

# CULTURE HISTORY AND NORTH AMERICAN ARCHAEOLOGY

When Thomas Jefferson withdrew temporarily from public life to his Virginia estate in 1781, he settled down to complete a long questionnaire from the French Government, seeking information on his home state. What plants and animals flourished in Virginia? What minerals, products, and industries were to be found? What was known of the native inhabitants? His famous *Notes on the State of Virginia* (first published in France in 1784) was the result, a lengthy treatise that discussed, among other things, the “aborigines,” and the first archaeological investigation in the United States (Jefferson, 1797).

## The First Excavation

1782

Jefferson was an influential member of Philadelphia’s coffee house society, one of many intellectuals who speculated about American Indian life and the abandoned towns and earthworks said to exist out west. He was a friend of the celebrated botanist William Bartram, who traveled widely through the Southeast in the 1770s, through country still densely inhabited by Indian tribes. The Cherokee, Bartram noted, built their meeting houses on large artificial mounds, as high as 20 ft (6 m). They did not build these earthworks, for they found them “in the same condition as they now appear.” Bartram thought the mounds were the work of biblical peoples (Fagan, 1977).

Bartram was by no means the only person theorizing about the mounds. Many travelers believed that the Indians were incapable of building such elaborate earthworks. Rather, they hypothesized, Toltec Indians from Mexico had erected them before migrating southward. Others argued for Welshmen, or for some lost race that had occupied North America long before the Indians had arrived.

Jefferson listened to these hypotheses and resolved quietly to test them by digging into a small mound by the Rivanna River. His trenches revealed layers of burials and artifacts of Indian origin, separated by levels of stones and earth. Jefferson observed the strata with care, and remarked: “That they were repositories of the dead, has been obvious to all; but on what occasion constructed, was a matter of doubt.” This was one of the first stratigraphic



The Moundbuilder controversy. The Great Serpent Mound, Adams County, Ohio (above), attributed to the Fort Ancient culture, was one of the many mounds accurately mapped for the first time by Ephraim Squier (below) and his colleague Edwin Davis in the 1840s. But they continued to believe in a mythical race of moundbuilders.



excavations anywhere, and was unique not only for its time but for generations afterward (Willey and Sabloff, 1993).

## The Myth of the Moundbuilders

1770s to 1894

After 1815, a flood of settlers poured over the Alleghenies, clearing farmland and exposing mounds, enclosures, and other exotic earthworks. The land itself was largely depopulated, the result, probably, of catastrophic 16th- and 17th-century epidemics of exotic European diseases. The newcomers were convinced that golden treasure lay in the mounds, and dug for their fortunes. They found no gold, but dozens of skeletons and exotic artifacts such as carved soapstone pipes, mica silhouettes of birds and animals, and fine copper ornaments and artifacts. The finds caused an intellectual furor, a wave of sentiment for theories of a "lost race" of white Moundbuilders, who had once settled and conquered the fertile lands of the Midwest. Such wild theories appealed to the romantically inclined, to people who believed that American Indians were incapable of building anything as elaborate as a burial mound (Meltzer, 1998; Silverberg, 1968).

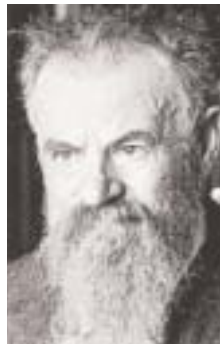
Meanwhile, a few scholars and antiquarians set out to acquire more information about the earthworks and their builders. Caleb Atwater, the postmaster of Circleville, Ohio, spent his ample leisure time exploring the mounds near his home town and described them in a two-part paper published in 1820 that separated observation from pure speculation. Atwater's descriptions were accurate enough, but his theories a product of his time: migrating Hindus from India had built the mounds, then moved on to Mexico (Atwater, 1820). Only a few observers, like Dr James McCulloh, an armchair antiquarian, argued that the Indians were the Moundbuilders. By and large, their findings were ignored.

Just under a quarter-century after Caleb Atwater's report appeared, two Ohio antiquarians, E.G. Squier and E.H. Davis, completed one of the first scientific monographs published by the newly founded Smithsonian Institution. *Ancient Monuments of the Mississippi Valley* was a comprehensive, descriptive work, with plans so accurate that they are still used today (Squier and Davis, 1848). Squier and Davis's descriptive research was remarkable for the time, but they still referred to the "great race of Moundbuilders," and believed that the American Indians and their ancestors were incapable of building the earthworks.

Although most antiquarians believed in exotic Moundbuilders, a growing minority of influential scientists thought otherwise. Foremost among them was Samuel Haven, the Librarian of the American Antiquarian Society. In 1856, Haven published a remarkable essay, *Archaeology of the United States*, in which he surveyed everything that was known about ancient North America, and the origins of the American Indian. A judicious and dispassionate observer, Haven set the tone for all future scholarly enquiry into the native Americans. His conclusions were admirably cautious. "We desire to stop where evidence ceases," he stated at the outset. The Indians



The Moundbuilder controversy. Three scientists, Samuel Haven (below left), John Wesley Powell (below center), and Cyrus Thomas (below right), were among those instrumental in proving beyond doubt that the American Indians themselves had built mounds such as those at Marietta, Ohio (left, a sketch by Squier and Davis).





*Frederick W. Putnam (far right) and other archaeologists photographed on a mound near Fair Grounds, Chillicothe, Ohio, in 1883. Putnam has been called the “professionalizer of American archaeology” for his work as an excavator, and as an administrator or founding father of several North American museums and departments of anthropology.*

were of high antiquity, he believed. “All their characteristic affinities are found in the early conditions of Asiatic races,” he wrote. Haven set the stage for a new era of systematic, much more scientific, research into the North American past.

The Moundbuilder controversy dragged on from the 1850s into the late 1890s, kept alive by continual amateur diggings and by the publication of often bizarre tomes that added new, and ever more offbeat, chapters to the ancient saga (Silverberg, 1968). Meanwhile, however, professional science grew hand in hand with the establishment of new universities and colleges, and thanks to the increasing influence of government agencies such as the US Geological Survey. Both the Survey and Harvard University’s Peabody Museum played an important role in the controversies surrounding Stone Age settlement in North America (Meltzer, 1983).

The Smithsonian Institution’s Bureau of Ethnology was founded in 1879, thanks to the lobbying of John Wesley Powell, the first man to traverse the Grand Canyon by boat. The Bureau was founded specifically to recover rapidly vanishing information about American Indian peoples in the far west. Under Powell’s Directorship, it also embarked on ambitious archaeological programs on a broad geographical scale.

Powell moved into Moundbuilder studies because Congress insisted in 1881 that he spend the then large sum of \$5000 annually on mound investigation. Forced to sponsor archaeological research, he appointed Cyrus Thomas, an entomologist from Illinois, to head a Division of Mound Exploration in 1882. At first Thomas believed in a “separate Moundbuilder race,” but fortunately, he realized that he would have to embark on an extensive campaign of survey and excavation, both to support his hypothesis, and to save hundreds of earthworks from imminent destruction. He and his assistants fanned out over

the Midwest, surveying, digging, studying artifacts, and making plans of sites large and small. The steady flow of data from the excavations soon convinced Thomas that the mounds were the work not of a “separate race,” but of ancient Indians, the ancestors of modern populations. His monumental report appeared in the 12th *Annual Report* of the Bureau of Ethnology in 1894, a description of hundreds of sites, thousands of artifacts, and a pioneering effort at studying the remote past by working back from known modern sites and artifacts as a basis for comparison with earlier cultures.

With the publication of Thomas’s great work, every serious scholar of North American archaeology accepted that the Moundbuilders were native Americans. All modern research into these peoples is based on this fact.

## First Descriptive Efforts

1874 to 1914

The 40 years between 1874 and 1914 saw the first systematic descriptions of ancient pottery styles in eastern North America, early attempts to define the criteria for establishing the date of the first Americans (Chapter 4), and stratigraphic excavations in shell middens on the East Coast and by the German-trained archaeologist Max Uhle along the California coast. As early as 1880, Canadian geologist John Dawson of McGill University in Montreal attempted to link ancient artifacts with the St Lawrence Iroquoian village of Hochelaga, visited and described by Jacques Cartier in 1535 (Willey and Sabloff, 1993). Cyrus Thomas’s work on the eastern mounds with their rich finds of artifacts and human remains confirmed the importance of a joint anthropological and archaeological approach to the study of the American Indian. This perspective, soon taught at Harvard, Pennsylvania, and Berkeley, was in sharp contrast to European approaches, where archaeology was thought of as an extension of history. At the time, there was some scholarly logic in this, for American archaeologists were investigating ancient non-European peoples, not the Romans and indigenous Europeans who formed a historical continuity with the modern inhabitants of that region of the Old World (Kehoe, A., 1998; Willey and Sabloff, 1993).

This close association with cultural anthropology has been a powerful catalyst for North American archaeology, providing a rich reservoir of modern analogies for interpreting the archaeological record, and offering chances to work back from the known present into the unknown past.

For most of the late 19th century, the doctrines of biological and social evolution were extremely fashionable in anthropological circles. In an era when human progress was a watchword, anthropologists theorized that human societies everywhere had passed through successive stages of universal evolution. These theories culminated in the brilliant researches of lawyer-turned-anthropologist Lewis Henry Morgan. Morgan (1877) proposed no fewer than nine stages of linear social evolution, beginning with simple Savagery, and progressing from there through successive stages of Barbarism, culminating in Civilization. Morgan’s unilinear evolutionary scheme proved popular, but was soon abandoned, as it was far too simplistic to explain the great diversity of American Indian groups.

## Cushing, Bandelier, and the Southwestern Pueblos

The earliest archaeological investigations in the west were at the hands of government scientists or members of private expeditions, often surveyors who came across abandoned pueblos and dry caves where surprisingly well-preserved artifacts were to be found. Serious research began with two remarkable pioneers, Smithsonian anthropologist Frank Cushing, and Adolph Bandelier, a Swiss-born mine engineer who became an anthropologist.

Frank Cushing arrived at Zuñi pueblo in 1879, intending to stay for three weeks. He stayed for four-and-a-half years, learned to speak the Zuñi dialect fluently, and, through participant observation, recorded an extraordinary wealth of information about pueblo life. Cushing was not an archaeologist, but he made a rich collection of Zuñi oral traditions about earlier times that helped him realize that the best way to study ancient times was by working back from the present into the past (Cushing, 1882–83).

Adolph Bandelier arrived in the Southwest in 1880. A mine administrator and amateur anthropologist, Bandelier had come under the influence of Lewis Henry Morgan, who obtained a grant for him to work in the west. For 12 years, he wandered from pueblo to pueblo on a mule, carrying all his worldly possessions in a saddle bag. At pueblos like Pecos, he recorded centuries of Southwestern history, oral traditions and local histories that reached back into the remote past. He soon realized that the way to study early pueblo history was to work back in time, “from the known to the unknown, step by step” (Bandelier, 1884).



(Above) Frank Cushing: Zuñi war chief and US Government ethnographer. Cushing was a pioneer of participant observation in anthropology and became famous for his descriptions of Zuñi life.

(Right) A scene of Zuñi life: decorating pottery, from Cushing's *My Adventures in Zuñi*. During this process “no laughing, music, whistling, or other unnecessary noises were indulged in,” he wrote. The potters believed the sound would enter the clay and cause the vessel to shatter when fired.



William Henry Holmes in an ocean of “paleoliths.” c. 1890. This carpet of flaked stone was, Holmes discovered, a recent Indian quarry, like many of the supposed ancient chipping sites uncovered in the late 19th century.

Ales Hrdlička investigates an ancient skull.



especially simplistic, linear schemes of human progress. A new generation of anthropologists led by the great fieldworker Franz Boas insisted on factual evidence, data on cultural traits collected from systematic field investigation (Lyman and Dunnell, 1997). Boas and his many students devoted years to the meticulous collection of cultural data throughout North America, founding a school of American anthropology known as “Historical Particularism.” Fortunately, Boas’s thinking had little effect on archaeologists, most of whom were firmly committed to an evolutionary perspective on the past. While everyone was convinced that the native Americans had settled in their homeland only a relatively short time ago, even the conservative scholars on this issue were evolutionary thinkers: both William Henry Holmes and Ales Hrdlička at the Smithsonian were evolutionary in their orientation, even if their authoritarian, strong-willed personalities insisted that the earliest human settlement of the Americas had taken place no more than about 4000 years ago.

Stratigraphic observation was also in its infancy, for few North American sites were thought to have multiple layers. Nor had North American scholars developed the excavation or analytical techniques to observe cumulative, small changes in human culture over even short periods of time. Archaeologists were hardly in a position to rebut the historical particularists. And when they started to use stratigraphic techniques and the Direct Historical Method, they began to develop their own conceptual frameworks quite separately from cultural anthropology.

Culture history is based on two fundamental principles that were enumerated in the early years of this century (Lyman and Dunnell, 1997; key papers collected in Lyman, O’Brien, and Dunnell, 1997). The first was inductive research methods, the development of generalizations about a research problem that are based on numerous specific observations. The second was what is called a “normative” view of culture. This is the notion that abstract rules govern what cultures consider to be normal behavior. The normative view is a descriptive approach to culture, which discusses it during one long time period or throughout time. Archaeologists base all culture history on the

assumption that surviving artifacts, such as potsherds, display stylistic and other changes that represent the changing norms of human behavior throughout time. Culture history resulted from careful stratigraphic observation, meticulous artifact classifications and orderings, and accurate chronologies. The culture-historical approach resulted in a descriptive outline of ancient North America in time and space that took generations to assemble.

*Stratigraphic Observation* was introduced to North American archaeology in about 1914 and came into universal use during the next two decades. This was the time when the principles not only of stratigraphic observation, but also of seriation (artifact ordering in a time sequence) became allied with artifact typology and classification. The result were the first culture-historical syntheses of major culture areas of North America.

Nels Nelson was a large, earthy Scandinavian archaeologist who was trained by the great anthropologist Alfred Kroeber at Berkeley. As a young man, he had visited French cave excavations and worked with eminent scholars like Hugo Obermaier and Henri Breuil, experiences that convinced him of the importance of stratigraphic excavation. Working for the American Museum of Natural History in 1914–16, young Nelson excavated in the Galisteo Basin area of New Mexico, an area where Bandelier and another pioneer, Edgar Hewett, were convinced that there had been “cultural transformations in prehistoric times.” A series of excavations at San Marcos and other pueblos provided stratigraphic proof of different pottery styles, but Nelson’s sequence was incomplete until he excavated the 10-ft (3-m) deep middens at San Cristobal. There he described a sequence of changing pottery styles, from black-and-white painted that was common in earlier levels to glazed, then painted-and-glazed forms (Nelson, 1916).

The discovery of stone projectile points in association with the bones of extinct bison in 1927 was another defining moment in the development of culture history. Suddenly, the bottom dropped out of the comfortable 4000-year-old chronology of American archaeology and archaeologists were faced with filling a yawning gap of 10,000 years. The time and space frameworks of culture history were the only way to populate this chasm with ancient societies (Meltzer, 1983).

*The Direct Historical Method.* Nelson’s Galisteo research was a major breakthrough, and a foundation of what became known as the Direct Historical Method, working from the present into the past. The first large-scale application of stratigraphic methods came with Alfred V. Kidder’s classic excavations at Pecos pueblo (Kidder, 1924). Kidder had been trained at Harvard and had taken a course in field methods with Egyptologist G.A. Reisner, a leading excavator of the day. He had also traveled in the Near East and observed modern European excavation methods at first hand. These he now applied at Pecos after 1916, in the largest excavation so far conducted in North America, dissecting refuse middens over 20 ft (6 m) deep at both the Fork Lightning and Pecos sites. Kidder excavated with careful controls, assembling selected potsherd samples at first, then digging further trenches with meticulous care. After several seasons of work, he constructed a stratigraphic sequence of pottery styles for each pueblo,



*Pecos excavations in 1916 with (inset) A.V. Kidder at the site, and his cross-section drawing of Pecos refuse stratigraphy with building walls and floors. Different ceramic styles found in the different layers are indicated by “Glaze 5,” “Black-on-white,” etc.*



confirming the general sequence from the Galisteo Basin, and ultimately creating a regional sequence for the ancient Southwest (Kidder, 1927).

Thus was born a careful sequence of research strategies for developing culture histories that were to be applied by dozens of North American archaeologists in coming years – preliminary site survey, selection of criteria for ranking these sites in chronological order, then comparative study of these criteria, followed by a search for, and excavation of, stratified sites. Finally, more survey and additional excavations to confirm the results and refine cultural and stratigraphic findings.

The Direct Historical Method became even more formalized by important researches elsewhere in North America during the 1920s and 1930s. It was used in New York State as early as 1916 to relate ancient settlements to historic Iroquois villages. However, the greatest impetus came from excavations by W.D. Strong and Waldo Wedel in Nebraska (Strong, 1935, 1940; Wedel, 1938). These two archaeologists started with a rich lode of historical information collected by anthropologists and amateur historians. They excavated historic Pawnee sites, then went on to dig settlements from the contact period and from remoter times. The results were extraordinary, for the application of the Direct Historical Method revealed dramatic cultural changes on the Plains, shifts from bison hunting on foot to horticulture in river valleys, then back to bison hunting again, this time on horseback. Strong's *Introduction to Nebraska Archaeology* (1935) became a model for such research in many areas of North America.

**Classification.** Typology and artifact classification were fundamental to the emerging culture history of North America. The first systematic attempts to classify ancient pottery were at the hands of William Holmes of the Bureau of Ethnology in the 1890s (Holmes, W., 1903). He worked on potsherds from mounds and other eastern sites, while early Southwestern archaeologists like Hewett and Nelson wrestled with different pottery types from their excavations in the Galisteo Basin and elsewhere. These early attempts at classification were basically descriptive taxonomy. As excavations in the Southwest introduced at least a degree of chronology into stratigraphic sequences, archaeologists were forced to refine their typologies to take account of change through time. Inevitably, since it was the most common artifact, the humble potsherd became the yardstick of classification, a kind of changing marker that was used to subdivide ancient times into ever more minute subdivisions (Gladwin and Gladwin, 1931; Sayles, 1936).

**The Pecos Classification.** Kidder's Pecos excavations added much new data to Southwestern archaeology, and Kidder himself called a conference at the pueblo in 1927, where the leading archaeologists working in the area came together to develop a standardized classificatory scheme and chronology for the Southwest (Kidder, 1927). From this, the first Pecos Conference – they are held annually to this day – emerged a chronological classification of Southwestern cultures that has survived, albeit in modified form, until today.

The earliest peoples identified in the Pecos classification were the "Basketmakers" of the Four Corners area, people who lived in pithouses and surface pueblos and were incipient farmers and hunters. There were two stages of Basketmaker culture, followed by five Pueblo periods, each distinguished by changes in architecture, community arrangement, pottery styles, and other artifacts. Pueblo IV and V straddled the first centuries of European contact and the transition from historical to modern Pueblo culture.

The Pecos classification was developed at a time when Southwestern chronology was still relatively imprecise. When more precise dates were forthcoming, it became apparent that the Pecos periods were better thought of as stages, which developed at different times in different local areas. Furthermore, the classification was better suited to the northern Southwest than to areas further south.

**The Gladwin Classification.** In 1934, Harold and Winifred Gladwin proposed another kind of culture classification, this time, a framework based on three broad "roots," the major cultural regional subdivisions of the Southwest: Basketmaker (later to be called Anasazi), Mogollon, and Caddoan (later named Hohokam). Each root was divided into "stems" which were major geographical areas. For example, the Basketmaker root contained "San Juan" and "Playas." Stems were split into even smaller units known as "branches." Each branch delineated a culture area within a stem such as "Chaco" or "Kayenta." These branches were divided into "phases," and generally named after local geographic features. Phases were units, defined by comparing individual culture traits from different sealed levels at different archaeological sites. The Gladwin classification grouped archaeological cultures by using culture traits, linked in space and time by a branching scheme that was almost genetic in nature – the assumption was that everything had started from a single root, then branched outward in a gradual evolution of Southwestern culture.

Gordon Willey and Jeremy Sabloff (1993) refer to the Pecos classification as "Chronologic" and the Gladwin scheme as "Chronologic-Genetic," a fairly apt description. The two systems were by no means incompatible, for the Gladwin hierarchy was a regional and local one, and the Pecos classification a useful way of generalizing over the entire area.

**The Midwestern Taxonomic System.** While Gladwin was wrestling with roots and stems in the Southwest, a group of Midwestern archaeologists under the leadership of W.C. McKern was developing a classificatory scheme for eastern North America. This was the famous Midwestern Taxonomic System, sometimes called the McKern Classification (McKern, 1939).

Midwestern archaeologists grappled with very different problems from those in the Southwest, notably an apparent lack of stratified sites and much poorer conditions of preservation. However, they had access to enormous numbers of artifacts from every millennium of the past, most of them without provenance, collected by private individuals and professional excavators alike.

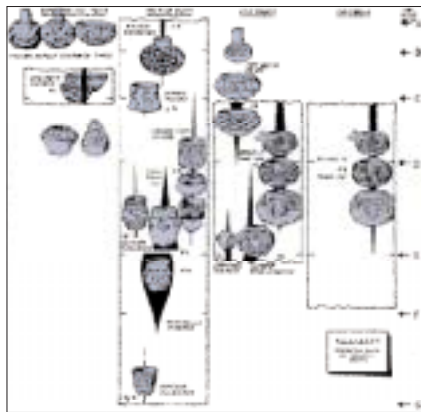
The McKern scheme dealt not with time and space, but entirely with artifact classifications. Its architects assumed that formal similarities between artifact forms signified both cultural origins and cultural history. They proposed a taxonomic hierarchy that began with *components*, a unit of a culture complex that could be a site, or a distinct layer in a site. Several components were then grouped into a focus, components that shared high frequencies of similar culture traits. Foci were classified into *aspects*, broader groupings where there were still many culture traits in common. The highest levels in the McKern Classification were the *phase*, the *pattern*, and the *base*, all of them founded on increasingly more generalized cultural traits.

The Midwest Taxonomic System started off as just that – a taxonomic scheme, with no explicit chronological or spatial contexts at all. It was much criticized by Southeastern archaeologists, who had acquired a great deal of valuable time-and-space data during the great River Basin Surveys carried out during the Depression (Fagette, 1997). These ambitious surveys involved large quantities of data that were described minutely by James A. Ford and others (Ford and Willey, 1941). In time, however, the Midwestern system was found so effective that its rapidly multiplying taxonomic categories began to acquire chronological and spatial dimensions.

**Seriation.** The Midwestern system required, and still requires, precise methods for ordering artifacts through time – seriation. Seriation is based on two assumptions: that cultural change is gradual, and usually from the simple to the more complex, and that similarity between artifacts is a measure of their cultural relationship. The first American scholar to demonstrate the effectiveness of seriation was anthropologist Alfred Kroeber, who wrote a classic paper on potsherds he had collected from eighteen sites in the desert near Zuñi pueblo (Kroeber, 1916). He seriated these into six sub-periods by style and frequency of occurrence, arguing that his seriation showed that the cultural history of the Zuñi region resulted from “a steady and continuous development on the soil.”

Leslie Spier (1917) refined Kroeber’s work the following year and was the first person to use the term “seriation.” His researches caused seriation to become standard archaeological practice in North American archaeology, not only for classifying potsherds, but also for pueblo architecture, stone tools, and other artifact forms. The arctic archaeologist Henry Collins used both stratigraphic observation and the associations of ancient Eskimo settlements with ancient beach lines as a chronological framework to seriate bone and ivory tool forms over many centuries (Collins, 1937). One of the young fieldworkers with him was James A. Ford, who took seriation back with him to the Southeastern United States, where he developed elaborate artifact-based chronological schemes between the 1930s and 1960s.

*James A. Ford’s stylized seriations of pottery-type frequencies. The table illustrates different types and tries to correlate pottery sequences from northeast Texas, Louisiana, and Florida.*



As time went on, many important area syntheses appeared, each of them adding to the emerging, and increasingly bewildering, diversity of ancient North American cultures (for examples, see Deuel, 1935; Ford and Willey, 1941; Kidder, 1924; McGregor, 1941; Strong, 1935; and many others). From these pioneer syntheses emerged the fundamental principles of culture history and nomenclature that are in use today, among them chronological schemes like the familiar Archaic-Woodland-Mississippian terminology of the Eastern Woodlands (Griffin, 1946).

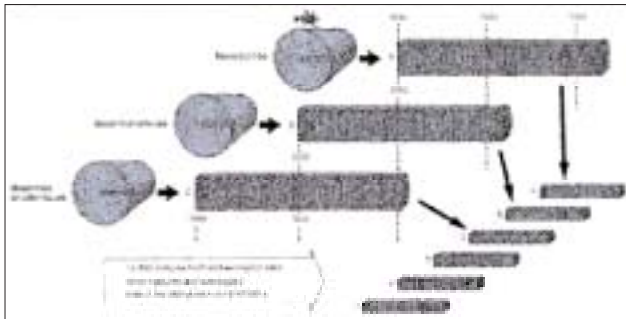
The 1920s through the early 1950s saw North American archaeologists focusing on sites, artifacts, and chronologies, with any form of speculation or theoretical discussion considered not only unnecessary, but intellectually unsound. Archaeology was basically a descriptive, historical methodology that paid lip service to anthropology. Many anthropologists considered it peripheral to their research. “Archaeology ... is always limited in the results it can produce. It is doomed always to be the lesser part of anthropology,” wrote anthropologist E. Adamson Hoebel in a revealing and devastating comment of the day (Lyman and Dunnell, 1997).

## Dating Ancient North America 1901 to 1960

We should not be surprised that the archaeologists of a half-century ago were preoccupied with chronology. Their preoccupation was similar to that of colleagues in every part of the world, simply because there were no reliable ways of dating the remote past. Until the 1920s, all absolute chronologies for ancient North America were based on intelligent extrapolation from historical records, and on guesswork, instinct, and an assumption that the first human inhabitants of the Americas were of relatively recent date (Meltzer, 1983). Artifact typology and seriation merely ordered cultural material in a relative chronological sequence, without being anchored to “true” dates.

The bastions of the short chronology crumbled in 1924, with the well-known discoveries at Folsom, New Mexico, that proved that early native Americans had hunted extinct forms of Plains bison. Soon estimates of 10,000 years for Folsom were considered not unreasonable, but there was still no accurate method of dating even recent archaeological sites. Even such comprehensive syntheses as those of Ford and Willey (1941) in the Southeast were based on very short time scales indeed, in the order of 2000 to 3000 years. It was the development of two accurate, easily applicable chronological methods that was to prove to be the catalyst for new approaches to North American archaeology. In both cases, these methods came to archaeology from the hard sciences.

**Dendrochronology.** Astronomer A.E. Douglass of the University of Arizona, Tucson, was interested in tree-rings as a means of dating sunspot activity. He began his research in 1901 with live trees, then searched for wooden beams preserved in ancient pueblos. By 1929 he had two tree-ring sequences, the one extending back from the present through Spanish contact into late Pueblo times, the other a chronology that was not anchored



*Dendrochronology: using tree-ring sequences to date North American archaeology.*

to historic trees, which covered a long period of earlier times. Douglass searched hard for the beams that would link his two tree-ring sequences, and eventually found a charred log of AD 1237 in a pueblo at Show Low, Arizona. Once he had secured his master tree-ring chronology, Douglass could apply dendrochronology (tree-ring dating) to ancient sites simply by comparing the ring sequences from their beams with the master sequence.

By the mid-1930s, later Southwestern cultures had an accurate chronology. Basketmaker II dated to before AD 500, Basketmaker III between AD 500 and 700, and the four Pueblo stages from AD 700 to 1600.

Dendrochronology was an important advance, albeit a local one, for the chronology it produced could not be expanded far beyond the Southwest and contiguous arid areas. It is only in recent years that more sophisticated methods have enabled the development of tree-ring chronologies based on oak trees and other temperate species in the Midwest and elsewhere, chronologies that act as a useful check on radiocarbon dates. The new tree-ring dates showed Southwestern scholars that the various periods of the Pecos classification were more stages of cultural development than precise time periods. For the first time, the archaeologist could study not just rigid cultural sequences, but such phenomena as rates of cultural spread and change, also minute changes in rainfall over long periods of time.

**Radiocarbon Dating.** Other than for the Southwest, dating the remote past was more-or-less a matter of intelligent guesswork and careful extrapolation backward from sites of known age. Then, in 1949, University of Chicago chemist Willard Libby published the new and revolutionary radiocarbon dating method (Marlowe, 1999). This operates on the principle that the radioactive carbon in the atmosphere is, and was, absorbed by all living

organisms. This absorption ceases when they die, and a steady, and measurable decay of carbon then begins. Libby tested his new method with objects of known age like ancient Egyptian boats, then extended his tests to charcoal and other organic materials excavated in association with artifacts of unknown age. He found that he could date sites up to 40,000 or more years old. By the mid-1960s, radiocarbon dating was a routine procedure in every corner of the world.

It is no exaggeration to say that radiocarbon dating revolutionized North American archaeology. Within a few years of Libby's announcement, radiocarbon dates had shown that human beings had lived in the Americas for at least 11,000 years. Other samples filled in the chronological vacuum between Paleo-Indian and much later sedentary cultures such as the Mississippian of the Eastern Woodlands. The radiocarbon revolution was far more profound than merely an opportunity to date cultural sequences from all corners of the continent. It enabled the archaeologist to look at the rate of cultural evolution with far greater precision. It was a chance to compare rates of change in different places and in different environments, and an opportunity to compare cultural developments in widely separated areas. For the first time, one could move beyond simple cultural sequences and study the complex processes that triggered cultural change. Libby's discovery laid the foundations for the dramatic theoretical and methodological advances of the 1960s. The radiocarbon revolution took hold at a time when the sciences began to have an increasing impact on North American archaeology. Tree-ring dating was further refined, and is now used as a method of studying very fine-grained climate change in the Southwest. New, but still somewhat experimental, dating methods have been developed, among them paleo-magnetism, obsidian hydration, and thermoluminescence (for details of dating methods, see Fagan and DeCorse, 2005; Renfrew and Bahn, 2004).

## Science and Archaeology 1950 onward

By the 1950s, many North American archaeologists had realized that the sciences had much to offer archaeology. Fossil pollens offered opportunities to study ancient environments, animal bones a chance to examine ancient subsistence activities. Closer collaboration with geologists, biologists, botanists, and other scientists led to numerous interdisciplinary research projects, which studied the evolution of human cultures against a backdrop of major climatic changes over the past 15,000 years (summary: Willey and Sabloff, 1993). This collaborative research yielded detailed results, especially when geomorphologists, pollen experts, paleontologists, and archaeologists cooperated in the field, as was, and still is, the case with the study of the Bering Land Bridge (see Chapter 4).

The development of quantitative approaches to artifact analysis, increasing use of computers, aerial photography, and remote sensing from space – these are but a few of the scientific methods that have had a profound effect on North American archaeology since the 1960s.

## Method and Theory in American Archaeology

These experiments coincided with an explosion of archaeological research after World War II, partly as a result of massive federal flood control projects that had started before the war and continued into the 1950s. These works led to a great deal of salvage archaeological work carried out in advance of dam building, projects such as the Glen Canyon project in Utah (Jennings, 1966). Much more basic culture-historical data flowed from these projects, and also from important, purely academic researches of the 1940s and 1950s.

All these researches led to a proliferation of historical and developmental syntheses of ancient North America, the most famous of which was Gordon Willey and Philip Phillips' *Method and Theory in American Archaeology*, published in 1958. This classic work drew on years of gradually evolving area syntheses from the Southwest, the eastern United States, and on ideas developed in Mesoamerica and Peru. In it, Willey and Phillips referred to five broad developmental, or culture, stages, based not only on technology, but on economic data, settlement patterns, art traditions, and social factors, too. Chronology was less significant. These stages were:

- The Lithic (Paleo-Indian and other early cultural manifestations in the New World),
- Archaic (post-Ice Age hunter-gatherers),
- Formative (village agriculture and/or sedentary life). There were two additional stages that did not exist in North America:
- Classic (urban development),
- Postclassic (imperialistic states such as the Aztec and Inca).

The Willey and Phillips scheme created a ferment of discussion, and was rejected by some archaeologists out of hand, and modified by others (Willey and Sabloff, 1993). Many scholars were unhappy with the strong evolutionary undertones of the work, an approach that had long lain dormant in American archaeology. The book was a sign of the times, for archaeology was on the move. Now the stage was set for new approaches that did not merely describe the past, but attempted to explain why ancient American cultures had changed, and how they had adapted to their very diverse environmental settings.

## A Study of Archaeology

In 1948, W.W. Taylor published *A Study of Archaeology*, a detailed critique of archaeological approaches of earlier years. Taylor singled out Kidder's Southwestern research for attack, describing it trenchantly as a "comparative chronicle." Kidder never reconstructed life in the past, nor did he use his data to discuss functional matters, Taylor alleged. Not that Kidder alone was singled out for criticism. Taylor swept a broad brush across North American archaeology, accusing its practitioners of being more

TABLE 2.1

## Commonly Used General Subdivisions of Ancient North America

North American archaeologists commonly subdivide ancient times into broad cultural stages that are a terminological relic from earlier attempts at culture-historical reconstruction. Like the Three Age System in the Old World, the terms have little more than very general theoretical application in our data-rich scientific environment. Since they are still commonly used, and occur frequently in the pages of this book, we should define them in general terms here.

Two terms used throughout North America:

**Paleo-Indian.** Human cultures ancestral to later, Archaic developments. This very generalized term subsumes the first Americans, the Clovis people, and other pre-Archaic groups. In strictly chronological terms, the boundary between Paleo-Indian and later cultures is usually about 10,000 years ago.

**Archaic.** Archaic cultures evolved from Paleo-Indian ones, to the point that the boundary between the two is often impossible to draw. Archaic peoples hunted smaller, more varied animals, placed greater emphasis on plant foods, and developed a toolkit for processing same. They also created increasingly diverse, and often specialized, adaptations to local environments. Archaic cultures survived in some parts of the western United States until modern times.

Two other terms are commonly used in the Eastern Woodlands culture area:

**Woodland.** Woodland subsumes many local adaptations. Generally, the label Woodland implies hunter-gatherer societies augmented with some cultivation, manufacture of some pottery, also more elaborate tools and art traditions, and cemetery burials, often associated with earthen mounds and more elaborate ritual and trade activities.

The Woodland continued in many areas of the east until European contact, but by AD 800 the Mississippian tradition replaces it in the Midsouth, between the Mississippi River and the Appalachians (see Chapter 20).

concerned with artifact classification and chronology than with culture change or social behavior in the past. He proposed a new, "conjunctive" approach that used all possible lines of research to work on specific archaeological problems, problems with far wider focuses than merely pottery classification and chronological sequences, everything from settlement patterns to food remains.

Predictably, *A Study of Archaeology* raised many academic hackles, for many archaeologists sincerely believed that archaeological data were too limited for anything much more than classification and description. On the other hand, a significant number of scholars chafed under the narrow restrictions of culture history (Ford, J., 1952; Spaulding, 1953). In 1958, Gordon Willey and Philip Phillips wrote that archaeologists had used such explanatory terms as

TABLE 2.2

## Culture-Historical Terminology

Major North American language groups (below right). The early 20th-century photographer Edward Curtis made a priceless record of American Indians (below, Yellow Owl [Mandan]; bottom, Sitting Bear [Arikara]).



There is no agreed-upon terminology for North American culture history. However, the following hierarchy of terms is in wide use, and is employed in this book:

**Component.** A culturally homogeneous stratigraphic unit within a site. A settlement occupied but once will consist of a single component, but one occupied four times will have four. Components occur at one location. To produce a regional chronology, one must synthesize components from different sites, using the next analytical step.

**Phase.** Similar components from more than one site. They are limited to a locality or region and span a relatively limited amount of time. Distinctive culture traits distinguish one phase from another. Phases enable one to establish regional contemporaneity, but, as time goes on and more discoveries are made, may be broken down into more and more precise sub-phases.

**Archaeological Regions.** Normally defined by natural geographic boundaries, archaeological regions usually display some cultural homogeneity. They are often defined by natural geographic features as well – for example, the Santa Barbara Channel region.

**Culture Area.** These define much larger tracts of land, and often coincide with broad ethnographic culture areas identified by early anthropologists. The Southwestern United States is one such area, in turn subdivided into distinctive sub-areas (see Chapter 13).

North American archaeologists also use two units that synthesize archaeological data over wide areas:



Names of major groups and the main culture areas of North America:  
 1a Arctic, 1b Subarctic, 2 Great Plains,  
 3 Eastern Woodlands, 4 Southeast,  
 5 California, 6 Great Basin,  
 7 Southwest, 8 Northwest Coast,  
 9 Plateau. For the purposes of this book, 1a and 1b have been grouped as the Far North, 3 and 4 as the Eastern Woodlands, and 5, 8, and 9 as the Far West.

**Horizon.** Horizons link a number of phases in neighboring areas that contain rather general cultural patterns in common. In some parts of the world, all-embracing religious cults may transcend cultural boundaries and spread over an enormous area. Their distinctive artifacts, like those of the famous Chavin art style of Peru (900–200 BC), can be identified in phases hundreds of miles apart.

**Tradition.** A widespread term in North American archaeology. It is used to describe a lasting artifact type, assemblages of tools, architectural styles, economic practices, or art styles that last much longer than one phase or even the duration of a horizon. Tradition implies a degree of cultural continuity, even if shifts in cultural adaptation have taken place in the meantime. A good example is the so-called Arctic Small Tool tradition of Alaska, dating to as early as 2000 BC (see Chapter 8). The small tools made by these hunters were so effective that they remained in use until relatively recent times.

“acculturation” (the assimilation of one culture by another) and “diffusion” (the spread of culture traits and ideas from one culture to another), but only in very local contexts. Few people had attempted generalizations, indeed “so little work has been done in American archaeology on the explanatory level that it is difficult to find a name for it.” They proposed the term “processual interpretation” for such attempted explanations.

The publication of *Method and Theory in American Archaeology*, and of *A Study of Archaeology* marks an important watershed in North American archaeology, the end of a period of transition from arid culture-historical studies to a new era that focused not only on questions of “how,” but on questions of “why” as well. With their insistence on multi-dimensional, problem-oriented research, more imaginative hypotheses, and their cautious flirtation with the then unrespectable notion of cultural evolution, these landmark essays paved the way for the theoretical debates and scientific approaches that now dominate North American archaeology.

### Further Reading

Fagan, Brian M. 1977. *Elusive Treasure*. Charles Scribners, New York.

*A popular introduction to the history of American archaeology, which focuses on the Moundbuilders and Southwestern archaeology in the context of this book.*

Lyman, R. Lee, and Dunnell, Robert C. 1997. *The Rise and Fall of Culture History*. New York: Plenum.

*A definitive assessment of the role of culture history in American archaeology.*

Lyman, R. Lee, O'Brien, Michael, and Dunnell, Robert C. (eds.). 1997. *Americanist Culture History*. Plenum Press, New York.

*A useful anthology of key writings on culture history. Invaluable for serious students.*

Meltzer, David J. 1983. “The Antiquity of Man and the Development of American Archaeology,” *Advances in Archaeological Method and Theory*, 6:1-51.

*A detailed essay on the controversies surrounding the antiquity of humankind in North America, which contains an invaluable account of the emergence of government archaeology in North America.*

Sabloff, Jeremy A. and Willey, Gordon R. 1993. *A History of American Archaeology*. 3rd ed. W.H. Freeman, New York.

*The best comprehensive source on the early history of North American archaeology. Especially strong on the development of culture history and classification.*

Silverberg, Robert. 1968. *Moundbuilders of Ancient America: The Archaeology of a Myth*. New York Graphic Society, Greenwich, Connecticut.

*A well-researched and vividly written account of the Moundbuilder controversy for the general reader.*

Willey, Gordon R. and Phillips, P. 1958. *Method and Theory in American Archaeology*. University of Chicago Press, Chicago.

*The classic essay on culture history in American archaeology. Essential reading for any serious student of the subject.*