

Clovis and Folsom: Cimarron's First Tourists

Exactly eighty years ago, and a mere fifty miles northeast of Cimarron, American Archaeology was born. Prior to 1927, the arrival of inhabitants to the Western Hemisphere was thought to occur during historical times, possibly as recent as 3,000 years ago. What the thinking was before this seminal event and what has been learned since is the subject of this talk.

The Question of American Antiquity

From 1492, when Europeans are first believed to have encountered Native Americans, until the Revolutionary War, the natural history of the indigenous American population was not a topic seriously considered. Some "historians" variously described the aboriginals as descendants of wandering Romans, colonists from Egypt or survivors from the Lost Continent of Atlantis. However it was only after the Governor of Virginia responded to an official letter from a French delegation that, at least for the moment, the true nature of the American Indian was earnestly discussed. Thomas Jefferson, being the Governor in question, replied that on the basis of appearance alone one must assign the American Indian a common ancestry, most probably in Eastern Asia. Furthermore, Jefferson surmised, since they would have arrived speaking a single language and that it had by now multiplied many fold, their arrival must have occurred a long time ago, "perhaps not less than many people give to the age of the earth." When these views, based on excavations near his Monticello home, were made public in 1787 they were considered blasphemous and although the earth might well be quite old, as scientists were then beginning to insist, the Bible assigned an age to mankind of no more than 6,000 years. Meanwhile European exploration, driven by the Industrial Revolution, had begun turning up fossils of extinct plant and animal life from pre-human, or Pleistocene, times (earlier than about 10,000 years ago). However any associated human remains were deemed accidental intrusions. So that was that, at least for the next seventy years.

In 1859 two significant events occurred which, although not necessarily desired, could not be ignored. The previous summer a team of leading British geologists had uncovered stone tools in undeniable contact with Pleistocene fossils and the authenticity of the find had now been verified. More importantly, Darwin published the *Origin of Species*. Acceptance of Darwin's views demanded a belief in the antiquity of man. With the identification of Neanderthal fossils in 1857 in Germany and Cro-Magnon man in 1868 in France, along with their stone tools, the existence of Paleolithic, or Old Stone Age, Europe was firmly established.

But was there a Stone Age America? Not wanting to be left out of the advancement of science, amateur American archaeologists such as New Jersey physician Charles Abbott, aided by his friend and Harvard professor Frederic Putnam, began assembling collections of crude stone artifacts that resembled primitive European tools. Seeing was believing and by the end of the 1880s a torrent of articles and books had pronounced the discovery of Pleistocene man in America. Meanwhile, archaeologist William Holmes, who doubted the claims of Abbott, had also been collecting artifacts. In 1890 he delivered a scathing assessment of Abbott's work declaring that form had no

significance at all when it came to dating stone artifacts. Looking old was not the same as being old. Today we know that the finest stone tool craftsmanship was practiced by some of America's earliest inhabitants. What was important was the geological strata of the find, that is, how old the environment was in which the artifacts lay. For the next thirty years proponents on both sides of the issue waged a vitriolic war of words with Czech-born anthropologist Aleš Hrdlička, curator at the Smithsonian Institution, emerging as the de facto referee. While any declaration of an authentic Paleolithic site required Hrdlička's approval, time after time, from Kansas to Florida, either the geology was not Pleistocene, the bones were modern, the fieldwork was incompetent, or it was a simple case of fraud. Although frustrating to many, and probably postponing the recognition of early Stone Age Americans by several decades, Hrdlička's approach did force a much-needed professionalism onto the field of New World archaeology.

An Educated Cowboy

As a youth George McJunkin had been a slave before the Civil War. His father had worked at a ranch in Midway, Texas in order to buy his son's freedom but when Union soldiers arrived at the ranch, all slaves including George were freed. At the age of seventeen George left the ranch to join a cattle drive to Dodge City, adopting the surname of his former owner, John McJunkin. After several years running cattle in the Great Plains, the young man found himself working on the Crowfoot Ranch in northeastern New Mexico, along the Dry Cimarron River. Among a mix of Anglos, Hispanics and Indians, and in a state that had sided with the Union, George felt himself at home. From his love of reading, particularly scientific books and encyclopedias, to his mastery of Spanish, his skill with compass and transit, and even his adept handling of horses and cattle, George's intelligence quickly became apparent to all and he was soon chosen as ranch foreman.

One August day during the summer of 1908, a terrific storm pounded Johnson Mesa. The resulting flashflood wiped out the nearby town of Folsom, killing seventeen people. The following month, while checking for fence line damage up on the mesa, McJunkin noticed that a new, ten-foot deep arroyo had appeared scouring a gap beneath a fence. As he surveyed the site he also noticed some rather large bones protruding out from the arroyo wall. While they appeared to be bison bones, they were much too large to be those of modern bison and he thought they might have some scientific significance. As is often said, "Chance favors the prepared mind." It was during this time that museums across the country were actively involved in adding to their meager collections of prehistoric animal bones for public display. George wrote to and spoke with several prominent collectors describing his find but could not convince anyone to look at the bones or visit his "bone pit" in Wild Horse Arroyo. Some years later, when George had become too old to work and Crowfoot Ranch has been sold, he moved into an isolated line cabin. When the cabin was struck by lightning and all his relics burned, George moved into a room in the Folsom Hotel, where, on January 21, 1922, he died.

The Bone Pit Rediscovered

A few months after McJunkin's death, Carl Schwachheim and Fred Howarth, two Raton businessmen whom the cowboy had earlier contacted, decided to visit the bone pit.

What would previously have been a two-day trip by horseback was now but an afternoon drive in Howarth's new automobile. Finding the pit exactly where McJunkin had described, the two men loaded a sack full of bones and returned to Raton. A look through what books were available to them suggested that they might be dealing with the remains of some large extinct animal such as elk or bison. As there was no museum nearby, they left it at that.

Four years later, in January 1926, the two men were delivering cattle to a Denver stockyard and took along some of the bones they had dug up at McJunkin's bone pit. At the Colorado Museum of Natural History they were sent to the office of the museum's director, Jesse Figgins, who was also one of the men whom Hrdlička had publicly attacked. When Figgins saw the bones he recognized them as belonging to an extinct species of bison, now called *Bison antiquus figginsi*. If they had come from a kill site and if more bones could be found in conjunction with human artifacts, then at last he could give Hrdlička his comeuppance. As Figgins later wrote: that summer an expedition was organized in "a deliberate attempt to arouse Dr. H. and stir up all the venom that there is in him." On July 10, one of the Figgins' diggers picked up a beautiful spear point that had a peculiar flake or flute struck from the side. Unfortunately the point had been removed from its setting before it could be properly catalogued and no additional points were uncovered that summer. Despite a courteous meeting between Figgins and Hrdlička that fall, the latter was unpersuaded by the evidence but did stress that should any more points be found that it was imperative for them to remain undisturbed until independently verified.

The following summer, on August 29, 1927, during resumption of the excavation of McJunkin's bone pit, another point was discovered. This time the point was clearly embedded in rock and was straddled by the ribs of an ancient bison skeleton. As luck would have it, precisely at that time there was an important archaeological conference being held only two hundred miles south at Pecos, New Mexico. Attending the conference were Frank Roberts of the Smithsonian and Alfred Kidder, the leading archaeologist who had defined the cultural sequence for the Anasazi Indians. Figgins sent them a telegram that read: *ANOTHER ARROWHEAD FOUND WITH BISON REMAINS AT FOLSOM NEW MEXICO HAVE INVITED HRDLICKA TO MAKE INVESTIGATION J.D. HIGGINS*. Roberts, Kidder and Barnum Brown of the American Museum of Natural History made the trip to Folsom and verified Figgins' claim that the spear point and bison bones were of the same age. The Pleistocene barrier for early Americans had at last been breached.

A Second Big Find

During the succeeding years numerous sites containing artifacts of "Folsom Man" have been identified throughout central North America but the Folsom site was first because it differed from those that had come before. Archaeologists now searched along stream banks, washed-out gullies and ancient lakebeds, near watering places where extinct mammals could be trapped and killed by spear-wielding hunters.

In 1929 a nineteen-year old boy, James Whiteman, was looking for arrowheads along Blackwater Draw, near Clovis, New Mexico, about 180 miles southeast of Cimarron. What the lad picked up was a rather large and heavy spear point next to some mammoth teeth. Like those points found at Folsom, this one also had a flute removed along its length. Young James realized that the find might be of some importance and sent it along with a letter describing the discovery to the Smithsonian. When the archaeologist sent back to investigate looked over the site, he “decided it was *too unimportant* to work on.” What James Whiteman had found and the archaeologist ignored was the first evidence of North American mammoth hunters we refer to today as Clovis Man. After work in a nearby gravel pit unearthed many more bones and projectile flakes, a serious excavation of the area was undertaken. In addition to more points, a hearth with partially burned mammoth remains was discovered, along with bones of a dire wolf, sabertooth tiger, and giant sloth, all long since extinct. Later work at Blackwater Draw revealed that a sequence of cultures could be identified, beginning with Clovis and moving through Folsom and Archaic Indian to Anasazi. Thus the Clovis culture was older than that of Folsom. Numerous other Clovis sites have since been discovered throughout North America.

The First American Invention

The feature of Clovis and Folsom projectile points that distinguishes them from European points is the length-wise flute removed from the base. In Clovis points, the flute extends about one-third up the length of the artifact, while in later Folsom points, the flute is about twice as long. Analysis has clearly shown that fluting was the last operation applied during the manufacture of a point and often resulted in the piece breaking, rendering it useless. Large finds of broken partially fluted points attest to the relatively high failure rate that occurred during the fluting process. Since an early American’s ability to kill game relied on having a functional spearhead, the practice of fluting must have served some important purpose. Also, fluting techniques improved as the practice was passed down from Clovis to Folsom times, as evidenced by the larger flute of Folsom points. It has been suggested that fluting increased the loss of blood from speared mammoth and bison victims. Some have also surmised that fluting allowed the point to be more loosely attached to the spear shaft, with the point remaining inside a speared beast, improving the chances of a kill. Still others have considered it a Paleolithic art form, perhaps rooted in some religious ritual. As of yet, no fluting of European spearheads exactly like those found in North America has been discovered. Whatever its purpose, the technique of fluting has been called the first American invention.

How Old Are These Cultures?

Knowing that Folsom man hunted ancient bison and that earlier Clovis man killed and ate mammoth was useful but what was lacking was a definitive date for these cultures. All that could be identified at the time was their relative dates based on the geological context of the finds. The discovery of radioactivity by Henri Becquerel in 1896 and its explanation by Marie Curie shortly thereafter would prove to be key to assigning firm dates to archaeological finds.

Radioactivity is the spontaneous change of an atom, the smallest object with chemical properties, into a lighter and/or different atom. Many but not all atoms undergo such decay but of particular relevance to archaeology is the decay of a carbon atom into nitrogen. Carbon and nitrogen atoms are necessary components of all life and exist in several forms, called isotopes, which differ by their weight. For example, two forms of carbon are designated C-14 and C-12. The lighter form, C-12, is by far the more numerous and is stable, that is, it doesn't undergo radioactive decay. On the other hand, the heavier form, C-14, decays into an atom of nitrogen, N-14. Although it is not possible to predict exactly when any specific atom of C-14 will decay into N-14, scientists do know that on average, half of any sample of C-14 will decay into N-14 every 5700 years. Since living plants and animals exchange carbon atoms, including C-14, with the atmosphere, by measuring the relative amounts of C-14 and N-14 in an artifact of wood, bone or ivory, the age of a sample can be determined. During the 1950s, Willard Libby of the University of Chicago pioneered the technique of radiocarbon dating as applied to archaeological artifacts and was awarded the Nobel Prize in Chemistry in 1960 for his work.

Much work has gone into determining the age of Folsom and Clovis points, usually by radiocarbon dating associated wood or bone artifacts. The primary difficulty lies in accurately calibrating radiocarbon dates to calendar dates. By the mid 1960s, enough Paleolithic samples had been tested to provide a reasonably reliable assignment of dates. Until recently, the Clovis culture was believed to have thrived between 13,600 – 12,900 years ago; the Folsom tradition that followed peaked between 11,000 – 10,000 years ago. For seventy-five years, the stone tools left behind by Clovis man have placed that culture as America's earliest. In a scenario eerily reminiscent of what was happening in the scientific community before the presence of Folsom man was confirmed, the proponents of the "Clovis first" theory have steadfastly denied the existence of any earlier culture in America, despite increasing evidence to the contrary. In the 23 February 2007 issue of *Science*, the premier American scientific journal, two researchers report a revision of the Clovis timeline based on more accurate dating of selected artifacts. Their conclusion is a substantial shrinking of the Clovis time range to only 13,100 – 12,900 years ago. Why this change in the time span of the Clovis culture is considered so important and evoking so much controversy requires us first to address where Clovis man came from.

Out of Africa

Since the discovery of humanoid fossils in South Africa in the 1920s, it has been believed that man originated somewhere on the African continent. According to Darwin's theory of evolution, man has continuously evolved from more primitive human-like ancestors who themselves evolved from ape-like beings. This is believed to have occurred in Africa since the earliest human-like fossils and tools are found there. As the population in one area increased to where resources became scarce, there was pressure for part of the tribe or band to expand beyond its initial habitat. Eventually these early humans migrated off the Africa continent and spread across Asia and Europe. This "Out of Africa" model presently agrees with most available evidence and is strongly supported by recent genetic data on the movement of ancient peoples. Whether our species *homo*

sapiens is the result of one migration or several is still under debate but it is generally believed that about 100,000 years ago, humans with all the traits of modern man left Africa to settle first in the Middle East, arriving in east Asia roughly 50,000 years later and in Europe about 20,000 years after that. To discuss how humans made their way to the Americas requires a short discussion of the Earth's climate over the past 25,000 years.

Glacier Theory

During the Eighteenth and early part of the Nineteenth Centuries, the foundations of modern geology were laid. Rock strata with embedded fossils were mapped providing the basis for a geological time scale of the earth. Volcanoes were investigated as a means to understanding the inner workings of our planet. But one thing that was not seriously studied was climate. It was believed that life is as it always was. There were some however who wondered how large granite boulders were found hundreds of miles from any granite deposit or who pondered the significance of deep gouges carved across the face of immense rock slabs. These curiosities were brushed aside or attributed to the force of water during the Biblical Great Flood. Of course local woodcutters and farmers in the Swiss Alps knew better. In the 1830s, the director of a salt mine in Switzerland, Jean de Charpentier, began to suggest that at some time in the past, Alpine glaciers were much larger. Despite a series of talks to noted scientists on the subject, de Charpentier's views were uniformly met with disapproval. That is, until his friend and well-known naturalist Louis Agassiz accompanied him on a brief journey. At first skeptical, Agassiz quickly understood the import of glacial theory and soon became its biggest advocate. Agassiz traveled throughout Europe, presenting lectures to influential scientists and guiding tours in the countryside, pointing out signs of past glacial activity. In 1840, he published his ideas in a work titled *Studies on Glaciers* in which he wrote this description of earth during an age of ice:

The surface of Europe, adorned before by a tropical vegetation and inhabited by troops of large elephants, enormous hippopotami, and gigantic carnivore, was suddenly buried under a vast mantle of ice, covering alike plains, lakes, seas and plateaus. Upon the life and movement of a powerful creation fell the silence of death. Springs paused, rivers ceased to flow, the rays of the sun, rising upon this frozen shore (if, indeed, it was reached by them), were met only by the breath of the winter from the north and the thunders of the crevasses as they opened across the surface of this icy sea.

In 1846, Agassiz was invited to lecture at the Lowell Institute in Boston and travel throughout the United States. In the spring of 1848, uprisings in France had plunged Europe into turmoil so Agassiz decided to settle in the U. S., obtaining a teaching position at Harvard University. Through his lecturing and travels, his views on glaciers quickly gained ascendancy on this side of the Atlantic as well. Agassiz died in Boston in 1873 and today is recognized as the father of the ice ages.

The Ice Ages

Once geologists learned to recognize glacial features and assign them to a past ice age, two important questions arose: How many ice ages were there and what caused

them? During the century following Agassiz' work, a consensus appeared, based on detailed government-sponsored surveys throughout Europe and the United States, that there were four distinct episodes. In the U. S., names were given to these stages based on where glacial deposits were especially noticeable: the Nebraskan (oldest), Kansan, Illinoian, and Wisconsin (youngest). In Europe, names were similarly assigned after local regions: Günz, Mindel, Riss, and Würm. Each of these ice ages was followed by a period of warmer temperatures; we are presently in the Holocene interglacial epoch. While it would turn out that there were many more ice ages than just these four, as one long stage often wipes out evidence from several previous smaller ones, the more recent Illinoian and Wisconsin stages still retain some validity. The latter is often broken up into three smaller stages; that which concerns us is the Late Wisconsin ice age, which reached a maximum between 20,000 and 18,000 years ago.

In 1911 a Serbian mathematician named Milutin Milankovitch began thinking about what might have caused the ice ages. He felt that their cause had to be due to a decrease in the amount of solar radiation the earth receives. It was known that the earth wobbles in its orbit about the sun and that there are three distinct time periods over which the radiation the earth receives fluctuates. The eccentricity of the earth's orbit varies over a 100,000-year period, the earth's tilt cycles every 41,000 years, and the closest approach to the sun repeats every 22,000 years. It took Milankovitch decades to work out the mathematical details but his predictions, which were verified by computer only recently, agree very well with geological data. During the last ice age, about 20,000 years ago, it is estimated that average temperatures were about 10 degrees Fahrenheit below those of today, while closer to the ice sheets, temperatures may have been up to 20 degrees colder.

Beringia and a New Home

During the last ice age, the North American continent was host to two large glacial masses, one immense ice sheet that formed from three smaller ones was centered over northeastern Canada, called the Laurentide ice sheet, and a second situated along the western North American mountain ranges, called the Cordilleran ice sheet. These along with European, Asian and South American glaciers removed over 5% of the world's water, lowering sea levels at least 400 feet from what they are today. For example, the Pacific and Atlantic shorelines were 30 and 100 miles farther out, respectively. While these huge ice sheets might have once been joined, it is believed that if they did so it was only briefly and during the coldest period.

Of particular importance was the situation in the North Pacific. Today Alaska is separated from Siberia by the Bering Strait, a stretch of water 50 miles wide at its narrowest and only 150 feet deep. As soon as sea levels dropped by at least this much, the shallow continental shelf beneath the strait would have been exposed. From 25,000 to about 14,400 years ago this land was above water and is called Beringia. Even until about 10,000 years ago, the Bering Strait would have frozen over during winter, allowing travel between the Asian and North American continents.

Once the Clovis culture was clearly dated to about 13,000 years ago, it was immediately concluded that tribes from Siberia must have crossed over to North America

through Beringia during the last ice age. Tribes would have tracked mastodon and mammoth as they in turn followed new spring and summer vegetation. Once across Beringia, these pre-Clovis peoples would have migrated further south each winter along the front range of the Rockies. Eventually reaching the lush grasses of the Great Plains, many people and animals would have stayed, moving between the Plains in the summer to the edge of the mountains in the winter. As the population of both increased, there would have been pressure to migrate away, some to the south, others to the east. By this time the Clovis culture, with its distinctive partially fluted points, would have been fully developed and its customs instilled for generations to come. Eventually, over the course of two millennia, the traditions of Clovis Man would evolve, his points become fully fluted and we would come to recognize a new people: Folsom Man.

Clovis First?

Recently, however, this view known as “Clovis First” has been questioned. How likely is it that Stone Age Siberians would have dared to travel past the vast ice sheets that blanketed the North American continent, and could they if they had tried? Would sufficient vegetation have been available in lieu of a scarcity of meat? While there is not yet enough data to adequately address these questions, other concerns have arisen. At first archaeological digs in California and Canada looked to be much older than the 13,000 year-old arrival date of Clovis Man, but further work has corrected this. Then came more recent finds in Pennsylvania and Brazil that have been more difficult to dispute, but dispute them some did. The contentious atmosphere that surrounded the pre-Folsom finds has resurfaced regarding the Clovis First view. Some archaeologists firmly believe that no American culture existed before Clovis, while others insist that there must have been, we just haven’t found evidence of it yet.

Of considerable concern are excavations begun in 1976 at a site known as Monte Verde in Chile, close to the Pacific Ocean, that have turned up more than just stone tools. Buried in a bog, which has provided a low oxygen environment allowing more than the usual artifacts to survive, were found fruits, seeds, leaves and bits of animal hide, even footprints. Radiocarbon analysis at the primary site has provided dates from 11,800 to 13,600 years ago. Could Clovis Man have migrated the entire length of the Western Hemisphere in as little as 1000 years? Further complicating the issue is that carbon material at a secondary Monte Verde site suggests an age of over 33,000 years. Finally, the recent publication in Science magazine reassigns a time span to the Clovis culture of only 200 years, implying that Clovis Man must have arisen out of a preceding culture, one that has yet to be identified.

All these developments have led to a number of alternative theories to the Clovis First model. Perhaps the simplest is that Stone Age peoples left Asia in boats, traveling eastward along the Pacific rim. Migration by water would have been much easier and faster, and avoided the ice sheets (though not icebergs), than that postulated in the Clovis First model. Monte Verde could easily have been reached even as early as 33,000 years ago. Unfortunately, all sites bearing evidence of this migration would now be submerged beneath one hundred feet of water. Another suggestion, based on similarities between Clovis and European stone tools, is that early Europeans island-hopped across the

Atlantic, first to England, then Ireland, Iceland, Greenland and on to North America. This would explain the preponderance of Clovis tools found in the eastern half of the United States. Of course it has also been pointed out that as the east is much more densely populated, the chance of finding artifacts is that much the greater. How many hundreds of pre-Clovis sites conceal their treasures beneath the windy plains of the West?

Whoever did enter the North American continent first, we do know that Clovis and Folsom Man were among Cimarron's first tourists.

Gene Lamm
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