Introduction to Archaeology
Final Chapters Review

Chapter Nine
Archaeological Excavation

Chapter Overview

Excavation is a primary way in which archaeologists acquire subsurface data about the past. Modern archaeologists tend to carry out as little excavation as possible, however, because digging archaeological sites destroys a finite resource: the archaeological record.

Modern excavations are often conducted by multidisciplinary research teams made up of specialists from several disciplines, who work together on a carefully formulated research design.

All archaeological excavation is destruction of a finite resource. Accurate methods for planning, recording, and observation are essential.

The Koster site in Illinois, where the excavators devised a sophisticated data flow system to keep their research design up-to-date, illustrates the essential research design.

Sites can be excavated totally or, as is more common, selectively. Vertical excavation is used to test stratigraphy and to make deep probes of archaeological deposits. Test pits, often combined with various sampling methods, are dug to give an overall impression of an unexcavated site before major digging begins. Horizontal or area excavation is used to uncover far wider areas and especially to excavate site layouts and buildings.

The process of archaeological excavation begins with a precise site survey and establishment of a site-recording grid. A research design is formulated, and hypotheses are developed for testing. Placement of trenches is determined by locating likely areas or by sampling methods. Excavation involves not only digging but also recording of stratigraphy and the provenances of finds, as well as observations of the processes that led to the site's formation.

Careful stratigraphic observation in three dimensions is the basis of all good excavation and is used to demonstrate relationships among layers and between layers and artifacts.

Excavation is followed by analysis and interpretation and, finally, publication of the finds to provide a permanent record of the work carried out.

Among the special excavation problems we discussed were the recovery of fragile objects, human skeletons, and structures and pits.

Chapter Ten
Classifying Artifacts

Chapter Overview

The first stage in laboratory analysis is processing forms that will enable one to analyze and interpret them. The finds are also inventoried during this stage.

Classifying artifacts in archaeology is somewhat different from our day-to-day classification of the objects around us. Two systems of classification are taxonomy and systematics. Taxonomy is a classification system of concepts and terms used by many sciences, archaeology among them. Systematics is a way of creating units of classification that can be used to categorize things as a basis for explaining archaeological or other phenomena.

The objectives of archaeological classification are to organize data into manageable units, to describe types, and to identify relationships among types. Archaeological types are groupings of artifacts created for comparisons with other groups. These groupings may or may not coincide with the actual tool types designed by the manufacturers.

Types are based on clusters of attributes. There are four "types of types" commonly used today:
1. Descriptive types are based on the form of the artifacts, using physical or external properties.
2. Chronological types are defined by form but are time markers.
3. Functional types are based on cultural use or role rather than outer form or chronological position.
4. Stylistic types use changing styles for classification purposes.

Archaeological classification begins with identifying artifact attributes, the characteristics that distinguish one artifact from another. Formal attributes are such features as the shape of an artifact, and technological attributes include the materials used to make an artifact and manufacturing methods. Attributes can be selected by closely examining a collection of artifacts, or they can be derived statistically.

Statistically based classifications are now in common use, based on quantitative analyses, including the use of exploratory data analysis (EDA). Attribute and object-cluster classifications are two major approaches now based on quantitative methods.

Culture history in archaeology is based on classification of artifacts and assemblages, defined as associations of artifacts that are thought to be contemporaneous. This "organic" view of culture history has been replaced by a more "cultural" viewpoint in which environment and culture play important roles.

Chapter Twelve
Ancient Environments

Chapter Overview
The study of long- and short-term climatic and environmental change is of vital importance to archaeologists concerned with human societies' changing relationships with their surroundings. This chapter described ways of studying such changes.

Geoarchaeology is a multidisciplinary approach to the study of human adaptations that reconstructs ancient landscapes using such approaches as remote sensing and paleographical and biological methods such as pollen analysis.

Deep-sea cores and ice drillings provide us with a broad framework of climatic change during the Pleistocene (Ice Age) Epoch that chronicles at least nine glacial periods during the past 730,000 years.

The Pleistocene itself is divided into three broad subdivisions, the last of which coincides with the spread of modern humans across the world from Africa.

The Holocene covers postglacial times and has witnessed not only global warming but at least three short periods of much colder conditions as well. The Younger Dryas brought drought and cold conditions and may have helped trigger the development of agriculture in southwestern Asia. The catastrophic flooding of the Black Sea Lake in approximately 5500 B.C. by saltwater from the Mediterranean caused major population movements in Europe.

Short-term events such as El Ninos and drought cycles are studied with the aid of ice cores, geological observations, and tree rings, methods that are achieving increasing precision. We are now beginning to realize that short-term climatic change played a vital role in the rise and fall of many human societies.

Chapter Thirteen
Subsistence and Diet

Chapter Overview
Archaeologists rely on many sources to reconstruct prehistoric subsistence methods. These include environmental data, animal bones, vegetal remains, human feces, artifacts, and prehistoric art.

Zooarchaeology involves the study of animal bones. Bone identification is carried out by direct comparison between modern and ancient bones.
Game animal remains can give insights into prehistoric hunting practices. The proportions of animals present can be affected by cultural taboos, the relative meat yields of different species, and hunting preferences. Over hunting and extinction can also affect the numbers of animals in a site.

Early domesticated animals are very difficult to distinguish from their wild ancestors. Domestication alters both the characteristics of an animal and its bone structure.

Slaughtering and butchery practices can be derived from the frequency and distribution of animal bones in the ground. Teeth can be used to establish the age of animals slaughtered, but hunting and slaughter patterns are subject to all manner of subtle variables, including convenience and season of the year. Understanding the cultural systems of which the food remains are a part is essential for interpreting slaughter and butchery patterns.

Carbonized and unburned plant remains are recovered from hearths and pits, often using a flotation method to separate seeds from the matrix around them. Dry sites, such as the rock shelters and camps in the Tehuacan Valley of Mexico, provide abundant evidence for early crop domestication. Grain impressions on European pots are studied to reconstruct prehistoric agriculture in the Old World. Danish archaeologists have used pollen analysis to study forest clearance in temperate zones during early farming times.

Bird bones provide valuable information on seasonal occupation; fish remains reflect specialized coastal adaptations that became common in later prehistoric times. Hooks, nets, and other artifacts, as well as fish remains themselves, provide insights into both coastal and offshore fishing practices.

Freshwater and saltwater mollusks were both consumed as food and traded over enormous distances as prestigious luxuries or ornaments.

Ancient diet and nutrition must be studied together, for they are distinct from subsistence, which is the actual process of obtaining food. It is difficult to estimate the caloric needs of modern peoples, let alone those of ancient groups. Archaeological data can indicate only some of the foods eaten by prehistoric communities and show their importance in general. But this is far from ascribing their true caloric importance to ancient societies.

Human skeletal remains, stomach contents, and feces are the few direct sources available to us of information on ancient diet. The information they yield is limited, at best.

Chapter Fourteen
Analogy, Middle-Range Theory, and the Living Past

Chapter Overview
Ethnographic analogy helps in ascribing meaning to the prehistoric past. Analogy itself is a form of reasoning that assumes that if objects have some similar attributes, they will share other similarities as well. It involves using a known, identifiable phenomenon to identify unknown ones of a broadly similar type.

Most simple analogies are based on technology, style, and function of artifacts, as they are defined archaeologically. Such analogies, however, based as they are on people's beliefs, can be unreliable.

Direct historical analogies and comparisons made with the aid of texts are common, but meaningful analogies for American and Paleolithic sites are much harder to achieve. One approach has been to devise test implications, using several analogies. This technique is based on the Functional approach assuming that cultures are not made up of random traits but are integrated in various ways. Thus, analogies are made between recent and prehistoric societies with closely similar general characteristics.

Middle-range research is carried out on living societies, using ethnoarchaeology, experimental archaeology, and historical documents. It is designed to create a body of middle-range theory, objective theoretical devices for forging a link between the dynamic living systems of today and the static archaeological record of the past.
Ethnoarchaeology is ethnographic archaeology with a strongly materialist bias. Archaeologists engage in ethnoarchaeology as part of middle-range research in attempts to make meaningful interpretations of artifact patterns in the archaeological record.

Experimental archaeology seeks to replicate historic technology and lifeways under carefully controlled conditions. As such, it is a form of archaeological analogy. Experiments have been conducted on every aspect of prehistoric culture, from lithics to housing. Archaeology by experiment provides insights into the methods and techniques used by prehistoric cultures.

Chapter Eighteen
Managing the Past and Public Archaeology

Chapter Overview
Cultural Resource Management (CRM) involves the development of overall strategies for conservation priorities and management of a finite resource, the archaeological record.

The 1960s saw the development of the concept of cultural resource management. New federal legislation, notably the National Environmental Policy Act of 1969 and the Archaeological Resources Protection Act of 1979, laid down regulations for land use and resource policies and also defined archaeological resources as any artifact more than a century old. The Native American Grave Protection and Repatriation Act of 1990 protects Native American graves on federal and tribal lands and requires museums and government agencies to inventory their holdings and to offer to repatriate those with direct affiliations with living groups.

The primary concern of CRM archaeology has been the identification, description, and protection of archaeological resources. Many CRM projects are small scale and the reports descriptive. However, larger-scale projects often provide opportunities for major archaeological excavations and surveys that have important bearing on the development of archaeological method and theory. CRM is having an increasingly important impact on the future direction of American archaeology, on account of both its large budgets and its unique opportunities for large-scale field and laboratory research.

The sheer volume of CRM research has led to problems. In some cases inadequate oversight has allowed inadequate archaeological research to be accepted. The recording of sites, the curation and storage of artifacts, and the publication and dissemination of important discoveries are also issues that need to be addressed.

One of the most important benefits of CRM has been the increasing input from the public into archaeological research. This is important because it is ultimately the greater public who should benefit from CRM research and it is the public who ultimately funds the research undertaken. To inform the public about archaeology, many archaeologists now talk of public archaeology, a form of archaeology open and accessible to the public through television, state-sponsored “archaeology weeks,” special museum displays and activities and the Internet.

Native American concerns figure increasingly strongly into North American Archaeology. Native American groups have demanded that many Indian skeletons in public and private collections be returned to them, a movement that culminated in the passing of the 1990 Native American Grave Protection and Repatriation Act. This controversy has pitted native peoples against scientists not only in North America but in other parts of the world as well. In the future, American archaeologists will have to work closely with Native American communities when excavating sites where burials are likely to be found.

CRM and the destruction of archaeological resources are of global concern. The threat of unchecked development and the looting of archaeological sites for antiquities are worries that plague other countries as well. The problem is especially pressing in developing countries, where the consequences of economic development have often included widespread devastation of large tracts of hitherto undisturbed natural and historical landscapes. All archaeologists are managers of a finite resource that requires immediate attention.