WORLD HISTORY
THE BIG ERAS
BIG ERA THREE

RISE OF CIVILIZATIONS

Farming and the Emergence of Complex Societies

10,000–1000 BCE

General Editor

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The units in this book are drawn from the Landscape Teaching Units of World History for Us All, a web-based model curriculum for world history (http://worldhistoryforusall.sdsu.edu). The website is continuously evolving with new content being added. If a topic is not included here, please visit the website to see if it is currently available.

A Companion to World History for Us All
A Model Curriculum for World History
http://worldhistoryforusall.sdsu.edu

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Publisher's Note

BACKGROUND

The Big Era lessons emphasize the relationships between particular subject matter and larger patterns of historical meaning and significance. This inclusive, context-focused approach is primarily concerned with forging connections on a global scale, thereby encouraging students to construct the globally integrated chronological framework essential to achieving deeper historical understanding. The lessons may be used flexibly, depending on interest, school curriculum requirements, and instructional time available.

This volume brings together the Landscape Teaching Units of Big Era Three in World History for Us All, a web-based model curriculum for world history available online at http://worldhistoryforusall.sdsu.edu. The nine Big Eras constitute the periodization plan and the basic organizational structure of the World History for Us All curriculum. Many teachers have requested a printed version of the Big Era units, or lessons, to help guide them and their students in exploring historical developments, continuities, and turning points on a larger scale than textbooks or content standards lists offer.

GENERAL APPROACH

Chapters begin by explaining the educational value of their particular historical moment, identifying the topic's relevance and positioning it within the context of the global landscape. Outlining salient information in a written description and visually situating the era on a time line, the chapter's introductory section foreshadows the content and underlying themes of the chapter, preparing students to draw informed connections among historical events.

The Three Essential Questions and Key Themes encourage students to engage in critical, higher-order thinking as they solidify their comprehension of major world trends. (See below for further description.) Additional introductory material enumerates the chapter's learning objectives, estimates the time commitment required, and lists the materials necessary to complete the lessons.

The lessons offer a varied selection of activities, readings, primary source documents, discussion questions, assessments, and extension activities. The teacher's guides, containing instructions for lesson preparation, procedure, and background information, are followed by each lesson's reproducible student handouts. Charts, graphs, and maps referenced in the lesson are also provided.

Correlations to National History Standards are listed to enhance convenience for teachers designing their curricula to align with these content recommendations. All the lessons in this volume support learning and practice of critical-thinking skills. By teaching these lessons, instructors will help students develop the skills charted in both the Common Core State Standards Initiative and the *College, Career, and Civic Life (C3) Framework for Social Studies State Standards*. Extensive correlations for this volume to Common Core State Standards are found on the web-based product page at http://www.socialstudies.com/c/product.html?record@TF45334. The resource sections recommend books, articles, and digital content selected as means to further explore the chapter's historical concepts and expand the scope of understanding for both educators and students.

This book and the World History for Us All model curriculum use the secular designations BCE (Before the Common Era) and CE (Common Era) in place of BC and AD. This usage follows the format of the National Standards for History and the Advanced Placement World History course. It in no way alters the conventional Gregorian calendar. We also use BP (Before Present) for historical periods approximately prior to 10,000 BP.

GEOGRAPHICAL TERMS

Afroeurasia

Afroeurasia is the landmass made up of Africa and Eurasia combined. Afroeurasia was formed during the last forty million years by the collision of the tectonic plates containing Eurasia and those containing Africa and Arabia. This geographical expression serves as a helpful tool in discussing large-scale historical developments that cut across the traditionally defined continental divisions of Africa, Asia, and Europe. Even though Africa is separated from both Europe and Asia by the Mediterranean and Red seas (except at the Isthmus of Sinai where modern Egypt meets Israel), these bodies of water have historically been channels of human intercommunication, not barriers to it. Therefore, we may think of both the Mediterranean and the Red Sea as "lakes" inside Afroeurasia.

America, the Americas

The Americas are made up of the continents of North America and South America, including neighboring islands, notably the islands of the Caribbean Sea. Until the twentieth century, most geography books classified North and South America together as a single continent, labeling them the "New World" ("new" to Europeans beginning in the late fifteenth century CE) as opposed to the "Old World," that is, Afroeurasia. In the twentieth century, school children in the United States and most other countries (though not in some Latin American states) were taught to see the "Western Hemisphere" as comprising two distinct continents, joined only by the narrow Isthmus of Panama. However, humans in North and South America have never been entirely disconnected from one another. As far as we know, humans first migrated from North to South America 14,000 years ago, or longer, by advancing along either the Isthmus or its coastal waters. Also, it is not hard to perceive the Gulf of Mexico and the Caribbean Sea as two "internal seas" of a single American landmass, much the way we may think of the Mediterranean and Red seas as "inside" Afroeurasia. The Caribbean and the Gulf of Mexico are bounded on three sides by land and on the west by a long string of closely clustered islands.

Australasia

The continent of Australia, plus New Guinea, New Zealand, Tasmania, and other neighboring islands make up Australasia. During the last Ice Age, when sea levels were lower, Australia, New Guinea, and Tasmania comprised a single landmass known as Sahul. Human settlement of Australasia began as many as 60,000 years ago, although Polynesian mariners did not reach New Zealand until about 1000 CE.

Eurasia

Eurasia is the landmass made up of Asia and Europe. Today, this term is widely used in history and geography education. The idea that Europe and Asia are separate continents goes back many centuries, but scholars who accept the definition of a continent as "a large landmass surrounded, or nearly surrounded, by water" know that the definition applies to neither Europe nor Asia because these two landmasses are conjoined. Moreover, the Ural Mountains, designated by eighteenth century European geographers as the proper boundary between the European and Asian continents, have never been a serious obstacle to the flow of migrants, armies, trade goods, or ideas. In this book, Europe is defined as a subcontinent of Eurasia (or Afroeurasia), analogous to South Asia or the Indochinese peninsula.

Great Arid Zone

A climatic map of Afroeurasia shows that a good part of the landmass is a belt of dry or semi-dry country that extends all the way from the Atlantic coast of Africa in a generally northeasterly direction to the northern interior of China. This enormous tract comprises a chain of interconnected deserts, mountains, and semi-arid steppes. A steppe may be defined as flat or rolling grassland, equivalent to what Americans call "prairie" and Argentineans call "pampas." The main climatic characteristic of the Great Arid Zone is low annual rainfall, which may range from an average of less than 5 inches in the driest of deserts to 20 inches or so in better watered steppes. For several millennia the Great Arid Zone has been home to pastoral nomadic peoples. Where water has been available from rivers, springs, or wells, it has also been home to farming societies and even large cities.

Indo-Mediterranea

The region of lands and seas extending from the Atlantic coasts of Europe and North Africa to North India is known as Indo-Mediterranea. This expression includes the Mediterranean basin as a whole and extends eastward across Southwest Asia to northern India as far as the Bay of Bengal. In the long term of human history from at least the third millennium BCE to modern times, this region has been characterized by a proliferation of clusters of dense population (notably in river valleys) and by intense commercial and cultural interchange.

Inner Eurasia

The huge interior landmass of Eurasia, whose dominant features are flat, semi-arid regions of steppe and forest, is known as Inner Eurasia. David Christian defines Inner Eurasia as the territories ruled by the Soviet Union before its collapse, together with Mongolia and parts of western China. Poland and Hungary to the west and Manchuria (northeastern China) to the east may be thought of as Inner Eurasia's borderlands. The northern margins are boreal forest and Arctic tundra. The southern boundaries are the Himalayas and other mountain chains.

Oceania

The basin of the Pacific Ocean and its approximately 25,000 islands make up Oceania. Human settlement of this enormous region, sometimes called the Island Pacific, began in western islands near New Guinea about 1600 BCE. Polynesian mariners reached both Hawaii to the northeast and Easter Island to the far southeast around 500 CE. The majority of the islands lie in the tropical belt south of the Equator. The first peoples of Oceania spoke mostly Polynesian languages. Some geographers include both the large island of New Guinea and the continent of Australia as part of Oceania.

Southwest Asia

Southwest Asia is the designation of the region extending from the eastern coast of the Mediterranean Sea to Afghanistan. It includes Turkey and the Arabian Peninsula, but not Egypt or any other part of Africa. This region is often referred to as the Middle East, but this book uses the term "Middle East" only in the context of history since the start of the twentieth century. (For earlier periods, "Middle East" causes confusion because it is used sometimes as a synonym for Southwest Asia, sometimes to encompass Southwest Asia plus Egypt, and sometimes to embrace the entire region from Afghanistan to Morocco.)

THREE ESSENTIAL QUESTIONS

The Three Essential Questions introduce overarching thematic questions that stand at the crux of historical understanding. These questions provide three distinct lenses through which to examine the constantly evolving relationships that shape human civilization: the relationships between humans and the environment, humans and other humans, and humans and ideas. The study of these relationships—which have proven to be enduring aspects of the human experience—and their corresponding questions function as guides for organizing classroom activities and discussion. Prompted by the Three Essential Questions, students identify how the content of each chapter relates to these themes and utilize this information to predict future patterns of activity and thought.

Humans and the Environment

These questions require students to consider how humans have lived, how they have treated the earth, and how their power over the earth has grown, while relating each chapter's content to the underlying question, "How has the changing relationship between human beings and the physical and natural environment affected human life from early times to the present?"

Humans and Other Humans

These questions explore the relationships among humans themselves and how those relationships have evolved, while relating each chapter's content to the underlying question, "Why have relationships among humans become so complex since early times?"

Humans and Ideas

These questions push students to examine how ideas influence historical development and how events shape ideas, while relating each chapter's content to the underlying question, "How have human views of the world, nature, and the cosmos changed?"

KEY THEMES

The lessons in this volume address a number of historical themes. A theme is defined here as a topic that addresses a particular sphere of human activity over time. Themes are concerned with broad aspects of change of enduring importance in the human experience. Historical learning usually works best when students begin their investigations in world history with distant eras and move forward, connecting patterns of cause and effect over time. Nevertheless, attention to thematic issues offers ways to connect the study of particular periods and regions of the world to enduring aspects of the human condition. This encourages students to think more coherently, systematically, and comparatively about the past. Teachers may wish to emphasize one or more of the key themes suggested here in connection with any of the chapters and lessons in this book.

Key Theme 1: Patterns of Population

Key Theme 2: Economic Networks and Exchange

Key Theme 3: Uses and Abuses of Power

Key Theme 4: Haves and Have-Nots

Key Theme 5: Expressing Identity

Key Theme 6: Science, Technology, and the Environment

Key Theme 7: Spiritual Life and Moral Codes

For in-depth discussion of these themes and for investigative questions that link them to the Three Essential Questions, go to World History for Us All (http://worldhistoryforusall.sdsu.edu, Questions and Themes, The Seven Key Themes).

Introduction

About 10,000 BCE (12,000 BP), some human communities began to move in a new direction. For the first time, they began to produce food in a systematic way rather than by hunting or gathering all their food in the wild. The emergence of farming and the far-reaching social and cultural changes that came with it sets Big Era Three apart from previous eras.

From one perspective, the advent of farming was a slow, fragmented process. It happened independently in several different parts of the world at different times. It occurred as a result of people making thousands of minute decisions about food production without anyone deliberately setting out to "invent agriculture." Even though some people started farming, others continued for thousands of years to live entirely on wild resources, or to combine crop growing with hunting and gathering.

From another perspective, we might argue that agriculture took the world by storm. The Paleolithic era of hominid and human tool-making went on for more than two million years. Farming settlements, however, appeared on all the major landmasses except Australia within a mere eight thousand years. Foraging societies may have retreated gradually, but today, just twelve thousand years after the first signs of agriculture, they have all but disappeared.

We may define farming as a set of interrelated activities that increase the production of those resources that humans can use, such as cattle, grain, or flax, and reduce the production of things humans cannot use, such as weeds or pests. In order to increase the production of useful resources, farmers systematically manipulate their environment, removing those species they do not want and creating conditions that allow the species they favor to flourish. Thus, we plow and water the land so that our crops can thrive, and we provide food and protection to the animals we need. This is why the emergence of societies based on agriculture, called agrarian societies, involved a complex interplay of plants, animals, topography, climate, and weather with human tools, techniques, social habits, and cultural understandings.

The fundamental technological element of this interplay was domestication, the ability to alter the genetic makeup of plants and animals to make them more useful to humans. Scholars have traditionally labeled the early millennia of agriculture the Neolithic Era (meaning "new

stone age"), because humans developed a more varied and sophisticated kit of stone tools in connection with the emergence of farming.

Systematic food production contributed hugely to the amazing biological success of Homo sapiens. In Paleolithic times, human populations underwent extensification, whereby they multiplied and flourished by spreading thinly across the major landmasses of the world (excepting Antarctica) and by adapting to a wide range of environments, from equatorial forests to Arctic tundra. In Big Era Three, however, a process of "intensification" got under way. This meant that by producing their own resources with the help of domesticated plants and animals, humans could settle and thrive on a single land area in much greater numbers and density than ever before.

The consequences of intensification were astonishing. In the 9,000 years of Big Era Three, world population rose from about 6 million to about 120 million, a change involving a much faster rate of increase than in the previous eras. Such growth, in turn, required unprecedented experiments in human organization and ways of thinking.

CHAPTER 1

By Anne Chapman

Getting a Grip on the Food Supply

Domestication and Its Results

WHY STUDY FOOD SUPPLY?

Without the shift from hunting/gathering to farming/herding, the development of the complex societies that gave rise to our current way of life would not have been possible. This chapter deals with the origins of agriculture, which first took place in Southwest Asia starting about 11,000 years ago. It also considers the results of the shift from collecting to producing food, which paved the way for the complex societies that first arose in the world about 5,000 years ago. This chapter alerts students to the historical processes that led to farming and herding, one of the key turning points in human history. Note that the dates cited in this chapter are approximate and provisional, subject to change as new research emerges.

OBJECTIVES

Upon completing this chapter, students will be able to:

1. Explain how the shift to domestication first came about
2. Compare the life ways of Paleolithic hunter-gatherer communities (about 23,000 years ago) both with those of hunter-gatherers who relied significantly on wild grain (about 10,000 years ago) and with those of farmers (about 9,000 years ago)

3. Assess the advantages and disadvantages of the shift from a hunting/gathering to a farming/herding way of life
4. Articulate a concept of "progress" based on evidence

TIME AND MATERIALS

This chapter is versatile. Each of the two lessons may stand on its own, taking one or two 45-minute class periods each. Time taken will vary, depending on how long is spent on the introductory activities, lesson activities, discussion, assessment, and homework. No materials are needed other than copies of the student handouts, and for some activities, pencil and paper.

HISTORICAL CONTEXT

The domestication of plants and animals meant a revolutionary increase in human control over food supplies. In the process of domestication, humans deliberately cultivated and raised selected plants and animals in places they chose, regulating their growth and reproduction. This resulted in a five- to ten-fold increase in the number of people that a given unit of land could feed. Even greater increases came later. However, hunting remained for a long time an important food source in farming communities.

Historians do not fully understand the reasons why shifts to farming took place in Southwest Asia and other regions at the particular times they did, especially considering that anatomically modern Homo sapiens had been successfully gathering and hunting for more than 200,000 years. Several factors certainly played a part:

- First, Southwest Asia had an unusually large number of species of large-seeded grasses compared to other world regions: 32 of them compared to 5 in Central America, which had the next highest number. Two kinds of wild wheat and barley, among other grasses, grew in the area where farming began, as well as the wild ancestors of lentils, peas, chickpeas, and flax. Women and men domesticated all these between about 11,000 and 9,500 years ago.
- Second, four of the most promising wild mammal candidates for domestication—sheep, goats, cattle, and pigs—were all found wild in Southwest Asia. It is the only place in the world where their range and that of the wild wheat and barley species overlapped.
- Third, a climate change may in some areas have reduced the availability of the wild grasses, leading people to experiment to try to increase the productivity of a resource they had come to rely on.

Population among farmers rose. Permanent settlements multiplied and grew in size. Surpluses could be consistently produced and then stored in containers or on the hoof. Important here was the invention of pottery about 7,000 years ago in which food could be both stored, cooked, and transported. Some individuals and families began to accumulate more surplus wealth than others, which led to inequalities of power, influence, and well-being. Leadership under

these new conditions required different skills and justifications than in small hunting-gathering communities. The need grew for conflict resolution, for symbolic ways to unify larger populations, and for defense of stored surpluses against rivals and outsiders. Production of surplus crops and herds made it possible for a community to support people who did not grow food themselves but had specialized jobs as artisans, priests, soldiers, and political chiefs. Because farming peoples lived in larger, denser communities than did hunter-gatherers, infectious diseases appeared and spread more easily, partly as a result of close contact between humans and infected domestic animals.

THREE ESSENTIAL QUESTIONS

Humans and the Environment

"The invention of farming had such a negative impact on the natural environment that humans should never have done it. They would have been better off remaining hunters and gatherers." Debate this statement.

Humans and Other Humans

How do you think social and economic relations between adult men and women in early farming villages and in hunting-gathering bands might have differed? Why do you think changes took place? How do you think gender relations in early farming villages and in urban societies today might generally differ? Why?

Humans and Ideas

What inferences might we make about religious beliefs and practices of people in the Neolithic Era from archaeological evidence? Can we possibly know anything about what people *believed* in the absence of written documents? What might you infer about peoples' religious beliefs or practices by simply examining the exterior of a church, a mosque, or a synagogue?

KEY THEMES

This chapter addresses the following historical themes:

Key Theme 1: Population Patterns

Key Theme 6: Spiritual Life and Moral Codes

Key Theme 7: Science, Technology, and the Environment

CORRELATIONS TO NATIONAL HISTORY STANDARDS

National Standards for World History
The Beginnings of Human Society. Standard 2A: The student understands how and why humans established settled communities and experimented with agriculture; Standard 2B: The student understands how agricultural societies developed around the world.

INSTRUCTIONAL RESOURCES

Bellwood, Peter. *First Farmers: The Origins of Agricultural Societies*. Malden, MA: Blackwell, 2005.

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LESSON 1

Be the First to Practice Domestication

An Archaeology-Based Simulation

Introductory Activities

1. Ask students to brainstorm: If you had to pick one thing that distinguishes domesticated plants and animals from their wild ancestors and relatives (that clearly divides all domesticated flora and fauna from all wild species), what would it be? Compare ideas, and have students try to pick the most significant distinguishing characteristic of domestication, and explain why they consider it the most significant.

2. Ask half the students to list the most important advantages, the other half, what are the most important disadvantages, of keeping animals such as goats, sheep or cattle as domestic animals rather than hunting them. Compare the answers that students list.

   Discussion: Do the advantages of having domesticated animals outweigh the disadvantages? Ask students to explain their answers. Did advantages clearly outweigh disadvantages at the time domestication of animals first began?

3. This activity lends itself well to small group work. Ask students to list what human-made tools or other items would be necessary to make domestic animals and plants a significant part of a group's diet.

   Discussion: Which of these tools, or the technologies needed to make them, do we know from archaeological evidence were already part of human culture by about 20,000 years ago?

4. Ask students to list the most important changes in Homo sapiens' way of life from about 100,000 years ago to about 20,000 years ago, and explain on what basis they were ascribing and assessing significance.

   Discussion: How important would you say the domestication of plants and animals was, beginning around 11,000 years ago, compared to the changes between 100,000 and 20,000 years ago?

Activities

All the following activities are based on Student Handouts 1.1.1 and 1.1.2. Teachers may find it helpful to share with students what they will be asked to answer or do before they begin to work with a student handout.

1. This activity lends itself well to small group work. Decide what you and your group would have to do in order to gain more reliable control over your food supply. Describe, step by step, the actions that would have to be taken, given the resources of people, technology, and ideas you have available.

   Discussion: What important questions do you have regarding how to gain more reliable control over your food supply that are left unanswered by the information in Student Handout 1.1.2? How would the answers to your questions help? Could your questions be answered today? If so, what now allows us to do so?

2. Based on reading Student Handout 1.1.1, write a set of diary entries describing daily events relevant to you, as well as your acts and feelings and those of people in your household. (Of course, students could not really have made diary entries 10,000 years ago because writing had not been invented.)

   Discussion: In what ways would your life at that time have been harder, and in what ways easier, than your life today? Consider, among other things, demands on your time, skills, mind, and feelings.

3. Based on Student Handouts 1.1.1 and 1.1.2 of this lesson, ask students to:

   a. Compare the hunting/gathering lifestyles of the two different periods and locations.
   b. Describe what were the three most important similarities, and the three most important differences, in the lives of the Ukrainian mammoth hunters of 23,000 years ago and the Southwest Asian hunter-gatherers of 10,000 years ago. Explain your reasons for your answer, including an explanation of how you decided what was important.
   c. Decide whether the two ways of life were more different or more similar, and explain your reasons for your answer.

4. Based on the information in Student Handouts 1.1.1 and 1.1.2, ask students to:

   a. Compare the hunting-gathering life ways of the two different periods and locations.
   b. Describe the three most important similarities, and the three most important differences, between the Southwest Asian hunter-gatherers of 10,000 years ago, and the farmers of the same region of 9,000 years ago. Explain your reasons for your answer, including an explanation of how you decided what was important.

c. Discussion:

i. Was there progress during the 10,000 or so years between the Ukrainian mammoth hunters of 23,000 years ago and the Southwest Asian hunter-gatherers of 10,000 years ago?

ii. Explain how you have defined "progress."

iii. Was there progress during the 1,000 or so years between the Southwest Asian hunter-gatherers of 10,000 years ago and the farmers of the same region of 9,000 years ago?

iv. Has your definition of "progress" remained the same? Why or why not?

v. During which of the two periods you have compared was there more "progress"? Explain your answer.

vi. What changes that could be defined as "progress" might have happened that are not knowable from the archaeological evidence we have?

5. Explain what there was in the way of life of the group described in this lesson's Student Handout 1.1.1 that set the stage or prepared the way for the more complex way of life (often called civilization) that is characterized by accumulation of surpluses, complex division of labor, the organization of humans into increasingly large groups, unequal power distribution, and large-scale building.

Be the First to Practice Domestication: An Archeology- Based Simulation

You are members of a group of some one hundred people, from newborns to elderly folk, who live in Southwest Asia about 10,000 years ago. You hunt deer and gazelles (which can run 50 miles per hour, are very easily panicked, and can jump over 25 feet) when the herds are in your territory. You also get some wild goats, cattle, pigs, hares, small rodents, birds, and fish. You range considerable distances from home base to collect some sixty different species of plant food, including berries, acorns, seeds, and nuts. The bulk of this food is wild wheat and barley, which you harvest with flint-toothed bone sickles from the patches where they are usually found at various distances from your settlement. You can collect about 3 to 4 pounds of their seed in an hour, not counting the time to get to and from the fields.

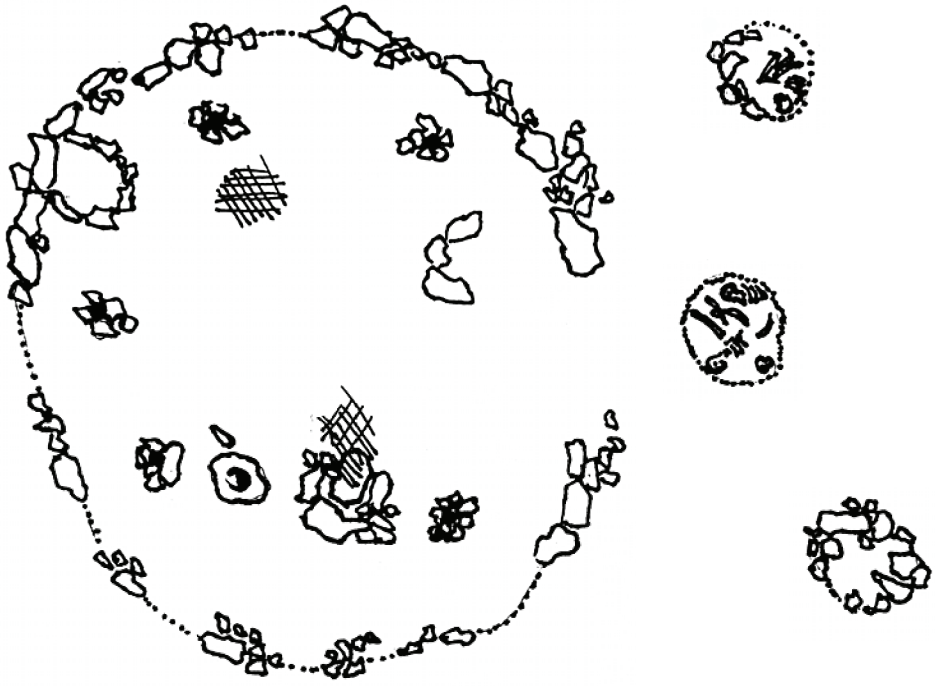
A pound of wheat or barley seed provides about 1,200 calories, about half the daily requirement for an adult. This is about 10 percent more calories than in a pound of beef and 50 percent more than in a pound of goat meat. While cereals' protein content is about 30 percent less than that of meat, lentils are higher in both calories and protein content than either cereals or meat.

Unwanted seeds of the many weeds that grow along with the cereals are mixed with the harvested seeds. Also, many cereal seeds are lost, dropping to the ground because on wild cereals they are only loosely attached to the stalk. Year to year, some cereal stands disappear because they are rooted up, trampled, eaten by animals, or shaded out by weeds. Therefore, your group has to scout new stands. Some years, weather conditions result in much smaller stands of cereals.

Your band lives in round huts having a single room and dimensions of about 20 feet across and 3 feet into the ground. They have stone foundations, mud-brick walls, and roofs of reeds and clay supported by wooden posts. The floors are smoothed with a layer of clay.

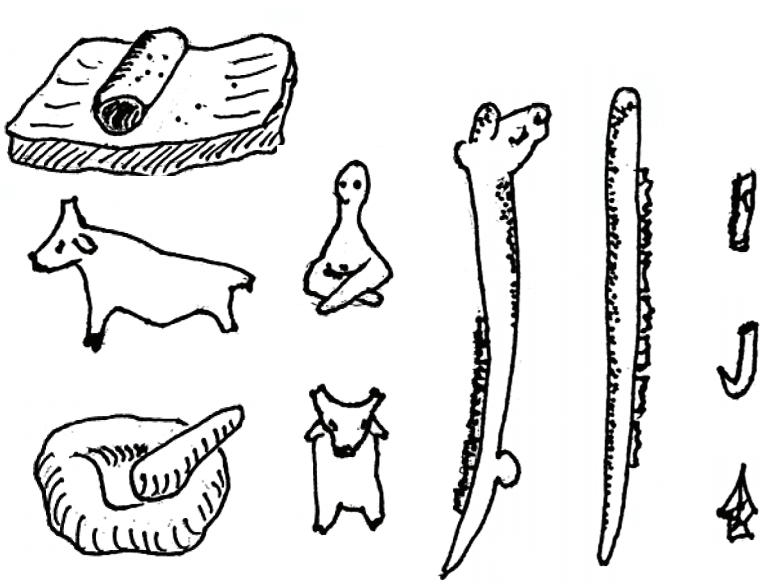
Inside the houses are stone-lined hearths; flat, hollowed-out grindstones and mortars with cylindrical pestles; bone and stone tools, including picks and stone bowls; small figurines of hoofed animal and a few human figurines, as well as jewelry made with animal teeth and shells from 120 miles away. Bone tools, often decorated, are used to work animal hides and to make baskets. Some of the flint tools and arrowheads have been heat-treated for finer flaking. Cooking is done with heated stones. Some houses have storage bins inside. Outside are several 3-foot deep pits. In some, humans and simple grave-goods are buried.

> The information in Student Handout 1.1.1 is based on reports of archaeological excavations at Mallaha (occupied between 13,000 and 11,000 years ago), Abu Hureyra (occupied between 13,000 and 9,000 years ago), Jericho (occupied between 11,000 and 9,300 years ago), Mureybet (occupied between 10,500 and 9,300 years ago), Beidha (occupied between 10,500 and 8,200 years ago) and Netiv Hagdud (occupied between 10,300 and 9,300 years ago), which span the period during which domestication occurred.



While the houseplan is imaginary, it is based on a composite of plans reported from excavations at real sites in Southwest Asia from about the date. The objects represent information from several sites, but are not themselves composites.

- Postholes
- Ashes
- Edge of excavated area



Wild wheat, native to Near East. It tolerates a wide range of temperatures and poor soil. For its domesticated relative, see illustrations to Student Handout 1.2.4

LESSON 2

Domestication Accomplished: Now What?

Activities

All the following activities are based on Student Handouts 1.2.1, 1.2.2, 1.2.3, and 1.2.4. Some involve information from Student Handouts 1.1.1 and 1.1.2.

> Note: It is usually helpful to share with students what they will be asked to answer or do before they begin to work with student handouts.

1. Compare the changes between 10,000 (Student Handouts 1.1.1 and 1.1.2) and 9,000 years ago (Student Handouts 1.2.1, 1.2.2, 1.2.3, and 1.2.4) with those between 23,000 and 10,000 years ago. Which changes do you consider more important? Why?
2. This discussion lends itself well to small group work.
    a. Explain what important conclusions can be drawn from the information in the Student Handouts 1.2.1, 1.2.2, 1.2.3, and 1.2.4 (including illustrations) about the following in agricultural settlements of about 9,000 years ago in Southwest Asia:
        i. Political organization
        ii. Economic organization
        iii. Social organizations
        iv. Systems of ideas
    b. Explain on what evidence you are basing your conclusions.
    c. Discussion
        i. On what did you base your judgment of importance?
        ii. Rate, and explain, how reliable you consider each of your conclusions to be on a scale of 1–10, with 10 being the most reliable (ashes inside their houses were found only inside a fired clay box, so they must have known how to control fire) and 1 the least reliable (since no special ways to dispose of human waste were found, they must have used it to fertilize their crops).
        iii. What important questions would you want to ask about the way of life in this time and place for which the evidence is lacking? Why do you think these questions are important?

3. This activity could serve as assessment. You are a clever and curious member of a seasonally moving hunting/gathering band of about fifty people in Southwest Asia about 9,000 years ago. You have visited to trade, then lived for a while in one of the large, long-settled farming villages of several hundred people in the region. (Note: Each role may be assigned to a group, or roles distributed to students at random.)

    a. Explain to your band, when you got home, why you think they should, or should not, shift to a fully settled, agricultural way of life. Whatever your recommendation, make sure you point out both the advantages and the disadvantages of what you propose, based on what you yourself could have seen and experienced.

    b. Discussion: Are there any advantages or disadvantages you could add to your argument based on what we know today? What? Which of your arguments in favor and against do you think would be most persuasive in that time and place? Why?

4. This activity could serve as an assessment. Imagine that you are one of the following:

    a. A journalist

    b. A social worker

    c. A politician

    d. A housewife

    e. A teacher

    You have taken a time machine back 9,000 years, to one of the settled agricultural villages about which evidence is presented in Student Handouts 1.1.2, 1.2.2, 1.2.3, and 1.2.4, where you stay for several weeks. Write the script of a discussion about your experiences, based on the evidence from the above student handouts, which will be broadcast upon your return on National Public Radio.

    Include as much of the important information as you can while making it interesting to an audience of today. How did you decide what was important to include? Compare accounts by those in different roles. What conclusions can you draw from the comparison?

5. List all the problems you can think of that were solved by the practice of agriculture, and how agriculture solved them. Then list all the new problems that arose as a result of the practice of agriculture. Make sure you do not overlook possible political, economic, social, moral/ethical/religious, and technological problems.

    Discussion

    i. In what ways, if any, were the kinds of new problems different from the kinds of old problems?

    ii. Did one set of problems affect more people? Did it affect them more seriously (life and death as opposed to inconvenience)? Did it affect them more of the time?

6. This activity can also serve as assessment. Divide the class into small groups. Ask each group to describe the changes brought about by the shift to domestication, one-third of the groups to work on the changes in humans' relations to the environment, one-third changes in humans' relations to other humans, and one-third changes in humans' relations to ideas. Have groups share their conclusions.

    Discussion

    i. In which areas of human life did the shift to domestication bring about the greatest changes?

    ii. What explanation for the differences in the impact of domestication could you come up with?

    iii. What evidence would you look for that might support your explanation?

7. This is another activity that can serve as an assessment. Ask students to describe what there was in the way of life of the people living in settled agricultural villages about 9,000 years ago that set the stage or prepared the way for the more complex way of life often called "civilization," characterized by complex division of labor, accumulation of surpluses, the organization of humans into increasingly large groups, a society with various possibilities for unequal power distribution, and symbolic visual communication.

    Discussion

    i. In what ways were these people at this time closer to being the kind of complex society often called a "civilization" than had been the case in the mammoth-hunter camp of 23,000 years ago?

    ii. What had been the case in the settled hunting/gathering village of 10,000 years ago?

What Does the Evidence Show?

Excavations of sites dated to around 9,000 years ago show that:

1. Domesticated seed plants and animals had become visibly different from their wild relatives. The differences were consistent, and bred true. Compare wild wheat (Student Handout 1.1.2) with early domesticated wheat Student Handout 1.2.4.
    a. Domesticated cereal seed plants had larger seeds with thinner skins in larger and tighter clusters more firmly attached to the stem.
    b. Domesticated animals had become smaller overall and had even smaller skulls (and therefore brains) than the decrease in size would have suggested.
2. Concentration of people in the same location increased.
    a. Jericho (West Bank of Palestine) had a population of about 2,000.
    b. Çatal Hüyük (modern Turkey) population estimates ranged from 4,000 to 7,500.
    c. Several more settlements' inhabitants were estimated at about 1,000.
    d. Typical villages at the time numbered people in the hundreds.
    e. Hunting/gathering bands without any permanent settlement continued to exist, numbering typically some 10–50 people.
3. Agriculture, and denser settlements with it, spread. Hundreds of existing archaeological sites overlap during this period in Southwest Asia. Only a minority of them have been studied so far.
4. Agriculturalist specialized.
    a. Some became settled farmers, who cultivated grain and kept domestic animals.
    b. Others became less settled herders, who kept domestic animals and collected or traded for edible plants including grain.
5. Defense became an issue for some.
    a. Jericho at this time had built a town wall of stone that survived to a height of 18 feet and had at least one tower 40 feet across, its ruins still 30 feet high with an internal stairway, and a ditch outside the wall cut into solid limestone 28 feet wide and 8 feet deep.
    b. Çatal Hüyük in Turkey was built so that its houses presented an unbroken line of blank walls to the outside of the settlement without doors or windows, the only way in being by easily moveable ladders. The doors of individual houses there opened into their roofs.
    c. Sling stones, maces, and long-bladed knives are added to the arrows already in use. However, no large caches of weapons have been found.

6. Architecture became more complex.
    a. Round or oval houses were replaced by rectangular ones, which were easier to add rooms to.
    b. Houses with several rooms with spaces for air circulation to keep the house dry built into raised foundations, a second story, and built-in furniture appeared.
    c. Lime-plaster floors became common, which involved quarrying, transporting and crushing a lot of chalk and limestone, and a lot of fuel to stoke the kilns used in its preparation.
7. Special structures were built, meant for public purposes not for being lived or worked in by individuals or families. These public buildings, often with features that seemed to mark them as religious, were characterized by such details as:
    a. Being twice or more the size of homes
    b. Having more elaborate floors, such as painted plaster, carefully fitted limestone slabs, and stone chips set in mortar and polished
    c. Having stone pillars set in the floor; carvings, sculptures or paintings on floor, walls, or pillars; deliberately placed skulls of humans or animals; objects not found in homes, made of imported materials
8. Special treatment was frequently given to human skulls. After a first disposal of a corpse in a way that got rid of the flesh off the bones, skeletons were often reburied under floors or benches within the houses or in pits outside them. Skulls were typically re-buried or kept separately, singly or in groups; or stored in containers, or within buildings, sometimes in the hundreds or displayed singly, sometimes on clay supports. Realistic reconstructed faces with shells for eyes were modeled in lime plaster on many skulls. Others had the top of the skull daubed with red ochre.
9. In some settlements, sculptures of women with large hips, breasts and bellies, and bulls' heads or horns appear in ways showing that people considered them important.
10. Tools of chipped, pressure-flaked, and sometimes heat-treated flint and of bone continued to be made. Added are polished stone and obsidian tools, for raw materials of which sources are limited, are geographically widely spread but are few within individual settlements. Mirrors appear, sparsely, for the first time.
11. Pottery containers began to be made, shaped similarly to objects made of stone and wood and to clay-coated baskets. Its manufacture spread slowly.
12. No special provisions were made for sanitation. Some settlements show refuse as well as ashes thrown into courtyards, over a wall, or out the door.

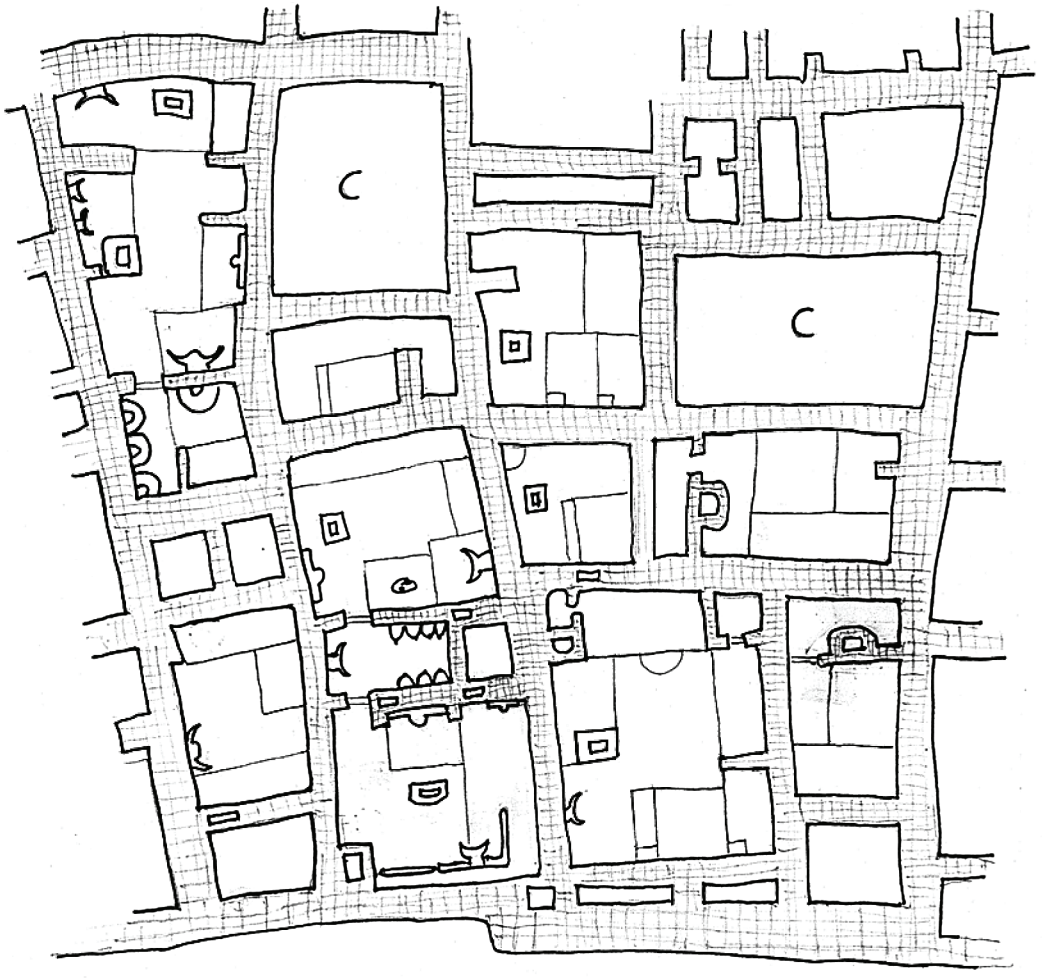
13. Humans in farming communities had health problems that did not trouble hunter/ gatherers.

    a. Skeletons show that because a highly grain-based diet lacks some essential nutrients, agriculturalists in general reached a lower average adult height, and had a marked increase in weakened bones, lost teeth and cavities, anemia, and diseases carried by grain-attracted rodents.

    b. Women's skeletons in some settlements show deformation of knees, spine, and big toe. These are consistent with the skeletal changes that would result from spending a lot of time bent over a grindstone and rubbing a pestle back and forth over it to crush grain.

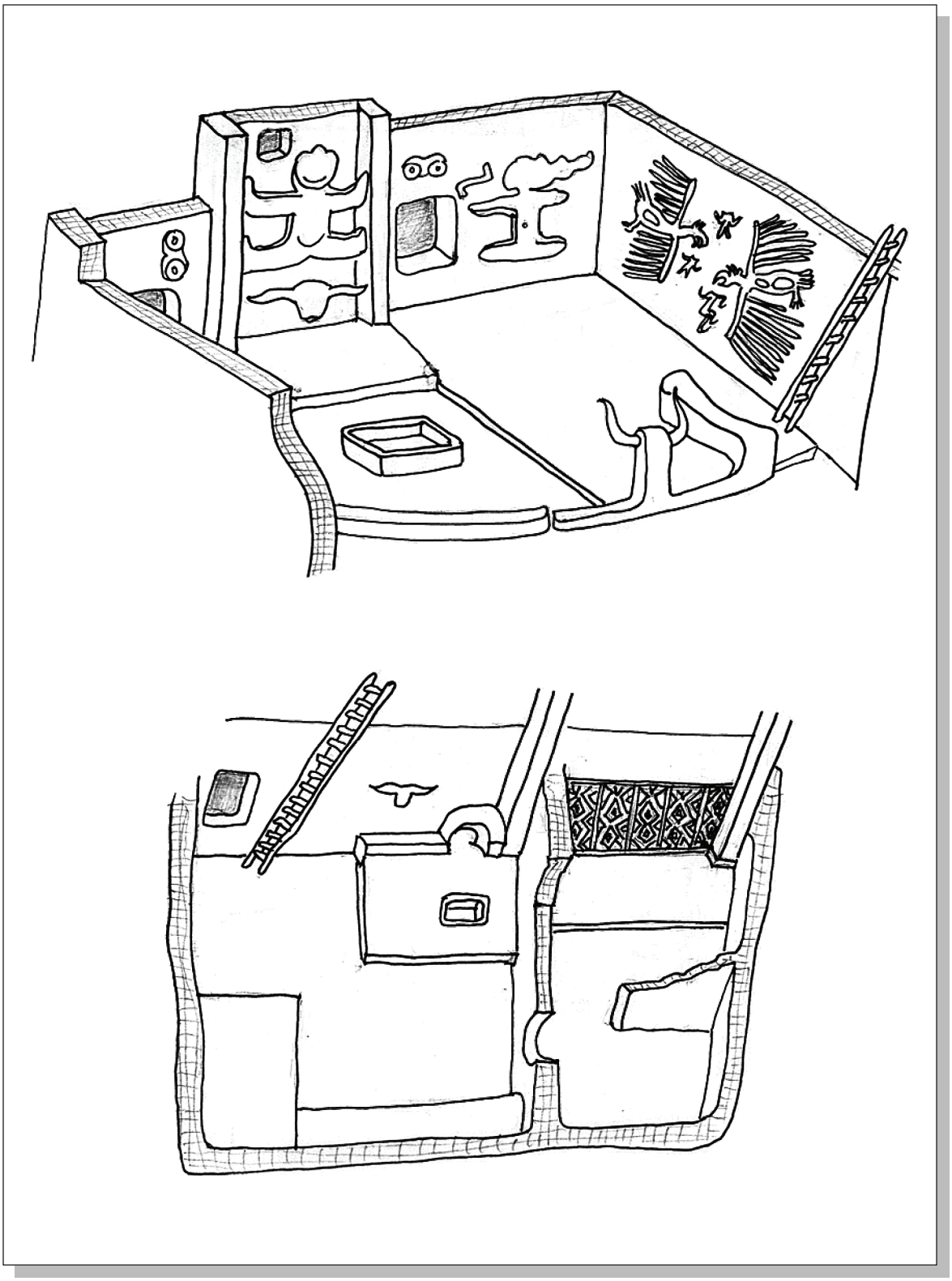
The information in Student Handout 1.2.1 is based on archaeological excavations of the levels dated to about 9,000 years ago at the following sites: Jericho, Çatal Hüyük , Hallan Cemi, Kfar Hahoresh, Beidha, Ain Ghazal, Abu Hureyra, Gritille.

Groundplan of a Large Agricultural Settlement About 9000 Years Ago



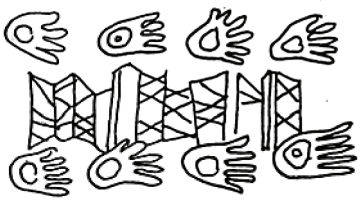
Note: Not to scale

Reconstructed Rooms In Large Agricultural Settlement About 9000 Years Ago

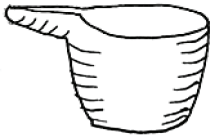


Note: Not to scale

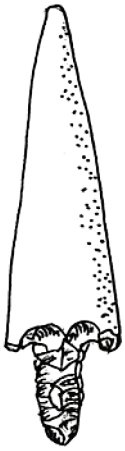
Objects From Large Agricultural Settlements About 9000 Years Ago



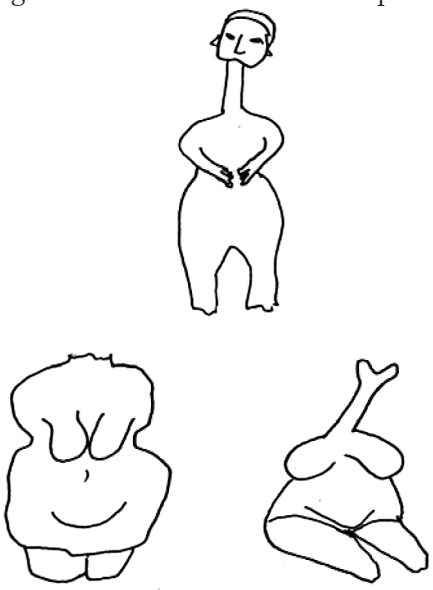
Wallpainting



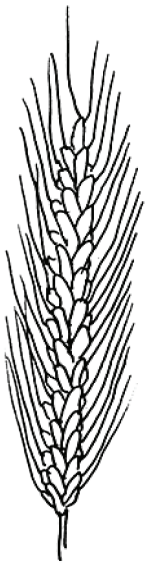
Spouted Stone Bowl



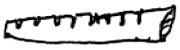
Obisidian Arrowhead



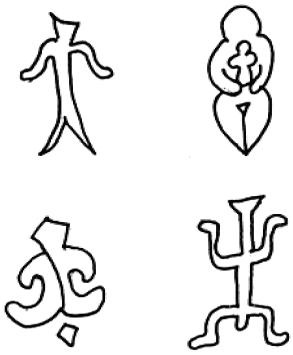
3 Clay and Lime Plaster Sculptures



Domesticated Wheat
(for wild ancestor, see Student Handout 1.1.2)



Smoothed and Finely Notched 4" Stone Objects
(Bones notched in the same way have also been found.)



Stylized Human Figures from Wallpaintings

2 Stamp Seals

Note: Not to scale

CHAPTER 2

By Mary Bickley and Susan Douglass

Farmers around the World

WHY STUDY EARLY FARMERS?

This chapter surveys regions where early human farming communities were located around the world between 10,000 and 1500 BCE. It invites students to explore the scientific and archaeological background of domestication of plants and animals and the variety of food crops that provided human nutrition. The lessons in this chapter are a classroom tool for comparing various aspects of early farming communities around the world in terms of their location, latitude, type of climate, crops raised, time period, and other characteristics.

The lessons show how geography skills and knowledge can be integrated into the study of world history through a correlation activity involving several types of content maps and timelines. Students will acquire historical thinking skills by working with evidence from archaeological sites of early farming communities in Afroeurasia, the Americas, and Australia. The lesson activities take students from the global to the regional and local levels, then back to the global for comparison and analysis. The lessons lead students beyond the usual focus on Southwest Asia, offering a more global approach to the origins and spread of agriculture.

OBJECTIVES

Upon completing this chapter, students will be able to:

1. Locate on a world map places where farming occurred between 10,000 and 1500 BCE
2. Describe the characteristics of physical environments where settled farming communities developed between 10,000 and 1500 BCE
3. List plants and animals that were domesticated in different places around the world and relate them to specific locations
4. Describe how early farmers modified their environment
5. Give examples of archaeological evidence of farming from the Americas, Australia, and Afroeurasia
6. Trace the spread of agriculture in various locations across the globe
7. Describe some effects of farming on human societies

TIME AND MATERIALS

This lesson takes two class periods of 50 minutes each to complete.
Materials: Classroom world atlases with climate, vegetation, and physical maps, and student handouts.

THE HISTORICAL CONTEXT

The historical context of this chapter is the period from 10,000 to 1500 BCE when human beings in a variety of places around the world began to domesticate wild plants and animals for their use. This development led to humans' increased dependence upon these food sources for their caloric intake, and gradual replacement of hunting and gathering with herding and farming. The processes that were involved in this shift were both gradual and complex. Early farmers left no written records, and the evidence of agriculture is organic and perishable. Therefore, archaeologists realize that their conclusions are based on a changing body of evidence. Some early farmers were only seasonally or temporarily settled, and those settlements that existed were built mainly out of impermanent materials.

Evidence for the beginnings of agriculture comes from archaeological investigation of sites in various locations around the world. The discovery and choice of sites for investigation has depended on a number of factors:

- The ideas historians and archaeologists have about where sites might be found
- Geographical conditions that might make discovery of a site likely
- Available financial and human resources for excavation and study of evidence
- Cultural preferences for studying sites in one part of the world rather than another

Evaluating evidence of early farming sites involves a wide range of scientific disciplines, including sophisticated methods of dating organic materials and analysis of such objects as pollen grains, seeds, charred plant fragments, tools, and human or animal remains. Analysis of soil disturbance as evidence of dwellings, fields, or water channels involves sometimes controversial interpretation. Evidence of ancient climatic conditions and changes is gleaned from tree growth ring patterns, remains of local plant and animal life, human artifacts, and analysis of ice core samples, notably from Greenland.

It is important to remember, and to convey to students, that what we know is based on our current level of technology and the amount of time and money available to investigate sites. What we know now is certainly not the final word. More intensive investigation, newer technology, and sometimes even a willingness to look at old ideas in a new way can shed new light and change our interpretations.

THREE ESSENTIAL QUESTIONS

Humans and the Environment

What environmental conditions were suited to early farmers' experimentation with domesticating plants and animals? What biological mutations and adaptations occurred in the domestication process. What factors facilitated human selection of particular plants or animals?

Humans and Other Humans

How did domestication of plants and animals affect how human beings lived together? Which changes might have been favorable and which unfavorable? For example, why would people want to live together in a crowded village if they could roam the land in a hunting-gathering band?

Humans and Ideas

If the human species and its hominid ancestors lived for millions of years hunting and foraging for food, why did humans turn to farming at all? Was it inevitable that this happened? Might humans have been somehow "trapped" into becoming farmers, even though they did not consciously want to?

KEY THEMES

This chapter addresses the following historical themes:

Key Theme 2: Economic Networks and Exchange

Key Theme 7: Science, Technology, and the Environment.

CORRELATIONS TO NATIONAL HISTORY STANDARDS

National Standards for History
Era 1: The beginnings of Human Society. 2A: The student understands how and why humans established settled communities and experimented with agriculture. 2B: The student understands how agricultural societies developed around the world.

Geography for Life: National Geography Standards
Standard 9—The characteristics, distribution, and migration of human populations on Earth's surface. Standard 10—The characteristics, distribution, and complexity of Earth's cultural mosaics. Knowledge Statement 1—The spatial distribution of culture at different scales (local to global). Knowledge Statement 2—How to read elements of the landscape as a mirror of culture. Knowledge Statement 3—The processes of cultural diffusion. Standard 15—How physical systems affect human systems. Knowledge Statement 1—Human responses to variations in physical systems. Knowledge Statement 2—How the characteristics of different physical environments provide opportunities for or place constraints on human activities.

INSTRUCTIONAL RESOURCES

Barber, Elizabeth W. *Women's Work: The First 20,000 Years*. New York: W. W. Norton, 1994.

Bellwood, Peter S. *First Farmers: Origins of Agricultural Societies*. Malden, MA: Blackwell, 2005.

Diamond, Jared. *Guns, Germs, and Steel: The Fates of Human Societies*. New York: W.W. Norton, 1998.

Hodder, Ian. *The Leopard's Tale: Revealing the Mysteries of Çatalhöyük*. London: Thames & Hudson, 2006.

Renfrew, Jane M., ed. *New Light on Early Farming: Recent Developments in Palaeothnobotany*. Edinburgh: Edinburgh University Press, 1991.

Scarre, Christopher, ed. *Past Worlds: The Times Atlas of Archaeology*. London: Times Books, 1988.

Smith, Bruce D. *The Emergence of Agriculture*. New York: Scientific American Library, 1998.

LESSON 1

Map Correlations with Early Farming Regions and Chronology

Procedure

1. Introduce the lesson by discussing the beginnings of agriculture in multiple locations around the world. Start by developing a definition of "farming." Ask students to imagine how farming and herding might have developed among hunter-gatherers. This might be done by asking pairs of students to come up with a hypothesis about the steps involved in beginning farming or herding. In debriefing the groups, ask the class to critique the ideas presented and to come up with a plausible scenario. Which might have come first, domestication of plants or animals? Might the answer differ for different locations around the world? Discuss the meaning of "domestication" of plants and animals, reserving the details for the exploration of domesticated plant characteristics in Lesson 3.

2. Distribute copies of Student Handouts 2.1.1 and 2.1.2 to individuals or groups. Discuss the map in Student Handout 2.1.1, asking students what the map as a whole illustrates and what the different shades of gray represent.

3. Have students work in pairs or small groups. Assign each group to investigate one of the six world regions where farming is known to have been discovered and spread. Each group will fill in one region on the graphic organizer in Student Handouts 2.1.2. They will correlate the map of farming locations for the beginnings of farming in Student Handout 2.1.1 to a variety of maps showing rainfall, annual temperature ranges, topography, vegetation zones, access to water sources (rivers, lakes), landforms, and longitude/latitude. The information gleaned from the geographic exploration is to be entered on Student Handout 2.1.2.

4. Whole class debriefing activity: Tape large chart papers on the wall around the room, one for each category on the graphic organizer. Label the category in large letters. Each group will rotate around the room and write the name of its region and fill in results for that category on the chart paper. In turn, each group then makes an oral report of its findings on their location. After the reports, gather the charts and tape them at the front of the room (in the order that they appear on the graphic organizer). Use the charts to compare and contrast the environmental conditions for the spread of farming (10,000–1500 BCE), and to discover the range of physical conditions such as rainfall, latitude, vegetation region, and temperature under which early farming developed.

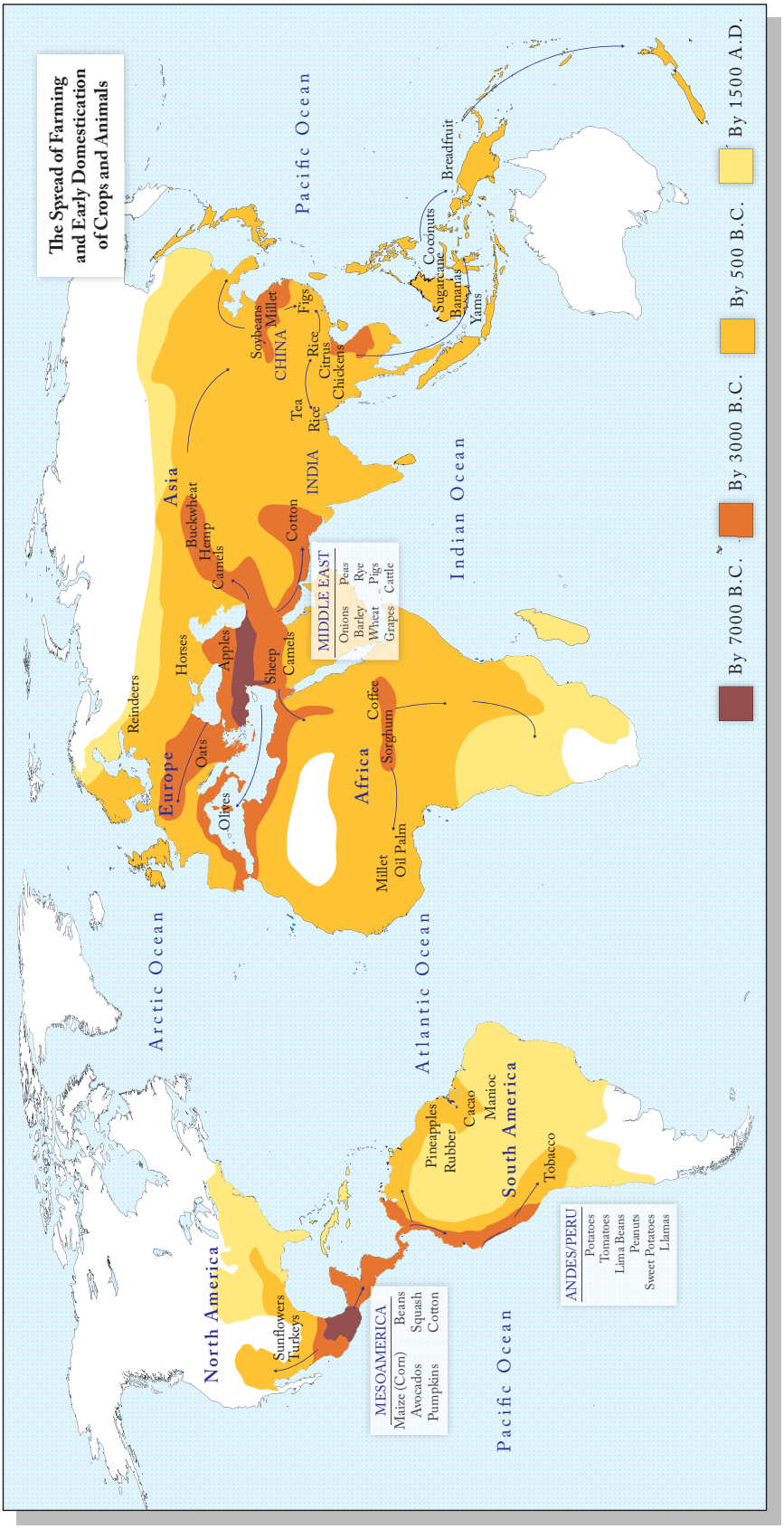
NOTE: Interesting conditions will arise, such as areas with very little rainfall today, giving rise to the question of climate change since the period described on the map. Try to pinpoint those regions where the climate must have changed most, and to characterize the change (more rainfall or less, colder or warmer, change in the course of rivers or other water sources.)

Assessment

At the conclusion of the activity, each student may write a paragraph or other form of summary describing the characteristics of regions where farming emerged, comparing and contrasting these characteristics, and accounting for possible climate change over time (extended proficiency). Note: This activity is the basis for hypotheses about farming conditions, which may become modified through the investigation of actual historical evidence.

Farming around the World

The map shows regions where farming began, and the range of dates for each region.



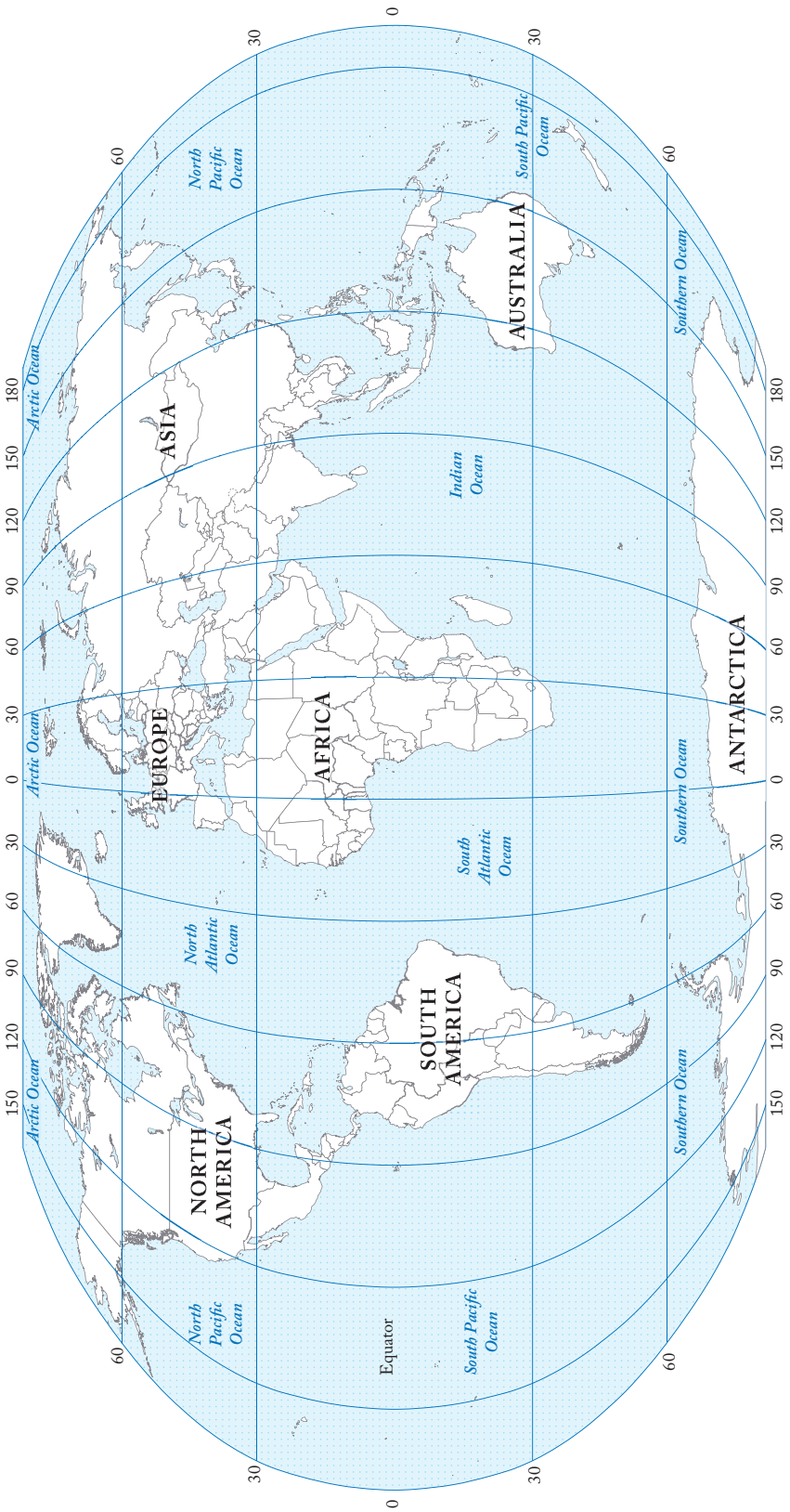
Conditions for Early Farming Data Sheet

Using the world map in Student Handout 2.1.1 and a classroom world atlas, fill in the geographic information on the zones of the world where farming began between 7000 and 3000 BCE.

	Region 1	**Region 2**	**Region 3**	**Region 4**	**Region 5**	**Region 6**
Continent/ region name						
Time period for spread of farming						
Latitude range						
Vegetation zone						
Annual rainfall amount						
Annual temperature range						
Physical features						
Elevation						

Locating Archaeological Sites with Evidence of Early Farming and Herding

Using the outline map below, locate the archaeological sites found in the descriptions in Student Handouts 2.2.2–2.2.9. Mark them on this outline map with colored dots. You may need an atlas to assist you.



LESSON 2

Investigating Archaeological Sites of Early Farming and Herding around the World

1. Distribute the Student Handout 2.1.3 map. Distribute Student Handouts 2.2.1–2.2.9, which provide summaries of the archaeological investigations that will guide student investigation of archaeological sites by showing them evidence of early farming and herding.

    a. Ask what evidence students think historians and other specialists might use to make conclusions about where and when farming began.

    b. Explain that ideas about where and when farming began in different locations around the world are based on careful investigation of the remains of human settlements from thousands of years ago. The evidence found at such places is often being updated with new finds and techniques.

2. Working in pairs or groups, have students use a large atlas and longitude/latitude coordinates to locate the eight archaeological sites on the Student Handout 2.1.3 map. The sites may be marked with different colored pencils, and students may underline the heading of the site description using the same color.

3. Then, working in eight pairs or groups, students will fill out the data sheets on corresponding copies of Student Handout 2.2.1 based on each reading and its illustrations. They will enter the various types of archaeological evidence of farming and herding, and other finds at the sites.

4. Intermediate assessment: Each group presents to the class its findings on the sites based on the categories and data it has entered on the Student Handout 2.2.1 chart. The group should use the information to argue for or against the presence of human domestication of plants and/or animals at the site. The teacher may choose to introduce some or all of the questions given in number five below. Groups may use illustrations for their presentation. In many cases, additional information on these sites is available by doing an Internet search.

5. In discussion, the class will compare and contrast these sites and try to account for the variety of experiences in different places. Discussion may include the following questions concerning each site, and the sites as a group:

    a. What methods of scientific examination of the remains were used?

    b. What evidence dates the site?

c. What types of plant and/or animal remains were found at the sites? How did these give evidence of a balanced diet?

d. What evidence of continued hunting and gathering was found at the site?

e. What evidence of trade was found?

f. What evidence of permanent or semi-permanent dwellings indicate settlement patterns? What types of building material and construction were used?

g. What evidence of craft production, social organization, and communal life was found?

h. How might archaeologists decide whether agriculture had developed independently at a given site, or whether domestication practices and skills had diffused, or spread there from a nearby or distant location?

6. Assessment/Extension: Students create an archaeological site based on their investigation of the selected sites, describing the time period, climate, surrounding physical features and vegetation, and tell how the inhabitants changed their environment. They describe the crops and domesticated animals associated with their site, give other evidence of nutrition sources, and describe the dwellings, found artifacts, and settlement patterns. They also describe other aspects of the culture, including arts, trade, religion, and evidence of what happened to the people who settled the site. They should make a "menu" of the diet of the inhabitants and show that it was a nutritionally complete diet for healthy living.

Investigating Archaeological Sites

Name of site	
Location	
Size of site	
Dating of site (When was it inhabited?)	
Available natural resources	
What they grew (plant evidence)	
Evidence of animal domestication	
Dwellings and other buildings	
Technology (farming implements)	
Food storage	
Human skeleton evidence (health, burials)	
Evidence of continuing hunting & gathering	
Evidence of art	

Investigating Archaeological Sites

Mehrgarh, South Asia

The Kacchi Plain, between the hills of Baluchistan and the Indus Valley is one of the earliest farming settlements in South Asia. The site is located at latitude 24° 48′ N and longitude 66° 59′ E in today's Pakistan. The archaeological site, called Mehrgarh, is about 168 acres in size. Its layers have been dated to the period from the beginning of the seventh to the sixth millennium BCE. It belongs to the Neolithic Period, or New Stone Age. Many archaeologists believed that farming began in Southwest Asia and spread elsewhere, but discovery of sites like these have led some to change their minds. The evidence points to independent development of farming.

The Mehrgarh settlement had many advantages. The highlands were suitable for summer grazing of domesticated animals. Streams that flowed throughout the year could be dammed to trap mineral-rich silt and provide water for crops. Many species of plants and animals that could be domesticated were native to the area. Wild varieties of wheat and barley grasses were found, and wild cattle, sheep, and goats lived in the hills and valleys. Other resources included flint stones found in deep rivers, and trees for building and fuel. Early trade routes to Inner Eurasia and the Indus Valley crossed near the area.

Archaeologists found the remains of a village of mud-brick houses that had been plastered with adobe. The house foundations were square or rectangular, with more than one room. They showed evidence of wood beam roofs with reed thatch supported by twigs. Upper layers of the excavation dated to the sixth millennium BCE showed that people built storehouses in the village. They were mud brick buildings with walled compartments where archaeologists found grains, raw materials, tools, and items for trade.

The diggers found many types of artifacts in different layers and areas of the site. People living there made and used blades, stone axes, chisels, and sharp-edged stone points called microliths. They also made small balls that might have been used for pounding things, hunting birds, or even playing games. They made stone sickles for cutting grain, and grinding stones to make flour from grain. Bone objects included needles and sharp-pointed tools. Later, levels of the village contained copper that had been made into spearheads and axes.

Lapis lazuli, marine shells, and turquoise artifacts must have come on trade routes from Persia and Inner Eurasia to make the luxury goods found at the site. Recently, evidence of cotton threads with the beads shows the earliest known use of cotton fiber, probably a wild variety. People also made terracotta figurines in the shape of seated women with exaggerated bodies, probably as fertility

A Mehrgarh Statuette

symbols; they were also decorated with jewelry. These figurines are found in several periods (layers) of the settlement. They made more than one type of pottery, either undecorated (probably used for cooking) or decorated with geometric patterns, stylized bird designs, and multi-colored containers. Early vessels seem to have been used for storage, but later people made plates and bowls with handles.

Farming tools and remains of wheat and six-row barley show that these plants were farmed. Animal pens in the village and plentiful bones of sheep, goats, and cattle are evidence that these animals were domesticated. Tools and other types of animal bones showed that people continued to hunt to add to their diets but that successful farming led to population growth and gradually replaced hunting and gathering.

The site had many graves. People were buried in an open area within settlements. The graves also contained goods like decorations of bone, shell, and stone ornaments on the skeletons. Even some infants were buried with many grave goods. The number of objects varied among graves, showing that some individuals had more wealth or higher status. Ornaments for the head, chest, arms, waist, and ankles were found buried with the dead, with beads and pendants made of semi-precious stones such as turquoise, lapis lazuli, carnelian, and steatite. They included shells that may have come from as far away as the Arabian Gulf. Bangles made of copper were also found.

Investigating Archaeological Sites

Ban-po-ts'un, East Asia

One of the earliest and best-investigated early farming sites is Ban-po-ts'un in East Asia, also called Banpo [baan paw]. It is located in northern China near the famous medieval city of Xian, in Shanxi province. The site belongs to the Neolithic Period, or New Stone Age, and was settled from 6,000 years ago. It is located near the ancient city of Xian, at longitude 108° E by latitude 34° N, and 412 meters above sea level.

The site of this early farming village is 12.5 to 17.5 acres (5–7 hectares). It consisted of about one hundred houses, both round and square in shape, surrounded by a defensive drainage ditch. The site was continuously occupied over a long period of time. One area of the village showed evidence of five house floors on top of each other, showing that it was continuously remodeled and rebuilt over time. Some of the houses had floors sunk about 1 meter below the ground. The circular houses were about 3–5 meter in diameter (10–16 feet). They had timber beams resting on stone bases, with steep thatched roofs. The floors and walls were plastered with clay and straw. Circular or pear-shaped fireplaces at the center of the houses were lined with clay. Among the houses, storage pits and animal pens were found at the center of the settlement. (Image on next page.)

Rich farming soils surrounded the village, where people grew millet for food and hemp for fiber. Pigs and dogs were domesticated, and bones of cattle, sheep, and goats have been found. A cut silkworm cocoon may be evidence of early silk cultivation.

At Banpo, people made farming tools like bone hoes from the shoulder blades of sheep and cattle, as well as polished stone adzes, axes, and knives. Archaeologists found many digging stick weights at the site. Stone spindle whorls (weights) and bone needles are evidence of clothing production. Fishhooks, stone net sinkers, and bone or quartz arrow points show that people added to their diet of grain by hunting and fishing. Bones of deer and remains of chestnuts, hazelnuts, and pine nuts are also evidence that hunting and gathering still made up part of their diet.

Among the most abundant artifacts found at Banpo were 500,000 pieces of pottery. Six kilns for firing pottery were located around the village. Most of the containers found were handmade vessels called red ware, made from red clay. Some of the pottery was plain and coarse and used for cooking. Craftspeople also made water vessels and food-serving bowls from finer clay. They decorated the pottery vessels by pressing twisted cord, fingernails, baskets, or textiles into the wet clay. Some of the most beautiful pottery bowls and jars were painted black with geometric and animal designs.

Adults were buried in a cemetery outside the ditch at the north end of the settlement. Corpses were placed in pits, 2 meters (6.5 feet) deep in rows. Individuals were buried alone, in an extended position. Ceramic vessels were included with the body in most of the graves. Infants and small children were most often buried in redware pottery jars near the houses. One child burial was in a wooden tomb with green jade pendant, a string of sixty-three bone disk beads, four ceramic vessels, and three stone pellets.

Toward the end of the occupation of the village of Banpo, the inhabitants built a large rectangular structure on a manmade platform 20 x 12.5 meters (65 x 41 feet) in the center of the village. It was ringed by a low wall that may have had posts in it to support walls that are no longer there. The earthen structure was plastered with a white limey substance hardened by baking. Archaeologists think it may have been a clan house or a communal assembly hall used for ceremonies or worship.

Human-faced fish decoration, pottery bowl. Yangshao Culture, Banpo style (4800-4300 BCE)

Archaeological site: Shaanxi. Capital Museum, Beijing, China.

Investigating Archaeological Sites

Tripolye, Eastern Europe

A map showing the main presence of the Cucuteni-Trypillian culture.

Archaeologists had not found early farming sites in eastern Europe until they discovered a number of them between the Dnieper and Dneister Rivers, which they identified as the Cutcuteni-Tripolye Culture. The first of those was the village of Trypillia, 50 kilometers south of Kiev, Ukraine. Trypillian sites have been dated from 6000 BCE to 3000 BCE. These settlements seem to have been occupied for 50–70 years each, after which they were abandoned. It is not known why Cutcuteni-Tripolye Culture vanished after 3000 BCE or why the settlements were often abandoned. Evidence shows that Trypillya tribes cut down forests and enlarged the steppe. Turning the steppe into grazing land invited invasions by Indo-European animal herders. The lack of diversification may have been another reason, since the villages depended on land farming more than domesticated animals. The climate may have become colder over time, or the soil may have worn out. Some evidence exists that the village had been burned, and archaeologists have a theory that the people may have burned down their houses before leaving to frighten invaders and wild animals. They believe that when the inhabitants moved on, they harnessed bulls to sledges loaded with their possessions, since they had no wheels yet.

Ancient Trypillian farmers cultivated wheat, barley, peas, and legumes. According to paleobotanists, these crops were grown in fields that were used for long periods of time. Spore pollen analysis shows that these plants were grown around settlements. Ravines were covered with rich motley grass, red mallow, white bindweed, and pinks. Cornflowers grew in the wheat fields. Willow, alder, oak, hornbeam, and nut-trees grew along woodland waterways. Bison, deer, wild boars, bears, wolves, foxes, and hares lived in the forests. Animal bones and artwork show that the Trypillian people raised cattle.

Having a rich supply of wood, inhabitants cut down many trees for their dwellings. At the beginning, their settlements were small, from seven to fourteen buildings, but with time some grew into towns with thousands of buildings. Evidence of dwellings was found in floors of baked clay, which included both dwellings and barns. Houses show evidence of thatched roofs, earthen walls, and clay and bran coating on the walls. The floor space ranged from 50–160 square meters. The houses were complex, perhaps two-storied with walls of wooden stakes covered with clay. At some sites, houses were arranged in concentric circles. Larger houses—like longhouses— were occupied by families of several generations. Evidence of earthen storage benches and painted altars was found in some houses. The floors and the walls of some houses were painted in black,

red, or white colors in geometrical ornamental patterns, which probably had a spiritual meaning. Communal houses of 200–300 square meters might have been shrines, with something like altars in them, which could accommodate a whole community gathered for a ritual.

The early settlement occupied half of a square kilometer, and Trypillya farmers tilled the land close to the settlement until it was exhausted, then moved on. Improvements to land cultivation and development of crafts led to increases in population. Some settlements began to grow into towns divided into streets and blocks, with some two-storey houses, which were connected by bridges at the second floor. Some later settlements may have had 10,000 residents. To clear fields for farming, Trypillian people used stone and copper axes. Sickles with silicon (flint) inserts were used to harvest crops. Clay or stone mortars for grinding harvested grain into flour were found in the houses. Evidence or crafts such as metallurgy and metal-working, pottery, and weaving was found. Copper tools and weapons, pottery bowls, flint arrowheads, and a variety of bone points, needles, and tools were also found around the site. Stone tools included axes, knives, and spindle whorls. Metal was used to produce weapons (axes and daggers), bracelets, rings, pendants, and amulets. Trypillians used molded and forged metal products. Most tools were produced from flint, stone, animal horns, and bones. Residents made vertical looms and a potter's furnace. Crude pottery with no decoration served for cooking. Archaeologists found fancier pottery jars and other vessels, and footed beakers that show painted decoration with intricate swirled and geometric designs. These designs may indicate worship of the sky, sun, and rain. Tree-of-life images on pottery, horned animals for handles on vessels, and brown and black painted designs on pale yellow background show reverence for nature, magic, and use of symbolism. Figurines in the form of seated women were very common at Trypillian sites. "Tokens," beads, or clay shapes incised with geometric designs might be a form of pictograph used for counting.

Cucuteni Culture male clay figure (left) and pottery (right).

Investigating Archaeological Sites

Chilca, South America

The Chilca Valley lies on the eastern coast of Peru, flanked on the east by the Andes Mountains and on the west by the Pacific Ocean. The area lies at an altitude of 13,120 feet, about 45 miles south of Lima. It has served as an important traveling route for coastal inhabitants to access the highlands. Within the Chilca Valley, two major archaeological sites have been discovered, Tres Ventanas and Kiqche. Each includes about two acres of excavations. The area is believed to have been inhabited by hunter-gatherers from the Early Archaic Period through the Formative Period (8000–5000 BCE).

Around 5000 BCE people in the area began to cultivate seeds and tubers indigenous to the area—potatoes, gourds, and lima beans, followed by squashes, peanuts, and cotton. They may have done this owing to the increasing scarcity of deer and camelids, the indigenous animals that had been a source of protein.

Evidence of tools used by the people of the Chilca Valley, such as stone blades and knives, has been found. Archaeology has evidence of dwelling construction, garbage heaps, and burial sites, further demonstrating that the people of Chilca settled there for a long period. The dwellings found in the village were well built, using sophisticated architectural techniques. Construction of the huts included heavy branches and brush, with "carpets" of organic material, and ceilings held up with a center pole.

Three different types of burial rituals were evident at the Chilca site: individual graves, graves containing up to eight bodies, and graves with large numbers of bodies. In each of the grave types, bodies were wrapped in organic material, and sometimes even in woven cotton. Evidence of the special importance of children in the community can be inferred by extra care taken in their burial. After being wrapped in cotton, the deceased child was laid on a bed of stone or sand surrounded by straw. The jewelry and fine fabrics buried with children are additional signs of respect for the dead and for children.

The Chilca people acquired knowledge through trial and error, discovering that alternating crops allowed the minerals in the soil to rebuild, thus producing a greater yield. They domesticated such vegetables as potatoes, yams, and ullucos.

Investigating Archaeological Sites

Jericho, Southwest Asia

Jericho is located four miles west of the Jordan River, twenty miles east of Jerusalem, and ten miles northwest of where the Jordan meets the Dead Sea. Jericho is one of the lowest cities in the world, at approximately 825 feet below sea level. Archaeologists date the site at Neolithic Jericho to approximately 9000 BCE. The location of ancient Jericho—built on a "tell," or settlement mound—proved ideal for farming and trade. An underground spring, still flowing today at a rate of more than one thousand gallons per hour, is a major reason why people have been so successful in their farming endeavors, both in ancient times and today.

Ancient Jericho probably began as a camp of hunter-gatherers who took advantage of the abundant fresh water from the underground spring. Archaeologists have discovered evidence to suggest this, including abandoned tools and the remnants of wild plants and animals. The overlying layers illustrate the dramatic changes that followed.

Remnants of round houses, often in clusters and connected by adobe walls (probably to keep livestock out of the inner yards), have been found. These houses were constructed of mud bricks with inclined walls and domed roofs and had cultivated fields nearby. This was the beginning of agriculture and a reliable and renewable food source. Grains grown were wheat, rice, rye, oats, millet, and barley. Food could be raised in abundance and stored for the future. Ancient Jericho prospered with cultivated crops of barley and wheat, as well as domesticated sheep and goats. The organized society that developed can be seen in a variety of objects, including plastered human skulls used in rituals, tools replete with decorative carvings, and jewelry. Many of the knives found have a gloss on the blade, which is known to result from the cutting of grasses and cereal grains.

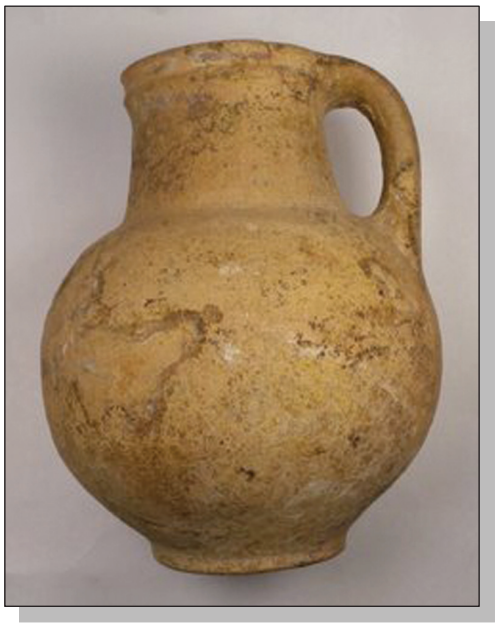
The people of ancient Jericho constructed a wall for both fortification and flood control. It was 6.5 feet thick and stood up to 20 feet high, encompassing an area of approximately six acres. The total area of the city was about nine acres. It is believed, based on the archaeologist's rule of thumb of 200 persons per acre, that up to 1,200 people might have lived in ancient Jericho at its peak. One of the most amazing discoveries has been a circular stone tower with an internal stairway. The purpose of the tower is not known.

Evidence of trade is seen in the minerals and shells not found locally, such as obsidian and various green stones indigenous to Anatolia, turquoise from Sinai, and cowry shells possibly from the Red Sea. Jericho could have exported resources such as salt and bitumen (a tar-like material used to stick things together).

The excavation of some artifacts, such as greenstone amulets, hint at religious rituals. Burial rituals and ideas about death can be surmised from location and position of skeletons found.

Some bodies were buried below the floors of the houses, sometimes with the head removed. Skulls have been found in groupings inside some of the walls, as well as underneath houses. In one instance, the skulls had been arranged in a circle, all looking inward. Infants have been found in groupings as well, some with bodies intact and others with the head removed.

Tower of Jericho, Tell es-Sultan archaeological site, ca. 7000 BCE



Jug or pitcher, light brownware, found in a tomb
at Tell en-Nasbeh, Palestine, in 1932.

Investigating Archaeological Sites

Guilá Naquitz Cave Group, Oaxaca, Mexico

Adaptations to farming as a way of life in Mesoamerica took place over thousands of years—much more gradually than in other places in the world. It appears that the hunter-gatherers of this area began cultivating plants while still living a semi-nomadic life. The location of one extensive dry-cave excavation in Mesoamerica is Guilá Naquitz.

Naquitz is a cave 1,926 meters above sea level (16º57' N and 96º22' W) overlooking the Oaxaca Valley of Mexico in South America. Two rivers, the upper Rio Atoyac and the Rio Salado, flow through the valley.

Although this early date had been contested, archaeologists now feel confident that they have evidence that the people of Guilá Naquitz cultivated squash 9,000 years ago. Using current knowledge of the history of domesticated plants in Mexico combined with data gleaned through radio carbon dating, scholars believe that these gourds, Cucurbita pepo, were cultivated for their protein-rich seeds. The squash is the same species as the modern pumpkin and the summer squash. While it seems that the seeds provided nourishment, the skin of this gourd served as a container. Remnants of other plants, such as corn and beans, discovered in the area have proved to be about 5,000 years old.

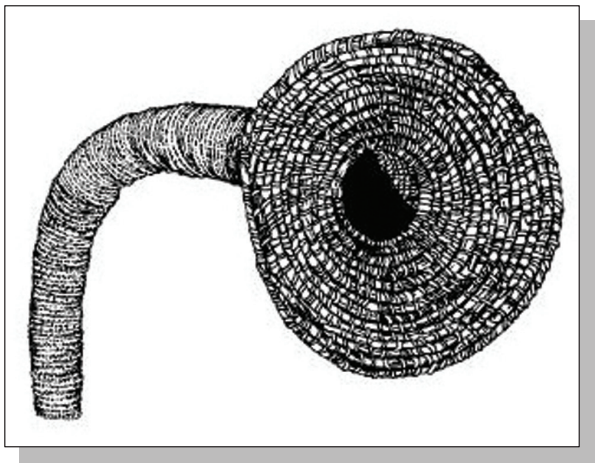
The excavation of Guilá Naquitz has provided evidence of periodic inhabitation between the months of August and December over a span of about 2,000 years. These were the months when edible, native vegetation was ripening. Evidence shows that there were six distinct periods of time when people took shelter in the cave. Archaeological excavations provide evidence of areas where butchering, food processing, cooking, and tool making took place. We may also infer, based on the changing layout over time, that gender roles became more distinct over the 2,000 years the cave was used.

The people of Guilá Naquitz learned over time to forage for different plants, according to the season. The unpredictable rainfall necessitated experimenting and sharing new knowledge of plant adaptability. Evidence of their success is the seeds that have been found in the cave. Some seeds germinate in wetter conditions, while some grow better in drier soil. Understanding and planning for variations in rainfall would allow crops to be harvested every season, ensuring food production and survival. Dependable harvests allowed them to rely more heavily on the maize, beans, and squash they were able to produce. When the harvest was in excess of the people's needs, they stored food by digging pits in the ground at the back of the caves.

Investigating Archaeological Sites

Gunditjmara, Australia and Papua New Guinea

Farming in aboriginal Australia took place in a different manner. Hunter-gatherer societies burned vegetation to encourage the growth of preferred plants. Until recently, it was commonly believed that all aboriginal people in Australia lived a mobile lifestyle. Recently, researchers surveyed one site in particular and determined that the aboriginal people of Gunditjmara were not settled.



A drawing of a fish and eel trap from Lake Condah.

After studying the findings, archaeologist Heather Builth set out to research the area for herself. Her interdisciplinary investigation showed something quite different about the site, the home of the Gunditjmara in the Lake Condah region (142°0'E and 38°5'S) in southeastern Australia. Using core samples, radio carbon dating, and ethnographic and historical eyewitness evidence, she was able to discover and relate a detailed picture of a sophisticated society run by the Gunditjmara. She discovered that around 8,000 years ago, the hunter-gatherers from the Lake Condah region cultivated approximately 100 square kilometers (more than 24,000 acres), not with plants, but eels. They created artificial ponds from the natural wetlands, which were connected by channels, and they built stone fish traps to take advantage of the migration cycles of the eels. Recent findings show that the aboriginal people of Gunditjmara would have been able to feed more than 10,000 people with the eels they farmed and traded.

While ancient aboriginal people lived in small, mobile communal bands where wealth and power were shared, the people of Gunditjmara built stone huts, evidence that they were a sedentary people. Previous experts had dismissed the rock formations as being random. Builth used careful measurement and statistical analysis to show that the rock formations were not natural—that they were, in fact, the foundations for stone huts.

Burnt, hollowed-out trees, frequently located right next to the eel traps, served as smoke houses to persevere the freshly caught eel for later consumption. This method of preserving the huge numbers of eels believed to have been farmed also led Builth to believe that the people of Gunditjmara were involved in trade. The story of the eel farms of Gunditjmara is proof positive that there is much for us to learn.

Another archaeological site near Australia may reveal early cultivation of an important crop. At a site called Kuk in the highlands of New Guinea, a series of channels that dates to about 10,000 years ago seems to show evidence of being made by humans to serve as a canal to irrigate or drain crop land. In addition, studies of ancient grains of pollen show that at about the same

time, the forests of Kuk began to change to grasslands. The investigators said this may have been evidence of clearing the forests to grow crops.

Further investigations found fragments of banana plants called phytoliths dated to between 6,440 and 6,950 years ago. Phytoliths are built of silica crystals that gather in certain parts of a plant while it is alive. After the plant dies and decomposes, the phytoliths can show what plants thrived in a certain area at a particular time. The number of banana phytoliths found at the Kuk site dated to 7,000 years ago was more than a typical grassland would contain. The large number of banana phytoliths could show that people at Kuk were planting fields of bananas. These banana fragments belonged to a subspecies that later led to the domesticated bananas that we know today. Evidence of farming other crops in the New Guinea highlands includes the starchy root crop called taro, found in a valley in New Guinea's mountainous interior. The big island now joins a select few places in the world as a location where agriculture began. Investigators believe that this site reveals that bananas were first cultivated in New Guinea and spread from there.

The combination of evidence from pollen and the channeled formations show that the people living at Kuk made major adaptations of the local environment at a very early period. Kuk was a swampy area, and although a swamp may sound like a bad place to farm, the Kuk region actually would have been a good place to start domesticating plants. It lay on the boundary between wet and dry ecological regions, allowing many different types of plants to flourish that could have been exploited by humans. People might have visited the place often because of the variety of food-bearing plants.

Two of these crops were bananas and taro, and scientists are speculating that sugar cane may have gotten its start in the same region.

The canal formations may or may not be the work of human hands, but the attempt to drain away or concentrate water at this place may be related to farming at the site.

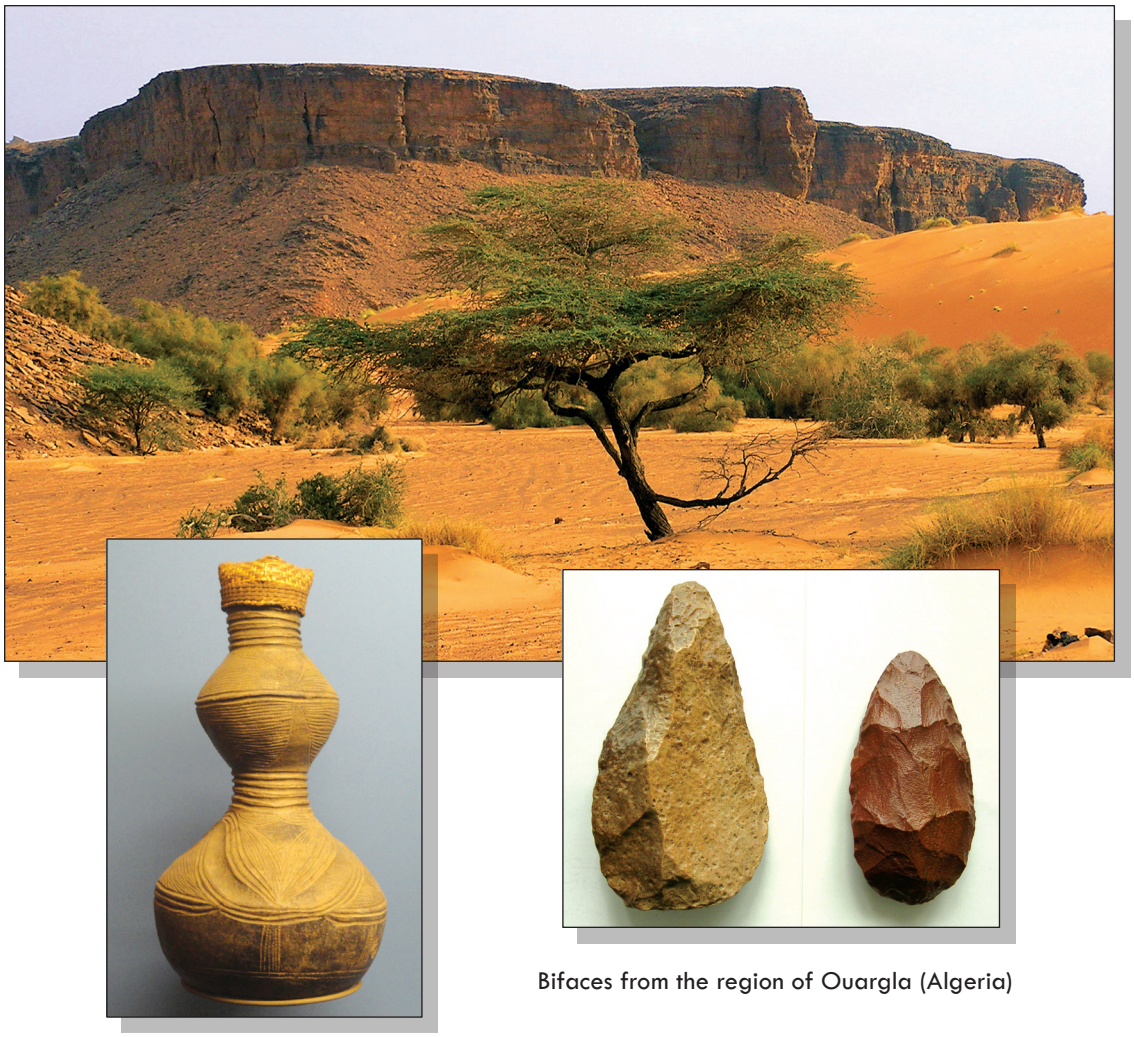
Investigating Archaeological Sites

Dhar Tichitt, West Africa

The archaeological surface site located at Dhar Tichitt appears to lie on what was a 50-meter stretch of ancient beach on the edge of a dry lake bed. It was found in Mauritania at latitude 18° 26' N, longitude 9° 5' W. The site has been dated to the late Holocene, about 7000 BCE.

For archaeologists, a problem of identifying early African agriculture is that there does not appear to be one center, nor did one crop dominate and then diffuse to other locations. Early theories about the beginnings of agriculture in Africa centered on the Nile Valley and on the Niger delta area in West Africa. Little archaeological evidence of that theory has been found, however. Patrick Munson, the archaeologist who investigated the Dhar Tichitt site, believes that evidence of the beginnings of farming would be found farther north of the Niger river, in marginal areas. The reason for seeking this evidence in the desert is that the area covering the Sahara is known to have been much wetter during late pre-historic times. Rock art found in the driest areas of desert shows rich animal life, including giraffes, crocodiles, and rhinoceros, in grasslands and wetlands. Cattle remains at lower levels are evidence that herders began to settle Dhar Tichitt between 5,000 and 3,500 years ago. The site at Dhar Tichitt is near an area where wild grasses are related to domesticated varieties of seed crops such as sorghum. Earlier archaeologists had already found Neolithic village remains in the area. Finally, the area is not far from the upper Niger River valley, which was a center of the early West African civilization of Ghana.

Dhar Tichitt in southern Mauritania showed a cultural response to a drying climate. Digging revealed eight phases, from hunting animals (2000 BCE) to the beginnings of herding (1500–1100 BCE). In later periods, people began to rely more on grains, based on the presence of millstones. The plant remains found include cramcram, a spiny famine food, as well as millet and sorghum in the later phases. Identification of the species found showed that people living at Dhar Tichitt, first gathered wild grasses, then planted them. This development took about 100 years. This is very rapid development unmatched by other sites. The investigators theorized that the



Bifaces from the region of Ouargla (Algeria)

people at Dhar Tichitt must have been somewhat familiar with the idea of farming and migrated from another area. People seem to have begun herding and planting as the climate grew drier at the site.

Artifacts from the site included chipped stone points, scrapers, knives, awls, choppers, and blades made from quartz, chert, and slate. Ground stone tools included axes and grinders made of dark, hard stone. Mortars for grinding grain were also found at the site. Bone tools had been made into awls, scrapers, and beads, although not many bone tools were found. At a nearby site, a harpoon-like bone tool was found that hunters probably used to hunt in the area of the lake.

Many stone bracelets were found at different levels of the site. Animal remains include crocodile and hippo bones and shellfish.

Many pieces of ceramic pots and bowls were found, most of them being either undecorated or with simple corded decoration at the top, or with woven patterns and comb decorations. An important find related to the millstones was millet grain seeds impressed into the pottery, showing evidence of agriculture, since the types of seed were identified with cultivated, rather than wild, types.

LESSON 3

Understanding Domestication of Wild Plant Species

Procedure

1. Bruce D. Smith states, "Domestication is the human creation of a new form of plant or animal—one that is identifiably different from its wild ancestors and extant wild relatives." Using the definition of domestication from Smith's, *The Emergence of Agriculture* (New York: Scientific American Library, 1998), discuss the idea of plants becoming dependent on humans, and humans dependent on plants. Discuss what types of plants people have domesticated over time (e.g. grains from grasses, nuts from trees, tubers and other root crops, annual vegetables, fruit trees, herbs for medicinal and culinary purposes, flowers for gardens).
2. Ask students what methods archaeologists and paleobotanists might use to identify the remains of prehistoric or ancient plants that are associated with human settlements or sites of occupation by hunter-gatherers. (Answer: morphological clues such as seed shape, stem shapes, grains, impressions of plant parts in clay pots, hearths or earthen floors, charred plant remains such as corn cobs, and pollen). Some students may do a mini-research project to find out about recent plant DNA studies as ways to relate and distinguish wild and domesticated plants.
3. Students will use Student Handout 2.3.1 to investigate the different qualities of plants that distinguish wild, self-propagating versus domesticated, human-propagated plants. Students will also consider how people gradually altered wild plants by selecting four characteristics they found favorable. Students will be able to describe, by analyzing the cartoon drawings and answering the accompanying questions, the characteristics that were valued as advantageous by early gatherers and farmers, and explain how these characteristics were often the opposite of those necessary for plants to propagate in the wild. By preferring these qualities, plants that possessed them were favored by humans. Therefore these species survived and continued to change based on human cultivation.
4. Assessment: Students will write a paragraph, make a visual presentation or orally summarize their findings about early human domestication of plants.
5. Extension: Using the Internet, books, or specialized periodicals, have students research a domesticated plant of their choice and present in written and/or graphic form how its wild ancestor differs from its cultivated offspring. Alternatively, students can research current genetic modification of wild and domesticated species through traditional cross-breeding as well as new techniques such as gene splicing. Their research product should include information about what qualities agricultural scientists are attempting to achieve in modifying these plants (i.e. disease resistance, increased yields, long shelf life).

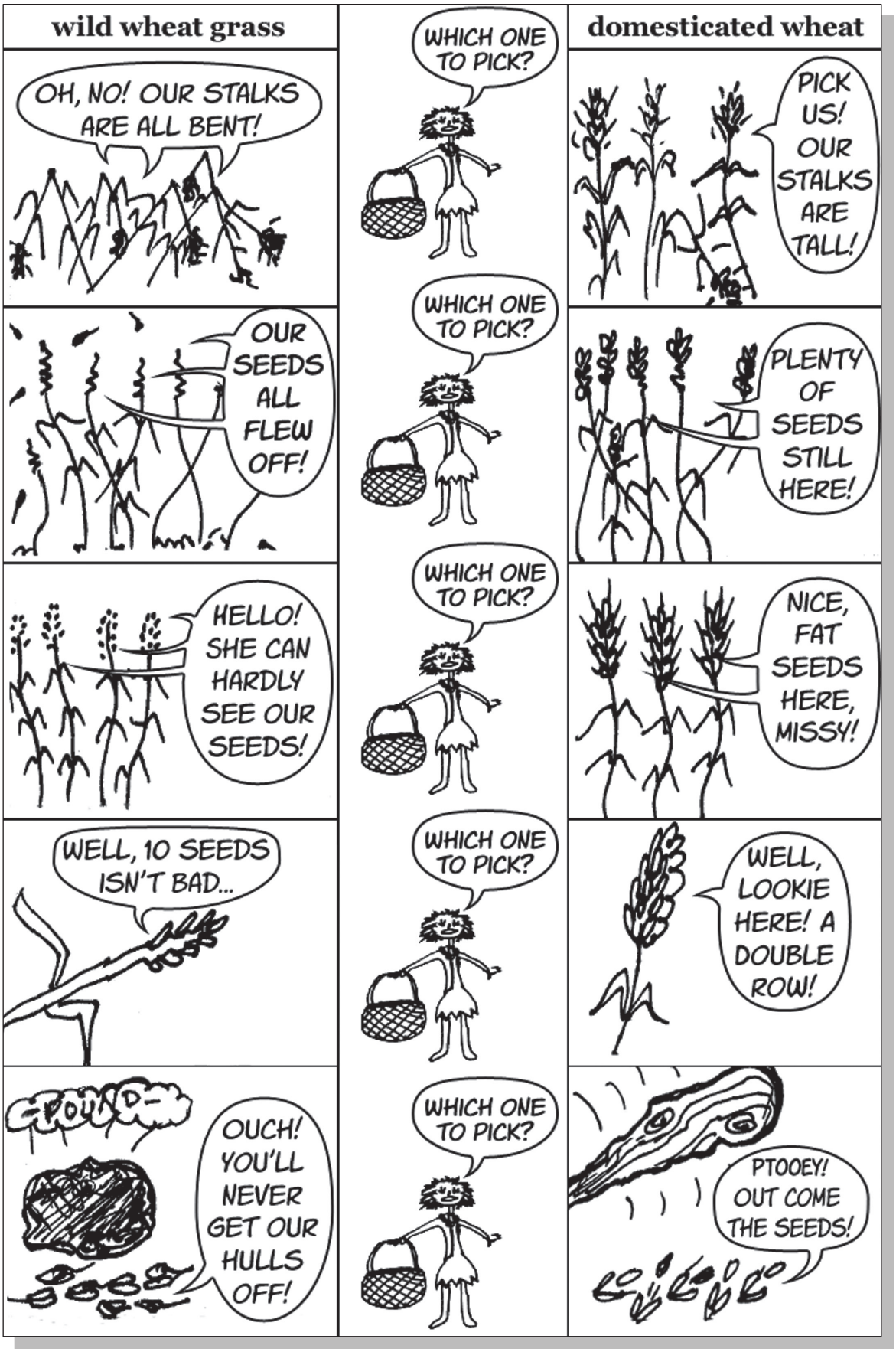
From Wild Grass to Wonder Bread

Scientists studying ancient plant remains at archaeological sites try to find out what plants or animals ancient humans ate and whether these foods were wild or domesticated. For example, by studying animal bones and the remains of ancient livestock enclosures, they can tell whether the people were merely bringing hunted catch to the site (if the bones represent mostly adult animals with signs of weapons used for the kill), or whether there were larger numbers of younger animal bones or female specimens (indicating that the animals were herded and kept for milk or slaughter). Evidence of permanent settlements rather than migratory camps can help determine whether and what type of farming was practiced at the site. Discoveries of tools used for cultivating, harvesting, storing, and preparing plant foods help archaeologists build a case for the type of settlement and its activities. Dating the site using organic remains is also important.

A rock painting in the Tassili n'Ajjer mountain range in southeast Algeria

By finding remains of plants such as ancient seeds, stalks, cobs, seed casings, and nut shells preserved in layers of earth associated with different periods of human settlement, scientists can study the biological features of individual plants such as the size and structure of the stalks, the attachment points of seeds, the seed husks, or seed heads. Study of pollen has become useful with the development of advanced microscopes and DNA (the cell's hereditary blueprint).

Using these techniques, paleo-botanists have been able to discover which plant species were domesticated early in human history, and how these plants changed as people chose foods because of certain biological characteristics. By this method, people helped to develop new varieties of wild plants, eventually creating plants that could no longer survive or reproduce without human effort,but which produced more food per plant than the wild varieties. Thus, farming was born. Using the following cartoon and graphic organizer, discover what qualities humans "encouraged" in wild plants that resulted in domesticated varieties and helped them to reproduce and pass on their new biological traits.



Summarize what you learned: List the qualities of winners and losers in Ms. Gatherer's food basket on the chart below. Which wheat plant traits are needed in the wild? Why? Which traits are most desirable for human gatherers and farmers? What other traits might be desirable for domesticated wheat?

Wheatgrass trait	Losers to the wild side	Winners to domesticated bliss
Stalk strength		
Seed attachment & dispersal		
Seed size		
Number & arrangement of seeds		
Hull adhesion to kernel		

LESSON 4

Three Sisters

Complete Nutrition from One Field

Procedure

1. Distribute Student Handout 2.4.1 as a reading. Discuss the concept of "combination planting" and review the characteristics of each plant in the "Three Sisters" combination.
2. Discuss the nutritional importance of carbohydrates, proteins, and vitamins in the combination. Selected students may do additional research on this.
3. Extension:
    a. Use the Internet to find out what groups in North America use the Three Sisters combination planting and what legends are attached to it.
    b. Use the instructions to try planting the Three Sisters in a container or garden. Students report on the results. It is best to use a combination of varieties suitable for the planting, and such heirloom seed packets available from specialty mail order suppliers online.
    c. Research other combination plantings being investigated by agricultural laboratories today to solve problems of world hunger and increase yields and nutrition. Especially, look for evidence for the origin of some of these ideas in traditional agriculture of indigenous peoples around the world.

Three Sisters Feed Many People

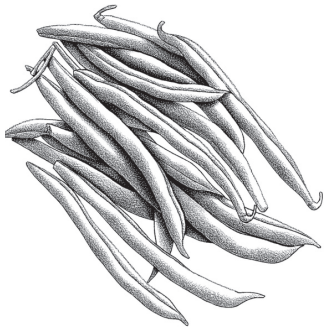
In today's hungry and intensely populated world, scientists are always looking for ways to get the maximum nutrition out of the earth. Hundreds and maybe thousands of years ago, people living in North America found a way to do that. They developed a system of companion planting that helped the plants and provided excellent nutrition. They called this combination of plants the "Three Sisters." Many different Native American groups know and claim the Three Sisters. It may have been developed in the Southwestern desert. The Three Sisters were corn, beans, and squash. Planting these three food crops together increased productivity and nutrition.

Why do the Three Sisters grow well together, and what makes them such a healthy combination?

Corn provides a lot of calories from fat, starch, and sugar. Beans provide important proteins for building muscle tissue. Squash provides vitamins and fiber, and its seeds have both oil and protein.

Each of the Three Sisters plays an important role in solving a problem. Think about how each plant grows.

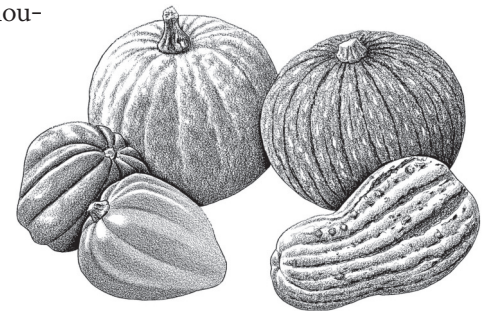
1. Growing corn in rows takes up a lot of land and water. They have to be planted about a foot apart to grow well, and they need fertilizer.
2. Beans are a climbing vine that need something to hold them up.
3. Squash, with its large leaves, takes up a lot of room. It creeps along the ground. Squash needs fertilizer to grow well.



Here is how the Three Sisters crops work together:

1. Corn is planted first in a mound.
2. After the corn grows a foot tall or so, beans are planted around it. The beans climb up the cornstalk as they grow.
3. Then, squash is planted around the mound of corn and beans. The squash crawls on the soil as it grows and its large leaves cover the ground, shading the soil to prevent weeds and trap moisture in the soil for all three "sisters."
4. As the corn and squash grow, they pull nitrogen out of the soil. The beans use nitrogen-fixing bacteria to put nitrogen back into the soil. Beans also add other nutrients to the soil that are used as the plants grow.

Corn has been grown by indigenous peoples in Mexico for about 6,000 years. Cultivation of corn spread from one group to another until people all over North America grew it. Beans came from Central and South America, and there are more than four thousand types of beans. People in Mexico began to plant beans more than 2,000 years ago. Squash also came from Central America and was used for thousands of years for seeds, for the fruit, and for utensils (bowls, ladles and spoons).



How to Plant the Three Sisters

Plant corn in the middle of a small mound of soil in mid-May. Thin out the young plants leaving four well-spaced ones. Allow the plants to reach six inches in height. Then sow beans around the corn, and sow squash around the mound. When those plants appear, thin to four bean and two squash plants. If you lack space, try planting the Three Sisters in a bushel basket, half barrel, or any available large container. Use lightweight soil mixed well with compost and place in a sunny location.

Try planting the Three Sisters in a bushel basket, half barrel, or any available large container. Use lightweight soil, well mixed with compost and place in a sunny location. Plant corn in mid-May and thin to four (4) well spaced plants and allow the plants to reach six (6) inches. Then sow beans and squash and thin to four (4) beans and two (2) squash plants. Experiment with different numbers of seeds. To ensure adequate corn pollination remove the male flower or tassel, and shake it vigorously over the female silks. This is done when the male flower first tassels out. If you notice the dust-like pollen grains adhering to the silks, then you know your efforts were effective. (From the Evergreen Learning Grounds program at http://www.evergreen.ca/en/lg/h-corn.html.)

Not just any kind of corn, beans, and squash will work. Heirloom varieties are most like the ones planted long ago, and none of them overpowers the others. You can get seed packets online by looking up Three Sisters seeds (for example, http://www.littlepinecrafts.com). That packet includes varieties called Six Nations Calico Corn, Seneca Scarlet Runner Bean, and Acorn Squash.

Resources on the Three Sisters

Brown, Dann, Professor of Botany, Eastern New Mexico University at http://horizon.nmsu.edu/ddl/3sisresources.html.

Galinat, Walton C. "Maize: Gift from America's First Peoples." In *Chilies to Chocolate: Food the Americas Gave the World.* Edited by Nelson Foster and Linda S. Cordell. Tucson: University of Arizona Press, 1992: 47–60.

Kaplan, Lawrence, and Lucille N. Kaplan. "Beans of the Americas," pp. 61–79. 1992.

Rozin, Elisabeth. *Blue Corn and Chocolate.* "Corn," pp. 3–5, and "Beans, Pumpkins, and Squashes," pp. 139–142. New York: Knopf, 1992.

CHAPTER 3

By Anne Chapman

River Valleys and the Development of Complex Societies in Afroeurasia

WHY STUDY CIVILIZATIONS IN AFROEURASIA?

Our current way of life is rooted in the complex societies, traditionally called civilizations, that originated in Afroeurasia between about 4000 and 1500 BCE. Many of the integral features of our own world developed in these societies during this period. We have inherited from the builders of those societies many fundamental ideas and inventions, including urban living, the state, social class hierarchies, writing, institutionalized religion, mathematics, astronomy, and wheeled transport.

This chapter focuses on the earliest civilizations that arose in the valleys of the Tigris-Euphrates River (Mesopotamia, today Iraq), the Nile River (Egypt), and the Indus River (today Pakistan and northwestern India) during the fourth and third millennia BCE. The chapter also considers more briefly the early civilization of the Yellow River valley in China, which emerged later than the other three. This chapter alerts students to the characteristics these complex societies had in common, to some of the differences among them, and to major changes they underwent down to about 1500 BCE.

OBJECTIVES

1. Describe major characteristics of the complex societies (civilizations) that emerged in Afroeurasia during this period.
2. Compare the life ways of the earliest city-dwellers during the period of about 3500–2500 BCE with those of neolithic farmers.
3. Describe the changes that occurred in early complex societies in human relationships to the environment, to other humans, and to ideas.
4. Assess the advantages and disadvantages of life in complex societies compared to earlier Neolithic societies.
5. Analyze primary source documents and assess their reliability as historical evidence.

TIME AND MATERIALS

This chapter is versatile. Both lessons can stand on their own, each taking one or two 45-minute class periods. Time taken will vary, depending on how much of the lesson is used. The only materials needed are copies of the student handouts, pencils, and paper.

HISTORICAL CONTEXT

Scholars have different ideas about where to mark the historical dividing line between the era of Neolithic farming societies in Afroeurasia and the emergence of complex societies, or civilizations. Historians generally agree, however, that early complex societies had distinguishing characteristics, though not every complex society necessarily displayed all of them. These characteristics include:

- Cities.
- The state, that is, a central governing authority in which a relatively small group of people exercised, to some extent, command over the economic and political life of everyone else. Membership in the state was based not on kinship relations but on common submission to the governing authority.
- Occupational specializations. (Part of the population engaged in jobs or professions other than growing food or herding animals.)
- Institutions for collecting, storing, and distributing surplus products, staffed by officials and managers.
- Social class hierarchy. (Typically, a small privileged elite occupied the top rank, the vast majority of farmers, herders, and laborers, the bottom. A minority population of people possessing commercial wealth or special skills constituted a middle group.)
- Institutionalized religion. Monumental public architecture. Writing.
- Creation and accumulation of knowledge in mathematics, engineering, astronomy, and other technical and scientific fields.

If we go back five thousand years, we see that the trend toward larger and denser populations practicing farming was occurring only in limited areas of Afroeurasia. In most regions, the frontier of farming was advancing slowly. However, in three regions—the valleys of the Tigris-Euphrates, Nile, and Indus rivers—startling changes were occurring. In those places, and nearly simultaneously, populations were growing at a much faster rate than at any earlier time in history, and humans were beginning to organize themselves in remarkable new ways. These three complex societies all arose within the mid-section of the Great Arid Zone, that is, the belt of arid or semi-arid territory that extends from all the way across Afroeurasia. Climatologists have hypothesized that the hot, dry conditions that prevail today in those regions set in around 4000 BCE. Complex society was therefore possible only because spring runoff from wet highlands flowed into rivers that crossed arid country on their way to the sea. The Tigris and Euphrates originate in cool, green mountains of eastern Anatolia. The Indus flows from the Tibetan Himalayas. The Nile has its source in highland Ethiopia and tropical East Africa.

In fact, we may think of the three early river valley civilizations as all emerging in one region, the middle part of the Great Arid Zone. All three occupied approximately the same belt of latitude, shared a similar climate, and produced the same basic crops centered on wheat and barley. Also, trade took place between all three, by both land and sea.

Complex society appears to have arisen first in southern Mesopotamia (about 3600 BCE), then in Egypt (about 400 years later), then in the Indus valley (about 2600 BCE). In East Asia, citied society appeared in the Yellow River valley of northern China but not until around 1700 BCE.

During the gradual transition to complex societies, humans' relations to the environment, to other humans, and to ideas changed.

- First, the development of these societies was inseparable from humans finding new and more intensive ways to exploit the environment to produce surplus wealth and sustain growing populations.
- Second, rising production and population required new institutions to manage the interactions among individuals and groups who lived in much closer proximity to one another and had more complicated economic, social, and political relations. The state served to organize and regulate human behavior on a much larger scale than had been known in the early millennia of farming.
- Third, religious ideas became more systematized and expanded their focus from the world of nature to concern with human social relations. Writing promoted the spread of ideas but also limited access to them because only a small minority achieved literacy. (For further discussion of the rise of complex societies, go to Student Handout 3.1.1).

THREE ESSENTIAL QUESTIONS

Humans and the Environment

Research and report on the hypothesis that the civilizations of both Sumer in the Tigris-Euphrates valley and Harappa in the Indus River valley disintegrated owing to degradation of the natural environment linked to irrigated farming and urbanization.

Humans and Other Humans

Investigate evidence for the hypothesis that Egyptian, Indian, and Mesopotamian societies borrowed from each other. In what ways might such borrowing have taken place? What effects might cultural borrowing have on a receiving society? Why are foreign innovations sometimes rejected? What examples of cultural borrowing and rejection can you think of?

Humans and Ideas

Compare the social, political, and cultural purposes of monumental buildings such as temples or pyramids in early Mesopotamia or Egypt with the purposes of public monuments we may visit today in Washington, D.C.

KEY THEMES

This chapter addresses the following historical themes:

Key Theme 1: Patterns of Population

Key Theme 2: Economic Networks and Exchange

Key Theme 3: Uses and Abuses of Power

Key Theme 4: Haves and Have-Nots

Key Theme 6: Spiritual Life and Moral Codes

Key Theme 7: Science, Technology, and the Environment

CORRELATIONS TO NATIONAL HISTORY STANDARDS

National Standards for History

Era 2: Early Civilizations and the Emergence of Pastoral Peoples, 4000–1000 BCE. 1:
The student understands the major characteristics of civilization and how civilizations emerged in Mesopotamia, Egypt and the Indus valley.

INSTRUCTIONAL RESOURCES

Alchin, Raymond, and Bridget Alchin. *Origins of a Civilization*. New Delhi: Viking, 1997. Detailed information about individual Harappan cities and settlements. Useful as a research resource.

Brewer, Douglas J., and Emily Teeter. *Egypt and the Egyptians.* Cambridge: Cambridge University Press, 1999. Comprehensive background for teachers; selections also suitable for older students. Scholarly but lively and readable text; quotes from ancient letters, law codes, hymns, funerary texts. Extensive and useful illustrations.

Christian, David. *Maps of Time: An Introduction to Big History*. Berkeley: University of California Press, 2004. Two relevant chapters present an interesting meld of information and theory.

Crawford, Harriet. *Sumer and the Sumerians*. 2nd ed. Cambridge: Cambridge University Press, 2004.

Kemp, Barry J. *Ancient Egypt: Anatomy of a Civilization*. 2nd ed. New York: Routledge, 2006.

Kenoyer, Jonathan Mark. *Ancient Cities of the Indus Valley Civilization.* Oxford: Oxford University Press, 1998.

Kramer, Samuel Noah. *History Begins at Sumer: 27 "Firsts" in Man's Recorded History.* Garden City, NY: Doubleday Anchor Books, 1959. Individual selections are brief (about 3–6 pages) and readable enough to be selectively assigned to some students. Reader-friendly translations of Sumerian texts, with Kramer's clear and smooth commentaries, give intimate glimpses into life in early Sumer.

Kuhrt, Amelie. *The Ancient Near East, c.3000–330 BC.* 2 vols. New York: Routledge, 1997. Provides considerable range of accessibly translated original source documents, useful maps, and lots of information, but it is tough to wade through. Only useful as a possible source for original documents.

Leick, Gwendolyn. *Mesopotamia: The Invention of the City.* London: Penguin Books, 2001. Selected parts, identifiable by headings, useful for teachers and could perhaps be assigned to older students. Account of excavations, finds, and life in ten cities, in chronological order from Eridu (dating back to 4900 BCE) to Babylon (as recent as about 1800 BCE). Enlivened by quotations from varied sources in unusually accessible translations.

Lesko, Barbara S. "Women of Egypt and the Ancient Near East." In *Becoming Visible: Women in European History,* edited by Renate Bridenthal, et al. 2nd ed. Boston: Houghton Mifflin, 1987. Interesting and readable survey that considers women in the context of the social and cultural settings in Egypt and Mesopotamia in less than twenty pages for the period of about 3100 to 1500 BCE. Accessible to students who are competent readers.

McIntosh, Jane. *A Peaceful Realm: The Rise and Fall of the Indus Civilization*. Boulder, CO: Westview Press, 2001.

Pollock, Susan. *Ancient Mesopotamia: The Eden That Never Was*. Cambridge University Press, 1999. Dense presentation for the truly dedicated. Much detailed information drawn directly from archaeological and documentary sources.

Possehl, Gregory L. *The Indus Civilization: A Contemporary Perspective*. Lanham, MD: Altamira Press, 2003.

Postgate, J. N. *Early Mesopotamia: Society and Economy at the Dawn of History*. New York: Routledge, 1994.

"The Pyramids and Egypt's Old Kingdom." *Calliope*: *Exploring World History*. 12 (September 2001). A lively historical magazine for children.

Shaw, Ian. *Exploring Ancient Egypt*. New York: Oxford University Press, 2003.

"Sumer and Its City-States." *Calliope*: *Exploring World History* 14 (September 2003). A lively historical magazine for children.

Van De Mieroop, Marc. *A History of the Ancient Near East, ca. 3000–323 BC*. 2nd ed. Malden, MA: Wiley-Blackwell, 2006.

LESSON 1

What Does It Take to Be a "Civilization"?

Introductory Activities

Ask students to brainstorm or discuss in groups or with a neighbor the following:

1. Can we describe the society of any hunter-gatherer group (such as the mammoth bone users in the Ukraine) living before about 15,000 BCE as a "civilization"? Why or why not?
2. Can the society of any agricultural settlement (such as Çatal Hüyük) before about 5000 BCE be described as a "civilization"? Why or why not?
3. What, then, would you consider the most important characteristics that define a society as a "civilization"? Explain your reasons for choosing the characteristics you identified.
4. What reasons can you give for the fact that cities did not develop anywhere in the world until after about 4000 BCE? Explain your reasoning.
5. What are the most important ways that life in a city differs from life in other types of human settlements? Explain your reasons for considering your choices the "most important" ones.
6. What are the most important advantages and disadvantages of living in a city?
    a. Explain your reasons for considering your choices the "most important" ones.
    b. In what ways, if any, do the advantages and disadvantages of living in a city differ for various groups in a city's population?
7. Have students share their ideas, and then agree on a single hypothesis for each of the following, in each case supporting the hypothesis:
    a. What the most important characteristics that define a society as a "civilization" are.
    b. What the most important distinguishing characteristics of a city are.
    c. What the most important advantages and disadvantages of living in a city are, taking differences between groups into account.
8. Ask students to keep a record of the hypotheses agreed on for a, b, and c since one of the assessments at the end of the chapter may require students to provide (1) all the evidence that supports, and all the evidence that contradicts, the hypotheses; and (2) their individual revision of the hypotheses in light of that evidence.

Activities

The following suggested activities and discussions are all based on students having read the information in Student Handout 3.1.1. Share with students the questions and activities you are going to ask them to work with before they start going through the student handout. This helps them to read and consider it more attentively.

1. What problems were solved in ancient Southwest Asia during the period just before the earliest civilizations can be identified, about 7000 BCE to about 4000 BCE; and what new problems arose? This activity lends itself well to small group work. It can serve as a partial review of earlier information from Chapter 1, Lesson 2 ("Domestication Accomplished: Now What?").

2. What were the most important differences between peoples' lives in large agricultural settlements (such as Çatal Hüyük and Jericho) during the eighth millennium BCE and in the complex societies of Mesopotamia and Egypt during about 3500–2500 BCE?

    a. Consider the following:
        - People's relationship to the environment (economic organization)
        - People's relationship to each other (political and social organization)
        - People's systems of ideas (religion, values, the arts, science)

    b. For which of the above is the information needed to make comparisons most lacking?

    c. What reasons could you give for differences in the availability of information?

    d. Explain how you decided what was "important."

3. You are given the choice of spending your life in one of the two societies below:
    - A large agricultural settlement (such as Çatal Hüyük) during the 7000s BCE
    - Mesopotamia or Egypt about 3500–2500 BCE

    a. Which would you choose? Why? Would you choose differently if you were a:
        - Slave
        - Merchant
        - Scribe
        - Peasant woman

    b. Explain the reasons for your choice.

4. What evidence might you give in favor of, or opposed to, each of the following claims. This activity lends itself well to small group work.

    a. The earliest civilizations hardly benefited anyone other than the small, largely urban and male elites.

    b. Some segments of the population became worse off as a result of the development of complex society (civilization).

    c. Social hierarchies in the earliest civilizations were flexible enough so that some of those with low status could rise by their own efforts.

5. From the information in Student Handout 3.1.1, what can you infer about the values of people living in the complex river-valley societies during about 3500–1500 BCE? What changes in values could be identified, when and where? Explain what your inferences are based on.

6. Were the complex societies in Mesopotamia and Egypt between 3500–1500 BCE generally similar to or generally different from each other? Give evidence to support your assessment.

7. Would you agree with the statement that "early civilizations had fuzzy edges in both space and time"?

    a. Explain your reasoning, and give evidence to support your opinion.

    b. Would you have the same opinion about the cities in early civilizations? Why or why not?

8. What four or five things in Student Handout 3.1.1 helped you most in understanding what it took for a society to be a "civilization"? What questions do you still have unanswered that would help you to better understand what it took to be a "civilization"? What kind of evidence might realistically be available to answer these questions?

9. This activity could serve as assessment. You have been asked by a textbook publisher to act as their consultant on a chapter to be called "The Emergence of Complex Societies in Afroeurasian River Valleys." Your job is to come up with a time line that shows all the information you feel is important for students to know about this topic. Base your time line on the information in Student Handout 3.1.1. The publisher also needs to know from you the reasons why you have chosen the information you have shown as being important.

10. This activity could also serve as assessment. You have been invited to give a talk in a history class of students about two years younger than you on "How Civilizations First Arose." Basing your talk on the information in Student Handout 3.1.1, explain the half dozen or so most important points you feel you would need to make for your audience to understand what is meant by "civilization." What do you consider the most important information you give these students so that they will understand how complex societies arose? Explain why you decided that the things you chose to talk about were "most important."

What Does It Take to Be a "Civilization"?

The earliest societies that have been called "civilizations" emerged in the river valleys of Afroeurasia. The first did so soon after 4000 BCE along Mesopotamia's Tigris and Euphrates rivers. A few hundred years later, one existed in Egypt's Nile valley, and some 500 years or so after that in the valley of India's Indus River. China's Yellow River valley witnessed the rise of complex society around 1700 BCE.

In the Tigris-Euphrates valley between about 7000 and 4000 BCE, exploitation of the environment intensified. Villages spread into less easily farmed areas, such as river valleys. Here floods left fertile mud in their wake but drainage was often needed. Arid plains beyond flooded areas could be made productive only by building irrigation works. Large-scale cultivation of nut and fruit trees began. Farmers learned how to use animals not only as a one-time source of stored meat and hides, but as continuing sources of milk, wool, and fertilizer. In Mesopotamia, animals began to be used to pull carts and plows. More efficient sickles of flint, then of copper and bronze, all made from imported materials, replaced earlier ones made of native baked clay.

As food resources grew faster, so did human populations. Land close enough to water for irrigation and close to settlements to make transport feasible became more valuable. Marked differences in wealth developed. Shifts in watercourses, both natural and human-caused, led to conflicts between communities. The need to predict, direct, and use the spring river floods led to the need for large-scale cooperation and to innovations in water management engineering.

Along the edges of the more intensively farmed areas, and in some pockets among settled communities, marsh- or desert-dwelling hunter-gatherers maintained older ways of life, intermittently trading with sedentary populations.

Human impact on the environment became increasingly varied and widespread. Landscapes were transformed from natural to man-made. Marshes were drained. Trees gave place to cereal crops. Orchards and date palms grew where only scrub had existed before. In lower Mesopotamia, over-irrigation turned some soils salty and barren. Native animals in some regions were deprived of their habitat. Towns and villages intruded on farm land. Problems of sanitation and crowding in fast-growing settlements put people in greater danger of disease and infection. With population ever denser after 4000 BCE, leaders built massive artificial hills as foundations for temples, citadels, and palaces.

Human relations became more intense and complex. Both people and resources became more concentrated. In early cities, rulers collected agricultural and commercial resources in centralized storage places, where they could be guarded and their gathering and distribution controlled.

In southern Mesopotamia, the area known as Sumer, the number of settlements identified grew from 21 to 123 between 4000 and 3000 BCE. The average size of settlements grew about fivefold, and the first cities arose. During the third millennium, an estimated 80 percent of the population was urban. In Egypt, there were similar increases in the numbers and sizes of settlements at about this time. Egypt, however, remained more village-based than either Mesopotamia or the Indus valley. In the Nile valley fewer cities developed and the population was spread more evenly.

The new cities were more than just enlarged villages. They were hubs in wide-flung trade networks, promoted by the new availability of ox-drawn carts and boats. In cities, artisans, laborers, and merchants concentrated. Cities became centers of manufacturing. New technologies were used such as alloying and casting metals for tools, weapons, and luxury goods. The wheel allowed for mass production of pottery.

Surplus resources allowed the emergence of full-time specialist occupations in the cities. Some of these jobs were concerned with organization and management of people and resources: rulers, government officials, scribes, and soldiers. Others were in artisanry, manufacturing, and trade. Specialists such as priests, priestesses, and religious officials acted as intermediaries between the people and the gods and goddesses. Some city-dwellers continued to farm, walking to nearby fields. People who lived in the countryside came into the cities to trade, deliver tribute to the temple, or work on large-scale building projects.

Cities became hubs of both local and long-distance trade. Sumer is known to have imported timber, marble, metals, and semi-precious stones. References to "boats from Dilmun (modern Bahrein on the Persian Gulf) bringing ivory, gold, carnelian, and lapis lazuli" appear in Sumerian royal inscriptions of the third millennium BCE. Archaeological evidence shows that sea trade connected Mesopotamia to the Harappan civilization of the Indus valley. There is also abundant evidence of thriving trade between northern Mesopotamian cities and both Anatolia (modern Turkey) and Iran.

Around 3000 BCE, Sumerian-style cylinder seals, architectural techniques, and art motifs appeared in Nile Delta settlements. Soon after, Egypt was importing marble from the Red Sea coast, copper from the Sinai Peninsula, cedar and cypress wood from Lebanon and Syria, and ebony and ivory from sub-Saharan Africa. Egyptian-made stone vessels of various dates before about 2000 BCE are known from excavations in Syria, Palestine, Crete, and Greece. Both in Mesopotamia and Egypt, the ruling class financed and controlled long-distance trade and also benefited most from it. But in Mesopotamia the merchants who acted as the rulers' agents are known to have traded also on their own behalf. They also made loans to government.

Hierarchy was another hallmark of emerging complex societies. After about 4000 BCE, the social structure in densely populated regions began to resemble pyramids. At the top of this pyramid were the most powerful political and religious leaders and the wealthiest landowners. They had a grip on power, rights, privileges, and prestige, all backed by religious ideas. Just below the top were the elite officials, managers, and high-ranking military officers. They saw to it that rulers' wishes and policies were carried out. Below this group was a minority population with special skills or with wealth gained in manufacturing or trade. The broad base of the pyramid included the vast majority of peasants and laborers, a class that had few possessions, rights, or life options. Slavery became widespread in Mesopotamia after about 2800 BCE. Many slaves had lost their freedom by being captured in war.

In Mesopotamia, women's inferiority to men was taken for granted, but they shared the social standing of their fathers and husbands. Up to about 2000 BCE, they benefited from some measure of equality. In both Sumer and Egypt, women occasionally served as rulers or held high office. Priestesses could command exceptional wealth, prestige, and power. Women generally

inherited equal shares of land with men, could own property, could sue in the courts, and worked in many jobs outside the home. Towards the end of the third millennium, however, an increasing emphasis on the importance of armies and conquest and on trade and manufacture as sources of wealth meant that women were increasingly excluded from the most valued occupations. Laws increasingly defined them as dependents and restricted to the home. In one Sumerian city-state, any woman speaking disrespectfully to a man was ordered to have her mouth crushed with a brick. The number of women in government or religious positions in Egypt and in supervisory positions in Mesopotamia declined.

States emerged in response to the need for central regulation that could be backed up with systematic coercion on a large scale. The ability of states' rulers to regulate and coerce was typically religiously supported, and buttressed by a near-monopoly of force that could command labor, tribute, and taxes. Rulers of states organized and financed public services, arranged for religious ceremonies and festivals, maintained irrigation works, controlled stores of food for famine relief, administered justice, and in some places issued written law codes.

Priests governed the earliest city-states in Mesopotamia on behalf of the city's chief god or goddess. Priestly power to coerce seems to have been based on both religious ideas and on economics because the temples controlled surplus grain and other commodities. In the third millennium, a secular leader typically replaced these religious authorities. Originally called something like "big man," he was soon described as "king." His power was based on control of the military, and his position became hereditary. A city-state normally only controlled its local hinterland of towns and villages. But city-states often warred with one another over territory and resources.

The kings of some city-states claimed to have united the whole of Sumer in southern Mesopotamia at various periods down to about 2200 BCE. At that time, Sargon became ruler of the Semitic city of Akkad in central Mesopotamia. His armies conquered all the independent Sumerian city-states. One documents records that "5,400 warriors ate bread daily in his presence." He established the first multi-ethnic, multi-lingual, multi-cultural empire that stretched from the Persian Gulf to Syria, Turkey, and Iran. His successors began to call themselves divine. Within a few generations his empire crumbled, but others followed in the second millennium.

Egypt's rulers were successful military leaders first, emerging from generations of conflict between rival towns and regions. From about 3100 BCE, the entire Nile valley from the great Delta upriver to the first of several cataracts (steep rapids) was united under a Pharaoh proclaimed as divine. His rule and that of his hereditary successors depended on the support of the powerful priesthoods of the various gods, enormous wealth based on taxes and tribute, and a monopoly of force. After about 1,000 years, central authority weakened, but from about 1570 BCE, a new dynasty arose that created an Egyptian empire extending far upriver and into Southwest Asia.

Some kind of central authority, perhaps a state, almost certainly existed in the early Harappan civilization of the Indus valley. This is suggested by the existence from around 2500 BCE of cities scattered over hundreds of miles sharing similar urban layouts with parallel streets intersecting at right angles. There is also evidence of uniformity in the size and shape of bricks,

weights, and pottery. However, no direct evidence of central rule has been found: no palaces, no elaborate royal tombs, no depictions of monarchs, no inscriptions that anyone can read.

Perhaps the most significant and enduring innovations that peoples of the early civilizations contributed to history were in the realm of ideas. The people of these civilizations invented writing, developed abstract thinking in mathematics, worked out ethical codes, and experimented in the arts.

Writing emerged as a system for recording information. It overcame the inaccuracy and impermanence of memory, eased communication between widely separated people, promoted the flow of information, and made possible both the cumulative storage and the control of knowledge. According to our most reliable current information, the earliest written records appeared in Mesopotamia on clay tablets about 3600 BCE, although some tantalizing recent evidence suggests that Egyptians may have been the first writers. Writing appears on seals in the Indus valley dating to about 2600 BCE. In China, the earliest evidence is on bones and bronze vessels dating to around 1600 BCE.

The earliest written signs were pictures (pictographs) of objects and notations of quantities. Gradually, the objects came to stand for ideas, such as an image of a foot to represent the idea of walking. Eventually, sounds of words that identified objects began to be used to write concepts for which pictures could not be made. A hypothetical example in English would be to combine the pictograph for "bee" with the one for "leaf" to create the abstract word "belief."

Writing was hard to learn because a scribe had to remember thousands of symbols. Eventually, the number of signs was reduced from thousands to hundreds, and their forms simplified. In both Mesopotamia and Egypt, knowledge of writing remained restricted to the higher ranks of society, and almost entirely to men. Knowledge of writing became quite widely used in Sumer for both commerce and government, mostly to record quantities of goods received, rations given to workers, and agricultural products distributed. In Egypt, writing was for centuries concerned mainly with royalty and religion. Most Harappan inscriptions, which have not been deciphered, have been found on seals and apparently used to identify ownership

Monumental architecture and art were symbolic expressions of hierarchy and concentrated public power. Architecture also demonstrated technological, mathematical, and engineering know-how. Examples from the fourth and third millennia include city walls, palaces, temples, and tombs. Particularly well known are the ziggurats, or temple towers, in Mesopotamia; the pyramids of Giza in Egypt; and the citadels and great water tank in the Indus valley. The ziggurat of the Sumerian city Ur, built the third millennium, was 150 feet by 200 feet at the base, and 80 feet high. Egypt's 481 foot Great Pyramid, which served as a pharaoh's tomb, was built at about the same time. Its 2.5 million twenty-ton limestone blocks were cut to within 0.01 inches of being perfectly straight.

Works of art were also produced as symbols of wealth and status. Many were deliberately designed to make forceful statements about the majesty of gods and rulers, to communicate socially approved ways of behavior, and to reinforce the social and religious hierarchy. Others were purely decorative. In all of the early civilizations, the arts reached very high levels of skill, creativity, and sophistication.

Religious ideas heavily influenced behavior. In the societies whose writings we can read, we know that people believed in many gods (about 3,000 of them in Mesopotamia). These were typically associated with forces of nature (sun, sky, earth, and certain animals such as the bull). In Egypt, an afterlife depended on divine judgment confirming that the deceased had lived a good life and on preservation of the corpse, along with grave goods that would ensure its comfort. Mesopotamia's afterlife was a loss of identity in a shadowy world of sadness. Each god had priests and priestesses that served it. They organized and carried out the rituals that celebrated, made sacrifices to, and requested favors from the divinity. They also supervised public worship, which often involved impressive spectacles.

The first evidence for the use of mathematics comes from Sumer in the fourth millennium. This society adopted both a decimal (10-base) system, later abandoned, and one based on the number 60 and its fractions and multiples. In both systems, the value of an individual number sign depended on its placement in the entire number (as in 1111, the first 1 stands for a thousand, the next for a hundred.). The Babylonians in the third millennium worked easily with fractions and solved quadratic and cubic equations. Babylon employed a calendar with a year of 360 days divided into 12 months, a week of 7 days, a day of 24 hours, and hours and minutes divided into 60 parts. Egypt's calendar had a more accurate year of 365 days, divided into 36 ten-day periods with an extra five days tacked on. Both societies practiced systematic astronomical observations, keeping records of eclipses, new moons, and motions of the planets. They used mathematics to calculate and predict the behavior of heavenly bodies, which were thought to influence human events on earth.

LESSON 2

What Can We Tell from What They Said Themselves?

Activities

The following suggested activities are all based on students having read the information in Student Handouts 3.1.1, 3.2.1, and 3.2.2. Share with students the questions and activities you are going to work on before they start reading the student handouts. This helps them to read attentively and work more productively with the questions.

1. This activity lends itself well to small group work. If students have not read Student Handout 3.1.1, then they can be asked to compare the student handouts from Lesson 2 with information in their textbook.

    a. You have been asked to provide a readers' review comparing Student Handout 3.1.1 with Student Handouts 3.2.1 and 3.2.2.

    b. Explain to prospective student readers what they can expect to get out of reading Student Handouts 3.1.1, 3.2.2, and 3.2.2.

    c. Evaluate for your readers what are the advantages and disadvantages of a student trying to gain an understanding of the earliest societies called civilizations.

2. To help understand a society in the past, what are the advantages and disadvantages of written documentary evidence (such as those in Student Handouts 3.2.1–3.2.4) compared to physical evidence such as skeletons, grave goods, and the remains of buildings, art, household objects, and tools? Explain your reasoning.

3. This activity lends itself well to small group work. Ask half the class to work with the documents from Mesopotamia (Student Handout 3.2.1 and 3.2.2), the other half with the documents from Egypt (Student Handouts 3.2.3 and 3.2.4). Different aspects of the society could be assigned to different groups. Assume you are an archaeologist who has no other information about an ancient society than the five documents you are working with here. Assume that you have managed to date and translate these documents.

    a. Using your five documents, give as well-rounded a description as you can of the society the documents came from. Consider various aspects of the society they came from: economic, social, political, religious, artistic, and intellectual.

    b. In what ways does the information you have limit your ability to give a well-rounded description of the society they came from?

4. Compare the descriptions of a city in the Mesopotamian (Student Handouts 3.2.1 and 3.2.2) and the Egyptian document (Student Handouts 3.2.3 and 3.2.4).

    a. In what ways are the accounts similar? In what ways different? What information available in this chapter might help explain any of the differences?

    b. Which, if any, of the characteristics described were specifically urban, showing that these cities were "more than just enlarged villages"?

    c. What, if any, important characteristics of modern American cities are missing from both descriptions? Explain how you decided what was "important."

    d. How reliable are the two accounts as historical evidence of what the cities described were really like? Use a scale of 1 (not at all) to 10 (completely). Explain the reasons for your rating. What reasons for accuracy or inaccuracy could the author of each description have?

5. Compare the advice to sons in Student Handouts 3.2.1 and 3.2.3.

    a. What can you infer from the Mesopotamian document about the likely occupation and social position of the father? What differences between the Mesopotamian and the Egyptian fathers' advice could be explained by their different occupations and positions?

    b. What can you infer from the two documents concerning how people at the time felt about the relationship between fathers and sons, between women and men, between those higher and lower in the social hierarchy?

    c. Did the advice given pay more attention to self-interest or to morality? Explain your answer.

    d. If an American father today were to give advice to his teenage son, what 5–10 statements from these documents might he want to include?

6. Compare Student Handouts 3.2.2 and 3.2.4 on the subjects of law and confession.

    a. What values common to both societies can be identified from the two documents?

    b. What important differences in the two documents can you identify? Why do you consider these differences important?

    c. In what ways would the existence of each document have contributed to upholding the social order? On what did each depend for effectiveness?

    d. What can you infer about the main concerns of each society from the two documents?

    e. Compare each to contemporary American ideas about justice, values, and morality. What are the main differences? Similarities?

7. Compare the Student Handouts 3.2.2 and 3.2.4 on the subject of scribes.
    a. What reasons did each father have for wanting his son to be a scribe?
    b. What can be inferred from these two documents about the relationship between fathers and sons? What evidence, if any, from this chapter would support your inference?
    c. What can be inferred from these documents about the job and the lifestyle of a scribe?
    d. How would you account for the similarities in the ways scribes were thought of in the two societies?
    e. How would you rate, on a scale of 1 (not at all) to 10 (completely), the reliability of these documents as evidence for what the job, lifestyle, and social status of a scribe might have been like? What reasons might there be for questioning the documents' reliability? Explain your reasons for your rating.
    f. What differences are there between the experience of school as you know it, and the school experience that can be inferred from these documents? What features of Mesopotamian and Egyptian societies might help account for some of the differences?
8. What conclusions can you draw about Mesopotamian and Egyptian societies from Student Handouts 3.2.2 and 3.2.4 concerning mathematics? What information from this chapter could you use to support your conclusions?
9. What features of contemporary American life could you argue were based on, or influenced by, those developed in the earliest civilizations?
10. This activity, or part of it, could serve as a summary assessment for the chapter.
    a. Recall the hypotheses developed and agreed on at the beginning of the chapter.
    b. What the most important characteristics that define a society as a "civilization" are.
    c. What the most important distinguishing characteristics of a city are.
    d. What the most important advantages and disadvantages of living in a city are, taking any differences between different groups into account.
    e. What evidence from this chapter supports, and what evidence contradicts, each of the hypotheses as developed earlier.
    f. Revise each hypothesis in accordance with the evidence you now have, and explain how you have arrived at your final version.

Documents from Mesopotamia 1

Document A: The Sumerian Goddess Inanna Looks after the City Agade (about 2000 BCE)

So that the warehouses would be provisioned
that dwellings would be founded in the city,
that its people would eat splendid food . . .
that acquaintances would dine together,
that foreigners would cruise about like unusual birds in the sky . . .
At that time, she filled Agade . . . with gold,
Delivered copper, tin, and blocks of lapis lazuli to its storehouses . . .
Its harbor, where ships docked, was full of excitement . . .
Its king, the shepherd Naram-Sin, rose like the sun on the holy throne of Agade . . .
Its city wall touched heaven, like a mountain . . . .
Ships brought the goods of Sumer itself upstream [to Agade],
The highland Amorites, people ignorant of agriculture,
Came before her there with spirited bulls and spirited bucks,
Meluhhans [from the Indus valley, and] people of the black mountains,
Brought exotic wares down to her . . .
All the governors, temple administrators, and land registrars of the Gude'ena
Regularly supplied monthly and New Year offerings there.

Document B: A Sumerian Father Gives Advice to His Son (about 2300 BCE)

My son, let me give you instructions.
Pay attention to them!
Do not beat a farmer's son, or he will break your irrigation canal. . . .
When you are drunk, do not judge . . . .
Do not break into a house . . .
Do not speak with a girl when you are married, the [likelihood of] slander is strong . . .
Do not allow your sheep to graze in untested grazing grounds . . .
Submit to strength. Bow down to the mighty man.

Document C: A Teacher's Math Examination Question to Student (about 1700 BCE)

"Do you know multiplication, reciprocals, coefficients, balancing of accounts, administrative accounting, how to apportion all kinds of pay, divide property, and delimit shares of fields?"

Source: Gwendolyn Leick, *Mesopotamia: Invention of the City* (London: Penguin Books, 2001), 70–71, 103–104, 163. Some of the language has been simplified by Anne Chapman.

Documents from Mesopotamia 2

Document A: Hammurabi's Laws Seek to Uphold the Social Order in Babylon (about 1700 BCE)

1. If a man accuses another of murder but cannot prove it, the accuser shall be put to death.

8. If a man steals, he shall repay thirty fold. If he hasn't the money, he shall be put to death.

15. If a man helps a slave to escape from the city, he shall be put to death.

117. If a man sells his wife or child to settle a debt, they shall work in the house of the buyer for three years, and regain their freedom in the fourth.

129. If a man's wife is caught lying with another man, they shall be bound and thrown into the water. If the woman's husband spares her life, the king shall spare the life of the man.

132. If the finger has been pointed at a wife because of another man, though she has not been caught lying with him she shall throw herself into the sacred river for her husband's sake.

141. If a wife goes out, plays the fool, ruins her house and belittles her husband, he may divorce her; or, if he prefers, he may marry another and keep the former wife as his maidservant.

142. If a woman hates her husband and says: "You shall not have me," her past shall be inquired into. If she had been careful and was without past sin; and her husband had been going out and greatly belittling her, she has no blame. She shall take her dowry and go back to her father.

145. If a man's wife does not give him children, he may take a concubine.

195. If a man strikes his father, they shall cut off his hand.

202. If a man strikes the cheek of his superior, he shall receive sixty strokes with an oxtail whip.

204. If a common man strikes a common man on the cheek, he shall pay ten shekels of silver.

205. If a man's slave strikes the son of a gentleman on the cheek, they shall cut off his ear.

206. If a man strikes another in a quarrel and wounds him, but swears: "I did not strike him intentionally," he shall only be responsible for paying the physician.

209. If a man strikes the daughter of another and causes a miscarriage, he shall pay ten shekels.

210. If the woman dies, they shall put his daughter to death.

Document B: A Sumerian Father Wants His Teenager to Be a Scribe (about 2000 BCE)

Why do you idle about? Go to school, recite your assignment, open your schoolbag, write your tablet, let your "big brother" write your new tablet for you. Be humble and show fear before your apprentice teacher. When you show terror, he will like you . . . . Never in my life did I make you carry reeds to the canebrake. I never said to you "Follow my caravans." I never sent you to work as a laborer. "Go, work and support me," I never in my life said that to you. Others like you support their parents by working . . . . Compared to them you are not a man at all. Night and day you waste in pleasures . . . . Among all craftsmen that live in the land, no work is more difficult than that of a scribe. [But] it is in accordance with the fate decreed by [the god] Enlil that a man should follow his father's work.

Source: Louis Cohn-Haft, *Source Readings in Ancient History*, Vol. 1 (New York: T.Y. Crowell, 1965), 66–68; 79–81; 89–91; 96–97. Some of the language has been simplified by Anne Chapman.

Documents from Egypt 1

Document A: Praise for Pharaoh's New City (about 1300 BCE)

His majesty—life, prosperity, health!—has built himself a city, named "Great of Victories." All men have left their towns and are settled in its territory. Temples of the gods Amon and Set, and the goddesses Astarte and Uto, mark its four quarters. Pharaoh is in it as a god.

The Residence is full of supplies, its ponds with fish, its lakes with birds. Its granaries are so full of grain they come near to the sky. Onions and leeks are available for food, and lettuce, pomegranates, apples, olives. Its ships go out and come back to mooring, so it has supplies and food every day. One rejoices to live there.

The small in it are like the great. The young men are dressed up every day, with sweet oil on their heads and newly dressed hair. The ale of the city is tasty, so is beer from the harbor and wine of the vineyards. The singers of "Great of Victories" are sweet, being taught at Memphis [the old capital of Egypt]. So live there content, Pharaoh—thou god!

Document B: Instructions of the Vizier Ptah-hotep to His Son (about 2450 BCE)

Let not you heart be puffed up, confident that you are a wise man. Take counsel with the ignorant as well as the wise. Good speech may be found with maidservants at the grindstones . . . .

Wrongdoing has never brought its undertaking into port. Fraud may gain riches, but the strength of justice is that it lasts . . . .

If you sit at the table of one greater than you, speak only when spoken to. Laugh after him.

When carrying a message from one great man to another, be accurate. Beware of making words worse through vulgar speech, and so making for hostility between them.

If you have a son who listens to you and takes care of your property as he should, do not cut your heart off from him. But if he does not carry out your instructions, if his manners in your household are wretched, if he rebels against all you say, cast him off. He is not your son at all.

If you want to make friendship last in a home to which you have access as a master, a brother or a friend, beware of approaching the women. Do not do it.

Do not be greedy, or envious of your own kindred.

Love your wife at home as is fitting. Fill her belly, clothe her back. Make her heart glad as long as you live. Do not contend with her at law, but keep her from gaining control.

Bow your back to your superior, then your reward will be as it should be. Opposition to a superior is a painful thing.

Document C: A Selection of Math Problems (about 1850 BCE)

Problems 1–6: How do you divide N loaves between 10 men, when the value of N is 1, 2, 6, 7, 8, 9?

Problem 26: A quantity added to a quarter of that quantity becomes 15. What is the quantity?

Problem 50: A round field has a diameter of 9 khet. What is its area?

Problem 64: Divide 10 hekats of barley among 10 men so that each gets 1/8 hekat more than the one before.

Sources: James B. Pritchard, ed., *Ancient Near Eastern Texts*, 3d ed. (Princeton, NJ: Princeton UP, 1969), 412–3, 470–1. From the Ahmes papyrus, in J. J. O'Connor and E. F. Robertson, "An Overview of Egyptian Mathematics" (The MacTutor History of Mathematics Archive, School of Mathematics and Statistics, University of St. Andrews, December, 2000). Some language has been simplified by Anne Chapman.

Documents from Egypt 2

Document A: An Egyptian Father Wants His Son to Be a Scribe (about 2000 BCE)

On his way to put him into the Writing School among the children of officials, he said to his son: I have seen how the laboring man is burdened. You should set your heart on pursuing writing instead. The scribe's place is in the Residence City, and he shall not be poor in it. Men greet him respectfully, and he is not clothed in the workman's apron.

If you leave the school after midday is announced, and go rollicking in the street, it is not for you. If three loaves should satisfy you, and two measures of beer, but there is still no limit to your belly, fight against it.

I have set you on the way of god. The scribe reaches the halls of the magistrates. No scribe lacks food, being fed from the property of the King's House—life, prosperity, health!

Document B: Negative Confession by the Deceased in the Underworld, Afterlife Depending on Its Truth, from the *Book of the Dead* (about 1500 BCE)

Hail to you, O great god, judge of the dead! I know your name, and that of the forty-two gods with you who punish evildoers on the day of reckoning. Lord of Justice is your name.

I have come to you; I have brought you justice; I have expelled deceit for you.

I have not committed evil against men. I have not mistreated cattle.

I have not blasphemed a god.

I have not defamed a slave to his superior. I have not made anyone weep.

I have not killed.

I have given no order to a killer.

I have not added to the weight of the balance. I have not built a dam against running water.

I am pure! I am pure! I am pure! I have not stolen.

I have not been greedy or envious. I have not told lies.

I have not practiced usury. I have not gossiped.

I have not committed adultery. I have not been quarrelsome.

I have not been abusive.

May you rescue me from the devourer of the condemned dead! I have come to you without sin, without guilt, without evil, without a witness against me, without one against whom I have taken action. I have come here to testify to justice, and to bring the scales in which my character is weighed against the feather of truth into perfect balance.

Source: James B. Pritchard, *Ancient Near Eastern Texts*, 3d ed. (Princeton, NJ: Princeton UP, 1969), 432–434 34–36. Some language has been simplified by Anne Chapman.

CHAPTER 4

By Susan Douglass and Jean Johnson

Migrations and Militarism across Afroeurasia

WHY STUDY MIGRATIONS AND MILITARISM?

This chapter examines what caused large numbers of peoples whose way of life was based on animal herding to migrate into settled regions of Afroeurasia in the second millennium BCE. The chapter also investigates what resulted from this epic interaction between pastoral groups and settled agrarian peoples. The interaction of these two groups was a constant theme in world history for several thousand years. Students will examine the relationship between these migrations and the development of several states and empires during the second millennium BCE.

OBJECTIVES

Upon completing this chapter, students will be able to:

1. Compare key differences between the way of life and values of pastoral nomads and settled peoples.
2. Examine the reasons for and consequences of the interactions between these groups.
3. Infer characteristics of kingdoms that developed in the second millennium BCE.
4. Describe the effects of migration and settlement on the development of languages.

TIME AND MATERIALS

This chapter is divided into four lessons. Each lesson should take a class day or more, although the actual time will vary depending on classroom circumstances. If time is limited, each lesson may be taught as a stand-alone investigation.

THE HISTORICAL CONTEXT

The revolutionary second millennium BCE was a period of impressive population growth, agrarian expansion, and city building. Many nomadic groups speaking languages on the Indo-European family migrated from their homelands in Inner Eurasia to settled areas of southern, or "outer" Eurasia. Also, in this period several states and empires rose and fell in both Eurasia and the Mediterranean region. In large part, these kingdoms arose from the interactions between nomadic and settled peoples. In some cases, invading pastoral nomads settled, mixed with the sedentary peoples, and created new kingdoms. In other cases, resistance to the nomadic threat helped leaders in settled areas solidify their power base and defenses. The kingdoms that appeared in the era included:

The Shang dynasty in China

Small Indo-European speaking kingdoms in the Indus and Ganges valleys of northern India

The Akkad, Babylonian, Kassite, and Mitanni kingdoms in Mesopotamia (Iraq)

The Greek Mycenaean city-states in the Aegean Sea basin

The Hyksos conquest of Middle Kingdom Egypt, and their subsequent replacement by the Egyptian New Kingdom

Scholars do not know exactly what pushed pastoral nomads from their homelands in the steppe regions of Inner Eurasia. Some possible factors might have been:

Climate change, resulting in lower rainfall and less vegetation for livestock

Pressure from other nomadic groups competing for grazing land for their herds

New technology of warfare, including iron weapons and the chariot

Refusal of settled peoples to trade goods nomads needed for survival

The rise of charismatic leaders among the nomads

Political and military weakness of settled areas

Scholars do know that the migration and invasion of nomadic groups had differing results depending on the characteristics of their encounters with farming peoples.

In some cases, the settled peoples repulsed the intruding nomads and forced them to retreat back to the steppes.

In some cases, nomads stayed in settled areas but tried to remain somewhat separate from settled people to maintain their traditional way of life.

In some cases, nomads conquered settled peoples and created their own kingdoms, ruling over farming and urban populations.

Certain similar characteristics can be found in most of the kingdoms of this period:

Central control of a monarch whose legitimacy came in large part from control of the military

A fairly rigid social hierarchy, including a military aristocracy at the top and slaves at the bottom

Priests or other religious authorities enjoying a great deal of power

Other nomadic groups on the kingdom's border presenting a chronic threat

THREE ESSENTIAL QUESTIONS

Humans and the Environment

Pastoral nomadism has always been a way of life of a minority of the human population. Today, that minority relative to the world's total population is much smaller than it was even 200 years ago. How do you think changes in the world's natural and social environment might have affected pastoral nomadism as a way of life in the past two centuries?

Humans and Other Humans

Drawing on historical information, create a conversation between a pastoral nomad woman and a man from a farming village about what is expected of women and men in each of their societies.

Source: *Bring History Alive: A Sourcebook for Teaching World History* (Los Angeles: NCHS, 1996), 78.

Humans and Ideas

English is an Indo-European language that has been spoken for hardly more than 1,000 years. In the year 1000 CE, the only people who spoke it (or an early version of it) lived on the island of Britain. Today, English is the third most widely spoken language in the world (after Chinese and Spanish). How and why did English become so important?

KEY THEMES

This chapter addresses the following historical themes:

Key Theme 1: The Weight of Numbers

Key Theme 3: Uses and Abuses of Power

Key Theme 5: Finding Identity

CORRELATIONS TO NATIONAL HISTORY STANDARDS

National Standards for World History
Era 2: Early Civilizations and the Emergence of Pastoral Peoples, 4000–1000 BCE. 2B: The student understands how centers of agrarian society arose in the third and second millennia BCE. 3A: The student understands how population movements from western and Central Asia affected peoples of India, Southwest Asia, and the Mediterranean region. 3B: The Student understands the social and cultural effects that militarization and the emergence of new kingdoms had on peoples of Southwest Asia and Egypt in the second millennium BCE. Standard 4: The student understands major trends in Eurasia and Africa from 4000 to 1000 BCE.

INSTRUCTIONAL RESOURCES

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LESSON 1

Differences between Settled Farmers and Pastoral Nomads

Introductory Activities

1. Ask students if they have ever worked on a farm. What was it like? Who has ridden horses, lived with cowboys, or worked on a ranch? What are the differences between the two ways of life? Which way of life would they prefer? Why?

2. Define the terms "pastoral" and "nomad" as words referring to groups who live by herding animals of various types, for example, horses, cattle, goats, sheep, or camels. Students should understand that people who live permanently on farms often engage in pastoral activity, raising sheep in a pasture, for example, or herding dairy cows. "Pastoral nomads," however, do not live in one place. Rather, they move within a large or smaller area in response to seasonally available grazing for their flocks or herds. Discuss the idea that nomads do not wander aimlessly, but usually in circuits across specific territories, adjusting for changes in weather and climate. For example, pastoral nomads may graze their animals in mountain valleys in the summer and flatter lowlands in the winter. Students should take note of derivative words such as "pastoralist," "pastoralism," "nomadic," and "nomadism."

3. Review the term "steppe" as grassland, which may experience fluctuations in rainfall and vegetation from year to year. A comparison of terms may be helpful. "Prairie," a term used in North America, and "pampa," a word used in Argentina, are general synonyms for "steppe." Students might compare people's dependency on animals in the North American Great Plains and the Eurasian Steppe.

4. Using a large map that shows the physical geography of Afroeurasia, have students identify (or review) where farming took place and where early cities developed. Then, help students to identify the arid or semi-arid regions that make up the Great Arid Zone, the belt of dry country that stretches from the Sahara Desert of Africa northeastward across the hemisphere to Manchuria north of China. Who lives in parts of the Great Arid Zone? How do they survive? Show students Handout 4.1.1 (Map of Inner and Outer Eurasia). Correlate the physical geography map with the Inner and Outer Eurasia map, showing what parts of it lie within the Great Arid Zone.

Activities

1. What are the major differences between settled farmers and pastoral nomads? Divide students into small buzz groups. Have half of the groups brainstorm the characteristics of early farming communities, such as types of homes, foods, values, and religious beliefs, drawing on previous lessons and readings. Have the remaining groups identify characteristics of pastoral nomadic life. The groups then compare and contrast their lists. The result should include some of the following factors:

Settled Farmers and Urban Dwellers	Pastoral Nomads
Homes are permanent	Homes are temporary and can be moved
Specialization of occupations (not everyone farms)	Little specialization (most men and women involved in herding)
People identified by occupations and social class	People identified by blood relations: lineages, clans, and tribes
Economic surpluses	Little surplus except livestock
Much food from crops: grains, fruits, and vegetables	Much food from animals: meat and milk products
Reverence for land and water	Reverence for fire, thunder, and sun
Worship of fertility divinities	Worship of powerful male divinities
Social status from wealth in land, social position of parents, military/political power	Social status from herd size, courage, and personal military following
Society organized in centralized states with hereditary ruler at the top	Societies organized in tribes and clans with leaders holding power only as long as they are effective

2. Have students discuss why they think these differences existed. In what ways might geography or population density have influenced these two ways of life? What special challenges did life on the steppe likely present? What did pastoral nomads do to compensate for the poor land and sparse rainfall on the steppe? Why were their herds so important? Why did they usually become excellent warriors?

3. Ask students where towns and cities are likely to have been established. In what ways did they depend on farming and trade to exist? What various ways of life were possible for people who settled in towns? In what ways were towns vulnerable to attack by pastoral nomads? What measures might townspeople have taken to defend themselves and what role did ruling groups play in their defense? What benefits might both nomadic groups and farmers have gained from the existence of towns and cities? Why and when might nomads have interacted peacefully or conflicted with townspeople?

4. Ask students if they think fighting and warfare were important in the lives of pastoral nomads. Do they think settled people or nomads would have been more concerned with warfare? Why or why not?
5. Distribute and have students read and discuss Student Handout 4.1.2.

Reinforcement activity: Distribute Student Handout 4.1.3 and have students analyze the attitude to warfare expressed in the provided Vedic hymn.

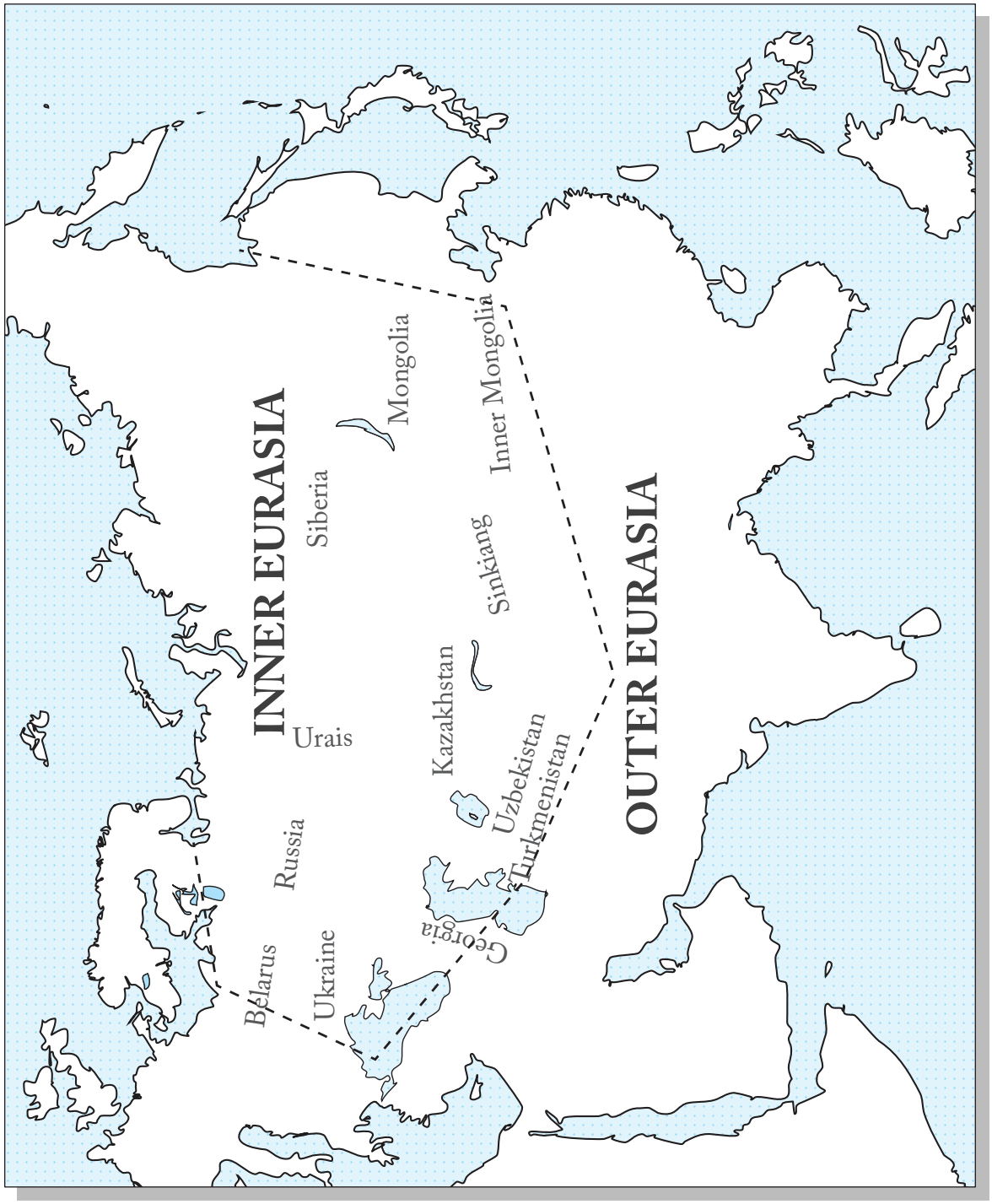
Extension activity: Use an atlas to locate areas where pastoral nomads live today. Make a chart listing the region, its latitude, names of ethnic/cultural groups, and the kinds of animals herded. To complete the activity, write three to five sentences that describe conclusions reached about the relationship between geography and various ways of life in those regions and around the world.

Questions to Consider: What attitudes might nomads have about settled people? What might settled people think of nomads? Would the settled people want to become nomads? Why or why not? Might nomads want to settle down and farm? Why or why not?

Assessment

1. Summarize the similarities and differences between pastoral nomads and settled farmers.
2. Make a graphic organizer similar to the one above comparing and contrasting settled and nomadic ways of life. Or write a comparative essay on this subject.
3. Write a dialogue or role play a conversation between a pastoral nomad and a farmer.

Inner and Outer Eurasia Map



Pastoralists' Values

For hundreds of thousands of years humans and their hominid ancestors survived in the Inner Eurasian grasslands by hunting and eating animals that consumed grass. In the grasslands, hunting and gathering was a way of life that used the scarce food resources of a region of low rainfall and natural productivity.

Around 4000 BCE, however, horse-riding livestock herders appeared on the Eurasian steppes. Men and women learned to use domesticated animals not just for their meat but also for their secondary products of milk, wool, and hides. People also used the traction power of domesticated animals, such as horses and oxen, to pull carts, wagons, or chariots. Eventually, this development transformed transportation and warfare.

Like hunting, pastoralism offered a technological solution to the ecological problems that the harsh environment of Inner Eurasia posed. Its success encouraged population growth, and as populations grew, Inner Eurasian communities faced new challenges. They had to find ways to mobilize scarce resources both to sustain themselves and to defend themselves against rival groups. The relatively flat landscape of Inner Eurasia offered a few natural resistances. Where geography offered no shield, societies had to rely on tactical and fighting skills.

Why were pastoralist societies so warlike? The pastoral way of life favored warrior cultures. Livestock was a less secure resource than agricultural crops. Disease could swiftly destroy a large herd, and rival nomad rustlers might steal an entire herd. Herders had to be vigilant and able to react quickly in a crisis. Controlling large animals also required the physical skills of a rodeo rider and the logistical skill of a cattle driver. This means that they had to have a system of military readiness both to protect their animals and to raid their neighbors. It requires physical strength, endurance, and a great tolerance for hardship. Pastoral societies had to be able to transform themselves easily into armies capable of fighting with skill, spirit, and ferocity. Military resources had to be concentrated in relatively sparse populations. Therefore, training in how to ride and shoot had to begin at an early age.

The pastoral nomadic way of life also encouraged aggression and a willingness to resort to violence, a limited empathy for other peoples' suffering, restrained affections in personal relationships, and great concern for personal courage and status. Pastoral societies instilled these martial values in both women and men.

To Arms

Although the Rig Vedas were not written down until around 400 BCE, these hymns and prayers that priests of India recited and passed down orally were probably composed in the second millennium BCE. From them historians can infer a great deal about the life and values of the Indo-European linguistic subgroup known as Indo-Aryan speakers, which reached India from Inner Eurasia sometime in the second millennium BCE. This Vedic hymn was a benediction that the royal chaplain recited before a military expedition. Each item in the arsenal is described separately and praised.

1. His face is like a thundercloud, when the armored warrior goes into the lap of battles. Conquer with an unwounded body; let the power of the armor keep you safe. [He is calling for protection by the metal and leather armor he wears and by the sacred power of the hymn.]

2. With the bow let us win cows, with the bow let us win the contest and violent battles with the bow. The bow ruins the enemies' pleasure.

3. She [the bow] comes all the way up to your ear like a woman who wishes to say something, embracing her dear friend; humming like a woman, the bowstring stretched tight on the bow carriers you safely across in the battle . . .

4. These two who go forward like a woman going to an encounter hold the arrow in their lap as a mother holds a son. Let the two bow-tips, working together, pierce our enemies and scatter our foes.

5. Standing in the chariot, the skillful charioteer drives his prize-winning horses forward wherever he wishes to go. Praise the power of the reins: the guides follow the mind that is behind them.

6. Neighing violently, the horses with their showering hoofs outstrip everyone with their chariots. Trampling down the foes with the tips of their hoofs, they destroy their enemies without veering away . . .

7. Her [the arrow's] robe is an eagle, and her tooth is a deer; bound with cows, she flies as she is sent forward. Let the arrows give us shelter wherever men run together and run separately. [The arrow is robed with eagle feathers, tipped with deer-horn and bound with leather thongs.]

8. Spare us, O weapon flying true to its mark; let our body be stone . . . .

9. He beats them on the back and strikes them on the haunches. O whip the horses, drive forward into battle the horses who sense what is ahead . . . .

10. Whoever would harm us, whether it be one of our own people, or a stranger, or someone from far away, let all the gods ruin him. My inner armor is prayer.

LESSON 2

Interaction between Pastoral Nomads and Settled Peoples

Activities

1. Review the Questions to Consider at the end of Lesson 1.

   Discussion: Would the settled people want to become nomads? Why or why not? What about the nomads? Might they want to settle down and farm? Why or why not?

2. Distribute Student Handout 4.2.1. Use the map to identify linguistically related groups that migrated from the steppes during the second millennium BCE.

3. Read and discuss Student Handout 4.2.2. Consider the historical question, "Why did so many groups of pastoral nomads migrate into or invade settled areas during the second millennium BCE?"

   a. Have students consider possible reasons pastoral nomads would invade settled areas, such as population growth, disease, climatic change, weakness of settled areas, surplus wealth of settled areas, need for goods such as grain, desire for glory, leadership of skilled warriors, and new technology such as the chariot. Some of the major factors might be:

      - Nomads were desperate for food because of overpopulation or because diseases killed many of their herds.
      - Changes in climate resulted in less grass for their herds to eat. Many of their animals have died, but the settled peoples do not want to barter or trade. Related question: Why might settled peoples refuse to trade? (e.g. insufficient surplus, poor economic conditions, unfavorable terms of trade offered)
      - Other nomadic groups were pushing pastoral nomads out of the grazing areas their herds have been using.
      - The development of the chariot or iron weapons gave nomadic people a decisive military advantage over settled farmers.
      - A strong leader among the pastoral nomads wanted to lead his people to get booty and glory.
      - The settled area was weak or under poor leadership, so plundering would be easy.

b. Discuss why settled peoples sometimes turned the tables and invaded the territories of pastoral nomads. Why would they do that? Why might rulers want to expand their frontiers into the Inner Eurasian steppes?

4. Read and discuss Student Handout 4.2.2.

5. Read and discuss Student Handout 4.2.3. Explain that because ancient nomadic groups have left behind fewer material artifacts than have city-dwellers, historians have had to rely mainly on relatively sparse archaeological evidence, changes in language, and literary sources like the ones in this handout.

    a. Discussion questions:

        i. Why do you think that one reading depicts settled and nomadic individuals fighting and the other shows them battling but then becoming equals and friends?

        ii. What is the reason for the jealousy between Cain and Abel in the story from Genesis?

        iii. How are the two ways of life (shepherd and farmer) contrasted? How does this comparison align with the typical views of nomads versus sedentary folk? Compare the characters of Gilgamesh and Enkidu in appearance, in personal qualities, and in the way they are seen by the people of the city.

6. Create and analyze a list of options for nomadic-settler interaction.

    a. Ask students to brainstorm what different kinds of contact and interaction might have occurred between these two groups. Would the interaction usually be peaceful? When would it be violent? If the nomads invaded a settled community, which group do they think would win, and why?

    b. To record the brainstorming results, make a list using F for farmers, P for pastoralists, and F/P for both groups. How might settled people and pastoralists cooperate or trade for each other's benefit? What situations might bring the two groups into conflict? Examples:

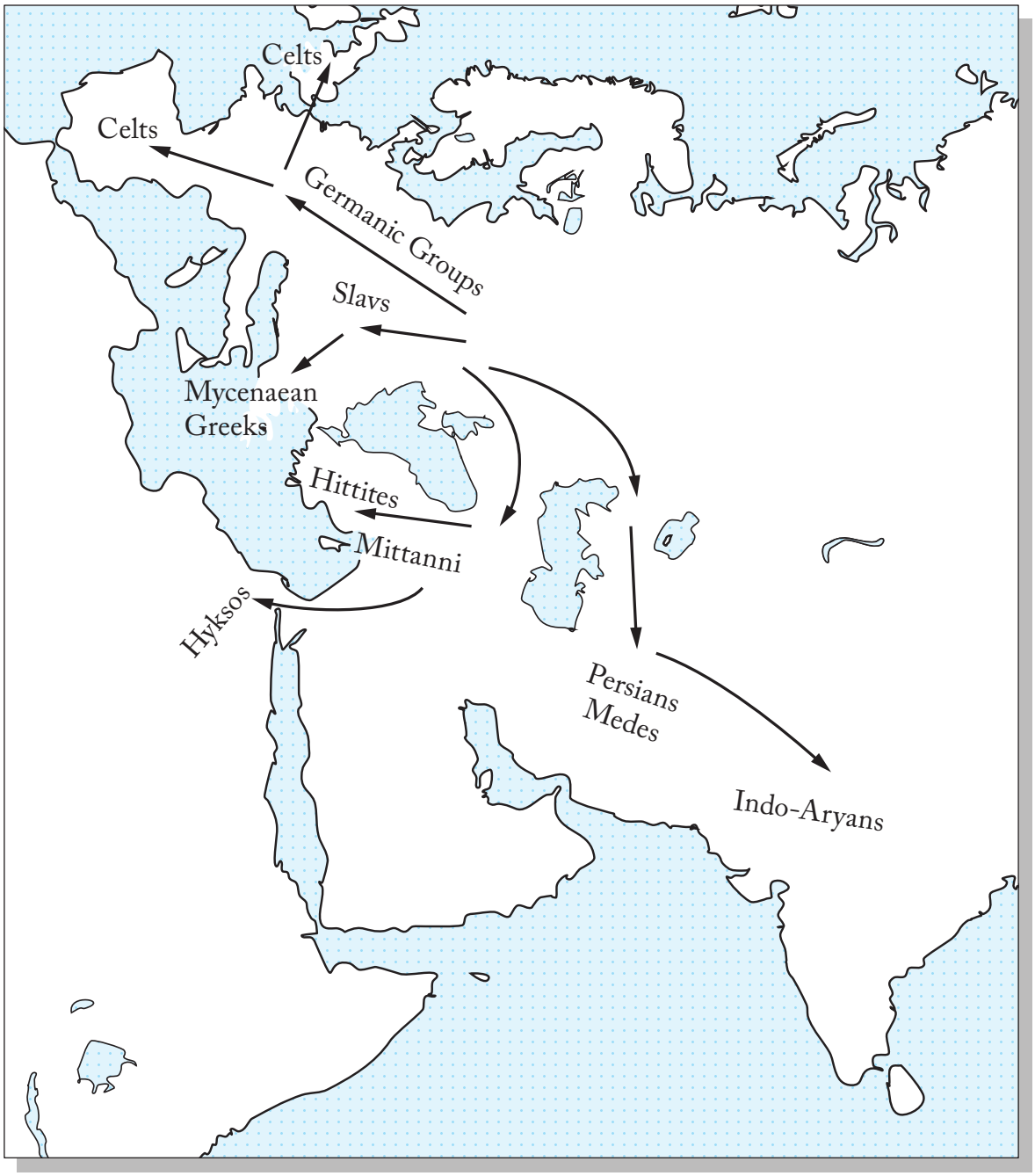
        - F/P mutually trading animal and agricultural products to achieve a nutritionally complete diet
        - F trading manufactured goods to P in return for animals for transport and food
        - P providing animals for the royal courts of settled leaders
        - P acting as guides on trade routes
        - F providing stable sources of luxury goods and prestige to P

7. Record various outcomes that might result from interaction between pastoralists and settled peoples. Place these possible outcomes on a scale from "no contact" to "totally integrated." The list might include:
    - The two groups have little or nothing to do with one another, few encounters
    - Nomads raid but are repulsed
    - Occasional peaceful exchanges occur such as barter, marriage, or trade. For example, nomads have livestock and minerals. Settled people have grain, tools, and luxury goods.
    - Nomads raid, take what they need, and leave.
    - Nomads raid, destroy, and return to their homeland.
    - Nomads conquer, rule, but try to remain separate from farmers and city-dwellers.
    - Nomads conquer, settle, and use local people to help govern.
    - Nomads conquer, rule, and are eventually thrown out.
    - Nomads come into a settled area and are assimilated.
    - Nomads conquer, settle, mix, intermarry, and create a new population synthesis.

    Have students discuss reasons for the occurrence of these outcomes.

8. **Extension Activity:** Have students use their textbooks or other documents to research how pastoral and settled peoples interacted in various areas in the second millennium BCE. For example:
    - Little or no contact. (Perhaps 90 percent of the time this was the case, as the two groups lived in different ecological zones and neither wanted to be like the other.)
    - Nomads raided but were repulsed. (Little or no record of this outcome exists except for the general fear settled people have of nomads, recorded in literature and chronicles.)
    - Occasional peaceful exchanges such as barter, marriage, or trade. Nomads had livestock and minerals. Settled people had grain, cloth, and tools. (This happened unless settled areas refused to interact.)
    - Nomads raided, took what they needed and left. (Often happened)
    - Nomads raided, destroyed, and left. (Achaeans in Troy, Mycenaeans in Crete)
    - Nomads conquered, ruled, but tried to remain separate from farmers and city-dwellers. (Indo-Aryans in India, Spartans in Greece, Hebrews in Canaan)
    - Nomads conquered, settled, and used local people to help govern. (Turks in Southwest Asia, Mongols in China)
    - Nomads conquered, ruled, and were eventually thrown out. (Hyksos in Egypt)
    - Nomads conquered, settled, mixed, and established a new synthesis. (Babylonians, Hittites, and Chaldeans in Southwest Asia)

Map of Some Groups Associated with Spread of Indo-European Speaking Peoples



Relations between Pastoral Nomads and Settled Farmers

Pastoral nomads are animal-herding people who migrate seasonally in search of grazing land for their livestock. Pastoral nomadic groups became significant on the stage of Afroeurasian history in the second millennium BCE. No fully satisfying explanations for the migrations of Indo-European speaking pastoral peoples has so far emerged. Increased aridity may have forced pastoral nomads to travel more widely in search of grass. A nomadic lifestyle made it possible to exploit more land, including arid, previously marginal land. Contacts with sedentary societies of Outer Eurasia may have created new opportunities for trade and pillaging. With the rise of chariot warfare in the second millennium BCE, empires such as those of China and Assyria needed horses for their armies. Since they lacked the pasture needed to support large herds, they had to import horses from the steppes. Pastoralists of Inner Eurasia could maintain large herds only if they took up a nomadic lifestyle. If this argument is correct, it suggests the beginning of a symbiotic relationship between Inner and Outer Eurasia. Both now belonged to an embryonic world system.

Pastoral nomads moved with their flocks of sheep, horses, and other livestock through regular annual circuits. Frequent movement was necessary to feed large herds. Nomads depended for subsistence on the meat and milk of their flocks, but they still needed some agricultural products, such as grain. As a result, pastoral nomadic societies did not usually remain fully independent of farming societies. Pastoral nomads usually needed the grains and luxury products of agricultural societies more than farmers needed surplus livestock. This unbalanced relationship helps explain why relations between nomads and settled peoples sometimes became violent, especially along the borderlands between Inner and Outer Eurasia.

Cain and Abel, Gilgamesh and Enkidu

Cain and Abel

Now Abel was a keeper of sheep, and Cain a tiller of the ground. In the course of time Cain brought to the Lord an offering of the fruit of the ground and Abel brought of the firstlings of his flock and of their fat portions. And the Lord had regard for Abel and his offering, but for Cain and his offering he had no regard. So Cain was very angry, and his countenance fell. The Lord said to Cain, "Why are you angry, and why has your countenance fallen? If you do well, will you not be accepted? And if you do not do well, sin is crouching at the door; its desire is for you, but you must master it." Cain said to Abel his brother, "Let us go out to the field." And when they were in the field, Cain rose up against his brother Abel, and killed him. Then the Lord said to Cain, "Where is Abel your brother?" He said, "I do not know; am I my brother's keeper?" And the Lord said, "What have you done? The voice of your brother's blood is crying to me from the ground. And now you are cursed from the ground, which has opened its mouth to receive your brother's blood from your hand. When you till the ground, it shall no longer yield to you its strength;

Source: The Bible (Revised Standard Version), Genesis 4. 2–12

Gilgamesh and Enkidu

Gilgamesh was king of Uruk,
A city set between the Tigris
And Euphrates rivers
In ancient Babylonia . . . .
Enkidu was born on the steppe
Where he grew up among the animals. . .

Gilgamesh was a tyrant to his people . . . .
Sometimes he pushed his people half to death
With working rebuilding Uruk's walls,
And then without an explanation let
The walls go untended and decay . . . .

Enkidu was ignorant of oldness.
He ran with the animals,
Drank at their springs,
Not knowing fear or wisdom.
He freed them from the traps
The hunters set. . . .
[He was] all covered with hair
and yet his hands had the dexterity of men's.

[One day a hunter led Enkidu into Uruk's market square.]
The marketplace filled with people
When they heard he was coming.
People said: He looks like Gilgamesh
But he is shorter and also stronger;
He has the power of the Steppe. . . .

At night when Gilgamesh approached
The market square
Enkidu stood
Blocking his way.
Gilgamesh looked at the stranger
And listened to his people's shouts of praise
For someone other than himself
And lunged at Enkidu.

They fell like wolves
At each other's throats, Like bulls bellowing,
And horses gasping for breath
That have run all day
Desperate for rest and water, crashing the gate they fell against.
The dry dust billowed in the marketplace
And people shrieked. The dogs raced
In and out between their legs.
A child screamed at their feet
That danced the dance of life
Which hovers close to death.
And quiet suddenly fell on them
When Gilgamesh stood still
Exhausted. He turned to Enkidu, who leaned
Against his shoulder and looked into his eyes
And saw himself in the other, just as Enkidu saw
Himself in Gilgamesh.
In silence of the people they began to laugh
And clutched each other in their breathless exhaustion.

Source: Herbert Mason, *Gilgamesh: A Verse Narrative* (New York: New American Library, 1970), 15–6, 23–5.

LESSON 3

Characteristics of Eurasian Kingdoms in the Second Millennium BCE

What Was Life Like in the Babylonian Kingdom under Hammurabi?

Activities

This lesson asks students to infer aspects of the Babylonian kingdom from the law codes compiled during the reign of Hammurabi

1. Explain that many kingdoms formed during the second millennium BCE. The Babylonian kingdom ruled over Mesopotamia and the surrounding territory during the eighteenth century BCE..

2. Use Student Handouts 4.3.1–4.3.4 as a jigsaw lesson. First divide the class into four "expert" groups and give students in each group the same student handout. Have them read their handout and summarize together the major conclusions they can draw about what life was like from the information. Then divide the class into groups of four students, one from each "expert" group. Have them share the information from their expert groups. Then have each of the mixed groups make a poster that illustrates life in the Babylonian kingdom, based on the information they have shared. Finally, have each group share its poster and briefly identify the points they illustrated.

3. Questions related to student handouts:

    a. Student Handout 4.3.1. What kinds of economic activity went on in the Babylonian kingdom? Which activities seem to be the most important? What efforts were made to ensure that business people were honest? Which occupations or artisans do you think should take out "malpractice insurance?"

    b. Student Handout 4.3.2. Based on the information in these laws, how important was the military? What was done to ensure that men fulfilled their military obligations? What was done to protect the soldiers' rights and property?

    c. Student Handout 4.3.3. What different groups existed in Babylonian society? Who had the most status? Who had the least? What kinds of different treatment did members of different groups receive? How did the punishments differ?

    d. Student Handout 4.3.4. What were some of the risks to women of going into business? What rights for women can you identify from the laws (both those affecting her material needs and those affecting her personal freedoms)? Which of the partners in the marriage more clearly held the right to divorce? How

might the law concerning beer-sellers have helped to preserve public order? At what price to the business woman? Identify two other issues you find in the laws about women and marriage and discuss them with the class.

4. **Extension Activity:** Give students the following list and have them individually or in small groups research one of the other kingdoms that flourished during the second millennium BCE.

    a. Possible topics students could research on kingdoms:
        - Connection of the monarchy to Indo-European migrations
        - Physical borders and ability to defend them
        - Source of ruler's legitimacy and symbols of the ruler's authority
        - Importance of government buildings, palaces, or religious structures
        - Tax base and attitude toward taxation
        - Importance of trade, economic well-being, and fair distribution of wealth
        - The role and importance of government officials and the military
        - Means of recruiting soldiers, their status, and motivation to fight
        - The roles and status of women of different classes

    b. Possible Second Millennium Kingdoms to Research
        - Shang in China
        - Akkad, Babylonia, Mitanni, Kassite kingdom in Mesopotamia
        - Hyksos in Egypt
        - Middle Kingdom and New Kingdom in Egypt
        - Hittites in Anatolia and Syria
        - Assyria in upper Mesopotamia
        - Mycenaeans in the Aegean Sea region
        - Minoans on Crete

Assessment

Make a poster illustrating the positions, classes, and division of labor in Mesopotamian and Indian society. Your poster should show divisions in status and occupation. It should illustrate what emerging urban society was like.

Hammurabi's Code: Economic Activity

53. If man had neglected to strengthen his dike and has not kept his dike strong, and a breach has broken out in his dike, and the waters have flooded the meadow [farmland], the man whose dike broke shall restore the corn he has caused to be lost.

54. If he is not able to restore the corn, he and his goods shall be sold, and the owners of the meadow whose corn the water has carried away shall share the money.

55. If a freeman has opened his irrigation trench for watering and has left it open, and the water has flooded his neighbor's field, he shall pay him an average crop.

60. If a freeman has given his field to plant as an orchard to a gardener, and the gardener has planted the orchard, four years shall he rear the orchard. In the fifth year the owner of the garden and the gardener shall share (it), and the owner of the garden shall cut off his portion first and take it.

104. If a merchant has loaned an agent corn, wool, oil, or any sort of goods, to sell at retail, the agent shall write down the money value, and shall return that the merchant. The agent shall take a sealed receipt for the money that he has given to the merchant.

107. If the merchant has overcharged the agent and the agent has really returned to his merchant whatever his merchant gave him, and if the merchant has disputed what the agent has given him, that agent shall put the merchant on oath before the elders, and the merchant, because he has defrauded the agent, shall pay the agent six fold what he misappropriated.

117. If a free man has been seized for debt, and has given his wife, or his son, or his daughter to work off the debt, the hostage shall labor for three years in the house of the creditor, but in the fourth year he shall be set free.

221. If a doctor heal the broken limb of a free man, the patient shall pay five shekels of silver to the doctor. (A mina equals about 500 grams. One mina equaled 60 shekels. A shekel equaled 180 SE. These were all weight measurements, not coins.)

224. If a veterinary surgeon makes a large incision in an ox or asses, and cured 9them), the owner of the ox or ass shall give him one-sixth of a shekel of silver.

229. If a builder builds a house for a free man, and has not made his work strong, and the house has fallen in and killed the owner of the house, then the builder shall be put to death.

230. If it kill the son of the owner of the house, the son of the builder they shall kill.

235. If a shipbuilder has built a ship for a free man, and has not perfected his work, and in that year that ship is sent on a voyage, and it has shown faults, the boat builder that vessel shall take to pieces, and at his own expense make strong, and the strong ship he shall give to the owner.

Hammurabi's Code: The Military

26. If an officer or soldier has been sent on a military campaign by the king, and he goes out, but then hires a substitute, and sends him to fight, that officer or soldier shall be put to death, and the person he hired shall take his house.

27. If an officer or soldier on the business of the king is detained, and his field and his garden are given to another, when the officer or soldier returns, his fields will be returned to him.

28. If an officer or soldier is detained on the authority of the king, and his son is able to manage his affairs, his field and garden shall be given to him and he shall manage the affairs of his father.

29. If the son is young, and he cannot manage his father's affairs, one-third of the field and garden shall be given to his mother, and his mother shall bring him up.

31. If he is absent for only one year and has returned, his field and orchard and house shall be given back to him and he shall look after his feudal obligations himself.

32. If a merchant has ransomed either a private soldier or an officer, who was carried off in a campaign of the king and has enabled him to reach his city, if there is sufficient to ransom him in his house, he himself shall ransom himself; if there is not sufficient to ransom him in his house, he shall be ransomed from the estate of the city-god; if there in not sufficient to ransom him in the estate of the city-god, the state shall ransom him, since his own field, orchard and house may not be ceded for his ransom.

33. If either a governor or a magistrate [or sergeant or captain] on the king's business had sent out a hired substitute, that governor or magistrate shall be put to death.

34. If either a governor or magistrate [or sergeant or captain] has taken the property of an officer, or has robbed an officer, on in the decision of a case has robbed an officer, or has taken the gift the king gave the officer, that governor or magistrate shall be out to death.

36. In no case is the field, orchard, or house belonging to an official, constable or a tax-collector to be sold.

Hammurabi's Code: Hierarchy and Justice

196. If a patrician has knocked out the eye of a patrician, his own eye shall be knocked out.

197. If he has broken the limb of a patrician, his limb shall be broken.

198. If he ahs knocked out the eye of a plebeian or has broken the limb of a plebeian, he shall pay one mina of silver.

199. If he has knocked out the eye of a plebeian's servant, or broken the limb of a plebeian's servant, he shall pay half his value.

200. If a patrician has knocked out the tooth of a man that is his equal, his took shall be knocked out.

201. If he has knocked out the tooth of a plebeian, he shall pay one-third of a mina of silver.

202. If a man strike the head of a man who is his superior, he shall receive sixty blows of an ox- hide whip in public.

203. If a plebeian strike the head of another plebeian equal to himself, he shall pay one mina of silver.

205. If a slave of a plebeian strike a plebeian, his ear shall be cut off.

209. If a free man strikes a freed woman and she drops that which is in her womb, he shall pay ten shekels for that which was in her womb.

210. But if the woman dies, his daughter shall be put to death.

211. If the woman of a freed class (former slave) loses that which is in her womb by a blow, he shall pay five shekels of silver.

213. If the woman dies, he shall pay half a mina of silver.

215. If a doctor has made a large incision with a bronze lance and cured a free man, or has opened the abscess [in the eye] with the lance, saved the eye of the man, ten shekels of silver he shall take.

216. If it was a freed man, five shekels of silver he takes.

217. If it was the slave of a free man, the master of the slave shall give two shekels of silver to the doctor.

218. If the doctor has made a large incision with a bronze lance, and has caused a free man to die, or opened an abscess with the lance, and has put out the eye, his hands shall be cut off.

219. If the doctor makes a large incision in the slave of a free man and kill him, he shall render slave for slave.

108. If the mistress of a beer shop has not received corn as the price of beer or has demanded silver on an excessive scale, and has made the measure of beer less than the measure of corn, that beer-seller shall be prosecuted and drowned.

Hammurabi's Code: Roles and Status of Women

108. If the mistress of a beer shop has not received corn as the price of beer or has demanded silver on an excessive scale, and has made the measure of beer less than the measure of corn, that beer-seller shall be prosecuted and drowned.

109. If the mistress of a beer-shop had allowed outlaws and riotous characters to assemble in her house, and if those riotous characters have not been arrested and hauled to the palace, that beer-seller shall be put to death.

117. If a free man has been seized for debt, and has given his wife, or his son or his daughter to work off the debt, that hostage shall labor for three years in the house of the creditor, but in the fourth year he shall set them free.

127. If a free man has caused the finger to be pointed at another free man's wife, and has not proved his charge, the accuser shall be thrown down before the judges and shall be branded on the forehead.

129. If a patrician's wife be taken in adultery with another, they shall be strangled and cast into the water. If the wife's husband would save his wife, the king can spare his subject.

134. If a patrician has been taken prisoner, and in his house there is no subsistence for his wife, and then his wife has entered into the house of another, that woman has no fault.

135. If a patrician has been taken prisoner, and in his house there is no subsistence for his wife, and then his wife has entered into the house of another and borne children, and later her husband has returned to his city, that woman shall return to her spouse, but the children shall follow the father.

138. If a patrician has divorced his wife, who has borne him children, he shall pay over to her as much money as was given for her bride price and the marriage portion which she brought from her father's house, and so shall divorce her.

139. If there was no bride-price, he shall give her one mina of silver as a price of divorce.

140. If he be a plebeian, he shall give her one-third of a mina of silver.

141. If a patrician's wife, living in her husband's house, has gone out to engage in business thus neglecting her house and humiliating her husband, he shall prosecute her. If here husband has said "I divorce her," she shall go her way; he shall give her nothing as her price of divorce. If her husband has said "I will not divorce her," he may take another woman to wife; his first wife shall live as a slave in her husband's house.

142. If the woman hates her husband and says, "Thou shall not possess me: they shall inquire what is her failing. If she has been careful, and was not at fault and her husband has gone forth and greatly depreciated her, the woman has no blame; she shall take her marriage portion and go to her father's house.

143. If she has not been careful, but has gone forth and his household property has wasted, impoverishing her husband, they shall throw that woman into the waters.

148. If a man marries a wife and a disease has seized her, if he is determined to marry a second wife he shall marry her. He shall not divorce his wife whom the disease has seized. In the home they made together she shall dwell, and he shall maintain her as long as she lives.

LESSON 4

Word Detectives on the Case of the Indo-European Language Family

Activity

1. Ask students if they know any words in foreign languages that are similar to words in other languages. Make a list of such words and discuss how these similarities might have come about. Ask whether they know about groups of languages that are similar to one another, such as Bantu languages, Romance Languages, and Semitic languages. Ask students to discuss how languages might branch off to form new languages. Discuss differences in British and American English as both have developed over the past few centuries.

2. Give the class Student Handout 4.4.1. Read and discuss the way in which linguistics came to be used as a tool for investigating history, and what conclusions have been reached about the origins of some Europeans and Asians through their languages. The teacher may wish to add information about how the theories of Indo-European language and culture have changed over the past century. Use the map attached to Student Handout 4.4.1 to locate major branches of the language and routes of migration as they are understood today.

3. Divide the class into groups and give each group Student Handout 4.4.2 and a world map. Ask them to read the list of languages in the chart. To the best of their ability, the groups should build on the reading in Student Handout 4.4.1 to locate the geographic area where each language (or most of them) was or is spoken.

4. The rest of the time should be spent examining the word similarities and answering the bulleted questions on Student Handout 4.4.2. Debrief the groups as follows:

    a. The word roots in Student Handout 4.4.2, which are highlighted in gray, are believed to be the Indo-European roots of common words found in other related languages. The words are selected from a much larger database of similar words among Indo-European languages. Note the similarities, and take notes in response to the following questions:

        - What evidence do you see that the words listed under each root word in gray are similar to those listed below it?
        - Why do you think these words traveled so far and still remained similar?
        - What might these and other similar words tell about the life of the people who spoke these languages and migrated across Eurasia?
        - Find the geographic locations where some of the languages listed were or are spoken.

5. Using a large classroom or online dictionary, have each group think of five words from English whose etymology (linguistic origins) they can research. Have the group report on each word, its spelling, meaning, and the likely source languages it passed through.

6. **Extension Activity:** Analyze the process of linguistic dissemination. As a class, or for individual homework assignments, students may think of three words from contemporary language that they think have passed or will pass into other languages. Or, think of words that have recently passed into English from other languages. For each word, they should write down the spelling and meaning, as well as a sentence or two explaining why they think this word has passed or will pass into other languages. How might the word have been learned by speakers of other languages (i.e., Internet, TV, radio, song, technical usage?)

Word Detectives: The Indo-European Language Puzzle

Archaeologists study artifacts buried in the earth to learn the stories of peoples whose histories are not recorded in writing. Historical linguistics is the scientific study of language as a tool for looking into the human past. Linguists use words like archaeologists use artifacts. By comparing words that are similar in various languages, they construct theories about the migration, original homeland, and ways of life of early people.

Linguistics developed during the nineteenth and twentieth centuries in Europe. In 1786, an Englishman studying Sanskrit in India discovered words and grammar in that language that were remarkably similar to those of European languages.

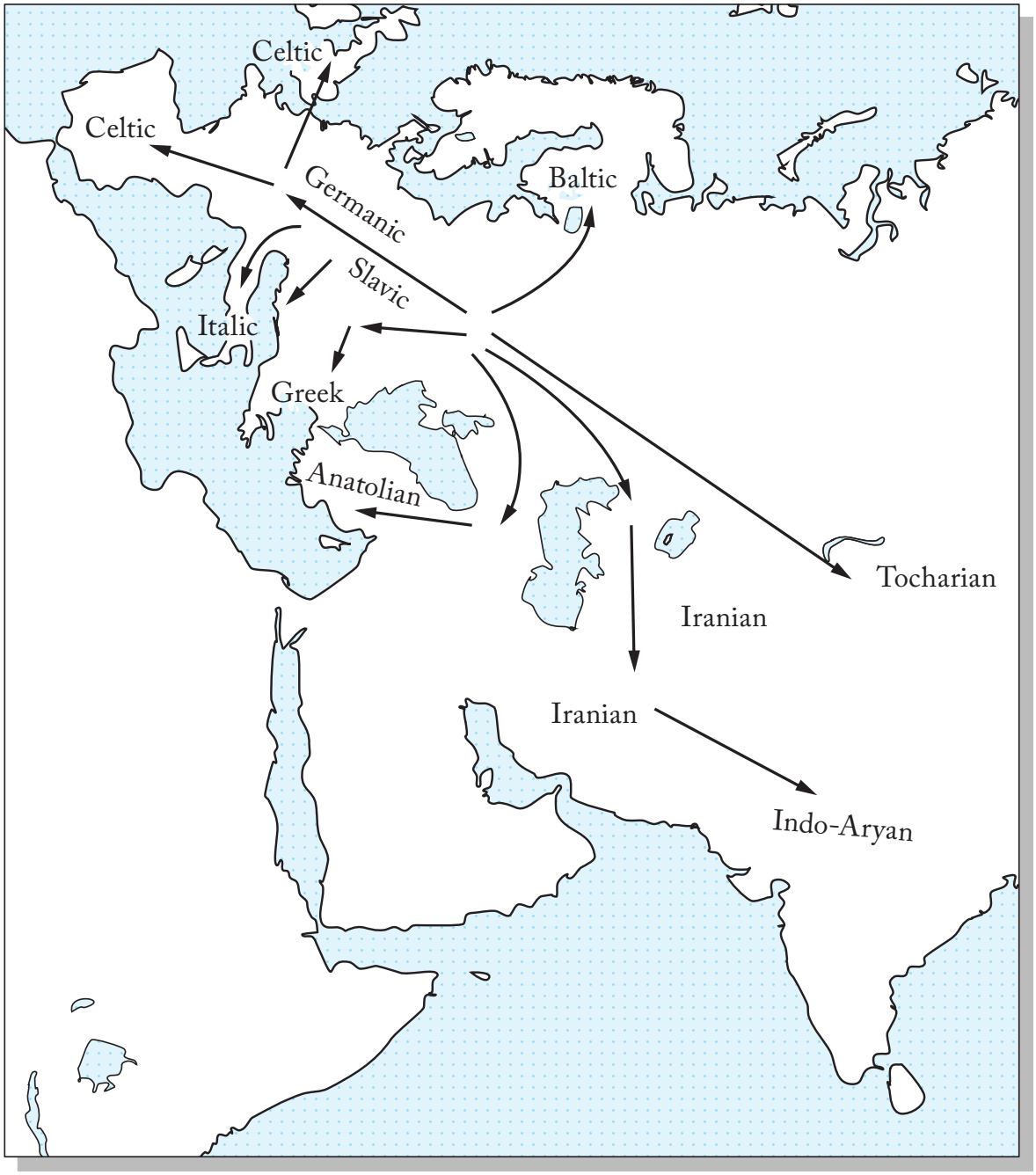
During the past 200 years, a theory developed that there is an Indo-European superfamily of languages, which must be based on an original "proto-language" spoken by a group of people whose descendants migrated far and wide in Eurasia. Today, nearly half of the world's population speaks an Indo-European language. Among the Indo-European languages are English, French, German, Italian, Russian, Spanish, and Persian, as well as Armenian, Hindi, and Bengali.

Acting as word detectives, linguists have attempted to reconstruct the vocabulary and structure of the Indo-European proto-language they believe existed. They developed theories about how sounds of certain letters are dropped, added, or changed to form new languages. In this way they have tried to trace the branching of the many Indo-European languages in the family and find evidence of the place of its homeland and the migration routes along which the languages spread.

Today, most linguists believe that the protolanguage originated more than 6,000 years ago in western Asia, somewhere north of the Black and Caspian Seas. They associate the people who spoke this language with horse herding on the steppes. Many historical linguists believe that the proto-Indo-European language began to branch off through migrations no later than 6,000 years ago and perhaps earlier. As more evidence comes in, the pieces of the linguistic puzzle may fit together in surprising new ways.

Around the turn of the third to the second millennium BCE, the story slipped into written history. Some Indo-European migrants originating much earlier from the north moved into Anatolia.

They established the Hittite kingdom around 1400 BCE. The Hittite language was one of the first Indo-European languages to be written down. Linguist Bedrich Hrozny was able to decipher Hittite inscriptions that were written in cuneiform on tablets found in Anatolia. Other inscriptions using related languages were also found in the region.



The early distribution of several Indo-European language groups, third millennium to first millenium BCE.

Indo-European Word Roots and Branches

*bhrátér- = a brother	*es- = to be	*ma'te'r- = a mother	*newo- = new, fresh
Greek ***phratér*** (a brother), ***phrátór*** (a member of the brotherhood), ***phratria*** (a community)		Greek ***me'te'r*** (a mother), Doric ***ma'te'r,*** New Greek ***metera***	
Latin ***frater*** (a brother), Oscan ***fratrúm*** (a brother; acc.sg.), Umbrian ***fratrom*** (a brother; acc. sg.), ***frater*** (brothers; nom. pl); French ***frère*** (a brother), Romanian ***frate,*** Megleno-Romanian ***frati,*** Istroromanian ***frote***	Latin ***sum*** (I am), ***es*** < ****ess*** (thou art), ***est*** (is), Oscan ***ezum*** (to be), ***som*** (I am)	Latin ***mater*** (a mother), Osc ***maatrei's*** abl.sg., Umbr ***matrer*** abl. sg.; Italian ***madre,*** Catalan ***mare,*** Spanish ***madre,*** Provencal ***maire,*** French ***mere,*** Brazilian ***mae,*** Portuguese ***mai***	Latin ***novus*** < ****nevos*** (new) Aromanian ***nawe,*** French ***nouveau,*** Spanish ***nuevo,*** Sardinian ***novu, nou,*** Occitan ***nouveu,*** Catalan ***nou,*** Italian ***nuovo,*** Rhaeto-Romance ***nouv,*** Romanian ***nou,*** Portuguese ***novo,***
Common Celtic ****bratér,*** > Gaulish ***Bratronius*** (personal name), Old Irish ***brathir,*** Irish ***bráthair,*** Scottish Gaelic ***bràthir,*** Welsh ***brawd,*** pl. ***brodyr,*** Cornish ***broder,*** pl. ***bredereth,*** Breton ***breur, breuzr,*** pl. ***breudeur***	Common Celtic ****esmi*** (I am); > Gaulish ***emmi*** (I am), ***esti*** (is)	Common Celtic ****ma'te'r,*** > Gaulish ***matir*** (mother), Irish ***ma'thair*** (mother), Scottish ***ma'thair,*** Old Irish ***ma'thir,*** Welsh ***modryb*** (dame, aunt), Old Breton ***motrep*** (aunt), Breton ***moedreb*** (aunt)	Common Celtic ****novio-,*** Gaulish ***novios*** (new), Old Irish ***naue,*** Irish Gaelic ***nua,*** Scottish Gaelic ***nuadh,*** Manx ***noa,*** Breton ***nevez,*** Welsh ***newydd***
Sanskrit ***bhrátár***- (a brother), ***bhrátra***- (brotherhood)	Sanskrit & Vedic ***asmi*** (I am), ***asti*** (is); Khowar ***asum*** (I am)	Sanskrit ***ma'ta'*** (a mother)	Sanskrit ***navas*** (new) Hittite ***newa*** (new, fresh)
Lydian ***brafr-*** (a member of the community)	Common Anatolian ****es-*** (is), > Palaic ***ash-*** (to		Waziri ***newai,*** Bengali ***notun, noea,*** Singhalese ***nava,*** Nepali ***naya,*** Hindi ***neya,*** Khaskura
Armenian ***el'bair*** (a brother), gen. ***el'baur*** Tocharian A ***pracar,*** B ***procer*** (a brother) Albanian ***vla*** (a brother) ?; Venetic ***vhraterei*** dat. 'to a brother'	Avestan ***ahmi*** (I am), ***asti*** (is) Armenian ***em*** (I am) < ****esmi*** Albanian ***jam*** (I am) < ****esmi***	Armenian ***mair*** (a mother), gen. ***maur*** Tocharic ***ma'car*** (a mother) Albanian ***motre''*** (a sister)	Thracian ***neos*** (new) Armenian ***nor*** (new) Tocharian A ***n'u*** (new)

Germanic ***bróder*** (a brother), > Gothic ***bróþar*** (a brother), Old English ***bróþor,*** Old High German ***bruoder,*** Old Norse ***broþir,*** German ***Bruder,*** Dutch ***broer,*** Scots ***brither***	Common Germanic ****is-*** (to be), > Old English ***eom*** (I am), ***ist*** (is), Gothic & Old High German ***ist,*** Old Frisian ***is,*** Old Norse ***ert,*** German ***ist*** (is), Dutch ***is,*** Danish & Norwegian ***er***	Common Germanic ****mo'the'r,*** Old High German ***muoter,*** Old Icelandic ***modher,*** Old English ***mo'dor,*** Norse ***mo'thir,*** Old Low German ***mo'der,*** Old Frisian ***mo'ther,*** Old Saxon ***mo'dire*** (aunt), Middle High German ***mu''eder,*** Swedish ***mor, modor,*** German ***Mutter,*** Icelandic ***mooir,*** Norwegian ***mor,*** Danish ***moder,*** Faroese ***modir,*** Dutch & Afrikaans ***moeder***	Common Germanic ****niow-, *nioj-*** (new) > Gothic ***niujis*** (new), Old High German ***niuwi,*** Old English ***néowe, níwe*** (new, recent, not used), Old Swedish ***niwi,*** Old Frankish ***nie;*** German ***neu,*** English ***new,*** Swedish & Danish & Norwegian ***ny,*** Africaans ***nuwe,*** Dutch ***nieuw,*** Frisian ***nij,*** Faroese ***nyggjur,*** Icelandic ***nyr,***
Common Baltic ****brat-*** (a brother), > Lithuanian ***brolis,*** Zhemaitian ***bro'tis,*** Latvian ***bralis,*** Old Prussian ***brati, brote*** (brother, brothers), Sudovian ***bra'te'***	Common Baltic ****esmi*** (I am), > Old Lithuanian ***esmi*** (I am), ***esti*** (is), Lithuanian ***esu*** (I am), ***esi*** (thou art), Prussian ***asmai*** (I am), Latvian ***esmu*** (I am), ***esi*** (thou art), Sudovian ***esmai*** (I am), ***est*** (is)	Common Baltic ****mo'te'*** > Lithuanian ***mote., motina*** (a woman), Latvian ***mate*** (a woman), Old Prussian ***mu'ti*** (a mother), ***pomatre*** (a step-mother), Sudovian ***ma'te'*** (a mother)	Common Baltic ****nawo-*** (new) > Lithuanian ***naujas*** (new), Latvian ***naujš*** (in a hurry), Prussian ***nauns*** (new), Sudovian naunas, naujas
Common Slavic ****bratü*** (a brother), > Russian ***brat,*** Old Church Slavonic ***bratru,*** Czech & Upper Sorbian ***bratr,***	Common Slavic ****esmi*** (I am), > Ukrainian ***est'*** (is), Belorussian ***josc',*** Serbo-	Common Slavic ****mati*** (a mother), Ukrainian & Bulgarian & Serbo-Croatian & Slovene & Czech ***mati,*** Slovak & Russian	Common Slavic ****novü*** (new) > Ukrainian ***novij,*** Bulgarian & Serbo-Croatian & Macedonian
Lower Sorbian ***brats',*** Polish & Slovene & Belorussian & Ukrainian ***brat***	Croatian ***jesam*** (I am), ***jest*** (is), Slovene ***je*** (is), Bulgarian ***sum*** (I am), ***je*** (is), Czech ***jsem*** (I am), ***jest*** (is), Slovak ***som*** (I am), Polish ***jesm*** (I am), ***jest*** (is), Sorbian ***je*** (is), Russian ***jest'*** (is)	***mat',*** Belorussian & Polish & Upper Sorbian ***mac',*** Lower Sorbian ***mas'*** (a mother)	& Slovene ***nov,*** Czech & Slovak ***novy,*** Polish & Sorbian ***nowy,*** Belorussian & Russian ***novy***

*ekwo- = a horse	***dó- = to give, to take, exchange**	***wíro- = a man, a husband, a human**
Greek ***hippos*** (horse) - an example of how ***kw > p*** in Greek	Greek ***didómi*** (I give) New Greek ***dido*** (I give)	Greek ***herós*** (a hero), ***aristos*** (the best) are thought sometimes to have derived from the same stem, as Indo-European ***w*** disappeares in Greek. The first word is more probable.
Latin ***equus*** (horse)	Latin ***dare*** (to give), ***dó*** (I give), ***dedi*** (I gave); ***donum*** (a gift, a talent), Oscan ***deded*** (he gave), ***didest*** (he will give), ***donom*** (a gift), Umbrian ***dirsa-*** (I give), Pelignan ***dida-*** (I give); > Daco-Romanian ***da*** (to give), Megleno-Romanian ***dare,*** Istroromanian ***dou*** (I give), Spanish ***dar,*** Catalan ***donar,*** Italian ***dare,*** Ladin ***der,*** Romanian ***a da,*** French ***donner,*** Aromanian ***dau,*** Sardinian ***dare,*** Portuguese ***dar,*** Occitan ***douna***	Latin ***vír*** (a man, a husband), ***virtus*** (virtue), Umbrian ***viru, veiru*** (acc.pl.; men) French ***viril, virtu,*** Portuguese ***varao*** (a man)-?
Common Celtic ***ekwos*** (horse) > Gaulish ***epos, eqos,*** Goidelic ***ehwah,*** Ogham Irish ***eqa,*** Old Irish ***ech,*** Irish and Scottish Gaelic ***each,*** Welsh & Cornish ***ebol*** (a colt), Breton ***ebeul*** (a colt)	Common Celtic ***dó-*** (to give); > Old Irish ***dobiur, tabur*** (to give), ***tabraim*** (I give thou), Irish & Scottish Gaelic ***tabhair*** (give!), Irish ***dán*** (fate, destiny), Welsh ***dawn*** (a gift, talent)	Common Celtic ***viro-, vero-*** (a man) > Gaulish ***uiro-*** (a man), Old Irish ***fer,*** Irish and Scottish Gaelic ***fear,*** Manx Gaelic ***fer,*** Old Welsh ***gur,*** Welsh ***gwr,*** Cornish ***gur,*** Breton ***gour***
Sanskrit ***açva-*** (horse), Mitanni Aryan ***asvasanni*** (a stableman)	Sanskrit ***dá-*** (to give), ***dadáti***	
(he gives); Gypsy ***dav*** (to give), Lahnda ***dewen,*** Nepali ***dinu,*** Kashmiri ***dyunu,*** Singhalese ***denawa,*** Khaskura ***dinu,***	Sanskrit ***víra*** (a man), Gujarati ***wer*** (a man, a husband)	
Sanskrit ***veera*** (a hero), Bengali, Hindi ***veera***		
	Punjabi & Hindi & Urdu ***dena,*** Bengali ***deoa,*** Marathi ***dene***	
Tocharic A ***yuk*** (a horse), B ***yakwe***	Armenian ***tam*** (I will give), ***dal, tal*** (to give), ***turkh*** (a gift)	
Thracian ***esb, esvas*** (a donkey, a horse), Phrygian ***es'*** (a donkey)	Venetic ***doto*** 'given'; Albanian ***dhashë*** (gave)	

Common Germanic ***ihwaz*** > Gothic ***aihwa-*** (horse), Old English ***eoh,*** Old Norse ***jo'r,*** Old Saxon ***ehu-,*** Old High German ***eha-***	Lithuanian ***duoti*** (to give), ***duodu*** (I give), Old Prussian ***dátweí*** (to give, to let), ***padátan*** (given), Sudovian ***dátun*** (to give), ***dais*** (give!), Latvian ***dot*** (to give)	Common Germanic ***vero-*** (a man, a warrior) > Gothic ***wair,*** Old High German, Old English, Old Swedish and Old Frankish ***wer,*** Old Norse ***verr*** English ***world*** (from ***wer-ald*** "man's age, lifetime"), German ***Werwolf*** ("man-wolf"), ***Welt*** (world), Dutch ***wereld*** (world), Frisian ***wræld***
Old Baltic ***as'u-,*** probably > Lithuanian ***as'va*** (a mare), Old Prussian ***aswinan*** (mare's milk)	Common Slavic ***dati*** (to give), ***damï*** (I give, I will give); > Ukrainian & Old Church Slavonic & Slovene & Czech & Serbian ***dati*** (to give), Bulgarian & Macedonian ***dam*** (I give), Belorussian ***dats'*** (to give), Polish & Upper Sorbian ***dac',*** Lower Sorbian ***das',*** Russian ***dat'*** (to give), ***davat'*** (to give many times), ***daju*** (I give), ***dam*** (I will give)	Common Baltic ***víro-*** (a man) Lithuanian ***vyras,*** Latvian ***virs,*** ***virietis,*** Old Prussian ***wíjrs,*** Sudovian ***víras***

***patér- = a father**	**nokw-, *nekw-* = **night, darkness**	**reg'-* = **to rule, to lead straight, to put right**
Greek ***patér*** (a father), New Greek ***pater, pateras***	Greek ***nuks*** (a night)	Greek ***réks*** (a king) - a Middle Greek word borrowed from Latin in the Medieval epoch
Latin ***pater*** (a father), Oscan ***patír,*** Umbrian ***patre*** abl.sg., Marrucinian ***patres*** gen.sg.; Italian ***padre,*** Spanish ***padre,*** French ***pere,*** Occitan ***paire,*** Catalan ***pare,*** Portuguese ***pai***	Latin ***nox*** (a night), genitive ***noctis***	Latin ***regere*** (to rule), ***rex*** (a king, a leader), ***rectus*** (right, correct), Oscan ***regaturei'*** (dat. sg., a leader, a guider)
Common Celtic ****atér,*** > Gaulish ***Ateronius*** (a personal name), Irish ***athair*** (father), Scottish ***athair,*** Old Irish ***ater,*** Welsh ***gwal-adr,*** Breton ***ual-art***	Common Celtic ****nokti-***(night) > Old Irish ***nochd,*** Welsh ***henoeth,*** Cornish ***neihur,*** Breton ***neyzor, nos,*** Irish ***anocht*** (tonight), Scottish ***nochd*** (tonight)	Common Celtic ****réks,*** gen. ****régos*** (a king) > Old Irish ***rí*** (a king), Scottish Gaelic ***righ;*** indirect Irish ***-righ*** (right) Gaulish ***-rix*** (a king), pl. ***-riges*** - known from personal names including ***Vircingetorix;*** Welsh ***rhi*** (a king) - here ***r*** is lenited, Breton ***reizh*** (right, correct), Cornish ***ruy*** (a king), Middle Breton ***roe***
Sanskrit ***pitá, pitar-*** (a father) Punjabi ***pyo,*** Hindi & Gujarati ***pita***	Hittite ***neku-*** (to get dark), ***nekuz*** (evening) - absense of suffix *-t-* shows the original IE root Vedic ***nak-*** (night), Sanskrit ***nakti-*** (night), ***naktam*** (at night)	Sanskrit ***ráj-, rat.*** (a king, a leader)
Avestan ***pitá-*** (a father) Pashto ***plar,*** Lahnda ***pyu,*** Baluchi ***phith, pith,*** Ossetic ***fyd,*** Tadjik ***padar,*** Persian ***pedar***		Avestan ***raé*** (wealth, wealthy), ***raya*** (rich person) - a supposed word; ***rástar*** (a leader) Persian ***rahst*** (right, correct)
Armenian ***hair*** (a father), gen. ***haur*** Tocharian ***pácar*** (father)	Albanian ***naté*** (night)	Thracian ***rhesus, resos, rézos*** (a personal name meaning "king")
Lithuanian ***patinas*** (a male animal), Old Prussian ***Seme-patis*** (a deity; "father of earth"?, as ***zeme*** means 'ground, earth')	Old Baltic ****nakti-*** (night) > Old Prussian ***naktin*** (acc. sg. night), Lithuanian ***naktis*** (night), Latvian ***nakts*** Common Slavic ****nokti*** 'night' Belarussian ***noch,*** Bulgarian ***noshch,*** Serbo-Croatian and Slovenian ***noc',*** Chekh Slovak Polish and Sorbian ***noc,*** Polabian ***nu''c,*** Russian ***noch',*** Ukrainian ***nich***	
Common Germanic ****fadir,*** ****fadhó,*** > Old High German ***fater,*** Old Icelandic ***fadhir,*** Old English ***faeder*** German ***Vater,*** Swedish ***far, fader,*** Frisian ***faer,*** Faroese ***fadir,*** Danish ***fader,*** Norwegian ***far,*** Icelandic ***faoir,***	Common Germanic ****nahtiz*** (night) > Gothic ***nahts*** (night), Old Saxon ***neht,*** Old English ***niht, neaht,*** Old Norse ***natt,*** Old Frankish & Old Swedish ***nacht,*** Old High German ***n***	Common Germanic ****reik-,*** ****rik-*** (to rule) > Gothic ***reiks*** (a leader), Old English ***ríce*** (a kingdom), also ***-ríc*** (a king), ***ríce*** (rich, powerful); Old High German ***riche*** (kingdom), Old Norse & Old Swedish ***ríki*** (kingdom), Old Frankish ***ri'ke;***

Source: List of words adapted from *Proto-Indo-European Roots*: *An Etymological Database of Indo- European Roots*, a project of the Indo-European Roots Database by Christopher Gwinn. http://www.geocities.com/indoeurop/project/phonetics/waw.html#1. (Site discontinued)

CHAPTER 5

By Mary Bickley and Sharon Cohen

Early Complex Societies in the Americas

WHY STUDY EARLY AMERICAN SOCIETIES?

About five thousand years ago, agricultural societies were beginning to emerge in certain parts of North and South America. Shortly after 2000 BCE, complex societies began to appear. They had almost all the major elements of the complex societies, or civilizations that had appeared about 2,000 years earlier in Afroeurasia: densely clustered populations, cities, states, specialized occupations, social class structures, monumental buildings, intricate belief systems, and sophisticated technological and scientific knowledge. Peoples of North and South America got a later start on farming than Afroeurasians did, and the earliest American civilization arose on its own, entirely isolated from the lending and borrowing of ideas and inventions that in Afroeurasia flowed between one river valley society and another. The population of the Western Hemisphere was a sort of "control group," suggesting that complex society was likely to develop wherever in the world intensive farming arose and population went up. Investigation of early complex societies in the Americas raises important questions: Was the rise of civilizations in the world inevitable once some human communities turned to farming? Were early complex societies in the Americas mainly similar to those in Afroeurasia? Or were they drastically different? Have the cultural heritages of early complex societies in the Americas endured in some ways up to today?

This chapter focuses on the two early complex societies that reveal themselves in the archaeological record: the Olmec in Mesoamerica (Mexico and Central America) and the Chavín society in the Andean Mountains of South America. Archaeologists continue to make new discoveries about these complex societies. Therefore, the historical evidence continues to grow, and scholars continue to debate the meaning of this evidence. Students can join archaeologists and historians in constructing explanations of the meaning and purpose of artifacts found in sites identified as Olmec or Chavín. Building interpretations is an important habit of mind for young history students. Moreover, students will see that in ancient times people built complex societies on all the major land masses of the world, with the exception of Australia and Antarctica.

OBJECTIVES

Upon completing this chapter, students will be able to*:*

1. Identify the fundamental elements of Olmec and Chavín societies and describe their similarities and differences.
2. Construct and evaluate an argument about the purpose of the monumental colossal heads that the Olmec built.
3. Infer characteristics of ancient societies based on archaeological evidence.

TIME AND MATERIALS

The chapter will take about five class periods. The only materials needed are the student handouts provided in the chapter.

THE HISTORICAL CONTEXT

Archaeological evidence currently identifies the Olmec in Mesoamerica (1200–100 BCE) and the Chavín in the Andes (1200–400 BCE) as the earliest examples of complex societies in the Americas. These societies developed such an impressive array of art and religious practices that subsequent civilizations emulated them, including the Toltec, Maya, and Aztecs in Mesoamerica and the Inca in the Andes. Like complex societies in Afroeurasia, the Olmec and the Chavín demonstrated social stratification, labor specialization, some urbanization, and surplus of agricultural production.

THREE ESSENTIAL QUESTIONS

Humans and the Environment

Research the land of the Olmec, including topography, soil, climate, and plant and animal life. Then become "a farmer for a day," describing in words or pictures your experiences. What plants do you cultivate, and how? What animals are part of your daily life? What problems do you

have in growing food, and what solutions to them do you try? How is information about Olmec farming known to us today?

Humans and Other Humans

Drawing on recent research, debate the validity of the statement that the Olmec were the "mother civilization" of Mesoamerica. What sort of evidence would you marshal to make your case?

Humans and Ideas

Time and again, Olmec civilization appears in the news because new archaeological discoveries lead to new hypotheses and interpretations. In what significant ways have recent discoveries altered or challenged the views of researchers regarding Olmec civilization and its place in Mesoamerican history? A good source of information is the History News Network at http:// hnn.us/.

KEY THEMES

This chapter addresses the following historical themes:

Key Theme 2: Economic Networks and Exchange

Key Theme 3: Uses and Abuses of Power

Key Theme 4: Haves and Have-Nots

Key Theme 6: Science, Technology, and the Environment

CORRELATIONS TO NATIONAL HISTORY STANDARDS

National Standards for History

Era 3: Classical Traditions, Major Religions, and Giant Empires, 1000 BCE–300 CE. 4: The student understands the achievements of Olmec civilization.

INSTRUCTIONAL RESOURCES

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LESSON 1

Rise of the Olmec

Monuments as Evidence of Complex Society

Introductory Activity

1. Provide a copy of Student Handout 5.1.1 to each student. Create a list, either as a whole class, in pairs, or individually, of the reasons that societies have constructed public monuments and chosen particular materials for building. Generate a list detailing who the students believe are the people that design and build monuments in our society. Additional monuments with which students are familiar can be added to the list.
2. Next, pass out a copy of Student Handout 5.1.2 to each student. Ask them to apply the same questions they addressed using the first handout to the colossal heads that the Olmec sculpted.
3. Finally, generate a list of questions students have regarding these colossal heads. Write these questions down. Revisit this list of questions at the end of the chapter.

Activities

1. Look at the pictures in Student Handout 5.1.1. For each photograph, answer as many of the following questions as you are able:
    a. Why do you think these monuments were created?
    b. Who ordered them to be created? What kind of political organization and funding were necessary to put these monuments on the sites?
    c. What kinds of materials did they use to create them?
    d. Were the building materials near the site where the monuments are displayed?
    e. What was the social status of the craftsmen who made them?
    f. What tools were used?
    g. How long did it take to complete each project?

    What other monuments are you familiar with? Can you answer the above questions about them?
2. Look at the pictures in Student Handout 5.1.2. Answer as many of the following questions as you are able.
    a. These heads are sculpted monuments. What do you think they commemorate?
    b. Who do you think ordered that these monuments be created and for what purpose? What kind of political organization and funding was necessary to put these monuments on the sites?

c. Who do you think made them?

d. What kinds of materials did the makers use to create them?

e. Were the building materials near the site where the monuments are displayed?

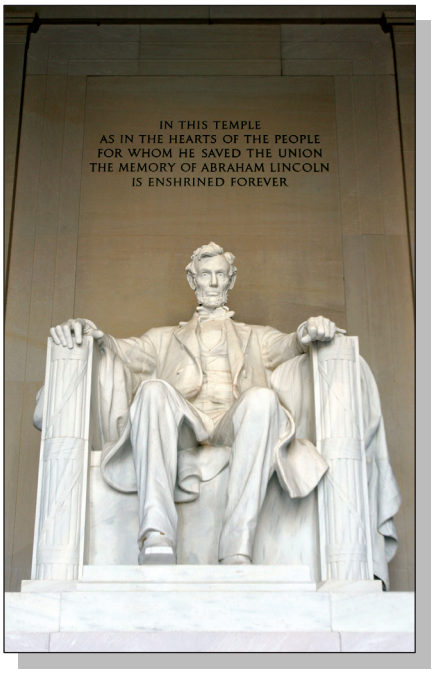
f. What was the social status of the craftsmen who made them?

g. What tools were used?

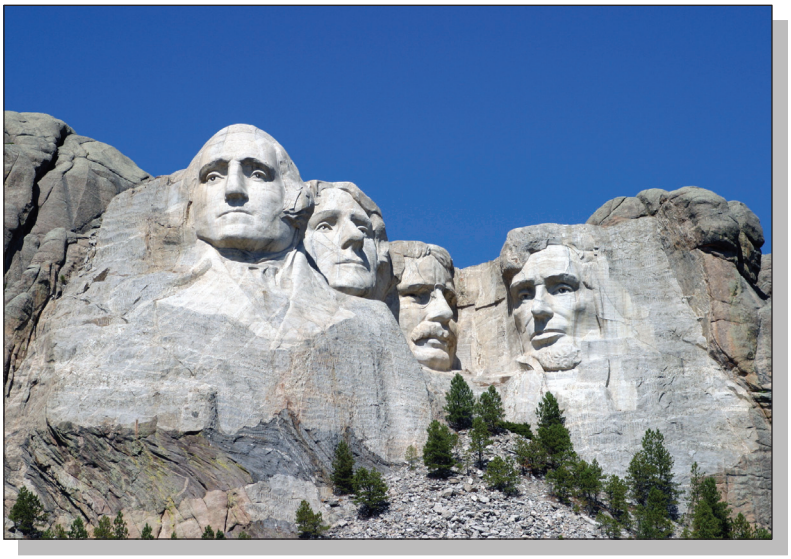
h. How long did it take to complete each project?

3. Historians do not have final interpretations of the purpose of the colossal heads in the territory of the Olmec. Develop your own interpretation of the purpose of these monuments. Your hypothesis is called a thesis statement. You will test your thesis statement by analyzing additional information about the Olmec in the next two lessons.

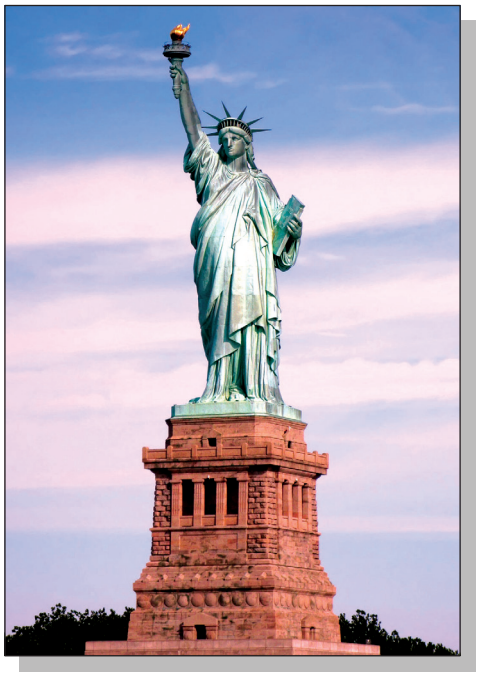
Monumental Sculptures in the United States



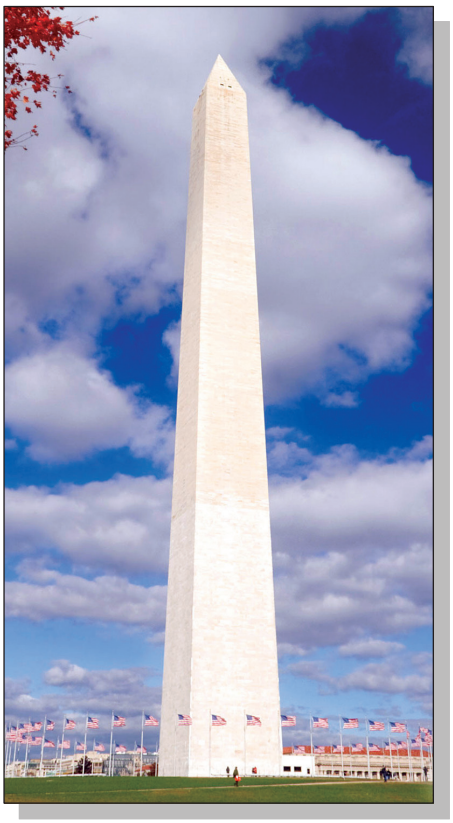
The Lincoln Memorial



Mount Rushmore



The Statue of Liberty



The Washington Monument

Olmec Heads

LESSON 2

The Olmec Colossal Heads

Were They Evidence of a Complex Society?

Introductory Activity

Using Student Handouts 5.2.1 and 5.2.2, have students construct a thesis about the possible process the Olmec used to make the colossal heads. The thesis should include, but not be limited to, the following factors:

- Securing the basalt rock from the mountain
- Transporting the basalt from the mountain to the river and down the river to the city
- Carving the basalt into the finished head
- Lifting the finished head onto the platforms

Activities

1. Study the maps and the information in Student Handouts 5.2.1 and 5.2.2. Construct a thesis about the possible methods the Olmec used to transport the colossal heads. What kind of technology might they have used to move the basalt from the mountain to the river and then lift them to the ceremonial platform at La Venta.
2. Referring again to the maps and information in Student Handouts 5.2.1 and 5.2.2, construct a thesis about the methods the Olmec used to sculpt the colossal heads.
3. Divide the class into groups of four or five and ask each group to discuss the possible relationship between the colossal heads (including both what they might depict and the process of mining, transporting, sculpting, and lifting involved) and the existence of a complex society. Discussion questions:
    a. What kind of skills would have been necessary to create and move the heads?
    b. What kind of social and political organization might have been required?
    c. Did the work require the existence of a supreme ruler?
    d. Did the work require many specialized jobs?
    e. Could a hunting and gathering band of, say, thirty people have produced and placed these heads? Could an agricultural village population have done it?
4. Have the groups report to the class about their discussion of these questions.

The Olmec Region of South Central Mexico

The basalt used to make the colossal heads came from the Tuxtla Mountains, about sixty miles due west of La Venta. According to Michael Coe, an archaeologist, the Olmec selected some of the big basalt boulders from the bottom of the lower slopes of the mountains to make these heads. Historians still do not know whether the heads were carved at the base of a mountain or transported back to the ceremonial platforms and carved there.

Historians are also not sure how the Olmec transported basalt boulders weighing ten to twenty tons. About twenty-five miles from the base of the mountains, there are feeder streams that flow into the Coatzacoalcos River, near the mountains, and out to the Gulf of Mexico. The La Venta site is near another river, the Tonala River (Rio Tonala), which also flows into the Gulf.

What tools or technology did the Olmec use to carve the basalt into the stone heads? With no local hardware store available, they first needed to make a chisel of some sort. What could they use to make a rock-breaking chisel? What tools or technology did they use to transport the heads to the ceremonial platforms? There were no beasts of burden to help with transportation. It is estimated that it would take 2,000 people to carry the colossal heads overland.

LESSON 3

Hierarchy of Olmec Society

Introductory Activities

Review the basic elements of early complex societies:

- Surplus
- Food production
- Social stratification
- Labor specialization
- Monumental structures
- Dominant religion
- Centralized government

Students should now be able to identify some of the basic elements of Olmec society from the work done in Lessons 1 and 2.

Activities

1. Analyze the social hierarchy of the Olmec:
    a. Review the generic social hierarchies in early complex societies: rulers, priests, merchants, artisans, peasants, and slaves.
    b. Match the generic social hierarchy listed above with the specific types of social roles among the Olmec listed in Student Handout 5.3.1. Make a graphic organizer for Olmec complex society with the elite on top and the others below in the order listed in Student Handout 5.3.1.
    c. Compare your thesis drafted in Lesson 2 regarding the purpose of the colossal heads in Olmec society with historical interpretations of the purpose of colossal heads in the complex society of the Olmec given in Student Handout 5.3.2. Make revisions to your thesis if necessary.

Olmec Social Hierarchy

The elite of the Olmec, determined by status and wealth, included rulers and priests who possessed political and religious power. They, along with the skilled artisans and merchants, probably lived in the larger cities, and relied on farmers, who lived in the surrounding countryside, to produce enough food for the urban population. The upper class traded in art and other items of luxury, while the lower class, residing in less populated areas, hunted and farmed for a living.

Ruler: There was not one centralized ruler. Rather, there were multiple rulers of rival city-states. The rulers led any military operations against rival states.

Olmec Priests: They probably had several duties: scribes, calendar makers, and overseers of rituals in the religious temple complexes. The temple complexes were earthen mound platforms shaped like upside-down cupcakes. Their areas were similar in size to those of volcanoes. The priests also may have been consulted about the location and ceremonies for the burial tombs. They were experts in the stories of the gods including the were-jaguar. Perhaps the priests also had the duty of deciding when to deface or to decapitate the heads of sculptures. The 260-day sacred calendar and 365-day secular calendar created by the Olmec used the highest volcano or mountains in view to mark the sunrise position on the summer solstice (June 22), thus establishing the true length of the solar year. They ingested Bufo toads to achieve a hallucinogenic trance that by tradition allowed them to transform themselves into jaguars or other supernatural beings.

Ball Players: They played the ritual ball game. The ball was made of rubber from latex found in trees in the area.

Engineers: They designed the plan to quarry volcanic basalt blocks and transport them by land and probably by rafts on streams and rivers and along the Gulf coast. They also must have ordered the drains for the artificial ponds. They were most likely responsible for creating the mounded earthen platforms, which after 900 BCE were built as pyramid-shaped platforms.

Sculptors: They carved the were-jaguar motif. The jaguar of Mesoamerica is comparable to the royal symbol of the lion in the Eastern hemisphere. The sculptors had to make tools to carve Obsidian and jade. They probably knew the meaning of special icon symbols, for example cleft heads in sculptures of jaguars. Their workspaces for their craft specialization show up in Olmec archaeological sites.

Artists: They produced colored clay masks, which were covered up right after being made.

Laborers: They quarried the volcanic basalt, carried the basalt blocks, constructed the rafts, sailed the rafts down rivers and along the coast, and lifted the basalt up to the religious temple complex platforms.

Merchants: They traded local products for jade, cacao beans, colored clay, obsidian, and other goods.

Farmers: They grew maize, beans, and squash in surplus quantities both to feed themselves and to supply all the social and occupational groups that did not farm.

Textile workers: They cultivated cotton, dyed it, wove it, and made it into clothing.

Comparing Different Interpretations of Olmec Complex Society

Interpretation 1

A variety of "sister" chiefdoms existed in different areas with a common religion based on worship of the jaguar. The heads represent the shamanistic practices, such as the transformation of priests into jaguars. Over time, the jaguar became associated with the god of rain.

Interpretation 2

The purpose of the heads was to honor the current ruler. When the ruler died, his sculpture was decapitated as a religious sacrifice. Some historians think that competitors for power were responsible for decapitating sculptures.

Interpretation 3

The colossal heads demonstrated the power of rulers. When monuments, such as heads, statues, altars, or pillars, were located in large public plaza, people would gather for ceremonies. Many large gatherings implied that the ruler possessed great power. Rulers were those who could show contact with ancestors and gods through shamanistic rituals. The purpose of the ceremonies was to ask for help with rainfall and to control the ferocity of jaguars and other aggressive animals in the rainforest. The heads represented those rulers who demonstrated religious power. The temple complex platforms were oriented eight degrees north to align with the summer solstice, so every year when the sunrise appeared in the right place, the ruler was legitimized.

Interpretation 4

Heads celebrated ball players who may have been rulers, too. Many of the earliest heads seem to represent participants in the ritualistic ball game, which, according to Mesoamerican beliefs, recreates the world.

LESSON 4

Hierarchy of Chavín Society

Activities

Chavín de Huántar was a religious and political center located in the north central Andes Mountains of Peru. It is dated to between 1200 and 200 BCE. Therefore, its development closely parallels that of Olmec civilization.

1. Compare the social system of the Olmec with that of the people who lived at Chavín de Huántar. To research each society, use the information in Student Handout 5.4.1 and the websites or articles listed in the Resources section.

2. Divide students into four groups and have each group make a Venn diagram on large chart paper comparing aspects of Olmec and Chavín society in one of the following categories:
    - Religion
    - Social structure
    - Trade
    - Technology

3. Ask each group to present its comparisons. Then lead the class in a discussion of similarities and differences between the two societies, especially on the subject of the social hierarchy, that is, social class divisions.
    a. Discussion question: How does comparative analysis help us to understand each of these societies?

Characteristics of Chavín Society

Study this list of factors influencing Chavín society:

- Religion
- Raised monumental platforms for religious ceremonies
- Feline (cat-like) figures found in religious art
- Religious platforms aligned to reveal the sunrise at the winter solstice
- Hallucinogenic drugs used to induce trances in shamans (spiritual leaders)
- Social structure
- Status and wealth evident from grave goods in burial sites
- Trade
- Trade items included pottery, shells, stone tools, wool, textiles, metals, and dried fish
- Location of Chavín de Huántar allowed for flow or control of trade between major environmental zones from the High Andes down to the sea coast
- Long distance trade fueled success and growth
- Trade depended on llamas for transport
- Technology
- Innovations seen in textiles, including use of llama and alpaca hair in cotton cloth, dying animal hair, textile painting, resist painting, discontinuous warps and warp wrapping, and the heddle loom
- Gold metallurgy that included soldering, sweating, welding, use of silver-gold alloys, and production of three-dimensional forms

Final Assessment

Listed below are three methods of assessing student comprehension for this chapter.
The student will:

1. Write a paragraph describing the elements of early complex Olmec society in Mesoamerica. The best responses incorporate these elements:
    - Existence of large mounds
    - Location along coast facing Gulf of Mexico
    - Time period from about 1300 BCE Society with social class hierarchy
    - Forced labor to build structures and move stone heads

- Far ranging system of trade in obsidian, jade, colored clay, cacao beans, and other goods

2. Draw a diagram or graphic organizer detailing the complex society of the Olmec. (Graphic organizers can be used as a part of differentiated instruction.) The best responses incorporate these elements:
    - Ruler (no single ruler, rather multiple rulers)
    - Priests/scribes
    - Royal assistants
    - Military
    - Engineers
    - Sculptors
    - Calendar writers
    - Merchants
    - Farmers
3. Draw a scene depicting the different aspects of social hierarchy in Olmec society. For example, the ruler and priests on the ceremonial platform, the laborers transporting the big heads, and farmers growing corn. (Differentiated instruction for high level learners can include a paragraph describing the scene depicted in the drawing.)
4. All three alternative assessments may be made more challenging by incorporating comparisons with Chavín society.

Glossary

Afroeurasia: The land masses of Africa and Eurasia, together with adjacent islands, as a single spatial entity. The concept of Afroeurasia is useful in the study of both historical and contemporary social phenomena whose full geographical contexts overlap in one way or another the conventionally defined continents of Africa, Asia, and Europe.

agrarian society: A society where agriculture, including both crop production and animal breeding, is the foundation of both subsistence and surplus wealth. To be distinguished from hunter-forager and pastoral nomadic societies.

agriculture: The intentional cultivation of domesticated plants and animals. Beginning about 12,000 years ago, the development of agriculture permitted unprecedented growth of human population and the emergence of towns, cities, and the centralized state. Scholars generally agree that agricultural economies developed in several parts of Afroeurasia and the Americas independently of one another.

Amerindian: A member of any of the native populations of the Americas; an American Indian or Native American.

archaeologist: A professional scholar in a branch of anthropology that documents similarities, differences and change among various human societies of the past. Archaeologists work with the material (physical) remains of societies. Their work provides the major source of information available on societies that did not have writing systems. Archaeologists also provide evidence that supplements written sources.

Australopithecus/australopithecine: A group of hominid species ancestral to Homo sapiens. Australopithecines were bipedal but had brains about one third the size of modern Homo sapiens. These species appeared in Africa between four and three million years ago and died out about one million years ago. The best-known australopithecine remains are those of the creature named Lucy, who lived in what is today Ethiopia about 3.2 million years ago.

barter: The mutual transfer of goods or services not involving the exchange of money. Used as the common form of exchange before the invention of currency. The practice of bartering continues to one degree or another in all modern societies.

belief system: A combination of ideas, values, and practices that serve a society's cultural needs. Belief systems include all religions, as well as philosophical, ethical, and moral systems.

Big Bang theory: The cosmological theory that the universe began as an infinitesimally small, dense, and hot entity. About 13 billion years ago the universe began to expand and continues to expand today.

bipedalism: The physical ability, characteristic of the genus Homo, to walk upright on two legs, thus freeing the hands to hold and manipulate objects or tools. "Homo sapiens is a bipedal species."

caliph: In Arabic, khalifa. In Sunni Muslim teaching, the successor to the Prophet Muhammad as rightful leader of the Muslim community chosen by a concensus of that community. In the Umayyad (661–750) and Abbasid (751–1258) dynasties, the Caliphs were also the heads of state and transmitted their authority to their descendants.

civilization: See complex society.

clan: A form of social and political organization in which the fundamental principle of solidarity is kinship. Clans typically constitute two or more kinship groups within a tribe. Clan organization is common among pastoral nomadic and stateless societies.

collective learning: The view that the human species has a unique capacity to accumulate and share complex knowledge and to transmit this knowledge from one generation to the next.

commercial diaspora: A network of merchants of common origin and shared cultural identity who lived as aliens in foreign towns to serve as agents and cross-cultural brokers for fellow merchants who moved along the trade routes connecting these towns. Examples are the ancient commercial diaspora of the Phoenicians and the medieval diaspora of Jewish merchants in the Mediterranean and Indian Ocean. Also trade diaspora. See diaspora.

complex society: A type of society characterized by all or most of the following features: dense population, agricultural economy, cities, complex social hierarchy, complex occupational specialization, centralized state, monumental building, a writing system, and a dominant belief system. To be distinquished generally from hunter-forager, pastoral nomadic, and small-scale agricultural societies. Civilization.

diaspora: The scattering of a people of distinct regional, ethnic, or religious identity from the original homeland to other parts of the world. A diaspora may result from either voluntary or forced migration. Examples include the Jewish diaspora and the dispersion of people of African descent to the Americas and other regions as a result of slave trade. See Commercial Diaspora.

domestication: The process whereby humans changed the genetic makeup of plants and animals by influencing the way they reproduced, thereby making them more appealing in taste, size, and nutrition, as well as easier to grow, process, and cook. Humans could not invent new plant species, but they could select plants that possessed certain observable mutations, that is, characteristics that made them desirable. Farmers could tend these mutants in ways that ensured their survival. The domestication of animals through selective breeding followed a similar process.

ecological niche: The environment within which an organism is adapted to live.

ecology: The aspect of biology concerned with the relations between organisms and their environment.

endemic: Prevalent in or peculiar to a certain area, region, or people, as an infectious disease.

epidemic: An outbreak of contagious disease affecting a significant portion of the population of a locality. See also Pandemic.

extensification: "An increase in the range of humans without any parallel increase in the average size or density of human communities, and consequently with little increase in the complexity of human societies. It involves the gradual movement of small groups into new lands, usually adjacent to and similar to those they have left." (David Christian, Maps of Time: An Introduction to Big History [Berkeley: University of California Press, 2004], 190). Processes of extensification were characteristic of the paleolithic era in world history. See also Intensification.

farming: The process of growing and harvesting domesticated plants and animals for food, fiber, and other commodities. Farming is characteristic of agrarian societies.

government: An organization having the power to make and enforce laws and to maintain social order over a territory or a group of people. A government may regulate society through a consensus of leaders, through democratic elections and decision-making, or through authoritarian force. In a state, the government is the central decision-making authority.

Great Arid Zone: The belt of arid and semi-arid land that extends generally northeastward across Afroeurasia from the Sahara Desert in the west to Manchuria (northern China) in the east. The Great Arid Zone has been home to both pastoral nomadic communities and to farming societies where water from rivers, wells, and periodic rainfall is available. In addition to the Sahara, the large deserts of the Great Arid Zone include the Arabian Desert, the Great Indian Desert, the Takla Makan Desert, and the Gobi Desert.

hominids: This category in evolutionary biology includes all humans and their early ancestors within the primate family. Hominid species include the Australopithecines, Homo habilis, Homo erectus, Neanderthal, and Homo sapiens. Until recently, most scholars agreed that all hominid species other than Homo sapiens became extinct about 28,000 years ago. Anthropolgists, however, have begun to study fossil evidence found in Indonesia that suggests the existence of a species (named Homo floresiensis) that may have lived as few as 13,000 years ago.

Homo erectus: A hominid species and likely ancestor of Homo sapiens. Homo erectus was characterized by a prognostic jaw as well as a large brow and receeding forehead. This species emerged between and 2.4–1.6 million years ago and may have become extinct about 30,000 years ago.

Homo sapiens: The scientific name for anatomically modern humans, a hominid species that emerged between 150,000 and 150,000 years ago, eventually displacing all other hominid species. The development of the frontal lobe of the brain was a key factor differentiating this

species from other hominid species. The average human brain is larger than that of other hominids. The oldest fossils have been found in Africa. Fossil evidence and more recent DNA analysis indicates that Homo sapiens evolved in East Africa and subsequently displaced the Neanderthals and any other hominid types that shared the planet.

hunter-gatherers: Also hunter-foragers. Humans that rely on naturally occurring sources of food, obtained by scavenging, gathering, or hunting. Because hunter-gatherers require much more extensive land areas from which to secure food than do farmers or stock-raisers, their communities have necessarily been small. Hunter-gatherer communities were the exclusive form of human economic and social organization until the emergence of farming about 12,000 years ago. Today, hunter-gatherer groups account for only a tiny percent of the human population.

Inner Eurasia: The huge interior land mass of Eurasia, whose dominant features are flat, semi-arid regions of steppe and forest. Inner Eurasia generally corresponds to the territories ruled by the Soviet Union before its collapse, together with Mongolia and parts of western China. Poland and Hungary to the west and Manchuria (northeastern China) to the east may be thought of as Inner Eurasia's borderlands. The northern margins are boreal forest and Arctic tundra. To the south are the Black and Caspian seas and the Himalayas and other mountain ranges. A mountain-free corridor connects Inner Eurasia to Iran.

intensification: "New technologies and lifeways that enabled humans to extract more resources from a given land area." (David Christian, Maps of Time: An Introduction to Big History [Berkeley: University of California Press, 2004], 207). Intensification is associated with the emergence of agriculture about 12,000 years ago and with the subsequent unprecedented increase in the size and density of human populations in some regions. See also Extensification.

khan: The title of a Turkic or Mongol tribal leader; a common title of sovereigns in Inner Eurasia. The feminine form is khatun, a typically carried by wives and daughters of khans.

life expectancy: The probable life span, or the expected age at death, of an individual; a statistical determination of the probable life span of an individual or category of persons.

lineage: A form of social and political organization in which the fundamental principle of solidarity is kinship. A lineage is typically a local kinship group of several generations, both living and deceased individuals. Several lineages may constitute a clan.

logographic writing system: A system of writing in which signs, or characters represent meanings rather than the sounds of speech as in an alphabetic writing. In logographic systems a single character may represent an entire word or phrase. Chinese is the most widely used logograhic system today.

mammals: Any warm-blooded vertebrate of the class Mammalia which that feeds its young with milk from the female and that has body hair, for example, dogs, apes, and human beings.

Mesoamerica: The part of North America that includes modern Mexico and the states of Central America. Mesoamerican civilizations included the Olmec, Oaxacan, Teotihuancan, Maya, Toltec, and Aztec. The combining word "meso," meaning "middle," is from the Greek.

mestizo: A person of mixed Spanish and Native American ancestry.

monotheism: The doctrine or belief that there is one God.

monsoon: A rainy season that endures for several months in a particular region. The term also typically refers to the seasonal winds that dominate the Indian Ocean basin. These winds blow generally from southwest to northeast in the summer months (April to October) and from the northeast to the southwest in the winter months (November to March). For thousands of years, knowledge of the monsoon wind cycle has allowed mariners to sail from one part of the Indian Ocean to another with fair speed and predictability.

nation: A community of people who believe they share a common culture, history, and future destiny. The members of the nation typically believe that they share rights, including the right to occupy a territory and to constitute a sovereign government to rule that territory.

nation-state: A sovereign state that generally coincides with, or aspires to coincide with, a single national community or nation. A state, on the other hand, may also be multinational, for example, an empire.

Neanderthals: An ancient hominid species (Homo neandertalensis) that lived during the late Pleistocene Age mainly in Europe, Southwest Asia, and North Africa. The species had more advanced tool-making ability than earlier species. Physically Neanderthals were characterized by thick bodies, a flat forehead, and a pronounced brow. The species had a brain case similar in size to humans, but the frontal area was less developed. There is no evidence that Neanderthals possessed language. Homo sapiens replaced Neanderthal populations throughout their habitat, leading to their extinction by about 28,000 years ago.

Neolithic Age: The period from about 12,000 to 6,000 years ago, when humans domesticated plants and animals and took up ways of life centered on agriculture. The invention of more sophisticated, versatile stone tools also characterized the period, thus neolithic, or "new stone" age.

pagoda: A typically multi-storied memorial structure built in connection with a temple or monastery, usually Buddhist. .

Paleolithic Age: The era from approximately 2.5 million to 12,000 years ago when Homo sapiens and its hominid ancestors relied on a technology principally of tools and weapons fashioned principally of stone. Scholars commonly divide the paleolithic into three periods: lower (2.5 million–300,000 years ago), middle (300,000–40,000 years ago), and upper (40,000–12,000 years ago). In each of these periods humans or their ancestors produced increasingly varied and useful stone technologies.

paleontologist: An expert on animal life of the distant past, studied mainly from evidence of fossilized remains.

pandemic: An outbreak of contagious disease that is not confined to a single locality but spreads from one locality to the next, possibly over a great distance. The Black Death of the mid-fourteenth century was a pandemic that reached across Afroeurasia. The influenza pandemic of 1918 was worldwide. See also Epidemic.

pastoral nomadism: An economy and way of life centered on the raising of domesticated animals such as cattle, horses, sheep, or camels. This economy is an adaption to arid or semi-arid land, such as the steppes of Inner Eurasia, where farming is either limited or impossible. Pastoral nomadic communities typically move their herds or flocks seasonally in search of pasture and water. Pastoral nomadic societies probably emerged in the third millennium BCE.

periodization: In the study of history, periodization is the dividing or categorizing of time into separate sections. Historians periodize the past for a number of reasons. "One is simply to identify and isolate chunks of time in order to study them one by one, since all periods cannot be studied simultaneously. A second is to distinguish one cluster of interrelated historical events from another in order to discover patterns of change. A third is to identify significant shifts in those patterns in terms of discontinuities or turning points, which serve as the start and end of periods. A four is to highlight trends or events that appear dominant or important during a particular span of time." (Ross E. Dunn, ed., The New World History: A Teacher's Companion [Boston: Bedford St. Martin's, 2000], 359.)

plate tectonics: The science dealing with the forces or conditions within the earth that cause movements in the earth's crust, notably the study of when and how large plates, or sections of the earth's crust moved, separated, and came together to form large land masses, or continents; the study of continental drift; because large land masses have in geologic time been joined or separated (sometimes by wide oceans) over spans of millions of years, the history of continental drift is closely related to evolutionary biology.

primary and secondary sources: Primary sources are items of historical evidence, including both written documents (legal contracts, government papers, personal letters, bills of sale, biographies) and artifacts (material objects, works of art, elements of language) that were generated during or relatively close to the historical period being studied. Secondary sources are documents, mainly books, articles, and illustrations, based on primary sources and generated some time after the historical event which they describe or interpret.

primates: The order of mammals that are large-brained, live mostly in trees, and have the ability to see three-dimensionally. This order includes humans, all hominids, apes, chimpanzees, and monkeys.

revolution: A drastic change in a political system, institution, condition, or idea. A revolution may be political, social, economic, or cultural.

secularism: Pertaining to worldly, as opposed to supernatural or religious, beliefs, values and behavior. Any movement that questions or rejects religious faith or the social influence of religious organizations and hierarchies. Secularization is any social process that strives

to imbue society with secular values. In the Christian tradition, the term "secular" is also used to refer to members of the clergy who live "in the world," that is, who have not taken monastic vows or live in a monastery.

sedentary: The practice of residing in a specific locality, as opposed to a mobile way of life centered on hunting and gathering or on pastoral nomadism. Farming societies are necessarily sedentary.

shaman: An individual believed to have power to communicate with supernatural forces and through these interventions to heal, bring blessings, or foretell the future. Belief in the power of shamans, or shamanism, has been a mark of traditional religion among pastoral nomadic peoples of Inner Eurasia, though the term has been applied throughout the world to local healers, doctors, diviners, and others believed to have the ability to communicate with the world beyond.

Southwest Asia: The region of Afroeurasia extending from the eastern coast of the Mediterranean Sea to Afghanistan, including Turkey and the Arabian Peninsula. The common term for this region has conventionally been the Middle East or Near East. Many scholars, however, now regard these expressions as obsolete, except in the context of the history of the past century or so, because these terms evoke a specifically European perspective on the world, that is, that all of Afroeurasia may be thought of as constituting two primal zones, the West (Europe) and the East (all lands east of Europe).

standard of living: The level of subsistence or comfort that a group or individual is able to maintain in daily life; an economy's ability to produce the material goods and services that individuals want or need; a society's average per capita gross domestic product.

state: A population and territory over which a central government holds authority.

steppe: Flat or rolling grassland characterized by semi-aridity. Equivalent to what Americans call "prairie" and Argentineans call "pampas."

sultan: A title designating rulership of a Muslim state, usually implying administrative and military authority as opposed to religious leadership. A sultanate is a state headed by a sultan.

syncretism: A blend or combination of different beliefs and practices, usually religious; the adoption of one group's religious or other cultural beliefs and practices by another group.

tribe: A form of social and political organization in which the fundamental principle of solidarity is kinship. The members of a tribe claim to be descended from a common ancestor. A tribe is typically the largest group in a region claiming shared descent. Tribal organization is common among pastoral nomadic and stateless societies. In tribal societies, individuals identify primarily with kinship groups rather than with a specific geographical territory.

Upper Paleolithic: The period from about 40,000 to 12,000 years ago when humans invented a range of new specialized tools, including fine, multi-purpose stone blades, that gave men and women increasing control over their local environments. Although recent evidence suggests

that humans acquired symbolic language and the capacity for artistic expression in Africa between 75,000 and 90,000 years ago in Africa, the upper paleolithic witnessed numerous technical and social breakthroughs, including increases in the size of huner-gatherer communities; larger, more permanent dwellings, the construction of boats, and production of jewelry, sculpted images, and cave paintings.

world religion: A belief systems that embraces people of diverse languages and cultural traditions and that has had significant influence on the course of human history. The major world religions are Buddhism, Christianity, Daoism, Hinduism, Islam, and Judaism. Confucianism is a major belief system, though some scholars reject classifying it as a religion because it addresses mainly moral and ethical issues rather than the spiritual or supernatural realm.

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