

**THE
BERING STRAIT
THEORY**



**BY
ALEXANDER EWEN**

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By Alexander Ewen

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The author wishes to thank the many commentators to these articles, almost all of whom made important and salient points, and hopes that these articles will inspire further discussion on the subject.

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FORWARD

In April of 2017 a study was published in *Nature* magazine that upended the scientific community and created a storm of controversy by claiming that humans butchered a mastodon in southern California 130,000 years ago. The study is truly groundbreaking, but whether the study's conclusions are true or not, as that remains to be tested, but from the fact that *the study was published at all*. It is a historic event when a prestigious scientific journal publishes and a reputable scientific institution, the San Diego Natural History Museum, is willing to write and endorse a finding that is so completely at odds with prevailing scientific opinion.

For more than 100 years, it was simply impossible to challenge the scientific view that ancient Indians crossed over from Asia earlier than 15,000 years ago (or up until recently, before 10,000 years ago), regardless of what the scientific evidence actually said. No scientist would risk their reputation and their academic standing to counter the prevailing view, nor would any reputable journal publish their findings even if they were brave enough to speak out.

It has also been the presumption of Western society, particularly in the scientific era, that other societies, such as American Indians or other indigenous peoples, are superstitious - that is these "primitive" cultures believe in or have ideas that are irrational, not grounded in science or reason, and through time these nonsensical ideas have become so widely held and entrenched that they have become myths. Western society, by contrast, had over time evolved from this primitive and irrational state, discarded its ancient myths, and now exists in a state where science and reason are the norm.

From an indigenous perspective, the reverse appears to be true. It is Western society that is steeped in mythologies or ideologies so fierce they border on madness, and it is the indigenous people that have managed to exist in their environments for thousands of years in a relatively orderly fashion.

Because of these differing perspectives, for the longest time scientists and Native peoples were at odds. Since "primitive" peoples did not have science, the right to explore, study, explain and educate people as to the past was the exclusive enclave of the scientist, even if the past the scientist was studying was not his own. These rights extended so far as to include the right to confiscate cultural artifacts and unearth graves without the permission of the indigenous peoples. Only very recently have these attitudes changed, and now we are seeing research that includes indigenous peoples and their perspectives.

In 1992 the great Seneca philosopher John Mohawk gave a talk in which he expressed the view that the varied cultures that make up the human race were "a vast library which contained the sum of human knowledge" and he expressed the hope that one day we would become wise enough to seek out and use that knowledge to help us confront the problems of the present day.

My hope is that this collection of essays will inspire people to search for the truth in the spirit of cooperation. The past and the future are great unknowns that can best be traveled through together.

Alex Ewen
December 23, 2017

INTRODUCTION

The immense knowledge and factual proof of many scientific theories does not exist. Many theories and facts recited by scholars are merely academic folklore which professors heard in their undergraduate days and have not examined at all.

Vine Deloria, Jr. *Red Earth, White Lies* (1995)

On August 2, 2013 an article in the prestigious journal *Science*, “Sequencing Y Chromosomes Resolves Discrepancy in Time to Common Ancestor of Males versus Females,” announced a major scientific breakthrough in genetic research. By a complex analysis of the human genome, a team of 11 scientists had discovered that the first modern man, the genetic “Adam,” lived in Africa between 120,000 to 156,000 years ago, around the same time that the genetic “Eve” was living there as well. By studying the differences in the Y chromosome in dozens of modern men and calculating the rate of mutation, the scientists were able to project backwards into time and determine where and when he lived.

The *New York Times* featured the discovery with the headline, “New Studies Suggest an ‘Adam’ and ‘Eve’ Link.” Before this study, the *Times* noted, “geneticists believed that Mitochondrial Eve appeared hundreds of thousands of years before her male counterpart.” The team, led by Stanford University geneticists G. David Poznik and Carlos D. Bustamante had “discovered thousands of previously unknown Y chromosome variations, which they say allowed them to establish more reliable molecular clocks.”

To complete the study, however, the scientists needed a way to calibrate this clock. In order to do so, they looked to American Indians.

To directly compare the TMRCA of the Y chromosome to that of the mtDNA [Mitochondrial DNA], we estimated their respective mutation rates by calibrating phylogeographic patterns from the initial peopling of the Americas, a recent human event with high-confidence archaeological dating. Archaeological evidence indicates that humans first colonized the Americas ~15 kya [15,000 years ago].

The only problem was that the statement that the initial peopling of the Americas is an “event with high-confidence archaeological dating” was simply not true.

University of New Mexico professor of anthropology E. James Dixon flatly states in *Bones, Boats & Bisons*, a history of American archaeology, that, “one of the most controversial issues in North American archaeology is the time when humans first colonized the Americas.” Tom Dillehay, professor of archaeology at Vanderbilt University openly admits in *The Settlement of the Americas*, “What we do not know is exactly when this migration occurred.” To make things even more uncertain, as David J. Meltzer, professor of prehistory at Southern Methodist University, notes in *First Peoples in a New World*, “It is possible that there were even more migrations, major or minor, including some that were not successful.”

Far from a high confidence, the question of when, how, and from where the first Indians came to be in this hemisphere has been a matter of constant and often acrimonious dispute within the archeological community. But not withstanding the controversies among themselves, to the outside world archaeologists have projected a certainty that ancient Indians first crossed over into America through the Bering Strait 15,000 years ago or less to such an extent that it has become an unquestioned fact.

So unquestioned that 11 scientists spent hundreds of hours and tens of thousands of dollars doing highly sophisticated and expensive gene splicing, only to base their entire work on an unproven and controversial assumption. Unfortunately, these flawed studies end up reinforcing each other much like a house of cards.

SCIENCE VS. INDIANS

When the late Sioux philosopher Vine Deloria, Jr. published *Red Earth, White Lies: Native Americans and the Myth of Scientific Fact* and challenged the Bering Strait Theory, he was savagely attacked by many scientists in the press. Most of them had a difficult time trying to understand his point of view. They lumped his work along with creationists, conspiracy theorists, experts on ancient astronauts, and other nuisances that scientists are often forced to deal with. In contrast to the wry humor and rambling musings that made up much of *Red Earth, White Lies*, the vitriol that poured from some of the harshest critics, such as John Whittaker, a professor of anthropology at Grinnell College, who in a review published in the journal *Skeptical Inquirer* referred to Deloria's book as "a wretched piece of Native American creationist claptrap," seemed excessive.

As if to get revenge for his often comical lampooning of widely held scientific beliefs, the critics blasted Deloria for using dubious sources and lacking scientific proof when he tried to present an alternative view. Few realized that Deloria's attack on the Bering Strait Theory was his way to highlight the differing worldviews that separate indigenous peoples from modern scientists.

The major difference between American Indian views of the physical world and Western science lies in the premise accepted by Indians and rejected by scientists: that the world in which we

live in is alive. Many scientists believe this idea to be primitive superstition.

These differing perspectives collided in 1996 with the discovery of an ancient body on the banks of the Columbia River, "Kennewick Man." A fierce court battle erupted over the remains, which pitted archaeologists and other scientists who wanted to examine Kennewick Man and store him for future study—against federal agencies that were trying to enforce a federal law that protected Indian graves.

Believed to be over 9,000 years old, for science Kennewick Man was a rare and priceless find. Of the more than 30,000 remains of indigenous peoples housed in museums across the world, fewer than 50 are Paleoindians (Ancient Indians). The rest were either collected by the army during Indian wars or were looted from historical graves.

For Indians, Kennewick Man was a person, not an artifact, who needed to rest in peace. The indiscriminate collecting of Indian remains by scientists in the past was a major reason Indians had sought passage of the federal laws that protect Indian gravesites. In the end the archaeologists emerged victorious when the courts ruled in 2004 that there was no scientific evidence that the remains were related to any contemporary Indians, and thus did not have to be reburied.

The mainstream scientific presumption in the Kennewick Man case and over *Red Earth, White Lies* was that Deloria and traditional Indians were similar to fundamentalist creationists, and therefore against science when it contradicts religious belief. But in fact what Deloria was proposing was that Indians were not anti-science, *they were anti-scientist*. In particular, they were against those scientists who held narrow views of the world, who had no respect for other

people's traditions, who fostered a cult of superiority either for themselves or for their society, and who were afraid to search for the truth unless it already conformed with established opinion.

Deloria also argued that science, when studying people, was not neutral. In his view some scientific theories harbored social and political agendas that were used to deprive Indians and other minorities of their rights. Many of the assumptions that underlay certain scientific principles were based on obsolete religious or social views, and he urged science to shed these dubious relics of its past.

The issue for Deloria was not science vs. Indians, it was good science vs. bad science. In the two decades since *Red Earth, White Lies* appeared a host of new evidence has dramatically challenged the Bering Strait Theory and particularly the accepted date of 13,000 BC for the initial colonization. That the paradigm continues only seems to confirm Deloria's view that the reason the belief is widely held has less to do with science, and more with the scientists themselves.

This series on the Bering Strait Theory was written to place the debate over the theory in context, not to provide an answer to the question of when and how the Americas were first settled. The answer to that question is still, as in the words of many Native traditions, "The Great Mystery."

It is an examination of the origins and development of the Bering Strait Theory in order to fully comprehend the difficulties attached to having a reasoned discussion over it. For rather than being an unfettered search for the truth, the debate over this theory has been filled with a venom more characteristic of religious fanaticism than scholarly discourse. Not simply outsiders like Vine Deloria were

tarred and feathered, the scientists would often reserve their most scathing attacks for each other.

So in 1892, when the geologist George Frederick Wright published his massive study, *Man and the Glacial Period*, which challenged some of the tenets of the Bering Strait Theory as it was then formulated, he was attacked, as Professor Meltzer pointed out in *First Peoples in a New World*, "with a barrage of vicious reviews which were unprecedented in number and savagery." One critic of the book, W. J. McGee, the head of the Bureau of American Ethnology, "was especially bloodthirsty, labeling Wright's work absurdly fallacious, unscientific, and an 'offense to the nostrils,' then dismissing him as 'a betinseled charlatan whose potions are poison. Would that science might be well rid of such harpies.'"

Although his approach may not have been what scientists expect and would accept, in his basic thesis, Deloria was not wrong. Many sciences, such as economics, psychology, and anthropology, have dubious scientific principles based on little more than prejudice and the rationalization of power and greed. Thus the discussion of this scientific theory is but a microcosm of a greater issue. Today, Western culture and science are filled with dogmatic beliefs so powerful and ingrained that they are pulling this planet apart and threatening the existence of most living species.

It is the indigenous peoples that have for decades been calling for practical solutions to ensure the survival of future generations. It is unfortunate that Native voices, such as Deloria's, have been dismissed so quickly, especially given that now, finally, even the scientists recognize that we live on a planet that is in big trouble.

BERING STRAIT THEORY, PT. 1: HOW DOGMA TRUMPED SCIENCE

It is generally assumed that the Bering Strait Theory has almost universal acceptance from scientists. The mainstream media, and thus the general public, take it as a given that the debate over the origins over American Indians has long been settled. So, for example, the *New York Times*, in an article on March 12, 2014 “Pause Is Seen in a Continent’s Peopling” stated unequivocally that, “The first migrations to North America occurred between 15,000 and 10,000 years ago.”

While there is no consensus for the dates, or even the route, for early Indian migrations among the scientists themselves—nor has there ever been—to the outside world the standard mantra is the same, that Indians migrated across the Bering Strait land bridge from Asia 15,000 years ago or less.

The reason for the insistence in the primacy of the Bering Strait Theory is not because of science, but because of dogma. This is well known among the scientists, many of whom have chafed under its strictures. So in 1998, Dennis Stanford, director of the Paleoindian program at the Smithsonian Institution, coined the term “Clovis Police” to refer to those “die-hard archaeologists who insist upon Clovis as representing the earliest culture in the New World.” James Adovasio, known for his excavations of the Meadowcroft Rockshelter in Pennsylvania, devoted an entire chapter of his 2002 book, *The First Americans: In Pursuit of Archaeology’s Greatest Mystery*, to the “Paleo-police” who have frustrated his attempts to gain recognition for the antiquity of the site.

When genetic studies that proposed an ancient contact between Polynesians and

American Indians—not in conformity with the Bering Strait Theory—were published by University of Hawaii geneticist Rebecca Cann in 1994 in the *American Journal of Human Genetics*, under the title “mtDNA and Native Americans: A Southern Perspective,” they were met with a swift and fierce rebuttal. Cann is a pioneer among geneticists, her research having developed the concept of the “Mitochondrial Eve” and the currently accepted “Out of Africa” theory of modern human origins. She was not someone to be trifled with, and she shot back in a letter in the *Journal* in July, 1996, dismissing much of her critics’ data, interpretations, and point of view; “Rather than make dogmatic statements, we feel that it is better to encourage the open exploration of this debate, with more genetic markers and the use of data already in the literature.”

But open exploration of the debate has not happened because the debate itself has been moderated by ideologues who determine the evidence that may be used, and ignore the evidence that does not fit the theory. In order to understand why this is, one must look at the history of the Bering Strait Theory, which will only shed a little light on the development of science, but offers important lessons on how and why a dogma is created.

THE BIRTH OF A THEORY

When Columbus stumbled upon the Americas in 1492, he set off an endless round of speculation in Europe regarding the lands and its people. By 1797, Benjamin Smith Barton could write in his book *New Views of the Origin of the Tribes and Nations of America* that the “opinions of writers concerning the origin, or parental countries, of the Americans are as numerous as the tribes and nations who inhabit this vast portion of the earth.”

In those days the study of science was still a subset of theology, so virtually all of the early theories of Indian origins were based on the Bible. Typical of these early scientists was the keen-eyed Jesuit observer Friar Joseph de Acosta, whose book *The Natural and Moral History of the Indies* (as America was then known), published in 1590, is among the first in the nascent field of anthropology. For Acosta, the evidence was clear.

The reason why we are forced to admit that the men of the Indies came from Europe or Asia is so as not to contradict the sacred Scriptures, which clearly teaches that all men descend from Adam; and thus we cannot assign any other origin for the men of the Indies.

Similarly, the colonization was believed to have taken place only in the past few thousand years. The scientific consensus at that time, held by the foremost chronologists of the Bible, such as Jesuit philosopher Benedict Pereira, Irish archbishop James Ussher, the astronomer Johannes Kepler and the physicist Isaac Newton, was that humans were created around 4,000 BC and the Flood unleashed around 2,400 BC.

Although it would be another century before European explorers would find the Bering Strait, Acosta and many other 16th-century scientists had already assumed that Asia and the Americas were connected. They reasoned that since all of the animals in the world were descended from those saved by Noah from the Flood, the animals that were in the New World had to have walked over by some as yet undiscovered passageway. Acosta argued similarly “that the race of men arrived by traveling little by little until they reached the New World, and the continuity or nearness of the lands helped in this.”

Not everyone agreed with Acosta. The 16th-century Swiss scientist and father of

chemistry, Paracelsus, believed the indigenous peoples of the Americas were a separate creation of God and not descended from Adam and Eve. His theory, however, met with little support, as there was no evidence of a separate creation in the Bible.

In 1681, Diego Andrés Rocha proposed in his book, *A Unique and Singular Treatise on the Origins of the Indians of Peru, Mexico, Santa Fe, and Chile* that Indians were the descendants of Noah’s son Japheth and had come to the Americas by way of Atlantis. Since Rocha believed the Spanish were also descended from Japheth, and thus related to Indians, the colonization of the Americas by Spain was to him a fulfillment of divine providence.

Not to be outdone, British writers such as Richard Hakluyt and George Bruder argued that ancient Indians were Welsh and thus justified the British explorations of North America. The Dutch legal philosopher, Hugo Grotius, believed they were northern Europeans who had sailed across the Atlantic, since had there been a land connection with Asia they would have surely brought their horses. Many believed Indians were descended from Canaan, the grandson of Noah who was cursed by God, or Ophir, a descendant of Noah’s son Shem who settled in a land rich with gold.

The most enduring origin theory based on the Bible was that Indians were the descendants of the Lost Tribes of Israel, a belief still held today by devout Mormons. It was proposed in 1567 by both French Benedictine scholar Gilbert Genebrard in *Chronicle in Two Volumes* and Dutch priest Joannes Fredericus Lumnius in his book *De Extremo dei Judicio et Indorum Vocatione*. As evidence they produced the apocryphal *Second Book of Esdras*, which tells the story of how the Lost Tribes escaped their Assyrian captors and fled “to a far away country where mankind had never lived,” a



1562 map of the world by Venetian cartographer and engraver Paulus de Furlanis Veronensis (Paulo Forlani). The map shows Asia and the Americas being joined by a land bridge, named Arsarot (Arsareth), after the mythical homeland of the Lost Tribes of Israel.



By contrast, the 1566 map by Bolognino Zaltieri, also based in Venice, shows Asia and the Americas separated by a small strait, the mythical Strait of Anián. It would be 162 years before the existence of the strait would be confirmed by Russian explorer Vitus Bering.

region called Arsareth, or in their view, America.

Irish anthropologist James Adair popularized this notion in his book published in 1775, *The History of the American Indians*, bringing a wealth of (what at that time was considered to be) scientific evidence to back up the Lost Tribes theory. Adair also argued that the early migrants had crossed the Bering Strait.

The Russians, after several dangerous attempts, have clearly convinced the world that [Asia and America] are now divided and have close communication by a narrow strait, in which several islands are situated, through which there is an easy passage from the north-east of Asia to the north-west of America. ... By this passage, supposing the main continents were separated, it was very practical for the inhabitants to go to this extensive new world, and afterwards have proceeded in quest of suitable climes.

Although Adair's ideas about the Lost Tribes would largely fall out of favor, his theory about the Bering Strait would not.

SCIENCE TAKES OVER

On September 6, 1856, a small article appeared in the local newspaper in Elberfeld, Germany.

In the neighboring Neander Valley ... a surprising discovery was made in recent days. During the breaking away of limestone cliffs ... a cave was uncovered, which over the course of centuries had been filled with clay sediment. Upon digging out this clay, a human rib was found ...

The news caught the attention of the distinguished naturalist and professor of anatomy at the University of Bonn, Hermann Schaaffhausen, who at first speculated that the ancient skeleton uncovered was nothing less than an

ancestor of American Indians. Upon actual examination of the fossil, what he reported sent shock waves through the Western world.

Neanderthal Man, as he was dubbed, was human, but an entirely different species of human. The concept was not easy to grasp at that time. The idea that there might have existed other forms of humans had rarely been contemplated, much less fit into any existing theory of human origins. Schaaffhausen's conclusions met with a swift rejection from most other German scientists, who argued that despite the extreme mineralization, the unusual skeleton was not old, he was either a "poor wretch" who had been deformed by disease, or a Russian Cossack.

But others were ready to accept the possibility that ancient humans existed even if there was no mention of them in the Bible. Geologists, beginning with James Hutton in the 18th-century, had already begun to challenge the notion that the Flood had deposited the many differing layers of soils, rock, and sediments, and argued convincingly that the earth was much, much older than previously thought. In 1837 the Swiss botanist and geologist Louis Agassiz proposed his then extremely controversial theory that the earth had been subject in the ancient past to an ice age.

William Pengelly's systematic excavations at Brixham Cave in England in 1858, where he found stone tools located alongside extinct ice age animals, was therefore seen as convincing proof of the antiquity of humans. The next year the excavations in the Somme Valley by French archaeologist Jacques Boucher de Crèvecoeur de Perthes, who as early as 1847 proposed that men had lived during the Ice Age, were examined and confirmed, and the findings presented before a stellar assemblage of scientists at

London's prestigious Royal Society, where they were accepted.

With the discoveries of Neanderthal Man, Brixham Cave, and the Somme, antiquarians (as those who studied the human past were then called) were forced to make a choice, and out of that choice a new science, paleoanthropology, was born. The same year that the antiquity of man was confirmed and accepted by the scientists of the Royal Society, Charles Darwin published his famous work, *On the Origin of Species*, leading to a lasting break with long held Biblical theories of the natural world.

Paleoanthropology, the study of ancient humans, began as (and still is) a mixture of many sciences and its founding members were composed of academics from practically every discipline: geology, anthropology, biology, archaeology, anatomy, and chemistry, to name a few. They were joined by a host of amateurs: businessmen, doctors, bankers and schoolteachers, who would search for fossils in their spare time.

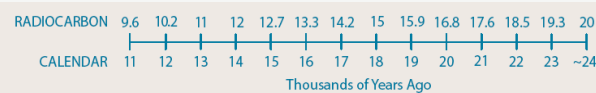
In Europe dramatic discoveries rapidly followed one after another, and in America the new science was also taking off dramatically—but unfortunately, dramatically on the wrong foot.

THE DATING GAME

One fallout from the conflicts between religion and science has been the reluctance of scientists to use the Gregorian Calendar, the standard system of dating in use, regardless of religious convictions, by most of the world today. Under this calendar, this series of articles was written in AD 2014, and the estimated date when American Indians are first presumed to have crossed into the Americas is around 13,000 BC, or 15,000 years ago. By the mid-20th century, scientific publications began to use the term “BCE or Before the Common Era” rather than “BC” in an attempt to avoid the religious connotations.

Recently the use of “YBP or Years Before Present” has become popular and is now standard in paleoanthropology and geology. The problem with YBP is, of course, that the “Present” is not a fixed date, but changes every year. It was presumed, in dealing with periods thousands of years ago, that this might not be a problem. But as technology progressed, new dating systems, using tree-rings and ice-cores, can now accurately identify climactic events that occurred thousands, or in the case of ice-cores, tens of thousands of years ago, often to the year. Therefore it was decided to fix the “present” at the year 1950, when radiocarbon dating came into widespread use. So for example, 458 YBP is equal to AD 1492, when Columbus began his first voyage.

In addition, many studies give their dates in radiocarbon years, referred to as C¹⁴ YBP or RC YBP. Radiocarbon dates do not correspond to calendar dates, and so must be calibrated using other technologies. The confusion has led to reports inadvertently comparing differing dating systems.



RADIOCARBON YEARS before the present (*top*) must be translated into calendar years before the present (*bottom*). For example, an artifact that is 11,000 radiocarbon years old is actually 13,000 calendar years old.

BERING STRAIT THEORY, PT. 2: RACISM, EUGENICS AND WHEN NATIVES CAME TO AMERICA

Since the early 16th-century, questions about the origins of American Indians spurred a lively theological debate. By the mid-19th-century, science was taking over, but that did not end the debate, indeed, it only made it more contentious than ever.

SKULLDUGGERY

On July 18, 1866 the distinguished geologist and scion of a prominent and intellectual Massachusetts family, Josiah Whitney, wrote to his younger brother, the linguist and philologist William Dwight Whitney, of a stunning find at the bottom of a gold mine in Calaveras County, California.

The great excitement now at the office is the discovery of a human skull at a depth 153 feet below a series of volcanic beds with intercalated gravels. I have just returned from the locality, and we have the skull in the office. It is a bony fide find of the greatest interest.

Whitney, a professor at Harvard, was the first “State Geologist” of California. For his scientific achievements, the highest mountain in the continental United States, Mt. Whitney, and a glacier, Whitney Glacier, would be named after him. Whitney examined the skull, which was still partially encrusted in gravel and volcanic ash and covered with a thin sheen of calcium carbonate. Although it was anatomically similar to modern humans, the skull was almost completely fossilized, strong evidence it was probably very old.

The only way to know how old, in those days, was to determine the age of the stratum in which it was buried, but Whitney had not discovered the skull. The

skull was apparently found by the mine operator who then gave it to a Wells Fargo agent, who then passed it on to a doctor in San Francisco, who then contacted Whitney. Whitney visited the site, but it was now five months after the discovery and the shaft where it was found had been abandoned and become filled with water. Despite not being able to confirm the exact stratigraphic position of the skull, and therefore its age, Whitney went ahead and announced his preliminary results in a short paper before the California Academy of Sciences.

The news hit the world like a thunderclap. If the skull had indeed been found beneath four separate layers of lava, each layer between 9 and 40 feet thick, that meant that Calaveras Man was, under the reckoning of the day, around 10 million years old.

Whitney’s discovery was met with stunned disbelief from most scientists. Although the antiquity of man had just been recently accepted, 10 million years was a big, big leap. Given the new state of the science many still held an open mind. French anthropologist Jean-François-Albert du Pouget was willing to give Whitney the benefit of the doubt, although he found it odd that the skull was indistinguishable from a modern man; “it is difficult to admit the perpetuation of a type without appreciable modifications during the incalculable ages in which all nature has undergone so complete a transformation.”

But for many scientists, the idea that American Indians could be more ancient than Europeans was impossible. At the same time the theories of evolution for natural organisms were being developed in Europe, culminating in Darwin’s work, theories of social evolution had also been percolating, finding its synthesis in the works of British philosopher Herbert

Spencer, who argued that societies increase in complexity over time.

Lewis Henry Morgan, in his influential work *Ancient Society*, proposed that humans went through various stages of development, beginning with the “Older Period of Savagery” progressing through middle and later periods into the “Older Period of Barbarism,” which also had other stages until finally the “Status of Civilization” was reached.

Thus Canadian geologist Sir John William Dawson could state in his book, *Fossil Men*, published in 1880, that, “existing humanity, as it appears in the Native American, is little else than the survival of primeval man in Europe.” Dawson led the charge of those scientists who fought against the antiquity of the Calaveras Skull, calling Whitney’s discovery “fanciful and improbable.”

Nor were scientists Whitney’s only detractors; there were those who still held firmly to Biblical ideas of time and creation. “The religious papers,” paleontologist John C. Merriam wrote, “in particular investigated the case and pronounced it a hoax originating with some mischievous miners.” The stories that Whitney was the victim of a practical joke spread, becoming more and more elaborate with each telling, with more and more participants claiming to have been in on it, and making the new science a source of popular ridicule. To make matters worse, Whitney took his time defending his discovery, writing a detailed report about the skull only in 1879, a full 13 years later, which allowed the controversy to fester and grow.

With the release of his report, dissenting scientists were finally able to take a crack at dismantling Whitney’s discovery and the attacks were swift and blistering. The geologist William Phipps Blake, who

visited the site, argued that the calcareous sheen on the skull was not typical of a fossil washed into a gravel bed, and the skull should have been more damaged and abraded. Alphonse Pinart, a champion of the Bering Strait Theory who had actually kayaked through it, contended that the site was not pristine and so there was no way of knowing where the skull came from, all of which created “the most serious doubts regarding the antiquity of this specimen.”

Whitney replied that it didn’t really matter where the skull had been found, the gravels found encrusted with it were clearly of an ancient epoch, an argument dismissed by the prominent archaeologist William Henry Holmes, who countered that the Indians could have simply buried the person in those ancient deposits. A host of distinguished scientists rose to defend Whitney. Many, such as the paleontologist William Healey Dall and geologist George Ferdinand Becker, actually examined the skull. But the lack of proof that it had come from such a deep location made it difficult to defend its great age, and there were strong grounds to believe that even if Whitney was not the victim of some prank, the skull did not come from the bottom of the mine shaft.

With Whitney’s death in 1896 the gloves came off and the Calaveras skull was systematically debunked and pronounced a hoax. Unfortunately it would be another 70 years before the skull could be dated independently of the stratum it might have come from. Because it was almost completely fossilized, the skull could not be radiocarbon dated, but a fluorine test conducted by the archaeologist Kenneth Oakley of the British Museum (Natural History) found it to be approximately 5,000 years old, ancient yes, but by no means 10 million years old.

THE PALEOLITHIC WAR

The highly publicized battle over the Calaveras skull was just the opening salvo of a rancorous war among American paleoanthropologists that raged across the hemisphere over the next half-century. The battle lines became drawn between those who believed, or were willing to accept, that Indians in America were ancient, that is present in this hemisphere at least 10,000 years ago or even 100,000 years ago (the Paleolithic era), and those who insisted that Indians had migrated here only within the past 5,000 years.

As Anthony T. Boldurian and John L. Cotter observed in their history of the early excavations in the Southwest, *Clovis Revisited*, the conflict was due “in part to heated arguments over what exactly constituted acceptable evidence.” The new science was still working out its methodology for determining how old artifacts might be. But a larger problem was that, “a few of anthropology’s influential elite seemed firmly opposed to an American Paleolithic.”

Thus any archaeological site that might betray a hint of antiquity became a bloody battleground fought between competing camps of scientists. From the suburbs in New Jersey to beaches in Florida, the wilderness of Canada to the Mississippi Delta, from the Pampas of Argentina to the valleys of Mexico, the war raged without mercy. To make things worse, amateurs and dilettantes scoured the land looking for fossils, often making outlandish claims. Among the professionals there were dozens of theories as to how old Indians were and where they came from, with some even proposing an American genesis.

In Europe, spectacular finds piled up one after another: the discovery of Cro-Magnon man in southern France in 1868; the cave art of Altamira, Spain, discovered in 1879;

the discovery of extensive Neanderthal tools in 1880. But in America, paleoanthropology was completely paralyzed by the infighting. By 1900, the new science did not have a single discovery that had any consensus among its members.

Paleoanthropology needed a leader, someone who could end the chaos and put it on the path to respectability. It found it in a most unlikely person, a Czech-born anthropologist by the name of Aleš Hrdlička. His impact on American paleoanthropology in the coming century would be difficult to overstate.

THE RISE OF AN ORTHODOXY

Although only 34 years old in 1903, Hrdlička was chosen to head the new physical anthropology department at the National Museum (now the Smithsonian Museum of Natural History) in Washington D.C. Physical anthropology, the biological study of humans, was at that time largely concerned with “racial classification,” often through the study of human skulls, and Hrdlička was by then one of its leading experts. Over the previous four years, Hrdlička had toured the Americas examining people and collecting skulls for the American Museum of Natural History and his skills had brought him to the attention of the curator of anthropology at the National Museum, William Henry Holmes.

Holmes, one of the most prominent critics of the Calaveras skull, was a veteran in the war among paleoanthropologists and the leading debunker of ancient archaeological finds. In Hrdlička, Holmes found a person who was an even more strident advocate of the modernity of American Indians and an unswerving devotee of the Bering Strait Theory, believing that Indians had originated in Central Europe and then reached the Americas no earlier than

3,000 BC. As the anthropologist Adolph H. Schultz wrote in 1944 in his memorial to Hrdlička,

In regard to his own conclusions, Hrdlička seems to have been rarely plagued by doubts ... Thus, once having become convinced that man's arrival in America was of comparatively recent date, he steadfastly clung to and passionately fought for this conclusion to the end of his life, even in view of evidence demanding a reconsideration of the problem of the antiquity of man in the New World.

Hrdlička's views were by no means a consensus among scientists then. Even conservatives like Sir John William Dawson, who was among the first to challenge the Calaveras skull and who believed that American Indians were relatively recent migrants, also believed that they had migrated through multiple routes, from Asia, the North Atlantic, and the islands of Polynesia. A host of others, like Frederic Ward Putnam, curator of the American Museum of Natural History in New York and considered the "father of American archaeology," were firmly convinced that Indians were here in the Paleolithic, at least 10,000 years ago or more.

Hrdlička subscribed to the pseudo-scientific "eugenics" theories that were in vogue at the time. Eugenics, essentially scientific racism, was based on the work of Darwin's cousin, Francis Galton, who had proposed that the perceived superiority of the white race was due to a superior genetic makeup, a theory highly controversial even then. Hrdlička worked with and was influenced by America's leading eugenicist, Charles B. Davenport, and he received funding to conduct research and launch his magazine, *The American Journal of Physical Anthropology*, from Madison Grant, author of one of the most infamous works of scientific racism, *The Passing of the Great Race*.

Hrdlička's theory of the Bering Strait migration was identical to that of James Adair, who had proposed it more than a century before, except for the Lost Tribes part. They were both based not on scientific evidence, but on a presumption born in religion that then migrated to science—the antiquity and preeminence of Western culture over all others.



Louis Agassiz's table of human species, from Nott and Gliddon, Types of Mankind, 1854.

SCIENCE AND RACISM

In 1996, in the book, *Race and Other Misadventures*, Anthropologist Michael L. Blakey argued in an essay, “Skull Doctors Revisited: Intrinsic Social and Political Bias in the History of American Physical Anthropology; with Special Reference to the Work of Aleš Hrdlička,” that physical anthropology essentially began as a pseudoscience “offering biological justifications for social inequality.”

Professional physical anthropology has, from its inception, been a powerful ideological force. It successfully competed with Christianity as elucidator of human origins and gave new, naturalistic meaning to human social relations. In this important ideological role, scientific knowledge has been subject to systematic and continuous influences of broad political and economic interest.

One of the first scientific efforts at examining the comparative anatomies of the different races was by the German naturalist Johann Friedrich Blumenbach, and his series of articles, *Decas Craniorum*, which first appeared in 1790, is possibly the first work in the science of craniometry. Blumenbach divided the human species into five races, four of which he considered degenerate versions of the original race—the Caucasian race—begun by Adam and Eve. The French zoologist Georges Cuvier in his book in 1817, *Le Règne Animal*, perpetuated the idea of a hierarchy of human races, with “the Caucasian, the noblest race” on top.

It was the Philadelphia physician Samuel Morton who provided a scientific justification for these presumptions and in doing so became, in the words of Aleš Hrdlička, “the father of American physical anthropology.” During the 1820s and 30s, Morton collected and measured hundreds of skulls, becoming convinced that the presumed superiority of the Caucasian race was due to the larger size of their skulls (as measured by him). Thus in his opus *Crania Americana*, where he examines over 140 Indian skulls from across the Americas, he described the Indian character as “slow in acquiring knowledge; restless, revengeful, and fond of war” whereas the Caucasian race is “distinguished by the facility with which it attains the highest intellectual endowments.” Morton’s work was widely used to justify slavery in America.

Not satisfied with being Caucasian, the French naturalist Paul Broca took these ideas even further, arguing that his craniometric studies proved that Frenchmen were superior to other Europeans, and thus at the very pinnacle of the hierarchy. Of course this was not science, but religion and prejudice masking itself as science. The idea of a hierarchical system of the natural world (a very Western concept deeply imbedded in its culture), with white humans on the top, had long been known as the *scala naturae* or “Great Chain of Being” ostensibly created by God.

This ordered system had the advantage of rationalizing the slavery, dispossession, and murder of races other than the Caucasian—at first as the result of God’s will, and then as the result of evolution, but not as war crimes. So as Hrdlička pointed out in 1915:

We see that the higher civilized white man has already in some respects out distanced others, that he is rapidly diversifying, and that all about us those who cannot keep the accelerated pace are being eliminated by nature.

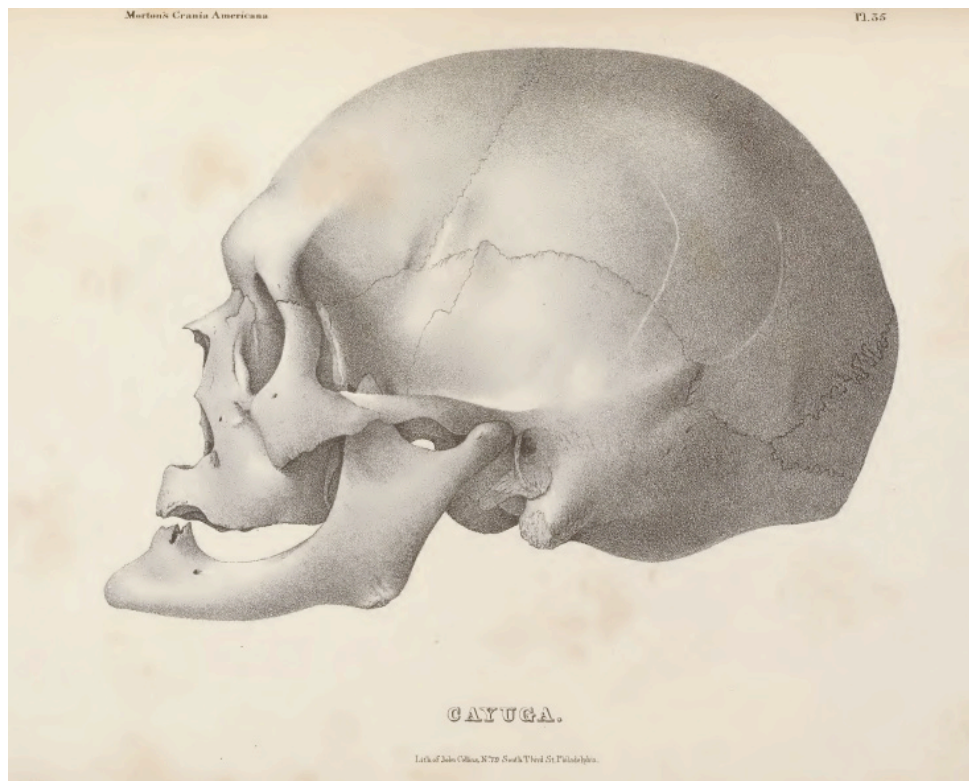
The eugenics movement of the early 20th century thus believed in “improving” the genetic quality of the human population by prohibiting mixed-race marriages, sterilizing undesirables, and promoting the reproduction of those with the right genes.

Scientific racism became a fundamental underpinning of Nazi German ideology. Eric Ehrenreich, in his book *The Nazi Ancestral Proof*, argues that for the Nazi government to simply be out-and-out racist would not have been acceptable to the German people.

A more morally acceptable explanation was needed. Racial scientific thought, if true, provided just this palliative. Given the immense technological advances of the nineteenth and early twentieth centuries, scientific endorsement was very powerful . . . Accordingly, if racial scientific ideas were true, racist policies were the result of fundamental necessity, not self-serving choice.

The Western hierarchical view of humans and nature is foreign to most indigenous cultures, which largely lived in harmony with their environment. There are those who are beginning to suspect that the Western hierarchical perspective is possibly a central ideological engine in the global process of environmental destruction. As the writer Murray Bookchin proposed in *What Is Social Ecology?*

The idea of dominating nature has its primary source in the domination of human by human and the structuring of the natural world into a hierarchical Chain of Being.



*The skull of Cayuga chief Wayunta, who died in 1834, acquired by Samuel Morton shortly thereafter, measured, and then pictured in his book, *Crania Americana*. The indiscriminate collection of Indian remains for scientific studies led to the passage of federal laws that protect Indian gravesites from looting.*

BERING STRAIT THEORY, PT. 3: THE THEORY BECOMES A RELIGIOUS CRUSADE

In Europe, the new science of paleoanthropology had uncovered spectacular finds, but in America, it was paralyzed by infighting. In 1903, the new head of the physical anthropology department at the National Museum (now the Smithsonian), Aleš Hrdlička, and like-minded colleagues, were determined to end the disputations and promote professionalism and respectability.

By founding the first journal and first professional association of physical anthropology in the early 1900s, Hrdlička became the undisputed authority in that field. By insisting that the form of evidence suitable for answering the question of American origins only lay in physical anthropology, he cut out any other form of scientific evidence, for example linguistics, as most linguists were clearly at odds with his theory at that time. With Hrdlička at the head of the physical anthropology department at the National Museum, William Henry Holmes as curator of anthropology at the National Museum, and W.J. McGee at the helm of the Bureau of Ethnology, the top government positions in anthropology were now filled with ardent critics of the antiquity of humans in America.

Hrdlička and his colleagues then proceeded to debunk every known potentially ancient site in North and South America. His zeal was so great, as George W. Stocking wryly notes in *The Ethnographer's Magic and Other Essays in the History of Anthropology*, that "he succeeded in exiling early man from the hemisphere—so successfully that until 1930 it was almost heretical to claim an antiquity of greater than two or three thousand years."

As the eminent archaeologist and director of the Bureau of Ethnology, Frank H.H. Roberts, who coined the term Paleoindian, wrote in 1940.

The upshot was that the question of early man in America became virtually taboo, and no anthropologist, or for that matter geologist or paleontologist, desirous of a successful career would tempt the fate of ostracism by intimating that he had discovered indications of a respectable antiquity for the Indian.

It has been argued that Hrdlička's heavy-handed tactics at least cleaned up the mess that was American paleoanthropology, and there certainly is much truth to that. Gone were the amateurs and dilettantes, gone were the hoaxsters and forgers, gone were the acrimonious pitched battles. Gone also was any other theory of American Indian origins but the Bering Strait Theory. As Roberts pointed out, the cleaning came with a heavy price.

The critics unquestionably did valuable service in exposing the fallacy of many claims, but eventually they were swept away by the ardor of their own crusade and definitely retarded the progress of investigations by their dogmatic denial of the possibility of traces of occupation other than those left by recent Indians. Augmenting this was a categorical refusal to consider new evidence as it came to light.

Not simply retard investigations, Hrdlička sent American paleoanthropology into the Dark Ages.

SCIENCE GOES BACKWARDS

In 1949, when Kenneth Oakley of the British Museum (Natural History) used his new fluorine test to finally expose the Piltdown Man, a celebrated hoax in England in which a human skull was fitted with an ape's jaw and then "discovered" in 1912 and promoted as an evolutionary "missing link," he was shocked to discover

shortly afterwards that he had not invented the technique. Thomas Wilson, curator of prehistoric archaeology at the National Museum in Washington, D.C., had used it as early as 1892. In 1895 Wilson used the fluorine test to examine the antiquity of one of the most intriguing, and sensational, finds of the 19th-century.

During excavations near Natchez, Mississippi between 1837 and 1844, Montroville Wilson Dickeson, a Philadelphia physician and a pioneer in archaeology, uncovered a cache of extinct animals including mastodons, horses, bisons, and ground sloths (megalonyx and mylodon). In the presentation of his finds before the Academy of Natural Sciences at Philadelphia in 1846, he shocked his audience when he told them he had found a human pelvis alongside the bones of the extinct animals.

That this bone is in the fossil state is clearly manifest from its physical characters, in which it accords in every aspect of color, density, etc. with those of the megalonyx and other assorted bones. That it could not have drifted into the position it was found is manifest from several facts ... that the human bone was found at least 2 feet below three associated skeletons of the megalonyx. ...

At that time it was not clear what to make of Dickeson's find, since scientific notions of the antiquity of man or animals were still in development. Dickeson was arguably the most famous archaeologist in America, had discovered troves of dinosaur bones as well as investigated the mysterious Indian mounds, and so his word was not to be taken lightly. The famous British geologist Charles Lyell examined the site and pelvis, and although he did not dispute it, he had his doubts. In time the bones were stored at the Academy's museum in Philadelphia, but they were not forgotten and remained a continual subject of discussion.

Thomas Wilson, a Civil War cavalry officer who rose to the rank of colonel, had worked for the State Department, where in the course of his travels he had come to know many of the leading anthropologists in Europe. He joined the National Museum in 1889 and, aloof from the bitter disputes then raging among paleoanthropologists, had an open mind about American Indian antiquity. Wilson was aware that Josiah Whitney had done a fluorine test on the Calaveras skull as far back as 1868 (although Whitney did not grasp its significance) and that the test had been in use by mining companies in Europe. Wilson first experimented on the Calaveras Skull, which he compared to the teeth of an extinct rhino and found a good match, but that was not conclusive because local conditions can affect the absorption rate of fluorine and the two had not been found together.

It was better to try this test on the Natchez Pelvis, for the fluorine test cannot give a date, but it can be used to compare two fossils to each other. Since the bones of a ground sloth were found right next to that of the pelvis, if they were the same age, they should have the same concentrations of fluorine. Moreover, since fluorine is absorbed into the fossils over time, the older the fossil, the higher the fluorine content, and so they should both have high levels of fluorine.

Wilson found exactly that. Both the ground sloth and the Natchez pelvis had similar fluorine contents that were much, much higher than modern bones. He concluded in his report that "the bones under the present consideration, the man and the mylodon are substantially of the same antiquity" and "this, therefore bears out the contention of the value of this test." As he wrote to one of his associates with deserved satisfaction:

I consider this to be a valuable discovery, and one that may afford large opportunities for determining the antiquity of man in America, thereby aiding to settle some of those disputed questions about which the dogmatism of certain scientists has had such a free rein.

Unfortunately for Wilson—and for the science of paleoanthropology—shortly after his great discovery the leading dogmatist of the day, William Henry Holmes, the ardent debunker of Indian antiquity, was named the curator of anthropology at the National Museum and became Wilson's boss. The significance of the test was discounted and after Wilson died in 1902, the test was forgotten. In 1907, when Hrdlička examined the Natchez Pelvis only to dismiss it, he did not bother to bring up Wilson's fluorine test.

After Hrdlička's death, the famed forensic anthropologist and Hrdlička's successor at the National Museum, T. Dale Stewart, found in Hrdlička's files the report by Wilson on the Natchez Pelvis. Stewart lamented the lost opportunity in a letter to *Science* in 1951, "for 55 years anthropology has been deprived of an important objective argument in favor of the antiquity of man in America."

A LEGACY OF DOGMA

As David J. Meltzer summed it up in his important discussion of the fluorine test, "A Question of Relevance," in the book, *Tracing Archaeology's Past*, "Hrdlička depended far more on morphological evidence than on analytical tests, geological evidence, or context to determine the antiquity of human remains." While numerous scientific tools were being developed to study the world, Hrdlička would have none of it, indeed, he stifled their use. A tribute written by the anthropologist Ashley Montagu could not help but condemn him.

In many respects Hrdlička's methodology belonged to the nineteenth rather than to the twentieth century. ... As editor of the American Journal of Physical Anthropology he played an important part in discouraging the use of advanced statistical methods in papers submitted to the journal. Hrdlička's knowledge of genetics was also severely limited, so that he failed to grasp the capital importance of genetic science for the future development of physical anthropology.

Other lost opportunities included a host of human fossils found in Argentina in the 1870s, many in association with extinct animals, that Hrdlička summarily dismissed. Hrdlička skewered their discoverer, Florentino Ameghino—who admittedly had fanciful ideas about his discoveries but was fortunately dead by the time Hrdlička punctured them—writing that the Argentine naturalist "could scarcely be regarded as a well-trained and experienced geologist." Be that as it may, in 2011 the Argentine archaeologist Gustavo G. Politis radiocarbon dated some of Ameghino's discoveries, finding a number of them to be ancient and one, an Arroyo de Frías skeleton, to be more than 12,000 years old, among the oldest in the hemisphere.

To find absolute, indisputable proof of ancient man was almost impossible, and even if the impossible had been found, that was not enough. As Hrdlička wrote in 1912:

The significance of the association of fossil animal bones with human bones, even in the cases in which the former shows effects of man's activity, is entirely problematic. The enumeration by the paleontologists in this and other cases, of long lists of names of extinct animals found with or near the human bones, or in the vicinity, or in the same strata, is impressive, but alone counts for little as evidence of the age of the remains of man found in such a relation.

So despite the host of sites in which humans (or human tools) and ancient extinct animals had been found together, this was not proof. Hrdlička had set up the Bering Strait Theory and the modernity of Indians as the established dogma, not on the basis of the evidence—the evidence had been clearly pointing the other way for over a half a century—but on the basis of his own beliefs. He then required almost impossible conditions for those beliefs to be challenged.

The pattern of requiring indisputable scientific evidence to overturn pseudoscientific mythology would be one of Hrdlička's unfortunate but enduring legacies. The only way Hrdlička was going to believe in an American antiquity was if a Paleoindian came up and speared him in the chest. And in a certain respect, that is exactly what happened.



Charles Wilson Peale's 1808 painting, Exhumation of the Mastodon, portrays Peale and his crew digging for fossils in New York State. Like most antiquarians of the day, Peale was a polymath, being one of America's foremost painters, a politician, as well as soldier who fought in the Revolutionary War. Peale would unearth the first complete mastodon skeleton in 1801 and display it in a museum he created in Philadelphia. Since this was long before the orthodoxy took hold, as part of his mastodon exhibit Peale felt free to include an Indian legend; "Of this animal, it is said the following is a Tradition, as delivered in the very terms of a Shawanee Indian." The tradition began by stating that, "Ten thousand moons ago, when nought but gloomy forests covered this land of the sleeping sun . . . a race of animals were in being, huge as the frowning Precipice. . ."

BERING STRAIT THEORY, PT. 4: THE INDISPUTABLE FACTS IN THE ARTIFACTS

By the 1920s, the Bering Strait Theory, and in particular the idea that American Indians had settled in the New World less than 5,000 years ago, had become a rigid dogma that no scientist who valued their career would dare to challenge.

In the end, it was a group of amateurs who exposed the charade. In 1908 George McJunkin, an African-American cowboy born the son of former slaves, was tending cattle at the Crowfoot Ranch near Folsom, New Mexico, when he discovered the remains of an animal that had been uncovered after a recent flood. He recognized the bones as a bison, and surmised that it was of some ancient type.

McJunkin informed a local blacksmith and amateur naturalist, Carl Schachheim, who then informed his friend and fossil hunting companion, Fred Howarth, a banker. After visiting the site, they tried repeatedly to interest paleontologists into excavating it without success. Finally, their persistence paid off in 1926, when Harold J. Cook and Jesse Dade Figgins of the Denver Museum of Natural History agreed to take a look. They quickly found, not only extinct bison, but spear points. This was a “kill site,” the results of a hunt. Since the established dogma insisted that kill sites of extinct animals did not exist, they worked very, very carefully, hoping to find something—anything—that might be conclusive.

On August 29, 1927, an ancient stone spear point was found embedded between the ribs of an extinct bison. This was clearly no accident. Recognizing the importance of the discovery, the find was left intact in the ground to be witnessed by as many eminent archaeologists as they could muster. Although he tried, Hrdlička

could not reject this. The indisputable evidence had surfaced, and one glass floor had been shattered.

With the acceptance of the Folsom point, it became clear that humans were in the Americas more than 5,000 years ago. No longer hamstrung by the need to overturn dogma, a flurry of sites were discovered in the next few years which began to change the picture of ancient America. In 1932, near Clovis, New Mexico, a site was uncovered that featured the same type of spear point found at Folsom, and then digging deeper, a different and older set of spear points were found. Humans had been in America at least 10,000 years or more. It had been 68 years since the Europeans accepted the antiquity of humans, but finally, the American paleoanthropologists had joined the club.

It is important to note that it was not the discovery of human remains, so emphasized by Hrdlička, but of human tools in the right context, that changed the perceptions of the past. This was also the case in 1859 in Europe, when the stone tools of Brixham and the Somme led to the acceptance of human antiquity. The value to science of human remains in certain cases may be important, but it has not been decisive.

But if the time frame for human antiquity in the Americas had changed, the story had not. The Bering Strait Theory remained the unchallenged assumption. The line was drawn hard and fast once again, this time at 10,000 BC.

“Clovis First,” the new version of the Bering Strait Theory, was based on the presumption that the Paleoindian culture that had produced the spear points found at the Clovis site were the first settlers. In part, this was because of the Clovis site itself, which had in layer after layer revealed thousands of years of settlement

history, but nothing was found in the layer beneath the Clovis culture. The other factor was the growing awareness among paleoanthropologists that the presumed pathway between Asia and the Americas, the Bering Strait, may not have always been open, but may at times have been impassable.

By 1932, geology had progressed to the point that an accurate map of the giant ice sheet could be drawn with reasonable certainty. A general consensus had developed among geologists that the glaciers were impassible approximately 30,000 years ago and very likely through to 10,000 years ago, about the time when the Clovis culture was beginning. The Clovis First Theory naturally dismissed the idea that Paleoindians might have arrived before 30,000 years ago (before the Last Glacial Maximum or LGM).

In 1933, the Canadian geologist William Alfred Johnston proposed that when the glaciers began melting, they broke into two massive sheets, one centered on the Pacific Coast and Rocky Mountains (later named the Cordilleran ice sheet), and the other, now known as the Laurentide ice sheet, covering the rest of Canada all the way to the Atlantic Ocean. In between these two massive ice caps, people might have been able to walk from Alaska down into the United States. Two years later, the Swedish-American geologist Ernst Antevs dubbed this route, the “ice-free corridor.”

The date when the melting of the ice sheets opened the ice-free corridor, believed to be around 13,000 BC, seemed to give just enough time for the Clovis culture to walk from Alaska and spread all across the Americas.

Retiring in 1942 as head of the anthropology department of the National Museum, a position he had held for almost 33 years since replacing William Henry

Holmes in 1909, Hrdlička died the following year. His legacy, however, continued. The Bering Strait Theory, now in its new incarnation, “Clovis First,” was upheld with equal dogmatism by a new generation of paleoanthropologists who had grown up with no other perspective.

BEND IT LIKE BECKHAM

As new scientific methods began to play an important role in the examination of artifacts, new battles began almost immediately. Radiocarbon dating, developed in 1949 by Nobel Prize-winning chemist Willard Libby, revolutionized archaeology. By measuring the decay of a radioactive isotope of carbon, carbon 14, in any dead organic matter such as bones, wood, or plants, Libby found an approximate way to date when it had died.

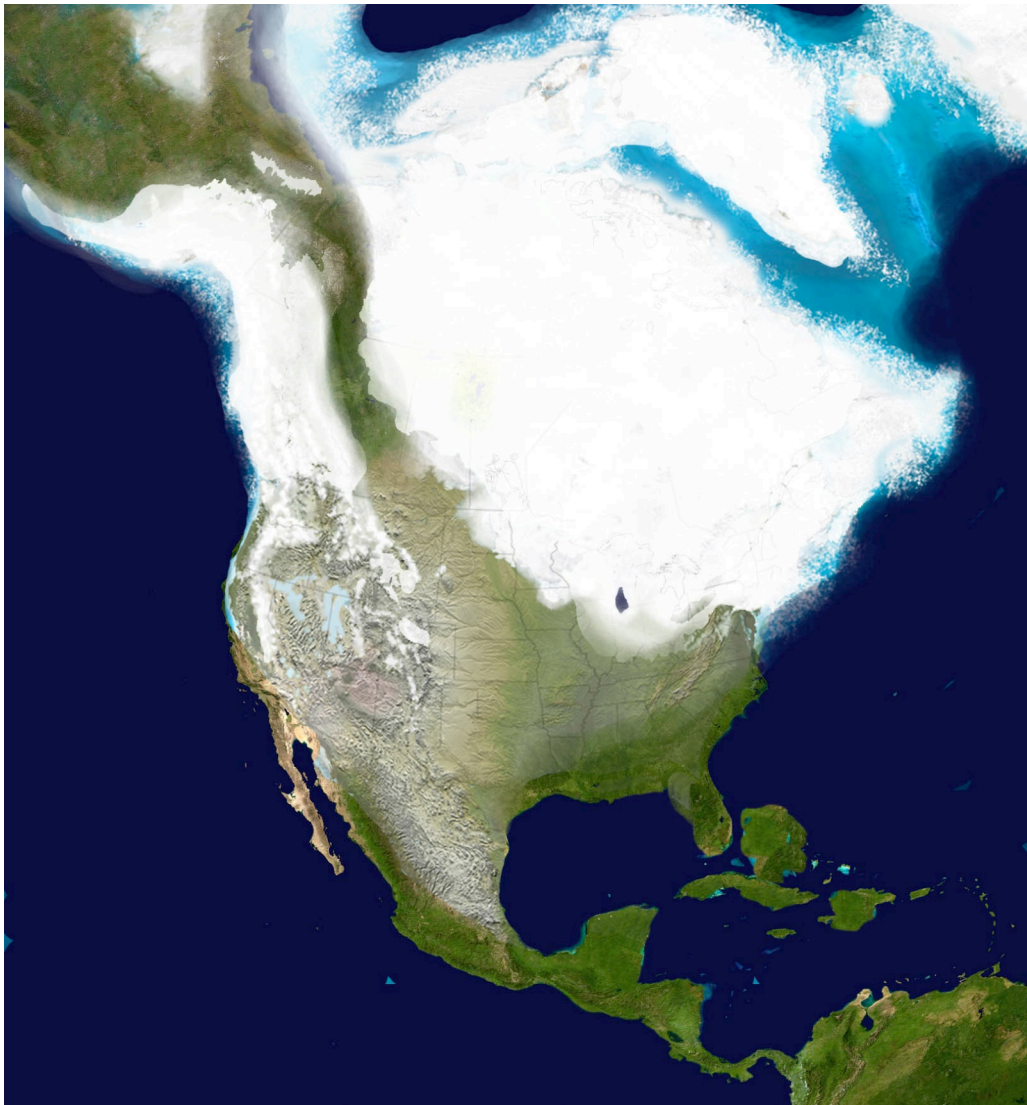
During the construction of a dam in Lewisville, Texas the remains of a bison were uncovered in 1949, leading to a series of excavations that continued until the dam was finished and the site inundated in 1957. The excavations, as archaeologists Wilson W. Crook, Jr., and R.K. Harris wrote in the journal *American Antiquity*, “yielded remains of more than 21 hearths of an ancient campsite of early man. An extensive Upper Pleistocene fauna has been recovered, much of it actually burned within the hearths themselves, and the remainder closely associated with camp refuse, along with certain distinctive artifacts.” What created a stir was that two of the hearths were radiocarbon dated at more than 37,000 years old.

Since this flew in the face of the Clovis First Theory, the findings were instantly attacked. But given the indisputable (at that time) radiocarbon dating, that was not going to be easy to do. The archaeologists Robert F. Heizer and Richard A. Brooks (both of whom did not

visit the site) responded in the *Southwestern Journal of Anthropology* in a manner that would have made Aleš Hrdlička proud.

The evidence for association of stone tools with the hearths is insufficient to provide a valid case for arguing that the hearths are the result of human agency. If we are to accept the proposition that man has been in the New World for more than 37,000 years, the least we can demand is that the evidence for the belief be unambiguous.

They then proposed that the hearths were actually ancient nests of wood rats, an idea so absurd on its face (presumably the wood rats also cooked the extinct animals found burned in the hearths), that the whole matter was dropped and ignored. Since it could not be disputed, the Lewisville site was consigned to the academic dustbin. Twenty-five years later, as archaeologists gained experience with radiocarbon dating and learned that a contamination of



The ice-free corridor.

samples or other factors could influence the dates given, the geologist D. L. Johnson proposed that maybe the Lewisville site had been contaminated by lignite (brown coal) from nearby outcroppings of the Woodbine Formation, which was around 70 million years old. A dry spell in 1979 had allowed for a new excavation and so material from the Lewisville site was sent for reanalysis.

Unfortunately for the Clovis First Theory, a report produced in 1985 by a team from the Illinois State Geological Survey headed by Richard H. Shiley, entitled “Moessbauer Analysis of Lewisville, Texas, Archaeological Site Lignite and Hearth Samples” found that whatever was burned in the hearths, it was not Woodbine lignite.

The rare earth composition of Woodbine Formation lignite and its corresponding ash are very similar to one another, but are not similar to the soil or hearth samples. The rare earth composition of the surrounding soil follows the same pattern as that of the hearth. From this data, it is reasonable to provisionally conclude that the Woodbine Formation lignite was not burned in the hearths.

A second test then found that, “pyrite combustion products were not detected using X-ray diffraction.” Pyrite, found in lignite, when burned should generate a byproduct, but none were found. Whatever was burned in the hearths was not lignite.

A third test, now using Moessbauer spectroscopy, also did not find pyrite byproducts in the charcoal of the hearths tested, but did find trace amounts of hematite, a pyrite byproduct, in the sediment lining of one of the hearths, hearth 22, a hearth that had been excavated in 1979, after the site had been submerged by the reservoir. The

Moessbauer test did not find traces of lignite in the hearths excavated in the 1950s by Crook and Harris. By all rights, the radiocarbon dates of more than 37,000 years still stood.

The team, clearly disappointed it had not come up with the expected result, put the best face it could on its findings.

The use of the Moessbauer spectroscopy, on the other hand, produced positive results. Hematite, a pyrite combustion product, was found in hearth 22. We concluded that there is some support for the hypothesis that Woodbine Formation lignite was burned in this hearth, thus increasing the apparent age (radiocarbon date) of the hearth material.

Thankfully the tepid “some support for the hypothesis,” even if it came from the wrong hearth, was all that was needed. Few were going to bother to read the actual report and nobody wanted to dispute its conclusions. Lewisville was pronounced as having been contaminated by lignite and was longer a problem for the Clovis First Theory.

The orthodoxy was stronger than ever. No longer under Hrdlička’s iron grip, it was now self-policing. Whatever the scientific data might say, the conclusions would somehow support the theory. New evidence would be “bent” towards upholding the Bering Strait Theory.

The established dogma could still only be overturned by “indisputable proof,” the nature of this proof being defined by the dogmatists themselves. Any site that promised to be earlier than Clovis was going to be subject to unrelenting scrutiny until something was found wrong with it. Despite the discovery of the Folsom point in 1929, the same intellectual stubbornness that Hrdlička had fostered continued to stunt paleoanthropology.

THE CLASH OF SCIENCES

To understand just one of the many scientific criticisms of the Bering Strait Theory, we must go halfway around the world to the continental mass known as the Sahul, which includes Australia, New Guinea and surrounding islands. Like the Americas, it had long been assumed by archaeologists that the indigenous peoples who lived in that region had migrated there from Asia just a few thousand years ago. It then came as a massive shock to those same archaeologists when in 1968, near Lake Mungo in Southeastern Australia, the geologist Jim Bowler discovered the remains of a cremated woman who was subsequently radiocarbon-dated to be between 25,000 and 32,000 years old. Lake Mungo Woman, as she came to be known, was repatriated to the Aboriginal community in 1992.

Yet this discovery had already been anticipated by other scientists, for example, the linguists. The Sahul is one of the most linguistically diverse areas in the world, home to more than 1,000 languages, about one-fifth of the world's total. The linguists had already predicted that the "time depth" required to achieve this type of linguistic diversity was clearly not in the thousands of years, but in the tens of thousands of years. Subsequent archaeological finds have now pushed back the date of human occupation of Australia to a minimum of 50,000 years ago and very likely more that 65,000 years ago.

The only area in the world that has a comparable level of linguistic diversity as the Sahul is the Americas, and in certain very important respects, the Americas are even more diverse. Since the very first period of contact between Europeans and Indians, observers had marveled at how many different languages and cultures were to be found. Thomas Jefferson, among the leading scientists of his day, wrote in 1785 in his *Notes on the State of Virginia*.

Imperfect as is our knowledge of the tongues spoken in America, it suffices to discover the following remarkable fact. Arranging them under the radical ones to which they may be palpably traced, and doing the same by those of the red men of Asia, there will be found probably twenty in America, for one in Asia, of those radical languages, so called because, if they were ever the same, they have lost all resemblance to one another.

Today, linguists call Jefferson's "radical languages," language families or stocks, each made up of numerous languages and dialects. As Jefferson saw it, this diversity clearly pointed to the great age of American Indians; "A separation into dialects may be the work of a few ages only, but for two dialects to recede from one another till they have lost all vestiges of their common origin, must require an immense course of time; perhaps not less than many people give to the age of the earth."

Based upon the linguistic evidence, Jefferson believed that "a greater number of those radical changes of language having taken place among the red men of America, proves them of greater antiquity than those of Asia," and led him to speculate that Asians may have been the descendants of early American Indian migrations from the Americas to Asia.

Exactly how diverse the American languages were became clearer in 1891, when the famed explorer and director of the Bureau of Ethnology, John Wesley Powell, released the monumental work, *Indian Linguistic Families North of Mexico*. In his introduction, Powell explained that, “The North American Indian tribes, instead of speaking related dialects, originating in a single parent language, in reality speak many languages belonging to distinct families, which have no apparent unity of origin.” Powell grouped the American Indian languages in the U.S. and Canada into 58 language families (or stocks) that could not be shown to be related to one another.

Since Powell’s day his classification has been modified somewhat and attempts to link many of these language families together to create “super stocks” have met with mixed success. Although what constitutes a family, stock or super stock is a matter of continuing debate among linguists, today it is generally accepted that there are 150 different language families in the Americas. To give some perspective to this diversity, there are more language families in the Americas *than in the rest of the world combined*.

Of the 150 New World language families, the super stock Eskimo-Aleut also spans the Arctic and so has Asian and European relatives. Another language super stock, Na-Dené, composed of the language stocks Athabaskan, Tlingit and Eyak, and located in Alaska and the northwest coast (but also in the southwestern U.S.), is also believed to have relatives in Asia, possibly the Yeneisian languages of central Siberia. It has long been suggested, and the issue is not particularly controversial, that peoples speaking Eskimo-Aleut and Na-Dené have moved back and forth between Asia and the Americas.

Other than Eskimo-Aleut and Na-Dené, linguists have yet to find any connection with any language stocks of the Americas and those of Asia. Along with the tremendous hemispheric diversity, this created serious doubts about the dates proposed by archaeologists and physical anthropologists for Indian origins. At the beginning of the 20th century it was held to be at most 10,000 years and generally only 5,000 years. In 1916, Edward Sapir, among the most important and influential linguists in history, countered the prevailing archaeological view; “ten thousand years, however, seems a hopelessly inadequate span of time for the development from a homogeneous origin of such linguistic differentiation as is actually found in America.” Instead he argued that, “the best piece of evidence of great antiquity of man in America is linguistic diversification rather than archaeological.”

One of America’s greatest scientists, Franz Boas, generally considered to be the father of modern anthropology and an important linguist in his own right, in his classic study, *Race, Language, and Culture*, published in 1940, wrote that not only were American Indian languages “so different among themselves that it seems doubtful whether the period of 10,000 years is sufficient for their differentiation,” but that the evidence of extremely ancient Indians would some day be found, and that, “all we can say, therefore, is that the search for early remains must continue.” Indeed, Boas was among the first to propose, based on the evidence from an expedition that he led to the Bering Strait region in 1897, of a “back migration” from the Americas to Asia.



Linguists were not the only ones who recognized the importance of the linguistic evidence. The great British paleoanthropologist Louis Leakey firmly believed that the linguistic evidence showed that Indians were likely to be many tens of thousands of years old and possibly much older, and shortly before his death in 1972 he began to sponsor fieldwork in the Americas in the hopes of proving this. But most American archaeologists and physical anthropologists, where the dogmatism of the Bering Strait Theory is most pronounced, dismissed or ignored the linguistic evidence, leading people and the mainstream press to assume that linguists were silent on this subject, even though the reverse was true.

Starting in 1987, the tensions between the proponents of the Bering Strait Theory and linguists turned into open warfare as archaeologists and geneticists used a highly disputed (and now completely discredited) theory by the linguist Joseph Greenberg to claim that the linguistic evidence now (after hundreds of years of refuting it) showed that Indians migrated from Asia to the New World around 15,000 years ago. The dispute led to a torrent of scientific papers by the world's most prominent linguists denouncing the use of "non-science" and faulty data to back the Bering Strait Theory.

The dispute also led the influential linguist, Johanna Nichols, to publish "Linguistic Diversity and the First Settlement of the New World," in the journal *Language* in 1990. In her introduction, she first made two important scientific points: the diversity of the languages of the New World is due to "the operation of regular principles of linguistic geography;" and that the linguistic and archaeological evidence from the Sahul clearly contradicted the attempts to assign early dates for the Bering Strait migration, since the assignment of early dates in the New World would create a scientific anomaly; "but such a discrepancy—one of at least an order of magnitude—must be assumed if we adhere to the Clovis [15,000 years ago] or received chronology [20,000 years ago] for the settlement of the New World."

Nichols' paper used six independent linguistic methods for calculating American Indian antiquity and she determined that it would have taken a minimum of 50,000 years for all of the American Indian languages to have evolved from one language, or 35,000 years if migrants had come in multiple waves. She concluded that, "The unmistakable testimony of the linguistic evidence is that the New World has been inhabited nearly as long as Australia or New Guinea."

Attempts by Clovis First advocates to refute Nichols were not particularly successful. Daniel Nettle, not a linguist but a biologist with Newcastle University in the UK, in a short, four-page article entitled, "Linguistic Diversity of the Americas Can be Reconciled With a Recent Colonization," began with a familiar argument:

The problem of the colonization of the Americas will be definitively answered only by archaeology, because archaeology has direct methods for dating human presence. . . . the idea that non-archeological considerations make belief in a late colonization untenable must be dismissed.

This, of course, was another way of saying that "indisputable proof" is required to overturn a position that is in itself not based upon evidence, but on dogma. Nettle then proceeded to argue that given that Africa is the oldest continent, and it has fewer linguistic stocks than the Americas, then "the long-term tendency is for diversity to decline with time." Needless to say this argument, which did not make any sense (unless we assume that humans were created speaking thousands of different languages), was not taken seriously.

Like any evidence against the theory that could not be disputed, Nichol's paper was largely ignored by the paleoanthropological community. But it was not the only linguistic evidence that indicated that Indians were far more ancient than the Clovis First theory presupposed. The same year that Nichols presented her findings, a team from the Museum of Natural History at the University of Kansas, Richard A. Rogers, Larry D. Martin and T. Dale Nicklas, writing in the *Journal of Biogeography*, argued that the distribution of North American Indian languages followed geographical boundaries, known as biogeographic zones, that were created during the last Ice Age.

In their article "Ice-Age Geography and the Distribution of Native North American Languages," they found that the "boundaries of biogeographic zones formed linguistically significant barriers which correspond to the boundaries of certain modern aboriginal language families." These barriers aided or hindered linguistic diversity and the creation of language isolates. They concluded that the many "distinctive language families must have been firmly culturally established at the height of the last glaciation 18,000 years ago." When the ice sheets retreated, language families expanded into uncovered regions that already suited their cultures. Since this paper could not be challenged, it was also completely ignored by the paleoanthropologists.

While recent genetic studies have shown relationships between certain Indian groups and some tribes in Central Siberia, the linguistic evidence (and some genetic evidence) argues that the Indian tribes are actually older. A new study, published on March 12, 2014 in the journal PLoS, "Linguistic Phylogenies Support Back-Migration from Beringia to Asia," found that Na-Dené, which includes the Alaskan Athabaskan languages as well as Navajo and Apache, is not descended from a Central Siberian language known as Yeneisian (as the Bering Strait Theory would infer) *but the other way around*, that there was a "back-migration into central Asia than a migration from central or western Asia to North America."

The linguistic evidence for the deep antiquity of American Indians is strong and long-standing. Granted it is not "proof" that Indians were here more than 15,000 years ago, but then "proof" is a legal, not a scientific concept. It is simply evidence, and strong evidence by any scientific standard. Archaeologists, however, have made it clear that the only evidence they will accept is archaeological (unless it happens to support the Bering Strait Theory).

Much like the fundamentalist Christian creationists, who will only accept evidence that is in the Bible or that agrees with it, the blind stance by archaeologists is a unfortunate legacy of the religious and ideological roots that underscored the Bering Strait Theory as formulated by Aleš Hrdlička.

BERING STRAIT THEORY, PT. 5: THE THEORY COMES CRASHING DOWN

For most of the 20th century, new discoveries of American Indian origins that cast doubt on the Bering Strait Theory were either dismissed or ignored. But as the technology of science marched on, the cracks grew deeper and deeper.

An unintended consequence of the atmospheric testing of atomic weapons during the Cold War was that by the 1960s it had doubled the amount of radioactive carbon 14 in the environment, and this “bomb pulse” was showing up on the instruments that were used for radiocarbon dating. This led scientists to suspect that the amount of carbon 14 that is found in the environment might not have always been constant, possibly leading to wrong dates.

By the mid-1980s, dendrochronologists, those that study and date tree-rings, had managed to piece together—by matching the tree-rings of long-living species such as the bristlecone pine with those of ancient trees—an unbroken string of tree-rings over 7,000 years old. Since dendrochronology can give extremely accurate dates, often to the year, matching the two dating systems found exactly that, that the amount of C14 fluctuated and that many radiocarbon dates had to be adjusted.

For Clovis First advocates, this presented a real problem, for the new calibrated radiocarbon dates pushed back the Clovis culture almost 2,000 years. It meant that the oldest reliably dated Clovis site, in Aubrey, Texas, which was radiocarbon dated at 11,590 years ago, was now approximately 13,490 years old. The Paleoindians would have had to race through the ice-free corridor to get to Texas in time.

But the new radiocarbon dates would give even more bad news. Geologists, also recalibrating their radiocarbon data, began to refine their estimates for when the massive ice sheets began to melt, and found them adjusting their dates between 500 and 2,000 years closer to the present day. The ice-free corridor was now certainly impassable 13,000 years ago and possibly as late as 12,000 years ago (Recent studies have confirmed it only became passable 12,600 years ago). This meant that there was no way the Paleoindians could have walked over from Asia—or if they had, they would have had to do so 20,000 years earlier, a non-starter for the theory’s advocates. A central thesis of the Bering Strait Theory was now toppled, for if the Clovis culture was indeed the first peoples in the Americas, they had to have come by boat.

A POLYNESIAN INTERLUDE

The use of boats had always been rejected by the Bering Strait advocates, because it opened up other possible routes of migration, such as Europe or Polynesia. Thus they had dismissed any contacts between Polynesians and American Indians (and many continue to dismiss evidence of prehistoric contacts), because it would undercut the contention that “primitive people” could not cross the oceans, and that walking across the Bering Strait was the only possible way that Paleoindians could have come to the Americas.

But the presumption that primitive people cannot sail the ocean is a belief born out of the social evolutionary theories of Herbert Spencer and Lewis Henry Morgan—that societies inexorably evolve to greater complexity and skill. Since the Europeans were unable to cross the oceans until the 16th-century, no one else should have been able to do so earlier.

Yet the evidence for pre-Columbian contact between Polynesians and American Indians has always been strong. Before the Bering Strait Theory assumed its dogmatic status, many scientists believed it and few rejected it out of hand. As early as 1837, scientists such as John Dunmore Lang, a prominent Presbyterian minister and Australian politician, proposed Polynesian voyages to America. In his book, *Origins and Migrations of the Polynesian Nation*, Lang dismissed the Asian-American connection, stating that “there is no evidence, and not the slightest probability, of any emigration having ever taken place from Asia to America by the Behring’s [sic] Straits.”

Ever since the first proposer of this particular route for the discovery and settlement of America announced his great idea to the world, the learned of all nations, including such names as Humboldt and Dr. Robertson, have caught and adopted that idea and followed in his wake—as blindly, indeed, and as unintelligently as a flock of sheep follows its leader.

Lang, who traveled throughout the Pacific and into the Americas, argued, in a large part through linguistic evidence, that the Polynesians originated in Malaysia and spread across the ocean in a pattern largely confirmed 150 years later by genetic evidence.

Many of Lang’s ideas were fanciful, but no more so than any one else’s at the time. He believed the Polynesians landed near Copiapo in Chile in some distant past and from there colonized the Americas. The historian George Bancroft (whose dubious accomplishments include instigating the Mexican War as acting Secretary of War under President James Polk), wrote about Lang’s theory in 1841 in his influential book, *History of the Colonization of the United States*, “It would not be safe to reject the possibility of an early communication between South America and the Polynesia

world.” The distinguished French naturalist Jean Louis Armand de Quatrefages also considered American voyages likely in his 1866 work, *The Polynesians and Their Migrations*.

There was little doubt in those days that the Polynesians could have made a trans-Pacific voyage. The early settlement of Hawaii, more than 2,500 miles from the northernmost islands of French Polynesia and over 3,000 miles from Tahiti, required a tremendous feat of sailing and navigation. European explorers often recorded meeting Polynesian sailors in the open ocean, including an encounter in 1615 by the Dutch navigator, Willem Cornelisz Schouten, who came across a party of Polynesians in a double-hulled ship more than 3,000 miles from their home in the Marianas.

Lang noted physical and cultural similarities between the two peoples, many of which today would be seen as the result of simple prejudice, but others, such as similar types of fishhooks, canoes, and harpoons used by Indians in California, Chile, and among the Polynesians, were not to be dismissed lightly.

The most important evidence was biological. As early as 1770, Spanish explorers wrote that maize, manioc, and white potatoes, all indigenous to the Americas, had been grown on Easter Island. Similar varieties of coconuts, bottle gourd (calabash), bananas, and chickens, were all seen as evidence of voyages back and forth. Most significantly, the sweet potato, clearly indigenous to the Americas, was found across Polynesia, including Hawaii and New Zealand. In 1866, in the journal *Botany*, the German botanist Berthold Carl Seemann wrote that the Polynesian name for sweet potato, “*Kumara* or *umara*, of the South-Sea Islanders, is identical with *cumar*, the Quichua name

for sweet potato in the highlands of Ecuador.”

As if that evidence was not indisputable enough, in 1841, while digging through an ancient Inca temple in Cuzco, Peru, the director of the National Museum of Lima, Mariano Eduardo de Rivero, and the Swiss explorer, Johann Jakob von Tschudi, discovered a distinctive “green amphibole stone ax,” that was soon identified as a Maori *patu-pounamu*, or jade war club, from New Zealand. But as the Bering Strait Theory became predominant in the late 19th-century, the idea of Polynesian-American contact began to lose favor.

By the early 20th-century, only a few anthropologists, such as Roland Dixon, were willing to accept, and even then only half-heartedly, that trans-Pacific voyages by Polynesians might have occurred. Thor Heyerdahl’s highly celebrated voyage from South America to Polynesia in the light raft *Kon-Tiki* in 1947, along with his equally celebrated but extremely doubtful ideas of Polynesian origins, created a huge scientific backlash that basically killed any lingering discussion of trans-oceanic contact.

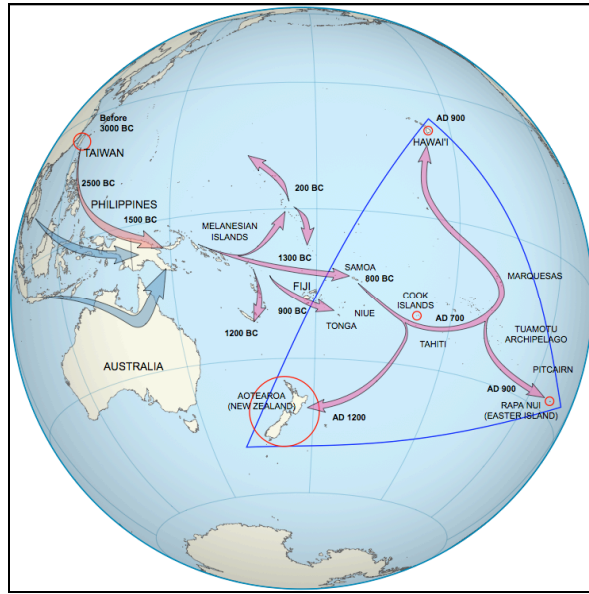
But the Polynesians did sail to the Americas. A flurry of recent articles, including “The Polynesian Gene Pool: an Early Contribution by Amerindians to Easter Island,” published in the *Philosophical Transactions of the Royal Society* in 2012; a 2013 article from the *Proceedings of the National Academy of Sciences*, entitled “Identification of Polynesian mtDNA Haplogroups in Remains of Botocudo Amerindians from Brazil;” and a 2010 article in *Current Geonomics*, “The Origin of Amerindians and the Peopling of the Americas According to HLA Genes: Admixture with Asian and Pacific Peoples” have found genetic mixing between Polynesians and American Indians.

A new study, “Genome-wide Ancestry Patterns in Rapanui Suggest Pre-European Admixture with Native Americans,” was conducted by a team of geneticists from the Natural History Museum of Denmark and published on November 3, 2014, in the journal, *Current Biology*, and found that the “admixture event was dated to 19–23 generations ago,” before European contact. The study’s co-authors, Eske Willerslev and Anna-Sapfo Malaspina, argue that “evidence has been brought forward supporting the possibility of Native American contact prior to the European ‘discovery’ of the island in AD 1722.”

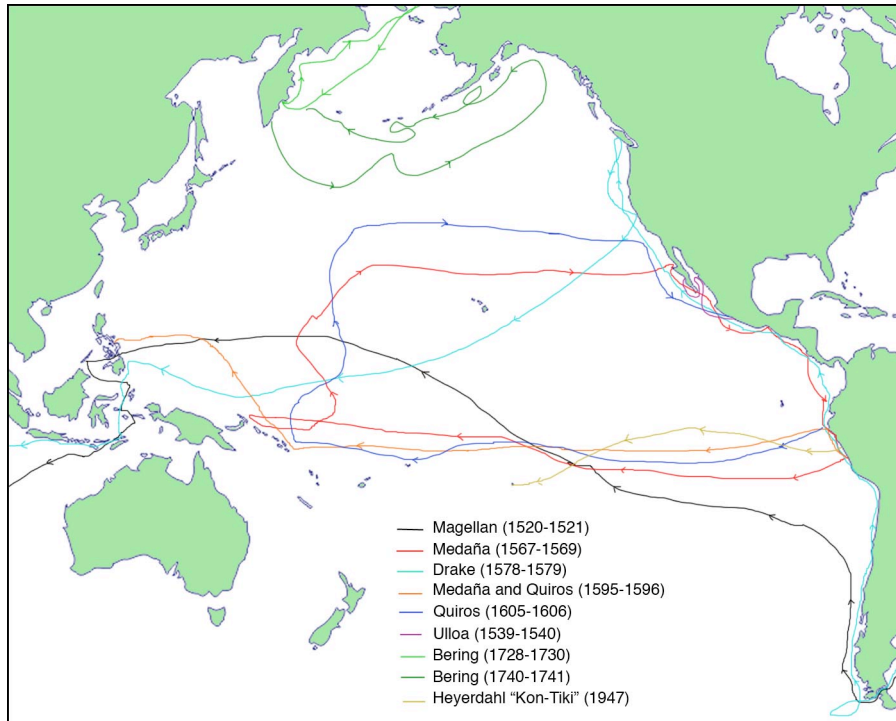
Recent DNA studies of sweet potatoes now confirm that they were traded before contact with Europeans. A 2013 study by a French team, led by Caroline Roullier and Vincent Lebot, in the *Proceedings of the National Academy of Sciences*, analyzed the DNA of sweet potatoes collected during the voyages of James Cook (who sailed the Pacific in the years 1768-1779). Using these early and thus uncontaminated specimens, the researchers argued that their “results provide strong support for prehistoric transfer(s) of sweet potato from South America (Peru-Ecuador region) into Polynesia.” These new studies have virtually settled the debate, except for the most dogmatic Bering Strait advocates.

The new version of the Bering Strait Theory, what is now known as the “Coastal Migration,” has the first Americans using boats, presumably small primitive craft that then skirted the massive ice-sheets along the coast on their way to Aubrey, Texas. But that assumption completely dismisses the reality of the region of the Bering Strait.

As it is presently, even without being surrounded by the massive ice-sheets that would have reached out well into the open



The current mainstream view of Polynesian migration history. The migrations to Australia (in blue) are by separate peoples and occurred 40,000 to 60,000 years ago, indicating that there was some seafaring technology in ancient times.



Francisco de Ulloa and then Francis Drake attempted to reach the “Northwest Passage” but Vancouver was the furthest north either made before being forced back by heavy seas. Although Bering later found the passage he died after his ship was wrecked on his last expedition. Yet two hundred years before, the equatorial part of the Pacific Ocean (the “Calm Ocean” in Spanish) had already been circumnavigated by Magellan. The voyage of Kon-Tiki proved even the simplest vessel could sail in that region.

ocean back then, the seas around the Bering Strait are among the most treacherous on the planet. European explorers had, for 200 years after they had already circumnavigated the globe, attempted to reach the area without success, failing time and time again because their ships were not capable of even coming close to it, much less crossing it. Navigating those seas requires tremendous technological skill, every bit as daunting as crossing the open ocean.

One could argue, using the example of European or Polynesian voyages, that it would have been just as easy for Paleoindians to have crossed the Pacific or Atlantic, than to try to sail or paddle the seas around the Bering Strait. The presumption had been that Paleoindians walked across a land bridge into the Americas because they were incapable of doing anything else, but if Paleoindians did indeed use boats 15,000 years ago, *then they could have come from anywhere.*

TIME WAITS FOR NO ONE

Now that it became evident that the land passageway to the Americas was effectively blocked, even during the Clovis period, the Bering Strait Theory should have died a natural death, but being a dogma and not a scientific theory, its advocates would simply not let go. After Aleš Hrdlička's retirement in 1942 from the National Museum, a number of sites potentially older than Clovis had been excavated, but all had been vigorously challenged by a new generation of archaeologists, and all had been dismissed. The demand for "indisputable proof," whatever that might entail, was simply too great an obstacle to overcome. But one man had figured out the game, and in doing so, brought down the Clovis First version of the Bering Strait Theory.

In 1976, Tom Dillehay, an American anthropologist who at that time was working at the Universidad Austral de Chile, began excavating an ancient site in southern Chile. Quickly recognizing the antiquity of this site, his excavation became arguably the most meticulous ever undertaken. It had to be, for when he first announced his findings in 1988 and claimed that the samples of wood from houses, charcoal from hearths, and other artifacts that he had excavated had been radiocarbon dated to be 14,800 years old, it sent a massive shock wave through the archaeological community. It meant that this site in South America was more than 1,000 years older than any accepted site in North America. Dillehay's findings were immediately and bitterly attacked by the Clovis First advocates, but he had expected it, and the detail and quality of his work made his conclusions virtually irrefutable. Despite this, it took almost 10 years for the archaeological community to—extremely grudgingly—accept the Monte Verde site.

The fact that the oldest site in the Americas was located almost 8,000 miles from the presumed gateway did not go unnoticed. One might have assumed that if the Bering Strait Theory were correct, and Paleoindians migrated from Asia, then the sites in South America would be much younger than those in North America, and the further north one excavated, the older the sites would be. But that had never been the case, as the accepted sites in Canada were even younger than those in the U.S. Indeed the archaeological evidence was pointed towards a migration, but a migration the other way.

With Clovis First now dead and with it the ice-free corridor, coastal migration using boats was now the only alternative. The Coastal Migration Theory, first proposed by C.T. Hurst, Professor of anthropology at Western State Colorado

University, in 1943, had previously been considered little more than a heresy. Its most vocal proponent, Knut Fladmark, an archaeology professor at Simon Fraser University, wrote in 1983 regarding the difficulty in getting the coastal route accepted: "The ice-free corridor runs through the minds of most early man specialists, if not in reality, like a highway beckoning Paleoindians south from Beringia."

In a 1992 article in *Arctic Anthropology*, N. Alexander Easton argued that the reason the Coastal Migration Theory had not been taken seriously was "ideological, in particular the almost mythological entrenchment of the Ice-Free Corridor theory within our culture."

But now there was no alternative. What was once a heresy became the pillar holding up the Bering Strait Theory. As the professor of archaeology at the University of Alaska Fairbanks, William Workman, observed in a paper presented in 2001, "Reflections on the Utility of the Coastal Migration Hypothesis in Understanding the Peopling of the New World," that, "This scenario has since evolved from possibility to probability without a concomitant enrichment of the database."

The Coastal Migration Theory at that time had serious flaws, particularly, as Workman pointed out, the lack of evidence that it actually happened. More problematic was the massive ice sheets, which prevented the Indians from walking along the coast and required instead for them to somehow sail around them.

Geological studies of the ice sheets in the 1970s and early 1980s, conducted by both the United States and Canadian Geological Surveys, had determined that 17,000 years ago the coastal route was completely blocked by ice from Russia all

the way to Seattle (since then new studies indicate that a few ice-free "refugia" may have existed, even during maximum glaciation, and that deglaciation may have occurred earlier in certain parts of Beringia). The Paleoindians would have had to have sailed a distance of almost 3,000 miles alongside the massive ice sheets generally unable to land. Even 16,000 years ago the coastline was almost completely encased in ice.

And this is in the summer. In the winter (which back then was harsher and longer) any travel was virtually impossible. The intriguing question, did the first Paleoindians make the whole journey in one shot, or did they stop and camp at the refugias along the way (and if so did they carry the large quantity of food on their ship needed to survive the long winter), has not been asked because it would draw attention the extreme difficulties of such a voyage.

The line was drawn once again by the Bering Strait advocates at 15,000 years ago, and it could not go back much further than that without the collapse of the whole theory. The new dates from Monte Verde had pushed back human occupation of the Americas to 14,800 years ago, so once again the Paleoindians would have had to race, this time in tiny boats through treacherous waters, if they were to reach Monte Verde in time to leave traces of their occupation.

So this meant that according to the newest version of the Bering Strait Theory, the Paleoindians essentially sailed down the coast directly to Monte Verde, Chile, before later deciding to settle in the Americas. But as absurd as that idea was, new evidence was making even that far-fetched concept impossible.

PSEUDOSCIENCE TO THE RESCUE

The use of pseudoscience, that is studies, methodologies, or theories that pretend to use the scientific method and that look like a real scientific effort, but are actually not based on any science at all, is more common than regularly admitted.

Usually the pseudoscience moniker is applied to beliefs like astrology or creationism, or to renegade authors such as Immanuel Velikovsky, the author of *Worlds in Collision*, or Michael A. Cremo, author of *Forbidden Archaeology*. But in truth beliefs such as astrology or creationism are not similar to science, nor are authors such as Velikovsky or Cremo scientists. In most cases—notable exceptions are the creationists—there is not even the pretence that these are sciences or these authors scientists. In addition, neither these beliefs nor these authors are published in scientific journals or quoted in scientific studies, nor do they have anything to do with the scientific community.

True pseudoscience are those studies or theories that circulate among the scientific community and are proposed by scientists to the public as real science, but are based on deeply flawed or non-existent methodologies, often for the purpose of promoting a particular belief. Examples of pseudoscience can be found in most fields, but are especially common in social sciences like economics, psychology, and anthropology.

One hundred years ago it was difficult to distinguish between pseudoscience and science, in part because the scientific method itself was under development, but also because of pervasive religious and social prejudices that science had not yet escaped from. Discredited fields like craniometry are now infamous for their role in classifying people. Yet the use of dubious methods, flawed studies, and the suppression of evidence, the hallmark of Aleš Hrdlička's efforts to try to bolster the Bering Strait Theory, have continued to this very day. An unfortunate example of this has been the promotion by archaeologists and geneticists of Joseph Greenberg's "Three-Migration hypothesis."

A HYPOTHESIS TOO GOOD TO BE TRUE

Greenberg, an influential and pioneering linguist at Stanford University, was well known for his work on language universals and his regrouping of African languages. He had long been impatient over the time and effort it normally took to group language families together; "by comparing languages two at a time and in great depth they will arrive at the true system—in another 50 to 100 years." Greenberg developed a system called multilateral comparison to try to find relationships between languages faster than the time-consuming and labor-intensive system then largely in use, known as the comparative method.

His system worked reasonably well on African languages, where Greenberg, in the words of linguist Benji Wald, "established order where there was prejudice and chaos, and a grateful set of Africanists adopted his labels, fully aware that they were problematic." But his attempt in 1971 to reclassify the languages of the South Pacific, known as "The Indo-Pacific hypothesis," was not successful and was rejected by the linguists who study that region.

Greenberg then turned his attention and his methods to the languages of the Americas. As he recognized in an article co-written with his student Merritt Ruhlen in 1992, the great language diversity of the Americas was a problem for the Bering Strait Theory.

The number of [language families] reached about 60 in North America and about 100 in South America, far greater than the number in the Old World, where, for example, Africa has but four. These estimates are puzzling, because taxonomic diversity normally increases with time. Yet most archaeologists have long agreed that human settlement in the Old World substantially predates that in the new. The current consensus is that modern humans . . . did not reach the Americas until 12,000 to 20,000 years ago. How could the American languages have diversified to such a great extent?

Greenberg's solution to this dilemma was simply to eliminate the diversity. He grouped all of the existing language families in the Americas into just three large family stocks. He also proposed that the first of these stocks (which he called "Amerind") migrated from Asia 12,000 years ago, exactly the same as the Clovis First Theory proposed, a second (which he called "Na-Dene") arrived 4,000 years ago or so, and the last (Eskimo-Aleut) in historical times.

Attempts to reclassify Indian languages into super stocks were by no means new, in 1919 Paul Radin proposed that all of the languages in North America could be grouped into two super stocks, but he offered no proof for this and his idea was discarded. In 1921, Edward Sapir grouped the North American languages into 6 super stocks, some of which have since been accepted. But Greenberg's sweeping new changes, in particular his "Amerind" super-super stock, was almost completely rejected after it was proposed in 1987 in his book, *Language in the Americas*. As Robert L. Rankin wrote in his review of Greenberg's work:

The author, a generalist, wishing maximally to clarify vast stretches of history for the non-specialist, has gotten wrong the detail necessary to justify his claims or has used methods that rob him of credibility among his peers. Greenberg's lack of acceptance of classificatory principles established in historical linguistics over the past 75 to 150 years, plus his cavalier treatment of data and sources and his lack of familiarity with most of the language families with which he deals have produced a deeply flawed book.

Greenberg made it difficult for other linguists to try to duplicate his efforts, an important scientific concept known as "reproducibility," by not publishing his data, because it "would have added greatly to the length and the cost of the work."

To make matters worse, Greenberg was sloppy. The Andean specialist Willem Adelaar called Greenberg's work "riddled with errors" to such an extent that the "number of erroneous forms probably exceeds that of the correct forms." The influential cognitivist and professor of linguistics at the University of California Santa Barbara, Wallace Chafe, criticized Greenberg's methodology as "vague" and his book "a random collection of chance resemblances." Lyle Campbell, author of the standard work in this field, *American Indian Languages: the Historical Linguistics of Native America*, was withering:

Greenberg compared arbitrary segments of words, equated words with very different meanings, misidentified many languages, failed to analyze the morphology of some words and falsely analyzed that of others, neglected regular sound correspondences, failed to eliminate loanwords, and misrepresented well-established findings.

When linguists did test his system, it did not work. Alexis Manaster Ramer, in a paper in the *International Journal of American Linguistics*, while “trying to employ Greenberg’s own methodology,” tested Greenberg’s classification of the Tonkawa language as a subset of Hokan and then a subset of Amerind:

Greenberg’s classification of this language should not be accepted. Since this case seems to be one of the most obvious test cases available to us, we end up with a new and rather telling argument against taking for granted the validity of the Greenberg classification of the languages of the Americas.

But an even larger problem, according to Donald A. Ringe, Jr. in “The Mathematics of ‘Amerind,’” was that the methodology was so loose that mathematical tests found:

The similarities Greenberg has adduced as evidence for the genetic unity of ‘Amerind’ fall within the range to be expected by chance alone, and concluded that Greenberg’s method of ‘multilateral comparison’ is utterly unreliable, as well-informed specialists have long claimed.

Indeed, using his methods, linguists found they could classify Finnish as an American Indian language. Greenberg’s hypothesis simply did not meet the test of a true work of science. As the *Concise Encyclopedia of Languages of the World* summed it up, “In short, it is with good reason that Amerind has been rejected.”

Yet despite the universal rejection by linguists, paleoanthropologists and geneticists wildly cheered Greenberg’s hypothesis, using it to show that linguistics had finally come around to support the Bering Strait Theory. As William Croft wrote in his obituary of Greenberg: “Another controversial aspect of Greenberg’s Amerind hypothesis was the support it received from physical anthropology and from genetics.”

Over 80% of all genetic studies on American Indian origins have cited Greenberg’s hypothesis since it was published, most of them using his flawed classifications in classifying Indians, and thus leading to skewed genetic reports. The anthropologist E. James Dixon, in his work *Bones, Boats & Bison*, referenced Greenberg when saying that, “linguistics and biological anthropology, demonstrate that ancestors of living Native Americans most likely came to the Americas from northeastern Asia.” Archaeologist Thomas D. Dillehay, in his book, *The Settlement of the Americas*, wrote that, “Greenberg’s model has been the most dominant linguistic interpretation of the peopling of the Americas.”

Lauding Greenberg’s theories, the *New York Times* dubbed him “that rare breed of academic, a synthesizer who derives patterns from the work of many specialists, an exercise the specialists do not always welcome.” The few times that paleoanthropologists did acknowledge that Greenberg’s hypothesis might be controversial, they did so in a way to make it appear as if it was simply academic squabbling. Luca Cavalli-Sforza, a population geneticist at Stanford, said the linguists “have attacked Greenberg cruelly, and I think frankly there is some jealousy behind it.”

But Greenberg himself admitted that the hypothesis was based, not so much on linguistics, but upon “archeological considerations,” in particular, the Clovis First Theory, which he said had “wide acceptance.” Greenberg collaborated with the physical anthropologist Christy G. Turner II (whose study of dental patterns was met with suspicion and is now largely discredited) and the geneticist Stephen L. Zegura (whose early genetic findings have since

been overturned), and together they promoted the Three Migration hypothesis, stating that their work independently backed each other up. But many believed they did more than that, as they themselves wrote in 1986 in “The Settlement of the Americas,”

If the investigator in one field is aware of the conclusions proposed in another, he or she may be influenced by this knowledge in developing a theory.

And Greenberg never hid the fact, which was made clear when his data was reviewed, that most of his classification attempts preceded his system, in other words, he used his system to prove a preconceived outcome.

Ives Goddard, the curator and senior linguist emeritus of the Department of Anthropology of the National Museum of Natural History at the Smithsonian Institution, the linguistic editor of the monumental, *Handbook of North American Indians*, and generally considered to be one of the most prominent figures in the study of historical linguistics, stated in 1994 in “The History and Classification of American Indian Languages,”

We are not aware of a single specialist working on American Indian historical linguistics who thinks that Greenberg has established the validity of his postulated Amerind phylum.

Despite the complete lack of scientific validity, archaeologists and geneticists continued to use Greenberg’s classifications, leading a group of linguists—led by Campbell and Goddard—to write to the *American Journal of Human Genetics* in 2004 to condemn the widespread use of Greenberg’s work in genetic studies about Indian origins. Yet these objections were ignored.

Greenberg was a devotee of the Bering Strait Theory and he created a body of work to prove it. Although it had no scientific merit and was completely rejected by its own scientific field, his hypothesis was still widely promoted by archaeologists and geneticists because it upheld the prevailing Clovis First dogma. Had it not supported the Bering Strait Theory, it would have been dismissed without controversy like many other theories, including his Indo-Pacific hypothesis twenty-five years previously.

But this was a hypothesis too good to be true, and even knowing full well it was worthless, the archaeologists and geneticists adopted it, much to Greenberg’s delight and to the outrage of most linguists. It was only twenty years later, after Clovis First bit the dust and the Three Migration hypothesis was proven incompatible with genetic evidence that his theory began to be abandoned. But by then the damage to science was done.

As Jason Eshleman, Ripan Malhi, and David Glenn Smith observed in their 2003 article in *Evolutionary Biology*, that even though Greenberg’s “linguistic divisions themselves have not held up to persistent scrutiny. Nonetheless, the model has strongly influenced designs for research on Native American population genetics.” And has undoubtedly made much of this genetic research useless.

Pseudoscience is used to endorse dogmas and ideologies, not scientific theories. The blatant misuse and promotion of Greenberg’s discredited work by archaeologists and geneticists was pseudoscience in its purest form.

BERING STRAIT THEORY, PT. 6: DNA, BLOOD TYPES AND STEREOTYPES

Archaeological discoveries in South America in the 1980s led to a revision in the timeline of the Bering Strait Theory, throwing the whole theory into doubt. But the dogmatic insistence on a single passageway in a certain time period was also being challenged on many other fronts.

It is generally presumed that the new science of genetics is providing support for the Bering Strait Theory, but that is not necessarily so. The idea that we are all related is a concept well known among American Indians and therefore the fact that new genetic studies are detailing these relationships among humans is not surprising. The question is not so much, “are there relationships?” but do these the new details actually shed light on the movements of populations in the past.

Adding to the confusion surrounding genetic studies is the newness of the science, which has caused genetics to be heavily influenced by the archaeologists, and thus already predisposed to the Bering Strait Theory. More unfortunate has been the use by geneticists of the pseudo-scientific classifications of American Indians proposed by the linguist and Clovis First devotee, Joseph Greenberg, classifications that are completely discredited, but still used in genetic studies. These problems and others have led to the regular publishing of highly contradictory reports, often in the same year. As University of Wyoming anthropologist Nicole M. Waguespack noted, “Genetic studies are currently plagued by equifinality, as it has become clear that multiple scenarios of initial colonization and later population movements can be devised to account for the modern frequencies of American haplotypes.”

The first simple tests for genetic inheritance involved blood groups, discovered by the Austrian biologist Karl Landsteiner in 1901, who named the three then-known types as A, B, and O. In 1919, Ludwik and Hanka Hirschfeld, by sampling soldiers, found that different ethnicities and races had differing frequencies of having one blood type or another. In 1923, two immunologists from Cornell University, Olin Diebert and Arthur Coca, collected blood samples of American Indians, in part to determine “the question of the relation of the American Indian race to the northeastern Asiatic races.” As Margot Lynn Iverson wrote in her book, *Blood Types*, after they compared their samples to those taken from Asian peoples,

Coca and Diebert anticipated finding similar blood group distributions in the Asian and Indian populations, which would further support the widely held theory that Native Americans had immigrated to the Americas from northeastern Asia. They were surprised to find that, to the contrary, the blood group distributions of the East Asian and American Indian sample groups were quite different.

The American Indians had a very high likelihood of being type O, whereas it was not common in Asians. About one-third of the Asians were type B, but this group was almost non-existent among Indians. In a pattern that would become familiar with genetic studies of American Indian origins, Iverson noted;

Despite not finding similarities between the American Indian and Asian populations, the two researchers interpreted their results as in accordance with the scientific view that Native Americans had traveled to the Americas from Eastern Asia by arguing that the blood group data was evidence of the antiquity of the separation between the two populations, before the mutations causing the A and B blood groups had occurred.

The study by Coca and Diebert did not break down the Indian samples by tribe, a serious flaw in any study. Later studies confirmed that a high percentage of Indians were type O, leading many to conclude that this was the original Indian blood type. This appeared to lend credence to the belief that Indians were one genetic unit, in tune with the perception that the first Indians were a small group of hunters who wandered into the Americas over the Bering Strait. But a report in 1933 threw all of that out the window.

Gustave Matson, a bacteriologist at Washington University in St. Louis, and H.F. Schrader, an Indian Office doctor, did one of the few studies in which the genetic markers of a single Indian nation, in this case the Blackfeet (Piegan), were examined. The report, "Unexpected Differences of Blood Groups in American Indians," found that the vast majority were type A, and indeed, the more "fullblood" they were, the more likely they were to be type A. They then did another study among the Blackfeet of Canada and found the same result, leading them to conclude that originally the Blackfeet were all type A. Matson and Schrader argued that the results showed that Indians were not originally one homogenous group, and they "suggest the necessity for reconsidering the origin of the American Indian."

As other genetic markers were developed, they too showed little relationship between American Indians and Asians. The RH blood group system, discovered in 1939, found that American Indians were unlikely to have negative RH factors, the opposite of Asians. Similarly in fingerprint patterns, Indians are more likely to have similar patterns to Caucasians than Asians. Moreover, as in the case of blood types, Indian genetic markers could vary considerably depending on the tribe, dispelling the notion that Indians are one

genetic group, and making any conclusion problematic.

THE GENETIC SWAMP

In 1953, James Watson, Francis Crick, Rosalind Franklin, and Maurice Wilkins cracked the genetic code by discovering the structure of DNA. Over the next three decades, scientists would work to identify and place in proper order the thousands of genes that make up DNA strands, leading to the "sequencing" of the DNA in the mitochondria, the small "energy battery" inside of a cell, in 1981. Like radiocarbon dating, sequencing DNA revolutionized, and continues to revolutionize, our understanding of human origins.

In 1991, an international team led by R.H. Ward from the University of Utah and Svante Pääbo from the University of Munich examined the Nuu-Chah-Nulth (Nootka) people of Canada. Their paper, entitled, "Extensive Mitochondrial Diversity Within a Single Amerindian Tribe," created a stir.

Sequencing of a 360-nucleotide segment of the mitochondrial control region for 63 individuals from an Amerindian tribe, the Nuu-Chah-Nulth of the Pacific Northwest, revealed the existence of 28 lineages defined by 26 variable positions. This represents a substantial level of mitochondrial diversity for a small local population.

This was unexpected, as it would take a long time for this diversity to develop. Given the fixed date of the Bering Strait Theory, the authors could only assume that, "the magnitude of the sequence difference between the lineage clusters suggests that their origin predates the entry of humans into the Americas," a conclusion that raised even more questions than it answered.

Other, broader studies were encountering similar problems. Because Mitochondrial DNA is passed only from a mother it avoids the gene shuffling that can obscure the evolutionary trail. It also mutates faster than nuclear DNA, allowing researchers to distinguish populations that recently separated and estimate when that occurred. As geneticists began to detect these mutations in different populations, they began to classify them. Although new variations are still being discovered, the basic outlines began to fall in place by the early 1990s.

Divided into “haplogroups” these distinctive sequences were named A to Z in order of their discovery. In very general terms, haplogroup L is found largely in Africa and is believed to be the parent sequence of all modern humans. At some point in the deep past, two groups, M and N, descended from L and, breaking up into numerous subgroups, expanded all over the world, including the Americas. From M, the subgroups C and D, and from N, the groups A, B, and X, are found in American Indians.

These groups are also found in Asia and Europe, and so it was presumed that the Eurasian populations with these same haplogroups were the ancestors of Indians. Even though these haplogroups were the same in both hemispheres, they were not quite identical due to mutations over time, allowing the geneticists the ability to estimate when the DNA in Asia and the Americas had separated from each other. And what they found surprised them.

Investigations by a number of geneticists began to find extremely deep ages for when the DNA splits occurred. Michael D. Brown from Emory University estimated that Haplogroup A divided between 27,000 and 57,000 years ago; Antonio Torroni, professor of genetics at the University of Pavia, Italy, estimated that B

split sometime between 26,000 and 39,000 years ago and that D split 32,000 to 47,000 years ago; Theodore G. Schurr, professor at the University of Pennsylvania, estimated that C split between 42,000 and 55,000 years ago, and X split 13,000 to 17,000 years ago. Sandro L. Bonatto from the Catholic University of Rio Grande do Sul, Brazil, summed up the situation, “these results put the peopling of the Americas clearly in an early, pre-Clovis time frame.”

Like the linguistic evidence, which indicates that American Indians have been a separate peoples for at least 40,000 years, the dates for the Bering Strait Theory were “in the wrong ballpark,” in the words of linguist Johanna Nichols. To make matters more problematic, the “coalescent age,” that is the date when the varying genes had been one and not split, in some American Indian haplogroups were older than those of some Asian populations, leading to speculation that migrations may have occurred both back and forth, to and from Asia.

But even with this formidable evidence against it, the Bering Strait Theory would not die. Because it was simply impossible, according to the belief, for American Indians to have migrated before the massive ice sheets blocked their path approximately 30,000 years ago, a new hypothesis was proposed, originally known as the “Three Stage Expansion” but now dubbed the “Beringian Standstill Theory.”

THE THEORY THAT WOULD NOT DIE

Resembling more an invention by Rube Goldberg than a scientific theory, the Standstill hypothesis is a direct result of the genetic evidence, which undercuts the Bering Strait Theory, and it was first proposed in 1997 by the geneticists Sandro L. Bonatto and Francisco M. Salzano. In

this scenario, the ancestors of Indians migrated to “Beringia,” as the region that surrounds the Bering Strait is called, between 30,000 and 40,000 years ago. They then waited in Beringia—at that time a vast plain that connected Siberia and Alaska—for about 20,000 years until the ice sheets melted, and then around 15,000 years ago made their way into the Americas in time to get to Monte Verde 14,800 years ago.

The Indians, while waiting 20,000 years, also had to be in complete isolation and not genetically mix with other Asian tribes. In this way, the unique genetic mutations would have the time to develop, while at the same time keeping the Paleoindians out of the Americas before 13,000 BC. Geneticists have looked to find a “bottleneck” in genetic growth, and “founder effects,” that is the loss of genetic diversity that occurs when only a small population gives rise to a larger one, that might show there was indeed a 20,000-year wait in Beringia before the expansion into the Americas. This search has produced a number of genetic studies with conflicting results, leaving the whole thing unresolved.

In his February 28, 2014 article in *Science* magazine, “Out of Beringia?” University of Colorado Boulder researcher John Hoffecker, who is a proponent of the Standstill theory notes, “the weakest link to the Out of Beringia theory is the lack of archaeological evidence.” There is absolutely no sign that humans lived in this region during this time. In addition, this research by the University of Colorado Boulder (and two other universities) found that although the area had “surprisingly mild temperatures” during the summer (for an ice age), it was still cooler than the area is now, which is not particularly hospitable.

The new study actually set the Beringian Standstill Theory back. Digging up sediment cores from that region dated to between 15,000 to 30,000 years ago, they found in the spores of shrubs and other plants, “evidence that central Beringia supported a shrub tundra region with some trees during the last glacial maximum.” But a review in *Scientific American* argued that, “This kind of vegetation would not have supported the large, grazing animals – woolly mammoth, woolly rhino, Pleistocene horses, camels, and bison” that presumably the Paleoindians would have lived on.

Archaeologists had long held that because there is (under their standards) no archaeological evidence of Indians in the New World before 15,000 years ago, they were thus not here. Yet there is absolutely no archaeological evidence of anyone living in Beringia during the 20,000 years Paleoindians are supposed to have been there, either.

THE MYTH OF SCIENTIFIC FACT

It would appear that different standards of evidence are required, depending on the point of view. Those who would propose an alternative to the Bering Strait Theory must come up with an ironclad case, impeccably documented and researched, and proven beyond all doubt.

Unfortunately, science is only rarely able to prove things with absolute certainty as it normally confines itself to mathematical probability. As the evolutionary psychologist Satoshi Kanazawa put it, “proof is not a currency of science,” and, “the primary criterion and standard of evaluation of scientific theory is evidence, not proof.” However, the demand for “indisputable proof” to overturn a dogmatic stance is one of Aleš Hrdlička’s enduring legacies.

Meanwhile, those who support the Bering Strait Theory may simply present conjectures, even if they have only the slightest evidence and even if these conjectures are often improbable if not impossible.

What makes the dubious nature of the Standstill hypothesis even more unfortunate is that perspectives that do not conform with the Bering Strait Theory, if they are not ignored, are treated with disdain or ridicule, or even savagely attacked. Yet it is the Bering Strait Theory that has historically been a collection of pseudoscientific mythologies, promoted virulently by dogmatists, who have largely held back science and discouraged free expression.

In 1916, in his book, *Time Perspective in Aboriginal American Culture*, while discussing the science of archaeology, the renowned linguist and a firm believer in the deep antiquity of American Indians, Edward Sapir, offered a thinly veiled criticism.

The method has yielded brilliant results in the study of prehistoric Europe and western Asia and is doubtless destined to teach us vastly more than has yet been disclosed to us about the earlier culture history of the rest of the world. For America, however, the results, while of distinct value as far as they go, have so far been rather more meager than might have been expected. Whether this is due to the nature of the culture history of America itself or to certain defects in the field methods of investigators, I would not venture to decide.

Bruce Bradley, senior lecturer at the University of Exeter, UK, and Dennis Stanford, the former Chair of the Department of Anthropology at the National Museum of Natural History of the Smithsonian Institution, wrote about the Bering Strait Theory in *World Archaeology* in 2004:

We must remember that these ideas on New World origins are based on informed speculation and are not supported by archaeological evidence. Through time and repetition, and in the absence of any clear alternatives, the theory has become dogma, and ultimately ideology, appearing in all textbook and popular publications.

Bradley and Stanford have proposed instead an equally speculative alternative, that the Clovis culture originated in Europe, not Asia, and that early Paleoindians migrated across the northern Atlantic, not over the Bering Land Bridge. Needless to say, their position is considered to be extremely controversial and their evidence is highly disputed by the paleoanthropological community.

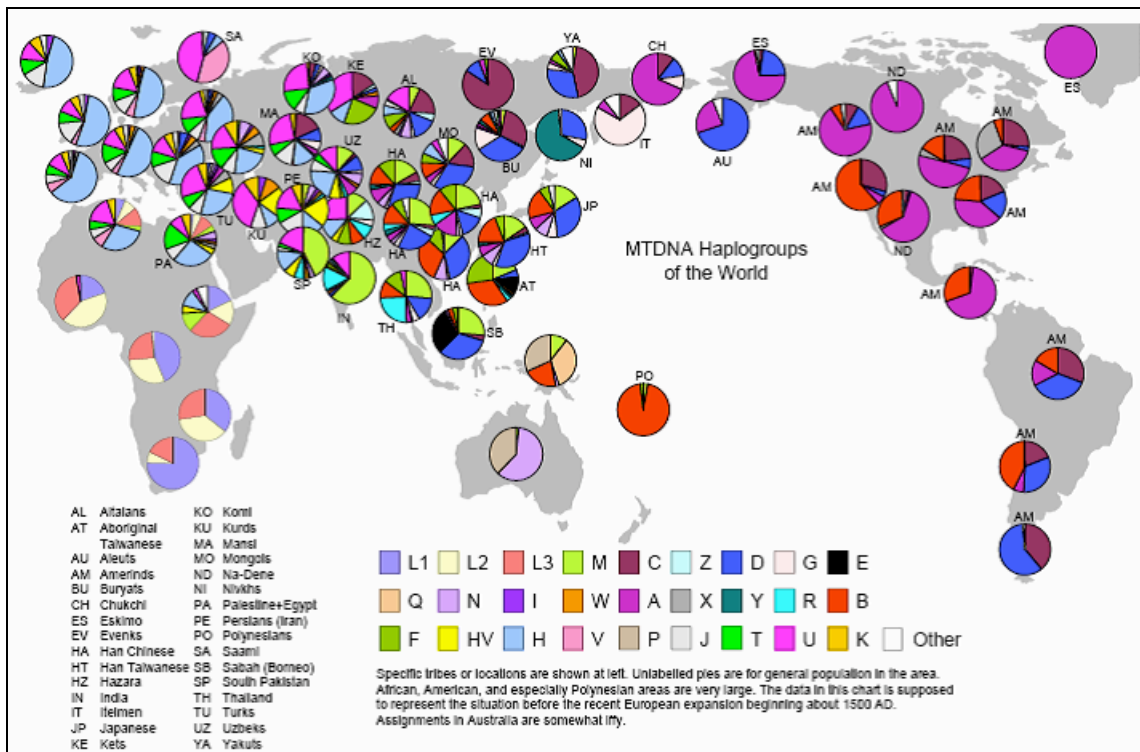
That the science of paleoanthropology, and thus the Bering Strait Theory, were born out of assumptions of Western cultural and genetic superiority is now widely accepted. Anthropologist Michael L. Blakey argued that the father of the modern Bering Strait Theory, Aleš Hrdlička, was among the most influential of the ideological “skull doctors,” and his work was little more than pseudoscientific racism. Yet the unfortunate impact of Hrdlička’s dubious methods continues to this very day.

It is also unfortunate that to the mainstream press, the standard line is recited, that American Indians crossed into this hemisphere from Asia in 13,000 BC through the Bering Strait, as if this is an accepted fact. It seems impossible for scientists to say, “we simply do not know.” It is easier to promote a myth.

One hundred and twenty years ago, paleoanthropologists were faced with what they believed to be a dilemma: chaos or order. In the end they chose order, and in doing so they created the dogma of the Bering Strait Theory. Like most dogmas, it has taken on a life of its own, far beyond

what its creators could have hoped for or expected. As a theory it continues to grow and mutate, adapting to new circumstances, for no amount of evidence to the contrary will make it disappear.

While there are those who may fear that the loss of a dogma may lead once again to chaos, there are alternatives to chaos or order. As the geneticist Rebecca Cann argued, “rather than make dogmatic statements” we should “encourage the open exploration of this debate” and in doing so, maybe we will find some answers.



A standard map of the mtDNA haplogroups of the world. Unfortunately, virtually all genetic maps of this type use the pseudoscientific classifications of Indians developed by Joseph Greenberg, making it difficult to assess the validity of their research.



North America as seen from a contemporary satellite photo. The only permanent ice sheets left from the last ice age is the one that covers Greenland, along with some small remnants in Canada such as the Barnes Ice Cap. The Greenland ice sheet averages over 1 mile in thickness and in some places is almost 2 miles thick. From about 35,000 years ago until about 11,000 years ago all of Canada and parts of Alaska and the continental United States were covered in similarly massive ice sheets.

THE ICE CAP QUESTION

A report in *Quaternary Science Reviews* in August of 2012, entitled “Early Retreat of the Alaska Peninsula Glacier Complex and the Implications for Coastal Migrations of First Americans” suggested that the deglaciation around the Aleutian Islands may have occurred between 1,500 and 2,000 years earlier than previous believed. It has also concluded that the maximum thickness of the ice sheet in the Sanak Island region during the last glacial maximum was 70 meters, or about half that previously projected—and that deglaciation could have happened more rapidly than earlier models predicted. As Sergio Probst wrote in *Sci-News.com*:

The study is important because it suggests that the possible coastal migration of people from Asia into North America and South America – popularly known as “First Americans” studies – could have begun as much as two millennia earlier than the generally accepted date of ice retreat in this area, which was 15,000 years before present.

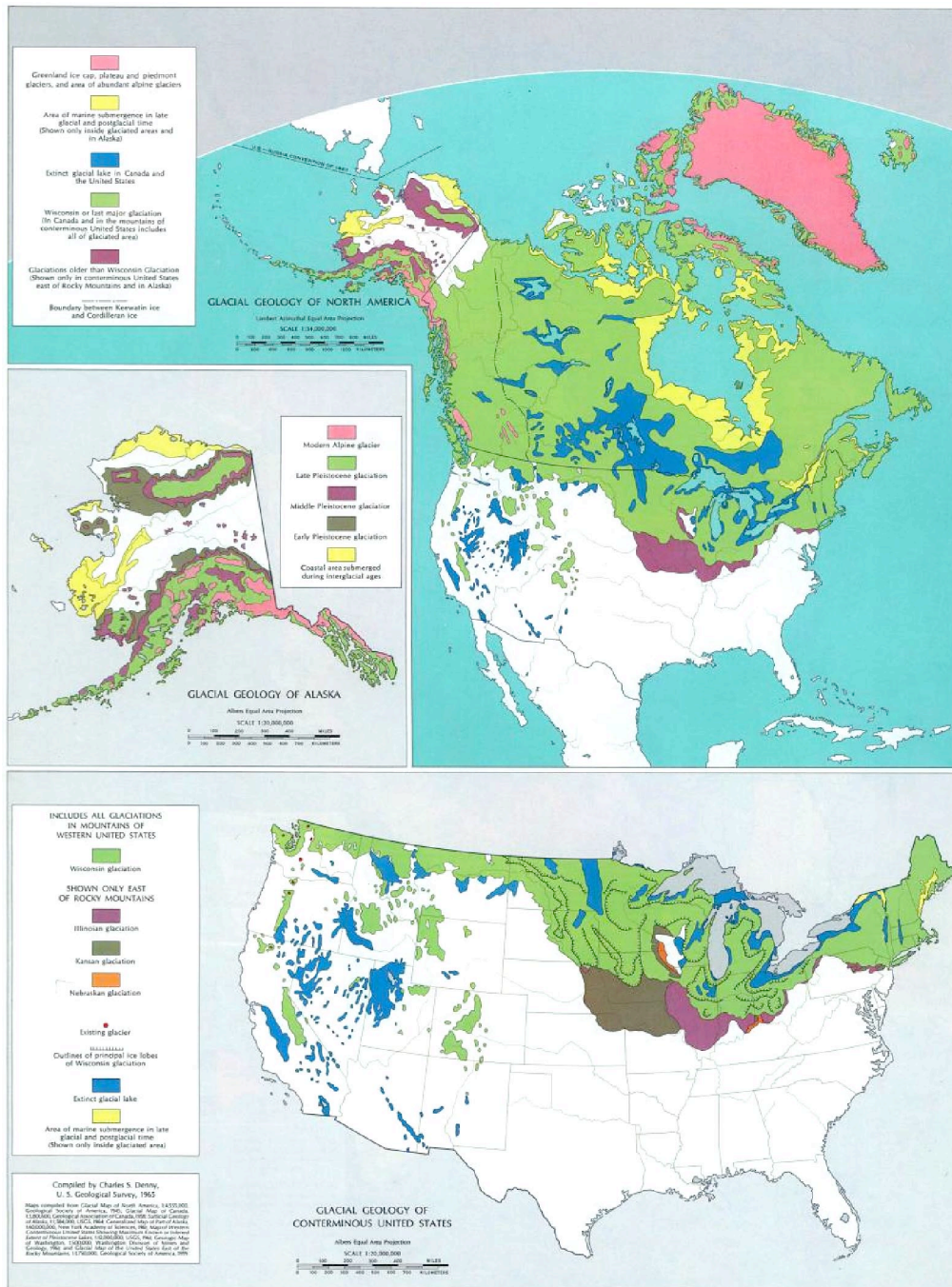
The lead author of the report, Nicole Misarti of Oregon State University, added that “Glaciers would have retreated sufficiently so as to not hinder the movement of humans along the southern edge of the Bering land bridge as early as almost 17,000 years ago,” and that they found “a full contingent of pollen that indicated dry tundra vegetation by 16,300 years ago. That would have been a viable landscape for people to survive on, or move through. It wasn’t just bare ice and rock.”

The new dates make the Coastal Migration Theory more plausible by giving Paleoindians possibly 1,500 years to travel 8,000 miles to the early Monte Verde site, as opposed to only 200 years, as had been previously presumed. But making things more complex, recent studies from Russia indicate that the eastern side of Beringia may have been covered with ice-sheets, dispelling the notion that this area was ice-free. Large ice-sheets, up to 3,000 feet in thickness, also covered parts of the Arctic Ocean. Exactly when these ice-sheets existed and their extent is not certain.

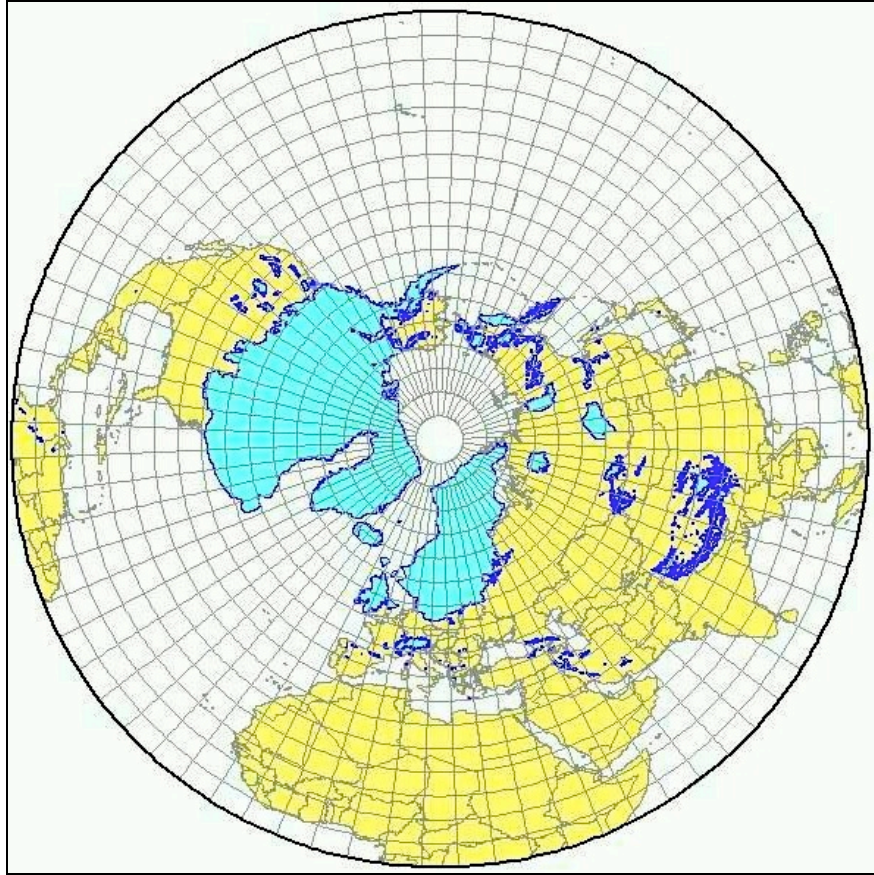
The most recent glacial period (which is the one which has a bearing on our discussion) has a bewildering number of differing names for different areas, although Late Wisconsinan is often used for the North American glaciation. The “Last Glacial Maximum (LGM)” is the period when the ice sheets reached their greatest extent, approximately 26,000-19,000 years ago.

For the Bering Strait Theory as it currently stands, exactly when the ice-sheets retreated enough to allow passage, by land or by sea, is essential. Right now the question is, “was travel even possible.” Whether travel was likely or easier than any other route, given the hostile environment, is another discussion. The Standstill theory supposes that Paleoindians lived in Beringia during the height of the Last Glacial Maximum, surrounded by massive ice sheets.

The first map of the ice caps of North America to be drawn with reasonable accuracy was by the influential geologist and founder of the *Journal of Geology*, Thomas Crowder Chamberlin, in 1894, although the area of Alaska was left incomplete.



A 1965 map of glaciation in Canada and the United States, as compiled by the U.S. Geological Survey. It shows the entire Pacific Coast, north of Seattle, glaciated through the Aleutian Islands.



A polar view of the ice cap at approximately 19,000 years ago.



Satellite photo of North America on February 13, 2014. Up until the last century, travel in the upper Northern hemisphere was limited to the short summers. Migrating populations would have to gather and store food to survive the winter, which was likely to be longer and more severe than the winters today.

Throughout the 20th century, greater advances in research and technology began to make it clear that the ice cap's expansion and retreat was not synchronized, but varied depending on the location. Radiocarbon dating has helped to provide a more exact extent of the glaciation and also the dates for ice advances and retreats. By collecting samples of pollen, wood, or plants, the radiocarbon dates given can determine approximately when an area was devoid of any plant life, and thus completely covered with ice, or when it became ice-free.

The Canadian geologist, Arthur S. Dyke, has collected radiocarbon data from a vast array of sources and compiled them into a database, using it to create one of the most comprehensive maps of North American glaciation. Although new studies continue to expand and change our knowledge of the extent of the ice sheets, Dyke's maps are still in standard use today. The following maps are based on his 2004 paper, "An Outline of North American Deglaciation with Emphasis on Central and Northern Canada." The ice sheets are pictured in white, and red dots are radiocarbon data.

There is little doubt that during the LGM, passage to the Americas through Beringia was virtually impossible. Approximately 18,000 years ago, the ice began to retreat, but at what point it retreated sufficiently to allow passage is still unclear.



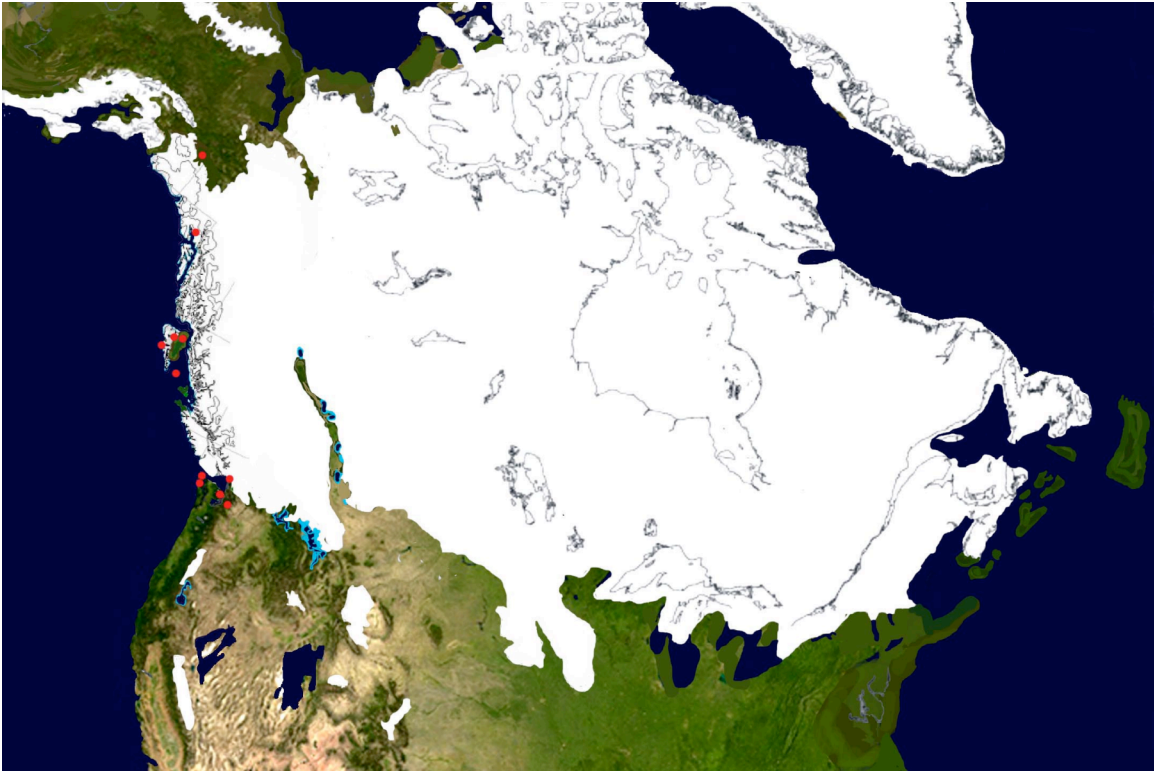
Map showing the ice sheet at approximately 19,650 years ago (16,500 radiocarbon years ago). The red dots represent radiocarbon data. The massive ice sheet completely straddles North America and extends well into the oceans.



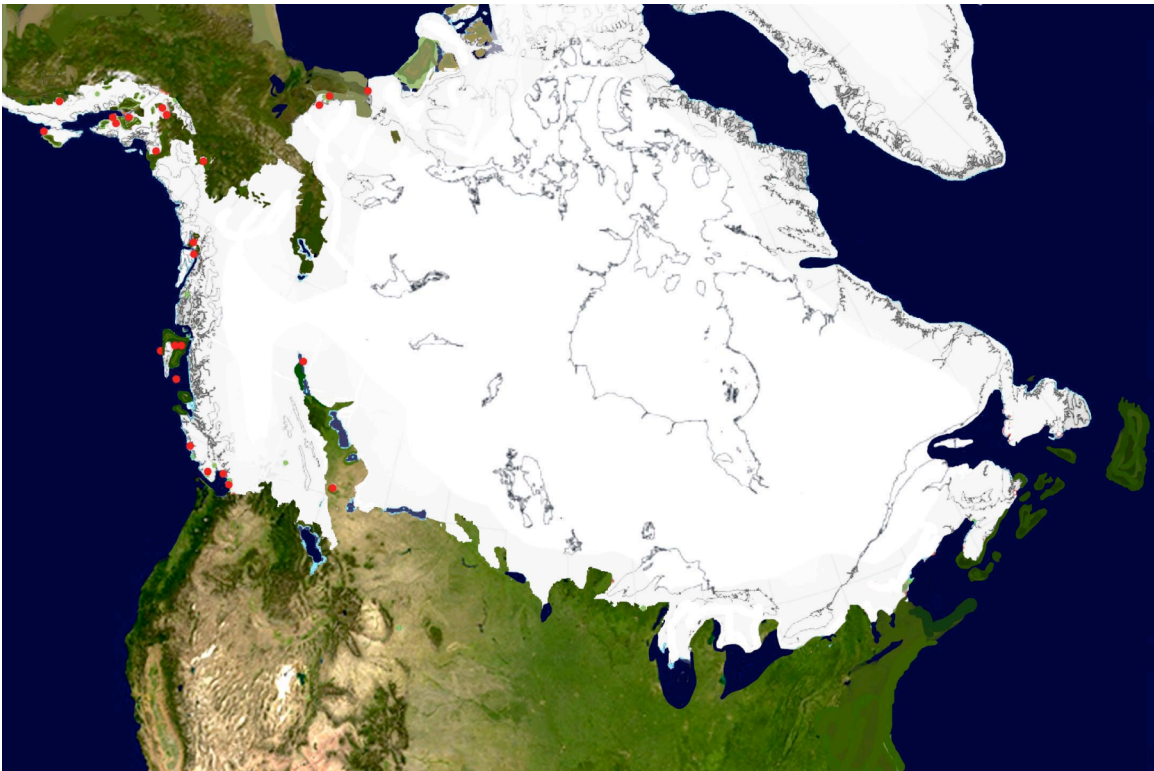
The ice sheet 18,500 years ago. Melting is underway, and two small refugia, in what is now Anchorage and Graham Island have opened up along the coast, but they are about 1,500 miles from each other.



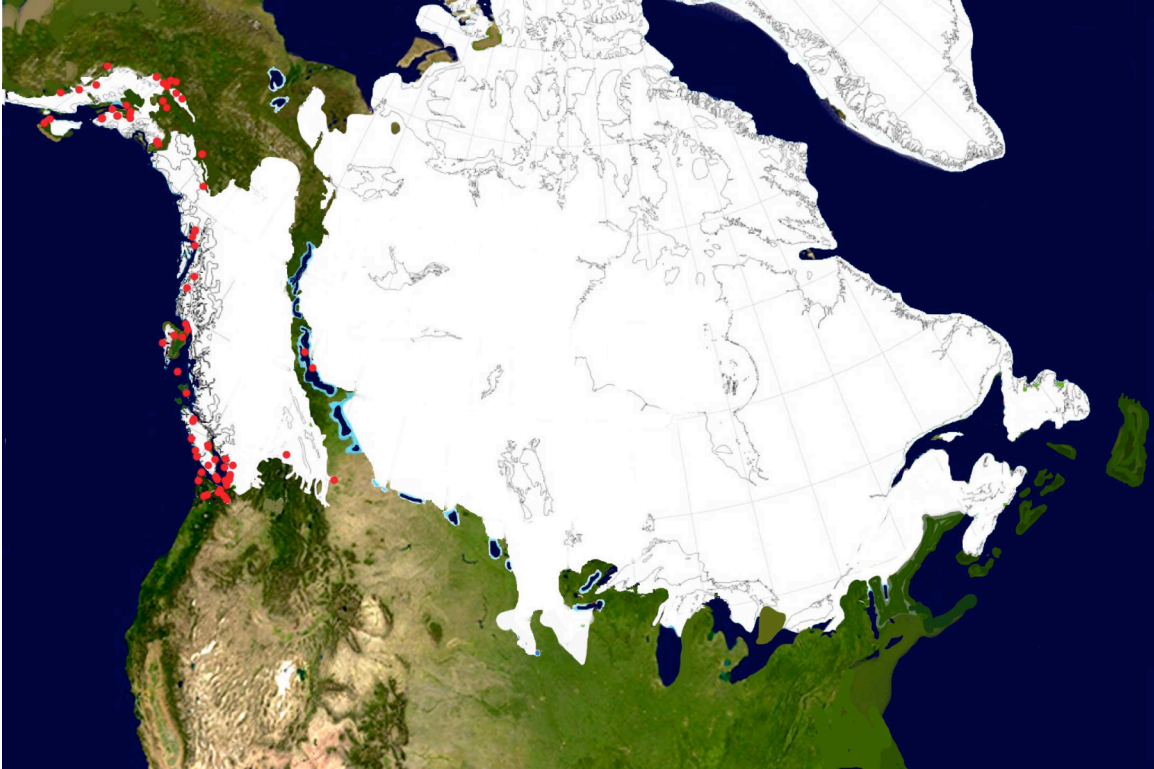
The ice sheet at approximately 17,350 years ago. The sheet has actually expanded, it still extends miles into the oceans and no significant melting has occurred along the coasts.



The ice sheet at approximately 16,200 years ago. The coastal ice is melting and more refugia have opened up, but large stretches of coast are still covered in ice.

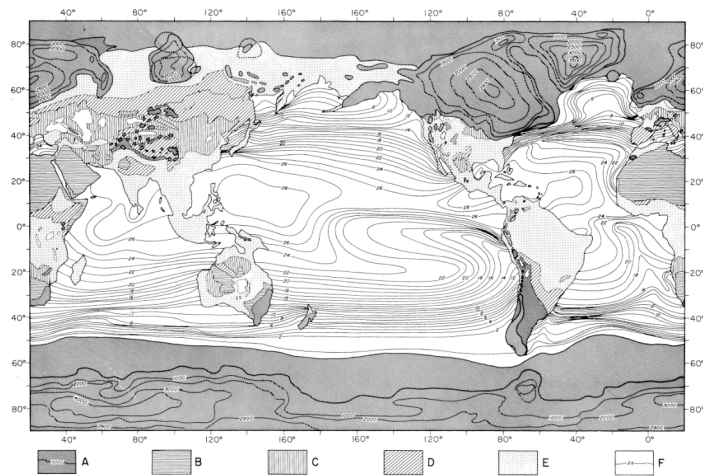


The ice sheet at approximately 15,600 years ago. It is in the process of splitting into two sheets, the Laurentide over most of Canada and the Cordilleran along the west coast.



The ice sheets at 14,400 years ago. They have by now split in two, although the ice-free corridor between them is still not passable by foot. The coast now has a number of refugia, but there are still long stretches of ice. By this time Monte Verde in Chile has already been settled for more than 400 years.

The maps do not take into account the extent of sea ice along the coasts during the period between the LGM and the end of the Wisconsinan. The extent and timing of sea ice in that region and period is currently not clear. The CLIMAP project estimated that 18,000 years ago, the seas around Beringia were 4 °C cooler than they are today and the seas around the Japanese coast and the Kamchatka Peninsula up to 10 °C cooler than today.



Map of sea temperatures by the CLIMAP project, The "A" gradient is ice and snow.

AFTERWORD

The idea that American Indians are a unity, or one people, is a Western concept. Terms such as American Indian, Native American, Amerind, are Western terms. The people who have inhabited the Americas never understood themselves in this way, but rather referred to themselves by their nation, whether it be Dené or Hnahñu, and they maintained separate identities with very different cultures and languages. Even genetically they are different from one another, although unfortunately most genetic studies tend to lump them all together, so these differences are obscured. Yet the Western perspective of simplifying the vast indigenous variety of this hemisphere is certain to lead to an oversimplification over how this hemisphere was occupied.

With all the advancements in science, we still know very little about what was happening on this planet 5,000 years ago, much less 15,000 or 50,000 years ago. Every day new discoveries add to our knowledge of the past, and yet it seems that more mysteries surface than do answers.

It was presumed, up until very recently, that modern humans were less than 40,000 years old. This presumption was once a driving force in limiting the age of Indians in the Americas, since it was assumed they could not be older than the peoples of Europe or Africa, and it would take a long time to migrate to the New World. It is now known that modern humans are at least 200,000 years old, and likely much older.

Moreover, there was in the past more than one kind of human. The recent discovery of the Denisovan hominin, along with the Neanderthals and a number of other, unclassified remains, such as Grimaldi Man and Chancelade Man, indicate a

wide variety of ancient humans existed contemporaneously. The significance of this has yet to be understood.

There have been enormous environmental changes over the past 100,000 years, so pronounced that it is difficult to comprehend their effects on humans and other living things. The last ice age, known in North America as the Wisconsinan Glaciation, began approximately 85,000 years ago and ended about 11,000 years ago. It reached its peak extent of ice about 20,000 years ago. It was not a smooth transition, and during this time there were abrupt climate changes. Approximately 14,000 years ago there was a major climatic event, known as the Older Dryas, in which the Northern Hemisphere cooled significantly. A short period of warming then occurred, followed by the Younger Dryas, another period of cooling also known as “the big freeze,” which began approximately 12,000 years ago and lasted about 1,000 years.

Many volcanic events, such as the Lake Toba super-eruption in the Indonesian island of Sumatra approximately 70,000 years ago, had global consequences and may have triggered mass human migrations.

The archaeological record of ancient Indians in the Americas is sparse, but that does not mean that Indians were not here in the deep past. The “culture history” of ancient humans is little understood, and our perspectives on how they lived, sustained themselves, and organized their societies is largely based upon old prejudices and discredited theories of social evolution. What little we do know, it does appear that the culture history of ancient Americans is different from the ancient peoples of Europe or Asia.

Paleoindians lived in the Americas for thousands of years and did not leave many

traces of their settlements because they lived relatively close to nature. This is evident in the oldest accepted archaeological site, Monte Verde in Chile. The preservation and discovery of the site was extremely fortuitous. It was situated near a creek that at onetime overflowed and subsumed the camp, becoming a bog. The bog inhibited the decay of the organic matter in the settlement so that the wooden posts, clothing, hearths, bones, and even a chunk of meat were preserved. Otherwise an open-air camp of this type, once abandoned, would have disappeared thousands of years ago, a victim of the elements.

One certain effect of climate change is that the sea levels have risen more than 300 feet since the glacial maximum, inundating hundreds of thousands of square miles of coastlands about 11,000 years ago. It should be noted that today, 80% of the world's population lives within 60 miles of the oceans and would be forced to move if the seas rise another 300 feet. Whether or not the majority of Paleoindians were living along the coasts is now almost impossible to discover. Yet in an intriguing find in 1970, the crew of a scallop trawler 60 miles off the Virginia coast hauled a mastodon tusk onto its deck along with an eight-inch stone blade. The tusk was radiocarbon dated to be 22,760 years old.

In 2016, after a thirty-year battle, the underwater site, Page-Ladson in Florida, was finally accepted to be 14,550 years old, making it the oldest in North America. But other sites in North America remain controversial because of their possible ancient dates. The most compelling of these sites is Meadowcroft Rockshelter in Pennsylvania, which points to Paleoindian habitation as early as 19,000 years ago. Meadowcroft has received unyielding criticism from Clovis die-hards such as C. Vance Haynes, professor emeritus of archeology at the

University of Arizona, who claim the early radiocarbon dates are the results of contamination (now refuted), but otherwise have been unable to challenge the validity of the site.

New excavations at Buttermilk Creek in central Texas indicate the site may be 15,500 years old, and the large collection of tools gives this site substantial weight. There are also a large number of sites in which the remains of extinct animals have been found that show signs of having been butchered by Indians. For example, at La Sena in Nebraska, mammoth bones that appear to have been fractured by humans were radiocarbon dated at 22,000 years ago.

By contrast to the stubbornness found in most North American archeologists, in Central and South America, the acceptance of ancient, pre-Clovis sites is matter of fact. For example, the Monte Verde site in Chile has more than one level. The upper level, MV-II, is universally accepted as having human occupation reliably dated to 14,800 years ago. A lower level, MV-I has what appear to be hearths, stone tools and wood artifacts. While North American archaeologists have been hesitant to even discuss this level, Mario Pino Quivera, a geologist with the Universidad Austral de Chile, who co-excavated the Monte Verde site, is emphatic about the burnt wood that he believes comes from an ancient hearth. "There is no doubt these are real human artifacts," and "there is no doubt to its age—its 33,000 years old."

A recent study published in the *Proceedings of the Royal Society* in 2013, by a team led by Richard Fariña of the University of Uruguay, proposed that a site near Sauce, Uruguay, showed evidence of giant ground sloths having been butchered by humans, with the sliced bones found along with stone scrapers. The fact that the site and

bones were radiocarbon dated to be more than 30,000 years old drew little controversy in South America.

Yet in North America, these ancient dates are met with scoffing disbelief. For example, the Pedro Furada site in Northeastern Brazil, a rock shelter with what are believed to be hearths and associated stone tools, has been radiocarbon dated to be more than 22,000 years old. As Alex Bellos of the *Guardian* explained in 2000, the Pedro Furada site “has divided the academic community into two sides—roughly between US archaeologists, who refuse to accept it, and South Americans and Europeans, who do.”

Many important sites in Latin America have never had their findings published in English, and so are fairly unknown to North American archaeologists. For example, the Rancho La Ampola site near El Cedral in the Mexican state of San Luis Potosí, has extensive documentation, so much so that a pamphlet of interdisciplinary papers, entitled *Rancho "La Amapola", Cedral: Un sitio arqueológico-paleontológico pleistocénico-holocénico con restos de actividad humana*, published by Mexico's National Institute of Anthropology and History in 2012, states that the stone tools, worked animal bones, and the hearths at the site “conclusively proves the presence of man in Mexico more than 31,000 years ago.”

The schism between North American and Latin American archeologists is long-standing and dates back to Aleš Hrdlička's trips to Latin America in the early 20th century, where he proceeded to debunk the research of a number of Central and South American archaeologists. It begs the question; if Monte Verde had been principally excavated by a South American archaeologist, rather than Tom Dillehay, would the site have been accepted.

Yet as the North American archaeologists wait to uncover “indisputable proof,” a smoking gun that may some day overturn the current dogma, the evidence continues to accumulate that Indians have been in this hemisphere far longer than 15,000 years.

The linguistic evidence has always been clear. Indians are extremely ancient, so ancient, that, with the possible exception of the Athabaskans, there is no linguistic connection between modern Indians and modern Asians.

The genetic record is more complex and the results of recent studies are difficult to evaluate. It is essential, when studying Indians, to genetically map individual nations, given how different they are from each other. Sadly, the genetic evidence is hamstrung by the pseudoscientific classifications of Joseph Greenburg that is used in most genetic studies. Greenburg attempted to eliminate the diversity of Indian peoples and so lumped most of them into one group. This makes it much easier than examining the genetic makeup of 150 distinct peoples, but it has led to wildly divergent outcomes between similar genetic studies, often done in the same year.

Lumping so many different tribes into a single massive group makes it easy to create false relationships between Indians and Asians. The perceived unity of American Indians also creates a self-fulfilling data set, so therefore, haplotypes that are not believed to be originally American Indian, but are still found in some American Indians, are tossed out on the assumption they are the result of later European or African admixture. Add to this is that most geneticists are heavily predisposed to the Bering Strait Theory, sometimes leading to interpretations not supported by the data itself.

But in spite of the difficulty in evaluating the genetic studies because of these flaws, the genetic data is also clear, like the linguistic evidence, that Indians are very ancient, much more ancient than the Bering Strait Theory currently allows. So great are these ages—that Indians have been a genetically separate peoples for as much as 40,000 to 50,000 years—that the possibility exists of many migrations, back and forth between the Americas and Asia, between some Indian and Asian groups.

But not all Indians. There are those Indian nations that show only the most remote connection to Asian peoples, so remote that certain genes bear no resemblance whatsoever. Using HLA haplotypes to study some Central and South American Indian tribes, a study in 2006 led by A. Arnaiz-Villena from the University of Madrid, entitled “The Uniqueness of Amerindians according to HLA genes and the Peopling of the Americas,” found that “While other worldwide populations are genetically related following generally a smooth geographic gradient, Amerindians appear apart.” Indeed so apart from other world populations that the time depth needed for such change must have been very great.

If Meso and South American Indians come from Asia, they must have originated from a very different Asian people as those existing nowadays.

Two sites in the Americas, one 5,000 miles from the other, have been conclusively dated to be more than 14,500 years old. Yet even then the ice cap still posed a formidable barrier to migration. So while it is possible that Paleoindians first migrated from Asia 15,000 years ago, it is not probable. The evidence: genetic, linguistic, and archeological, paint a more diverse picture and a much earlier date.

It would appear that the past is more complex than the simplistic assumptions that currently hold sway. The idea of a straight-line migration from Africa through Asia through the Bering Strait to the New World is only one possibility out of many.

It is just as likely there were many migrations and back migrations, which may have changed the composition of each continent, Asia, Europe, Africa, and the Americas, multiple times. History, as far back as records tell us, is replete with massive migrations, often through entire continents, so much so that for example, Indians are now only a tiny minority in this hemisphere.

Based on his expeditions to Beringia in the late 19th century, the father of American anthropology, Franz Boas, proposed that Indians had migrated to the Americas before the last glacial maximum and when the ice age ended there was then a back-migration from the Americas into Asia. Large scale population movements like these would have led to intermixtures that show up today in genetic markers, but as to who came first, or later, or who moved where, or when, these genetic similarities cannot yet answer.

What happened in the ancient past, we do not know. But one thing we do know, the Bering Strait Theory is not a scientific theory, it is a myth. As a myth it has stifled our understanding of the past, not enhanced it. For more than a century it has been above criticism, upheld by dogmatism so ferocious that to challenge it was academic suicide.

As science moves forward, the myth is beginning to disappear. Finally, we may now be able to look at the past with open eyes.