MAMMOTH TRUMPET

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Center for the Study of the First Americans
Department of Anthropology, Texas A&M University
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Clovis in the Classroom

STANLEY KATZMAN, UNIVERSITY OF PITTSBURGH AT GREENSBURG

1 Koleen Grimm
2 Professor Boldurian
3 Amanda Messmer
4 Jennifer Long
5 Dean Nones
6 Rebecca Flotta
7 Dana Huether

How do you excite college undergrads about a hunter-gatherer culture that flourished in Ice Age America, whose only resources were stone for making tools and weapons and their awesome craftsmanship? Professor Tony Boldurian of the University of Pittsburgh at Greensburg has hit upon a learning tool for students in his Survey of World Prehistory class that he calls the Clovis Artifact Activity Kit. Packaged in a plastic case (center foreground, photo) are precise replicas of a blade core and the blades detached from it that Clovis people used for every task. The Kit also includes casts of two magnificent fluted points—and a notched foreshaft and artificial sinew so that students can make for themselves the same kind of weapon Clovis hunters used. Accompanying handbooks written by Dr. Boldurian describe the Clovis-age environment and give students an impressive grounding in lithic technology. Our story about this energetic teacher and his imaginative creation that immerses students in the Clovis culture begins on page 14.

The Center for the Study of the First Americans fosters research and public interest in the Peopling of the Americas. The **Center,** an integral part of the Department of Anthropology at **Texas A&M University,** promotes interdisciplinary scholarly dialogue among physical, geological, biological and social scientists. The **Mammoth Trumpet,** news magazine of the **Center,** seeks to involve you in the peopling of the Americas by reporting on developments in all pertinent areas of knowledge.

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PETITION TO REHEAR DECISION ON KENNEWICK MAN IS DENIED

On March 17 the Native American tribes who have sought to have the remains of Kennewick Man given to them for reburial submitted a petition for a rehearing before the U.S. Court of Appeals for the 9th Circuit. Their goal was to reverse the decision made in February, when a panel of judges from the 9th Circuit ruled against the tribes and the government, saying scientists had the right to study the remains of this ancient skeleton (**MT 19-2,** "Kennewick Man Decision Upheld by Court of Appeals"). On April 20 the 9th Circuit Court of Appeals unanimously denied the tribal petition.

The claimant tribes do not concede that the Native American Graves Protection and Repatriation Act (NAGPRA) was ever intended to strike a balance between the primarily religious concerns of Native Americans and the equally legitimate interests of scientists and museums. Instead, they argue that NAGPRA was intended to champion "the spiritual beliefs of Indian tribes" over the "academic exploitation of the dead." Such a dichotomy suggests the interests of scientists are not just secondary or irrelevant, they are morally reprehensible. This passionate and polarizing rhetoric emphasizes their feeling that they are engaged in a "struggle over our past" and that scientists are the enemy.

The tribes accuse the panel of judges of having "emasculated NAGPRA." They fear this ruling will dramatically narrow the applicability of NAGPRA and set the 9th Circuit "adrift into the waters of confusion." They therefore petitioned the Court to grant a hearing before a larger panel of the U.S. Circuit Court of Appeals for the 9th Circuit. They asked the Court to "vacate the panel's decision, and reinstate DOI's [Department of the Interior's] decision, or at minimum, remand the matter to the agency."

The tribes believe the panel of judges who ruled against them committed "serious and egregious legal and factual errors" that have done a "great injustice . . . to Indian people." First, they allege the judges "radically narrowed NAGPRA's two-step process for determining whether remains

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The Other Front of the War

Legislative Attempts to Alter NAGPRA

by Ryan M. Seidemann

Over the past eight years we have all followed the developments in the Kennewick Man court battle with intense interest. Admittedly, the story of scientists and indigenous groups vying for the right to study or repatriate, respectively,

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Yana River, Siberia

Implications for the Peopling of the Americas

Part I
The Siberian Connection

THE UPPER VALLEY of Siberia's Yana River is one of the coldest places on Earth. Located more than 500 km north of the Arctic Circle, 2,000 km west of the Bering Strait, this environment is so forbidding that humans can barely function there today, even with the help of modern technology. Yet Russian archaeologists have unearthed convincing evidence that humans populated the upper Yana River valley as early as 30,000 years ago—a good 15,000 years earlier than previously thought.

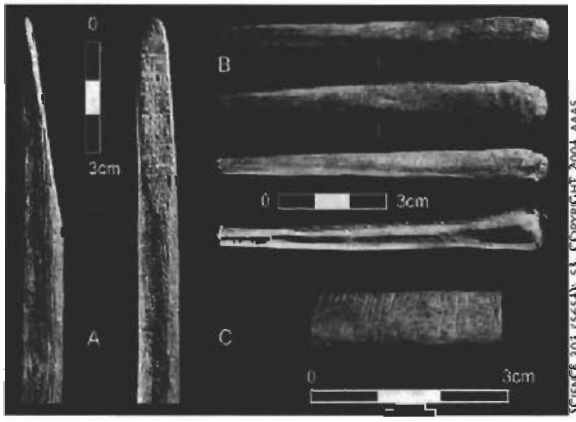
The discovery has far-reaching implications for our understanding of human adaptability and survival during the last Ice Age, and opens a Pandora's box of new research questions and avenues of scientific inquiry. The fact that early humans, possessing a limited Paleolithic technology, were ingenious and determined enough to have ventured into such an inhospitable environment is amazing enough. But for those of us interested in the peopling of the Americas, the most intriguing implications concern what Yana River suggests about the time scale of the initial New World colonization. Although our picture of the First Americans is still viewed through a glass darkly, we now have proof that humans were in arctic Siberia *before* the Last Glacial Maximum (LGM). And if they were there, nothing could have stopped them from entering North America much earlier than previously thought.

The Great Debate

It's one of the great archaeological mysteries of modern times: when and how did humans first colonize the New World, and who were they exactly? Although the origin of the First Americans has been a hotly debated topic for centuries, bolstered by mountains of wide-ranging and often conflicting evidence, the answer can be summarized in four words: we're still not sure. Smithsonian Institution archaeologist Dennis Stanford wryly characterized this uncertainty with the title of his 1981 article in *Science*, "Who's on First?"

Nonetheless, there was a brief period when the issue seemed almost decided. By the early 1990s, the general consensus was that the widespread Clovis culture (11,000–12,000 RCYBP) represented the first occupants of the New World and that their antecedents had arrived by traveling through Siberia and across the Bering Land Bridge—a wide, dry corridor connecting Asia and North American during the last Ice Age, when the seas were much lower. After the LGM, no earlier than 13,000–14,000 years ago, an ice-free corridor was accessible that led from Alaska to the interior of North America. Most evidence indicated that the first Americans had arrived by this route.

Some researchers, however, still argued otherwise, based on finds in Chile, Brazil, Pennsylvania, Virginia, South Carolina, and elsewhere. The Monte Verde site in Chile, for example, has been reliably (if controversially) dated to at least 12,500 RCYBP—significantly older than Clovis. The issue was muddied further by finds like Kennewick Man, a 9,000-year-old skeleton from the Pacific Northwest Coast that seems to exhibit characteristics more Caucasoid (or Ainu) than Mongoloid.



Bone tools from Yana River RHS. A, proximal end of beveled rhinoceros horn foreshaft; B, wolf metatarsal; C, close-up of cutmarks on the medial portion of the metatarsal.

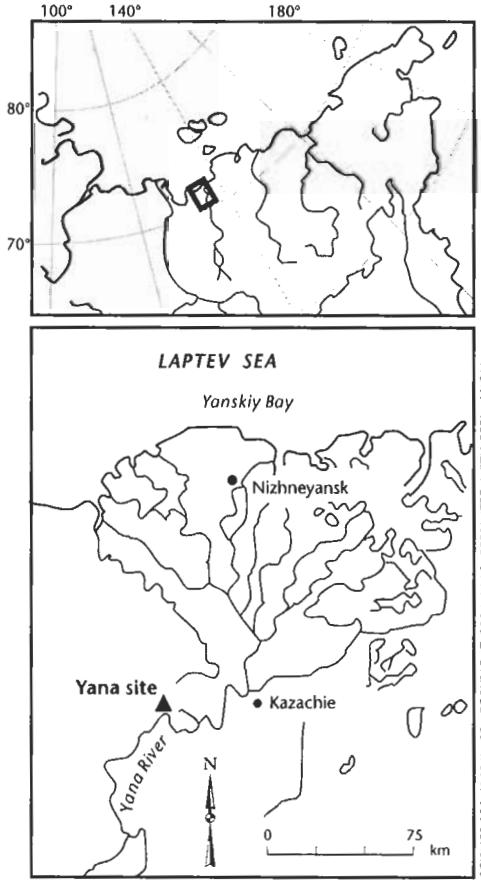
These days, what Southern Methodist University's David Meltzer calls "the general din over the peopling of the Americas" has become very loud indeed. We're not quite back to where we started, but there are plenty of new theories to consider: from Solutrean Europeans arriving more than 14,000 years ago and kick-starting the Clovis revolution, to Australoids coming in from the south. Some linguists, like the University of California's Johanna Nichols, claim that it's impossible for the 2,150-plus Native American languages known for North and South America to have

evolved in less than 35,000 years. Biological data are similarly contradictory, with various studies—from dental to mitochondrial—suggesting that Old and New World populations diverged sometime between 15,000 and 40,000 years ago.

The Beringia Theory

We may never find "smoking gun" evidence of the very first Americans, but one thing is apparent: of all the conceivable routes they could have taken to get into the New World, Beringia—the name given to the ancient Bering Land Bridge and surrounding areas—seems the easiest and most logical path. "In my mind, there's no viable alternative to the Bering Land Bridge or northeast Asian models for the human occupation of the Americas," says the University of Nevada, Reno's Ted Goebel, an archaeologist specializing in the peopling of the Americas. John Hoffecker of the University of Colorado, an archaeologist and paleoecologist who studies the evolution of human adaptations to cold Quaternary environments, agrees. "In my view," Hoffecker declares, "Beringia—either coast or interior or both—is the only plausible route for the peopling of the Americas during the Late Pleistocene."

Most other theories regarding the arrival of the proto-Americans require an advanced maritime technology, including such elements as sturdy boats and sophisticated stellar navigation methods. While this isn't impossible, the easiest answer—an overland migration—seems the most reasonable. Unfortunately, evidence that definitively proves the Beringia theory is still lacking. A dead giveaway would be the discovery of distinctive North American–style artifacts, such as fluted points, in Siberia—but no such artifacts have been found. Only one site, Uptar, has produced anything like a fluted point, and it's undated, fluted on one face only, and doesn't otherwise resemble Clovis points. Some candidate sites, like Ushki Lake in Kamchatka (**MT 18-1,** "Hunting Pre-Clovis in Siberia"), have proved to be con-



Location of the Yana River RHS site.

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Mammoth Trumpet, Statement of Our Policy

Many years may pass between the time an important discovery is made and the acceptance of research results by the scientific community. To facilitate communication among all parties interested in staying abreast of breaking news in First Americans studies, the **Mammoth Trumpet,** a science news magazine, provides a forum for reporting and discussing new and potentially controversial information important to understanding the peopling of the Americas. We encourage submission of articles to the Managing Editor and letters to the Editor. Views published in the **Mammoth Trumpet** are the views of contributors, and do not reflect the views of the editor or **Center** personnel.

–Robson Bonnichsen, Director

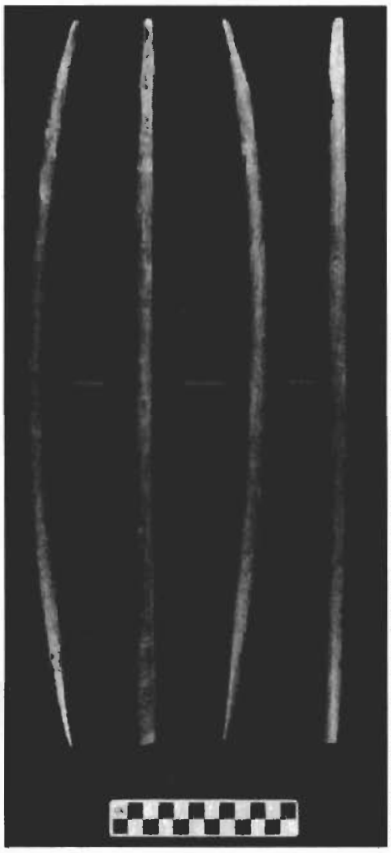
temporaneous with or even younger than Clovis, more "cousin" cultures than ancestral ones.

Most Beringia proponents, confident that sites bridging the New World and Old exist in Beringia, are eager to find them and don't despair that they seem scarcer than hen's teeth. Many of the sites that might prove their thesis are currently underwater or deeply buried under glacial loess. Others are probably hidden somewhere in the endless plains and deep valleys of Siberia, terrain that is geologically and climatically forbidding and therefore mostly unexplored by archaeologists. Nonetheless, Yana River is a welcome find if for no other reason than that it provides a dot on the map that proves that people were in Siberia very early on.

Yana River 101

The Arctic Circle begins at 66.5° N latitude. The Yana River site lies at 71° N latitude, on the upper reaches of the Yana River, a large stream that drains vast areas of Siberia before emptying into the frigid Laptev Sea. In 1993 a Russian geologist named Mikhail Dashtzeren, while working on the banks of the river at a remote location 100 km south of the river's mouth, discovered a beautifully worked dart foreshaft with beveled ends. This artifact proved to be made of woolly rhinoceros horn and is virtually identical in form to the ivory foreshafts used by the Clovis peoples of North America. Amazingly, accelerator mass spectrometer (AMS) dating shows that it dates to about 27,000 RCYBP (about 30,000 CALYBP). This makes it twice as old as the oldest site previously known anywhere in the Siberian arctic, the Berelekh site at 70° N latitude, which dates from just 13,000–14,000 RCYBP.

Dashtzeren later guided to the area a team of Russian archaeologists, led by Vladimir Pitulko of St. Petersburg's Institute for the History of Material Culture. They hit the mother lode almost immediately, finding a huge site preserved on the river's west bank. The Yana RHS, as it is officially known, measures some 1.5 km long and occupies portions of two erosional terraces. The uppermost terrace, 40 m above the waterline, has been radiocarbon-dated to 30,000–35,000 RCYBP (uncalibrated); the lower terrace, 16–18 m above the waterline, dates from just 3000–6700 RCYBP. Both terraces contain copious organic remains, which have been scattered across four modern beaches by erosion.



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Woolly rhinoceros dart foreshaft recovered by Dashtzeren in 1993.

Much of this material consists of animal bones, mostly from extinct Pleistocene species (including mammoth and lion). Pitulko and his colleagues published a research article on the site in the January 2, 2004 issue of *Science*.

While no formal excavations have been reported on thus far for Yana River, contexts examined during the 2001 and 2002 field seasons include not just the surface contexts of the gravel beaches, but also several frozen slump blocks that have collapsed off the face of the upper terrace and contain archaeological materials in situ, as well as cultural materials eroding out of the face of the upper terrace itself. The faunal material they recovered produced a suite of over a dozen radiocarbon dates that correspond

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KIRSTIN BENEDEK

Biologist Gerry Kuzyk at the site of the first atlatl find. Kuzyk and wife Kirstin Benedek are the sheep hunters who brought the phenomenon to the attention of the Yukon Heritage Department. Kuzyk was incensed that a previous article gave credit for the discovery to him, not to Benedek—if she hadn't asked him about the enormous deposit of freshly thawed caribou dung, he says he would have ignored and avoided the smelly pile.

Are Climate Shifts Opening Mountaintop Time Capsules?

The conclusion of our story on archaeology in the Yukon

THE ICE FIELDS, besides yielding clues to people who inhabited the northern reaches of the Americas nearly 10,000 years ago, are providing a glimpse into climate changes, which are much more complex than originally thought. In 1999, when Yukon archaeologist Greg Hare and others published their first papers, many sites and a large number of artifacts had been found. There was concern that global warming was threatening to eliminate the snow fields altogether. But the ensuing years were cooler. In fact, not enough snow melted for a significant survey season until 2003.

The general consensus is that the last Ice Age in the Yukon ended between 10,000 and 11,000 years ago in a warming trend that deglaciated most of the southern region. The Yukon researchers have determined that about 9000 RCYBP, ice slowly began to accumulate on the mountains again. Another warming trend, much later, melted much but not all of the accumulated snow. Hare has observed several ice patches where the record is as old as 9000 years, but the majority of ice patches are probably less than 5000 years old, suggesting a period of warming and melting between 5000 and 6000 years ago. "Starting about 5000 years ago," says Hare, "there was a very rapid accumulation of ice. The ice representing the past 5000 years is quite thick, and there is lots of caribou dung and artifacts in it."

GOVERNMENT OF YUKON

Unilaterally barbed antler points hafted to arrow shafts.

Hare says this is where other researchers should look. All the ancient ice fields yielding artifacts are on north-facing mountaintops between 5,500 and 6,500 ft—in his region, the altitude in which the edges of snowfields melt to the ground in late summer. Most are in the Coast Mountain Range and adjacent Yukon Plateau, generally extending from Whitehorse westwards about 150

miles to Kluane Lake. But there are hundreds of peaks in the mountainous southern Yukon, and only a handful have proven to contain ancient artifacts. Researchers say there appear to be a variety of conditions necessary to preserve ice for such long periods of time.

"We wonder how many times people must have seen those black slopes and never investigated," Hare muses. "They're very distinctive once you know what to look for; you can see one from 10 to 15 miles away. No one knew or paid attention to them before 1997."

–Ellen Saunders

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Ice Patch newsletter www.cafn.ca/

It Took Two Generations

A very clear chronology of the shift in hunting equipment has emerged from the ice patch research.

Yukon archaeologist Greg Hare and Ruth Gotthardt, a fellow lithic specialist, have clear radiocarbon-dating evidence from the ice patch assemblage that it took only 40 years for adherents of the bow to win over atlatl users. And at the same time, antler replaced stone. The researchers have submitted an article to the journal *Arctic* and cannot discuss all the details of their findings until it is published. But what they could say is impressive.

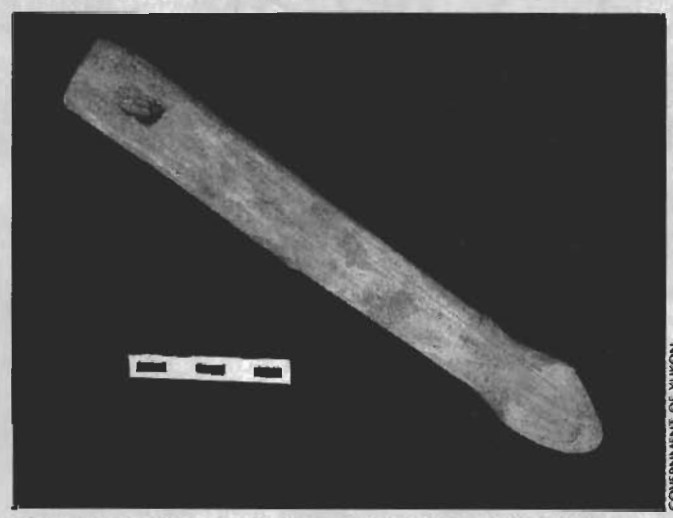
Atlatl vs Bow

Altatl technology in the Yukon persisted through most of the Holocene. All the projectile technology found, dating from approximately 9000 years ago until 1500 years ago, is related to throwing darts, or atlatls. With one possible exception, bow-and-arrow technology first appeared at 1300 RCYBP, says Hare. The last atlatl-related artifact is dated to 1260 RCYBP. "So in two generations," he concludes, "there was a complete transition from atlatl to bow-and-arrow technology." He adds that the timing of the transition is quite consistent with the known transition date for most of North America.

There is only one exception, an artifact dated to 3600 RCYBP. In most aspects of construction it would be considered a dart—it's long and heavy, with a stone point—but it's notched at the end like an arrow.

Darts

Throwing board or atlatl technology persisted throughout most of the Holocene, according to Hare, "so from 8500, 9000 years ago, right up until 1500 years ago, almost all the projectile technology is related to throwing dart or atlatl technology." Atlatl points found are typically made from a common grey chert, well suited for making points, which is ubiquitous in the



GOVERNMENT OF YUKON

This object is a mystery to Greg Hare. Many suggestions have been made about its possible purpose. He welcomes any others.

Kennewick Man Decision

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are 'Native American' and share 'cultural affiliation' with tribes." Second, they assert the judges' decision "rendered superfluous portions of NAGPRA's 'ownership' provision, as well as portions of the statute concerning 'unclaimed' and 'unidentifiable' 'Native American' remains." Third, they allege the panel "misapprehended the terms Congress chose to define 'Native American' and failed to give effect to each term Congress chose." And finally, they believe the decision undermines NAGPRA's provisions on illegal trafficking in Native American cultural items.

What is a "Native American"?

According to the tribes' petition, the 9th Circuit Court "emasculated" NAGPRA by substituting their own definition of "Native American" for Congress's original formulation. The tribes argue that the DOI correctly interpreted "Native American" to include anyone living in the area now encompassed by the United States prior to the arrival of Europeans in A.D. 1492. The tribes assert that the Court erred in requiring that the term "Native American" apply only to human remains that "share special and signifi-

region. He hasn't found much evidence of long-distance transport of raw materials.

But Hare notes that stone points found in association with atlatl darts span almost the entire spectrum of known point types for southern Yukon. Most are large lanceolate or leaf-shaped points, with many different styles of point bases. In some cases, foreshafts were used; in others the dart shafts are one piece. "We don't have very many darts that are complete, but we have a number we've been able to reassemble by taking the pieces and lining them up, refitting them," he explains. On average, the darts are about 195 cm (78 in) long, the length of a tall man. They are primarily made of birch and tend to be front-end heavy. "They taper back quite significantly to the proximal end," he adds. "They probably would have been quite flexible."

GOVERNMENT OF YUKON

This hafted foreshaft recovered in 1999 from an ice patch was radiocarbon-dated at 4500 RCYBP.

Hunters would have used a sling or throwing board to hurl the darts. Neither a bow nor throwing board has been found in the ice patches, unless an unidentified wooden artifact found this summer is a throwing board. "It's far smaller than we would ever expect a throwing board to be," he explains, "so that's why we're very hesitant to use that explanation."

Antler defeats stone

Also startling is the correlation of raw material and projectile. All the stone points found were used to tip darts; almost all the antler points found are associated with bow-and-arrow technology. Hare allows there are one or two examples of antler points associated with darts, but he notes emphatically that once you move to bow-and-arrow technology, there are no stone points at all in the ice patch collection. "As soon as they switched," he says, "they stopped using stone as a tip."

Arrows

Barbed points were carved from caribou antlers that had likely been steamed or boiled to make them pliable. Except for an occasional bilateral exception, they are unilaterally barbed. Nearly all are unique in design. Stone or copper tools or beaver teeth would have been used to carve the barbs and the point. "The attention to detail is fantastic," says Hare. "They are very well made."

The barbed points were tied on with sinew, which fits in with hunting strategy that Hare explains: "They are a tanged point, meant to detach. So when you shoot your arrow at the caribou, the point goes in and the arrow shaft falls off. And as the caribou runs along, the barbed point works its way further into the animal. So what we've found in the ice patch is in several cases where they obviously missed their mark and the arrow and projectile point are still together, and in other cases we find the projectile points by themselves, and arrows by themselves. It depends on whether they actually hit their target or not."

Archaeologists for years have had to extrapolate attachments for points, and in some cases they've had to resort to advanced mathematical models to decide if a point was from an arrow or a dart and to determine how it was connected to the haft. Now, Hare notes, Yukon researchers have the unique luxury of having a complete dart to examine and many dart and arrow pieces with either points or fletching still attached. A significant aspect of their collection is that all the information is preserved, including organic materials. It's now possible to look at all aspects of the construction of these weapons. "That being said," he cautions, "we still recognize this is not a complete window into the lives of ancient people. These are very specialized hunting sites." MT

–Ellen Saunders

cant genetic or cultural features with presently existing indigenous tribes, peoples, or cultures." And the tribes believe that this radical rewriting of the definition of "Native American" perverts Congress's intent, "dramatically shrinks the set of 'cultural items' available for repatriation under NAGPRA and creates a circular vortex of reasoning from which there is no escape."

The tribes assert that the Court's imposition of this legislative Catch-22 means they can't prohibit "potentially destructive studies" of human remains unless the remains are judged to be "Native American," but they can't sustain a claim that the remains are "Native American" unless these "potentially destructive studies" are performed and demonstrate a genetic or cultural relationship. "In other words, tribes must now consent to studies to prove remains are 'Native American' in order to trigger the statute to have the right to stop the studies." The tribes claim this is an "absurd result" that Congress could not have intended."

In an article published in the *Seattle Post-Intelligencer*, Alan Schneider, attorney for the scientists, says it's a Catch-22 situation either way. The tribes want to be given the right to decide, in all cases, whether or not any studies could be done to determine if they have the right to prohibit those studies in the first place. "If the tribes were to prevail in their argument, it would effectively shut down the study of all early sites in this country."

IN MEMORIAM

GEORGE F. CARTER, SR.
1912–2004

George Francis Carter, Sr., 91, passed away on March 16, 2004. Dr. Carter was Distinguished Professor Emeritus in the Department of Geography at Texas A&M University, and was a early leader in making the case for the greater time depth for prehistoric mankind's presence in the New World.

Professor Carter early developed a lifelong intellectual interest in the culture history of the Native American peoples. In high school, Carter (a native of San Diego, California) worked as a volunteer at the San Diego Museum of Man. Pursuing this interest, he earned his AB degree in Anthropology from the University of California–Berkeley in 1934. While an undergraduate at Berkeley, Carter had taken Cultural Anthropology courses with Professor Alfred Kroeber, who was then a leading authority in that field. In the late 1930s Kroeber was still hewing to the W. H. Holmes/Aleš Hrdlička paradigm that set 2000 years as the limit for early man's supposed first presence in the New World.

After graduation Carter returned to San Diego, where he served for several years as Curator of Anthropology at the San Diego Museum of Man. While there he began to question the archaeological view that 4000 yr B.P. was the limit of early mankind's presence in Southern California. In this time, before carbon-14 dating, 4000 years was held as the limit by Carter's boss, Malcolm Rogers at the San Diego Museum of Man.

This interest in the question of the higher antiquity of man led Carter to return and earn his Ph.D. degree in Geography at Berkeley in 1942 under the leading Cultural Geographer, Carl O. Sauer. Carter would later write, "I knew of Sauer's anthropological, archaeological, and cultural historical interests, and I hoped that in geography I could get the climatology, geomorphology, and other earth sciences that it was becoming increasingly obvious, were the keys to the antiquity of man in America."

Professor Carter indicated to Sauer that he wanted to do his dissertation research on early man based on evidence that Carter had begun to recognize during his fieldwork with the San Diego Museum of Man. However, Professor Sauer warned Carter that the topic was much too controversial for a dissertation. Carter's alternative Ph.D. dissertation topic, "Plant Geography and Culture History in the American Southwest" (Viking Fund Publications in Anthropology No. 5, 1945), led him into a lifelong interest in cultural diffusion. Carter spent two seasons of fieldwork among the Hopi, Zuni, and other groups of traditional Southwest Indian agriculturists. There Carter systematically collected and mapped differing varieties of corn, beans, and squash, and he came to realize that there were two separate diffusions of these domestic plants, one from Mesoamerica, the other from the eastern region of North America. The evidence also pointed toward greater time depth and complexity for that pre-Columbian Southwestern Indian agriculture.

Carter's dissertation opened a whole new scientific approach that enhanced understanding of New World cultural developments and migrations. This approach, which uses biological tracers (the origins and diffusion of domesticated plants and animals) to reconstruct the prehistoric past of mankind, would become another of Professor Carter's lifelong areas of professional research and writing. Professor Carter's first and strongest lifelong intellectual interest was in pursuing the question of when, and how, prehistoric peoples first entered the Western Hemisphere from the continent of Eurasia.

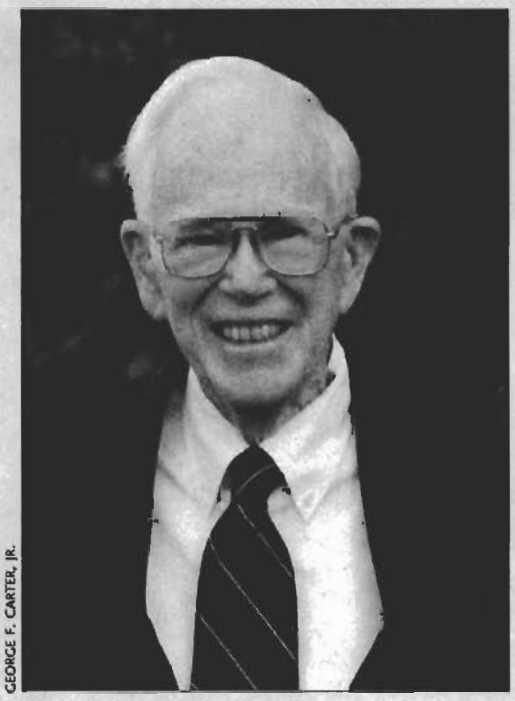
Beginning in the mid 1950s Professor Carter conducted archaeological fieldwork at the Texas Street site in San Diego. This resulted in *Pleistocene Man at San Diego* (Johns Hopkins University Press, 1957), which presents multiple lines of evidence (geomorphology, climatology, eustacy, soils, and lithics) that inform the site's archaeology. This evidence indicates the presence there of early man predates the 40,000 yr B.P. limit of the carbon-14

It is important to note that not all Native Americans are against the scientific study of human remains. A survey of tribal perspectives on NAGPRA published by the Society for American Archaeology last year revealed that a significant minority of representatives of federally recognized tribes (from 20 to 40 percent) approved of nondestructive and even destructive testing of human remains, especially if it contributed to a knowledge of prehistoric life-span, disease, and other health-related issues. The authors of this study conclude that "there is no Pan-Indian position on these complex and culturally and historically dependent issues." Contrary to a simplistic, black-versus-white view of the controversy, there is "a tremendous heterogeneity of attitudes and opinions regarding repatriation, reburial, and interest in studies of human remains . . . among American Indians and Alaska Natives" (see *SAA Archaeological Record*, March 2003).

NAGPRA's Ownership Provision

In the section of NAGPRA pertaining to the ownership and control of human remains discovered on Federal or tribal lands, there is a prioritized list of who is

dating technique. Based upon the totality of evidence, Carter estimated the age of the Texas Street site at 100,000 years. The official paradigm, upheld by the New World archaeology establishment, was (and for some still is) that there is no archaeological evidence of man in the New World prior to Clovis (10,000–12,000 yr B.P.). If Professor Carter's Texas Street evidence were accepted, it would threaten to undermine this official paradigm. Consequently, critics from that archaeology establishment heavily attacked both Carter and his work. Some of these establishment critics even went so far as to circulate the idea that the quartzite cobble-derived core and blade tools from the Texas Street site were not artifacts but instead should be dismissed as "carterfacts." The excavated hearths at Texas Street, where fire-burned rocks still surrounded charcoal residue, were also dismissed with creative and false declarations circulated by these critics.


GEORGE F. CARTER, JR.

In the summer of 1973, Carter obtained a grant and made a special effort to reopen the site; he formally invited the West Coast archaeology faculty, together with their students, to come and examine the site for themselves. Carter's 1973 invitation was systematically boycotted. At one leading California university's archaeology program, graduate students who expressed interest in going to see the site were warned off by their senior faculty member. This archaeologist is reported to have declared that if he discovered that any of his graduate students had gone to see the reopened Texas Street site, they "could forget about ever getting their degree in his department." Thus, over time many archaeology graduate students and younger faculty have come to accept the official line that the site had been "discredited." They often hold this received firm opinion, despite never having seen the Texas Street site or ever taking the time to read Carter's 1957 book and to consider the detailed multiple lines of evidence developed there.

Despite such organized resistance to the evidence presented at Texas Street, Professor Carter continued to work, along with others, on developing the wider evidence supporting the greater antiquity of man in the New World. In 1980 Texas A&M Press published Carter's book, *Earlier Than You Think: A Personal View of Man in America,* which details that wider evidence of, and the ongoing controversy over prehistoric people's earlier first entry into the New World from Eurasia. There is now growing evidence from a number of sites of at least a 200,000-year time frame for the first human presence in the Western Hemisphere. In light of this emerging new evidence, Carter was sometimes heard to remark that if he were to revise the 1980 book, then perhaps he should change the title to *Earlier Than I Thought.*

There is a corollary to the New World anthropology/archaeology establishment's attempt to hold a hard line for a post-Pleistocene entry of man into the New World. This centers on the equally determined academic establishment's enforcement of the paradigm that pre-Columbian New World civilizations developed in cultural isolation, independent of any trans-oceanic contact or cultural influences and exchanges with the cultures of Eurasia. Professor Carter also worked extensively on evidence of pre-Columbian cultural contacts by sea between the Old World and the New World. At the time of his death, Carter, as editor and principal author, was doing the final editing on a new multi-author book developing evidence supporting the diffusionist's understanding of this equally controversial and important question.

In addition to three books and chapters in other multi-author books, Professor Carter published over 400 scholarly articles in his areas of professional interest. Professor Carter was the recipient of one gold medal and numerous other academic honors recognizing his lifelong excellence and dedication in both his scholarly research and his teaching.

–George F. Carter, Jr.
April 29, 2004

entitled to make repatriation claims. First priority is given to lineal descendants. If no lineal descendant is known, then control goes to the tribe that owns the land where the remains were found, or the tribe that has "the closest cultural affiliation" with the remains, or the tribes that aboriginally occupied the land (but only when that land claim is recognized by a final judgment of the Indian Claims Commission or the United States Court of Claims). The panel summarized this section in their statement that a determination of cultural affiliation required a finding that the human remains are "most closely affiliated to specific lineal descendants or to a specific Indian tribe." According to the tribes' petition, the panel's "arbitrary limitation" of ownership claims to "lineal descendants" or "a specific Indian tribe" "eviscerates" this section of NAGPRA and radically restricts the claims tribes will be able to make on human remains.

The tribes criticize the panel for committing two "fundamental errors" in their review of the 22,000 pages of court records for this case. First, they claim "the panel never considered the

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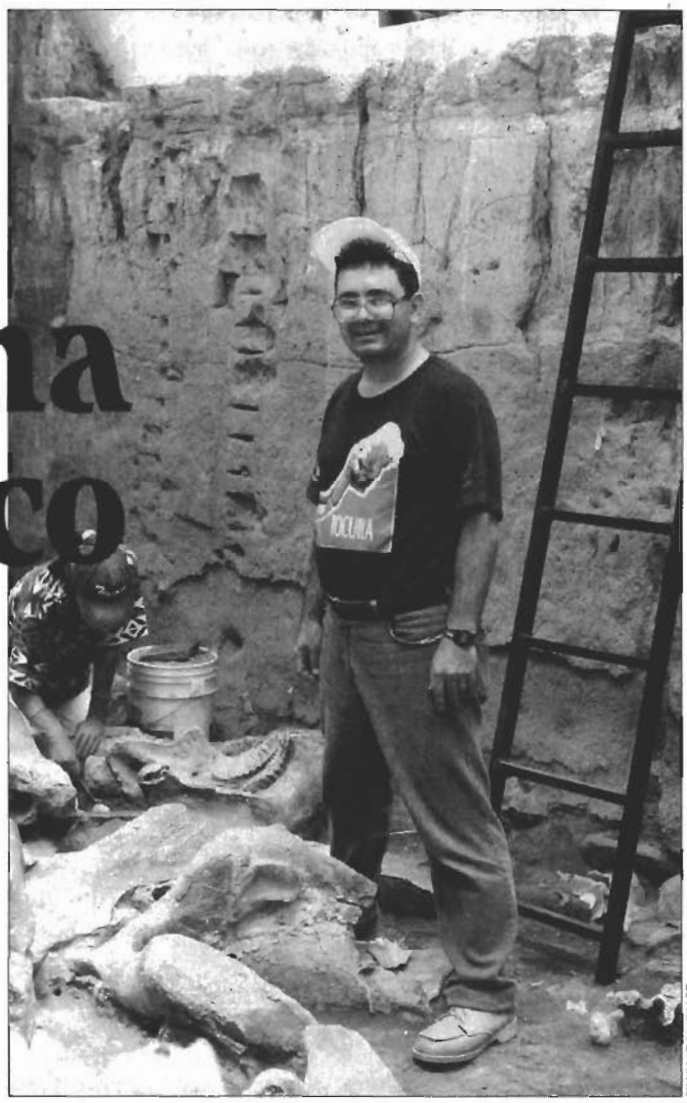
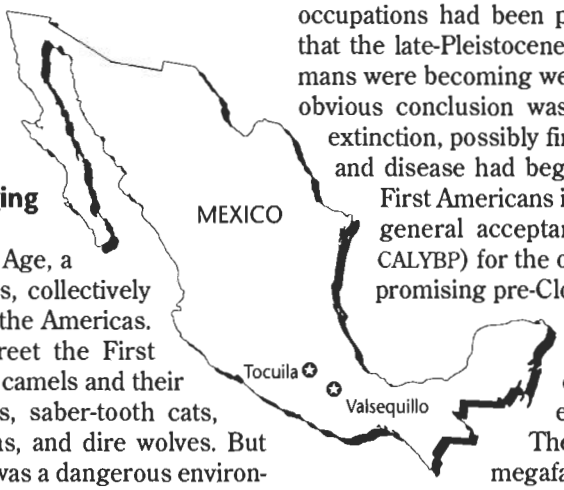


SILVIA GONZALEZ

Joaquín Arroyo-Cabrales at the Tocuila mammoth site, summer 1998.

Megafauna of Mexico

ALTHOUGH HE IS MUCH TOO POLITE to say so, Joaquín Arroyo-Cabrales has (to coin a phrase) a bone to pick with his North American and European colleagues. As Senior Scientist at the Instituto Nacional de Antropología e Historia (INAH) in Mexico City, he's all too aware that most researchers specializing in First Americans would prefer to focus their efforts on Beringia, Canada, the Great Plains, or even Siberia, ignoring Latin America altogether. But recent findings down south—especially in Monte Verde, Chile—suggest that our geographical shortsightedness has caused us to overlook valuable data. Dr. Arroyo-Cabrales has spent much of his career attempting to remedy this situation—and it's incumbent on us to pay better attention, since his work may help us answer one of the great mysteries that haunt our discipline: what became of the North American megafauna?



Vanishing megafauna and emerging humans

As recently as the end of the last Ice Age, a wide variety of large animals species, collectively referred to as *megafauna*, populated the Americas. Among the creatures present to greet the First Americans were horses, giant sloths, camels and their relatives, several types of elephants, saber-tooth cats, huge predatory birds called teratorns, and dire wolves. But terminal Pleistocene North America was a dangerous environment for megafaunal life; in the space of a single millennium, some 11,000–12,000 years ago, 32 genera of megafauna—over a quarter of all mammalian genera in North America at the time—became extinct. In the previous *two million years,* only eight genera had succumbed.

Twenty years ago, when no credible evidence of pre-Clovis occupations had been presented, it seemed no coincidence that the late-Pleistocene megafauna had died out just as humans were becoming well established in the New World. The obvious conclusion was that humans had hunted them to extinction, possibly finishing off what environmental stress and disease had begun. Now, of course, the story of the First Americans is somewhat less clear than it was; the general acceptance of 12,500 RCYBP (about 14,800 CALYBP) for the occupation at Monte Verde, and other promising pre-Clovis finds elsewhere, suggest that humans and megafauna may well have coexisted successfully for thousands of years before the abrupt round of extinctions 11,000 years ago.

The jury is still out on the question of megafaunal extinction, and many researchers have spent entire careers studying the few clues found in the fossil record. Perhaps the best-studied megafauna are the ancient proboscideans, the mammoths and mastodons, that

occupied the New World and much of the Old at the end of the Pleistocene. Given their large size and abundance, they've left significant fossil deposits throughout North America. In attempting to understand the interrelationship of humans and proboscideans in the New World, much emphasis has been placed on their occupations in Canada and the United States; but in fact, both types of proboscideans were quite common in Mexico as well, as the research of Arroyo-Cabrales and his colleagues has emphasized.

A biologist by training, Arroyo-Cabrales is well regarded for his studies of extinct fossil bats, birds, terrestrial mammals, and Ice Age cave assemblages from sites like Loltún Cave in the Yucatán. Lately, he's also becoming known as an expert in the zooarchaeology of the First Americans because of his work at remarkable sites like Valsequillo and Tocuila. Both sites chronicle the interaction of humans and mammoths at a time when the mammoths were the well-established North American residents and humans were the new kids on the block.

Possible pre-Clovis evidence at Valsequillo

Valsequillo, located on a reservoir near the city of Puebla, is best known for its Pleistocene-age fossil deposits, including the remains of horses, camels, dwarf pronghorns, and mammoths, which range in age from 22,000 to more than 200,000 years old. Since the early decades of the 20th century, there have been reports of human artifacts found in association with these remains as well as evidence of bone-reduction technology. Some researchers believe this might have occurred as early as 26,000 years ago, making Valsequillo one of the most interesting (if controversial) pre-Clovis sites in the Americas; others argue, on the basis of very old radiometric dates collected in the 1960s, that the human occupation is much older—some even going so far as to suggest it was the work of pre-modern humans.

The current investigations at Valsequillo are sponsored by INAH, an anonymous private donor, the Institute of Geophysics of the National Autonomous University of Mexico, and Texas A&M University. It is hoped that the new work conducted by Arroyo-Cabrales and the other members of the Mexican Hueyatlaco team (including principal investigator Patricia Ochoa and Mario Perez-Campa, both archaeologists, and geologist Ana Lillian Martin Del Pozzo) will help to clarify the issue of early humans at Valsequillo. Thus far, however, the evidence remains muddled. "We have at least 40 years of controversy involving possible human association with the fossil bone, and also about its radiometric controls," Arroyo-Cabrales points out. "We are still examining that issue, and we are still trying to discern the actual temporal record for human presence." In preliminary work conducted in the summer of 2000, more than 400 bones were collected from Valsequillo. Found nearby, but not in direct association with these remains, was a lithic debitage fragment of undisputed human origin.

Mammoth bone quarrying at Tocuila

Tocuila lies on the eastern fringes of Pleistocene Lake Texcoco in the Valley of México, near the village of San Miguel Tocuila. In 1996, construction workers discovered numerous mammoth bones in association with other fossil remains. Arroyo-Cabrales, with co-principal investigator archaeologist Luis Morett, geologist Silvia Gonzalez, and bone-modification specialist Eileen Johnson (of Lubbock Lake fame), have called this find "one of the most important late-Pleistocene and early-Holocene paleontological sites in the Basin of Mexico." Tocuila includes the remains of at least five mammoths whose bones were entombed in a lahar, a volcanic mudflow. Lahars occur when volcanic debris is washed down slope by rainwater or melted snow; they may directly result from a volcanic eruption or may occur later in response to unrelated flooding. At Tocuila, the lahar deposits are sandwiched between a layer of volcanic ash (possibly from the event that triggered the lahar) and an overlying sequence of broken limestone (tepetate), possibly also lahar-derived. Overlying this is a plowzone containing both Aztec and modern ceramics.

BOTH: CHRIS HARDAKER

◀ **Overview of excavation at the Hueyatlaco site, Valsequillo Reservoir, during the 2000 field season.**

◀ **Closeup of testing area at the Hueyatlaco site during the 2000 field season.**

In research sponsored by INAH, the Autonomous University of Chapingo, the municipality of Texcoco, the Cultural Foundation of Workers of Pascual, and Celso Ramirez and Francisco Venegas, the co-owners of the land where the Tocuila site is located, the mammoth finds have been dated to approximately 11,188 ± 76 RCYBP on the basis of a suite of five radiocarbon dates. The remains of horses, rabbits, and camels were recovered from approximately the same levels as the 800-plus mammoth bones, while the bones of turtle, fish, and aquatic birds such as flamingos were recovered from overlying layers. Several pieces of mammoth bone have clearly been modified by humans. One, interpreted as a bone core, exhibits a helical "green-bone" fracture in association with the removal of several flakes; a second piece is a bone flake that conjoins with the largest of the flake scars. These artifacts closely resemble pieces collected at other grassland mammoth bone

sites, including Lubbock Lake and Duewall-Newberry in Texas, Lange-Ferguson in South Dakota, and Owl Cave in Idaho. It seems likely that prehistoric humans were using the faunal deposits as a quarry to obtain raw material for tools. Arroyo-Cabales and his fellow researchers suggest a fracture-based bone technology oriented toward producing cores and thick blanks that could be transported easily and used to fashion a variety of tools. The compactness and thickness of mammoth bone lends itself to this type of technology, making it attractive to prehistoric toolmakers. Furthermore, it's clear that the human utilization of the bone material was roughly contemporaneous with the deposition of the mammoth remains, since the breakage pattern shows the bones were fresh when they were broken. And while we often think of Paleoamericans as big-game hunters, Arroyo-Cabrales cautions that it's far from certain that humans killed these animals; what we're witnessing, he notes, "could have been scavenging."

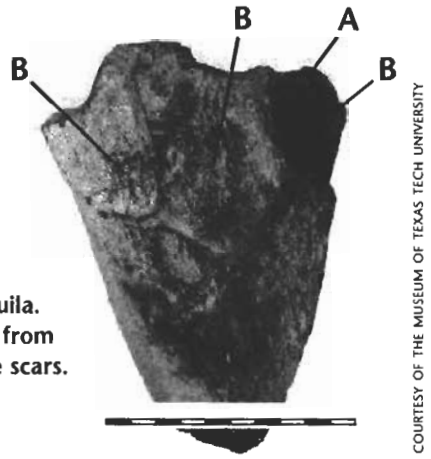
ALFREDO DE STÉFANO FARIAS, IN FOSILES DE MEXICO. COAHUILA UNA VENTANA A TRAVÉS DEL TIEMPO.

The mammoth bone bed at Tocuila.

A self-professed archaeozoologist

Joaquín Arroyo-Cabrales began his academic career as a biology undergrad at the National Polytechnic Institute of Mexico; he also holds advanced degrees from Texas Tech University, where he worked closely with Eileen Johnson. His interest in zooarchaeology was triggered when his former major professor, the late Ticul Alvarez, invited him to collaborate on a study of faunal assemblages from archaeological sites. Meanwhile, he had already begun to develop an interest in fossil bats. For the past 17 years, Arroyo-Cabrales has served as a senior scientist at INAH, though he took a year off from 1998–1999 to do post-doctoral work at the Smithsonian Institution. He currently holds a prestigious Level I membership within Mexico's National Researchers Council (SNI).

Arroyo-Cabrales cites his chief interests as taphonomy and paleoenvironmental reconstruction of late-Pleistocene Mexico, based on faunal studies and their connection to what was happening at the same time in the rest of North America. Rather than calling himself an archaeologist or paleontologist, he prefers the term "archaeozoologist"—a young profession just recently recognized by the scientific establishment. "My work duties are focused on studying and analyzing the bone remains from archaeological sites throughout Mexico, as well as animal representation from the past," he explains. "In that regard, my main focus in INAH's lab is archaeozoology."



COURTESY OF THE MUSEUM OF TEXAS TECH UNIVERSITY

A mammoth bone core from Tocuila. A, edge crushing and minor flaking from platform preparation; B, large flake scars.

One of Arroyo-Cabrales's prime duties is to study the association between fossil bones and humans (whether the evidence is human bones or artifacts), so it comes as no surprise that he has become involved with projects like those at Valsequillo and Tocuila, where megafaunal assemblages are associated with human activity. These projects are natural test-beds for interdisciplinary studies designed to examine the interactions of early Americans and Pleistocene megafauna. In each instance, Arroyo-Cabrales has served as the Co-Principal Investigator in association with archaeologists (and a geologist at Valsequillo) and has acted as the project paleontologist. He points out that the data they have collected have implications well beyond archaeology; they may apply as well to diverse fields like paleontology, taphonomy, zoology, and geology. "In both cases," he says, "the archaeological excavations have helped us obtain a detailed record of the past environments, through the study of several types of proxy-data, like faunal remains, sediments, pollen, and paleomagnetism."

A grand vision for Mexican megafauna research

In recent years, Arroyo-Cabrales and his colleagues have made an effort to present the known fossil record for Mexican mammoths to the scientific community abroad. In 1999, for example, they published three articles in the Proceedings of the Second International Mammoth Conference in Rotterdam, the Netherlands. "Given the literature at the time," he explains, "we thought it would be worthwhile to present the known fossil record for Mexican mammoths to scientists from all over the world." The problem is that although the faunal records have been documented in print in Mexican scientific outlets, "they're often ignored by foreign scientists," says Arroyo-Cabrales. Too often researchers turn a blind eye to the rich proboscidean assemblages in Mexico, and it was with this shortcoming in mind that he and his colleagues wanted to make the known record *better* known.

The work of Joaquín Arroyo-Cabrales and company has cast a good deal of light, from an archaeological and paleontological viewpoint, on the subject of early Americans and Pleistocene mega-

fauna in Mexico. But in science, answering a question typically just results in more questions to be answered. In the future, Arroyo-Cabrales and his colleagues at INAH aspire to broader studies that will parley what they've learned about the association of humans and faunal assemblages into a regional, multidisciplinary model useful for archaeological and paleontological studies. According to Arroyo-Cabrales, "As a Quaternary Studies team, we would like to develop a predictive model to help us decide where to search for early human evidence in Mexico, based on faunal remains—and also, we would like to develop an evolutionary explanation for the formation of the present mammal communities in Mexico."

Sure, their goals aren't modest, but that's not uncommon with scientists who are busy breaking new ground.

–Floyd B. Largent, Jr.

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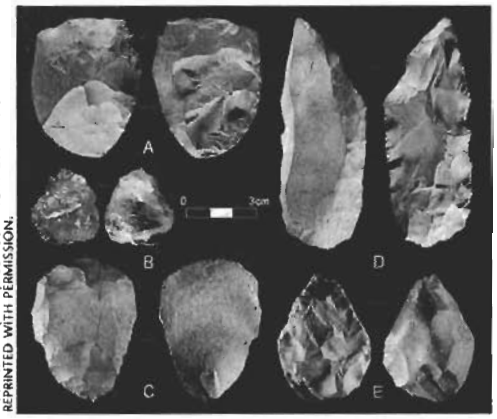
Yana River, Siberia

continued from page 4

well with the age of the rhinoceros horn foreshaft. These dates come from a mammoth ivory foreshaft, a burnt fragment of mammoth ivory, a horse mandible, and the bones of both brown bear and Pleistocene lion. The youngest radiocarbon age is 25,800 ± 600 RCYBP; the oldest (from the brown bear) is 28,300 ± 300 RCYBP. Many of the bones used for dating bear clear evidence of utilization, butchering, and cooking, and one has a small lithic flake embedded in it.

Hundreds of bones were collected from the in situ cultural layer itself; from areas (such as the slump blocks) where the relationship to the cultural layer was clear; and from material scattered along the beaches both up- and downstream from the main site. Most of the bones are from reindeer, but other species represented include mammoth, horse, bison, Pleistocene hare, Pleistocene lion, brown bear, woolly rhinoceros, musk ox, wolf, polar fox, and wolverine—typical Pleistocene steppe fauna. There are also various bird bones, which were only found within the site itself. Many of the mammal bones exhibit evidence of human modification, from scraping to burning to deliberate fragmenting.



Stone artifacts recovered from Yana RHS. A, sidescraper; B, worked quartz; C, endscraper; D, pointed tool; and E, bifacial sidescraper.

Bone tools collected at the site include two ivory dart foreshafts, the aforementioned woolly rhinoceros horn foreshaft, and an awl or punch made from a wolf metatarsal. The wolf-bone tool is burnished on one end and scored with a number of deliberate cutmarks; Pitulko and his colleagues suggest that the cuts might have served to hold a wrap in place, which in turn burnished the bone. The tool was probably used for making tailored fur clothing.

The stone tools found with the faunal assemblage are less diagnostic than the bones and ivory, but given their close association with the faunal remains are clearly of the same age. Although no formalized lithic tools of any type have been recovered, nonetheless these are definitely artifacts, not crudely broken stones whose cultural origin is suspect: they include obvious flakes, some retouched for use as tools; fragments of red ocher (a hematite pigment used for cosmetic and ceremonial purposes); choppers; a hammerstone; chisel-like tools, possibly used as gravers; and both end- and sidescrapers. Nearly all the 383 pieces collected are made of the flinty slate available in the riverbed, although one is made of local granite and six are made of quartz imported from elsewhere.

Conclusions

Like the much younger Berelekh site, which belongs to the Dyuktai culture, Yana River includes huge amounts of Pleistocene faunal material. Both sites are on rivers where archaeological materials are associated with numerous remains of large mammals. Although speculative, excavators of the site propose that the Yana River people were apparently big-game hunters and possibly scavengers, with full use of fire and tailored clothing, as evidenced by the burned bones and the wolf-bone awl. They preyed on a wide variety of animals including birds, but focused on reindeer. The stone tool assemblage bears no particular resemblance to other Siberian or Beringian assemblages, which is not surprising, given its great age compared with the finds at Berelekh and other sites of the Dyuktai culture. It also lacks the wedge-shaped small cores and prismatic blades that characterize Dyuktai. Nor does it resemble other assemblages, such as Alaska's slightly pre-Clovis Nenana complex or a classic Clovis assemblage. Nonetheless, some of the organic tools, particularly the ivory and rhino horn dart foreshafts, have led to comparisons with Clovis—and inevitably to speculations about the peopling of the Americas.

These and other implications of the remarkable finds at Yana River are explored in Part 2 of this article, "The Implications."

–Floyd B. Largent, Jr.

Hooking Students on CLOVIS

ARCHAEOLOGY IS BEST LEARNED WHEN DONE. That's the absolute conviction of Professor Tony Boldurian after 15 years of teaching archaeology. This year, undergraduate students in his Survey of World Prehistory course at the University of Pittsburgh at Greensburg (UPG) are testing that belief. They are the first to enjoy hands-on experience with his Clovis Artifact Activity Kit, which gives beginning college students the opportunity to handle and study in detail realistic replicas of Clovis lithic artifacts.

Moreover, since Dr. Boldurian demands that his students handle the delicate pieces with the same care they would give to actual specimens, they learn sound laboratory practices, a privilege normally reserved for his advanced archaeology students. "The fact that they are holding resin casts at that moment is completely immaterial," Boldurian contends. "They may as well be holding actual Clovis points 12,000 years old."

This semester's course is the first practical test of the Kit, which Boldurian developed with funding from a grant from the Advisory Council on Instructional Excellence of the University of Pittsburgh. For this trial run he prepared 10 prototype Kits, each shared by a pair of students. He won't know the decision of the Council until he compares the results of student exams at the end of this term with those of students from the previous term who were taught the same course material but without the benefit of self-directed discovery that comes from examining, measuring, and manipulating pieces in the Kit. A test score, albeit a crude measurement of how much a student has learned, is unfortunately the only practical means available to Boldurian to evaluate the effectiveness of the Kit. But he is already gratified by the enthusiastic response of students like Jen Long, who asserts, "I am more of a hands-on learner, and the Kit really helps me to see the expertise of Clovis technology rather than being only lectured about it." Dean Nones thinks the Kit is well put together, very informative, and fun to use. He concludes, "I honestly can't think of an area that needs improvement." In Rebecca Flotta's opinion, "The design of the activity [Kit] is brilliant."

Probably Koleen Grimm was expecting Survey of World Prehistory to be a series of dry lectures. Instead, she is treated to the most exciting experience of her beginning college career and gaining a depth of knowledge about the Clovis culture from handling artifact replicas that most students won't learn until graduate school—with one-on-one tutoring from Dr. Boldurian as a bonus.

A self-contained assemblage of Clovis artifacts

The package is your first indication of the detailed planning that went into developing the Activity Kit. A sturdy plastic case half again as big as a shoe box holds handbooks and artifact replicas. Unlatch the lid and turn it over, and you have a padded work surface for safely handling fragile objects. The replicas themselves, resin casts identical in every detail to actual lithic artifacts except lighter in weight, are individually wrapped in protective sleeves and housed in plastic containers inside the Kit case.

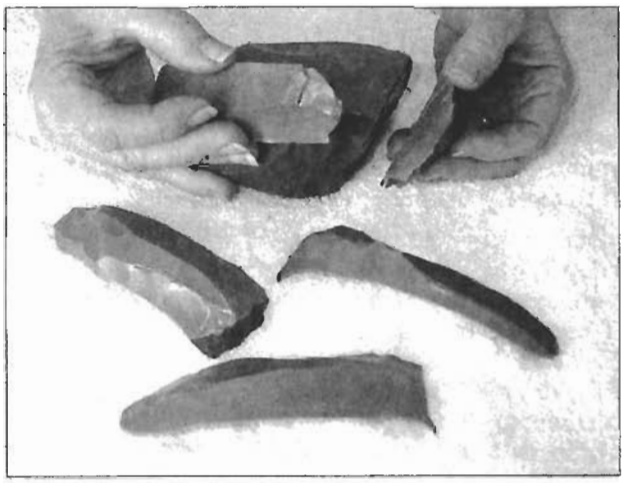
A primer on Ice Age North America

Before students ever handle the exquisite artifact replicas, however, they must learn something of the Clovis culture and how the peopling of the Americas fits into world prehistory. *Clovis: America's Ancient Mammoth Hunters,* the first of the two handbooks, is an eminently readable narrative written by Boldurian that introduces students to North America in the Ice Age, when the first immigrants made their appearance. It's an evenhanded

STANLEY KATZMAN, UNIVERSITY OF PITTSBURGH AT GREENSBURG

treatment that reflects today's competing theories about the peopling of the Americas:

> Many archaeologists think that Clovis people came from Eastern Asia. During the Ice Age, the easiest path to America from Asia lay across Beringia. Overland migrations by Siberian nomads pursuing mammoths along this route easily could have taken place. Other archaeologists are not sold on this idea. Instead they think that Clovis ancestors came to America from Western Europe, specifically the Iberian Peninsula, via the Atlantic Ocean. By hugging the edge of the ice sheet in small boats, such groups may have hunted seals and walrus while paddling their way westward. Complicating the origins issue is another theory: people may have arrived to America from both directions, at slightly different times. (pp. 38–39)



MARGARET CUNNINGHAM

The principal components of the Clovis Artifact Activity Kit: resin casts of a blade core, the flake that was removed to form the striking platform, and four prismatic blades.

This refreshingly candid, non-dogmatic account informs students that all scientists do not speak with one voice and that archaeology, like all other sciences, is constantly changing and growing.

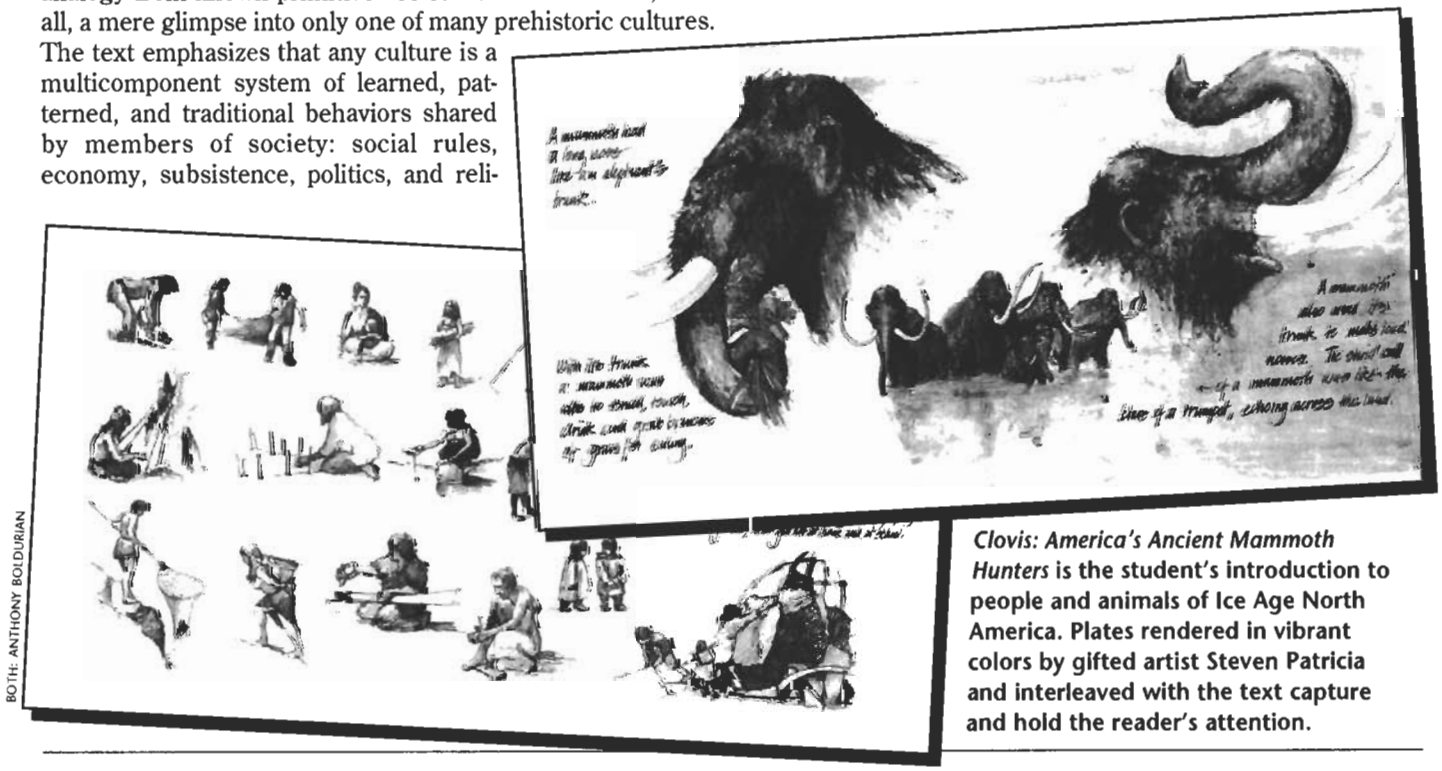
The handbook describes the terrain of Ice Age North America, so different from what we see about us today, and the now-extinct creatures—mammoth and mastodon, giant sloth, camel, horse, ancient bison—that shared the land with the Clovis people and became their source of food and materials. The reader gets an overview of the Clovis culture, based on what we know from physical evidence and what we can infer by analogy from known primitive societies. This course is, after all, a mere glimpse into only one of many prehistoric cultures. The text emphasizes that any culture is a multicomponent system of learned, patterned, and traditional behaviors shared by members of society: social rules, economy, subsistence, politics, and religion. The Clovis nomadic lifestyle—their method of fashioning tools; their techniques of hunting, butchering, and sharing meat from a kill; their cooperative mode of gathering foodstuffs and fuel—is a unique balance of behaviors struck by this one hunter-gatherer culture.

The richly illustrated handbook opens windows on geology, anthropology, and paleontology, disciplines that the archaeologist brings to bear in the study of ancient cultures. *Clovis: America's Ancient Mammoth Hunters,* without pretending to be an exhaustive study of the Clovis culture, prepares the student for the exciting phase of the course, learning by discovery.

Artifact replicas, a flintknapper's delight

Few archaeologists are treated to finer flintknapping masterpieces than those that Boldurian's students behold on opening the containers inside the Kit case. They enjoy the rare privilege of handling—very carefully—a precise replica of an actual blade core *and all its components.*

It is the work of Russian scientist Evgeny Girja of the Institute for the History of Material Culture of the Russian Academy of Sciences in St. Petersburg. During a visit in 1991 as guest scholar at the Department of Anthropology at Mercyhurst



BOTH: ANTHONY BOLDURIAN

Clovis: America's Ancient Mammoth Hunters **is the student's introduction to people and animals of Ice Age North America. Plates rendered in vibrant colors by gifted artist Steven Patricia and interleaved with the text capture and hold the reader's attention.**

Clovis Technology & Tools, the student's guide to Clovis artifacts, explains how knappers created weapons and tools and describes activities involving the artifact replicas that will help fix the concepts in the student's mind.

College in Erie, Penn., Girja, an authority on knapping techniques, selected a fine piece of toolstone. Just as a Clovis craftsman would have done 12,000 years ago, he prepared a blade core by first detaching a large flake with a limestone hammerstone, then carefully detaching a second flake with an antler billet—exactly like Clovis tools—to form a striking platform at an acute angle with the core front. Next, Girja struck off prismatic blades, the three- or four-sided razor-sharp, general-purpose tools Clovis people used for myriad tasks—to scale fish, skin and butcher game, work wood and leather.

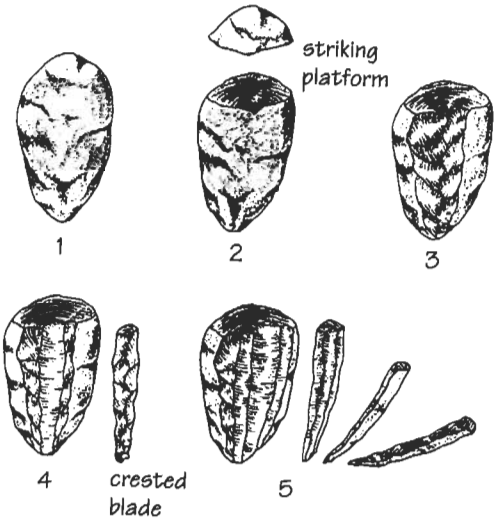


Figure 1.4 Schematic of Clovis Blademaking (adapted from *An Introduction to Flintworking*, by D. E. Crabtree, 1972, p. 43).

ANTHONY BOLDURIAN

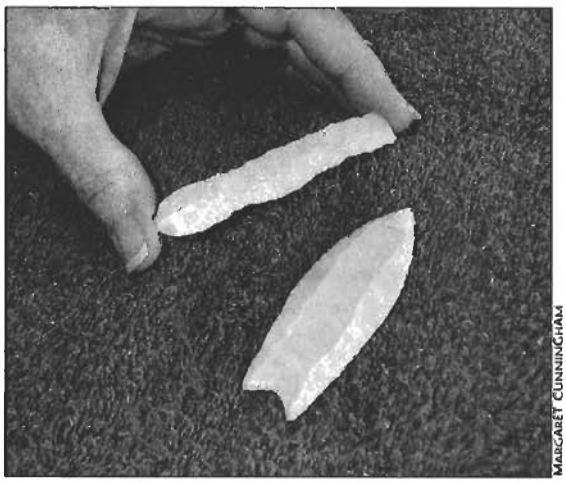
A Clovis knapper would have continued the process, detaching successive blades until the core was spent. Girja, however, stopped after making only four blades. He thus presented Boldurian with a worked blade core, the second flake he had removed to create the striking platform, and four prismatic blades. These are the masters that Boldurian's wife, Joanna, self-taught in the art of casting, used to create the resin replicas, which are identical with Girja's original lithic components to the minutest detail.

Students exploring these fascinating objects have as their road map *Clovis Technology & Tools*, the second handbook in the Clovis Artifact Activity Kit. Its pages first present an overview of the tools ancient cultures crafted of the many different materials at hand, including wood, bone, and antler. Then follows an introduction to ground stone and flaked stone technology, the principal ways stone was worked in different cultures. Clovis flaked stone technology is described in great detail. Students learn about blades and bifaces, the two principal Clovis flaked stone tools; direct and indirect percussion techniques; and how Clovis knappers created tools from blade and biface cores.

Boldurian is confident the trial application of the Clovis Artifact Activity Kit in the classroom will confirm the immeasurable value to students of being able to *experience* what they read in the handbook. Students handling the artifact replicas can see and feel the cortex, the weathered patina that clad the original nodule of toolstone and that appears on the surface of some of the prismatic blades. They can examine each blade and marvel at the tiny remnant of the platform evident on its end, the hallmark of a master Clovis knapper.

Probably the most rewarding experience comes when students refit the platform flake and blades to the core. Student Dana Huether says it well: "Seeing the core and blades and being able to 'play' with them gives you an insight into how the Clovis tool makers came to the final product and how much effort must have been put into the tools." As an additional benefit, students also learn to work cooperatively—it takes two pairs of hands to assemble the flake, blades, and core. They can see for themselves how the knapper formed prismatic blades, using the technique described in the handbook:

> Now the core was prepared for detaching blades. The first one to be removed was the crested blade. Its detachment resulted in two parallel ridges on the core. Each ridge was formed by the lateral margins of the crested blade as it separated from the core. The ridges were used to guide detachment of additional blades. Removal of each new blade was accomplished by applying force to the striking platform at the proper angle, *directly behind a ridge.* In this way, force was transferred effectively from the hand of the flintworker to the core. This process was described in a simple, yet accurate way by Don Crabtree, the Father of Modern American Flintworking. Crabtree said, 'We create ridges, then we follow the ridges we have created.' (pp. 15–16)



MARGARET CUNNINGHAM

Who can view this magnificent fluted point and its conjoining channel flake, fashioned by master knapper Charlie Hampton, Jr. of Guntersville, Ala., and not be awestruck by the craftsmanship of Clovis flintknappers? This point is 3 inches long; another point in the Kit, made by Tom Talley of Petersburg, Ind., is nearly 5 inches long and can be hafted by students, using a notched foreshaft and artificial sinew included in their Kits.

Selecting the next surface to be

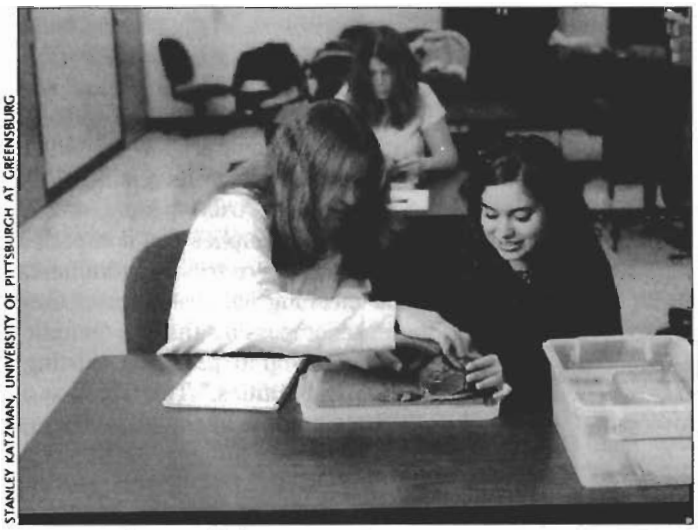
separated from the core is an instinctive ability acquired after many hours of experience. A bright student examining the refitted components will comprehend the knapper's strategy. The brightest of students, after inspecting the core, might even predict the next blade a master knapper would detach!

Clovis Technology & Tools also discusses in great detail the techniques Clovis knappers used to create bifacial tools and weapons. Although there is no bifacial core in the Kit, there are splendid examples of bifacial lithic products, including a bifacial tool used as a chopper and two classic fluted points—one with its intact channel flake, a prize seldom found in actual Clovis lithic assemblages.

Directed activities are a valuable learning bonus

The Clovis Artifact Activity Kit is appropriately named because the pages of *Clovis Technology & Tools,* besides giving an excellent description of flaked stone technology, also lead the student through specific activities that further increase the benefit that comes from examining and manipulating the artifact replicas.

- When examining prismatic blades, the student is directed to take careful note of especially important features, for example, parallel scars and parallel margins with sharp edges that identify superior tools created by a master knapper.



STANLEY KATZMAN, UNIVERSITY OF PITTSBURGH AT GREENSBURG

Someone forgot to tell Dana Huether (*left*) and Rebecca Flotta that archaeology isn't supposed to be fun! They are, however, fully aware of the serious nature of their activities. Notice that they are refitting prismatic blades to the core while working on the padded underside of the lid from their Kit. Boldurian trains his students always to cup an object in their hands; always to hand an object to their partner over a table, never over the floor; always to bend at the waist to view an object up close, never to bring it up their eye in an upright posture. In this class, students clean their hands with anti-bacterial wipes before handling artifact replicas, exactly as his advanced students do in his archaeology lab.

- The student, told the significance of the bulb of force, the impression left on the ventral surface of the prismatic blade by the knapper's punch, can examine the imprint on the replicas, using a pocket magnifier included in the Kit for exactly this kind of detailed inspection.
- A vernier caliper is also included in the Kit so that students can verify dimensions of artifacts important to scientists. Jen Long notes that "we learned that the width to thickness ratio of a refined bifacial tool is at least 4:1, and we were actually able to measure it to see for ourselves."
- Students read that Clovis knappers crafted special-purpose tools—scrapers, burins, spokeshaves, drills. In order to fix the concept firmly in students' minds, the Kit includes the replica of an endscraper made from a prismatic blade and *Clovis Technology & Tools* suggests how students can test it for themselves by scraping a piece of denim (the resin replica is too fragile to be used on animal hide, as Clovis workers would have used an endscraper). Jen Long again: "Using an end scraper on a piece of material . . . really helped me to better understand how the Clovis people performed different tasks."
- The Clovis fluted point, hafted to a shaft, became a deadly spear capable of dispatching bison and mammoth. Students can create this impressive weapon themselves by hafting the larger fluted point. The Kit includes a notched foreshaft, similar to one a Clovis craftsman would fashion with stone tools, and a length of artificial sinew for securing the point. Students now understand why knappers intentionally dulled the basal margin of the point, thus eliminating the sharp edge that would cut through the binding. A close examination of their replica with the pocket magnifier reveals the dulled margin and drives the message home.

It's hard to think of any important item Boldurian failed to include in his Clovis Artifact Activity Kit. There is even a pair of pointed pencil-size dowels. Their purpose? For students to use, says Boldurian, to point to a particular feature on a replica "instead of using the tip of their accursèd ballpoints." He adds that in his archaeology lab, if he sees students treating an arrowhead in such a nonchalant manner, "likely they won't be volunteering anymore in the lab." Granted, the Kit doesn't include a package of Band-Aids, but they aren't needed, since the resin casts lack the razor edge of actual lithic tools.

A Kit from an action-oriented teacher

The Clovis Artifact Activity Kit is exactly the kind of creation you'd expect from Tony Boldurian. Throughout his teaching career he has tried to regale his students with objects. He tries never to enter a classroom without something to show his students, usually a three-dimensional object, sometimes a map or poster. "Traditionally," he says, "I go to class behind a cart with something on it." His energy and enthusiasm don't pass unnoticed by his students—Koleen Grimm considers her class "very fortunate to have such an enthusiastic professor"—and are doubtless responsible for his receiving the 1996 University of Pittsburgh Chancellor's Distinguished Teaching Award (he is the only archaeology professor ever so honored).

Is he developing the Kit with an eye to marketing it? "Ultimately I would love to consider that as an option," he admits, and adds puckishly, "I think the University of Pittsburgh, who constructed the pilot program, would not be averse to considering that also." Today the sole purpose of the Kit is classroom instruction, but he foresees a time in the future when it may be necessary to address the alternatives of whether to develop the Kit for sale or retain it as a purely institutional teaching aid at UPG.

Meanwhile, he has two more kits on the drawing board. If the Clovis Artifact Activity Kit proves successful, he plans to offer similar packages to introduce The World of the Neanderthal and The Farmers of the Ancient World (the birth of civilization in the Fertile Crescent). Lucky students enrolling in Survey of World Prehistory courses at UPG may eventually experience activity-aided instruction in cultures spanning from the early Stone Age to the earliest historic period. Moreover, Boldurian is contemplating a yearlong course, Introduction to Archaeology I and II, with kits provided for laboratory applications.

Ambitious plans. All he needs is a supply of students with an energy level that matches his own.

–JMC

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Kennewick Man Decision

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Secretary's evidence that the remains are 'Native American' "; and second, the panel "applied the wrong standard of review to consider the 'Native American' evidence." They assert the "panel erroneously applied the 'preponderance of evidence' standard" instead of the less demanding "substantial evidence" standard of the Administrative Procedures Act. These criticisms seem off the mark, however, for the panel clearly "considered the evidence as a whole, weighing both the evidence that supports and the evidence that detracts from the Secretary's decision." Moreover, the panel concluded that the "administrative record [all 22,000 pages] contains no evidence—let alone substantial evidence—that Kennewick Man's remains" are related in any significant way to any modern tribe.

The tribes also argue that the panel's definition of "Native American" renders superfluous NAGPRA's provisions for the disposition of "unclaimed Native American remains" and remains that are culturally unidentifiable. If "Native American" encompasses remains that share "special and significant genetic or cultural features with presently existing tribes," then, the tribes assert, "unclaimed remains" and "culturally unaffiliated" remains would be impossibilities under NAGPRA, since such a relationship "must exist just to trigger the statute." The tribes argue that this invalidates the panel's interpretation since principles of statutory construction "preclude interpreting a statute to render part of it meaningless."

It seems clear, however, that under NAGPRA "unclaimed remains" are simply remains that have not been claimed by any tribe, regardless of their cultural affiliation. They may be eligible for repatriation, but the affiliated tribe may have chosen not to claim them. Under the panel's interpretation, "culturally unaffiliated remains" would be those that meet the general criteria for Native American, but cannot be tied unambiguously to a particular modern tribe.

Part of the confusion here may relate to the tribes' evident conflation of "prehistoric" and "ancient"

Can "Ancient" Human Remains Be "Native American"?

The panel concluded that Congress's use of the present tense in defining "Native American" as "of, or relating to, a tribe, people, or culture that is indigenous to the United States" was significant. The tribes disagree and assert that the "panel's reasoning elevates the term 'is' to talismanic proportions, while ignoring other parts of the statute that refute its reading."

The tribes claim Congress's use of "tribe, people, or culture," instead of simply "Indian tribe," implies that it intended NAGPRA to include more than just modern tribal governments in its purview. The "natural meaning" of that phrase, they assert, is broader and more encompassing than "a 'genetic' relationship to 'presently existing' political entities." The tribes suggest Congress intended the phrase to refer to "indigenous peoples, unbounded by time and political designation." Indeed, the tribes argue "the language of the statute, its legislative history, and its references to the Archaeological Resources Protection Act of 1979 [ARPA] . . . indicate NAGPRA applies to ancient remains."

To the contrary, the most comprehensive review of NAGPRA's legislative history failed to find any reference to remains older than A.D. 1492 (**MT 18-3,** "Congressional Intent: What is the Purpose of NAGPRA?"). In a footnote to the petition, the tribes argue that the panel's interpretation of "presently existing" as extant since 1789 means that "no remains older than 215 years could be 'Native American' under NAGPRA" and that this "restricted reading is irreconcilable with Congress' intent that NAGPRA apply to 'prehistoric' remains. This misconstrues the statute, however, since "presently existing" refers to the tribe claiming the relationship with remains and not to the remains themselves. These could be much older than 215 years.

At least part of the confusion here may relate to the tribes' evident conflation of "prehistoric" and "ancient." Moreover, they imply archaeologists are only interested in studying "ancient" remains. In fact, remains can be prehistoric without being truly ancient, since "prehistoric," in some regions of North America, can be as recent as 1700. Few people would suggest that remains of this age qualify as "ancient." And archaeologists and physical anthropologists are not solely interested in studying prehistoric remains.

In defending their assertion that "Native American" is not limited to "presently existing" tribes, the claimant tribes point out that Congress required that "sacred objects" have a relationship to "present day adherents," but made no similar requirement in the definition of "Native American." "In other words, Congress knew how to require an exacting relationship to an 'Indian tribe,' but chose not to do so with 'Native American.'"

In contrast, the panel viewed the definition of "sacred objects" as consistent with their interpretation of "Native American": "just as there must be a relationship between an artifact and a presently existing peoples [sic] for the artifact to be a 'sacred object' under NAGPRA, there must be a relationship between a set of remains and a presently existing tribe, people, or culture for those remains to be 'Native American' under NAGPRA."

NAGPRA's Criminal Penalties in Jeopardy?

The tribes argue that the panel's decision "renders the criminal provisions of NAGPRA unenforceable and unconstitutionally vague." They suggest a looter could not be expected to know whether a cultural item shared "special and significant genetic or cultural features with presently existing tribes, peoples, or cultures" and therefore could not know when they were violating the law. According to the tribes, this would frustrate Congress's intent that NAGPRA's criminal penalties " 'act as a deterrent' to protect federal and tribal lands 'from further looting.' "

The Court's Decision

On April 19, the U.S. Court of Appeals for the Ninth Circuit issued an order denying the tribes' petition. The full court was "advised of the Petition for Rehearing . . . and no judge of the court . . . requested a vote" on it. The tribes and the federal government have until 18 July 2004 to decide whether or not they will appeal the case to the US Supreme Court. Although previously the tribes expressed their intent to take the case all the way to the Supreme Court, Rob Roy Smith, attorney for the Confederated Tribes of the Colville Reservation, said in an interview with IndianCountry.com that it was unlikely the case would make it to the Supreme Court because it did not involve a conflict with a decision from another circuit court. Nevertheless, the high court could decide to hear the case.

The full text of the tribes' petition for rehearing, along with the text of all the court documents related to this case, can be found on the Friends of America's Past Web site **www.friendsofpast.org/** (where future updates on the appeals process also will be posted). For more information on the Native American Graves Protection and Repatriation Act (NAGPRA) see the National NAGPRA Web site at **www.cr.nps.gov/nagpra/** and the National NAGPRA on-line databases at **www.cast.uark.edu/products/NAGPRA/**

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The opinions expressed in this article are those of the author and do not necessarily reflect those of the Ohio Historical Society, with whom he is employed as a Curator of Archaeology.

Legislative Attempts to Alter NAGPRA

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the remains of a circa 9,200-year-old individual is exciting. Unfortunately, amidst the wrangling over this one individual, we may have turned our backs on an even greater threat to the study of ancient America. This threat comes in the form of legislative attempts to amend or supersede the Native American Graves Protection and Repatriation Act (NAGPRA). Since NAGPRA was passed in 1990, various members of the United States Congress have attempted four times to broaden the scope of the legislation beyond the original intent of Congress, even proposing expansions that would be impossible to implement and would place an undue burden on science. In an even more disturbing move, legislation was introduced in 2003 to create an entirely new law that would tighten the noose around scientific study even more than does NAGPRA. To be fair, there have also been two attempts, since the discovery of Kennewick Man, to legislatively clarify the ambiguous portions of NAGPRA that led to the controversy and ongoing court battle. In order to ensure that science loses no more ground, we must support the ongoing legal battle while remaining mindful of legislative activities.

In the four NAGPRA amendment attempts—S. 1983 and H.R. 4084 (1996) and S.110 and H.R. 749 (1997)—various politicians have proposed that NAGPRA be amended so that in situations where excavated or inadvertently discovered human remains are to be studied, the scientists must obtain written consent from the lineal descendants or, in their absence, "each appropriate Indian tribe or Native Hawaiian organization." Such an amendment, if passed, would make it virtually impossible to study human remains. In many cases, especially where remains are of the antiquity of Kennewick Man, without study it will be impossible to identify who constitutes an "appropriate" group to grant written consent. What is to be done with intratribal disagreements as to study? Some Native American groups are becoming increasingly interested in scientific analyses of remains, while others continue to resist such research. This dichotomy is not resolved in these proposed amendments. Although none of these four amendments were passed, the continued controversy over Kennewick Man makes it likely that similar amendments will be proposed in the near future. Indeed, it appears that the substantive proposals in these four amendments were a re-

sponse to the issues directly raised by Kennewick Man. According to Senate Report 104-356, the written consent requirements of these proposals are intended to extend Native control over remains to include materials recovered on federal lands, thus attempting to trump the Archaeological Resources Protection Act permit requirements under which Kennewick Man was originally recovered. Although on its face the written consent requirement of these proposals does not appear to be onerous, the identification of "appropriate" groups where lineal descendants are not "readily ascertainable" will likely prove impossible in most situations. Additionally, in light of Judge Jelderks's interpretation of NAGPRA in the Kennewick Man case, as allowing only the affiliated group to assert claims to remains, such a requirement to name an "appropriate group" in lieu of direct lineal descendants would be in direct conflict with Congress's original intention for NAGPRA (i.e., that only culturally affiliated, lineal descendants can speak for their dead). This added burden on science is a direct contradiction to the original intention of NAGPRA as voiced by Senator Melcher in the 1987 NAGPRA hearings: "We do not intend in any way to interfere with . . . science in the bill."

Although the above-mentioned legislation attempts to alter the original intent of NAGPRA, other proposed legislation has attempted to clarify some of the ambiguities of the original law while still maintaining the spirit of NAGPRA. In 1997 and again in 1999, Representative Hastings of Washington attempted such revisions. These proposals (H.R. 2893 and H.R. 2643, respectively) were intended "to provide for appropriate study and repatriation of remains for which cultural affiliation is not readily ascertainable." These proposals attempt to balance the competing interests of the scientists and the indigenous groups as to unaffiliated remains by allowing for study, and also allowing for repatriation upon identification of affiliation through study. Neither of these proposed bills was ever passed into law.

In a more urgent matter, in 2003 a number of Representatives sponsored H.R. 2419, the Native American Sacred Lands Act (NASLA). While the proposed bill appears to address a religious freedom problem—the protection of sacred Native American sites—it also threatens to substantially encroach onto the territory regulated by NAGPRA. As it is written, NASLA would charge federal agencies to ensure that "undertakings" do not cause "significant damage" to "sacred land" on federal property. Under this proposal, "sacred land" includes "any geophysical or geographic area or feature which is sacred by virtue of its traditional cultural or religious significance or ceremonial use." I should clarify my position at this point. I do not think any of us would advocate the destruction of Native American sacred sites. However, when the restrictions placed on such lands conflict with existing legislation to the point of increasing Congress's burdens on scientists' well-intentioned research goals, the legislation should be revised. As drafted, this bill would extend carte blanche to indigenous groups the ability to restrain activity on non-tribal, federal property depending on their own subjective determination of an area as "sacred." Such free reign over public lands substantially encroaches on the provisions of NAGPRA that regulate the handling of human remains found on federal land. In theory, this legislation could allow Native American groups to assert control over non-native historic unmarked burials on federal land by claiming that the land is sacred, under the assumption that all unmarked burials are indigenous.

The manner in which NASLA would most encroach upon NAGPRA, however, is through the type of evidence that would be admissible. Regulations under NAGPRA consider geography, kinship, biology, archaeology, linguistics, folklore, oral traditions, and historical evidence in determining affiliation. Each of these lines of evidence can be afforded different weight in the overall consideration of affiliation, based on the veracity of the evidence. However, in an apparent response to the Kennewick Man decision at the district court level, NASLA would mandate that oral histories be given equal weight with other evidence, regardless of their veracity. Such a provision eviscerates the well-considered evidentiary scheme of NAGPRA in which a judge can use a sliding scale to determine what evidence best provides a solution. If passed, NASLA could cause vague oral histories, such as those in the Kennewick Man case, to trump all other lines of evidence when human remains are involved. At a minimum, such well-intentioned legislation as that directed at protecting sacred lands from destruction must not be allowed to encroach on prior legislation's evidentiary sources. This bill needs a clause that exempts NAGPRA issues from coverage by this proposed law.

At this point, you are probably asking yourself, What do I care about a bunch of old proposals that never became law? The simple answer to that is that the battle to preserve and continue to study America's past must be fought in the courtroom (e.g., with such cases as Kennewick Man) as well as in the statehouse, through active support of proposals such as those put forth by Representative Hastings in 1997 and 1999. Believe it or not, the Kennewick Man case will end someday, but the doors to Capitol Hill will remain open. As a diverse group with a shared interest in the prehistory of America, we must ensure that Congress's original intent for NAGPRA is honored: Protecting the human remains of culturally affiliated living descendants, while not interfering with the advancement of science and its understanding of our nation's past. The scientific community as well as the interested public must keep abreast of such developments in the legislation and participate in the legislative process so that NAGPRA continues to function in this capacity. To assist you in better understanding this process, I have compiled information relevant to this issue, as well as links for you to contact your Congressional representatives on-line at **www.legalanthropology.com/NASLA.html**

These legislative undercurrents are likely to continue long after the Kennewick Man case is over. It is essential to the maintenance of the delicate balance that NAGPRA represents between science and human rights that amendments, no matter how sincere in intent, not be allowed to trample on the public's right to repatriation by an unaffiliated group whose religious beliefs about proper treatment might be inconsistent with or even antithetical to those of the deceased.

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