

ARCHAEOLOGY OF NORTH AMERICA

D. R. Snow

Department of Anthropology, The Pennsylvania State University, USA

Keywords: American Indian, Archaeology, Archaic, Canada, Demography, Ecology, Holocene, Maize, Migration, Mesoamerica, Mexico, North America, Paleo-Indian, Pleistocene, United States

Contents

- 1. Introduction
 - 1.1 Pleistocene Ecology
 - 1.2 Initial Peopling
 - 1.2.1 Linguistics and Biological Anthropology
 - 1.3 Paleo-Indians
 - 1.4 Later Migrants
 - 1.5 Holocene Adaptations
 - 1.5.1 Early Holocene
 - 1.5.2 Middle Holocene
 - 1.5.3 Late Holocene
- 2. The Evolution of Cultivation
 - 2.1 Mesoamerica
 - 2.2 Eastern North America
- 3. Regional Adaptations after 0 CE
 - 3.1 Southern Mexico and Central America
 - 3.2 Highland Mexico
 - 3.3 Southeast
 - 3.4 Northeast
 - 3.5 Southwest
 - 3.6 Great Basin
 - 3.7 Plateau
 - 3.8 California
 - 3.9 Northwest Coast
 - 3.10 Subarctic
 - 3.11 Arctic
 - 3.12 Great Plains
- Glossary
- Bibliography
- Biographical Sketch

Summary

North America was first peopled sometime after 15 000 years ago. Human hunters entered the continent by way of northeastern Siberia, over a land bridge opened by lowered sea level. Glacial ice blocked the way across Canada for part of the time and compressed ecozones into the southern half of the continent. Paleo-Indians exploited

large game animals such as mammoths, mastodons, horses, and a large species of bison, all of which became extinct during or shortly after the close of the Pleistocene.

The evolution of climate and environment toward modern conditions entailed a broad human readaptation. Archaic North American Indians settled into regional specializations, exploiting smaller game and plant resources. Attention to plants gradually led to cultivation, and suites of semidomesticates were developed both in highland Mexico and in the Eastern Woodlands. These supported the development of Olmec and other formative cultures in Mexico, and the Adena-Hopewell phenomenon in the Eastern Woodlands. Monumental earthworks were built in both regions.

Mexican teosinte underwent a series of mutations that were beneficial to human cultivators. The resulting varieties of maize eventually spread to the Southwest and to the Eastern Woodlands. Maize in combination with beans, squash, and other cultigens provided the base of staples that were the foundation of North American horticulture. America lacked potential animal domesticates, so animal husbandry was only a very minor part of native agriculture. Nevertheless, the domesticates facilitated the development of farming and settled life in the Southwest, and the rise of monumental Mississippian communities in the Eastern Woodlands.

Cultures in other parts of North America remained based on hunting and gathering, although the richness of the environments of California and the Northwest Coast allowed the emergence of chiefdoms in some parts of those regions. The last wave of migrants out of Asia founded the Aleut and Eskimo cultures of the far north.

1. Introduction

Human beings did not enter the Americas until they were biologically modern and in possession of hunting technology sophisticated enough to allow them to penetrate northern regions, where the land link between Eurasia and North America was located. After their initial peopling, the inhabitants of the Americas remained largely independent from the peoples of the Eastern Hemisphere.

Social and cultural development from simple band societies to states and empires thus evolved separately in the Americas. Comparative study reveals that the parallels were remarkable, suggesting that the forms of complex human societies were inevitable given the nature of modern *Homo sapiens* and global conditions. However, comparison also reveals that the earliest Americans were somewhat more constrained by environmental conditions, and that their evolution was consequently slower and more limited.

North America is the world's third-largest land mass, covering 24 258 000 km². Like South America its longest dimension and major mountain ranges are oriented roughly north to south. Consequently, bands of natural east–west ecozones tend to be both much shorter and broken up when compared to those of the Eurasian land mass. Eurasia is also more than twice as large, and has been inhabited by humans for much longer. All of these factors constrained human cultural evolution in North America, in terms of both its options and its rate of change.

Populations of large herbivores that might have been domesticated for traction in North America were either absent or became extinct before or soon after the arrival of the first humans. This forestalled the eventual development of animal husbandry and forms of horticulture that would have required plow technology and wheeled vehicles. These developments had to wait until their spread to North America from Eurasia and Africa after 1492.

1.1 Pleistocene Ecology

Broad bands of ecologically similar environments have existed only in the north of the continent, and then only since the retreat of Pleistocene glaciers. These covered most of Canada and the northernmost United States around 18 000 years ago. At that time North American ecozones were compressed in the southern half of the continent. Many plant and animal species that had wider distributions in more recent times were confined to relatively small refuge areas.

By 15 000 years ago the rate at which moving glacial ice sheets advanced from thick caps over the Hudson's Bay basin and the Canadian Rockies had fallen behind the rate at which they were melting at their margins. Thus the ice fronts were retreating even as the glaciers were still advancing. This process allowed ecozones to move northward again and for an ice-free corridor to open east of the Canadian Rockies. This might have provided a route for humans and other animals between interior Alaska, which had not been glaciated, and the unglaciated portions of southern North America.

A large amount of the earth's water was locked up in glacial ice during the Pleistocene epoch. Sea levels worldwide were as much as 150m lower than today as a consequence. Coastlines were thus farther out than they are today and broad areas of continental shelf were inhabitable landscapes. The shallow Bering Strait was dry and for many centuries the unglaciated portions of western and central Alaska were actually more a part of Eurasia than of North America.

1.2 Initial Peopling

The first peopling of North America is the focus of current archaeological research. Basic facts remain uncertain and controversial. Humans could have been in what is now central Alaska by 18 000 years ago or even earlier. Eurasian peoples were biologically modern and sophisticated enough technologically to have reached the area by this time. Many archaeological sites have been investigated in an effort to find evidence of the first peopling of North America south of the glaciers. For a variety of very complex reasons, no dating of archaeological evidence to before 15 000 years ago has stood up to close scrutiny. Some sites have been completely discredited while others have been generally accepted as dating to no more than 15 000 years.

Probable routes of entry also remain controversial. It has been argued for several decades that glacial ice would have prevented human migration after about 25 000 years ago and until the opening of an ice-free corridor around 15 000 years ago. Some authorities put the latter date at around 13 000 years ago. Finds once thought to date to before 25 000 years ago have all been discredited. However, the likelihood that any

recently deglaciated ice-free corridor might have lacked both vegetation and game animals and might also have been filled with impassable glacial lakes makes that route problematic

Some researchers have more recently proposed that migrants could have expanded along the exposed western continental shelf, never straying far inland from the marine resources of the Pacific. Much of the shelf would have been open to migrants by at least 13 500 years ago. The problem with this hypothesis is that even today mountain glaciers extend all the way to the sea in southeastern Alaska. The Malaspina Glacier is a formidable barrier and its Ice Age counterparts would have been even more so. Human migrants would have had to navigate around such barriers by boat.

Some archaeologists have even recently revived the hypothesis that the earliest human arrivals to North America could have migrated from Europe. Support for this idea is found in the similarities between Solutrean artifacts from Europe and Clovis artifacts in North America. However, the end of the Solutrean period predates the beginning of Clovis in North America by at least 5000 years, a time gap that cannot be bridged by current evidence.

Both the West Coast hypothesis and the Solutrean hypothesis require that the first migrants to North America traveled at least part of the way by boat. There is no direct evidence for boats at this very early time. However, native Australians reached their continent thousands of years earlier. Moreover, the Solomon Islands, which are out of sight of the nearest land and must also have been reached by boat, have also been inhabited longer than North America. Thus archaeologists are no longer inclined to reject the possibility of migration across moderate stretches of open sea out of hand.

However they got there, it now appears clear that humans were living south of glacial ice in North America no later than 14 000 years ago. The earliest radiocarbon dates from the Meadowcroft Rockshelter fall around that time. Early layers from Fort Rock Cave in Oregon are nearly as old. Cactus Hill in Virginia is similarly old and might hold even older evidence. Several other sites fill in the record for North America.

Curiously, some of the earliest sites known in the hemisphere are in South America. Of these Monte Verde in northern Chile is the best known. Clearly, human occupation of this site goes back at least 12 500 years. Because it is generally assumed that the first South Americans must have arrived by way of North America, Monte Verde provides some additional support for the hypothesis that at least one early wave of migrants expanded rather swiftly down the Pacific coasts of the two continents.

1.2.1 Linguistics and Biological Anthropology

Other disciplines have been contributing to the debate. Historical linguistics has traditionally used vocabulary items to show connections between related modern languages and to reconstruct the extinct protolanguages from which they descended. Unfortunately, that technique does not allow for meaningful reconstructions back beyond a few thousand years. However, recent research on basic grammatical structures has revealed very old linkages between isolated languages scattered along the west

coasts of both North and South America. These could be evidence of a very early migration along the Pacific rim of the Americas.

Biological anthropologists have observed that the earliest skeletal remains from North America do not closely resemble those of later American Indians. The 9000 year-old Kennewick skeleton is typical of the small number of early specimens that more closely resemble those of Asian population isolates like the Ainu of Japan. This suggests that the earliest wave(s) of migrants from Asia to North America emerged from populations there that had not yet been replaced by populations having the Mongoloid features shared by most modern East Asians and American Indians.

Modern genetics researchers are currently using mitochondrial DNA (mtDNA) lineages to explore these same issues. That research has suggested that four unique combinations of mtDNA (haplotypes) found in American Indians might have originated in their population before 18 000 years ago. Whether they could have emerged before that population reached southern North America or they alternatively argue for the presence of people south of glacial ice that long ago remains controversial. Resolution of the problem of American Indian origins will undoubtedly require teamwork among several relevant disciplines, not just archaeology alone.

1.3 Paleo-Indians

The earliest Americans have been referred to as “Paleo-Indians” for many years. The best-known Paleo-Indian culture is Clovis culture, known for the diagnostic Clovis point, a thin lanceolate type with thinning flutes on its base. The point was used to tip small spears hurled by spear throwers. The bow and arrow was not adopted in North America until much later.

Clovis points are very widespread in North America, but they appear to have been made for only a relatively brief period, mostly between 11 200 and 10 900 years ago. For many years cautious archaeologists rejected claims for earlier pre-Clovis sites, and the rapid spread of Clovis points was considered by some researchers to be evidence of a very rapid adaptive radiation of the first migrants to the Americas. This was further thought by some specialists to have coincided with the rapid extinction of Pleistocene game animals such as mammoths, mastodons, horses, and ground sloths.

Clovis and other fluted point types have long been considered diagnostic of all Paleo-Indians. However, this view has to be amended if the pre-Clovis sites that are now generally accepted are also to be classified as Paleo-Indian. Archaeologists are still not sure whether

Clovis represents a wave of migration or a successful new weapon that spread through human populations that were already in place. They are also not sure whether the point was a Eurasian invention that spread to America with people adapted to the exploitation of large Pleistocene herbivores, or an American invention only indirectly derived from Eurasian prototypes. As mentioned above, a few still argue for a more direct transatlantic derivation from the European Solutrean.

1.4 Later Migrants

The number of early waves of migrating human groups before the Clovis phenomenon remains uncertain. However, it is clear that there were two subsequent waves. Both came by way of Beringia, the once-dry land connection between Siberia and Alaska.

Alaska was still attached to Siberia 10 000 years ago. People not related to the Paleo-Indians moved into the region around that time, carrying a sophisticated microblade lithic technology. This is known as the Paleo-Arctic tradition, and speakers of one or more languages belonging to the Na-Dene family probably carried it. Their descendants eventually spread to the Northwest Coast and across most of the western Canadian Subarctic.

Around the same time or slightly later people ancestral to the Eskimos and their relatives the Aleuts also arrived in Beringia. These people adapted to the coastal environments of Alaska, dispersing and diversifying to match their technological skills to the demands of local environments. The people of the Aleutian chain had their own distinct tradition by 4500 years ago.

1.5 Holocene Adaptations

The Holocene epoch began with the end of the Pleistocene, about 12 500 years ago. Glacial ice fronts stood near the modern boundary between the United States and Canada. South of the front was a zone of tundra and still farther south a zone of boreal forest. Areas of the continent that are now hot and dry were cool and wet at the time. Large lakes and grasslands covered areas that now have near desert conditions.

People carrying Clovis points penetrated virtually every corner of the continent in their brief career. They appear to have been adapted to the hunting of large game, and their remarkable expansion coincided with the extinction of many species both large and small. The advent of the Holocene entailed widespread climatic and environmental change. Ecological conditions everywhere began to move toward modern ones and many species were subjected to adaptive stress. The presence of technologically sophisticated human hunters was a component of the new ecological regime. Unlike the animal species of Africa and Eurasia, those of the Americas did not have the luxury of slow adaptive biological evolution in the presence of human predators that were themselves evolving physically and culturally at a slow pace. American game species had an impossibly short time to adapt biologically to predation at the hands of skilled human immigrants. While not the only factor involved in their demise, the extinctions of the early Holocene must be attributable in part to human predation. Like all ecological problems, this one is undoubtedly a complex one that will not yield to simple causal explanation.

With the extinction of the biggest game animals, Paleo-Indians began to settle into specialized adaptations to local conditions around the continent. Environments everywhere were still unstable and changing, but people probably began to develop strategies of seasonal movement and specialized exploitation that maximized their return from plant and animal resources.

Although larger species of bison became extinct, the smaller species that still survives flourished on the Great Plains throughout this period. Lacking domesticated horses, the Indians of the region had to use other techniques. Herds of bison were occasionally stampeded into steep-walled arroyos, where they could be safely killed from above. Herds were also stampeded over cliffs. Many such “Buffalo jumps” are found in the High Plains east of the Rocky Mountain front, from Alberta to Colorado. The Alberta site of Head-Smashed-In (WHS) is an excellent example.

Anthropologists distinguish between “foraging” and “collecting” behaviors. Foragers map themselves on to local resources, changing their camp locations when resources within easy walking distance are exhausted, and depend upon sharing with neighboring groups to buffer shortages. By definition collectors practice food preservation and storage to buffer shortfalls and bridge lean months. The latter solution requires social compromises, because large-scale storage anchors communities to specific locations and encourages the development of social boundaries to protect precious stored resources from hungry neighbors. Generally speaking, people everywhere broadened their resource bases, and developed new technologies to exploit new food resources. For example, acorns are not edible by humans unless they are properly processed. Tools had to be developed to remove the hard outer shells and pulverize the inner meat. Toxins then had to be leached from the pulverized acorns to make them edible. Once the process was discovered, populations having access to oak groves had access to an important new collecting strategy. Local populations expanded their resources bases everywhere across the continent with innovations of this kind.

1.5.1 Early Holocene

The early Holocene (12 500 to 8500 years ago) was a period during which lakes shrank, big game disappeared, glacial ice receded, and sea levels rose. Trees adapted to cool temperatures expanded northward across recently deglaciated terrain. Major rivers carried huge amounts of glacial meltwater to the rising seas. Temperate forests expanded from refuge areas in the East while deserts expanded in the West. Paleo-Indian adaptations to big game hunting gave way to adaptations that archaeologists commonly refer to as “Archaic.”

1.5.2 Middle Holocene

The middle Holocene (8500 to 4000 years ago) witnessed a rise in average temperatures, in some regions to higher levels than today. This episode is referred to as the “Altithermal” in western North America. Some areas in the West became so dry that they had to be largely abandoned by their human populations. In the East prairie grasslands expanded at the expense of mixed hardwood forests as a result of the higher incidence of summer droughts. This process was probably accelerated by the human practice of burning forests to encourage populations of deer and other herbivores.

Environmental changes through the early and middle Holocene periods intensified other trends in human cultural evolution during the Archaic periods as well. Highly mobile band communities living in temporary shelters settled into scheduled seasonal rounds within traditional territories. Greater sedentism at regularly visited resource-rich

locations created archaeological sites with deep midden deposits. Technology became more complex and less portable. Large game was increasingly replaced by smaller game, and people found new ways to exploit and store the seeds, greens, and tubers of plants in their environments. As population grew band ranges shrank. Social and linguistic boundaries appeared between regional societies.

1.5.3 Late Holocene

The late Holocene, the last 4000 years, has been characterized by modern climatic conditions. Continuing human exploitation of the landscape, particularly the practice of burning, has caused the evolving local environments of North America to be partially anthropogenic. Some modern national parks have created wilderness zones that are close to what they might be had humans never come to North America. However, such environments were probably rare or nonexistent during the millennia that American Indians dominated the American landscape.

In the Arctic, by 4000 years ago the ancestral Eskimos living in southwestern Alaska developed a new technology referred to as the Arctic Small Tool tradition. Tiny microblades were diagnostic of this industry. So too was the bow and arrow, which was probably introduced from Asia. The weapon later spread to other parts of North America.

The carriers of the Arctic Small Tool tradition harvested runs of salmon and hunted seals along the coast. They often lived in snug semi-subterranean houses with sod roofs, at least in the wintertime. They were initially dependent upon wood for both fuel and roof beams, and this bound them to forested areas. However, they soon began to use stone lamps that burned oil from seals and other sea mammals. This released the grip of the forests on the early Eskimos, and freed them to live on the treeless tundra of the Arctic Ocean coast, the first humans to do so. They spread quickly across northernmost Canada to the coastal portions of Greenland.

It was a marginal existence. Small climatic variations have amplified effects in such an environment. Bands of Eskimo hunters might thrive in an area for a few years then have it turn completely uninhabitable. Climatic cycles thus periodically caused migratory events, rapid readaptations, and local extinctions across the northern margin of the continent. Archaeologists have detected and named a whole series of later local and regional Eskimo traditions, each differing from the others in subtle ways. Some later traditions even added crude pottery to household inventories.

-
-
-

TO ACCESS ALL THE 25 PAGES OF THIS CHAPTER,
Visit: <http://www.eolss.net/Eolss-sampleAllChapter.aspx>

Bibliography

Fagan B. M. (1995). *Ancient North America*, 528 pp. London: Thames and Hudson. [Probably the best comprehensive survey of North American archaeology. Use its bibliography to locate more specialized regional treatments.]

Fiedel S. J. (1992). *Prehistory of the Americas*, 400 pp. Cambridge, UK: Cambridge University Press. [A general survey that integrates historical linguistics and other nonarchaeological lines of evidence.]

Nichols J. (1994). The spread of language around the Pacific rim. *Evolutionary Anthropology* **1**, 206–215.

Schurr T. G. (2000). Mitochondrial DNA and the peopling of the New World. *American Scientist* **88**, 246–253.

Shelford V. E. (1963). *The Ecology of North America*, 610 pp. Urbana: University of Illinois Press. [A classic that is still a reliable source on the rich diversity of North American environments.]

Weaver M. P. (1997). *The Aztecs, Maya, and Their Predecessors: Archaeology of Mesoamerica*, 567 pp. New York: Academic Press. [This is the third edition of a reliable and readable survey of the archaeology of Mesoamerica.]

Biographical Sketch

Dean Snow grew up in Sleepy Eye, Minnesota. After receiving a BA in Anthropology at the University of Minnesota in 1962 he went on to doctoral study at the University of Oregon. While there he was supported by a National Defense Education Act Fellowship, a program designed to improve graduate training in the sciences. He started his professional career at the University of Maine, moving to the University at Albany in the SUNY system in 1969. He moved to Penn State to head the Department of Anthropology in 1995. Dr Snow is a specialist in archaeology. He carried out his dissertation research in Mexico and has had archaeological field experience in Alaska, the Midwest, New England, New York, and the British Isles. His fifteen-year-long project in the Mohawk Valley led to several new discoveries in Iroquois archaeology. The project also led to the development of new techniques to measure prehistoric population sizes and changes in them over time. This in turn has turned his research toward demographic objectives that have traditionally been regarded as beyond the reach of archaeological researchers. These include the study of a variety of demographic processes that are usually subsumed under the general term “migration.” His recent work has been directed at the improvement of techniques for the detection of the archaeological signatures of migratory processes.