SECTION A

A Brief History of North American Archaeology

There are a number of standard histories of archaeology and even several that deal directly with American as opposed to other types of archaeology (see "Suggestions for Further Reading" at the end of this section). Our intent in this section is merely to highlight the key ways in which North American archaeology has developed and changed.

SPECULATION, ANTIQUARIANISM, AND THE ORIGINS OF NORTH AMERICAN ARCHAEOLOGY

Questions about North America's past naturally began with the discovery and settlement of the continent by Europeans. Archaeological questions were an outgrowth of European interest in Native Americans. Curiosity about the origins of Indians might be seen as the initial stimulus for North American archaeology. Where did these people come from? What was their history? Were they mentioned in the Bible?

Explorers, naturalists, and travelers marveled at the traces of the American past—earthworks, ruins, and artifacts. The origins of the field of North American archaeology are to be found in the speculations of these individuals. Most of their accounts are not particularly recognizable as archaeology because they do not rely on material evidence to explain the past. At best, an object or a mound is described and then a possible meaning is proposed. Many accounts are more literary or philosophical than scientific in focus. They seek to assign meaning but not in an explanatory sense. For example, such accounts may draw moral lessons from the apparent demise of a past culture rather than seek understanding of the culture from remains found.

When we read the early accounts today, they seem like wild speculation rather than scholarship. Nevertheless, the origins of archaeology in North America and elsewhere are found in speculations of these kinds. Archaeology

developed not only out of an antiquarian interest in objects that included artifacts and ruins but because of an intellectual interest in history and its lessons.

By the end of the eighteenth century, a few American intellectuals and scholars were undertaking investigations that can more easily be classified as archaeology. Thomas Jefferson provides an example. The third president of the United States excavated into an Indian mound on his property in Virginia to determine for himself its precise nature. Not only did Jefferson undertake excavation to resolve questions about the structure and function of the mound, but he proceeded carefully and systematically. He excavated his trench in a manner calculated to reveal the strata in the mound. Jefferson examined the mound's soil layers, including the positioning of skeletal remains and drew his conclusions accordingly (Jefferson 1787:220).

Jefferson typifies a certain type of American intellectual of his day who, influenced by the ideas of the Enlightenment, encouraged inquiry into scientific, antiquarian, linguistic, and ethnological matters. Such men encouraged accurate description of the traces of the American past and in doing so fostered the development of archaeology. In 1799, in his capacity as president of the American Philosophical Society, Jefferson sent out a circular requesting accurate data on American archaeological remains. Similar interests led to the establishment of the American Antiquarian Society in 1812. This organization's first publication presented the description of another remarkable early American whose work exemplifies the beginnings of North American archaeology.

Trained as a minister and as a lawyer, Caleb Atwater served as postmaster in the town of Circleville, Ohio, as a member of the Ohio legislature, and as a commissioner to the Winnebago Indians in the early nineteenth century. He wrote the first history of Ohio, as well as a number of other essays and accounts. His passion was the investigation of the numerous antiquities and earthworks around his home. In archaeology, he is best known for his monograph entitled "Descriptions of the Antiquities Discovered in the State of Ohio and Other Western States" (Atwater 1820), which contains accurate plans and descriptions of the mounds, earthworks, and artifacts of Ohio. In his description he was precise and careful, but in his explanations he was speculative and strongly influenced by the assumption that the Native peoples of Ohio could not have built the impressive earthworks he had described. Although Atwater's interpretations of these constructions attribute them to a mound-building culture of Hindu origin, his descriptions are still useful to archaeologists. Atwater is a good example of the early blend of antiquarianism, scholarship, and speculation that eventually gave rise to archaeology as we know it.

DESCRIPTION, TYPOLOGY, AND THE BIRTH OF PROFESSIONAL ARCHAEOLOGY

As the nineteenth century progressed, the kind of careful description that Atwater exemplified became more common. After the 1840s North American archaeology began to take shape as a distinct field of inquiry, with classification and description of this continent's antiquities as the main goals (Willey and Sabloff 1993:38). Scholars of this period still resorted to speculative explanations, but they also began to systematically record the evidence they encountered. Typological and distributional descriptions done at this time have been the basis

for later studies and, in turn, have helped change the pursuit of North America's past from antiquarianism to anthropology.

The mounds and earthworks of the eastern United States comprised one major focus of archaeological work at this time. *Ancient Monuments of the Mississippi Valley* (Squier and Davis 1848), published by the newly established Smithsonian Institution, is a good example of the descriptive focus of archaeological research at the middle of the nineteenth century. This book presented a great quantity of data. Ephraim Squier and Edwin Davis had surveyed about 100 mound or earthwork groups and tested about 200 mounds of various types. Archaeologists still refer to the plates from this book when investigating mounds and earthworks (Figure A.1). One noteworthy characteristic is the rudimentary typology that Squier and Davis developed by providing separate sections on "works of defense," "sacred enclosures," "mounds of sepulture," "temple mounds," and "mounds of observation." While contemporary archaeologists would not recognize the same categories, this organization indicates the trend toward classification in nineteenth-century scholarship. Squier and Davis also saw important contrasts between earthworks and mounds in various regions, many of which are now thought to indicate different

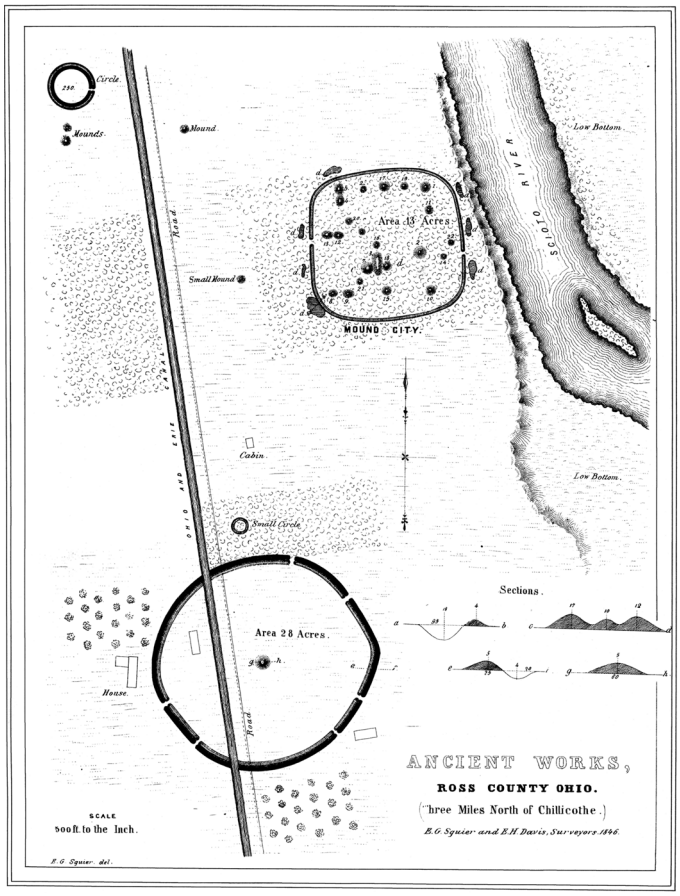

FIGURE A.1 The Squier and Davis map for Mound City and associated earthworks at Chillicothe, Ohio, the current site of the Hopewell Culture National Historical Park.

cultures. Although they refrained from poetic discourse on the topic, Squier and Davis did accept the theory of a vanished race of "Moundbuilders" that was then prevalent. Of course, it was more than 40 more years before the studies of Cyrus Thomas (1894), described in Chapter 1 (Box 1.1), would resolve this debate, and American archaeologists would come to recognize these constructions as the work of American Indians.

By the end of the nineteenth century, a number of significant mound studies were being conducted. One of the most colorful investigators was C. B. Moore, who epitomized the gentleman archaeologist of the late 1800s. Painted as a wealthy socialite in some accounts, Moore actually came from a family with scientific leanings, had graduated from Harvard, and had traveled extensively outside the United States (Polhemus 2002). Beginning in 1892, Moore attempted to make a systematic survey of the mounds and earthworks of the southeastern United States. He bought a steamboat, equipped it with a flat bottom, and named it *Gopher*. Each winter, at his own expense, he traveled the rivers of the Southeast, recording and excavating the burial and shell mounds he encountered. Then, during the summer and fall, he prepared a report of his work for the *Journal of the Academy of Natural Sciences of Philadelphia* (e.g., Moore 1899, 1905). Although modern archaeologists sometimes disparage Moore's techniques, he amassed a great deal of information about mounds and earthworks. Many of the sites he described have since been destroyed, making his early accounts important.

Another researcher of mounds was Frederic Ward Putnam (Figure A.2), one of the first archaeologists to hold a university position. Putnam was a curator and professor at Harvard University between 1875 and 1909. His prominence also

FIGURE A.2 Frederick Ward Putnam during a mound excavation in Ohio, 1890.

resulted from his position as chief of the Ethnology and Archaeology Department of the World's Columbian Exposition, held in Chicago in 1893. This exposition was a world's fair intended to mark the four-hundredth anniversary of Columbus's discovery of the Americas by showing the achievements of modern American society. Exhibits featuring Native Americans and other peoples around the globe were included so that the new science of anthropology could demonstrate its accomplishments. In his position, Putnam amassed collections from all over the Americas that later formed the basis of various museum holdings. Beginning in 1894, Putnam divided his time between Harvard and the American Museum of Natural History in New York City, but he was also associated with the development of other museum and university departments. Putnam is credited with training many young archaeologists of his day in careful excavation procedures. Among these archaeologists was Arthur Parker (Section E.1 of this CD).

Putnam's mound excavations included work at the Serpent Mound in Ohio, which he helped save from destruction for the people of Ohio, and at many other mounds throughout the East. His excavations were notable for their careful mapping and recording of finds and for their attention to stratigraphy. Putnam also figured in the archaeology of other areas, in part because he had early cultivated a network of local amateurs and collectors from many regions (Snead 2001:17). His involvement in explorations of Southwestern ruins was particularly significant. Through investigations such as those supported by the American Museum of Natural History and the Hyde Exploring Expedition during the 1890s (discussed shortly), Putnam oversaw a good deal of early archaeological investigation in the Southwest. When a post office was established at Chaco Canyon, it was named Putnam in his honor (Snead 2001:45).

As the nineteenth century drew to a close, government agencies, museums, and universities began to sponsor exploratory expeditions that collected archaeological and ethnological materials. For example, the mound explorations of Cyrus Thomas, which began in the 1880s, were funded at this time by the Smithsonian Institution's Bureau of American Ethnology. Another Bureau of American Ethnology undertaking, the Stevenson expedition, surveyed ruins and extant pueblos throughout Arizona and New Mexico during the 1880s. This Southwestern expedition conducted some archaeological excavation, but its members also documented the oral traditions and cultural practices of Pueblo Indians. The field party included Frank Hamilton Cushing and Matilda Coxe Stevenson, wife of the expedition's leader, both of whom went on to make important contributions to Southwestern anthropology, particularly in the area of ethnology, focusing to a great extent on the Zuni.

In the wake of the highly successful World's Columbian Exposition, museums opened exhibitions about America's past and hired researchers and curators to make sense out of institutional collections. The desire to systematically document the past is evident in all these undertakings, as are the various institutions' attempts to capitalize on growing public interest in such topics.

Gradually, those involved in archaeology secured positions in museums and universities and developed techniques that led to a professional archaeology that was part of anthropology, and more removed from the antiquarianism of earlier days. The professionalization of archaeology also is indicated by the appearance of formal professional societies for archaeologists and anthropologists. The Archaeological Institute of America and the Anthropological Society of

Washington, which became the American Anthropological Association, are the most important examples, but archaeologists like Putnam also were active in the Anthropology Section of the American Association for the Advancement of Science. There was a growing sense that archaeological remains could be used to scientifically reconstruct what had happened in the American past (Patterson 1995:37).

The dramatic ruins of the Southwest also were the focus for other influences on archaeology as it came of age—especially relic hunting and commercialization (Snead 2001). Consider the contributions of Richard Wetherill. Viewed from today, Wetherill has been portrayed solely as a pothunter and entrepreneur, but he was closely involved with key professional archaeologists of his time. His family regarded the exploration of ruins now preserved in Mesa Verde National Park, near their ranch in Mancos, Colorado, as an interesting pastime. Wetherill developed a family business around guiding visitors to the ruins (Figure A.3), operating a guesthouse and allowing visitors to take some artifacts home with them. He also used his guiding to develop a network of collectors for whom he provided artifacts. Over time, Wetherill became aware of the infant science of archaeology and adjusted his collecting techniques toward more careful excavation. By the time of the World's Columbian Expedition in 1893, Wetherill, who supervised the installation of an exhibit on antiquities from Colorado, was offering his services as a local expert to professionals like Putnam (Snead 2001:24–25).

At this time, Wetherill also acquired a wealthy patron for his relic hunting, Benjamin Talbot Hyde, who had previously visited the Wetherill ranch and nearby ruins. Under Hyde's sponsorship, Wetherill explored and excavated in

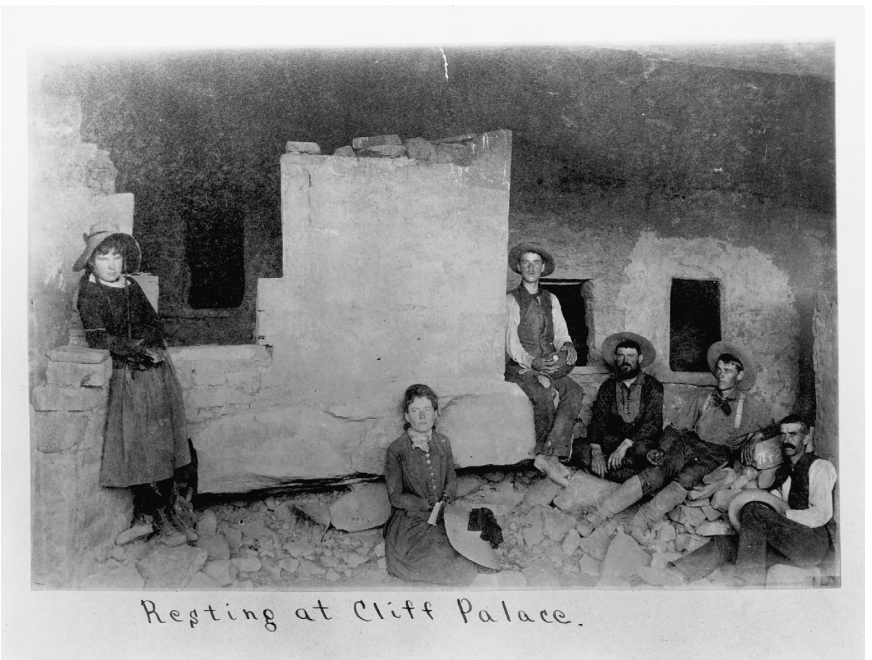

FIGURE A.3 Richard Wetherill (third from right) and tourists at Mesa Verde, 1889.

the Grand Gulch area of Utah during 1893 and 1894, taking some care to meet archaeological standards of recording. Out of this expedition came the announcement that there was a culture in the Southwest—dubbed the Basketmaker—dating earlier than the cliff dwellers of Mesa Verde. Soon after this, the American Museum of Natural History and Frederick Ward Putnam became involved with what was called the Hyde Exploring Expedition. In 1896 the focus shifted to Chaco Canyon in northern New Mexico, with the American Museum directing the scientific aspects of the undertaking. Wetherill, however, remained involved in the actual conduct of excavations. Work by the Hyde expedition on Pueblo Bonito, a major ruin at Chaco Canyon (see Figure 9.12), continued for several field seasons until 1901, but Wetherill also developed a commercial trading post that operated in tandem with the scientific work. The trading post sold Navajo rugs, jewelry, and other Southwestern curios and offered unprovenienced artifacts, apparently purchased from the local Navajos, for resale (Snead 2001:43). Even after the establishment of federal ownership of the canyon as a national monument, Wetherill remained in Chaco Canyon as a trader. There, in 1910, an angry Navajo shot and killed him over a business disagreement. The story of Richard Wetherill reminds us that those who saw antiquities and ruins as a resource for commercial profit also stimulated the growth of archaeology.

By the first decade of the twentieth century, archaeologists also were producing careful descriptions of North America's antiquities and beginning to develop systematic syntheses. One example of synthesis is the pottery classification for Eastern Woodland pottery published by William H. Holmes (1903). Originally an artist, Holmes had become interested in geology and archaeology as a participant in the U.S. Geological Survey's early exploration of the West. He had a long career with the government, becoming chief of the Bureau of American Ethnology in 1902, and he studied pottery from both the Southwest and the East, attempting to develop systematic classifications. In his 1903 publication, paying attention to differences in designs on ceramics as well as to the forms of pottery, the various methods of manufacture, and the materials used, Holmes identified pottery regions for the East. This was a significant step because it was an attempt to order items of material culture over a broad area rather than simply within a site or among a group of closely related sites. Such geographical synthesis, in turn, encouraged additional examination of regional and subregional variation in material culture both archaeologically and ethnographically and led to the recognition of North American culture areas (see Holmes 1914), such as those we use.

Though North American archaeology had accomplished much by the beginning of the twentieth century, it had a weakness: issues of chronology were not being seriously addressed. This failure stemmed from the general assumption that American Indians had not been in North America very long. In fact, many early antiquarians and archaeologists had sought to demonstrate the existence of Ice Age Americans, but their methods, evidence, and conclusions all had repeatedly been shown to be questionable. Thus, it was thought that Indian cultures were unchanged from those of the first inhabitants. Trigger (1989:122–129; see also O'Brien and Lyman 1999:3) has called this a "flat view of native history" and noted that changes observed in the archaeological record generally were considered to result from population migration rather than cultural evolution within local populations. Certainly stratigraphic methods

had been used in excavations, but the question of chronology as opposed to classification was not seriously addressed. Systematic description was the main achievement.

THE STRATIGRAPHIC REVOLUTION, CULTURE HISTORY, AND CONTEXT

The failure to address chronology began to be corrected during the second decade of the twentieth century. Many of the basic techniques of modern archaeology were developed and adopted by North American archaeologists at this time. Before this point, archaeologists' efforts focused on how a collection of artifacts—for example, pottery sherds from a single site—varied, not on the meaning of that variation for cultural distribution and change. In the twentieth century, archaeologists began to see typological variation as having more than descriptive meaning. Holmes's pottery classification mentioned earlier is important because when he linked his classification to different Native American regions (Holmes 1914), he moved closer to the idea that types can be indicative of different groups of people, and thus used to solve archaeological questions about these people. Eventually, archaeologists began to assume that differences in artifact types had historical meaning as well. This kind of conceptualization led directly to two closely linked, but still separate, methodological developments that remain basic to archaeological analyses today.

The first development has been called the stratigraphic revolution (Willey and Sabloff 1993:97–108). Of course, layers had been observed in excavations in North America since at least the late eighteenth century. We can list a whole series of investigators who carefully recorded site **stratification**, assuming that underlying deposits were older than overlying ones, and many of these archaeologists also collected artifactual material by stratigraphic layer. These individuals would include Jefferson, Putnam, Wetherill, and others not discussed here. Nevertheless, the observations of most of these archaeologists had been descriptive rather than chronological. At best they helped the researcher make sense out of the deposits that had been excavated. What changed, during the second decade of the twentieth century, was that archaeologists began to use stratigraphic observations to draw inferences about relative time depth and sequence on a regional basis. Specifically, the stratigraphic ordering of artifact types came to be seen as an indicator of chronology. A pioneer in these efforts was Nels Nelson.

Nelson was a Danish immigrant to the United States who was educated in anthropology at both Stanford and Berkeley (Snead 2001:106). Nelson first was exposed to stratigraphic excavation during his participation in shell mound excavations in San Francisco Bay area. Later, however, as an employee of the American Museum of Natural History in New York, Nelson was expected to address the chronological issues that the museum had recently recognized as important to its Southwestern work. At first he did not have much success with tackling this problem. Carefully observing the pottery styles found in various stratigraphic layers in sites located in the Galisteo Basin of New Mexico, Nelson developed ideas about which types of pottery were oldest and which were youngest. He could not, however, fully test these ideas because each of his

excavations had only some of the pottery types. At the end of the 1914 season, he finally found a refuse or midden deposit at Pueblo San Cristobal, with all the pottery types he had identified in one deep deposit. An important part of Nelson's innovation was that strata were not clearly visible in this 10-foot-deep deposit, but by excavating arbitrary one-foot (0.3048 m) **levels** and sorting the pottery from each level separately, he showed that the deposit had accumulated at different times. This was because some of the pottery types varied as one went from upper levels to lower levels (Table A.1). For example, although corrugated and biscuit wares showed little clear patterning, black-and-white painted ware was most common in the lower levels, while two-color glazed wares were more prevalent higher in the deposit. He was able to observe that pottery styles generally were introduced in small amounts, gradually increasing to peak use and then declining over time. This frequency variation in types was used to inferthe temporal significance of pottery styles. Then Nelson was able to comment on the relative age of other rooms that he had excavated and surface collected in the Gallisteo Basin sites.

Nelson's study (1916) had immediate impact on chronology building in the Southwest. For example, beginning in 1915, Alfred Kidder, a Harvard-trained archaeologist, used Nelson's observations to make chronological sense of the stratigraphy he found in his large-scale excavations in the upper Pecos Valley. Like Nelson's work, Kidder's research was directed toward determining the regional chronology (O'Brien and Lyman 1999:168). Kidder began to excavate in arbitrary levels, but he paid great attention to delineating stratigraphic units. Eventually he was able to excavate in natural units, but in both cases he tabulated sherds of various types by the arbitrary or natural stratigraphic unit. He also

TABLE A.1 Nelson's Pottery Type Counts by Level

			Type 1	Type 2			Type 3
Depth (ft.)	Corrugated Ware	Biscuit Ware	Black on White Painted Ware	Red Ware, Black or Brown Glaze	Yellow Ware, Black or Brown Glaze	Gray Ware, Black or Brown Glaze	Gray, Yellow, Pink, and Reddish Ware, Combination Glaze and Paint Design
1	57	10	2	24	23	34	5
2	116	17	2	64	90	76	6
3	27	2	10	68	18	48	3
4	28	4	6	52	20	21	
5	60	15	2	128	55	85	
6	75	21	8	192	53	52	1?
7	53	10	40	91	20	15	
8	56	2	118	45	1	5	
9	93	1?	207	3			
10	84	1?	69				

After Nelson (1916, p. 166).

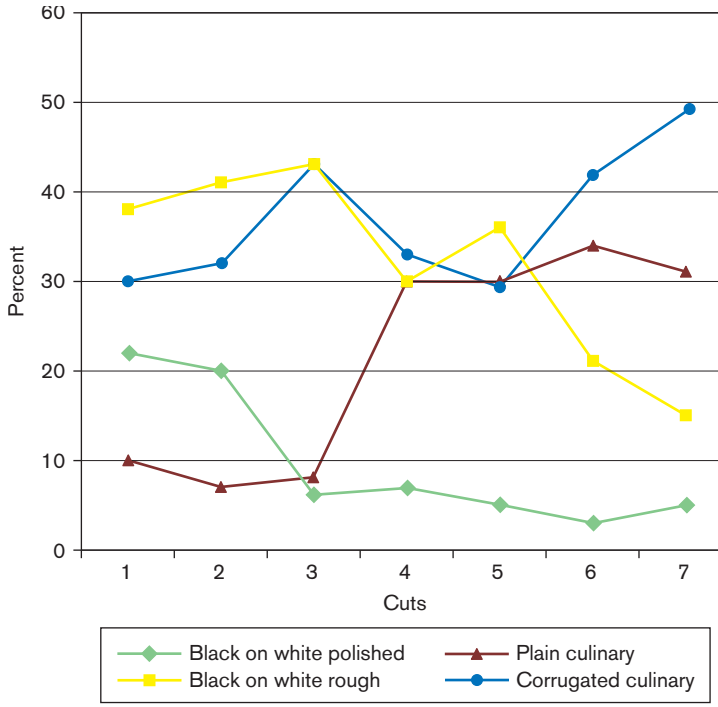

FIGURE A.4 Variation in proportions of pottery types found by Kidder at Forked Lightning.

calculated percentage contributions for each type within each unit and graphed these results, showing more clearly how pottery composition changed through the sequence (Figure A.4).

Archaeologists also were developing techniques of **seriation** during the second decade of the twentieth century. Seriation can be defined as the ordering of artifacts in a sequence according to their formal similarity. Archaeologists are most interested in sequences that reflect the way artifacts have changed over time, such that artifacts at the beginning of the sequence are older than artifacts at the end. Several types of archaeological seriation have been used (O'Brien and Lyman 1999:64–65). Most North American archaeologists have preferred a method called **frequency seriation**, developed first by Alfred Kroeber.

Kroeber, who taught at the University of California at Berkeley, is best known as an ethnologist, but he made important contributions in the field of archaeology. In 1915, while at Zuni doing research on kinship, Kroeber noticed that the percentages of different types of pottery on the surface varied from one ruin to another. For instance, the pottery of one ruin might be dominated by red and black sherds, while the sherds from another ruin were mainly white. Observing that some ruins obviously were older than others because they had fewer standing walls, he invented the technique of frequency seriation to order collections from various ruins in time. Kroeber seriated collections of pottery types or assemblages rather than pottery types per se, and he was not using stratigraphic positioning to determine sequence. He argued that because of the proportions of various pottery types found at different ruins, these pottery assemblages could be placed in a sequence that established the relative chronology of ruin use (O'Brien

and Lyman 1999:111–114). He also concluded that since one type of pottery was gradually replaced by another, change in the Zuni sequence resulted from continuous cultural development in this region itself rather than from group migration (Kroeber 1916).

By 1920, North American archaeologists began to apply these important techniques for the chronological ordering of sites and parts of sites relative to each other. Influenced by the school of anthropological thought known as **historical particularism**, this generation of archaeologists sought to document the unique history of specific cultures as shown in the archaeological record. The focus of research now was on culture history, a change that led to a great deal of methodological and analytic innovation and produced a tremendous amount of information.

Perhaps the first result of these new methodologies was the development of regional syntheses, such as the Pecos classification in the Southwest. Alfred Kidder continued to work at Pecos from 1915 through 1929, becoming a central figure in Southwestern archaeology. In 1924 he published a synthesis of Southwestern prehistory entitled "An Introduction to the Study of Southwestern Archaeology with a Preliminary Account of the Excavations at Pecos" (Kidder 1924). To each of nine Southwestern subareas that he recognized, Kidder applied four broad chronological periods: Basketmaker, post-Basketmaker, pre-Pueblo, and Pueblo. Then in August 1927, Kidder invited other Southwestern archaeologists to his field camp at Pecos to develop a single sequence of periods for understanding the region's prehistory. Using architecture, ceramics, and, to some extent, skeletal data, the experts defined eight periods in the archaeological past (Table A.2). Much of this sequence

TABLE A.2 Pecos Classification as Developed in 1927

Original Period	Traits
Pueblo V (Historic)	AD 1600 to present
Pueblo IV (Proto-Historic)	Widespread abandonment, decline in artistic elaboration, plain pottery wares
Pueblo III (Great Pueblo)	Very large communities, artistic elaboration and craft specialization
Pueblo II	Small villages, pottery currugated over entire surface
Pueblo I (Proto-Pueblo)	Aboveground structures of contiguous, rectangular rooms, pottery with unobliterated coils or bands at neck, cranial deformation
Basketmaker III (Post-Basketmaker)	Pithouses or slab houses, plain pottery, no cranial deformation
Basketmaker II (Basketmaker)	No pottery, but agriculture and atlatl present
Basketmaker I (Early Basketmaker)	Preagriculture, no longer in use, considered the Archaic

After Cordell (1997, 164–167).

of periods is still used in the northern Southwest today, even though other frameworks had to be developed for other parts of this region (see Cordell 1997:164–179). In addition, an annual Pecos Conference still is held at various locations in the Southwest.

Also in the first half of the twentieth century, the first technique of absolute dating became available to Southwestern archaeologists. A. E. Douglass, an astronomer interested in sunspot activity, is generally credited with developing the absolute dating technique of dendrochronology, or tree-ring dating (Nash 1999). In 1914, at the urging of Clark Wissler, who was Nels Nelson's boss at the American Museum, Douglass began to explore the possibility of using tree rings in archaeological dating. Many early Southwestern archaeologists helped Douglass by collecting beams and logs for possible dating during their excavations, and the National Geographic Society provided grants for "beam expeditions" to search for appropriate specimens.

As discussed in Section C, dendrochronology is not simply a matter of counting numbers of tree rings, but a more complicated process of assigning calendar dates to growth rings in trees. It involves the establishment of a regional sequence by matching rings in large numbers of specimens from a single species of tree. Through careful study of samples, Douglass slowly began to calibrate the relationship of Southwestern sites against a yearly calendar. In 1929 he finally was able to link his yearly calendar of tree rings from Southwestern ruins with modern tree rings of known historical dates. Once this was done, Southwestern sites and ruins could be dated according to the common calendar. Unfortunately, lack of well-preserved specimens has made this technique less useful elsewhere in North America.

Another important development in the history of North American archaeology also happened at the end of the third decade of the twentieth century. We have mentioned that early interest in exploring the antiquity of human settlement of the Americas had generally not yielded reliable evidence of Ice Age occupation of this continent. Through a remarkable set of circumstances described in Chapter 3, this perspective was abruptly and incontrovertibly changed in 1927 when a finely crafted stone spear point was found near Folsom, New Mexico, between the ribs of an extinct type of bison. With this discovery, a longer period of human settlement in the Americas was accepted by archaeologists.

From the late 1920s into the 1940s, North American archaeologists everywhere also were deeply concerned with the issue of artifact classification. Now that it was certain that a long time had elapsed since the initial settlement of North America, artifact classification systems were seen as likely to help archaeologists make sense of culture change. For example, in developing a system known as the **Midwestern taxonomic system** (McKern 1939), Midwestern archaeologists assumed that a standardized nomenclature and procedure would make culture history more obvious, just as Linnaean taxonomy made biological relationships clearer (Lyman and O'Brien 2003). Unlike systems such as the Pecos classification, space and time were not incorporated into the units defined by this system. The new method, which was largely developed between 1930 and 1935, used a hierarchical system of classification based on the degrees to which traits of material culture were shared. Artifacts and features from a single cultural complex at a given site were grouped together into a component, which in turn might be grouped with other components from other sites into a **focus**. Foci could be classified into **aspects**, and aspects into phases while phases could be

grouped into **patterns**. This method introduced terms still of use in archaeology today (see Chapter 2).

The 1930s also were a time of great importance in archaeology because they marked the beginning of large-scale support of archaeology by the federal government. The first sources of government support were various New Deal programs including those of the Tennessee Valley Authority, the Federal Emergency Relief Administration (FERA), and the Works Progress Administration. Archaeology, as a labor-intensive undertaking, proved attractive because many unskilled workers could be put to work. Many archaeologists found federal jobs supervising such projects, and, in part because of the massive amounts of data available to them, they moved to the forefront of the discipline, particularly with respect to determining how to standardize units of archaeological analysis (Patterson 1995:74). These developments also may have stimulated archaeologists to develop a new professional organization focused on American archaeology—the Society for American Archaeology, founded in 1935.

As more and more information became available, some archaeologists began to be frustrated with the emphasis on developing regional spatial and temporal syntheses. Wasn't the goal of archaeology really to investigate culture, and wasn't there more to culture than its historical ordering? Couldn't archaeology contribute more to anthropology than the bare bones of culture history? Some scholars argued that American archaeologists were paying too much attention to the details of artifacts and typology and not considering broad objectives. In the critics' view, these objectives were the same as those of the ethnologist, who wished to understand how cultures changed as well as how they were distributed in space. Beginning in the late 1930s and early 1940s, archaeologists began to explore ways in which the context and the function of artifacts could be used to broaden understanding of past cultures (Willey and Sabloff 1993:152–213). The anthropological school of thought known as **functionalism**, which was then competing with historical particularism, also influenced these archaeologists (Trigger 1989:175–179).

These mid-twentieth-century frustrations culminated in the critique developed by Walter W. Taylor. Taylor (Figure A.5) earned an undergraduate degree in geology from Yale and did fieldwork in the Southwest beginning in 1935. In 1938, as a graduate student at Harvard, he worked in northern Mexico. Military service during World War II, including a period as a prisoner of war, interrupted his Mexican fieldwork. Taylor's doctoral dissertation, A Study of Archeology (1948) was published in 1948 after World War II, but written earlier (Willey and Sabloff 1993:160). Not only is Taylor's study a critique of the narrow culture history focus of American archaeologists like Kidder, but it outlines a new **conjunctive approach**. This meant going beyond chronology building and intersite distributional analyses to include the careful study of patterning within sites in formal, systematic, functional, and spatial ways. Taylor suggested that a narrow focus on chronology resulted in fieldwork that ignored some potential lines of investigation, such as the study of faunal and floral remains (Trigger 1989:276). He urged archaeologists to establish a problem, reconstruct the cultural context, and then explore broader cultural problems. Taylor's call for contextual and functional studies provoked a mostly negative reaction at the time. Some archaeologists stated flatly that archaeological data were not adequate for what he proposed. Nevertheless, Taylor's arguments were not forgotten and would become important after 1960.

FIGURE A.5
Walter W. Taylor.

Similarly, developments in the study of human environment interactions within anthropology also began to influence archaeologists. Julian Steward is generally credited with founding an approach to anthropology known as cultural ecology because of its focus on the dynamic interactions of humans with their environments. Steward also developed concepts of multilinear as opposed to general cultural evolution that influenced archaeologists. Gradually, mid-twentieth-century archaeologists broadened their interests beyond artifact classification and chronology.

A major breakthrough in archaeological dating that took place in the late 1940s was the invention of the radiocarbon method of absolute dating, based on the work of Willard Libby, a chemist who eventually won the Nobel Prize in Chemistry. As discussed in Section C, radiocarbon dating uses the ratio of carbon-14 to carbon-12 as an indicator of how long it has been since an organism died. This method of dating became widely available as a technique during the 1950s, making it possible for archaeologists throughout North America to obtain dates for the sites they were investigating. In turn, this meant that many chronological questions could be answered and that questions of culture change could be more easily addressed.

Archaeologists continued to work out methods useful in the synthesis of culture histories through the 1950s. Many regional syntheses of importance were

published at this time (Willey and Sabloff 1993:188–204). These syntheses made it possible for a hemisphere-wide synopsis of prehistory to be developed using the concept of culture stage. As discussed in Chapter 2, a culture stage is a broad level of cultural development, which can be recognized over a wide area and time. The classic formulation for the Americas is contained in a 1958 publication called *Method and Theory in American Archaeology* (Willey and Phillips 1958). One notable aspect of this formulation is that using stages implies evolution, a concept that despite the emphasis on chronology and history, had been studiously avoided in American anthropology since the turn of the twentieth century.

THE NEW ARCHAEOLOGY, PROCESSUALISM, AND POSTPROCESSUALISM

During the 1960s, the basic assumption that culture history was the main goal of archaeology finally was successfully challenged and overturned. Standard histories of archaeology (e.g., Willey and Sabloff 1993) usually see this decade as ushering in the modern period in American archaeology.

The central figure in the developments of the 1960s was Lewis R. Binford (Figure A.6). Binford began his study of anthropology with an interest in ethnography while attending the University of North Carolina, but he switched to

FIGURE A.6
Lewis R. Binford.

archaeology before entering the University of Michigan as a graduate student. Like most other North American archaeologists, Binford saw himself as an anthropologist, and he became outspoken about what this ought to mean to the practice of archaeology. He picked up the complaints made previously about the approach to archaeology that concentrated on the narrow accomplishments of culture history. Binford proposed that culture was a system of interrelated variables, including the material culture that archaeologists study. Given this, he argued that artifacts should be used to study such additional aspects of the cultural system as technology, social organization, and ideology. Binford also argued that cultures must be understood within their adaptive context. He pointed out that archaeologists had a great deal to contribute to the resolution of anthropological problems precisely because of the long cultural record they studied (Binford 1962).

Binford's arguments were aggressively stated and his personality was forceful, which meant that he attracted a following of young archaeologists, but he alienated other colleagues who were more satisfied with culture history. The result was that in the decades of the 1960s and 1970s there was great theoretical and methodological controversy, not just in North America but in the archaeological community worldwide. These debates took place during a period of upheaval in American society in general, and this no doubt influenced receptivity to change among archaeologists. Two concrete transformations in North American archaeology were occurring as well—more women were entering the profession, and the federal mandate for archaeology was growing, leading to the expansion of extra-academic opportunities for archaeologists.

If you continue to study archaeology, you will no doubt learn a good deal about the theoretical nature of the "new archaeology" of the 1960s. Here, we will only summarize the four main characteristics of this approach (Willey and Sabloff 1993:224–231). First, the new approach revived interest in cultural evolution by being explicitly evolutionary. This evolutionary influence was expressed as an interest in **cultural process**, or how cultures change over time, resulting in the now more common label for this type of archaeology, processualism. Although we have alluded only briefly to the antievolutionism of American anthropology during the first half of the twentieth century, this was an important characteristic of the intellectual climate in anthropology at the time. American anthropologists had rejected the rigid evolutionism of the nineteenth century, which had seen all cultures as moving through stages from savagery to barbarism and ultimately to civilization. Leslie White, one of the cultural anthropologists at the University of Michigan, was an anomaly because of his materialist and evolutionary perspective. White argued that cultures did evolve, though not in the rigid, stagelike manner proposed in the 1800s. The "new archaeologists" were strongly influenced by White's neoevolutionism and saw archaeological sites as good places to look closely at how cultures changed or evolved over time.

A second argument of processualism is that culture is an adaptive system. This perspective built on the work of anthropologists like Julian Steward and developed into an interest in humans as parts of ecosystems. The perspective was important because it focused on the material aspects of culture, as opposed to the ideas and values that people in a culture may have had. Thus archaeologists could look at artifacts, features, and other evidence from archaeological sites as indicative of how technology was used to acquire food and raw materials. Because culture

was a system, technology was understood to provide insights into the economic and social structure, and ultimately perhaps even the ideology of a culture.

The third characteristic follows from the second one. Understanding of material remains and their distribution within sites as indicative of other aspects of the cultural system resulted in a focus on patterning of all sorts. A processualist might study the formal variation in a class of artifacts like stone tools, but to learn how they were used, who used them, and why, she would also need to know how these artifacts were distributed in space. She might need to explore how stone tools covaried with animal bones and plant remains as well. These characteristics of processualism mirror much of what Taylor had to say in 1948 in his conjunctive approach and, indeed, are logical extensions of archaeological interest in function and context dating back to the late 1930s, but Binford had provided a compelling rationale. In addition, processualists had a new tool for analysis—the computer, which in the 1960s and 1970s became widely available to university researchers of all kinds (Figure A.7). The computer allowed processualists to study patterning in artifacts on a scale that had never been possible before, and the data they generated was impressive. Yet even with the computer, it was not possible to collect all information or to analyze everything recovered. As a result, sampling sites and their contents became a major methodological issue.

Finally, processualists argued that archaeology would have to be explicitly scientific if it ever hoped to contribute to the resolution of larger anthropological problems. North American archaeologists had sought to approach the study of the past scientifically and rigorously from the very beginning of the field. They had not, however, defined science as the new archaeologists of the 1960s did. To the processualists, being scientific did not mean careful excavation and recording, or even quantification of the results of what one found. It meant explicitly formulating one's assumptions and ideas into hypotheses and then devising strategies for testing them against observable phenomena in the archaeological record. Only then was an archaeologist justified in generalizing about his or her results and formulating new ideas about what they meant. It was argued that earlier archaeologists had failed to arrive at meaningful

FIGURE A.7 Computers allow today's archaeologists to manage and manipulate the large quantities of data they generate with much greater ease than was possible before the 1960s.

conclusions because they had too often neglected to specify the problem they wanted to investigate, preferring instead to excavate carefully and then see what suggested itself as an explanation. As a result, explanation in archaeology tended to be ad hoc at best.

Essentially, processualists have taken a philosophical position known as **positivism**. Positivism states that reliable knowledge of the world is possible, but that it can be attained only through applying the scientific method. The scientific method, as we discussed in Chapter 1, involves the scientist in generating hypotheses from his ideas that are tested by obtaining data from observations in the natural world and then evaluating these data in relation to the original ideas. Although this set of ideas influenced the development of many Western sciences, positivism has fallen into much disfavor among postmodern scholars, and contemporary archaeologists and other intellectuals often take other philosophical positions.

The importance of the processualist revolution in the history of North American archaeology cannot be overestimated. The processualist program stimulated discussion as well as much research within archaeology, and archaeological practice has continued to change during the last three decades. The problem of how to produce significant insights into past behavior led archaeologists to study how materials are incorporated into archaeological sites and how they are altered in the process (e.g., Schiffer 1976). There also was a strong interest in the proper use of ethnographic analogy. These related concerns developed into a focus on what has been called middle-range theory, the exploration of how patterns in the archaeological record are linked to specific actions and behaviors in the past. This work is "middle range" because it is necessary to support the archaeological study of cultural systems in which archaeologists contribute to "**general theory**." Frustrated with ethnography's failure to provide the kind of information about living people's use of material culture, many processualists, including Binford himself, have turned to ethnoarchaeology (Binford 1978). In this subfield, archaeologists do ethnographic work specifically designed to provide insights into the material results of human behavior.

Processualism also has generated a great deal of criticism (e.g., Hodder 1985, 1991; Preucel 1991). This critique is partly responsible for the continued development in method and theory that characterized North American archaeology at the end of the twentieth century. Critical commentary on processualism often is grouped under the designation "**postprocessualism**." This does not mean that the processualist school of thought has disappeared, only that some archaeologists have proposed other ways of going beyond this approach. Two types of criticism have influenced the practice of North American archaeology most significantly.

The first type of postprocessualist argument criticizes the functionalist and materialist nature of processualism, arguing that culture is more than adaptation. Postprocessualists not only suggest the need for a broader approach but assert that topics such as ideology, gender, and power ultimately are more important for archaeologists to consider in the first place. They believe that symbols and meaning matter more in understanding culture than subsistence, though subsistence-related behavior may have important symbolic meaning. These topics, it is sometimes argued, are understandable only in the context of particular cultures, making attention to specific historical contexts more important than the comparison of cultural systems. Postprocessualists tend to believe that because individuals are not passive recipients of cultures but agents who actively construct

meaning and act accordingly, human behavior cannot be understood outside the social contexts in which it occurs.

A second type of criticism of processualism is more directly linked to postmodernism because it rejects the assumption that objective knowledge of the past can be acquired through the application of the scientific method. Postprocessualists have pointed out the obvious fact that the ideas about the past of today's archaeologists are biased by the social context in which we ourselves live. Therefore, archaeological ideas are not strictly objective. They argue that there are potentially multiple valid pasts, rather than one real past to be discovered by doing archaeology correctly (Leone et al. 1987). The scientific method, particularly as defined by the new archaeologists of the 1960s, may not be the only meaningful way to seek explanation in archaeology. Postprocessualists have called for a more humanistic form of interpretation. These arguments by postprocessualists have helped archaeologists see that our formulations may further the ends of the dominant culture at the expense of descendant populations. The processualist interest in generalizing and in anthropological comparison can result in a tendency to ignore the specific histories of cultural groups (Trigger 1989:315–317). This can mean that Native American tribes, finding that useful archaeological information about their heritage is limited, dismiss archaeology as irrelevant (Ferguson 2003).

Both lines of argument by postprocessualists have had profound impact on North American archaeologists even though most scholars would not identify themselves as postprocessualists. Contemporary North American archaeology continues to be characterized by considerable theoretical and methodological debate. A coherent paradigm for North American archaeology is lacking (Hegmon 2003). In North America, well-defined approaches are represented by **evolutionary ecologists**, who are concerned with the application of evolutionary ecology to human behavior, **behavioral archaeologists**, who focus on the relationship between human behavior and material culture, and **Darwinian archaeologists**, who in applying Darwinian evolutionary theory to the study of the archaeological record have discarded more traditional views of cultural evolution. However, Hegmon labels most North American archaeologists as "processualist-plus" because they remain processualists although they have been influenced by the arguments of the postprocessualists. Although gender, the agency of individuals, symbols, and the social significance of artifacts are of greater importance to contemporary archaeologists than they were to early processualists, much of the classic processualist formulation, including interest in evolution and environment, remains strong. There also is continued exploration of middle-range theory. Even as contemporary archaeologists take into account the viewpoints of Native Americans, commitment to science in the sense of a problem orientation and rigorous investigation through empirical studies still characterizes most North American archaeology.

CRM, OTHER VOICES, AND NORTH AMERICAN ARCHAEOLOGY TODAY

The theoretical and methodological debates we have discussed provide only a partial view of the contemporary archaeological scene. Our historical summary has omitted one extremely important development at the end of the twentieth

century: the advent of cultural resource management (CRM). As discussed in several places in the text, this field has transformed North American archaeology during our lifetime.

Many new archaeological techniques have been developed in recent decades as well. Today's archaeology has a highly technical side, involving the use of sophisticated equipment. Shovels and trowels remain standard archaeological tools, but to these have been added GPS units, computerized laser transits, magnetometers, and other instruments requiring technical expertise. Computers have been integrated into all phases of archaeological work, and analytical procedures may involve scanning electron microscopes as well as counting and weighing specimens. In Sections B and C of this CD, we touch on some of these aspects of modern archaeology more fully. Here we only suggest that the range of skills required of the contemporary archaeologist is vast, and the kinds of work archaeologists do highly varied.

The growth of CRM, as well as tensions within academic departments of anthropology, has made some archaeologists feel that archaeologists and cultural anthropologists have very little in common. This has led to recent questioning of the classic American formulation of archaeology as a subdiscipline of anthropology. Should archaeologists form disciplinary alliances with other fields more interested in heritage studies? Opinions range widely within the discipline (Gillespie and Nichols 2003).

Another development since the 1960s is the increased importance of historical archaeology within contemporary North American archaeology. Although the study of Historic period sites certainly had taken place in North America prior to the 1960s (see Deagan 1982), it was only during 1960s that a separate field of historical archaeology began to take shape. The establishment of the Conference on Historic Sites Archaeology in 1960 and the founding of the Society for Historical Archaeology in 1965 indicate this development. Prior to this time, much work at historic sites had been coincident with reconstruction efforts rather than focused on general anthropological problems. The processualist agenda for archaeology has been critically evaluated by historical archaeologists. They have been well represented among the postprocessualists, however, and there continues to be important theoretical and methodological debate of relevance to archaeology as a whole within this subfield.

As indicated in Chapter 1, one important aspect of the contemporary archaeological scene is involvement with other stakeholders in the past. These people include educators and their students (Figure A.8), descendant populations interested in their heritage, and even collectors, who though they may damage the archaeological record by their activities often seek professional recognition.

We can predict that the field of North American archaeology will continue to change theoretically and methodologically. We can also envision it continuing to develop as more than an ivory tower pursuit. Most likely, archaeology will remain a field with many applied dimensions related to cultural resources, heritage tourism, and education. Regardless of whether the work is pursued in more traditional academic and museum settings or in the public sector, those who enter this field, like their predecessors introduced in this section, will continue to find archaeology intellectually challenging as well as fun.

FIGURE A.8 Teachers at a workshop developed by archaeologists examine contemporary garbage in an exercise designed to illustrate what can be learned from material remains.

SUGGESTIONS FOR FURTHER READING

For an excellent summary of American archaeology in both North and South America:

Willey, Gordon R., and Jeremy A. Sabloff
1993 *A History of American Archaeology*, 3rd ed. Freeman, San Francisco.

For an account of the development of theory in archaeology:

Trigger, Bruce G.
2006 *A History of Archaeological Thought*, 2nd ed. Cambridge University Press, Cambridge.

For a fascinating account of the early days of Southwestern archaeology:

Snead, James E.
2001 *Ruins and Rivals: The Making of Southwest Archaeology.* University of Arizona Press, Tucson.