

LECTURE OUTLINE AND STUDY GUIDE

INTRODUCTION

- I. What Archaeology Is
 - A. The Study of the Material Remains of the Past (Garbage, Ruins, Burials, Etc.)
 - B. Kinds of Archaeology
 - 1. Archaeology as an ancillary historical discipline: "garbology", industrial, colonial, medieval, classical, etc.
 - 2. Archaeology as the only source of information about the human past: prehistoric archaeology
 - C. The Importance of Prehistoric Archaeology
 - 1. 99.75% of human culture history is prehistory
 - 2. All major steps in human social evolution took place during prehistoric times
 - D. This Course Covers:
 - 1. The methods of archaeology
 - 2. The most important discoveries archaeologists have made about prehistory by use of these methods

- II. The Origins of Prehistoric Archaeology as a Discipline
 - A. The Discovery of the Past as Different
 - 1. Medieval views of the past: change is cyclical; the past resembles the present
 - 2. The Renaissance discovery of the Greek and Roman past as different opens the way for a directional view of change
 - 3. In 17th and 18th century Europe knowledge of the past confers prestige
 - 4. The early development of European antiquarianism
 - a. Greek and Roman antiquities: the Society of Dilettanti
 - b. local antiquities: Stukeley and the Druid dead end
 - B. The Discovery of the Great Antiquity of Humankind
 - 1. The Biblical account of creation: Ussher and 4004 BC
 - 2. The discovery of fossils of extinct species: Cuvier, catastrophism
 - 3. Geological uniformitarianism: Hutton, Lyell
 - 4. Human remains discovered in association with extinct species: Boucher de Perthes
 - 5. If human prehistory is very long, then the diversity of its development can be explained

- C. The Development of Sequence Building Techniques
 - 1. Thomsen and the Three Age System (Stone, Bronze, Iron)
 - 2. Stratigraphic and associational verification of the Three Age System: Worsaae
 - 3. Sequence building techniques permit subdivision of prehistoric time
- D. Evolutionary Theory
 - 1. Evolutionary currents in early 19th century thought
 - 2. The Darwinian synthesis
 - 3. Applicability of evolutionary theory to prehistoric change
- E. Discovery of Human Antiquity + Development of Sequence Building Techniques + Evolutionary Theory = Formation of the Discipline of Prehistoric Archaeology

Study Question

1. In the middle of the 19th century prehistoric archaeology developed into a scientific discipline. What obstacles had to be overcome for this to occur?

CHRONOLOGY

III. Relative Dating

- A. Determining the sequence of events at one locality
 - 1. Stratigraphy
 - a. the Principle of Superposition
 - b. the Principle of Association (Worsaae's Law)
 - c. closed contexts (yielding assemblages) vs. open contexts (yielding aggregates)
 - d. single component vs. multiple component sites
 - 2. Stratigraphic interpretation
 - a. stratigraphy vs. stratification
 - b. the vertical section (profile)
 - 3. Depositional processes
 - a. rapid accumulative deposition (e.g., tells)
 - b. slow accumulative deposition (e.g., caves)
 - c. artificial accumulative deposition (e.g., temple mounds)
 - d. penetrative deposition (e.g., temperate zone villages)
 - 4. Excavating in arbitrary levels (spits)
 - a. advantages: may be necessary in preliminary testing of sites or in apparently unstratified deposits; saves time and money
 - b. disadvantages: converts possible assemblages into certain aggregates; saves thought

- B. Linking the sequences from several localities
 - 1. Cross-dating
 - a. identification of chronologically discrete, stylistically distinctive artifact types (type [index] fossils); control of functional variability
 - b. shared type fossils = contemporaneity
 - c. inter-regional vs. intra-regional cross-dating
 - 2. Seriation (cross-dating without stratigraphy)
 - a. presence/absence
 - b. percentage
 - 3. Geochronology
 - a. archaeological events into a sequence of non-archaeological events (climatic, geologic)
 - b. the periodicity of the Pleistocene Ice Ages and its geomorphological and palaeontological implications
 - c. climatic sequences: palynological (pollen) dating

IV. Absolute Dating

- A. Historically derived dates
 - 1. Objects dated from historical records
 - 2 Cross-dating into prehistoric contexts
 - a. Egypt and the Aegean
 - b. the Classical world and barbarian Europe
 - c. American Indian cultures beyond the frontier
- B. Radiocarbon dating
 - 1. Willard Libby
 - 2. The physics of radiocarbon
 - a. how C-14 is generated by cosmic radiation
 - b. the half-life of C-14 (5730 years)
 - 3. The active carbon pool has a constant ratio of C14 to C-12 and C-13 (if cosmic radiation is constant)
 - a. atmosphere
 - b. biosphere (living plants, living animals)
 - c. ocean
 - 4. By comparing the C-14/C-12 ratio in a dead organism with that of a living one, the date of the organism's death can be estimated
 - 5. The time span of C-14 dating
 - 6. Problems
 - a. contamination
 - b. statistical error (see below)
 - c. C-14/C-12 ratio errors
 - i. isotopic fractionation
 - ii. marine reservoir effect

- iii. cosmic ray variations and tree-ring calibration
- iv. associational errors
- 7. New developments
 - a. high precision C14 dates
 - b. AMS dates
 - c. wiggle matching
- 8. The effectiveness and importance of C-14 dating

Further Points of Attention in the Assigned Readings:
 dendrochronology, potassium/argon dating, thermoluminescence

What the Standard Deviation Applied to C-14 Dates Means

Radiocarbon dates are published with an estimate of the error measurement: 3500±200 B.P. (which is the same as 1550±200 B.C.), for example. The '+200' is the standard deviation, which tells one the range of error in determining the age of the sample. What the standard deviation tells you is the following:

The chances are 2 out of 3 that the age of the sample falls within one standard deviation on either side of on either side of the date. In the example above, the chances are 2 out of 3 that the date falls between 3300 and 3700. By the same token the chances are 1 out of 6 that it is younger than 3300 and 1 out of 6 that it is older than 3700.

The chances are 19 out of 20 that the sample age falls within two standard deviations of the date. In the example above, the chances are 95% that it falls between 3100 and 3900. (The chances are 2.5% that it is younger than 3100 and 2.5% that it is older than 3900.)

The chances are 99 out of 100 that the sample age falls within three standard deviations of the date. In the example above, the chances are 99% that the real age of the sample falls within 600 years on either side of 3500 (between 2900 and 4100 years ago). By the same token, the chances are 0.5% that it is younger than 2900 and 0.5% that it is older than 4100.

There are no limits within which the radiocarbon date for any sample is certain to fall.

Study Questions

2. Explain the importance of the Principles of Superposition and Association for the development of relative chronologies in archaeology.
3. What are the principal methods of absolute dating in prehistoric archaeology? Discuss the temporal and spatial range of each.

THE NATURE OF THE ARCHAEOLOGICAL RECORD

- V. The Acquisition of Archaeological Evidence
 - A. Site Formation (Behavioral Transforms) and Identification
 - 1. Ancient peoples disturb and reorder the natural environment
 - 2. Disturbed localities never return to their original state
 - 3. Archaeologists identify sites by the contrast
 - B. The Further Vicissitudes of the Archaeological Record
 - 1. Natural transforms
 - a. differential preservation of materials
 - i. inorganic materials (stone, pottery, often bone) will survive under unfavorable conditions
 - ii. conditions inhibiting bacterial action (cold, dry, acid) permit preservation of a full range of organic remains
 - b. differential erosion of deposits
 - 2. Cultural transforms (reuse of earlier materials, creation of fill, etc.)
 - 3. Archaeological transforms (preservation and retention of data is relative to archaeological technique)
 - C. Behavioral Transforms Only Seen Through the Filter of Subsequent Changes
 - D. Destruction of Archaeological Sites
 - 1. Natural erosive agencies
 - 2. Builders
 - 3. Archaeologists and pot-hunters
 - E. Excavating Archaeological Sites
 - 1. General Considerations
 - a. excavation as destruction
 - b. the necessity of selecting what not to record or retain: the impossibility of a purely empirical research strategy
 - c. facts don't speak for themselves: facts assume significance within a particular theoretical framework
 - 2. Excavation as a practical matter
 - 3. Excavation as a theoretical matter: question and answer in archaeology
 - F. General Thoughts on Excavation (Destroying Sites Wisely)
 - 1. There are no ideal solutions
 - a. the possible goals which an excavation can realistically undertake have outstripped the resources available for achieving them

b. important, feasible goals are often mutually contradictory (e.g., vertical vs. horizontal excavation strategies)

2. Characteristics of a Good Excavation

a. careful elaboration of a program of interesting and realistic questions to be answered (research design), not just one's own but those of the scientific community of archaeologists

b. deployment of necessary technical means to those ends

c. recording of the evidence bearing on the questions asked

d. recognition of the site's unique potential and flexibility to change course as that uniqueness changes one's ideas about what questions can be answered

G. The Parallel Evolution of Excavation Technique and Archaeological Theory

1. Two important aspects of any excavation are:

a. the recording of provenience (the detail with which the location of remains is recorded)

b. the scope of retention (which of the remains are kept)

2. Exploratory archaeology (pre-1850): looting

a. provenance: by locality

b. retention: the valuable and/or beautiful

c. today's pot-hunters ask the same questions as archaeologists did 150 years ago

d. characteristic figure: Belzoni

2. Chronological archaeology (1850-1920): refining the Three Age system

a. provenance: stratigraphic (the closed find, the vertical profile)

b. retention: chronologically distinctive finds (type fossils)

c. characteristic figures: Petrie, Montelius, Breuil

3. Cultural archaeology (1920-1950): describing prehistoric ethnic groupings

a. provenance: horizontal recording within layers (the grid)

b. retention: all artifacts, recording of features, representative ecofacts

c. representative figures: Childe, Wheeler

4. Ecological archaeology (1950-present): investigating human adaptations to their natural environments the key to an evolutionary understanding of prehistoric cultural development

- a. need to determine as completely as possible what humans appropriate from the environment
 - i. retention of all ecofacts (as well as artifacts)
 - ii. development of new techniques to facilitate this (e.g., flotation of deposits)
- b. need to determine as far as possible how humans execute that appropriation
 - i. three dimensional recording of provenance so as to reconstruct organization of daily activities
 - ii. development of new techniques of recording (photographic, latex casts, etc.)

Study Questions

4. Discuss how natural, cultural, and archaeological processes affect the integrity of the archaeological record.
5. How does the development of archaeological field methods relate to the development of archaeologist's questions about the past.

USING ARCHAEOLOGICAL EVIDENCE TO STUDY THE PAST

VI. Archaeological Explanation and Reconstruction

A. General Principles

1. Explanations/predictions/reconstructions can be reached to the extent that we understand the causes governing the phenomena to be explained/predicted/reconstructed
2. Explanations/etc. do not depend for success on abundance of data

B. What Archaeologists Seek to Explain/Reconstruct are Prehistoric Cultures

1. Definitions of "culture"
 - a. what one learns as a member of society
 - b. human social groups' extrasomatic means of adaptation
2. Subdivisions of cultural systems
 - a. techno-environmental: techniques used for manipulating the environment so as to ensure production and reproduction
 - b. socio-economic: organization of people for reproduction, production, exchange
 - c. ideological: conceptions, ideals that sanction, explain the social and natural order
3. Artifacts in Cultural Systems

- a. in the context of their production, all artifacts can give us information about all the subdivisions of the cultural system which generated them
- b. in the context of their use, artifacts can give us information about one or more of the subdivisions of the cultural system which generated them

C. The Varying Degrees of Success in Archaeological Explanation

- 1. Techno-environmental aspects of prehistoric societies are relatively easy to grasp because of our well-developed understanding of the natural sciences
- 2. Socio-economic aspects of prehistoric societies are less successfully handled because of our more limited understanding of the social sciences
- 3. Ideological aspects of prehistoric societies are poorly understood because of our very limited understanding of the "humanities"

D. Evolution as the Basic Framework for Archaeological Understanding

- 1. Darwin's theory of natural selection
 - a. organisms tend to multiply exponentially, but adult populations tend to remain constant in size
 - b. the consequent high mortality of young organisms is non-random: those best able to obtain food and space, escape from predators, and eventually mate are likeliest to transmit their characteristics to the succeeding generation ("the survival of the fittest")
 - c. offspring resemble their parents, but not exactly, so that features conferring fitness are likely to be retained but may be improved upon
 - d. species differ insofar as their ways of achieving fitness (their adaptations) differ
- 2. Applicability of Darwinism to cultural variation
 - a. culture is humanity's (extrasomatic, learned) means of adaptation
 - b. a human group's particular culture is an adaptation (not necessarily perfect) to the circumstance (environmental and social) in which that group must make its living
 - c. cultures are similar/different as their adaptations are similar/different
 - d. key role of the techno-environmental aspects of culture in evolutionist explanations of cultural variability

- e. long-term nature of techno-environmental determination
- f. Darwinian selection, but Lamarckian processes (the heritability of acquired characteristics)
- 3. The range of ethnographically documented techno-environmental systems
 - a. foraging
 - b. simple food production
 - c. complex (capital-intensive) food production
 - d. the prima facie evolutionary significance of the above range of production systems
- 4. Archaeology's main contribution to human knowledge is the verification that this evolutionary succession actually happened

Study Questions

- 6. Discuss the following statement: "Archaeological success in reconstructing and explaining past events depends on the quantity of evidence available to them."
- 7. How is evolutionary theory applicable to understanding human cultural development over the course of prehistory?

CULTURAL EVOLUTION

VII. The Pleistocene and the Palaeolithic

A. The Pleistocene Period

- 1. Nature and causes of the Pleistocene ice age
 - a. periodic ice cap advances and retreats (glacials and interglacials) with widespread climatic (temperature, rainfall) changes
 - b. increased continentality and solar energy variations
- 2. Evidence for and effects of glacials/interglacials
 - a. marine stratigraphy
 - b. sea level changes
 - c. glacial geological formations
 - d. floral and faunal changes
- 3. The adaptive significance of the Pleistocene

B. The Lower Palaeolithic during the Early Pleistocene: the Oldowan

- 1. Date: 2,000,000 to 1,500,000 B.P.
- 2. Distribution: mainly in East Africa
- 3. Stone tool technology: pebble tools and worked flakes
- 4. Subsistence technology: scavenging, small game hunting (and gathering)

5. The occupation as a manifestation of hominid social organization (the home base scenario and its rivals)
 6. Important localities: Olduvai Gorge Bed I, Koobi Fora
- C. The Lower Palaeolithic during the Middle Pleistocene: the Acheulian
1. Date: 1,500,000 to 100,000 B.P.
 2. Distribution: spread into cool temperate regions of the Old World
 3. Innovations in stone tool technology: handaxe, Levallois technique
 4. Technology of shelter: fire, huts
 5. Subsistence technology: some big game hunting
 6. Important sites: Choukoutien, Terra Amata, Torralba
- D. The Middle Palaeolithic (the Mousterian)
1. Date: 100,000 to 40,000 B.P. (early Upper Pleistocene)
 2. Distribution: spread into sub-arctic regions of the Old World
 3. Stone tool technology: a more elaborate flake industry (eventually including Levallois flakes)
 4. Subsistence technology: some specialization in big game hunting (catastrophic vs. attritional mortality patterns)
 5. Complex structure of assemblage variability, little regionalization of assemblage types
 6. Purposeful burials
- E. Upper Palaeolithic Cultural Developments
1. Date: 40,000 to 10,000 B.P. (late Upper Pleistocene)
 2. Distribution: spread into Australia/New Guinea and the New World
 3. Technology (curated vs. expedient industries)
 - a. innovations in stone tool industries
 - i. technology: the blade core
 - ii. typology: proliferation of special types
 - iii. the first elaborate bone tools
 - iv. composite tools and simple mechanical devices
 - b. subsistence technology
 - i. specialization (on reindeer in SW France)
 - ii. broad spectrum exploitation
 4. Increased population densities
 5. The development of ethnicity: regional and temporal differentiation of assemblage types
 6. Ideological developments: art, ornaments
 7. Explanations of the "Upper Palaeolithic Revolution"
 - a. the biological approach (Neanderthals vs. Cro-Magnons [AMHS])

b. cultural approaches

VIII. The Neolithic Revolution

A. General Features of the Introduction of Domestication

1. Definition of domestication: control over the reproduction and distribution of plants and/or animals
2. Independent (primary) centers of domestication
 - a. better known areas
 - i. Near East: sheep, goat, cattle, pig, wheat, barley, various legumes
 - ii. Mesoamerica: maize, beans, squash
 - b. worse known areas
 - i. East Asia: pig, rice (Oryza sativa), millet (Panicum)
 - ii. West Africa: rice (Oryza glaberrima), yams, millet (Setaria), sorghum
 - iii. Andean South America: potato, llama, quinoa
 - iv. Amazonian South America: sweet potato, manioc
2. Material consequences of food production
 - a. subsistence production is increased by the intensification of production and stabilized by the storage of harvested surpluses
 - b. increased sedentism
 - c. higher population densities
3. Social consequences of food production
 - a. production requires more work (and more work leads to more production)
 - b. the development of private property (as a consequence of the development of storage strategies)
 - c. the importance of warfare
4. Archaeological indices of the introduction of domestication
 - a. changes in subsistence patterns
 - b. increase in impedimenta (as a result of greater sedentism)
 - i. long term settlements
 - ii. ground stone tools ("Neo"lithic)
 - iii. pottery

B. The Gradual Nature of the Neolithic Revolution

1. Even in the primary centers of domestication, the transition from foraging to farming takes place over several millennia
2. After the Neolithic Revolution is under way in the primary centers, foraging continues for millennia

on their periphery (e.g., the European Mesolithic, the North American Archaic)

C. The Process of Domestication in the Near East and Mesoamerica

1. Importance of the broad spectrum foraging of the late Palaeolithic
2. Importance of a mountainous setting (high environmental diversity)
3. Climatic change at the end of the Pleistocene leads to changes in distribution, quantity of plant, animal resources
4. Humans adapt to increased scarcity and unpredictable availability of certain species by fostering their reproduction (that is to say, by domesticating them)
5. Subsistence fully dependent on domestication achieved by 7500 B.P. in the Near East, by 3500 B.P. in Mesoamerica
6. Differences between the Near East and Mesoamerica
 - a. resource mix (plants and animals vs. plants only)
 - b. differing time spans (shorter in Near East than in Mesoamerica)
7. Similarities between Near East and Mesoamerica
 - a. processes (XIII.C.1-4)
 - b. consequences (XIII.B.3-4)

IX. The Urban Revolution: The Origins of Class Society And The State

A. Material Characteristics of Class Societies

1. Economic specialization: craftsmanship (e.g., metal-working), mass production (e.g., wheel-turned pottery)
2. Capital-intensive subsistence (e.g., irrigation systems, plow agriculture, tree crops)
3. Higher population densities: more, larger (urban) sites
4. Differences in wealth and power between households (classes): housing (palaces vs. hovels), burials (princes vs. paupers)
5. Administrative control: writing
6. Greatly increased warfare: bigger fortifications, improved weapons
7. Intensified ideological control: monumental architecture (e.g., pyramids)

B. Independent (Pristine) Centers of the Urban Revolution

1. Mesopotamia (by 5000 B.P.)
2. Egypt (by 5000 B.P.)

3. Indus Valley (by 4500 B.P.)
 4. North China (by 4000 B.P.)
 5. Mesoamerica (by 2500 B.P.)
 6. Andean South America (by 2500 B.P.)
- C. Functionalist vs. Conflict Scenarios of the Origins of Social Stratification
- D. The Rise of the State in Mesopotamia
1. Near Eastern Neolithic society at 7000 B.P.: small, functionally undifferentiated villages farming in areas of sufficient rainfall
 2. Colonization of the Mesopotamian floodplain begins ca. 7000 B.P.
 3. The richness of Mesopotamia: fertile alluvial soils
 4. The poverty of Mesopotamia
 - a. lack of rainfall makes farming dependent on irrigation (with its inherently unequal access to resources and heavy capital investments)
 - b. lack of essential raw materials (wood, stone) makes settlement dependent on regular, long-distance trade for needed goods
 5. Development of capital-intensive production and exchange means that households become dependent on middlemen and protectors (with consequent opportunities for magnified inequalities)
 6. 5500 to 5000 B.P.: the Urban Revolution takes place as those who are "more equal" take permanent control

Study Questions

8. What is the nature of the earliest human cultural remains? How did the lifeways of the makers of these remains differ from the lifeways of other primates?
9. What are the principal differences between the Middle and the Upper Palaeolithic?
10. Compare and contrast the origins of agriculture in the Near East and Mesoamerica.
11. What are the principal adaptive advantages of farming over foraging? What are the principal consequences of the introduction of farming?
12. What are the principal archaeological markers of state-type societies?
13. You have just returned from Langbortistan, the remote and little-known region of the Near East in which you have just conducted an archaeological survey project. Your work suggests that the region was occupied from 75,000 B.P. to the beginning of locally recorded history (around 1500 B.C.). Write a 400 word abstract of the evidence which leads you to such a conclusion.