big stone statues.

Other kinds of archaeology we will explore include orientations toward cultural resources management, world heritage conservation, and historic preservation fields; specific analyses such as ethnobotany and zooarchaeology; restoration of monuments and conservation of artifacts; and other such specializations. It should be noted that in the Americas, archaeology is usually a part of anthropology and included in anthropology departments of universities and museums, while in Europe, Canada, and other locations it is a separate division. One reason for this is historic: in America, archaeologists were studying the remains of the cultures whose last living peoples were being studied by ethnographers and other anthropologists, so there was natural interaction. In Europe, naturalists and antiquarians who collected artifacts and tried to explain them usually interacted more with the earth scientists, while social anthropology was more allied with the social sciences.



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Lately there has been some division of archaeology into more scientific vs. more humanistic; these two are sometimes labeled processual vs. postprocessual archaeology. We will explore these philosophies and realize how one must do both to do good work.

What are the several goals of archaeology?

1. Description of the record of the past and sequences of culture history—finding out what happened.
2. Determining how, even why things happened; function and cultural processes of change or lack of change and past human systems.
3. Trying to achieve the view of the past people as to why and how they did things, what was significant to them—an emic or postprocessual archaeology.
4. Reconstructing and interpreting the past, especially in terms of practical applications.
5. Preservation of the evidence of the past for the benefit of all.

Scientific archaeology is done by testing hypotheses, looking at form and function, proceeding in a self-correcting fashion, as explained in your book on page



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11. It tries to see both synchronic and diachronic views, or at one point in time and through time.



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What *jobs* can you have if you are an archaeologist? The professionalization of archaeology has included expansion into several areas of the workplace. Besides the traditional academic and museum curatorial or research positions, there are jobs in federal, state, and local agencies as cultural resources managers, private archaeology companies who do research and compliance work in advance of proposed construction, and educators, interpreters, and others who bring archaeology to the public more intensively. It is not very possible any more to be a lone, isolated researcher in the lab or field with no connection to the

wider goals of public archaeology; modern professional ethics require a knowledge of how the research relates to the wider society.

There are many professional associations: one important one is the [Register of Professional Archaeologists](#) (RPA, formerly the Society of Professional Archaeologists or SOPA), which sets standards and ethics. Two other major national groups are the [Society for American Archaeology](#) (SAA) and the [Archaeological Institute of America](#) (AIA). State, local, and regional societies abound. Most have open membership to anyone who abides by the ethical principles and goals, and most have websites describing how to join.



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Modern professional archaeological concerns are well stated in our Seven Principles that are being emphasized in this class. These include the obligation to publish, not only for the scientific audience but for the public; the obligation to work with the people whose ancestors one is researching; the need to understand the many stakeholders in reconstructions and interpretations of the human past; and the view that archaeology must be socially relevant and produce information that can be useful in addressing real-world human problems.

Lesson Objectives: Understand the sociopolitical context of the development of archaeology.



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Who are the major figures in the early history of archaeology, and what social groups and subgroups did they belong to? What kinds of people are not represented? Most were wealthy Western men.

Why does the textbook begin with an account of looting at Slack Farm, Kentucky? It illustrates several issues. First, most archaeology began with looting, until practitioners figured out it would be more

interesting and worthwhile to keep associated information and provide better reconstructions of the past, not just pretty artifacts for hanging on the wall. But looting and artifact collecting is still with us, in a much bigger way thanks to fancy New York and London auction houses, illegal antiquities dealers, eBay, and the general greed mentality of the current decades. People either want to make money, or they want to have something unique that is not being made anymore, as a part of their self-identity.

Much of classical archaeology began as the accumulation of treasures by colonial powers. Giovanni Belzoni [show his picture and others to illustrate all this] was a strongman in a circus before he began hauling around stone monuments yanked from Egyptian tombs for the British government in the nineteenth century, and Lord Elgin grabbed sculptures from the Parthenon in Athens for the British Museum. Most museum collections are from looted sites where proper archaeological excavation has not been done. Now we supposedly know better and realize that taking an artifact out of its context destroys its scientific and archaeological value. But the image of Indiana Jones running out with the golden idol only is not too far from 1930s archaeology in many other countries.

Are we now free of the idea that we must save ancient treasures in lands where the poor dumb people do not know how to care for them themselves? What about the campaigns to prevent the Taliban from defacing and destroying ancient Buddhist monuments since they are images thought to be opposed to Muslim beliefs?

Can archaeology be used for political purposes? It is said that during the first Gulf War Saddam parked his planes and tanks next to famous monuments of Mesopotamian civilizations, knowing the U.S. would not bomb them. Hitler used archaeological data to prove the superiority of Germanic culture, where all the great ideas originated, and promote Nazi ideology. Do we use archaeology for any political purposes? Sure; there is identification with past ethnic groups and pride in heritage, establishing claims to lands or other things, promotion of ideas and styles modeled on those of the past.

Who are the historic figures discussed in your text and well-known as archaeological pioneers? Besides those mentioned above, we can look at Thomas Jefferson in our own country, who excavated a mound on his property; Stephens and Catherwood in Mesoamerica, publishing

books and drawings of monuments; and surveyors Squier and Davis in the eastern U.S. doing the same for mounds and earthworks.

Among the many others, Thomsen and Worsaae stand out in nineteenth-century Denmark because they established the three-age system. What is it based on? Technology is its foundation, demonstrating our Western ethnocentric bias, which we must keep in mind throughout the class. Likewise, the early anthropological models of cultural evolution in stages assume a unilineal pattern or even multilinear, normative development throughout the globe. But this is not necessarily the case. However one defines bands, tribes, and chiefdoms, a particular culture does not necessarily go through such stages or end up at some predetermined point. Cultural evolution, like biological, is not teleological; that is, it does not have a direction or an end point in mind; it is simply change.

What about diversity among archaeologists? Were all early archaeologists rich white colonial or other capitalist guys? Not necessarily. There are many others whose stories are only now being discovered or emphasized. I recently finished work on a book about women who did archaeology in the southeastern U.S. beginning early in the twentieth century (*Grit-Tempered*, White et al. 1999), and there are now many many works on women's contributions (e.g., Parezo 1993). It was a black cowboy who discovered the Folsom site, where archaeologists realized that people and extinct Ice-Age animals coexisted in the U.S. (Preston 1997, Meltzer et al. 2002:7).

The politics of archaeology can be rough on its practitioners. In Zimbabwe (formerly Rhodesia), an archaeologist was fired less than a half-century ago for suggesting that Great Zimbabwe and other ruins were the work of indigenous Shona people and not white traders (e.g., Kuklick 1991, Ndoro 1997). There are many such examples of who is left out of the archaeological record and out of the ranks of archaeologists.

How does past looting differ from that of today? Though in the past mostly the wealthy colonial administrators claimed ancient items for themselves or their governments, now everyone wants to collect. You can buy artifacts looted from sites around the world on the Internet. There are many blue-collar, working class as well as middle-class looters who do not care about preserving the past, though ethical collectors are willing to utilize archaeological methods and collaborate with professionals. In most countries outside the U.S., any archaeological remains become the property of the state once they are discovered. This is only the case in the U.S. if they are found on public lands. Archaeological materials on private lands can usually be collected or destroyed with no penalty unless they are involved in projects using public money or projects large enough to have regional impacts or otherwise governed by local preservation ordinances.

Archaeologists consider it unethical and unprofessional to buy and sell artifacts, much as physicians would not buy and sell livers or kidneys. But what is subsistence looting? In poorer regions where finding an ancient pot or statue would mean immediate government control, the peasant farmer who unearths such an artifact might instead quickly sell it to a dealer to bring money so an impoverished family will be able to eat. What is the anthropological view of such a practice? The situation has no easy answer. It is very much the same as with international drug traffic. It starts at the local level with very small compensation and usually subsistence farmers,

but gets transformed radically on the way to the streets of New York or Miami. One answer is education.

Different Theoretical Approaches to Archaeology

Lesson Objectives: Compare culture history, processual, and postprocessual approaches.



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What is the *culture history* approach in archaeology? It means the descriptive, normative, laying out of material culture according to a temporal framework and interpreting behavior during the different time periods. It is necessary to do culture history to establish baseline data over time and space. It is the kind of archaeology that has been historically done the most, and is still done to establish foundations for more scientific approaches.

What is *processual archaeology*? It used to be called the “New Archaeology” and emerged out of the intellectual currents of the 1960s (or even earlier); it includes concern with natural environments and ecosystems, human and civil rights, and rigorous mathematics and statistics and computers and other instrumentation. It means the application of scientific method to archaeology, and should include utilizing specialists in other fields such as zoology, botany, chemistry, physics, remote sensing, computer modeling, systems theory, and so forth. The “new” archaeologists were unhappy with culture history’s method of simply listing traits for different cultures but not explaining mechanisms for culture change except for some vague notions of invention and diffusion of ideas. They are concerned with culture process, asking how did systems work and change and what are the functions of artifacts, activity areas, and whole sites and systems. Much of processual archaeology is based in *cultural materialism*, the social science framework that explains culture in terms of the technoenvironmental constraints (what are the available technologies and natural resources?).

What is *postprocessual archaeology*? In sum, it can be seen as a humanistic approach, or as emic archaeology, attempting to get at the past peoples' own views of how they did things and what was significant. It derives from postmodern philosophy in the social sciences, which actually originated in the field of literary criticism. Though it is an awkward term, it has also been called or thought at least to include contextual, symbolic, or critical archaeology. Each of these seeks to understand how material items symbolized various things and had specific meaning to the people who made them, and how our scientific biases toward simple function and technology mask our view of individual human beings in the past and what they might have been thinking. Needless to say, emic archaeology is very hard to do with prehistory. We might infer what might have been

meaningful to the prehistoric people from what they left behind, for example, but it is very hard to discern what the meaning was. However, it works better with historic archaeology because we may have texts to indicate what past people considered significant. One segment of postprocessual archaeology includes several varieties of Marxist viewpoints, most of which envision the past as the common people's struggle for empowerment and resistance against domination by elites. Possibly the most useful aspect of postprocessual archaeology is critical theory, which points out all the many biases inherent in archaeological interpretation and in the profession itself. The numbers of Native American or African-American archaeologists in the U.S. still are ridiculously small, for example, and interpretations of ancient peoples are still dominated by pictures of men doing everything. A major emphasis lately in postprocessual archaeology has been in gender studies and feminist archaeology, though these can of course be done in a processual context as well.

Most archaeology done today is predominantly processual, with spatial and temporal aspects established by culture history and the awareness of bias brought in by postprocessual thinkers. We need to use all approaches as well as possible and be aware of the shortcomings of each. We also need awareness of how archaeology is done in the intellectual atmosphere and politics of the times. Today's "science wars" have been triggered by a kind of postmodern impatience with the biased investigator, even though every investigator is biased! We will examine bias in the latest archaeological discoveries to come out in the news while we are in this class. Controversies surrounding the discoveries are always juicy to discuss, and arguments from many sides can be found in weekly scholarly publications such as *Science*, *Science News*, the *Chronicle of Higher Education*, and many others, nearly all of which are easily available online as well as in the library.

For example, in 2002, a discovery making the daily news was the engraved ochre fragments from Blombos Cave in South Africa dated to 77,000 years ago, suggesting modern-looking human symbolic behavior. The science aspects can be explored in discussing the limits of radiocarbon dating to go far enough back in time, in questioning of the method of thermoluminescence dating, and in the debates on the timing for emergence of biologically modern humans. Humanities aspects of the story might be whether the cross-hatched lines are art or if there symbolic meaning of some other kind. There are also the political and professional issues: the great expense for the research in a poor country, the primacy of European-based explanations, and the world political situation applied to South Africa and its indigenous peoples today (see, for example, Rossouw 2002).

Types of Archaeological Data

Lesson Objectives: Understand sites, artifacts, sampling, and other basic concepts.



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What kinds of things does archaeology study? There are both *materials*, physical things such as artifacts or stains in the ground, and *data*, information such as measurements, directions, and associations. Discussion of this is very straightforward in your book. [Passing around of various kinds of artifacts, ecofacts; display on the screen photos of materials and sites.]

What are *artifacts*? Things made or modified by people, and they are usually portable, as opposed to *features*, which are stains in the ground or other non-portable things such as buildings. I did work at a bison kill site out west where a postmold, a dark stain in the

ground left from a large decayed log post, was carved out in a huge block and hauled to the Smithsonian for more careful study, so portability is a relative term. Even whole ships and other constructions can be raised or moved. What are *ecofacts*? Natural items used by people or somehow otherwise having cultural associations, such as the many shells left in the shell middens or garbage piles of prehistoric Floridians and other coastal peoples. What are *sites*? Locations of human activity that would have left artifacts, features, and ecofacts. They do not need to be habitation sites, but can be for special purposes or limited activities, such as stone quarries, cemeteries, sunken ships, or isolated temples. Often it is hard to define a site archaeologically, if it is one artifact it may have been dropped; one piece of an artifact, such as a sherd of



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pottery, is even more problematic. Similarly, site boundaries and divisions between one site and the next in a high-use area are difficult to establish sometimes, and usually defined operationally for the situation at hand or defined by the official state definition. In Florida, we can define a place where we find a handful of stone chips or flakes of chert (the New World stone often called flint) as a site. A single stone tool could be listed as an isolated find.

How can we categorize the processes that produce archaeological sites? Your book defines them as the *behavioral processes*, what the living people did to leave the remains of the site, and the *transformational processes*, what human and natural processes transformed the evidence after the original people were gone. Behavioral processes listed include



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acquisition of the material (from that quarry site we get the stone), manufacture (we make the stone tool by chipping it or flintknapping), use (which puts wear and other evidence on the stone tool), and deposition (either accidental, by losing something, or deliberate, by throwing it away).

All of these can be included under the heading of *site formational processes*, with two kinds, the human and the natural. After the original people are gone later humans transform the landscape, reusing old materials, plowing them down, covering them, and so forth. Modern human action is responsible for destroying hundreds of archaeological sites per day in the U.S. and across the world, mostly because people do not realize what they are destroying or how important it is. This is why education in the stewardship of the past is so important worldwide.

Natural processes can be classed as physical (erosion, rain, gravity), chemical (weathering, rusting), or biological (animals burrowing, bacteria decaying), and can work at the small scale (rotting away of a wooden artifact) or the large (rotting away of a whole village of wooden houses). They can be subtractive, destroying the materials, or preservative, burying the materials in river flood sands or volcanic deposits.



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The vagaries of the archaeological record severely bias our archaeological interpretations. What are the kinds of materials best preserved? Usually stone and ceramics. What is usually not preserved? Usually organic materials such as wood, animal flesh and bone. What conditions preserve organic remains best? Freezing, drying, or keeping wet all the time. The Florida climate, for example, is wonderful for organic decay because it is hot and cold, wet and dry. The soils are acidic, insuring rapid decay of organics. But in a shell midden the basic nature of the shell contributes to good preservation of animal bones, such as those passed around.



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At the Windover site near Cape Canaveral, where Archaic period Indians buried their dead in a pond, the constant wet environment preserved wood, bone, grass matting, and even the people's brain matter inside their skulls. Your book pictures other preserved people from Danish bogs, with all their clothes and even some with ropes around the neck indicating they were killed and thrown in there. On the desert coast of Peru, the lack of rainfall for years at a time guarantees the preservation of skin, feathers, textiles, and other perishables. Frozen Inca mummies have been

recovered from high-altitude ceremonial sites in the Andes, and other frozen past people have come from the Arctic and elsewhere. There is even the frozen 5,300-year-old Italian guy from the Alpine glacier who we will see later in the class.

Your book has a nice illustration of site formation processes on page 62, showing the sequence of events from prehistoric hunting camp to modern highway construction.

Besides the materials themselves, what information is recorded in archaeology? Very important is the context of *provenience*, or all the information on context in which something is found, including exact place in three dimensions and association with other items. Provenience might include everything from the date and name of the investigator to the level number in the excavation unit.

What is a *research design*? It is a plan for how the archaeological project will be conducted in order to meet its goals. One of the first tasks is to determine methods of investigation.

All archaeology is done by *sampling*. Why take a sample instead of digging up the whole thing? If you had a billion dollars to dig up a whole site, why should you not do it? *Conservation archaeology* is the view that we should NOT dig very much, that we should analyze well what has already been dug, that we should preserve sites, especially because our techniques today are probably very crude compared with what will be available in the future. In the 1930s, the Great Depression, make-work programs resulted in lots of archaeological excavation in the southeastern U.S. and elsewhere in the country. When they dug up many famous mounds and other sites, they did not save the charcoal or animal bone because it was considered junk; they just wanted the artifacts. Now we know that we could radiocarbon-date charcoal, and we could analyze the animal bone to see what people ate and what species they used.



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Archaeology is the only science that destroys its subject matter during the course of the work. A chemistry experiment can be redone many times, for example, but once an archaeological site is dug, it is gone. So the methods used must be as careful and complete as possible, and still you are losing information and materials. As methods improve we see what we did not do last time.

Meanwhile, then, we also sample because there is usually not the time and money to do more than a good

sample. What is the sampling universe or data universe? It can be an entire archaeological site, a county, or other land area in which we wish to find archaeological sites. It can be a portion of a site that may answer our research questions, such as the village site next to the mound.

What are the *sampling units*? To get Nielsen ratings they use television sets or households to find out what people are watching. What do archaeologists have? We can divide the site along grid lines into 1-meter or 10-meter squares; we can divide the county into already existing legal sections, which are square miles; or we can set up other sampling units that are useful and easy.



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What are the types of sampling? Beyond the strategies of data acquisition described in your book, we need to describe sampling strategies. What is random? *Random sampling* means choosing sample units based on a strategy that allows any unit to have an equal chance of being chosen. Random is NOT throwing your trowel into the air and digging where it lands. Why not? Because you tend to throw in a particular direction. To do random sampling you can number all your units and get a sequence of random numbers from a math book table or a computer or the decimal places of the number (pi, proven to be random) and use them to pick which units to investigate. The advantage of random sampling is that you do not impose your biases upon the data. The disadvantage is that you may get clustered units.

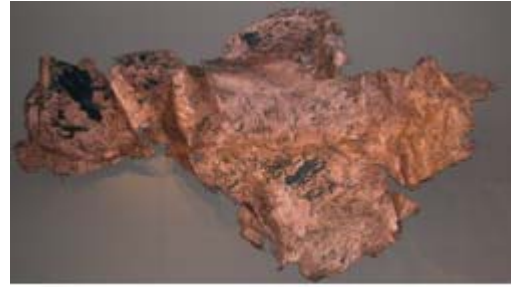


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What is *systematic sampling*? It calls for the investigation of sample units according to some designated system, such as every third unit or every 100 meters. The advantage is that you effect good coverage of the study area; the disadvantage is that your system may duplicate some past cultural system. Digging every 40 feet in a Neolithic village with houses spaced 40 feet apart will mean you uncover a west wall in every unit.

What is *stratified sampling*? You can stratify the sampling universe, divide it into areas based on environmental, architectural, or other criteria, then sample within the individual areas. For example, a site may contain a conical mound, a pyramidal mound, a plaza, and a village area; you could section off these areas and be sure to take a sample in each. Or a tract of land could have a stream valley, a hilltop, a swamp, and a coastal zone that could each be sampled. Within the different strata you might use random, systematic, or some other sampling method. The advantage of this type is that there is no clustering, and your knowledge of the land and culture can be used to ask better questions than just what is there. This could be the disadvantage as well, since your views may reflect your own culture and not that of past peoples.

What is *judgemental sampling*? This technique depends solely on the knowledge of the archaeologist, whose judgement indicates areas to sample. If you know that the plaza in front of the pyramidal mound was usually swept clean of artifacts, you might not dig there. If builders of burial mounds placed the deposit of exotic artifacts on the east side, you might place your excavation unit there. If looters have disturbed the site with their potholes, you might choose to dig around an old tree with large roots, knowing it will be difficult but that the cultural deposits will be perhaps less damaged since looters prefer easy work.



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What is the *sequence of research* for an archaeological project? Your book outlines the process, from research design to implementation to data and materials processing to interpretation and publication [diagram, page 73 of text]. What is the ethical consequence of not following through to publication? You might as well dynamite the site if you have destroyed it through excavation but have no report to show for the work! Your findings need to be available not only to other scientists but to the public who (usually) funded it.

Beyond just methods and techniques, what are the *ethical considerations* in planning archaeological research, as regards, for example, landowners, the public, the professional community, and funding agencies? All research designs should also require historical background investigation (what has been done on this site and this land before; what historical records do we have?). Another consideration is the obligations to the funding agency. What kinds of reports (technical and popular?) do they require? What kinds of reporting guidelines? Are any research areas sensitive? (For example, everything from dealing with human skeletal remains to working on restricted military lands to using historic personal photos).

Archaeological Survey and Excavation

Lesson Objectives: Understand the steps in locating and extracting archaeological evidence.



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What else must the archaeologist do before stepping outside to begin fieldwork? Your book plunges right into fieldwork without mentioning crucial issues such as gaining permission or access to lands, permits for work on public lands, and making sure you have laboratory and storage space for processing and curating the materials you might dig up. Another essential step is connection with the local people,

landowners or other residents, to find out what they might already know about the land. Have they collected artifacts, seen darker soils when plowing, or heard that some older residents once knew about older historic structures that once stood there? What will be the effects of your digging or surveying upon the local community? In our new era of mistrust of science and government, I have had to assure people that finding artifacts on their land will NOT mean that the state takes it away from them, and that I would like to see the artifacts they have collected ONLY to photograph them, if permitted, not to take them away.

What do we mean by *archaeological survey*? This is the answer to the common question, “how do you know where to dig?” (And again, we do not want to dig everything we find, but preserve as much as possible.) Survey is the process of locating the archaeological resources in a given area of land. Doing the background work can help pinpoint areas of greater interest. Besides the practical considerations mentioned above, research on the archaeology of the region is also absolutely essential. Where are most prehistoric sites located? Along coasts or rivers or springs? Those portions of land would then have the highest probability and perhaps require the greatest scrutiny. Is the survey being done in the path of proposed construction? If so, then



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perhaps only the areas where the ground will be disturbed need to be examined.



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Learning the environmental and historical variables must take place before you step into the field. Your book describes the work of Heinrich Schliemann, who read the classics and located the Troy of the Trojan Wars. It also mentions the importance of good maps, not only modern, but historical, to show both how the landscape may have changed and what historic remains might have once been located there. In more populated urban areas the old Sanborn insurance company maps may show building outlines or “footprints” that lie underneath modern features.

What is meant by *remote sensing*? Anything (usually technological device) that helps you learn what is on/in the ground without your having to be there or dig there. So a map is a remote sensing device, but even more sophisticated are aerial photos, including aerial infrared photos, satellite images, and pictures generated by various geophysical prospecting techniques such as magnetometers, electrical resistivity detectors, ground-penetrating radar (GPR), other kinds of radar, sonar, and all those spy devices developed by your friendly military scientists. The raised fields of the ancient Maya were not apparent on the ground in Central America, because, well, it is a jungle out there, but they were easily seen during testing of military imaging technology in the 1970s. Buried or jungle-shrouded features can be anything from just black midden stains to

traces of ancient canals, buildings, mounds, and other earthworks. If you do as much remote sensing as possible before and during the on-the-ground fieldwork, site discovery is greatly enhanced.

How is most archaeological *field survey* conducted? There is no substitute for being there and walking around. Especially important is covering open and disturbed ground, where shallower remains may have been churned up by plows, other heavy road building equipment, burrowing animals, and so on. In Florida, we walk dirt roads, plowed lanes in orange groves and cotton or soybean fields, and look for gopher tortoise burrows where the dirt is thrown out around the entrance and may have artifacts in it. We see on the map where the streams and springs are, and the highest ground nearby, and usually find prehistoric sites there. At the northeast end of our campus is a ditch along the road filled with slimy water and alligators today. Old maps show it was a pond with a stream outlet to Cypress Creek and the Hillsborough River, major transportation and communication routes in prehistory. It is no surprise that there are prehistoric human habitation sites around this last remaining small ditch! We have also talked with old-timers in the grounds department and elsewhere, who remember finding “arrowheads” (spear points) in that area of campus, especially during construction of various buildings there.



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Does survey include any digging? *Subsurface sampling* is enormously important, especially in the eastern U.S., which is often heavily forested. In the desert Southwest you can drive around and see the standing ruins of prehistoric pueblos. Many of these “windshield surveys” used to be done in the East, as well, by archaeologists looking for sites in plowed fields. But there is no substitute for seeing what is buried, whether there is cultural material on the surface or not. Methods of subsurface investigation during survey must be fast but careful. The shovel test is usually 50 cm square and a meter deep according to

Florida state guidelines; it is easily dug in our soft sands, and the soils can be dry-screened by one fieldworker while the other is digging (show photos of shovel-testing and other methods). We can also take cores or soil probes, pressing or twisting a tubular device into the ground to see what comes out. Besides 1-inch and 4-inch diameter hand-coring tools, we have a gas-powered auger which drills into the ground, which can be even faster but more destructive

What other technological devices must modern archaeologists use? Lately we must have a *Global Positioning System* (GPS) unit, which reads signals bouncing off several satellites to give exact locations in latitude/longitude or other coordinates. We also want to utilize *Geographic Information Systems* (GIS), which are simply computerized ways of making maps of different features that can be overlain to show relationships of natural and cultural features through time.



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Once the site is found, how do you know what part of it to dig? *Site survey* and *mapping* can be done at several levels, from a rough sketch using a compass and pacing distances to formal mapping with a surveyor's transit, electronic station, or other device. A typical local site here is a scatter of artifacts on the surface, but there may be a mound, concentrations of artifacts, a stream or hill, modern features such as roads, that all need to go on a base map. We often set up a site grid in uniformly sized squares so that everything can be precisely mapped in plan view and later in three dimensions. There are good examples in your book

(pp. 91-93; show other examples of site maps).

After getting control of horizontal space, how does archaeology tackle vertical space? Excavation must be done with an understanding of *stratigraphy*, the stratification or vertical positioning of soils and other materials in layers or strata. The law of superposition dictates that the earliest strata are usually the deepest (but there are exceptions in disturbed strata such as riverbank flood deposits or deliberately constructed mounds—see diagrams in book, pp. 96-97). It is important to be able to recognize strata deposited by natural geological processes and cultural processes or both, but it may be difficult. Since we want vertical as well as horizontal control, we ideally want to excavate one stratum at a time without mixing them. This is not always possible if color, texture, and content differences are hard to see. In such cases we can still maintain some control by digging in arbitrary levels of a standard thickness, such as 10 cm at a time. Sometimes we might dig in smaller arbitrary levels of 5 cm within a thicker cultural stratum, for even tighter control. Or, for a really slow but careful dig, recording each and every find in three dimensions can be done too. A formal excavation unit can be as small as a meter square or as large as many meters. We usually dig in squares to be able to see a clean view of vertical layering. We usually use metrics since they are easier and more



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international, though some historic archaeologists may dig in units of feet and yards if the site is, say, a British fort that was laid out using those kinds of measurements.



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How do we record the three-dimensional provenience? Your book shows methods, drawn on page 103, using a surveyor's transit and measuring rod, and also using a level string, plumb line, and tape measure. Usually cultural materials such as artifacts and ecofacts are recovered as individual finds while digging slowly with shovel or trowel or other, even smaller implement, or else they are recovered in a screen where the excavated soils are taken for processing.

Dry screening can be done in some of Florida's sandy soils, shaking the sand through usually 1/4-inch mesh. Waterscreening is better, since it washes away the soil and leaves everything easier to see, and can be done with smaller screen sizes such as 1/8-inch mesh, but you need a source of water. For our excavations on campus, we just hook up a hose to the closest faucet, but for our work in the swamp and wilderness we need our water pump to get water from rivers, bays, and other sources.

What is *soil flotation*? Just a fancier way of recovering the smallest remains, it involves taking a standard-sized soil sample (we use 9 liters) and processing it not through the regular screen but through the flotation machine. This is a device, usually homemade, with a 50-gallon drum, a hose connected to a showerhead inside, and graduated screens within, as well as a very fine screen to catch bits of charcoal and other light materials that float to the top and out a spout. Much good information on food remains has come from soil flotation, which can recover seeds, fish scales, and other tiny remains lost to archaeologists in the past. A late prehistoric site we excavated in northwest Florida was transformed into a historic site when a tiny glass seed bead was recovered during flotation!



[enlargement / caption]

What methods are used in recording information from field survey and excavation? A plethora of field forms (show examples), field notes in waterproof ink on surveyors' waterproof notepaper, photographs, maps, drawings, and other techniques are used. This may also include audiotaping and videotaping fieldwork. There can never be enough recording, and it is often very redundant.

But since information is lost the minute things come out of the ground, it is crucial.



[enlargement / caption]

How much survey and excavation is enough? It depends upon the individual project. There is a big difference between a multiyear research project at a protected site and a salvage project where survey and

excavation must take place in the path of proposed construction. American archaeologists, especially those working in cultural resources management, differentiate among the levels of investigation as follows: *Reconnaissance survey* usually involves walking around the project area looking for surface materials and doing the historical background work to see what might have been there and what is already known or found. *Phase I survey* is more intensive and involves subsurface methods such as shovel testing and writing a more comprehensive report. *Phase II test excavation* may be done after survey has identified the sites in an area, to place formal test units at those sites suggested to be significant. *Significance* is often difficult to define. It can be understood in local to international terms. A significant site will have undisturbed cultural deposits that have good potential to produce new information about a past people. This usually includes features, good intact midden soils, diagnostic artifacts, and so on. An internationally significant site will usually be a major monument. Phase II excavation can even include stripping off disturbed soils with heavy equipment such as a front end-loader to see if undisturbed features such as refuse pits or house patterns are present below.

Phase III excavations, also known as salvage or data recovery, might take place at the sites determined during Phase II to be significant but destined to be destroyed by whatever construction is planned. During Phase III more extensive excavation units are dug and as much information and material as possible is recovered, since this will be all that is retrieved from the site (usually) before it is gone. There is obviously the ethical consideration, again, of digging and thus destroying too much of a site if it is NOT destined to be disturbed or destroyed. Furthermore, it is always better to conserve instead of dig. Good cultural resources management strategies often involve working with those planning the construction to avoid site destruction. For example, after surveying and Phase II testing in the path of a housing development in Florida, we might find a few sites that are significant. We might persuade the developer to move planned buildings away from the site, change the design of the entire plan, or dump some loads of fill dirt over the site and preserve it as a park or green space, maybe even with an outdoor display describing the prehistoric people who once lived here (good public relations for the developer, as well!).



[enlargement / caption]

Archaeological Classification and Analysis

Lesson Objectives: Understand lab processing of data and materials, stone, ceramic, organic, human, and other remains; dating and other analytical methods.



[enlargement / caption]

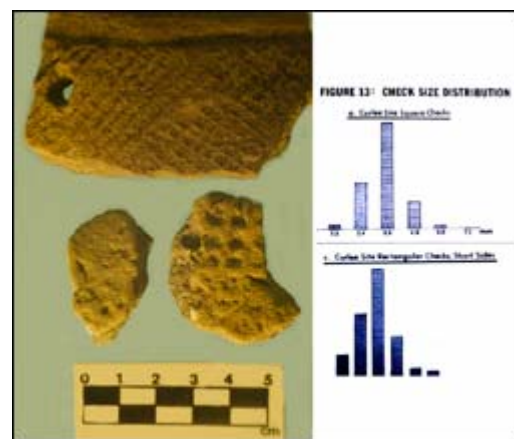
How are archaeological data processed in the lab? The obvious steps of washing and labeling and classifying artifacts and other materials are easy to understand. Less obvious is that it takes a lot of time just to do that. For every day of digging, several weeks are needed for laboratory processing. Our students and volunteers spend the whole academic year on this, carefully numbering artifacts by provenience, counting and weighing them, and drawing up tables of stone tools, potsherds, plant and animal remains from each site and

each level of each excavation square.

How do we do *artifact and ecofact classification*? Every science must begin with classification, but what are the bases we use to define different artifact types? Are they biased, and do they reflect what the makers of the artifacts thought? The obvious useful attributes are raw material (stone, metal, glass, ceramic, etc.), morphology (form, including size, shape, design, etc.), and style (more elusive—including design, decoration, etc.). Can we separate purely technological or functional aspects of an artifact from stylistic aspects? Can we look at the pure utilitarian function of an artifact but also the social and even ideological function? Let's look at an artifact type in the classroom—your writing implements (have students hold up various ones). Most of them are long and skinny for functional reasons. What aspects might be stylistic? Even the color of the lowly pencil: what does yellow designate? Anyone have a pencil of a different color? What messages are on the pencils—printed company names, the university name? These messages are social, even ideological. We can do the same with pens. What does the expensive gold Cross pen show beyond pure function? Does it function better to take notes?

Can we learn of function, style, social and ideological implications from past artifacts? Can we assume they will be similar to ours (no!). How does the archaeologist interpret artifacts for which no function is obvious (such as a cache or hidden pile of figurines, a burial with a pot over its head, and so on)? We can say, “must be ceremonial!”

Here we will do a coin trick. One student needs to give me a handful of change (to be returned of course!) that we can lay out under the document camera or even on the table for all to see. We pretend that these are discoidal artifacts recovered in excavations from the



[enlargement / caption]

planet Muni Mula, which we know was inhabited in the past by people. But we do not know what the artifacts are, so we start by trying to classify them. They are all round and made of metal, we can see. What bases do we use to classify? We can use size (arrange coins in descending order by size). Since in our culture bigger is better and more valuable, we might think that the biggest artifact is too (quarter) and that the smallest is the least valuable (dime). How about raw material? In our culture rare is more valuable, so we might assume the penny is the most important. How about whatever is pictured on the artifact? We cannot read the writing, but what is rarest? Most have long-haired men and buildings, but what about the new quarters? The Sacajawea dollar (or Suzy B's, or liberty dimes) are very rare, and show women, so might we assume women are more important in this culture(!)? What other criteria to use? How about context, provenience. Many of these artifacts have come from large monumental structures (banks), but there are different distributions of the different types elsewhere. For example, large glass and metal machines containing traces of what might have been weird food remains have some of these metal discoidals, but not the copper-colored ones. We suspect those are even more important ritually or ceremonially because they seem to occur most often in caches inside ceramic animal effigy vessels in only one room of the domestic structures (piggy banks in kids' bedrooms)! The exercise illustrates the problems with criteria for classification of artifact types in prehistoric archaeology.



[enlargement / caption]

What are *artifact assemblages*? The group of all artifacts from a site, or from a particular temporal component of the site, consisting of subassemblages based on finer and patterned sets of artifacts representing human behavior. So the recent temporal component of the site of our campus consists of assemblages of modern artifacts, within which there might be a glass artifact assemblage, a paper assemblage, plastic, etc. The faunal assemblage, animal remains, would include discarded chicken bones, a few squirrel skeletons, etc. The historic artifact assemblage underlying the concrete of campus

might include wooden and stone foundations of early hunting cabins and pasture facilities, with a faunal assemblage of deer and cattle bones. The prehistoric materials include a stone tool assemblage of spear points and a faunal assemblage that also has deer bone.

What are *diagnostic artifact types*? Recognizable items that are found in particular time periods or places and give a cultural characterization. So a diagnostic artifact of the recent campus site component would be a plastic cup; of the historic component, perhaps an old china or stoneware mug; and of the prehistoric component, a sherd of a pottery vessel. Artifacts are usually first classified based on raw material type and technology.

What are *lithic artifacts*? A fancy word for stone, and the study of them includes other jargon such as *debitage*, French for the garbage of stone chips or flakes left by manufacturing stone tools. Why are stone tools the first kind described by the book? Not only are they the earliest artifacts we have for humans, being the best preserved, but also they do reflect our value system that is based on technology! What would be another way of classifying tools that did not involve

technology? Here we can mention, for example, the categories used by historic archaeologists in the Southeast, such as domestic, architectural, etc., based on different kinds of human activity.

What techniques are used to make chipped stone tools?

Direct percussion means striking a core with a hammerstone. A core is usually a piece of siliceous rock that will produce sharp flakes when hit this way.

Indirect percussion uses a punch between the core and the hammer, and *pressure flaking* means pressing off the flakes, not hitting. We will now do a demonstration in the classroom of flintknapping, with a tarp on the floor to catch the debitage, some archaeology graduate student flintknappers with hunks of local chert, pieces

of leather or gloves to prevent too much blood from spilling, and students' desks moved back to avoid flying flakes lodging in eyeballs. We do such flintknapping at many of our archaeology day programs for the public. Here in the classroom we can appreciate it at a more complex level, perhaps, because we can look at the steps and their products individually. Let's see a close-up (on camera and passing around the room) of a classic flint flake and its shape and morphology.



[enlargement / caption]

What other *stone tool terminology* is important? A *blade* is a flake that is at least twice as long as it is wide, and important for fancier stone tools. *Retouching* might be seen on a stone tool, chipping off of little flakes to make sharper edges or steeper edges for scraping instead of cutting or slicing. What stone tool types are important? *Bifaces* are flaked on both sides to get a nice edge, while many scraping tools are *unifacial*, flaked and shaped on one side only. *Projectile point* is the term for what most people call arrowheads, and even that is a value-laden term, because they might really be knives or other tools and not projectiles flying through the air. The flintknapper has just made a point of the type we call Florida Archaic Stemmed, estimated to be some 5,000 or more years old. There are many projectile point guides (show several) to use in North America to tell the approximate age of the point by its shape. Here is the Florida guide (Bullen 1975); we can also use the Alabama guide (Cambron and Hulse 1968), and there are others for states or regions (e.g., Justice 1987).



[enlargement / caption]

Can stone tools be made in other ways besides chipping? *Ground stone tools* may start with an individual rock or chipped piece that is then ground into shape, even polished. Pass around examples of chipped and ground stone tools (and other artifacts through this whole list).

What attributes of stone tools can be studied? *Raw material type* can be determined in many ways, including physiochemical study of trace elements in the stone to establish the place of origin. *Use wear*

studies look at the scratches and tiny chips and other signs of use on different materials: cutting meat leaves different patterns than cutting wood or hoeing soil. Residue analysis now includes even looking at traces of DNA in blood on the edges of stone tools to see what species of steak was being cut up!

Why does your book list *ceramic artifacts* right after stone? Fired clay artifacts also preserve well, are often the next-oldest kind recovered, and also reflect our Western penchant for classification based on technology. Firing clay to make figurines was known in the Upper Paleolithic, some 25,000 years ago, in Europe and elsewhere. Apparently this technology was then either lost or at least not used much until about 10,000 years ago, when people started making earthenware vessels for holding things, presumably mostly food, and cooking food. We still eat off plates that are mostly fired clay, unless we have paper or plastic or styrofoam!

What *attributes of ceramics* can be studied? Pottery is a more plastic medium, allowing the makers to incorporate more variability. If you make a mistake or change your mind when chipping stone tools you need to reshape the piece into something smaller or throw it away and start over. With pottery you can reshape the wet clay before you fire it, and even add things after it is fired, such as engraving or painting. There are many more pottery types than stone tool types, at least in southeastern U.S. archaeology. The standard artifact we find is a potsherd, a broken piece (pass some around), but what other things are made of clay? Figurines, spindle whorls, whistles, etc.

What are the *raw materials for ceramic artifacts*? Natural clays, of course, and also often temper or aplastic, some material added to the clay for various reasons, from the functional (better firing) to the stylistic. Who in the class has made pottery? What are the possible tempering agents? In the Southeast we find sand, grit (crushed quartzite), shell (crushed), and grog (crushed clay fragments, often probably old pots, maybe smashed in a fit of temper!). The earliest pottery in North America was tempered with plant fibers; in Florida this was Spanish moss, like we see hanging on the trees outside this building. The fibers burned out and left squiggly line open spaces in the clay (show example). Besides describing the clay minerals, the clay sources, and the decorative or surface treatment of the pot (stamping, incising, punctating, painting, etc.; show examples), we can determine something else about the manufacturing technology. In the New World there was no potter's wheel. Early vessels were simply hand-built, like that first one you did in kindergarten. For the last 3,000 years pottery was made by the coil method, rolling a big snake-like form in your hands and coiling it around to shape the pot, then smoothing it. If we find a sherd of sand-tempered pottery that has uniform wheel marks on it at a Florida archaeological site we know it is from a Spanish olive jar, which very much resembles Indian pottery except for this technological clue.

What are fancier types of ceramics and how are they made? Old World technologies early produced fine china, vitrified clay we call glass, and fancy glazes able to be done because higher firing temperatures could be achieved. Does this mean New World peoples "lagged behind" and were not as bright as the Chinese or Egyptians? Maybe in glass manufacture, but does this mean in the rest of their technology or other areas of life? Remember that in this class we want to abolish the use of the terms "primitive" and "advanced," since they are making ethnocentric

judgements about cultures based on our own values, which place technology above nearly everything else!

Besides shapes, functions, and raw materials, we can also study residues on ceramics, as with stone or any other artifact. Ancient pots can sometimes still have food in them! What about pottery styles? Can we get at the meaning of some design on a pot that the potter intended? Given the opportunity for such variability, would the maker not put very individualized designs on these artifacts? Some archaeologists assume women made all the pots, and others, in a sometimes misplaced (I think) feminist approach, want to see the pottery designs as ways that always-oppressed women tried to empower themselves by their pride in self-expression. These are not always testable hypotheses in the far distant past, and we do now have many ethnographic examples of men making pottery and of women who have plenty of power already in their own cultures making pottery designs expressing far different ideas: religious, artistic, or just traditional design like the family always made.

What kinds of analyses can be done with *metal artifacts*? The same identifications of types, raw materials, trace elements showing places of origin, and studies of manufacturing technology. Early metalworking was done perhaps 9,000 years ago in southwest Asia with copper.

Why is copper earliest? It is available in some parts of the world as raw nuggets, and it is soft and easily shaped by heating. In a technique we call *cold-hammering*, Native Americans, for example, as well as many others around the world, could heat pieces of copper they picked up in northern Michigan and pound them into shapes of ornaments and tools. Pass around a piece of raw copper (I purchased this one at a museum shop). When a hotter fire could be made, copper could be melted and poured into casts.

What other metals were used early in prehistory? Silver, tin, and gold are soft and workable. Raw iron was rarely available from meteors. The process of making alloys was discovered thousands of years ago, probably in many places. Alloys combine two or more metals, and the most famous archaeologically is bronze.

What two metals make up bronze? What milestone do we name after bronze? Again, emphasizing technology, we note the *Bronze Age* because people discovered this combination of copper and tin had a lower melting point and cooled into a harder metal for making even more wonderful artifacts. Weapons, of course, would be nicer to have in a harder metal, especially for those who see technological development as completely linked to rise in military power (like the modern military-industrial complex, perhaps?). But there are many more bronze items with ceremonial and decorative functions, not to mention domestic utilitarian uses. The book shows (p. 126) 3,000-year-old bronze pots, and of course ancient bronze vessels in much of the Old World had to hold a lot of wine. I now pass around bronze replicas of pre-Roman Etruscan items, a coin and a little horse statue. The coin has an obvious set of functions (buy stuff, honor the ruler whose head is on it), and the horse may have been more than decorative if it was thrown into a spring as a spiritual offering. Look at the bronze fibulae pictures in the book (p. 127). Beyond the utilitarian function of holding up your clothes, they are of many different decorative styles that said something about your taste and probably status and position in life.

Why does iron metallurgy develop later and what milestone does it mark? The *Iron Age* began with development of a more complex technology, especially the requirement of a hotter fire, and of melting out the “bloom” and then reheating it and hammering it into shape. When you add charcoal, somewhat later in time, you get steel. There are many ancient technologies that we still have not been able to replicate in modern times.

What is special about gold artifacts? Gold is also soft and easily workable, and does not tarnish. If you have on, say, a ring someone gave you that you thought was gold and it is making a green stain on your finger, it is not pure gold! What kinds might you find in Florida? Of course, historic shipwrecks are known for Spanish gold, and while the silver coins end up looking like a blackish-gray rock on the sea floor, the gold is still gleaming. Because so many cultures value it highly, including ourselves, we love to study gold. So does Indiana Jones, who stole the gold idol at the beginning of the movie. Native Americans did have some gold and, especially in Central America, worked it into fancy forms. But usually in prehistoric Florida we do not find any gold, though we might get copper (show copper ear discs from a Florida site). One of our graduates who runs a contract archaeology firm in Orlando excavated a human skeletal hand with a gold ring on one finger. It was found in an area scheduled for a housing development and not known to be a cemetery. It was a recent historic burial, and the engraving on the ring led him to the person’s descendants, who still lived in the area.

What do we mean by *organic artifacts*? Anything made of something that was once alive, such as wood, shell, bone, leather, hair, horn, teeth, ivory, etc. I’m passing around a shell tool typical of Florida and some other coastal areas. The book shows bone harpoon heads (p.129). Of course, all these are of materials that are more perishable and less often found archaeologically.

What analyses can we do of organic artifacts? The usual, such as raw material type, manufacture, style; by now you should know the right questions to ask. Remember that the archaeological record is so biased in favor of what is preserved that we forget how important these artifacts are. But look at reconstructions at various sites, whether the Spanish mission site of San Luis in Tallahassee, with its European church but native council house and chief’s house, or perhaps the Forest Capital Museum’s reconstruction of a historic Florida homestead in Perry. All the buildings are of wood, the furniture, most of the tools and other artifacts are made of plant materials!

How do *ecofacts* differ from organic artifacts? They are not shaped into tools but are the result of human activity. The most typical are food remains, but there can also be naturally occurring remains affected by humans. For example, at sites where humans have cleared the forest to build houses, the natural pollen will not show tree species, but weeds that grow up in cleared areas.

What is *paleoethnobotany*? Study of plant remains from archaeological sites. It can be done at the macrobotanical level, looking at seeds, charcoal and wood pieces, etc. Some sites I have excavated have produced carbonized persimmon rind, native fruit skin that was dropped into the prehistoric fire and preserved for 1,500 years! At the microbotanical level we can study pollen remains, which is also known as *palynology*, and *phytoliths*, also known as biosilicates, which are mineral deposits that form in the open spaces inside plants (much like your pot for boiling water or your glass shower door in Florida will have scale form on it from calcium or iron in the

water). Pollen is very distinctive for each species. This picture of pollen under the high-power microscope (in Fagan 1985) shows the grains looking like little alien spaceships. Phytoliths also have distinctive shapes based upon which species they form in.

What can archaeobotanical remains tell us? Besides what plants people may have eaten or used for other purposes, we can learn what was growing in the area or brought to the site. Pollen from species that are no longer present in the region gives us a clue to ancient ecosystems and climates, for example. The study of environmental change, especially as it is linked to human action, is enormously important today. We can also learn about the process of domestication of plants, where people change from gathering wild resources to producing their own. The latter is MUCH more work, so it is important to understand this.

How can we tell if plants were domesticated? What is *domestication*? Biological evolution; that is, genetic change, but through cultural, not just natural, selection. Genetic engineering is nothing new, it has been going on for 10,000 years or more. The only difference today is that we can do it inside the cell, with the DNA. But selecting what characteristics you want in a controlled, domesticated species is old, even if Gregor Mendel only described the process more recently!

What characteristics do humans want in their plants? Today we want hardier food crops, sometimes better taste, but often weirder things such as the square watermelons that the Japanese have produced that won't fall off the truck or the "Flavor-Saver" tomato that can be picked when it is green and supposedly ripen slowly enough to have a long shelf life and make money for the produce market (ask your grocer, and see if you think they have any flavor!). Besides food plants, we breed things for beauty and style—aren't they still trying to produce a truly blue rose?

What about prehistoric people's domestication goals? They wanted more food, bigger, tastier, and easier to harvest. They bred out wild characteristics that allow the plant to reseed itself or otherwise propagate. Your book (p. 133) shows you the corn plant they began with, a small seed head on a grass, which is what corn is, and the big ear we ended up with after millennia of domestication. Corn is so domesticated that it cannot seed itself. It needs humans (or machines!) to open up the husk and plant the seeds.

What is *zooarchaeology*? The study of animal remains from archaeological contexts, with the same kinds of goals that we have for plant remains. What is the species, how was it used, what was its availability in the environment, and what about the domestication processes?

What faunal ecofacts might we see at a Florida site? Most common are shells from shell middens. But the zooarchaeological techniques we have today, including soil flotation and identifying tiny remains, show us that these prehistoric people were not just eating oysters and clams all day. In fact, if you order oysters in a restaurant, you get a huge platter with a dozen big shells, but the actual meat is a very small amount. So first of all, we realize that the amount of garbage associated with a species and the amount of meat it produces may not be proportional. With fine-screen recovery of tiny fish vertebrae we can see that Florida natives probably netted lots of fish for dinner, with only some oysters on the side. Zooarchaeologists have formulas to estimate meat weights based on the remains, and also to estimate the minimum number of individuals at the site. So one deer bone represents way more meat than a pile of oyster shells.

Two deer leg bones, if they are right and left, could represent one deer, but if they are both from the left side then you have at least two deer. And so on.

What are *coprolites*? There is a lot of terminology associated with analysis of ecofacts, but this is the best word, meaning preserved feces, or dried-up old turds. A pile of animal bones and plant remains at a site can tell you what the people had at the site, but a coprolite is direct evidence of what someone ate, if it is a human sample. (This is also a cute word to know and use for many purposes!)

What kinds of *human remains* can be preserved archaeologically? Any and all, as we already saw from the discussion of site formation processes and human mummies in bogs, deserts, and wet sites. But usually human remains uncovered by archaeologists are skeletons or portions of skeletons. In Florida, when human burials are preserved the bones are often the consistency of cheesecake, even inside coffins, and hard to record or excavate.

What can we learn from human remains? From soft tissue there can be any kind of medical and biological study we want, from blood typing to DNA analysis, identification of stomach contents, height, weight, sex, cause of death, health and illness, trauma and pathology, diet, etc. We can get a lot of these from skeletons as well. Bone studies that identify chemical isotopes indicating what the person ate can tell us not only about diet and health, but also about past environments and socioeconomic systems that produced good or bad nutrition. Sex and gender issues in the past are also well addressed with skeletal remains, as are other social questions. We can also look at cultural modifications of the human body, such as piercings, tattoos, dental work, and cranial deformation resulting from binding the soft skull bones of an infant (pictured in the book, p.137).

What about the ethics of excavating and studying human remains? There is no discussion of ethics and professional responsibilities at this point in your book, and only a brief discussion at the end of the book where modern social issues are noted. But it is much too important not to discuss right now. The history of archaeology clearly shows that Native American skeletons and others from unmarked human graves were treated differently from those of the dominant society. Modern and even early historic cemeteries of white folks were protected; it would be illegal to dig up any graves without some kind of permission for a special reason. But unmarked graves were not covered by law until recently. The skeletons were treated as scientific specimens, just like the artifacts, to be studied in the lab. Anthropological archaeology recognizes that the descendants of the people whose remains are being studied may not agree to such study, and activism by Native Americans and other groups has succeeded in changing the laws.

The 1990 *Native American Graves Protection and Repatriation Act* (NAGPRA) requires U.S. museums and other institutions to return human remains and other cultural property, especially burial goods, taken without permission, to the people of their origin. New laws in Florida and most other states require archaeologists encountering unmarked human remains to report them to the state archaeologist and locate descendant communities with whom to consult about the disposition of the remains.

What does this mean locally? In Florida, for example, if I am digging and uncover a human skeleton, first I must determine if it is recent or not. If there is gold in the teeth, or a metal belt buckle or plastic, I call the sheriff and the coroner! If it looks like a prehistoric burial, I must contact the state archaeologist; but what about descendant communities? A Seminole Indian burial, which might have glass beads or other indicators, would be easier to deal with because we could call the tribe and begin consultation. They might want it not excavated at all, excavated and immediately reburied at their cultural center in Tampa, or they might allow certain studies such as those noted above.

With clearly prehistoric skeletal remains the picture is more complicated because there are no native Florida Indians left. They were exterminated by the early Spanish and other Old World conquistadors, through violence but mostly by introduced diseases. Into the empty land of Florida came Creek and other native folks from Alabama and Georgia, who with their African slaves and occasional Scottish traders evolved into the Seminoles of the eighteenth century. So there are no clear representatives of Florida native peoples to consult with about prehistoric remains, and a determination must be made in each case by several interested parties, including modern Indian groups. We will return to these issues later in the class.

What can we learn from *soils and sediments* excavated by archaeologists? Rivers, lakes, different kinds of wind, water, and erosional action produce different soils that may give us clues to past human and natural action. This is why site formation processes are important to know. For example, a Florida hurricane might produce a nice culturally sterile white sand layer on top of a dark organically stained midden zone, sealing the midden nicely. Understanding soil deposits helps us reconstruct the original landscape of the site.

What do you think is meant by *micromorphology*? Inexplicably placed in later discussions in your book (see p. 185), it is the study of microscopic traces of soils and sediments to determine localized information, such as use of individual rooms within excavated houses or activity areas at sites. This is real detective work; microscopic traces of feces or pollen or other materials can help assign functions to certain places within sites.

What information does a *cultural feature* produce? As we already discussed, features can range from small postmolds and pits to large buildings. Some are constructed by humans while others may be accretionally deposited by human action, like garbage dumps. Analyzing spatial layout, construction technology, and associated artifacts and sediments can give everything from purely functional to social information. The carbonized fruit skin I mentioned from a Florida site came from a garbage layer which has other information about seasonality. This layer also had duck bones in it. Because the persimmon fruit is ripe in the fall and ducks arrive in the fall (to be shot for a nice dinner), we know the prehistoric people must have lived there in the fall. This is supported by a different line of evidence, namely that the site is on the riverbank and the river floods every winter and early spring today. Flood deposits are evident in the prehistoric garbage layer as well, so we know it would be easier to live in this spot during summer and fall during its occupation 1,500 years ago too.

How does an archaeologist get a date? Dating the past can be done with several different methods that are well-explained in your book (chapter 7).

What is the difference between *direct and indirect dating*? Direct methods date the artifact itself, while indirect methods date something it is associated with. It is seldom possible to date a stone tool or a clay potsherd, for example; radiocarbon dating requires something with carbon in it. But we might date the charcoal next to the stone tool or sherd under the assumption that they are the same age.

What is the difference between *relative dating* and *absolute dating*? Relative methods give an age only in relationship to something else, while absolute methods give a calendrical date. An easy relative method to understand relates to the *law of superposition*; deeper things are older than shallower things, but we do not know absolute ages.

What are some types of relative dating? *Artifact seriation* is done by arranging artifact types according to their stylistic similarities and/or frequencies of occurrence. See the nice figures in your text showing both twentieth-century automobile designs (p. 149) and Sir Flinders Petrie's stylistic seriation of ancient Egyptian pot types (p. 151). We may not know the absolute dates, but we can arrange the styles that look most similar closest to each other on the chart. What is the disadvantage of this method? First, it assumes gradual change through time and would not work with everything (look at the radical shift from slide rule to pocket calculator, or from pocket notebook to PalmPilot—those artifacts do not look anything alike!). Second, you can see gradual change through time, but you don't know which end is up! Which is the earliest and which the latest?

Frequency seriation arranges artifacts based on frequencies, assuming that types gradually come into popularity and gradually fade out. The very nice chart of New England tombstone types on p. 152 shows how a frequency seriation can produce battleship shaped curves. The tombstones have the dates on them, but you could also do this with artifact types arranged by vertical stratum. The curves look like battleships in plan view, or portions of battleships; hence the name. The tombstone study of Deetz and Dethlefsen cited in your text is a famous one because it shows stylistic change through time that can be correlated with social and ideological trends. Look at the three kinds of tombstone motifs in the chart: the death's head, cherub, and urn-and-willow pattern. All three fit nicely in the half-circle of the top of the tombstone, so in terms of design, we have the constraints of shape to consider. Within that shape, however, the winged, skull-like death's head gives way to the happy little winged angel, then the asymmetrical design of an urn with the flowing, still wing-like fronds of the willow. What does this say about the living people commemorating their dead loved ones? They are going from a more harsh, New England-style Protestant view of hellfire and damnation to a more benign view of heavenly bliss, then to a totally secular decorative motif that suggests waning power of religious beliefs!

What is *fluorine dating*? It is a relative dating method described in your book along with other bone chemistry relative methods on p.158. It is based on the principle that two bones buried together at the same time will take up the same amount of fluorine (and other elements) from the soil. It is famous because it is the method used to expose the hoax of the notorious "Piltdown man" fossil. Many textbooks in the 1970s and 1980s removed the story of Piltdown, which was too bad because it is fun and also packed with social and scientific meaning. It has been put back in again since the 1990s, but needs more explanation because it says so much about the influences of world politics and intellectual arrogance in anthropology. The Piltdown skull and

teeth were found in England between 1911-1915 by amateur paleontologist Charles Dawson, who convinced all the big famous men, and they all were men, in anthropology that they represented the “missing link” creature evolutionarily placed between apes and humans. No other finds resembling Piltdown were unearthed, and over the decades the australopithecine early hominid remains coming out of south Africa began to convince the scientists that the earliest humans originated in that continent from apelike ancestors. By the 1950s, when fluorine dating proved the skull to be a fake, few believed in it any more. It was a cranium (head without lower jaw) of a modern, if old (maybe Roman?) human and the lower jaw of an ape, filed to fit together and dyed to match! But the two did not have the same amount of fluorine. Who did the hoax? We are not sure. Dawson died shortly thereafter, and other possible perpetrators have been suggested, including Teilhard de Chardin (a famous Catholic priest and evolutionary thinker who may have been a young prankster at the time) and Sir Arthur Conan Doyle (author of the Sherlock Holmes stories). But meanwhile, we also need to ask why the fossils were so readily accepted as human ancestors. First, they fit the expected picture of a large braincase and ape-like jaw. Now we know that brain size was the last thing to evolve, and that early human forms are recognized by their upright, bipedal skeletal structure. Second, where was Piltdown found? In England, the home of so many of the major thinkers who accepted it, and easier to see as the home of the earliest humans than Africa, where the people are dark and considered inferior!

What is the difference between *absolute and chronometric dating*? Absolute dating means the calendrical date can be known. It is pretty rare and usually only possible with things that have dates on them, such as newspapers or coins. Your book does not give the term “chronometric,” but it is important to differentiate and not quite absolute. Chronometric means measuring time since something has elapsed. Most of the dating methods we use in archaeology are chronometric; examples follow.

Most people have heard of *radiocarbon dating*; how does it work? Invented by Nobel Prize-winning physicist Willard Libby in the 1940s, this method is based on the radioactive decay of the carbon 14 isotope (written as ^{14}C). All living things take in carbon through food, breathing, etc. The proportion of the carbon 12 isotope to carbon 14 is known, and after the organism's death the radioactive decay takes place at a known rate, measured by the concept of the half-life. This means, for carbon 14, with a half life of 5730 years, that after that many years only half will remain to emit radiation. The radiation can be measured and the time elapsed since the organism's death calculated. The advantage of the method is that there is often charcoal, bone, or other organic material that can be dated, and this method is usually the most important for archaeology. The disadvantages are that you have to have something organic, not stone or pottery, and you have to have enough of it to date (about a cup of charcoal or, for dating a large animal or human skeleton, an arm and a leg!), and you have to have about \$300. Another disadvantage is that the date comes out as a statistical approximation within two standard deviations, so there is something like a 33% chance that it is not correct. Another disadvantage is that farthest back you can date things because of that half-life is about 40,000 years, so that the human experience before that, some 2 million or more years, is too old to date by this method. This is fine for North and South America, however, because apparently there were no people here that long ago.

What is *AMS radiocarbon dating*? The letters stand for accelerator mass spectrometry, and this technique is a wonderful refinement that allows the physicist with a big particle accelerator machine to count the actual carbon atoms. Therefore it needs far less material for dating, such as a piece of charcoal as big as a pencil point tip. This can be a great advantage when there is not good organic preservation at your site. From our USF excavations of a shell midden in Florida, we obtained a sherd of fiber-tempered pottery that broke open to show a couple fibers of Spanish moss still unburned and undecayed in the clay. These were dated by the AMS method—one of the rare times that we COULD date a potsherd in this fashion. The date returned was about 4,000 years before the present.

There is yet another disadvantage of radiocarbon dating that has lately been corrected by utilizing a totally independent chronometric method, known as *dendrochronology*. What does this word mean? Tree ring dating, using sequences of thick and thin rings from trees with overlapping lifetimes and working backward in time. We can even find living trees that are several thousand years old, and your book shows a picture of one of these, the gnarly old bristlecone pine from the southwestern U.S. Ring characteristics depend on annual weather patterns, so this method works best where there is great variability, as in the southwestern desert. Disadvantages of the method are that you have to have enough wood, and the wood the artifact was made of may have been old already when used, or used for a long time, as in a house beam.

How has dendrochronology changed radiocarbon dating? The great gift of tree-ring dating has been to help correct the errors in radiocarbon dates and provide a cautionary tale of science. The assumption was that uniform amounts of radioactive carbon were present every year in the atmosphere and absorbed by all living things. When someone decided to check this by radiocarbon dating individual tree rings with known ages, it became clear that past levels of carbon 14 have fluctuated a lot. Now whenever you get a radiocarbon date, it is corrected or *calibrated* along a curve produced by tree ring dates to give a more accurate calendrical age.

What other dating methods are important for archaeology? Several other chronometric methods are based on measuring time elapsed since some physiochemical change. Most important is *potassium-argon dating* which again measures decay of a rare radioactive isotope of potassium that results in its becoming argon gas. Here the half-life is 1.31 billion years, so much older things can be measured. But you need something that has the requisite minerals. Luckily, there is potassium in volcanic deposits that have contained early human fossil forms in east Africa, so many of those finds have been so dated.

What is *archaeomagnetism*? Another chronometric dating method that is based on the fact that the earth's magnetic fields shift over time. When soil or clay is heated, the iron particles in it align themselves with the poles. Since north moves over time at a known rate, we can measure the magnetic alignment in the ground and compare it with today's. The method is often used in the eastern U.S. when we encounter hearths or fire pits with burned clay. You isolate a small cube of soil in the ground and cover it with plaster, on which you mark the current compass north. Then you cut it out of the ground and send it for archaeomagnetic dating, and they will see how the alignment of the iron particles in this soil cube compares with the current alignment of north. Again, the disadvantages are that you have to have burned soil with iron content. The advantage is that it is not difficult or too expensive.

Which dating method is best to use? Since there are advantages and disadvantages for all of them, the very best strategy is to use more than one independent method. Radiocarbon is the most important for the New World and later Old World prehistory, but if you can confirm your radiocarbon date in some other way, your results are much more reliable. At a site in northwest Florida where we were working during 2002, we had already excavated typical prehistoric pottery that has been dated often to between A.D. 1200 and the time of European contact when we got that tiny glass bead from the fine screen of the flotation machine. We know the Native Americans had no glass until the Spanish brought it in the sixteenth century. I found enough charcoal to get a radiocarbon date from a small pit feature that had the bead in it, and the date was returned as about A.D. 1500—very early in historic times (White 2000). There are no historic records for this part of Florida that early. So I am returning to dig a little more and see if more accurately dateable evidence might be found.

Archaeological Interpretation and Reconstruction

Lesson Objectives: Compare ethnographic analogy, ethnoarchaeology, and experimental archaeology; understand practical applications of archaeology, reconstruction of past human systems and the biases therein.



[enlargement / caption]

After we know what we have, where it is, how old it is, and have tabulated all the specimens and done the description, we next must work on explanation, interpretation, and reconstruction of past human lifeways. What do these mean? Essentially the what and where and when are used to try to determine the how and the why.

What is *analogy*, and why must we use it to explain the past? It is figuring out the unknown by beginning with the known, and we use it because it is the best and often only way we can explain the behavior of people who are not here to explain it themselves (or even to explain it in an alternative way if we want another view beyond that of the people themselves). Three different uses of analogy in archaeology are called ethnographic analogy, ethnoarchaeology, and experimental archaeology.

What do we mean by *ethnographic analogy*? This means explaining the archaeological evidence in terms of behavior recorded in the historic and ethnographic record. The advantage is that human behavior in countless types of cultures all over the world has been recorded in ethnographic and historical documents. The disadvantages are that such records are of course always biased, and that the culture you are investigating archaeologically may not be related to any known culture. Another disadvantage is that history and ethnography do not include very

much about material culture, which is what you are digging. The records might describe pyramids or clothing or houses, but not what the garbage looks like or where it is deposited.

What classic example of ethnographic analogy is described in your book (p. 170-71)? Lewis Binford, a major archaeological theorist, encountered at midwestern late prehistoric sites many pit features filled with charred wood and corncobs that he reasoned would have produced a lot of smoke. To figure out what they were for, he read through the literature about Native Americans in this region and found that they processed deer hides by drying and smoking them over small smoldering fire pits during historic times; he reasoned that this activity could be traced back in time to the sites dating A.D. 1000 that he was excavating (Binford 1967).

Does this mean that all such pits found in the eastern U.S. were for hide smoking? At the San Luis mission site in Tallahassee, archaeologists excavated the large Apalachee Indian council house that we know from historic documents was the political center of the native town, not far from the Spanish church and other colonial buildings. The council house is now reconstructed and wonderful to visit because you can see the huge circular building with the very tall thatched roof in downtown Tallahassee. Large postmolds in a big circle delimited the building in the ground, and around the inside there were small postmolds indicating what the historic documents say were sitting and sleeping platforms. Under these were pits full of charred corncobs that would have made lots of smoke. Were they processing hides? The Spanish documents say they were making smoke to keep out mosquitoes, and it makes more sense, given the public function of the building and the abundance of bugs in Florida! When we find corncob-filled pits at prehistoric sites in the northwest Florida area we can suggest they were similarly for bug control. This kind of specific analogy can work very well, in these two cases, because there is clear cultural continuity from the prehistoric archaeological record forward into historic times.

What if there is no continuous or appropriate cultural record into historic time? We can use more general analogies, such as with cultures in similar environmental settings and sociopolitical organizations. Sometimes this is better than historic cultures in the same area for interpreting remains of foraging peoples in the more distant past. So, for example, during the Archaic, some 5,000-8,000 years ago in Florida, we know people were hunting and gathering modern species. To understand their remains we might not want to use historic documents describing complex chiefly sedentary societies supported by maize agriculture that were first encountered by the Spanish; these evolved thousands of years later than the Archaic and were very differently organized. Examining the ethnographic records of hunter-gatherers elsewhere in the world in similar forested warm temperate environments might give us better clues to the prehistoric adaptation. General analogy of this type is common in archaeological interpretation, but is more risky.

Uncritical use of the ethnographic record is a common abuse. There are so few hunter-gatherers left that those who are well-studied are subjected to this kind of analogy all the time. The !Kung foragers (San or Ju/hoansi) of South Africa, made famous in *The Hunters*, the classic 1957 anthropology movie that many of you have seen, are often used in analogies to explain Archaic sites in the eastern U.S. (mainly because archaeologists now in practice saw that movie during their training!). This is usually inappropriate, since the southern African Kalahari desert is enormously different in environment and cultural adaptation from the wet, forested climate we

had here after the end of the Pleistocene (Ice Age). European Paleolithic cultures tens of thousands of years old have been explained using Australian aboriginal cultures, with the justification that, well, the latter are “still” in the Stone Age! This unilineal model of cultural evolution, nicely diagrammed on p. 172 in the book, assumes every society has to pass through stages of complexity and some, like the native Australians, who never did develop agriculture, are assumed to be moving far more slowly than the superior Europeans! You can see this attitude all the time with the sensational geographic shows showing “Stone Age” people or our “living ancestors” (oxymoronic or just moronic phrase!).

What is *ethnoarchaeology*? Archaeologists developed this method to counteract some of the abuses of ethnographic analogy. It means that the archaeologist is doing the ethnography, studying living peoples, with special attention to the relationship of behavior and the material remains. Your book mentions Longacre and Ayres’s (1968) study of a recently abandoned Apache house, which is still a classic. They looked at the stuff lying around and tried to reconstruct what they thought had gone on there and the composition of the family. They did a pretty good job, as measured by later obtaining direct information on the family itself. Another classic is Lewis Binford’s (1981) study of the Nunamiut, an “Eskimo” people with whom he lived and studied. Though in the 20th century they used guns and other modern items, he reasoned that some of their hunting behavior would retain more traditional aspects, and he described, for example, the butchering of animals and deposition of different kinds of bones in different ways. This could be compared with ancient Arctic hunter-gatherer cultures or other cold-climate peoples such as Europeans during the Ice Age. Are there fewer biases in ethnoarchaeology than in ethnographic analogy? Probably not fewer, just different kinds. Binford, for example, was far less interested in the activities of women among the Nunamiut, though their domestic work arguably leaves at least an equal amount, if not more, of an archaeological record than men’s activities.

What is *experimental archaeology*? Sometimes also called actualistic studies, this is the attempt to replicate past human behavior, usually specific technologies. Flintknapping is an especially popular form. Other experiments have included recruiting large groups of people to build mounds or earthworks with basketloads of dirt and recording how long it took, how many worker-hours and so on; recreating native houses out of local raw materials; or making pottery out of local clay from the riverbank and coiling it and using prehistoric techniques and designs. Some experiments have had participants living in recreated ancient villages for a set period of time just to see what it was like and what they could learn. This is very different from a *Survivor* type of television show. Participants would have the knowledge of past technologies, food sources, and so on.

Since we are trying to emphasize really practical applications of archaeology in this class, we might mention that archaeologists, familiar with all kinds of past technologies, would be very useful in getting along after major disasters, when there is no electricity or other power sources we are used to having at the flick of a switch.

What kinds of human behavior can be reconstructed from the archaeological evidence? The easiest kinds of things to see are those technological/environmental aspects of culture that the cultural materialist perspective perceive as the major constraints structuring cultural systems. We

can see what artifact manufacturing methods and raw materials were used, what people ate, where they lived, and how old the sites are. We can do *settlement pattern archaeology* and see how different kinds of sites, say, camps and villages, are arranged across the landscape, and *cultural ecology*, relating the cultural behavior to the kinds of natural (and even social) environments the sites are in. This is the major reason that most archaeologists, especially those who do fieldwork often, are *cultural materialists*, interpreting everything in terms of environments and technology. Because this is what we CAN do best; it is much more difficult to see social behavior, and even more so to find ideological systems, what the people believed.

Even with techno-environmental issues, we could be very mistaken. We can reconstruct prehistoric diet from the animal bones preserved at the site, but are remains of everything people ate left in their garbage pile? What if some garbage is treated differently, perhaps disposed of farther away because it smells? Does your trash can reflect everything you ate today? If you got fast food on the way to class, we will never know that from your own kitchen garbage. There are many sources of error even for the easier task of interpreting past technology and subsistence (making a living, using environmental resources).

What ways are used to reconstruct past *social systems*? We have to look for material evidence of social relationships, of political power and economic systems. Your book does a fine treatment of using settlement patterns to reconstruct such issues (pp. 183-193). What would be obvious material clues to social status? Wealth items or lack of them, differential treatment of burials, different house sizes; we could list many. Processual or scientific archaeologists have been looking for decades at the social dimensions of mortuary practices, the way the treatment of the dead reflects not only the rank or status of the dead person but also the family and other kin ties and relationships and statuses of the living (not to mention their religious or other belief systems). Studies that can trace raw materials or finished artifacts back to their sources can document economic patterns of how the items move around the map, showing various kinds of interaction. When we get Florida conch shells in 1,700-year-old human burials in Ohio mounds, we know somehow these rare items were of great importance to make it that far. But can we say that people came from Ohio to Florida to collect them like tourists do today? Or could they move north in what we call a down-the-line (domino effect) fashion? This is harder to reconstruct in prehistory.

Can we ever reconstruct past *belief systems and ritual*? This is the hardest to do, especially in prehistoric times, without any written record of what people were thinking and believing. Postprocessual archaeologists really emphasize social and ideological issues too. The discussion in your book of the famous Turkish Neolithic site of Çatalhöyük is an excellent introduction to the exciting work going on there lately, which reinterprets older excavations in light of new findings. Instead of seeing rooms with images of bulls and women as ceremonial shrines, the reinterpretation is that regular dwelling places might be decorated with such images. Are they deities or other important spiritual figures? How can we tell? In this classroom, how many people are wearing or carrying an artifact with a bull image on it? Do those images reflect your ideological system? Yes, because the USF team logo is Rocky the Bull, and you are presumably rooting for sports teams and generally supporting the totem of your school. But does it mean you worship bulls? If we had no written record to explain this, what would we say when we excavated such items? “Must be ceremonial?”

Discussion of past ideology and how to make testable hypotheses concerning the archaeological record is endless in archaeology. The Çatalhöyük project has a great [website](#) (Wolle 2002) where you can see cool discussions of whether the female figurines indicate goddess worship. [By the way, this is a reminder that website papers are due in two weeks at midterm {see Student Exercises section of this course design package}]. It is enormously difficult to arrive at prehistoric beliefs. By comparison, let us look at Western culture over the last 1,000 years, with its Christian focus. Images of the Virgin Mary are all over the place and presented in very different ways (though she usually has blue clothing!). Look at European religious painting, at Catholic icons such as the Virgin of Fatima or of Lourdes. Mexicans have the Virgin of Guadalupe, based on a colonial tale of a lady appearing to a poor Indian peasant and telling him to get the bishop to build a church there, and making roses appear in the snow. This story was a great marketing device for the Church because the Virgin's image appeared on the guy's cloak, and she had Indian features, not to mention the blue outfit. The image is now enshrined over the altar in the famous church in Mexico City, in what is today a very Catholic country. All this imagery and devotion to the Virgin Mary, but is she a goddess, with any power? Are Catholics goddess worshippers, and do women therefore have a powerful position in the Catholic church? No, they are not even allowed to be priests. The sheer ubiquity of an image does not mean it has power in itself or can easily tell who had spiritual or social power.

What is *archaeoastronomy*? Just what it sounds like: looking for reflections of astronomical knowledge in the archaeological record. As we use patterns in the distribution of material culture to try to reconstruct past belief systems, we might see alignments of buildings or other constructions that reflect alignments of stars, planets, the sun, and the moon. With computer assistance we can now find out, say, where the sun was rising on the day of the summer solstice in A.D. 200, the date of our mound complex, and see if the mounds line up with this particular sunrise. Once you get archaeological features on a map you can play around with them to see such things. We know from ethnographic analogy and archaeology that the Maya gave great importance to the planet Venus, which guided many of their rituals and other activities; recent deciphering of the written texts now confirm this. Once there are written records, interpreting ideology becomes a little easier (depending upon what the people wrote!).

How can we summarize the different frameworks for interpreting the past? Though the book puts all of this into one chapter (chapter 9), we have been discussing these all along throughout the class. So this is a review before the midterm exam and also to help us understand the emphases in the second half of the class, where we will not simply go through the culture history of the whole world, 2 million years in a half-semester, but also will look at the scientific interpretations and how we might question their biases.

What are the *mechanisms of culture change or stability*? For a long time archaeology was doing only culture history, saying what happened and when, and explaining change through just simple assumptions of invention and diffusion. Invention or innovation might become accepted in the wider society and diffuse gradually out to other cultures. So you could trace a particular trait, such as building conical burial mounds or making red-painted pottery, from its point of origin and see how widespread it becomes in space and time. Trait lists are a hallmark of culture history explanations.

How is diffusion investigated? The book (p. 206) notes how diffusion is an elusive mechanism of culture change. In historic times we can clarify it by speaking of trade in material items, movement of ideas, and movements of people through migration, enslavement, invasion, and other more specific cultural processes, but these are harder to see in the prehistoric record. We cannot even use the term “exchange” because it might have been tribute to a ruler or gift-giving (in other words, one-sided). Sometimes mechanisms such as conquest can sometimes be seen very dramatically in prehistory, such as shown in the picture on p. 208 of the book, in which human skeletons are fallen sprawled in the remains of burned buildings at a site in ninth-century B.C. Iran. Pretty clearly something dramatic happened here! But most of the time even large-scale culture change such as population movements cannot be detected in the prehistoric record with great certainty.

How can we see archaeologically when culture change is caused by environmental change? The volcano covering Pompeii in A.D. 79 is a pretty clear example, not only from the deposits in the ground but from written records. A prehistoric example is noted in the book (p. 209) from eleventh-century Arizona. It is also mentioned that we can learn of environmental change that humans create, one of the most useful areas of archaeology, since we can see the effects upon society of such actions as deforestation and overutilizing other resources.

How do we tell if changes in natural ecosystems caused changes in human systems, or vice versa? Often it is impossible to look for causal explanations, and we are better off determining interrelated aspects of the whole system. What are *systems models*? Developed in cybernetics, engineering, and computing, such models identify interrelated parts and their operations. In a closed system, such as your air-conditioning, equilibrium is maintained through negative feedback. When the temperature rises the air kicks on until the thermostat shows it has reached the right point, then it goes off. A steady state is maintained by the response from the component parts.

In an open system, which most are, there might be perturbations of the system, positive feedback that stimulates changes in the other components. The book describes (p. 211) the classic archaeological model by Kent Flannery of the origins of plant domestication in Mexico. We can draw the system on the BlackBoard, showing the component parts in different connected boxes (or look at the ones in the book, p. 212-213). The yearly round of hunter-gatherers includes obtaining various resources. One of them, maize, was apparently very responsive to human action and easily able to change genetically to become a more important component in the system, a bigger box. Archaeologists want to see which systems are in a steady state and which change and how and why. But systems models have been criticized for not dealing with causality at all, just naming and connecting the parts. We will look at this again when we talk about the origins of food production.

What are *multilinear evolutionary models*? They are explanations of culture change that recognize more than one “prime mover” or single cause, and emphasize various factors, natural and cultural. We can also look at *internalist* vs. *externalist* models for change, that is, from within, such as corruption in the political system or revolution, or without, such as climate shifts or earthquakes.

What do we mean by *prehistoric cultural ecology and adaptation*? Systems models that include the natural ecosystem in which cultures exist and how the social systems relate to the natural components. Cultural adaptation to natural conditions can change when the environment changes, or not. Often change comes NOT because people wanted to do something different all of a sudden (since culture is inherently conservative or resistant to change), but because they want to keep doing what they are doing in the face of external change. When will we find an energy source that is not finite but renewable? Right now, when we know there will soon be no oil left in the earth? No, probably when it is mostly gone and people still want to keep driving and using the electricity, so we will finally throw lots of money at solar and wind and other power sources.

All cultural systems are not necessarily adaptive. Many are NOT, and this is part of the reason why cultures become extinct. Others maintain an identity while changing radically. Besides the natural environment, cultures must deal with the social environment: who else is living nearby, where are potential mates and family, what are the total pressures on the resources, and other demographic variables.

What about ideological variables connected with adaptation? Cultural materialists often think that ideology too is structured by technoenvironmental conditions. The sacred cows of India are a classic example. An emic explanation of why beef is not eaten and cows can roam the street at will is that they are sacred in the belief system. An etic, materialist view might be that they are more economically valuable alive, to provide labor pulling plows, dung for fuel, milk, and other resources that otherwise would be missing in this poor country. Another example we can use, from the past, is the ideological explanation for the location of the Aztec state in ancient Mexico, that an eagle appearing on a cactus plant led the people to settle where they did, in the middle of an apparently unhealthy, marshy lake. Today you can see the eagle and cactus on the Mexican flag, and when you fly into Mexico City you land on the solidified, gelled remains of the filled-in lake. A materialist explanation of the location for the prehistoric capital is that it shows strategic genius. Connected only by easily defendable causeways to the surrounding land, and situated in the center of the central valley of the country, this native capitol's location was part of the military and political strategy ideal for the founding of an empire.

Does cultural materialism explain all human adaptations, even ideological? No. Often they are criticized for being too functional, too capitalist and efficient. Humans do many things that are inefficient. There are many belief systems that seem completely maladaptive. The Shakers, for example, were a Protestant, millennial-type sect of the eighteenth century who had some beliefs that led them to become extinct: they did not believe in sex!

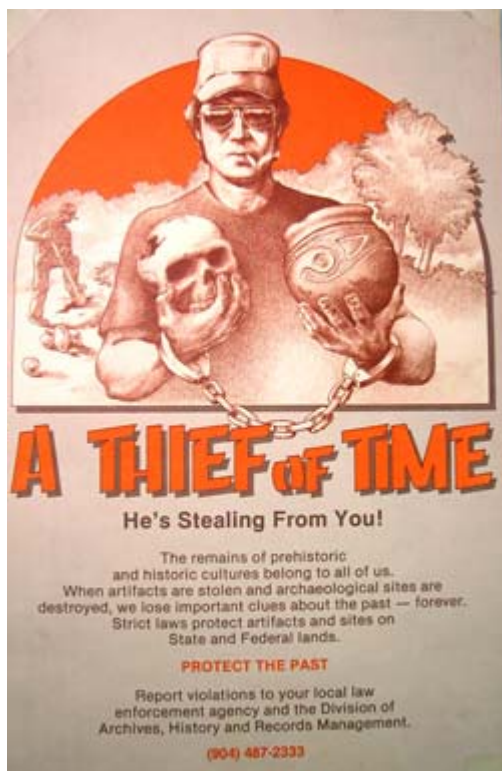
Postprocessual archaeologists like to point out that more than economic and environmental factors influence human behavior and that some are not efficient or rational. An important area of inquiry lately is to recognize the individual human actors in the past, to look for specific human agency and decision-making by persons who are not just facelessly grouped within the systems model boxes, but real people choosing to do this or believe that. However, it is very difficult to do this in prehistory, but easier when there are historic records to document things. Many of the hypotheses deriving from postprocessual models are untestable.

An example I can recount from my excavations two years ago involves an unusual feature we found within a shell midden. Among the bone bits, potsherds, and other species of shells and black soil making up the midden matrix was an unusual pile of sunray venus clamshells, about a dozen of them, maybe 6" long each. These are long, slender shells, and they were nested inside each other and standing on end and arrayed in an arc, like a necklace, but they were not pierced. Upon seeing this unusual feature we of course said, "must be ceremonial!" Then I remembered the night before we had eaten in a restaurant and entertained a visiting archaeologist, talking on and on after dinner. My 11-year-old of course got bored and began taking the little containers of butter (actually it was called whipped spread!), little tubs, and stacking them into pyramids and inverted pyramids that fell down and went up again until they were all over the floor. This gave me the idea that our sunray clamshell feature must have been a kid playing and leaving toys out on the floor when it was time to go! This proposition is not testable at the present time, but I just know it has potential.

Can there be alternate, and sometimes conflicting, interpretations of the same material record at the same site? Of course. How much depends upon who is doing the interpreting? Would only a mother who has picked up the darn toys a million times come up with such a hypothesis? Why not a father in our culture? How many different interpretations of this feature can you think up? [good time for some class discussion and maybe I can get new ideas for my report on the site with this feature!]

Public Archaeology and Modern Society

Lesson Objectives: Categorize public archaeology's many components, including CRM, legal and ethical issues, curation, conservation, looting, stewardship, colonial legacies, and ethics.



We have already integrated a lot of public archaeology and social relevance ideas into the topics of this first half-semester, but now we expand upon them. What is included within *public archaeology*? Everything that relates to the wider society: cultural resources management, historic preservation, educational programs, archaeo-tourism, antiquities laws, monument restoration, avocational archaeology, popular media images of archaeology, communication with modern communities and individuals affected by archaeology, and more.

What is *cultural resources management* (CRM)? It is a broad term that includes all decision-making about

archaeological and historic sites, from preservation to excavation to interpretation to the public. Cultural resources managers may be local, state, or federal archaeologists charged with protecting significant resources during construction of a highway or park. Before they can protect them they must first identify them, then determine which are significant. Often the Park Service or Department of Transportation archaeologist cannot do all this alone for large tracts of land, and so may hire specialists in contract archaeology, usually a small business or university research institute or consultant.

Contract archaeologists do the fieldwork, often a great number of Phase I surveys, shovel testing and doing background research, then they prepare a report with recommendations. If they find sites that are not significant—say, a scatter of chert flakes with little stratigraphic depth—they often recommend no further action and going ahead with the construction. They have to do a good job because that is usually all the scientific attention that site will ever get before it is nuked. If significant sites are identified, often during Phase II test excavation, they might work with the managers toward preservation, redesign of the development, or rerouting of the road. Usually the work is evaluated by the cultural resources manager at the public agency, who will concur with the recommendation if the work is done well and within official guidelines. Preservation is sometimes cheaper than digging more, but sometimes not. If preservation is not an option—if the road must go through here or the public hospital must be built here—then Phase III data recovery excavation may be recommended.

What *laws* protect archaeological sites? As early as 1906, the Antiquities Act protected sites on federal lands. But see the list of laws on p. 236 of the book. With the environmental consciousness of the 1960s and 1970s came many laws protecting cultural as well as natural resources. You do not need to memorize all the federal laws, and state laws differ across the country a bit, not to mention local ordinances.

However, the general picture is that public lands are protected, as we already discussed, but private lands are not very much. In Florida, if a developer wants to build yet another big gated community, it will require various permits and compliance with state laws. If it is big enough, it will be a development of regional impact or DRI. On the DRI application form, right in there with questions about the projected traffic patterns, water use, endangered species on the land, and others, is question 19, asking if there are any significant cultural resources that will be disturbed by the development. To answer that question the developer usually hires an archaeologist to do a survey, and so on. Sometimes the developer will say, no, there are no archaeological sites identified on this land, to which the state reviewer will say, how do you know? Has anyone ever looked? Sometimes the developer will change the development to be slightly smaller, so as to fall below the threshold for a DRI (I think in Florida it is 600 units, apartments or houses or whatever).



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What are the *ethical issues* involved in CRM? Besides all the usual ethical issues that concern the whole profession of archaeology, management decisions by agencies and for-profit firms have complex sets of circumstances. Often clients will hire the contract archaeology company that is the low bidder, not the best (as we see in all other areas of life!). I have done small contracts with archaeology students and had the developer offer me more money if I promise not to find any archaeological sites! Ethical training is becoming more and more important as the profession of archaeology becomes dominated by practitioners in CRM and contract positions.

What do we mean by *curation, materials conservation, and collections management*? All the artifacts and data recovered by field archaeology must be stored in such a fashion that they will not decay, that they can be easily located for further research, available for public appreciation, and cared for into the indefinite future. This is expensive and labor-intensive, and many professionals ignore it because it is more fun to dig.

The sometimes tedious listing of every item in every bag and the treatment of decaying items and storage of materials in sturdy, non-degradable containers is the part of archaeology seldom seen or realized by both many professionals and the public.

Is *looting* a big threat to the archaeological record? The book places the topic of looting first in this last chapter, but modern construction and our explosion of population that results in ever-expanding human effects upon the landscape destroy more archaeology than individual looters. However, there is always looting, probably since the first burials of important people with wealth items! King Tut's tomb was remarkable not for its outstanding wealth or even the importance of the teenage insignificant king himself, but because it was NOT looted and therefore full of gold and other goodies in original context. Most of the other, far more famous Egyptian rulers' tombs were robbed—probably before the body was cold, if not later in time.

What about the popular images of antiquities looting? Yes, that is how Indiana Jones begins, raiding for the lost ark, and Lara Croft is actually named “tomb raider.” We have a little problem here with public understanding of what archaeologists do and why it is destructive to grab artifacts out of context. Now various websites are set to pop up in your search



[enlargement / caption]

engine if you are simply asking about archaeological topics, and provide you with places to buy ancient artifacts! Remember this when you are finishing your assignments this week for a paper comparing some archaeological websites; this does NOT include websites selling artifacts. The Slack Farm example from the very opening page of the book shows how systematic, widespread destruction is done by people looking either to acquire items for sale and profit or have items for their personal collections.

What are the antidotes to looting and other destruction of the past? Archaeology education in the schools, in the chamber of commerce meeting rooms, in the law-enforcement agencies and really all public agencies, and in the public communications media.

What is the meaning of *stewardship*? This is an important concept we try to encourage: understanding the archaeological record as the fragile remains of the past of all people and how we are all responsible for preserving it as much as possible. There are many ways to do this, including lobbying for better preservation laws, engaging the local community in monitoring sites and protecting them against looting, and joining or donating to several preservation associations.

How can a non-professional participate in archaeology besides just visiting sites and museums as a tourist? There are many societies for amateur or avocational archaeologists who work side-by-side with professionals because they love it. Hester Davis, who just retired as the state archaeologist of Arkansas and taught in a program that certified volunteer field archaeologists in that state, once said that avocational archaeologists are the professional's secret weapon to help preserve sites (Davis 1991). They love it as a hobby and are often able to accomplish things professionals cannot.

What kinds of private agencies and foundations help protect archaeological sites? The [Nature Conservancy](#) was founded to gather private donations to purchase and protect ecologically important and endangered lands, sometimes with archaeological sites on them. Modeled after it is the more specific [Archaeological Conservancy](#), which targets significant cultural resources to buy and protect, often then donating the land to a public agency such as the Park Service to manage and conserve. In Florida there is the [Archaeological and Historical Conservancy](#) based in Miami, and many other such foundations are out there, usually with informative websites.

What international agencies work to preserve archaeological resources? The [United Nations Educational, Social, and Cultural Organization](#) (UNESCO) drafts statements to help prevent illegal international trade in antiquities and cultural properties. The U.S. and many other countries have made agreements through UNESCO to return illegally imported artifacts. Even though U.S. Customs is more worried about what drugs you are bringing into the country, occasionally and with good work from legal professionals, they catch smugglers of looted materials. But, I take calls nearly every week from people who have artifacts brought into the country from Peru or Mexico or Costa Rica and want them identified. I have to explain that if they were obtained recently, they are illegal! There are also lots of fakes out there made for the tourist trade and authenticating antiquities often takes special skills. As already mentioned, authenticating them for sale or profit, or even evaluating them in market terms, is unethical. It is often hard for people to understand why this should be so. Usually the medical model works. We

don't buy and sell body parts. And they are from only one body, while archaeological materials are part of the entire human past.

How is archaeology useful in supporting national identity and cultural heritage? Providing information on the ancestral past can give different ethnic groups a pride in their heritage and information that may be enormously useful and practical, such as in Native American land claims. In many countries outside the U.S., archaeological images figure prominently in everything from postage stamps to popular culture to fine arts. Designations of important sites as world heritage monuments or other landmarks can bring not only national and international recognition but real dollars in heritage tourism. Florida is acutely aware of archaeo-tourism and has good publicity campaigns to urge visitors to visit historic sites as well as Disney World.

What are the negative aspects of the colonial legacy of archaeology? War, vandalism, and looting of treasures for the museums of colonial powers have all devastated archaeological sites. The imperialist mentality used to be well-illustrated in the patronizing treatment in such familiar places as *National Geographic* magazine (Gero and Root 1990), where the archaeologists were dashing white guys in pith helmets and the actual workers digging and carrying were the dark-skinned natives whose heritage was being taken away to museums in far distant lands with or without their understanding, not to mention proper monetary compensation.

Have we become enlightened about our responsibilities in investigating the past of others? What ethical considerations should guide archaeologists so as not to abuse the heritage of others? Relations between Native Americans and archaeologists, for example, have changed in the past decades. Indians are demanding that their ancestors not sit on some dusty museum shelf waiting to be measured, but be treated with respect, returned to the community of origin, or not dug up in the first place. As anthropologists we have no trouble understanding this, though as scientists we lament the missed opportunities to learn more about ancient health, disease, and society in general when remains must be immediately reburied. These are also of course hotly debated issues in the scientific community, among Native Americans, legal scholars, land-management agencies, and other interested parties who are "stakeholders" in the human past, who have something to gain, if only the pleasure of historic identification, by the knowledge of the past.

Not only is there enormous legal and ethical responsibility in the treatment of human remains, but also just locating and consulting with descendant communities before investigations are underway is required. The permission and cooperation of landowners, local communities, and religious and other authorities must often be obtained before any excavations, but most important is the permission and interest of any living representatives of the cultural group being investigated.

What decisions about archaeology should be made in consultation with the diverse groups who have an interest in the past? Besides if and how to excavate and what studies to do afterwards, there is the question of the disposition of the materials. Artifacts are the property of the landowner, unless they are cultural properties that can be identified as belonging to a particular living group or associated with identifiable human remains.

What should be done with standing ruins? Should ancient buildings be reconstructed, restored as someone thinks they once were, left in place, or preserved at all? Can archaeo-tourism help or hurt? What about modern communities around famous sites? Should they not be involved in designing tourist attractions, museums, and restoration of monuments? Will the plans include any jobs for the local community members? Will the materials once preserved just fine in the ground be conserved well, so they will last while they are investigated or displayed?

What benefits can come to the archaeologist by working with local people and descendant communities? Not only good public relations and support for the project, but also real research information, such as the identification of artifacts and their past functions in the cultural context. Though I have no remaining Native Florida people in the region where I work, the local hunters and fishers are enormously helpful in identifying methods of catching different species and making a living off the river and the sea. In return, I can show them the kinds of species the ancient people used to make a living and how fishing might have been the same or different.

What other *obligations to the public* remain after the project analyses are completed and the scientific report submitted? Archaeologists should always try to produce popular accounts and interpretations of what they have found for the general audience. This can be in the form of displays, booklets, videos, lectures, or other media presentations. Since most of the work is done with public money, it is only fair that the public benefits. Archaeologists also need to learn to write for the public, in understandable but not condescending terms. All archaeology today is public archaeology.

The First People and Culture

Lesson Objectives: Model lifestyles of earliest hominid forms and Lower Paleolithic based on cultural remains and other evidence, understanding political issues.



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What do the earliest archaeological remains look like? Remember this is archaeology class, so we will not discuss the details of different early hominid skeletal forms and which of the many species is an evolutionary dead end as opposed to a true human ancestor (not that all the paleoanthropologists can agree on this anyhow!). But the true archaeological remains are the result of cultural behavior, and they are mostly stone tools.

Was stone the earliest material made into tools?
Probably not, but it is the only one preserved from as

much as 2.5 million years ago. The tool forms are minimally flaked to have a sharp edge, and they are called pebble tools or Oldowan tools, after the famous Olduvai Gorge in East Africa investigated by Louis and Mary Leakey. It is highly likely that the very first tools were made of perishable materials such as plant fibers or bone. We know that chimps make and use tools in the wild, such as shaped grass stems for pulling termites out of their mounds and wads of leaves for sponges to drink water from small pools.

Who made the stone tools? This class will not go into hominid evolution, which is the realm of physical or biological anthropology class. Suffice it to say that the early human-like forms were first discovered in the early 20th century in South Africa; then the Leakeys spent 30 years in Tanzania, East Africa, looking for hominid remains he knew would be there because he had found the crude-looking but clearly manufactured stone tools. By the 1970s other now-famous researchers were discovering more remains, such as Donald Johanson's find of the Lucy skeleton in Ethiopia at the Hadar site. Now we are up to a dozen species of australopithecines and counting, plus a few other taxonomic names. We do not know which one, if any, made the stone tools. Contemporaneous with many of these species at the 2.5 million year point, when the first stone tools appear, is another species, *Homo habilis*, which translates to "handyman" and is supposed to be the toolmaker. Do you need a larger brain and longer evolutionary history to know how to make tools? Apes have been taught flintknapping, so the answer is no. Might there be any prejudice against attributing tool-making behavior to hominid forms that look older or uglier or less like us? Maybe.



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What other kind of very early archaeological evidence was found at the Laetoli site? Fossilized footprints of hominids, excavated by Mary Leakey, demonstrating archaeologically the bipedalism that the bones also showed. Mary was an archaeologist in England who teamed up with Louis to do paleoanthropology. The book shows a photo of her digging the footprints (p. 41); she was a colorful character in her own right (show family picture, p. 53, in color in Fagan 1985 of Mary with Louis, boys, dogs).

Where is the Swartkrans site and are there differences in interpretations of its evidence? It is in South Africa and has produced skull fragments and other hominid fossils. One investigator, Raymond Dart, who named the original *Australopithecus africanus* specimen, saw the fragments as broken in such a way as to suggest that not only were these early human creatures hunting lots of other animals, but they were hunting their own species as well. The many skulls had the bases broken away, often seen as a sign of cannibalism because this is how you process animal skulls from which you want to eat the brains (yummy, and very nutritious too!). Another investigator, Robert Brain, interpreted them as evidence that something else broke the bones, site formation processes acting upon them after they were deposited as remains of meals of other carnivores such as big cats.



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Where is Koobi Fora and what is the evidence there? In Kenya, eastern Africa, where hominid remains, animal bones, and tools and stone fragments are arranged in enough proximity to suggest living floors where groups of early humans gathered. Today other Leakeys work there, first Louis and Mary's son Richard and now his wife Maeve, and the hominid fossil discoveries are still coming.

How old are the first hominids, and what do these small archaeological traces tell us about them? The Oldowan tools now have been pushed back to 2.5 million years ago, and the footprints are fully a million years older. Without straying too far from archaeology, we can examine all the glamour of paleoanthropology and see again how the viewpoints of the investigator influence the interpretation. Many popular accounts of hominid discoveries include the

soap opera details of the investigators' lives—who disagrees with whom and who was sleeping with whom and how this influenced what got funded or published. Examples are *Ancestral Passions* (Morrell 1995), the story of the Leakey family and its discoveries, and *Lucy: the Beginnings of Humankind* (Johanson and Edey 1981), by Don Johanson, who is coming to speak on our campus this fall. There are many other popular accounts, and they do explain the science fairly well. Some even demonstrate the importance of archaeology in understanding how our earliest human-like ancestors lived. Johanson's later book, *Lucy's Child* (Johanson and Shreeve 1989), includes a chapter telling how he brought some famous archaeologists such as Lewis Binford out to East Africa to help understand the landscape archaeology of early hominid adaptations.

How do archaeologists evaluate entire landscapes in which people lived? They look for the available resources, whether stone for tools, other raw materials, animals and plants for food, or other environmental variables that might influence communication and travel and social aspects of life.

How can we reconstruct the life of the earliest human ancestors, and what are alternative viewpoints? Beyond which hominid was an evolutionary dead end and which gave rise to our genus and eventually our own species (physical anthropology debates which change yearly with each new discovery and pronouncement), there is great controversy on how they lived. Here is where some archaeology, including social reconstruction, is useful. Dart's original interpretation portrayed our earliest ancestors as clever hunters who frequently killed for a living. The "Man the Hunter" model was popular into the 1960s, and was thought to explain humans' rapid evolution, especially ever-increasing brain size. The need to plan and hunt and survive, as well as the efficient nutritional package provided by meat, was supposed to have been the driving force in human biological evolution. But studies of modern and historic hunter-gatherers began to show that most such peoples ate predominantly plants, often gathered by women, since meat is much harder to come by (it runs away, while plants do not!). The male bias and the meat bias

were obvious. One alternative model, called “Woman the Gatherer” (Dahlberg 1981), suggested that foraging for foods other than meat, done by women, was what increased intelligence and drove hominid evolution. In this scenario the earliest artifacts were of fiber, were probably invented by women, and were probably containers, slings and strings made for carrying things that were gathered. Another model suggested that a three-foot-tall creature of Lucy’s type was not going to be hunting large game animals often, but that meat is easily available on the African savanna through scavenging, grabbing the remains of whatever was already killed by a lion or something else.

Is the scavenging model testable? Yes, to an extent, because we can see if the bones on possible living floors bear signs of human action. They might be broken open in a distinctive way to extract the marrow, something only humans would do. Further, they might have teeth marks from gnawing animals and cut marks from stone tools. Each is distinctive under magnification. If cut marks overlie chewing marks it suggests that something else killed and began eating the animal before hominids got it to eat.

Which reconstruction of australopithecine lifeways is the most popular? As detailed in *Lucy* (Johanson and Edey 1981) and many other introductory texts, the provisioning model (p. 62-63 in the textbook) seems to be the most popular. It portrays the hominid male as scavenger, gatherer, all-around guy who obtains the food and brings it back to camp where the female and kids are staying, supposedly increasing the reproductive success of the species. What keeps him coming back is supposed to be the hidden estrus cycle of the female. Women do not have monthly periods in which the sex organs become swollen and bright pink, as some monkeys and apes do, advertising fertility and sexual receptivity. The idea was that the attraction of sex at any time led to the early institution of monogamy. You can see the implication of this in the artist’s reconstruction of how the Laetoli footprints were made. Though we have three sets of footprints, larger and smaller, the painting shows the male hominid striding ahead, holding some kind of tool, while the female is the requisite number of paces behind, carrying the kid. What other interpretations could have been possible? Obviously many, including that the prints were made hours apart by individuals who did not even see each other.

What is the real evidence for all the models and what is sheer speculation? The only hard data are the bones, the tools, the footprints, and the landscape. First-level inference can tell us about scavenging or living floors, but there are alternative interpretations. What one scientist calls a living floor another may see as a cache of meat stored for future use but covered in rocks to prevent other animals from getting it. The supposed constant sexual receptivity of human females is a pretty sexist notion, and now it is clear that it is characteristic of many primates and that the marked estrus cycle is the derived characteristic, in other words, evolved later. The notion of monogamy does not jive with the social organization of ape troops (which are usually matrilineal—apes know their mothers and siblings but not their fathers). Nor is it supported by ethnographic analogy, since monogamy is a minority marriage type among human cultures. Nor does the ethnographic record support the idea of sedentary women staying home with the kids and waiting for food to show up with the hubby. We know that women hunt in many cultures, and even if the division of labor means that they are the plant gatherers, they work hard and move around; note this picture (Zihlman 1981:92) of a !Kung woman on a gathering trip from

camp, carrying the child and the bag of plants obtained and seven months pregnant! She is averaging many km per day in obtaining the needed resources.

Why is it important to model the earliest human social organization? How can this have any importance for us today, so far removed from those small early creatures in our ancestry? Since characteristics are attributed to humans based on our supposed evolutionary past, it is crucially important to characterize the way we originally were. If monogamy or inactive women are part of the natural human condition, then they must be the right thing to do! Since the biases of the researchers and lack of any (let alone good) evidence are so obviously a part of the reconstruction, we must be cautious in accepting these speculations about early human-like lifeways.

What is the Paleolithic time period? We have already commented on the artificial division of time into classifications for making it easier to understand. We can see the obvious bias in naming time periods “Paleolithic,” “Mesolithic,” “Neolithic,” or Old Stone Age, Middle, and New! We further continue the division into the sacred Western number three as we classify cultural remains from the Upper, Middle, and Lower Paleolithic, or Early, Middle, and Late! Since those classifications have been used for so long, however, they are convenient.

What is the Pleistocene period? A geological term, this is the time of the Ice Age, during which most human evolution took place and most of the archaeological record was formed, beginning around 2 million years ago (see chart p. 67 of the book; it shows the “sudden” cooling of the earth). The Lower Paleolithic is the cultural name for what is happening during the geological time of the Lower and Middle Pleistocene. During this Ice Age large glaciers, ice sheets, covered northern latitudes (pictured on map, p. 76 of text), and world regional climates were much different, as we will explore.

What hominids and archaeological remains characterize the Lower Paleolithic? Some time around or shortly after 2 million years ago, hominids spread out of Africa into Europe and Asia. The most frequently described species is *Homo erectus*, but others have lately been suggested. For archaeology class we will not discuss the finer points of biological evolution and skeletal characteristics. Suffice it to say that the Lower Paleolithic hominids were in the genus *Homo*, so closer to physically modern humans. What concerns us here is their culture. It is generally assumed that during the Lower Paleolithic the stone tools get more sophisticated and the use of fire becomes known (though some are suggesting that fire may have been known to earlier australopithecines in East Africa, but the evidence is hard to tell from the remains of natural fires).

Why was the use of fire a good idea for moving into these new regions? Because spreading from equatorial African regions into colder areas may have required it for survival. Fire is equally useful in warm areas for cooking, protection from predators, chasing game, and other uses, however.

What are diagnostic Lower Paleolithic stone tools? Bifacially chipped “handaxes” (pictured on pp. 68, 92-4 of the book) are pear-shaped tools made on the stone core by chipping off the flakes on both sides. These are especially common at sites in Europe.

Where are some important Lower Paleolithic sites? Your book focuses upon classic sites, such as the Trinil site in Java where the first *Homo erectus* bones were found and named in the 19th century. It is a romantic story, about the Dutch army surgeon Eugene Dubois and his obsession with the bones. But there were no tools, and still-controversial dates in more recent years.

What is important at the site of Zhoukoudian? Another classic site with a romantic story, these caves near Beijing also produced many *Homo erectus* skeletons early in the 20th century. The bones are now lost, though we have casts, but also there was some good archaeology. Animal remains and fires suggest hunting and cooking of some 96 mammal species, including extinct deer, elephant, and bear, though Lewis Binford and others are now questioning the site formation processes and asking if these can also be the remains of scavenging killed meat. The stone tools here include types of choppers, scrapers, and even small points, but no handaxes.

What happened at the Terra Amata site, and where is it? On the French Riviera, it another classic site, saved from being destroyed by construction of apartments. (Is there is a stronger sense of stewardship of the past going on in Europe because they are saving the remains of their own ancestors, unlike in the U.S., where people are not often descendants of the native inhabitants?) It is famous for producing remains of both terrestrial animals and coastal species, both fish and shellfish. Original interpretations of features indicating structures, huts on the beach, are now under question with new reanalyses. You can see the excellent picture (p. 86) of the lithic refitting analysis, putting the flakes back together to see the original piece and how it was chipped. There was a hearth with a pattern of rocks on one side of it suggesting a windscreen. Why do we have less evidence of Paleolithic coastal dwellers in general? Because rising sea levels after the Pleistocene, from the melting of the glaciers, have drowned most of the original shoreline and any sites that may have been on it.

What was found at the East African sites of Kalambo Falls and Olorgesailie? The former produced Lower Paleolithic plant remains, such as nuts and seeds, and the latter had preserved bones of baboons presumably hunted by *Homo erectus*. Both had handaxes.

What important points should we remember about the Lower Paleolithic? First, there are many debates about which hominid species are present or which species names should be used. Some sites have bones and no archaeological remains; some have tools and animal bone but no hominid remains. It would be nice to classify everything neatly, but that is not possible. The map in the book on p. 64 shows other Lower Paleolithic sites not even discussed in the text which are yielding more fascinating evidence lately and probably will be described in greater length in the next edition of the book. One of these is Longgupo in south China, where the finds were a few teeth and some pebble or Oldowan-like tools, dating to just under 2 million years ago.

What about social organization during the Lower Paleolithic? Your book is clear in its opinion that there was a sexual division of labor, that men hunted because they were faster and larger and women gathered and did child care (p. 95). They are less certain about family structure, and say that monogamy or polygamy were both possible. What is the evidence for such statements? Are they testable hypotheses? There is no evidence, and we have not yet figured how to test them. By analogy, we can say there does not have to be a division of labor based on sex as much as on age,

since children cannot do things adults can. But men can gather plants and nurture babies, and women can hunt, and the stereotypes given above for now just reflect Western biases.

Middle and Upper Paleolithic Hunter-Gatherers The Emergence of Modern Humans, The Mesolithic

Lesson Objectives: Compare models of Neanderthal and early modern humans and their lifestyles based on cultural evidence; understand political contexts; understand the Upper Paleolithic lifestyles and interpretations of art; the Mesolithic.



[enlargement / caption]

What is the *Middle Paleolithic*? This cultural “stage” was once easier to describe when it was thought that clear divisions could be made in both culture and associated biological forms of humans. So the Neanderthals, robust and ugly-looking to us, were considered to be the makers of Middle Paleolithic tools in Europe and the Near East (eastern Mediterranean and southwestern Asia), then in came modern people with Upper Paleolithic tools and art, and away went Neanderthals. Now the picture is enormously more

complicated and debated. One reason for this is that we know now that modern humans appear as early as 100,000 years ago, but Neanderthals last until about 40,000 years ago.

What is the relationship between Neanderthals and modern humans? There are many opposing arguments. Some think Neanderthals were a separate species of hominid from *Homo sapiens*, called *Homo neanderthalensis*, that evolved from the *Homo erectus* forms in Europe and died out when moderns came in. Others consider Neanderthals a subspecies or biological race, *Homo sapiens neanderthalensis*, differentiated only by geographical isolation but still contributing genes to modern humans, that is, mating with moderns to a degree. Physically, Neanderthals were different looking, with longer heads, more robust bones, even bigger brains; these adaptations are thought to be adaptations to the cold periglacial climate of their northerly home.



[enlargement / caption]

What are the two opposing models explaining the appearance of modern humans? The “out of Africa” model has modern humans developing in Africa and moving out to replace other

hominids all over the Old World. Replacement is considered to include everything from violent conflict to genetic superiority, from no mating with “the other” to some exchange of genes. The “multiregional” model has modern humans evolving in place all over the world; in other words, gradually developing from whatever hominid is there because there would be enough gene flow (translation: mating across geographical regions) to assure continuity of the evolution of the species all over the map.



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How can archaeology contribute to the debates on modern human origins? In this class, we will not discuss very much the details of biological evolution nor the evidence from both fossil skeletal remains and molecular evolutionary studies such as changes through time in DNA. There have been a couple of DNA studies done on European Neanderthals which found that there was enough difference from modern humans so as to make them not ancestral. But this is a small sample size, and those individuals may have simply had family lines that died out. There will be more such studies soon. Meanwhile, the archaeology is not simple either. There have been Upper Paleolithic tools found with Neanderthal skeletal remains and Middle Paleolithic artifacts with modern humans. The question of whether Neanderthals or even earlier

hominids could talk is also difficult to solve. How could *Homo erectus* have made it across the hemisphere without language? Can you teach someone to chip fancier stone tools without talking? There is even debate on whether skeletal remains can demonstrate that the vocal apparatus was present in earlier hominids; it is not there in apes.

What behavior can we attribute to Neanderthals from the archaeological remains? *Mousterian tools* of the Middle Paleolithic were made on flint flakes; they were scrapers and graters and many other types, including triangular, unifacial points. Deliberate burials are known, possible evidence for cannibalism, and many features that are interpreted as “ceremonial,” often including deposits of cave bear bones or other items.



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What evidence is known from Shanidar Cave? This famous site in Iraq produced, among other things, a Neanderthal skeleton of an older adult male who had been severely disabled from birth yet apparently cared for within his society. Another burial had pollen from plants in different kinds of environments, suggesting the placement of flowers over the dead. This has been disputed lately too, however.



[enlargement / caption]

What evidence is known from the Klasies River Mouth caves? These South African coastal caves have a record dating from 120,000 to 60,000 years old, with flake tools from the Middle Stone Age (Africa uses this terminology instead of Paleolithic) and fancier blade and other tools from the Late Stone Age (equivalent of Upper Paleolithic; see pictures p. 104), as well as remains of terrestrial mammals and marine foods. There is disputed evidence for cannibalism and for use of plant foods around hearths. Modern-looking human skeletal remains appear very early here, about 100,000 years ago.

What major archaeological characteristics are present in the *Upper Paleolithic*? We can characterize this time period, from perhaps 50,000 years ago to a little over 10,000 years ago, by its sophisticated blade tools and also artifacts of bone, antler, and ivory that are very standardized and diverse. The artifact typologies were established mostly in the south of France, where many caves and rock shelters were excavated over the past century.

Also this is the time of the earliest widespread art, both on rock walls and as portable items. Was there no art in the Middle Paleolithic? Did Neanderthals have the concept of art? There are a few engraved bones and now the newest, oldest find from a South African cave, dated to 77,000 years old so in the Middle Stone Age, is some stones with crisscross lines engraved in them, associated with finely carved bone tools and fishing gear (Blombos Cave finds, Jan 2002, in the news and online; also in Henshilwood et al. 2002). Is this doodling? Mapmaking? Evidence of complex thinking or esthetics? No way to tell. What hominid made this? Again, we do not know. But in the Upper Paleolithic there is what has been called an explosion of art of many kinds.



[enlargement / caption]

What is Upper Paleolithic *stationary art* or parietal or mural art? Engravings and/or paintings on cave walls, usually in the forms of animals, abstract lines, and sometimes people. What is *portable art*? The stone or fired clay figurines in the forms of animals and people. The best known examples of each are found in Europe (where, again, we have the longest history of archaeological investigation, though not necessarily the earliest or best archaeology!). Where is Lascaux cave, and what is in it? In the southwest of France, it is famous for painted animals, and there are many other such caves in this region discussed in your book. Where is Dolni Vestonice? In the Czech Republic, it has produced interesting evidence of portable art. Besides the representation of the asymmetrical human face buried near a skeleton of a woman who would have had such a face, the site has also produced thousands of fired clay figurines of animals and women.



[enlargement / caption]

What is the meaning of Upper Paleolithic art? What are the subjects of the depictions? Are they just art for art's sake or more likely symbolic of some ceremonial traditions? A traditional, simple answer is that the animals are the important species hunted and the women, both engraved on rock walls and as figurines, were fertility symbols. But let's look again at the animals. Even Lascaux had a bird figure and others that may not be food species. Two new caves discovered in the 1990s are Chauvet and Cosquer, shown on the map, p. 129 in the book, but not discussed. Chauvet depicts many rhinos and lions and may date as early as 35,000 years ago, older than all the others. Cosquer is an underwater cave with pictures of fish, penguins, and jellyfish! Portrayals of humans are not always female—see the excited man next to the bird from Lascaux, p. 133. Figurines are not always of women, and even those that are women are not always heavy or pregnant-looking bodies. Many are slim women, many are not clearly women, and we have absolutely no way of testing the hypothesis that they are fertility figurines.

What alternative explanations could you suggest for these “Venus” figurines? (Why are they named that?). They could be pictures of your mom that you kept with you, or Paleolithic Barbie dolls, or general goddess figures. One clue that has yet to be interpreted is that the figurines from Dolni Vestonice, which appeared to have shattered during firing of the clay, were found by experimental archaeology replication techniques to have been deliberately shattered. They had to go through several manufacturing steps to get them to shatter that way.

What other evidence tells us about Upper Paleolithic lifestyles? Clearly people were hunting, butchering, and cooking food. The Pincevent site has many living floors with hearths, an area where the flintknapper apparently worked, and suggestions of a tent-type shelter. Binford disputes the indications of a tent shelter based on his ethnoarchaeological work with Nunamiut Eskimo, who moved around an open fire on windy days. Arcs of debris around the hearths could be deposited as people moved around and do not necessarily indicate there was a circular floor inside a shelter.



[enlargement / caption]

How far did people go during the Upper Paleolithic? The earliest people in Australia and in the “New World,” North and South America, arrived during the Upper Paleolithic. How did they get there? Walk or take the boat.

Australia has archaeological evidence dating back at least 40,000 years, and it was an island then, so it required knowledge of boats to cross some 100 km of water. Coastal and inland forager sites and rock art are common here as well. People were still hunting and gathering, with no development of agriculture, when Western culture “discovered” Australia (in the person of Captain Cook). Does this mean that there was no culture change since the Pleistocene? No, of course not. There is always culture change. The direction, speed, and characteristics of change are different from place to place, however.

People reached North America at least 13,000 years ago and maybe much earlier; we will discuss this when we return to the North and South American archaeology sections later in the class.

What does the archaeology of the *Mesolithic* look like? What environmental changes might be tied to culture change? The end of the Ice Age began around 10,000 years ago, or 8000 B.C. (“before Christ,” which can also be written B.C.E., before the common era, or 10,000 B.P., before the present; what values are expressed in different ways of writing dates?). Was the extinction of the Pleistocene megafauna at this time due only to climate change? Probably humans helped along the extinctions of various species, as we do today. Archaeological evidence from Pacific islands shows clearly that shortly after humans arrive, just a couple centuries, the largest game animals, whatever they are (usually large terrestrial birds) disappear from the middens because they have already been hunted to extinction. Is there some lesson here for us today?

So what did people eat during the Mesolithic? Modern fauna were hunted after about 8000 B.C., the spectacular cave art apparently disappears, and different distinctive regional traditions emerge around the world. The New World time period equivalent to the Mesolithic is the Archaic. During this time it appears that hunter-gatherer peoples expanded the diversity of species that they used and exploited smaller regions more intensively. There are more plant remains in general, but that may just be from better preservation, not necessarily an indication that Paleolithic meat-eaters were now getting a different diet with more fruits and vegetables! Similarly, the higher number of coastal sites does not necessarily mean a sudden change toward favoring saltwater fish and clams, but results from the elimination of earlier coastal evidence under rising postglacial sea levels. In addition, the rising water backed up river mouths to create estuaries and bays, much like we have in the Tampa area, with more environmental niches and thus more diverse species available to collect. Many shell midden sites appear during this time period. These are ancient trash piles with animal bone and plant remains and shells left from harvesting various molluscs or gastropods; the shell makes the sites more visible and easier to find.

What is the evidence for postglacial foragers in the Old World? In Ireland, for example, there was no Paleolithic occupation because it was under or too near the ice (go back to map, p. 76). By 7,000 years ago, people had arrived. The Mount Sandel site shows posthole patterns of round, possibly sod-covered huts, with animal bone and seeds and other

plant remains that suggest year-round occupation of this favorable coastal location. Page 165 shows a very nice frequency seriation chart of what species were available at what times of year, indicating that there was always something that could be harvested from the wild resource base. This is an important aspect of the Mesolithic/Archaic—that sedentism is becoming possible, often in coastal locations.

What subsistence and ceremonial materials were found at Vedbaek site in Denmark? Another nice diagram (p. 169), this time a cross section of the coastal landscape, shows the range of species from land, water, and air that were utilized at camps in this region, according to the faunal remains. The Mesolithic cemetery dated to 4800 B.C. included many graves with decorative items and things we can interpret possibly as giving social and ceremonial information. The man's skeleton with a bone point in the throat, accompanied by skeletons of a woman and child, p. 161, are described as evidence for nuclear families. The child burial on the wing of a swan next to an adult woman's skeleton is interpreted as a mother and child. What could the swan wing symbolize? Belief of the flight of the soul up to heaven, or just a soft baby bed? Can we assume these family relationships? How could we test these very Western assumptions? DNA studies might at least give genetic family data, but if the child was adopted, they would not!

How was subsistence and seasonality interpreted and tested at Elands Bay Cave in South Africa? Interpretation of inland and coastal hunter-gatherer sites discovered during a large survey suggested to the researcher that people established a pattern of transhumance, moving across the landscape annually to take advantage of available resources. Both faunal assemblages of animals available only during certain times of the year and stone tool assemblages with different diagnostic artifacts suggested that people wintered on the coast and moved inland during the summer. But bone chemistry studies did not show any marine diet in the carbon isotopes of their skeletons, providing negative support for the model. A frequency seriation chart (p. 176) nicely shows the change through time in the faunal assemblage at the site, with more fur seals and smaller bovids (horned terrestrial mammals such as antelope and cow) through time.

What notable characteristics mark the Jomon culture? Dating from 10,000 to 300 B.C., Jomon sites in eastern Japan have similar evidence of terrestrial hunting and coastal gathering and fishing, with elaborate gear including net weights and floats, harpoons, fishhooks, and dugout canoes. There is also evidence of early plant cultivation and much wild plant gathering, as judged from the various species recovered archaeologically and also the mortars, pestles, and other grinding stones and chipped stone hoes. There are circular house patterns and faunal evidence of year-round settlement on the coast. The earliest pottery known so far appears in Jomon. Remember that the technology of fired clay artifacts was known, since people made figurines in the Upper Paleolithic, perhaps 25,000 years ago. But then it disappeared until earthenware vessels appeared in Japan.

Lesson Objectives: Compare models of origins of food production and understand what was produced.



[enlargement / caption]

Why is the origins of plant and animal domestication considered an important milestone in human prehistory? How did it happen and when and where? We might figure that deliberate production of food, as opposed to gathering it wild, is important to us because it marks innovation and more complex technology. This may or may not be the case. Traditional theories suggested people had to struggle and work harder to hunt and gather, and had a life that was “nasty, brutish, and short,” in the terms of seventeenth-century English philosopher Thomas Hobbes. The explanation

continued to describe the Neolithic Revolution as a time when the invention of food production allowed people to slow down and have leisure time to do fancy things with monuments or art or other pursuits. This is a very elite view, of course, since we know now that food production is MORE work than just collecting it wild. Most food-producing cultures involve the majority of the people in this production so that a few elites, rulers or artists, can indeed do their specialized thing. Ethnographic data show hunter-gatherers only work a few days a week to provide for their needs and get to loaf the rest of the time. So why would they want to do MORE work?

What are some explanations for the origins of food production? Remember, domestication of species means cultural selection of the desired biological characteristics so that you get real genetic change. Much of the change involves dependence upon humans for various requirements, such as food for animals and reproduction for plants. Remember also that we characterized cultures as conservative or resistant to change, and that we often see change happening as a result of trying to do the same thing. Changes in the surrounding environment that would

have made it more difficult to obtain wild resources might have made people try to control the species more themselves. The *oasis hypothesis*, suggested by famous early twentieth-century archaeologist V. Gordon Childe, portrayed the drying of the climate at the end of the Pleistocene in the Near East as an external factor in early domestication. Both humans and animals and plants would have gathered around the few oases or water sources, and humans would gradually come to control many other species. Robert Braidwood’s *natural habitat hypothesis* suggested species would be domesticated in areas where they first grew wild, as part of the gradually increasing association with humans.



[enlargement / caption]

The *population pressure hypothesis*, advocated by Binford and others, pointed to increasing human populations that required more food than could be obtained in the wild, resulting in intensification of production. But there was no explanation of how population sizes grew so much. We know that population sizes of any animal are usually naturally regulated, and humans should be no different. By what cultural ways did these systems get adjusted? It is no surprise that population growth models emerged in the 1970s, when Americans and others began to realize that we are currently overpopulating our planet and using up all the resources.

We already discussed the systems models for agricultural origins in Mexico, in which the genetic responsiveness of maize worked to make it more and more important in the diet. Lately more fashionable are *social models* (described in the book, p. 202) in which the behavior of particularly self-aggrandizing individuals is highlighted; they would be the ones to try to acquire influence and wealth by building up food surpluses and exchanging them for goods and services and followers. My take on such explanations emphasizing this kind of human agency is that they are direct results of the late-twentieth-century social climate of Wall Street greed: not all cultures value such individualism as we do; in fact, many abhor it.

All these models do not always explain things and are not often testable (especially the social ones). Especially difficult is being able to tell which came first: the population growth, the food production, the sedentism, or the evidence of social inequality and elites?

What are the important species domesticated in the Old World? For animals, the earliest anywhere in the world is the dog. For what purposes would dogs be domesticated? We think of them as companions, as they may have been, but it is possibly more likely they were for work and protection—pulling loads on sleds, helping the hunt, and warning of intruders. What about as a food source? Many cultures still eat puppy stew; you can get it in the butcher shop in the Far East, and the Aztecs bred a small hairless dog for eating (Chihuahua!). Sheep and goats, as you can easily imagine, were early under human control in the Middle East. Species such as pigs and chickens were also early in east Asia. Cattle, horses, and other larger mammals came much later; as you can imagine, the wild aurochs was probably not easy to tame and control.

What Old World domesticated plants are important? You are familiar with the grain crops—wheat, barley, rye; these are all grasses. Lentils, pistachios, and dates in the Middle East, and rice and millet and many others in the Far East, were important early. Many students do not know about some of these plants. (I pass around some dates, red and green lentils, millet that we know from salad bars and birdseed). Don't forget plants that are for things other than eating. Cotton and flax have seeds that give oil and fiber that gives fabric (flax makes linen for mummy wrappings). Spices, drugs, many other important species are known archaeologically.

What domesticated plants were important in the New World? A major staple was maize, but before it came along in some areas were domesticated squashes, and manioc in South America. Many students are unfamiliar with manioc; some of us only see it in tapioca pudding, but we in Tampa can eat it in Cuban restaurants, where it is called *yuca* or cassava. It is important to distinguish it as a root crop from all the seed crops. Seeds can be preserved more easily, but propagation of manioc by sticking new canes into the ground leaves very little archaeological evidence.

Other important New World crops are beans, chili peppers, potatoes, tomatoes, and peanuts, many crucial today to world economies and international cuisines. Don't forget those non-food crops, tobacco, coca, and other drugs and industrial materials.

What animals were domesticated in the New World? The dog came in early, probably with the first Paleolithic hunters. Others were South American camelids (llama, alpaca, vicuna) and guinea pigs, with occasional wild turkeys under human control.

Why so few? Probably because there were few around to control. Horses and other large mammals became extinct at the end of the Ice Age, not to return until brought back by the Europeans. Was this the reason that there were no wheeled vehicles in North and South America—that there were no large animals to pull them? Probably not, since we do have prehistoric Mexican toys with wheels, and humans can pull carts too. What about the hogs that run around Florida and get shot during hog season? These are not native but are descendants of the pigs brought by the Spanish, which got loose and went feral in the forest!

What will look different about *archaeological sites* after the beginning of food production? Besides evidence of genetically changed species, we will see larger settlements, more dense populations, more storage space, some evidences of social inequality, and more permanent structures, but not everywhere and not all at once.

How does some of this evidence appear at the Ain Mallaha site in the Jordan valley of Israel? This very early village dates from 11,000 to 9000 B.C. Stone houses with *querns*, grinding stones, set into the floor indicate more permanent settlement. But there are wild grains and remains of gazelle and other wild animals.

What does the evidence show of the development of domestication at Tell Abu Hureya in northern Syria? A *tell* is a mound of debris from successive habitation sites. Here we have uninterrupted occupation from 10,500 to 6000 B.C., with a record of the changes that happened during the transition from wild food collecting to farming and herding. Wild wheat, rye, lentil, and gazelle become replaced by cultivated cereals and domesticated sheep and goats over a time span of 2,500 years. Plastered mud brick houses were relatively permanent.

How does the 10,000 years of occupation of the tell at Jericho tell us of culture change? A rich oasis in the Jordan Valley, it was a biblical city, but much earlier Neolithic levels were excavated by Dame Kathleen Kenyon (shown digging in a skirt, p. 215 and color picture in Fagan 1985). Similar grinding stones, permanent houses, traces of grain, and wild gazelle giving way to sheep and goats were found. But this article also emphasizes trade items from long distances, such as salt, tar, and sulphur from the Dead Sea and turquoise, shell, obsidian, and greenstone from elsewhere in the region. A Neolithic-period stone tower, wall, and ditch surrounded the site; this was a major group construction project requiring some direction and fancy planning. Was it all for defense, and if so, from whom? Later interpretations suggest that it was fortification against flooding and a tower for storage or community gatherings for social or ritual reasons. Jericho is also famous for early Neolithic human burials with plastered skulls remodeled to look like heads. What might this ritual treatment mean?

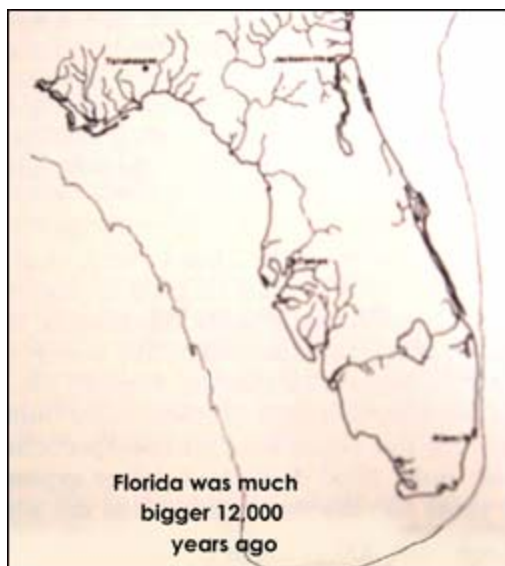
What fascinating evidence of Neolithic ideological systems is being recovered at Çatalhöyük? You are already familiar with this site and its recent excavations by Ian Hodder, who is reinterpreting the earlier reconstructions of Neolithic lifeways (Wolle and Tringham 2000) and trying to do postprocessual thinking along with the scientific discovery by publishing absolutely everything on the [website](#), including field notes, lively goddess discussions, etc. Are the burials beneath the houses, female figurines, bull imagery, for special ritual purposes or part of the ideological system represented in every regular household? No status differences are yet seen in households, and both domesticated and wild wheat and other plants have been found. Were the cattle domesticated yet? Would they be important in ritual more so if they were wild or domesticated? What long-distance trade items contributed to the economic system here? The obsidian trade was important, and the source of this rock was 125 miles away.

Where is Mehrgarh and what is its importance in for Neolithic archaeology? This site is in the Indus Valley in Pakistan. Earliest occupations had no pottery, but did have clay bricks for houses, a notable fact we will remember later. Early domesticated grains and dates were recovered, and the goats, sheep, and cattle remains become smaller over time but more abundant, suggesting the domestication process was making them more manageable. Many innovations in food production developed here, and the region was not just a recipient for domesticated species from elsewhere. What might be making it difficult to do archaeology in the Indus Valley today? Warfare and international conflict seriously interrupt or end archaeological research!

What do Neolithic sites in the Far East look like? The two representatives in your book are Ban-po-t's'un in northern China and Spirit Cave in Thailand. They also show control of indigenous plants and animals more than acceptance of domesticated species from elsewhere. Early Chinese farmers were also growing hemp and silkworms for cloth production, as well as millet, rice, and pigs.

North American Prehistory

Lesson Objectives: Compare models of the peopling of the Americas; understand the Archaic and early food production; late prehistoric societies.



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We will spend more time on North American prehistory since we live here and want to know about how the same land we live on now was used in the past. We will especially emphasize the southeastern U.S. and Florida. None of the color photos in your book document archaeology from this area, even though students in the eastern U.S. might be very likely to use this textbook!

When did the first people arrive in America and what were they doing? The *peopling of the Americas* is a hot topic in archaeology. We can go back to the Pleistocene and the article on the land bridge between northeast Asia and North America, called Beringia, that was exposed when the sea level was lower due to water being taken up into the ice of the glaciers. Did people need a land bridge to cross into North America? No, they could have traveled on water or even on ice. How early did they get here? At least 12,000-15,000 years ago, according to most estimates. Note the picture of the extent of the glacier (p. 144). There was an ice-free corridor extending down into the heart of North America, which they could have used to populate the continent. But they could also have come by a coastal route, hugging the shoreline, which would be more sheltered, perhaps more moderate in climate because of the proximity of water, and perhaps more abundant in resources from both land and sea. Archaeologists debate these routes and timing constantly, and the evidence is tricky since sea level rise would have drowned all the early sites.

What is *Paleoindian* culture, and how do we recognize the diagnostic artifacts? The photo in your book of *Paleoindian* projectile points is mislabeled (p. 146); the two larger ones are called Clovis and the smaller are Folsom points. They are types that show a large flute or channel flake running up the middle of the point. This is very clearly diagnostic of a cultural tradition seen in the New World only, mostly North America. For a long time it was thought that the people who made fluted points were the first Americans, and they used these artifacts for big-game hunting. Slightly later Paleoindians made other finely shaped lanceolate (long, thin) points. The discussion in the book (p. 152) of the Lindenmeier site in Colorado is one of these classic sites, showing a bison kill out on the plains. Though some recent evidence supports this view, the picture is far more complex. Many of the sites yielding the oldest dates are in South America, which appears counterintuitive, since it would take longer for people to reach there.



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What is preserved at the Monte Verde site in Chile? Since it is a wet site, preservation is excellent, but the archaeologist, Tom Dillehay, has had a hard time getting it accepted because the dates are so early and there are no chipped stone points. He did find evidence of wooden structures in a row with common walls, hearths, wooden tools, bones of large and small animals such as mastodon and llama, and 42 plant species, including wild potato and medicinal plants. The radiocarbon date of 13,000 B.P. was not believed by many of the famous scientists specializing in Paleoindian archaeology. Dillehay had to get funds to bring a bunch of them to northern Chile and show

them the site to get professional approval! Two big reports have been questioned, despite their detail, because of the confusion of stratigraphic layers and other missing data. When you challenge the accepted wisdom you have a huge burden of proof to come up with. But there has been a gradual change toward expanding the view of what the earliest Americans were doing. There were many different kinds of adaptations in different regions. Anna Roosevelt is an archaeologist who has found that the earliest people in the Amazon, contemporaneous with Paleoindian folks elsewhere, were making small stemmed projectile points, fishing and eating nuts from the jungle, even manipulating the forest for human needs.

There have been more Clovis points found in the eastern U.S. than in the west, where the bison and mammoth kill sites are. Some exciting newer finds in Florida have come from underwater. Years of diving and working with amateur archaeologists in north Florida's clear, spring-fed rivers have produced Paleo points with bison and elephant remains, such as tusks with cut marks on them, and dates a little older than 12,000 years ago. An exciting new find is a fluted point underwater out in the Gulf of Mexico, several miles offshore. Under some conditions, those drowned sites can be found! This work is being done by Florida State University (check out their anthropology



[enlargement / caption]

department's [underwater archaeology website](#)).



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How do *Archaic period sites* show changing adaptations after the Pleistocene? At Carrier Mills in southern Illinois, found during cultural resources survey before the area was strip-mined, the black earth stains in aerial photos showed where Archaic middens contained remains of modern animal species, especially fish, turtles, and deer. Plant remains were dominated by hickory nuts, but that may be just because nutshells preserve well. Grave goods with only 25 percent of the burials showed no real social differences except in male and female tools and the lack of decorative items with females. The Desert

Archaic is represented at Gatecliff rockshelter in Nevada. Here mountain sheep bones dominate the midden, suggesting it was hunted the most. Dry conditions preserved cordage and basketry, but only a few food remains such as seeds and nuts. A different kind of Archaic adaptation, to the wet northwest coast, is seen at the Ozette site in Washington State, where mudslides covered and preserved a late prehistoric settlement complete with fancy fishing gear and beautiful wood and fiber craftwork.

What might you expect to find at Florida Archaic sites? In much of the eastern U.S., the Archaic is marked by the switch from lanceolate points to stemmed and notched points as diagnostic artifacts, and this is true in Florida. We also have here and in all coastal and riverine areas the emergence of shell middens, some of them very large and mounded. In south Florida they were found to contain evidence of year-round settlement as early as the Middle Archaic, some 5,000 or more years ago. Fish, shellfish, and turtles dominate at coastal sites, with deer and turkey more predominant inland.

One amazing site from the Early Archaic has been excavated near Cape Canaveral at Titusville. Named the Windover site, it was discovered during construction of a housing development when workers hit skeletons in a pond they were trying to drain. The developer halted operations and even gave money for excavation. This was astounding because the development was too small to require any prior archaeology. A book will be out on this soon; the work was done by archaeologist Glen Doran and others. The developer was given a Stewards of Heritage Award by the Florida Archaeological Council during Preservation Week. The site was a pond in which people buried their dead some 7,000-8,000 years ago. Because everything stayed wet, organic remains were preserved, including sophisticated basketry and woven grass mats, wooden and bone artifacts, and even the skeletons of the dead, whose bodies were held down with wooden stakes and whose brains were still preserved inside the skulls. Working with communities of other scientists and medical professionals, Native Americans, developers and planners, and other interested parties, the archaeologists drained the pond and excavated part of the cemetery, then let the water come back in to preserve the rest. All kinds of interesting studies are going on with these materials, including DNA work. Meanwhile, the stone tool assemblage of the site consisted of just a few items. If it had not preserved any organic remains, the few bits of stone would not even have been enough to deem it significant and worth saving.



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What are the circumstances of food production in the New World? The movie *Corn and the Origins of Settled Life* showed the classic investigation in the Tehuacan Valley of Mexico by Richard ("Scotty") MacNeish, who died in 2001 and joined the archaeological record. His work documented the yearly seasonal movements of Archaic foragers, into which changes began to be introduced beginning around 8000 B.C., such as wild squash giving way to domesticated versions, and the earliest, tiny, nearly wild ears of corn appearing. Bone chemistry study is

lately indicating more corn or other grasses were eaten than we would think, given the record of animal bone at the site. Meanwhile, the people were still moving around the landscape, not settling down at all as they domesticated corn, in fact not until thousands of years later. So in this case sedentism comes after food production, whereas elsewhere, such as southeast Asia or south Florida, it comes before.

The sites of Guilá Naquitz cave in Mexico and Guitarrero Cave in the Peruvian Andes also document Archaic foraging lifestyles on the verge of domesticating plants and have produced, among other things, notable examples of fiber artifacts such as nets and basketry.

What is the evidence for elaborate ceremonialism and more complex society during the Archaic? The Poverty Point site in northeastern Louisiana was once considered an anomaly, a bunch of mounds and parallel earthworks that would have needed great coordination and leadership to construct, but dating to 1200 B.C., too early for food production. Can mobile hunter-gatherers settle in one place and build such monuments? Possibly the dependable resources of the Mississippi River floodplain allowed permanent, long-term settlement. Evidence for long-distance trade is seen in the distribution of other artifacts manufactured in this region of Louisiana. A complex lapidary industry produced fancy polished stone beads in the shape of owls and other birds. Some of these have been found as far away as north Florida, as have other associated items, such as weirdly shaped clay balls and microlithic tools. The clay balls may have been for cooking, since this was before the time of widespread pottery use.



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Now even earlier large-scale constructions have become known in the Southeast. I already mentioned the large shell middens in south Florida. In northeast Louisiana a complex of 11 mounds and connecting earthworks known as Watson Brake has been dated to earlier than 3000 B.C. This is far earlier than anything so complex in Mesoamerica. Does it mean complex society? Can you design and build such monuments without hierarchy or central leadership? I think so, but many do not.

How can we characterize North America after the Archaic period? In many parts of Canada and the western U.S., California, and northern Mexico, an essentially Archaic adaptation meant that foragers were still moving across the landscape when Europeans and other outsiders arrived to change history. But in the eastern U.S., the Southwest, and

Mesoamerica, intensification of food production led to Neolithic-style adaptations and, in Mesoamerica, true civilization.

What is the *Woodland period* in the eastern U.S.? Beginning around 4,000 years ago, the earliest pottery is developed during the Late Archaic the vessels being made of clay mixed with plant fibers. By 3,000 years ago, the beginning of the Woodland, we see more refined-looking pottery and burial mound construction as indications of some changing lifestyles, as well as a few domesticated indigenous weedy plants. Early Woodland mounds contained graves of people who were buried with a few artifacts, suggesting little social difference. By the Middle Woodland, described in your book as the Hopewell culture of the Midwestern region, there are large differences between grave offerings, suggesting a few people are vastly more important. Principal burials typically occur in log tombs below the center of the mound, to be covered over as the mound grows and other skeletons or cremated bones are interred. There is also evidence of long-distance origins of ceremonial items such as obsidian from the West and Florida conch shells ending up in Ohio and Kentucky mounds. Besides burial mounds, earthworks in many geometric and animal shapes were constructed with baskets or bags of soil. The Serpent Mound, a snake-shaped Ohio earthwork shown in the Hopewell chapter of the book (p.264), is now thought to have originated later in time.

In the Southeast there are just as many burial mounds, if not more, but different cultural names. The map (p. 266) showing Hopewell sites in the mid-continent only should be redrawn to include at least the northwest portion of Florida down to Tampa Bay. We have not only the famous Weeden Island site in the bay that gave our Middle Woodland culture its name, but also the Crystal River site, where we are going on our field trip, with many of the same kinds of exotic artifacts as are found in Ohio Hopewell. Some of the fancier raw materials buried in these mounds included mica, a shiny flat flaky stone obtained from the mountains,



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cold-hammered copper, all kinds of exotic, shiny stone, soapstone or steatite, sharks' teeth, and bear teeth. The Middle Woodland burial mound people were thought certainly to have been agriculturalists since they would have needed to settle down to do such monumental

construction. But we have evidence only of small gardens, and hardly any maize at all.



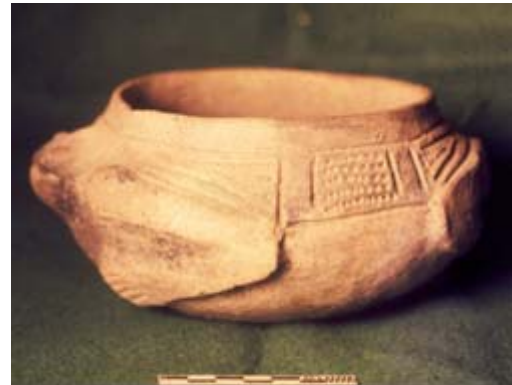
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How and when does maize get to the eastern U.S.? We are not sure of this at all, since the earliest domesticates were indigenous plants such as sunflower and chenopodium, but maize had to have come from Mexico. Somehow it got here, and by the Late Woodland, between A.D. 600-900, we see it increasingly in midden sites. Burial mound construction diminishes or disappears during this time—maybe everyone is too busy farming? The

maize-beans-squash complex was the foundation of southeastern (and southwestern) chiefdoms that were beginning to develop around 1,000 years ago.

What is *Mississippian culture*? We use this term to refer to the late prehistoric chiefdoms that developed all over the Southeast and Midwest, originally thought to have been earliest in the Mississippi Valley. The Cahokia site in East St. Louis, Illinois, is the largest Mississippian site, with some 100 mounds including Monk's Mound, the largest earthen mound in the whole hemisphere. See the photo of this mound (p. 275) dwarfing a car on the highway next to it. Mississippians built platform mounds, flat-topped pyramids with ramps leading up to the top, where the temple apparently stood. They look very much like earthen versions of Mesoamerican pyramids. Not only do we have many postmold patterns of structures, but also historic documentation from early colonial observers, who recorded the last remnants of the native chiefdoms in the eastern U.S. before they became extinct or were changed by this outside influence.

What is the evidence of social and even economic inequality, as well as ceremony and religion, in Mississippian culture? At Cahokia, the walled compound around Monk's mound separated houses inside and outside of it. Circles of wooden posts left features we call "woodhenges" that may have been for astronomical observations. In mound 72 were successive burials of important individuals with great numbers of wealth items, caches of stone points and pottery, copper, thousands of shell beads, mica, and piles of human skeletons suggesting sacrificial victims, perhaps servants or retainers of the important deceased. Though Cahokia was apparently abandoned by A.D. 1250, other regional temple mound centers were common in the eastern U.S. One of these is Moundville, Alabama, with similar multiple platform mounds and elite burials, plazas, and large village areas. Again your text does not do it well for the Florida area. The map of Mississippian sites (p. 277) shows only one in Florida, right in downtown Tallahassee (Lake Jackson mounds, which had elite burials with copper plates and huge shell bead necklaces).



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There are many others, including the Safety Harbor platform mound and Phillippe Park mound right on Tampa Bay. It looks like they may have been from chiefdoms that were NOT supported by intensive maize agriculture, however. It is hard to grow corn in south Florida, and the bounty of the coastal resources may have made farming unnecessary anyhow. The early Spanish accounts described sixteenth-century non-agricultural tributary chiefdoms among the Calusa and other historic native American groups.

How can we identify economically stratified, hereditary chiefdoms archaeologically? It is difficult to

distinguish between achieved status, accomplished by the deeds of a lifetime, and ascribed status, given to a person at birth. Grave goods with different individuals may tell us some things. Many archaeologists think that children buried with wealth items must have had ascribed status, but they could be just beloved of families who had achieved the power to obtain such wealth. We also must differentiate between differences in social status, esteem, and rank, which might be indicated by fancy clothing or other grave goods, and real economic differences, which might be better shown by nutritional differences seen in bone and teeth.

What about complex society in the rest of the U.S.? Northeastern Native Americans such as the Iroquois had clan-based, stockaded agricultural villages traceable back into prehistoric times at such sites as Draper, in southern Ontario. Early forms of the traditional longhouse can be seen as archaeological features. Interestingly, in the eastern U.S., though many warlike chiefdoms engaged in conflict over resources and power, according to our historic as well as archaeological evidence, most of the societies were matrilineal. This means that clan mothers and women in general had a high social standing and access to political power and abundant economic resources, including ownership of their children, households, and agricultural fields. Many archaeologists are now trying to look for different aspects of gender in the archaeology of the East.

This kind of matrilineal kinship and social organization was also present in the Southwest, where maize agriculture came in as early as 1000 B.C. and sedentary villages shortly thereafter. The Hohokam culture manifested at Snaketown in southern Arizona and northern Mexico developed irrigation systems and platform mounds associated with large villages. Anasazi settlements in New Mexico, such as at Chaco Canyon, included large multi-roomed pueblos and extensive transportation and exchange systems running over a network of roads; later the shift was to more defensible cliff dwellings, some of the most spectacular archaeological ruins in the country.



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What happened to Native Americans in the U.S. after contact and colonization by Europeans and others in the sixteenth century? Contact period studies are very popular in contemporary archaeology because they show what happens when cultures clash. British, Spanish, French, and other colonial powers treated natives slightly differently, with the medieval Catholic countries out for gold and souls for the church and the mercantile British moving in with consumer goods and mostly wanting the natives out of the way. In Florida, mission period archaeology is now just as hot as it is in the Southwest, even though there is more standing architecture in the latter region. But models in archaeology can be of different kinds; now we have the reconstructed Spanish mission church and Apalachee Indian chief's house and council house on their original locations at the Mission San Luis in Tallahassee. Are the reconstructions accurate? As much as possible, based on the postmold patterns and architectural possibilities for high thatched roofs with open ventilation for smoke from the central fire. How native and European changed with contact and colonization is also

becoming easier to interpret archaeologically because of the continuing location of historic documents in archives, especially in Spain.

Mesoamerican Archaeology; Origins of Civilization

Lesson Objectives: Characterize the anthropological understanding of the concept of civilization, compare models for its origins, see evidence in Mesoamerica and political interpretations and uses of the past there.



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Before we examine prehistoric cultural evolution of Mesoamerican civilizations, we must ask the question, what is *civilization*? Defined anthropologically, it includes several specific criteria first noted by V. Gordon Childe (p. 466), such as cities, full-time labor specialists, state bureaucracy and organization that goes beyond kinship systems, class stratification and economic surplus, monumental public works, long-distance economic exchange, engineering and mathematical systems, writing systems, and perhaps organized state religions. We have already seen some of these things in earlier prehistoric developments, but

they all come together into the most highly stratified sociopolitical system humans have developed, the state. Caution: do not confuse the emergence of food production and settled society in the Neolithic with the earliest state formation, which happened thousands of years later!

Where were the very earliest civilizations? At present we recognize six places in the world where the earliest or pristine states emerged independently: four in the Old World—Egypt, Mesopotamia, Indus Valley, and China; and two in the New World—the South American Andes and Mesoamerica.

What is meant by *Mesoamerica*? Central and southern Mexico, Guatemala and other parts of Central America, where several early states emerged, following long periods of establishment of farming villages. Notable achievements were the establishment of a calendar system and complex math, construction of pyramidal temples and sculpted stone monuments, ritual sacrifice of blood, hieroglyphic writing systems, and the earliest team sports, the ball game played with a ball made of sap from



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the rubber tree (show books on Mesoamerican ball game, Scarborough and Wilcox 1991 and Whittington 2001, and relate to team sports fanaticism in our society).



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Who were the *Olmec*? Along the Gulf Coast of Mexico, the term is used for the art style and associated early culture that is sometimes seen as ancestral to all the later great Mesoamerican states (the "mother culture"; certainly elements of later cultures are first seen in the Olmec horizon). Major characteristics are the huge carved basalt stone heads, stylistic attributes that emphasize jaguar faces and jade carvings, and earthen pyramid complexes, as seen at San Lorenzo. Olmec sites date to between 1500 B.C. and A.D.1, and there is debate over whether they were complex chiefly societies or the first true

Mesoamerican civilization.

Who were the *Maya*? An early Mesoamerican civilization that lasted from about A.D. 250-900 in the Yucatan area of Mexico and the lowlands of Guatemala and Belize. In Guatemala, El Mirador is an early site, and Tikal is a Classic period major center, with several huge pyramid complexes. Palenque, in Chiapas state, Mexico, is the center, with the tomb of the Lord Pacal. Chichén Itzá is a center in northern Yucatan that lasted longer after the collapse of major centers in the south. Advances in reading Mayan writing have allowed us to learn the names of rulers and the history of the rise and fall of different centers of political power. Agricultural production to support great populations of large Maya centers was made possible through construction of massive raised field complexes in the lowlands, which archaeologists often could not see without



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sophisticated remote sensing methods (see picture p. 339 of raised fields).



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Where are the sites of San José Mogote and Monte Alban, and what culture history do they relate to? In the Valley of Oaxaca, in the southern highlands of Mexico, they relate to the development of the Zapotec state, with major monuments and carved images of *danzantes* (dancers) who probably really represent war captives.

What sites relate to culture history in the Valley of Mexico? In the center of Mexico the highland valley

where Mexico City is located today was the home of an early great city-state called Teotihuacan. Reasons for its importance may have been irrigated farmland, abundant obsidian sources, religious prominence, and abundant temples. Neighborhoods of foreigners such as Zapotec and Maya have been identified within the huge city. Lasting for nearly 1,000 years, the city was abandoned after A.D. 750, to become a vacant sacred place by the time the Aztecs came along.

Who were the *Aztecs*? The last great civilization in Mesoamerica. They came to the Valley of Mexico and established their capital in A.D. 1325 at Tenochtitlán, under modern Mexico City, on a swampy island. They constructed chinampas (raised farm plots), causeways, and an impressive capital, and through conquest and alliance created a large empire by the time the Spanish arrived in the early sixteenth century. Then Cortez and his conquistadors from Europe defeated the native rulers, mostly with their germs, and built their own city on top of the site. But recently excavations

downtown have uncovered a great deal of this native history in Mexico, which can be compared with both Indian and Spanish written documents to learn more of the precolonial and colonial past. The photo on p. 358 showing downtown Mexico City with the Aztec principal temple superimposed on its original location is wonderful to show how one invading culture used

sacredness of place to defeat the other, and the Spanish built their cathedral in the same spot.



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Do not confuse the words Tehuacan (the valley where early maize was found in dry caves), Teotihuacan (the ancient city in the Valley of Mexico), and Tenochtitlán (the Aztec capital).

Are there any Maya, Zapotec, or other Mesoamerican native peoples left today? Yes, millions. Though some of these civilizations declined or disappeared before or at the time of Spanish conquest, the people are very

much alive and speaking several native languages. They also have enormous pride in their native heritage. Mexico's national archaeology program investigates, reconstructs, and interprets sites and monuments.

Discuss archaeo-tourism. In Mexico and elsewhere in Central America, visiting archaeological sites is the principal component of tourism. It is also economical travel for people from the U.S., who are incredibly rich compared with the average citizen of these poorer countries. If you plan your vacation with efficiency and also respect for the values of other cultures, you can see a lot of archaeology. You can also buy



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reproductions of famous stone monuments or pottery or other artifacts.



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Finally, you can see the use of ancient art styles and motifs as part of everyday life in many commercial and public areas, demonstrating the pride in the people's own heritage. Compare this with our public art and architecture, which usually has absolutely no connection with the cultural past of our own land.



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South American Prehistory

Lesson Objectives: Trace the development of several cultures on the continent; compare early civilizations here with others elsewhere on earth.



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What geographical and archaeological biases appear in the discussion of native civilizations in South America? As discussed in the book (p. 365), the focus is always on the Andes highlands and the dry desert western coast. Why is the jungle ignored in so many treatments of South American archaeology? Because, well, it is a jungle out there, which presents two problems: preservation of remains is not good, and it is very difficult to do archaeology. This situation often resulted in the view that everything important happened in the west of the continent and bits of things diffused eastward. Lately the work of Anna Roosevelt and others has shown complex and early sociopolitical evolution in the lowlands of Venezuela and Brazil that developed indigenously, with little or no stimulus from the outside. But there is essentially no treatment of this vast area of the continent in the textbook.

What are some general characteristics to note in South American civilizations? The culture

history presents a picture of the rise of horizon styles, sometimes associated with empire, and then the shift to smaller regional states, and back again. We will again look at just a few major sites, monumental centers. Preservation of organic remains is often excellent on the desert coast, where cultures are named after the valleys of the short rivers running to the sea on which they are located. Fascinating political systems based on community organization and state control and ownership seem to have evolved early. Centralized rulership and ancestor worship meant that the living maintained the monuments and compounds of dead rulers, and new leaders had to establish their own centers. Domestic animals are more important than in North America, especially the llama, for fur, eating, and carrying, and the guinea pig, for food. Massive stone construction took place. The archaeological record also shows how earthquakes and other continual tectonic movement, expectable in the relatively young mountain chain of the Andes, affected various cultural developments, as well as how the El Niño weather pattern affected people making a living on the Pacific Coast. South American civilizations are the only ones which developed no writing systems, though they recorded bureaucratic details in other ways.



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What is the *maritime hypothesis*? It is the idea that sedentary, year-round, large-scale settlement and the development of complex society is possible without agriculture in coastal areas such as western Peru, where the resources are plentiful and dependable. Mike Moseley, of the University of Florida, developed this hypothesis to explain the foundations of civilization in Peru. We have certainly seen early sedentism before in this class, even 4,000 years ago on the south Florida coast. But here the argument is that it can lead to even more complex developments.

How does evidence at the site of El Paraíso relate to this hypothesis? A major center on the desert coast, this site arose some 4,000 years ago during the preceramic period (before the introduction of pottery). Recent excavations have confirmed a dependence upon seafood, but there was also agriculture, especially of the industrial crop cotton. Beautiful cotton textiles, cloth, nets, etc., have been preserved in this exceedingly dry desert. Most of the food plants were wild, so the debate continues whether people would have needed farming to support the large population base. Meanwhile another argument against the near-total dependence upon the sea is that the periodic El Niño weather, which involves a warm current that kills off many species, would have made it impossible. Not mentioned in the text (p. 371) is that Moseley obtained evidence that during the times of El Niño, people just harvested different species that were not affected or that were more abundant.

What is the *Chavín horizon*? Named after the type site of Chavín de Huántar, this is the Early Horizon culture that may represent the earliest civilization, though most archaeologists now think it is not a single culture but demonstrates participation in a widespread ideological and possibly economic system. In both coastal and Andean areas, temple and plaza complexes and stone and pottery crafts are adorned with motifs that combine stylized geometric renderings with figures of jaguars, caymans (lizards), and other animals (many which live in the jungle!). The dating of Chavín to the last millennium before Christ and the emphasis upon jaguar and other such images suggests at least indirect connections with the Olmec in Mesoamerica. On the desert coast this horizon style is manifested in the Paracas culture, famous for its preserved colorful textiles which show the same artistic designs.



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What were the *earliest regional states* in South America? Between 200 B.C. and A.D. 600, the Moche culture on the north coast of Peru is famous for its *huacas* (pyramids), fine metalwork, and ceramics that depicted every conceivable area of daily life as well as spiritual and humorous ideas. The Huaca del Sol and Huaca de la Luna (pyramids of the sun and moon) at the Moche site were constructed with millions of adobe bricks that have marks possibly indicating different brickworkers' groups. Sipan is a Moche culture site at which recently excavated unlooted tombs show royal burials rich with gold and other finely crafted artifacts, as well as evidence relating to the ceremonial system. High-status individuals are buried with regalia making them look like the actual figures depicted in Moche art. Amputated hands and feet and skeletons of people who were clearly killed document the early development of ritual human sacrifice. Nazca was another regional state, on the south coast of Peru, developing out of Paracas. Besides pyramid centers, elegant textiles, and colorful painted pottery, this culture is most famous for the Nazca lines, drawn on the floor of the desert over several hundred square miles, in the shapes of

geometric figures, animals, and other forms. Yes, they are seen more clearly from the air, but they are also easily seen from the ground or the surrounding hills, and do not need ancient astronauts from another galaxy to have been accomplished! They were drawn by removing dark rocks to expose lighter desert floor; their meaning is unknown, but many designs are of animals from the faraway jungle or sea.

What is the first evidence of possible *empire*? During the Middle Horizon, between about A.D. 400-1200, the cultures we call Wari and Tiwanaku arose, respectively, in the regions of southern Peru and of Bolivia and Chile. The Tiwanaku site, on the high-altitude Bolivian altiplano around Lake Titicaca, was a grand city with the famous stone-sculpted Gateway of the Sun. These people also constructed raised platforms with complex engineering for intensifying agricultural production on low wetlands and had distinctive artistic styles and evidence of militaristic conquest.



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After the breakdown of these probable empires, what other, *late prehistoric regional states* emerged? The Chimu are known both from archaeology and from history that the Inca told to the Spanish. The Chimu capital at Chan Chan on the north coast was a huge city that controlled a state stretching from southern Ecuador to central Peru. It had extensive road and canal systems

and craftworkers, especially goldsmiths, who made highly prized wealth items. This state lasted from about A.D. 800 until 1470, when it was conquered by the Inca, who brought Chimú goldsmiths to their own capital.



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Who were the *Inca*? The last great civilization of South America, they were similar to the Aztec of Mexico in gaining power by militaristic conquest and strategy, and only began creating an empire in the fifteenth century, shortly before the Spanish arrived. Our knowledge of them is historic archaeology because we have Spanish documents, but the Inca had no writing system. Instead they used the *quipu*, a system of colored, knotted cords, to keep records. They built the largest empire in the world up to that time and connected it with an elaborate road system through the Andes. The capital was Cuzco, a highland

city which retains much of its prehistoric construction plan. Machu Picchu is a highland fortress and royal estate famous for its inaccessibility and was apparently little-known or altered by Spanish conquerors. Inca construction techniques used huge pillow-shaped stones that fit together well without mortar. Construction was done by the *mit'a* system of groups of laborers drafted into state service for specific tasks. Communication over the vast network of roads was done by a relay messenger service of runners. The socialistic governmental system was unlike anything known in Western society. The state owned all the land and goods and people were fed and cared for, but owed labor taxes or tribute in textiles and other goods. The Inca empire fell to Spanish conquistadors under Pizarro, who arrived in 1532.

Are the Inca and other native South Americans gone? No. The large Indian populations of course reflect all the change occurring over 500 years of European dominance, but some native languages such as Quechua, the language of the Inca, are still spoken. Indigenous peoples in South America remain mostly dominated by elites, however, of Euro-American or other “foreign” descent.



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What about archaeo-tourism and antiquities problems?

There are many sites that can be visited, and museums filled with beautiful pottery, gold, and textiles. While it is similar to Mexico in that Americans can visit economically, the poverty of Peru and the region today is great. Looted antiquities are often the major means of subsistence of poor farming communities. The Sipan discoveries came after a disgruntled looter reported others to the police; it is famous because there had never been an unlooted grave discovered before. The market for such antiquities is high, such that the local looter gets a pittance compared with what the piece brings the dealer at auction in New York or London. It is hard for the public to understand that this is destruction of someone’s heritage. It is hard to care about heritage when you are starving or, alternately, when it is not thought to be your own heritage and all you want

is some beautiful decoration for your wall. While public education is crucial, archaeo-tourism can have its negative sides too. Recently the ceremonial stone pillar at Machu Picchu was cracked by a crane involved in filming a beer commercial there!

Old World Prehistory, Origins of Civilizations

Lesson Objectives: Compare civilizational development in four pristine states (Mesopotamia, Indus Valley, Egypt, China), later states such as Great Zimbabwe, and the evolution of complex societies in Europe.



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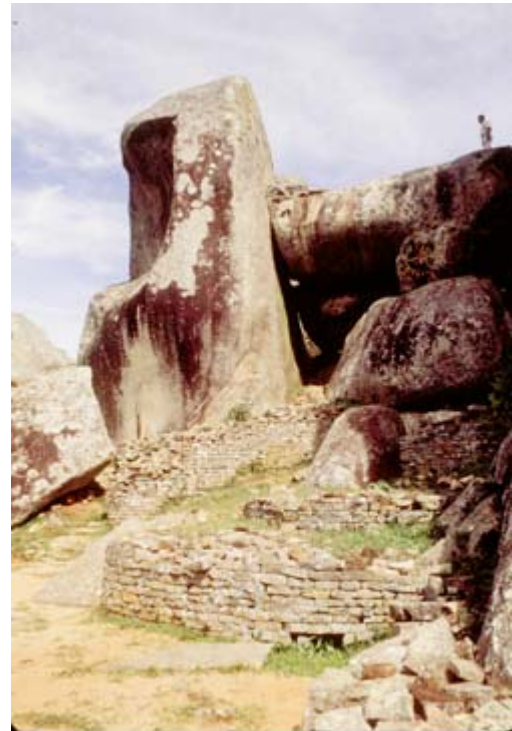
Even more than the previous sections on North and South America, this section is the very briefest of summaries of the whole rest of the world, highlighting only one or two sites from the hundreds of thousands that are important in the development of local and national cultural traditions (and several chapters of the text are skipped). It eliminates completely the later, secondary states that are part of what are sometimes called the classical civilizations, such as Greece and Rome, and many many others that are often studied in history classes even though they have a rich archaeology. Also NOT covered in this section are the historical archaeology of most of the world and the development of secondary states in most of the world (Great Zimbabwe is an exception to this).

Briefly describe the *pristine states* that emerged in the four areas of the Old World. The first civilization in the world arose in *Mesopotamia*, the land around the Tigris and Euphrates Rivers in Iran and Iraq, in southwest Asia, around 3000 B.C. It was characterized by temple-based cities such as Eridu, with stepped pyramids called ziggurats, canal irrigation farming, and cuneiform writing on clay tablets. The earliest city emerged at Uruk, where early dynasties used armies with bronze weapons and chariots to conquer and control. A succession of city-states rose and fell, and

powerful leaders and elites were buried with incredible wealth, including wagons and chariots, oxen, and human servants and other sacrifices, showing marked social stratification. How does

this history relate to what is going on in this region of the world today? Can constant conflict become a part of culture history destined to continue?

Describe the rise and fall of early civilization in the *Indus Valley* of Pakistan and India. The Harappan civilization, as we just saw in the movie about Mohenjo-daro, arose in a river valley environment similar to that of Mesopotamia between 2600-1900 B.C. Incredibly well-planned cities had covered drains, periodic rebuilding possibly due to flooding, standard weights and measures, evidence of extreme craft specialization, and a writing system we cannot yet read. There was far less socioeconomic differentiation—no rich tombs or elaborate palaces. For this reason, and because of the lack of evidence for military might, some want to bump down this culture to the level of chiefdom and not a true civilization. And yet there are many connections with modern civilization in the region seen in the archaeological record, such as depictions of yoga, ritual burning and bathing, costumes, and bull and elephant symbolism. Do cultures have to be aggressive and military to be civilized?



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How early did *Egyptian civilization* develop, and how was it different? It was centered along the Nile River, whose dependable annual flooding supported extensive agriculture, and after emerging before 3000 B.C. lasted as a centralized entity for over 2,500 years. The Upper and Lower Egypt segments were unified by the first pharaoh, and there followed different kingdoms and dynasties recorded in written hieroglyphs that we can read well. Famous pyramids and other monumental architecture were built at Giza and many other places for individual rulers, reflecting power and complex organization and engineering. Many think Egyptian civilization in general was more conservative and insular, but of course there were connections with other complex Old World cultures. We are perhaps more familiar with Egypt from the popular media; King Tut was not all that important; he just happened to have a tomb that remained unlooted until recent times and was able to be studied better.



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What are the highlights of the rise of the state in *China*? Beginning in 2205 B.C., we have written records of the earliest dynasties, and we try to establish the archaeology of each of them. An-yang is an ancient capital city of the Shang dynasty, 1766-1122 B.C., which has a royal center and household at its center, bronze foundries and other craft centers, and royal burials with sacrificed retainers, horses, chariots, and luxury items such as huge bronze pots. During the Qin

dynasty, conquest of many regions led to the first imperial state (221 B.C.), with the capital at Xianyang. The Great Wall was completed on the northern border, the legal system codified and writing system standardized, and paper was invented. The first emperor's tomb was built over many decades; it covered a 500-acre complex and contained some 8,000 life-sized terra-cotta figures of warriors and horses with wooden chariots, arrayed for battle with thousands of swords and other artifacts. Clearly there was enormous sociopolitical stratification.

Where else did states emerge in the world? Nearly everywhere, eventually, as secondary states built upon or were influenced by earlier forms. We will not have time in this class to discuss the Mediterranean, Rome, or Greece, not to mention Southeast Asia and other locales, though these places have rich archaeological records as well.

Why are *west and south African sites* included in the textbook but not other places? Probably because sub-Saharan Africa is still ignored, just like all of eastern South America and much of Southeast Asia, in standard courses and textbooks. These regions are all hot and forested, and/or in the Southern Hemisphere, and still relatively alien to Western culture. But there is much to learn, and we can now abandon the ethnocentric interpretations of the past that saw development of cultural complexity as the product of diffusion from external, more superior cultures. The city of Jenne-jeno, inland on the Niger River in southwestern Mali, had been settled for a millennium



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when it became prominent around A.D. 800 as a trade and ironworking center, declining after the arrival of Arab traders and the introduction of Islam.



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The civilization represented at *Great Zimbabwe* in south central Africa is now recognized as a product of the indigenous Shona (Karanga) people. Beginning about A.D. 1250, enormous stone structures and enclosures were built into the natural rock outcrops and on the open plain. The conical tower is solid and of unknown function. This center and others grew in power, with cattle herding and commercial connections with Indian Ocean settlements, including trade with Arab and Indian merchants. Its importance declined after the sixteenth century, when the

Portuguese established a fort on the coast and disrupted trade. The name of the site became the name of the country after colonial dominance was thrown off and Rhodesia became Zimbabwe. The famous stylized depiction of a bird, from stone statues at this and other sites, is now on the

face of the Zimbabwe dollar. Part of the post-apartheid African renaissance, the archaeology of this region has come a long way since a government archaeologist was fired in the 1950s for suggesting that Great Zimbabwe was created by indigenous people and not intruding superior Arabs or other outsiders. The archaeology director at the site today is Edward Matenga, who is native to the area.

Why does the book go from a few places on the map to more intensive treatment of European archaeology? Because it is ethnocentric and geared for the English-speaking audience whose ancestral home is Europe, and because more archaeology has been done in Europe so we do know a lot.

Why spend a class on *Ötzi, the Ice Man of Europe*? He is one of the most sensational recent discoveries, is the subject of lots of hot new scientific study, and is an archaeological resource embroiled in political and interpretive and professional issues and controversies that can illuminate some of the realities of twenty-first-century archaeology. Though he only gets three pages in the text (479-481), he will probably get more in the next edition. After this frozen guy started melting out of an Alpine glacier in 1991, he was found by lay people, climbers who tried to hack him out with ski poles and with a stick they later found to be one of his ancient artifacts. Encounters with the law and with others who tried to help preceded his excavation by local archaeologists. They had to go back to do the job properly and record other associated artifacts. Experts fought to have him, and surveyors were brought to redo the international boundary, determining that he was actually found in Italy. He was examined in both Austria and Italy and now, finally, sits in a special cold room in the museum in Bolzano, Italy. Tattoos on the body are in places where there was arthritis, so they may be medical or magical. Stomach contents showed diet, and pollen indicated that the time of death was in the spring. Artifacts included bow and arrows, a chipped stone knife, and an ax determined to be of copper; he was thought to be of a Bronze Age culture, but the ax and a radiocarbon date indicated a late Neolithic placement, about 5,300 years ago. Scanned images just detected an arrowpoint in his back, and reconstructions of his violent death scene are legion, though he could easily have been killed by a hunting accident of the kind we have in Florida all the time! Medical, diet, genetic, and other fancy studies continue, and each one brings new sensational imaginings about his culture and means of death.



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Lesson Objectives: Demonstrate knowledge of the [Seven Principles](#) and expand on them to relate archaeology to modern society and the students' own lives.

Class discussion of the following questions, including material from a good book on public archaeology (Little 2002).

Basic Archaeological Methods: How have you have seen them used to uncover the culture history and process of culture change throughout the world? Whether pollen analysis, radiocarbon dating, or remote sensing, you should know how they are applied in different situations. How do we know where to dig? How do we set up a survey or excavation? What different kinds of analysis will be possible with materials recovered? What different interpretive frameworks can we use to reconstruct the past?

Communication Skills: What is your primary responsibility to establish the basic principles of archaeology? At your next cocktail party conversation, can you clarify how it is NOT dinosaurs, NOT ancient astronauts, how radiocarbon dating must have some carbon, etc.? Can you explain in clear, non-technical language why and how archaeologists sample? You also must know how to write well-organized essay questions on your test.

Professional Ethics and Values: How have disputed interpretations and personal situations affected our reconstructions of the past by different professionals? How does an archaeologist surveying for a new construction respond to offers of more money if nothing is found? How about a donor who wants to give a million dollars to dig the whole thing up? We must remember conservation archaeology. What do you think of the popular kids' magazine put out by the Archaeological Institute of America whose title is *Dig*? What about museum exhibits encouraging kids to dig? Was archaeology of the past and as shown in modern movies more looting than science?

Diverse Interests in the Past: Who are all the communities affected by a local dig? In our excavations on campus I tried to include them all: the students who were learning in field methods class; the Native American community; the campus officials who needed to build new construction on the site and so needed compliance with state law; the public, especially local communities, university students, and schoolkids, whom we invited out to see the excavations; and the communications media who came with cameras and tape recorders. I forgot one important community, and it almost was a disaster. The campus parking services required permits for all of us—students, professor, and the public—to be in the lot next to the excavations, and everyone almost got ticketed until I worked things out with the director!

Stewardship: How can the public be encouraged to help protect the sites and artifacts when there are so many other worthy causes out there? Public education is always the answer. The Cub Scouts who came to our site on campus learned of a shell midden on the beach where they meet; they can monitor site erosion and bring exposed features to the attention of officials.

Social Relevance and Real-World Problem Solving: Who cares if the early human cultures succeeded or failed, if monogamy was or was not the original human condition, if warfare is important to build major civilizations, or if Romans died out from lead poisoning in their fancy plumbing systems? Why should we care if all these peoples are extinct anyway and not relevant to the advances we hope to make in modern life?

Many answers should be obvious. What is the original character of human nature? Now even chimp field studies are showing that cultural diversity is natural (e.g., Gibbons 1992). What biases in the Paleolithic “man the hunter” and other models relate to controversial current debates about the nature of humanity, not to mention male vs. female nature? When did hunting become common in our past? (see Binford 1988). What do overkill models for the Pleistocene have to tell us today? How is knowledge of massive environmental change at the end of the Ice Age pertinent now? What about gender in prehistory in terms of plants and animals, not to mention social learning?

How can we relate evidence of prehistoric violence in the Middle East or coca use in Peru or such issues anywhere else to modern politics? How can the heritage of the past be preserved in different parts of the world today when other problems, such as wars and terrorism, may be more pressing? What are the ethical obligations of the archaeologist in foreign countries vis-a-vis artifacts, national and foreign students, local populations, economics, political tensions, wealthy collectors, and other stakeholders? Can you do “emic” archaeology (see Wolle and Tringham 2000)?

What about truly practical contributions of archaeology? Maybe the most important is to contribute long-term data on the effects of humans upon their environments and the effects of environments and ecosystemic changes on human cultures. How has the garbage project (or any other) produced practical applications about our massive waste disposal, pollution, and resource use and wasting problems? (Rathje 2002)?
