# THE CHANGING HISTORY OF THE FIRST DISCOVERY OF AMERICA [1]

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In North America, everyone learns in elementary school that in 1492 Christopher Columbus discovered America. Dissenters have argued that, proper credit should go to others: to the Italian, Giovanni Chabotte (John Cabot), who had reached mainland North America a year or so before Columbus, or to English seamen who had arrived there by 1470, or to the Norseman, Bjarni who landed in Vinland around 985–986, or to Leif Ericson, who recorded his sighting of Vinland in 1000, or to Abu Raihan al-Biruni, the 11th century Persian polymath, who deduced in his *Codex Masudicus* that inhabitable land masses must exist in the ocean between Asia and Europe (Starr, 2013). Claims regarding African, Polynesian, Chinese and Japanese contact before Columbus have also been made, but none have proved conclusive.

With such a number of claimed "discoverers," the question arises: Who did discover America? The word "discovery" means the act of finding or learning something for the first time. By that definition the first discoverers of "America" were the ancestors of the indigenous peoples who inhabited the Americas before people from Europe arrived there, or anyone in the Old World even contemplated the New World's existence. The first discoverers did not leave a written record, thus deductions about who they were, where they came from, and when and where they arrived, depend on two types of evidence: (1) what indigenous peoples say about their origins, and (2) findings that arise from scholarly investigations. The first approach is straightforward, but the people who have been asked typically say that, they have always been "here."

In the absence of documentation, comparisons of orally transmitted origin narratives have been done, but they yield no single account (Archambault 2006), given the cultural heterogeneity of the indigenous peoples of the Americas. The second approach requires input from specialists who can address questions of time ("when"), place (from and to "where"), as well as biological and cultural relationships ("who"). Archaeologists, biological anthropologists (e.g., skeletal biologists, geneticists), linguists, and ethnologists, have provided the most evidence.

Academics typically expect that scientific evidence trumps all other accounts of the past, but the two approaches to deducing the origins of the indigenous peoples of the Americas have been seen as irreconcilable for at least three reasons: (1) the scientific evidence contradicts indigenous origin narratives (Deloria 1997), (2) the political use

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[1] The Literature Cited (bibliography) of this chapter follows specifically the style of the *American Journal of Physical Anthropology*. The in-text citation style is typical of the biological sciences.

of scientific data, for example, that indigenous people are immigrants too, has solidified resistance to scientific evidence (Deloria 1997; Bohaker and Iacovetta 2009), and (3) in the view of some aboriginal writers, the scientific evidence is false, and open to controversy in any case (Deloria 1997).

This paper reviews the changing history of the discovery of the Americas to show how that event has been explained by scholars. Reconciliation of different perspectives is challenging, but current research can lend support to indigenous claims that their people have always been "here."

## In the Beginning: Late 15th to Early 18th Centuries

Christopher Columbus did not assert that the people he encountered were anything other than people of Asia, that is, India. Agreement that Spanish voyagers had found a "New World" geographically separated from Asia did not occur until 1508–1511 in the writing of Amerigo Vespucci and Pedro Martir de Anglería (Huddleston 1967). With that finding would come profound questions about the nature of the people found in the Indies. The Council of Valladolid (1550–1551) ruled that the aboriginal inhabitants of the Indies were human beings with souls. Though that decision did not save indigenous people from slavery, nor protect their Meso-American and Andean civilizations from destruction, it did set off a trajectory for European consideration of who they were, and how their ancestors had arrived in the New World.

For some 230 years after Columbus, European concepts about the origin of American Indians were dominated by Spanish and Portuguese authors, who also influenced their counterparts in northern Europe. In his masterful account of their writings, Lee Huddleston (1967) concluded that they can be grouped into two traditions. One he named after José de Acosta, and the other, after the Dominican friar, Gregorio García, whose book, *Origen de los indios de el nuevo mundo, e Indias occidentales,* was published in 1607. Not all who wrote in the "Acostan tradition" had necessarily read Acotas's major text. However, their writings typically contain skepticism about cultural comparisons, minimal construction of theories, and confidence in findings arising from a careful examination of geographic and faunal factors (Huddleston 1967). In contrast, those who wrote in the "Garcían tradition," including some whose works preceded García's, had a "strong adherence to ethnological comparisons, a tendency to accept trans-Atlantic migrations, and to regard possible origins as probable origins" (Huddleston 1967, 13). The limiting factor affecting the perspectives of almost all writers in the period 1492–1729 was the belief that, human beings are the descendants of Adam and Eve, who, according to the Old Testament, certainly did not live in the Americas. By 1729, when Garcías' book was re-published, his views were dominant in Spain, but in northern Europe, Acosta's were more influential.

## Deductions of José de Acosta

The Spanish Jesuit, José de Acosta, published his major work in 1589, first in Latin, and a year later, in Spanish. Second and third editions followed, and in 1604 the first English translation appeared. *The Natural and Moral History of the Indies* was grounded in 16 years of observations on the physical geography, natural history, and the peoples

of the places we call Panama, Bolivia, Peru, Chile, and Mexico (Acosta 2002). In what has been described as a "remarkable display of acuity" (Meltzer 1994, 8), José de Acosta deduced where and how the ancestors of the indigenous peoples of the Americas likely entered America (Jarcho 1959; Ford 1998). Acosta's logical argument stated that the first peoples had to have come from the north, likely overland from Asia, following animals on which they depended. He postulated that at that time the Old World and the New World were either directly connected, or, if some islands intervened, the distances over water were so small that they formed no obstacle to migrating animals and the hunters that followed them. Almost 140 years after Acosta published his deductions, Vitus Bering sailed into the strait that is now named after him – the Bering Strait. He established that, Asia and North America are separated by a channel of water which at its narrowest point is 85 km wide.

Why did Acosta think that the first discoverers of the Americas had to have come from the Old World? Acosta was in the vanguard of a congregation of missionary-scholars who were extremely well-educated by16th century standards, and who were encouraged to compare and contrast what was written in the great books with what they actually observed (Jarcho 1959; Ford 1998). The exception to this approach was questioning what was written about human origins, along with all "perfect animals" (mid-size and large mammals: Jarcho 1959:436), which were regarded as descendants of the occupants of Noah's Ark. Accordingly, the human and animal inhabitants of the Indies had to have originated in the Old World. With respect to how they arrived in the New World, or whether the first people were hunters or farmers, Acosta employed a series of logical deductions to reach his conclusions. For example, he used biogeographic information he had obtained himself to decide whether the first people could have come through purposeful sea voyaging, or arrived by chance across the Pacific or Atlantic, or had come overland. Acosta systematically considered the alternative modes of arrival, and decided that the weight of evidence favored overland entry.

Acosta, however, was not the first Spaniard to postulate the origins of the indigenous peoples of the Indies. The Dominican friar, Diego Durán, among others, used biblical history and comparisons of native customs to argue that, they were the descendants of the ten lost tribes of Israel. Acosta examined the evidence Durán presented, and concluded that the claim was "false" (2002, 69). Nevertheless the claim continued, nor did speculation stop about other sources (e.g., Carthage, Atlantis, Norway, Wales, Tartary, etc.), other routes of entry (e.g., trans-Atlantic; trans-Pacific) (Huddleston 1967). With respect to what the indigenous people thought about origins, Acosta discounted the veracity of their accounts. Nevertheless, he asked them, and learned that, they "were certain that they had been created from their very beginnings in this New World where they dwell" (Acosta 2002, 73).

## The Garcían Tradition in the English-Speaking World: Emphasis on "Who"

In northern Europe research on American Indian origins was less concerned with understanding the process by which the Americas came to be occupied than, with defining the identity and ancestry of the indigenous peoples in terms of groups known in the Old World. This preoccupation was especially strong in England during the first 60 years of the 17th century. A common approach consisted of making cultural

and linguistic comparisons between indigenous Americans and peoples in the Old World —comparing lists of cultural traits, for example, or word lists— with similarities constituting proof of identity or ancestry. Unfortunately, valid comparative methods in ethnology and linguistics were unavailable at that time because these disciplines themselves had not yet come into existence. Regardless, comparisons abounded. These led to conclusions that have persisted into the 21st century, though they are without scientific and scholarly merit. The episode shows how religious and political agendas shaped explanations about the peopling of the Americas.

The need to explain the identity of American Indians coincided with theological developments in 17th century England, specifically those that argued that the identification of hitherto unknown peoples could provide a means to fulfil what the Judaic and Christian scriptures had foretold. The latter were concerned with the conversion of the Jews, the destruction of the Antichrist, and the restoration of the Jews to Israel (Huddleston 1967; Cogley 2005a; Sturgis 1999). Whether these developments would be followed by an apocalypse, or a Puritan millenium, or a Jewish messianic age depended on the beliefs of differing branches of Protestantism and Judaism (Cogley 2005a). Central to these matters was resolving two basic questions: What happened to the ten lost tribes of Israel, and who were the indigenous peoples of the Americas?

The earliest English-language manuscript that addressed the survival of the ten lost tribes was written in 1611, and was widely circulated in pamphlet form until its publication 66 years later. Its author, Giles Fletcher the Elder, claimed that the Tartars of Central and northeastern Asia were the descendants of the ten lost tribes (Cogley 2005b). This notion had been suggested more than a century earlier by Amerigo Vespucci (Cogley 2007), but Fletcher's contribution was important because he linked his "crude and unsophisticated" comments about Tartar society (Cogley 2005b, 784) with the writings of Thomas Brightman, a banished Anglican cleric, who was Calvinist in his theology (Cooper 1961–62; Cogley 2005b). Brightman's writings focused on the role converted Jewry would play in the destruction of the Anti-Christ (i.e., Ottoman Turks and Catholics), after which they would be restored to their promised lands. Such theological issues made the fate of the lost tribes of Israel important in 17th century Protestant England.

The second issue, regarding indigenous origins, was addressed in 1650, when a Presbyterian minister in Norfolk England, Thomas Thorowgood, published a book in which he claimed that Native Americans were Israelites (Cogley 2007). Thorowgood argued that the lost tribes had migrated through Tartary, crossed the straits of Anian (a mythical body of water separating Asia and America [Sykes 1915]) and became American Indians. In the same year, the Portuguese Rabbi of the Marrano community of Amsterdam, Manasseh (or "Menasseh") ben Israel published a book in which he detailed Antonio Montezinos' claim that there were Jews in America. Montezinos was a Portuguese Jew who had converted to Christianity, and had spent a few years in the Andes. He said that, he met people there who not only knew Hebrew, and were of the tribe of Reuben, but who also continued practices prescribed in the laws of Moses, among them, male circumcision, menstrual segregation, levirate marriage, and specific mortuary customs (Huddleston 1967; Cogley 2005a). Montezinos said that they also kept themselves apart from other Indians. Manasseh accepted this story,

and concluded that the peoples of America had been influenced by Israelites amongst them, but that the Indians themselves were descendants of Tartars.

As Cogley details (2007), other prominent scholars had argued forcefully against the claim that Israelites were in the Americas, and opined instead that all indigenous peoples were descendants of Tartars. Prominent among them was Thomas Brerewood, an English professor of Astronomy who had also published a major work on language and religion in 1614. That influential text was re-published three times, and was also translated into French and Latin (Huddleston 1967). Brerewood equated the Tartars with ancient Scythians, whose culture was regarded as barbaric, whilst others held the Tartars apart. The literature on such intertwined issues was prolific on both sides of the Atlantic, because Puritans believed that the world would come to an end in their time, and before then they would have to know "if the Indians were Jews or Gentiles," so that they could convert them in a proper sequence, as had been prophesied (Cogley 1986–87, 211). By 1655 the following arguments had been made: (1) the ten lost tribes had survived and entered the Americas (Thorowgood's 1950 view), (2) the Tartars (or Scythians) had entered America and were the ancestors of American Indians (Brerewood's 1614 view), (3) the ten lost tribes *and* the Tartars had entered the Americas (Manasseh's 1650 view). Indigenous custom that aligned with Mosaic law was the proof used to establish Israelite descent, and in the 1660 edition of his book, Thorowgood "made the Israelites, the Indians and the Tartars into the same people" (Cogley 2007, 45–46).

What made these fantastic arguments compelling? Huddleston (1967), Sturgis (1999) and Cogley (2007) reached the same conclusions. Regardless of the controversies among these 17th century authors, their writings reinforced each other because they served both religious and political ends in Cromwellian England. Where and how American Indians could be classified according to Christian scripture was as critical in Protestant England as in Catholic Spain. The need intensified with the rise of millenary beliefs among Puritan Englishmen who believed the end of the world was near, and the thousand-year reign of Christ and the Saints was coming. European Jews of the time believed not only that the arrival of the messiah was imminent, but also that messianic redemption would not occur until Jews were distributed around the world. It was therefore in Mannaseh's interest to show that Israelites were in the New World (Sturgis 1999).

The "Jewish Indian theory" was also justification for conversion of Indians, which was a costly endeavor, supported by the Society for the Propagation of the Gospel in New England that raised money for this purpose, as well as by funds obtained through Cromwell's liquidation of royal estates. Manasseh had no interest in conversions, but he did want the right for Jews to return to England, from where they had been expelled in 1290. The "Jewish Indian theory" linked his ideas with those of the Puritans, for if American Indians were Jews whom the Puritans welcomed among them, it made no sense to continue keeping Jews out of England (Sturgis 1999). By 1655, Cromwell privately supported the readmission of Jews, and formal approval for this was obtained in1662, just two years after the restoration of the House of Stuart and the end of the Commonwealth of England. With its fall, Puritans recognized that the millennium had not yet arrived. Nevertheless the notion that indigenous Ameri-

cans were the descendants of the ten lost tribes of Israel had entered the public imagination. Over the next 200 years the idea re-emerged periodically, and its demise was not assured until formal methods of ethnological and linguistic comparisons showed that the claim was a fantasy.

## Perspectives on American Indian Origins: Mid 18th-Late 19th Century

In 1729 Gregorio García's book was re-published, with annotations by de Barcia Carballido (Huddleston 1967). Its methods of comparisons of items of material culture, words of speech, and religious symbols and practices, among others, remained uncritical and credulous (Huddleston, 1967, 76). Advances in science also appeared in the 18th century, and the writings of Carl Linnaeus and Johann Friedrich Blumenbach were of enormous significance to understanding the place of humans in the living world. That development would have ramification for the dominant societies' attitudes towards the Indians of the Americas.

## Implications of Linnean classification of humans

In 1735 Linnaeus published a radical advance in systematic taxonomy by using zoological criteria to group humans and animals together. Until then humans had been regarded as unique, distinct from animals. Linnaeus' system created a series of nested, ranked hierarchies, whereby the most similar organisms were grouped into species, similar species were grouped into genera (sing. "genus"), similar genera were grouped into families, and so forth. The grades were arrayed in linear order, from the simplest to the most complex, following the Aristotelian concept of the Chain of Being (Gundling 2005). Linnaeus subsequently refined his classification by adding non-biologic criteria to anatomical ones. By 1758 his four varieties of *Homo sapiens* supposedly also displayed mental and cultural traits that were associated with skin color. Linnaeus placed American Indians before Europeans in his array, perhaps because he had "personal and positive experience with Lapps, who he believed were akin to American Indians" (Brøberg 1997, 617).

Three years earlier Johann Friedrich Blumenbach had described four varieties of humankind also, grouped by geography and using only anatomical criteria. Blumenbach steadfastly refused to add behavioral traits to his grouping criteria, but by 1881 he did increase his geographical clusterings of humans to five, one of which was comprised of American Indians. He considered them to be different cranially from Inuit (Eskimos), whom he grouped with Mongolians. Though some read "rank" into his categories, Blumenbach did not think that any one of his "varieties" was superior to another (Spencer 1997). He stressed that observable changes in biological traits over geographic distances was gradual rather than sharply distinct (Bhopal 2007), and he, like Linnaeus, thought that environmental factors had produced observable differences among humans. Most importantly, both also believed in the biological unity of the human species.

## Monogenesis Versus Polygenesis and American Indian Origins

Linnaeus and Blumenbach's belief that varieties of humankind represented one species rested on the concept of monogenesis, namely that, humanity had a single origin. This perspective was challenged by those who believed there had been multiple creations (polygenesis). The latter concept had been triggered centuries earlier, when readers pondered unexplained events in the Old Testament. For example, how could Cain, Adam and Eve's son, have found a wife, when his parents were the first humans that God created (Popkin, 1978)? By the late 18th century polygenists were arguing that the human varieties described by Blumenbach represented different races, fixed in their biological and cultural differences, and had separate origins. American polygenism was especially vigorous, and dominated mid–19th century discussions because its claim of African and American Indian inferiority provided justification for slavery (Popkin 1978).

Avid supporters of polygenism included a group of notable Americans, collectively called the "American School of Anthropology" (Erickson 1997) or the "American School of Ethnology" (Horsman 1975). Their beliefs were bolstered by the craniometric findings of Samuel G. Morton, who had measured cranial size, cranial capacity and cranial structure in some 1,000 skulls from around the world. Morton concluded that races existed, differences in intellectual capacity between races were real, and the differences among races were there from their beginnings. The latter notion was linked to the age of humanity, which he believed to be 5,000 years at the most. This was too short a time for the observed cranial differences to have developed. For Morton, either the biblical chronology on which this time depth was based was wrong, or that "distinct races had existed from the beginning of creation" (Horsman 1975, 156). He favored the latter notion, along with the claimed innate superiority of the white race. Morton's view precluded the migration of American Indians (excluding Inuit) to the western hemisphere.

Polygenism lost credibility after Darwin's book on the origin of species was published in 1859, but as late as 1873 *Nature* carried a letter regarding the origin of American Indians, in which the author, known for his interest in finding evidence for paleolithic Americans, argued that, if "pithecoid man" had entered South America, Indians either evolved from such creatures, or were "created *de* novo" (Abbott 1872, 203). Abbott was hoping to find evidence of the former, but he was aware that creationist arguments had not disappeared, and the notion of the fixity of "racial" characteristics was gaining momentum.

## Who Were the Mound-Builders? Presumed Consequences of Separate Origin

One of the great controversies that occurred in tandem with the monogenist-polygenist controversy concerned the identity of the people who had built the great mounds that dotted the American landscape. These were especially common in Ohio and the Mississippi valley, and extended into Canada. Mounds were large, earthen structures, and had been used variously for ceremonial and religious purposes. Some were burial mounds. Others were places on which the elite of Indian societies had residences in the 16th century, when the Spaniards encountered them. By the time of

the American expansion into Ohio Territory, most mounds had been abandoned and were overgrown. The great debate focused on whether the mounds had been built by the ancestors of American Indians, or, by others who had entered ancient America, such as the ten lost tribes of Israel (Garlinghouse 2001). The controversy raged, fueled by claims of the American School of Anthropology that, Indians lacked the ability to build such structures. The matter was not resolved until 1894, when a report based on field-work was issued by the American Bureau of Ethnology. The mounds had been built by American Indians (Rempel 1994), but by then, the idea that someone else of higher culture had built them, had become entrenched in the popular imagination.

## Perspectives on American Indian Origins: The Turn of the 20th Century

Four hundred years after Columbus, knowledge about the first discoverers of the Americas had not advanced significantly beyond what had been claimed in the 1600s. As late as 1898, the editor of the *American Anthropologist,* Thomas Henshaw wrote that

> the Jewish origin of the Indians secured a very strong hold on the minds of the writers and thinkers of the eighteenth century, and so firmly did the theory take root that it has never been wholly given up, but is held to-day by a greater or less number as the only rational belief (Henshaw 1898, 200).

Henshaw also observed that others selected different places of origin, and phrased the evidence supporting differing theories so convincingly that, one could choose according to one's own bias, whether the ancestors came from Scandinavia, or Ireland, or Iceland, or Greenland, or "across the Bering Strait from Asia, across the North Pacific from Japan or China in junks, of across the Southern pacific in canoes from the Polynesian Islands, or Australia. Even Africa..." (201). Nevertheless, in all instances of culturally-based claims, he called the evidence supporting them, "entirely insufficient" (Henshaw 1889, 201).

Henshaw (1899) also reviewed evidence on Indian origins provided by anatomists and linguists. Craniological studies produced contradictory results, thus he was skeptical towards conclusions based on anatomical traits. Linguistic studies were the most convincing, because studies conducted under the auspices of the Bureau of Ethnology had shown the existence of 58 indigenous language families, containing around 300 languages and dialects in the United States. This suggested great antiquity in North America, either of one original population that diversified linguistically in the continent, or of many single migrations, each with speakers of a different language (Henshaw 1889). Regardless of these alternate possibilities, the fact remained that none had any resemblance or relationship to any Semitic language (Campbell 1997). The best that could be said about the origin of American Indians near the end of the 19th century was that it was shrouded in geological time, that the indigenous peoples of the Americas comprised "one race," (Henshaw 1889, 212), and that their ancestors were either immigrants to the western hemisphere or "may have originated on American soil" (Henshaw 1889, 212).

## Would Answering "When" the Ancestors Came Help to Determine Origins?

The first real scientific dents in this quagmire of "who," "where" and "when" involved linguistic studies, learned arguments by physical anthropologists well-trained in anatomy and knowledgeable about the skeletal biology of American Indians, and a chance finding in 1908 of ancient bison bones in Wild Horse Arroyo, some eight miles west of Folsom, New Mexico.

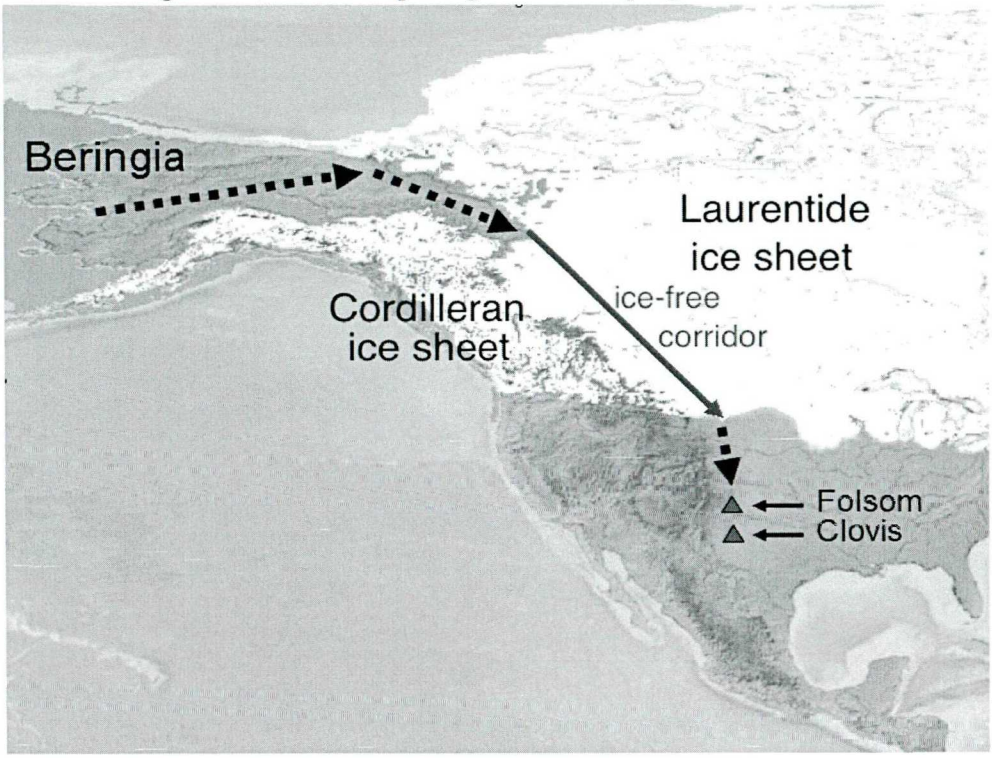
Archaeologists, inspired by paleolithic findings in Europe in the mid–19th century, had been searching for evidence of great human time depth in North America, but they could not prove the age of the antiquities they unearthed (Trigger 1980). More troubling was that Aleš Hrdlička, the first curator of physical anthropology at the Smithsonian Institution, decided that the burials archaeologists excavated and he investigated, were fully modern. Indeed, his studies of crania convinced him that even the most ancient were fully modern. Their morphology, as well as the anthropometry of the living suggested that, their ancestors likely arrived in North America via the Bering Strait relatively recently, that is, *earlier* than between "ten or at most fifteen thousand years ago and the dawn of the proto-historic period in the Old World" (Hrdlička 1923, 491). Sources such as Wikipedia translate this to mean "3,000" years, but Hrdlička relied explicitly on morphological evidence for antiquity, and no explicit "date" can be attributed to him. Then, in 1927 archaeologists reported finding near Folsom, New Mexico, a carefully chipped, fluted stone projectile point embedded in the ribs of an extinct species of bison. Its age was "as great but not earlier than *late* Pleistocene" (Meltzer 1994, 16). Such antiquity meant that this point was last used when the major continental glaciers were rapidly receding. However, its exact age could not be determined until 1949, when methods of absolute dating [$C^{14}$] became available (Highham 1999). By then, another projectile point associated with remains of an extinct species from the Pleistocene, was known. This lanceolate fluted point, found in 1933 near Clovis, Texas, was somewhat cruder and appeared older than Folsom. It was the first of many "Clovis" points discovered across North America.

## Perspectives on American Indian Origins: 1950 to 2015

Carbon 14 dating was quickly put to archaeological use, and by 1964 Vance Haynes had examined all of the then dated sites. He noted their ages, and examined the geoclimatic factors that could have allowed human entry from Alaska into mid-continental North America. From Haynes' (1964) observations and deductions, the "Clovis First" paradigm (Fig. 1) was born.

Primary to the model were geoclimatic circumstances that permitted access from Asia into mid North America, and provided a temporal framework for migration. Restated briefly, the model observed that as the climate cooled rapidly between 29,000 and 30,000 years ago, glaciers advanced overland. In North America the ice sheets reached their greatest expanse, the "last glacial maximum" (LGM), by 26,500 years ago (Clark et al. 2009). With the exception of an area in far northwestern North America, during the LGM the northern half of the continent was completely covered by two glaciers—Laurentide in the east, and Cordilleran in the west—which merged along the eastern side of the Rocky Mountains. The unglaciated area comprised much

Figure 1. "Clovis First" paradigm for the Peopling of the Americas

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of today's Alaska and some of the adjacent Yukon and Northwest Territories. Also unglaciated was the land that emerged between Siberia and Alaska as sea levels dropped and ice built up on adjacent continents. The newly surfaced land was called, Beringia, and became the "land bridge" between Asia and North America. As the glaciers began to retreat 20,000–19,000 years ago, a narrow corridor gradually opened up between the Cordilleran and Laurentide glaciers, so that by 12,000 years ago an overland route southward was present. To enter America the ancestors of all indigenous Americans (except Aleuts and Inuit) crossed the Bering Land Bridge, and eventually traversed the corridor to emerge onto the Great Plains (Haynes, 2005). These travelers were the Paleo-Indians, whose culture was called "Clovis." Many Clovis sites have been found across North America in the period 11,500–11,000 Radiocarbon Years Before the Present (RCYBP). 1950 is the year given for "the present." Because there has been variation in the amount of atmospheric radioactive carbon ($^{14}C$) since then, adjustment is required to obtain more precise age estimates.

Calibration of $^{14}C$ dates is done using the dendrochronological (tree-ring) record that is reliably correlated with chronological age. By convention, $^{14}C$ dates before the present (BP) are given as Radiocarbon Years BP (RCYBP, or $^{14}C$ yr BP), and as calibrated years BP (cal yr BP) (see ORAU 2016). Calibration tables are available in Stuiver et al. (1998).

### Demise of the "Clovis First" Paradigm

After the 1970s, challenges to this model accumulated. Geological evidence showed that, rather than remaining open throughout the Wisconsin glaciation, the Laurentide and Cordilleran glaciers east of the Rockies merged with each other, closing the "ice-free" corridor. In Alberta, ice blocked the passage for some 6,000 years, and the corridor was impassable for a longer period of time north of 60° N (Jackson and Duk-Rodkin 1996). There were also sites in North and South America that had radiocarbon dates older than Clovis but for which the evidence was deemed insufficient (Adovasio and Pedler 2014). The Monte Verde site (Dillehay 2000) in southern Chile was an especially strong claimant for pre-Clovis antiquity, so in 1997, a group of eminent North American archaeologists made a site visit to examine the evidence directly. When they accepted the antiquity of Monte Verde, they acknowledged that, the ancestors had to have entered America before 12,500 RCYBP (Meltzer et al. 1997). This raised further questions about the identity of the ancestors, and how they could have entered the Americas to have reached the southern regions of Chile before 12,500 RCYBP (14,600 cal yr BP). Perhaps they really had come across the Pacific, or from Europe, and reliably dated skeletal evidence could provide clues to population origins.

### Biological Affinities of the Ancestors

The end of the Paleocene corresponds with the disappearance of glaciers and the onset of the Holocene, which in North America was set arbitrarily at 10,000 years ago (Meltzer 2009, 48), or 11,485 cal yr BP (using the conversion table in Meltzer 2009, 9). Although there are less than a dozen reliably dated crania and/or skeletons of late Pleistocene-early Holocene age in North America, their similarities to each other and to populations of other continents have been assessed. Typically, they show such variability that it is unlikely that they represent a single population, even when some heterogeneity is expected because the crania are geographically and temporally disparate (Nelson et al. 1996; Jantz and Owsley 2001). Some North American crania show connections to more recent Archaic American specimens (Nelson et al. 1996; Jantz and Owsley 2001). Others, among them "Kennewick Man" from Washington state, were most closely linked to Polynesians (Nelson et al. 1996). Earlier descriptions, however, stated that "Kennewick Man" resembled modern Europeans, whilst a detailed metric analysis placed him closer to Ainu and Pacific Islanders than to late pre-historic American Indians (Chatters 2000). A Polynesian connection was also noted for the Dos Queiros cranium (11,060 cal yr BP) from Pedro Furada, Brazil (Nelson et al. 1996). Another study, which included 22 well-dated ancient crania in a larger data set from Lagoa Santa, Brazil, found cranial resemblances to Australians, Melanesians and Africans (Neves and Hubbe 2005). Such diversity has renewed speculation that there were different "migrations" into the Americas (e.g., Collins et al 2014).

Attempts to resolve this controversy have reached surprising conclusions. For example, examination of two series of skulls from Lagoa Santa, Brazil (11,500 to 7,500 BP) and Sabana de Bogotá, Colombia (10,500 to 7,000 BP), found that, ancient diversity was moderate in each, and within the range of variability shown by recent skeletal series from around the world. On the other hand, diversity was much higher among recent South Americans. The authors reasoned this could reflect "a new morphological diversity coming from Asia during the Holocene" (Hubbe et al. 2015, 1). It may be so, but skeletal data alone are not convincing because discrepancies have arisen between affinity deduced from morphology and affinity deduced from genetic evidence (Cavalli-Sfrorza et al. 1994). "Kennewick Man," for example, who shows craniofacial similarities to Polynesians, was typically North American genetically (Rasmussen 2015).

Discrepancies between findings based on anatomical and genetic traits occur largely because morphological measurements (size, shape, and colour) are "highly correlated with climate" (Cavalli-Sforza et al. 1994, 72). In any particular locality, some genetic traits may be more affected by genetic drift (e.g., mtDNA variants), whilst others may be more affected by non-random factors, such as natural selection (e.g., cranial traits). To date, only one study has included both kinds of characters in a large sample to determine if genetic evidence supports "two migrations." Perez et al. (2009) examined 283 crania from eastern Argentina that ranged in age from 8,000 to 400 yrs BP. They found that "even when the oldest samples display traits attributable to Paleoamerican crania, they present the same mtDNA haplogroups as later populations with Amerindian morphology" (Perez et al. 2009, 9). As with "Kennewick Man," though Paleoamerican crania may show affinities to peoples from other continents, their genetic traits identify them as American. Genetic evidence has priority regarding biological ancestry, and genetics has indisputably linked the indigenous peoples of America to Asia (Cavalli-Sforza et al. 1994; Adovasio and Pedlar 2014).

## Current Model for the First Occupation of the Americas

One part of the puzzle regarding the identity of the first discoverers of America is clear: Their biological roots are in Asia. How and when did they get into the Americas?

Though the corridor east of the Rocky Mountains remains important for full understanding of the process whereby people moved into interior North America (Ives et al. 2014), it remains to be shown how the ancestors reached the southern end of South America by 12,500 RCYBP. A coastal route, first suggested by Fladmark (1979) is regarded as the strongest possibility, but travel down the coast would have been arduous before, during, and after the LGM. Finding evidence for human occupation older than 12,500 RCYBP has also proven difficult because as the ice melted, coastal archaeological sites were flooded by rising sea water. Sites without dating controversies, such as On Your Knees Cave on Prince of Wales Island in southeastern Alaska, are dated around 9,800 RCYBP (Kemp et al. 2007). Further south, undersea sites dated to 10,400 cal yr BP (~ 9,250 RCYBP), are also known from Haida Gwaii (formerly the Queen Charlotte Islands) (Mackie et al. 2014). Other known sites, such as Paisley Caves in Oregon have dating problems (Sistiaga et al. 2013), and the north-

ern Channel Islands of California are contemporaneous with Clovis or are more recent (Erlandson et al. 2011).

These early sites support the idea that there were people along the Pacific coast of North America, but they do not pre-date the Monte Verde remains from South America.

## Archaeological Sites on Beringia

If no sites of indisputable antiquity have been found as yet along the Pacific margin, are there sites further north in Alaska? During the Wisconsin glaciation that region was contiguous with Beringia, which was initially defined as the exposed continental shelf between northeast Asia and Alaska. Archaeologists have typically described that area as a "land bridge." Subsequent research has shown that regions west and east of the current coastlines were also ice-free. The glaciers that were present were restricted to their mountain ranges, which are located mostly on the periphery of the region. Today, the western boundary of Beringia is set at the Verkhoyansk Mountains of Siberia, and its eastern boundary is the Mackenzie River basin of the Northwest Territories, Canada (Hoffecker and Elias 2007). Ice sheets formed boundaries on all sides except for a blind corridor reaching into Alberta. The "land bridge" encompassed some 1.6 million $km^2$!

At one time Beringia was regarded as a cold, dry, polar desert interspersed with regions of herbaceous tundra, unable to sustain human life (Hoffecker and Elias 2007). More recent research in eastern and western Beringia has documented a variegated distribution of plant types, with shrub tundra and steppe tundra in some areas, as well as local distributions of a few tree species (Hoffecker et al. 2014). Small mammals are known from late Pleistocene deposits in Alaska (Guthrie 1968). Large mammals, such as mammoth and steppe bison, were also present regionally (Zazula et al. 2009), and within the blocked corridor, ice-free areas served as local refuge for a variety of plants and animals, including mountain sheep (Loehr et al. 2006).

Where there are large animals, one expects human presence if they had the means to survive in extreme cold conditions. The Yana Rhinoceros Horn site at 71° N, 500 km north of the Arctic Circle, is reliably dated at 28,000 RCYBP in western Beringia (Pitulko et al. 2004). In eastern Beringia 23,500 RCYBP old modified mammoth bones were found at Bluefish Caves, Yukon. Whether they were made by humans and used as tools has been long debated (Morlan 2003), but new evidence supports human agency for a small component of this assemblage (Bourgeon, 2015). More recent sites from the Pleistocene-Holocene boundary include Ushki Lake, Kamchatka, where human occupations date to about 13,000 cal yr BP (Goebel et al. 2010), and 46 sites dated 10,000 to 14,150 cal yr BP (8,820 to 12,160 RCYBP) are known in central Alaska (Potter et al. 2014). The number of sites after the LGM suggests that humans were adjusting well to rapid changes in climate that affected the distribution of fauna on which they depended.

## Time-Length of Human Presence on Beringia: Deductions Based on Genetics

The last decade has brought a revolution in scientific views about the human occupation of Beringia. Archaeologists and biological anthropologists have shifted from regarding Beringia as a "bridge" that was crossed quickly in the ancestors' movement

south (Hoffecker et al. 2014). For example, the hypothesis that there were three sequential migrations into the Americas—speakers of "Amerind" languages first, then of Na-Dene, then of Eskimo-Aleut—based on a concordance of language, dentition and genes (Greenberg et al. 1986) is likely untenable given current genetic evidence. Linguists had long disputed the model because they regard the "Amerind" linguistic classification as invalid (Bolnick et al. 2004). Further, population geneticists have shown that the genetic structure of a large sample of Native Americans conforms significantly better to a structure that reflects established linguistic classifications than to the 3-step hierarchical structure based on Greenberg's linguistic classification (Hunley et al. 2005). Finally, the time depths obtained for the appearance of diagnostic American NRY (non-recombining region of the Y chromosome) haplogroups from their precursors suggests the variants arose in a single population that then dispersed into America (Zegura et al. 2004). All diagnostic American mitochondrial DNA (mtDNA) haplogroups arose after the LGM, and they are also widely dispersed in the Americas, rather than distributed in a nested fashion (Tamm et al. 2007). This too is consistent with their arising over time in one population, and a single, rapid population expansion over both American continents. Today, the "three-migration" hypothesis that dominated biological perspectives for three decades has been replaced by an alternate scenario that regards Beringia as home to hunting bands for several millenia during the LGM (Marangoni et al. 2014; Hoffecker et al. 2014).

The evidence for a long occupation of Beringia and the timing of departure from there is based on information obtained from mtDNA and NRY, which are uniquely useful for tracing ancestry. NRY and mtDNA are uniparental markers, whose transmission is sex specific: males transmit their Y chromosomes to their sons only; both males and females receive mtDNA from their mothers, but only women can transmit it. Such patterns of transmission over generations will form patrilineal NRY haplogroup lineages, and matrilineal mtDNA haplogroup lineages, respectively. Mutations in the nucleotides forming mtDNA and NRY are also transmitted, and these variants also yield sub-haplogroup lineage formations. For any haplogroup variant of mtDNA or NRY haplogroup, one can trace back along the variant's lineage to the original variant from which it descended. Over the past 30 years, the world distribution of mtDNA and NRY variants have also been described, and it is now possible to state with confidence if a variant is indigenous to a continental population or has been introduced through gene flow. Five basal haplogroups of mtDNA called A, B, C, D, and X occur among the indigenous peoples of the Americas. What is significant in terms of Native American ancestry is that mutations have accumulated over time in each haplogroup, such that 15 sub-haplogroup lineages (A2*, A2a, A2b, B2, C1b, C1c, C1d*, C1d1, C4c, D1, D2a, D3, D4h3a, X2a and X2g) are now considered to be founding American lineages (Perego et al., 2010). In men, the basal American NRY haplogroups are C and Q, and these have also diversified over time to form four haplogroup lineages, C3, Q1a*, Q1a3*, and Q1a3a. (Karafet et al., 2008; Marangoni et al., 2014). Marangoni et al (2014, 87) combine the two systems of nomenclature used to identify Y chromosome variants (see also Karafet et al. 2008, 831). In their schema, the haplogroups C3, Q1a*, Q1a3* and Q1a3a are shown as C3b-P39, Q1a*-MEH2, Q1a3*-M346, Q1a3a1-M3, respectively.

Research on mtDNA and NRY included the development of methods to determine the age of each mutation that led to a new lineage. Different methods exist, but their results overlap. The founding American mtDNAs appeared 16,600–11,200 years ago (Tamm et al. 2007). The American NRY variants arose 15,000–12,000 years ago (Zegura et al. 2004). The age of the American haplogroups suggest that they arose in a population that was isolated on Beringia, from where the ancestors then dispersed. Indeed, a "Beringian standstill" has been proposed to explain the time depth of the founding haplogroups (Tamm et al. 2007). The finding of two infants in a common internment dated around 11,500 cal yr BP in central Alaska (Upward Sun River site), one having mtDNA C1 and the other, mtDNA B2 (Tackney et al. 2015) is consistent with the "standstill" model, which expects the presence of mtDNA polymorphism in the Beringian population. With respect to the length of the Beringian standstill, Mulligan et al. (2008) have suggested that after diverging from an Asian source population, Beringia was occupied for around 7,500 years, and perhaps as long as 15,000 years. Expansion from Beringia into the Americas occurred between 16,000–12,000 years ago.

It is worth noting that evidence for a Beringian standstill gives credence to conclusions arising from studies of classical genetic markers (blood groups, serum proteins, red cell enzymes and immunoglobulins), regarding the relationships among Inuit and speakers of languages in the Na-Dene and the Algonquian language families. Szathmary and Ossenberg (1978) had suggested that Beringia had been occupied either by one group of people who were polymorphic at a number of gene loci, or two different populations had inhabited the region, and exchanged genes with each other over a few millenia. Adding more loci to subsequent analyses reinforced and clarified these findings (Szathmary 1981; 1984). After evidence showed that the ice-free corridor had in fact, been blocked for some years, and putative pre-Clovis sites were found below the glaciers, Szathmary noted (1993) that those who remained on Beringia would undergo further genetic differentiation, as would any pre-Clovis peoples south of the glaciers. Over time, differences would accumulate between those remaining in northern latitudes compared to those who had moved to southern ones, but the descendants would retain their core American (i.e., Beringian) identity (Szathmáry 1996; Bonatto and Salzano 1997). This is exactly what we see today.

Research continues to clarify peopling scenarios. Biological evidence indicates that regardless how the ancestors reached the southern part of South America so early, all indigenous Americans without non-American admixture carry uniparental haplogroups that originated in peoples of Beringia. The few rare cases of American mtDNA found on the Siberian side of the Bering Strait have been attributed to "reverse gene flow" (Tamm et al. 2007). Further, with advances in DNA technology, ancient DNA analyses have confirmed that the oldest known skeletal remains display typically American uniparental markers. The 2-year old Anzick boy (11,100–10,700 RCYBP; 13,000–12,600 cal yr BP), found in association with Clovis tools in Montana, carries diagnostic mtDNA and NRY markers (mtDNA D4h3a; Q-L54**M3) (Rasmussen et al 2014). Genetic analysis also suggests he was slightly more closely related to South American Indians than to North American ones. Kennewick Man (8,340–9,200 cal yr BP) from Washington State, whose cranium suggested closest affinity to

Polynesians, carries mtDNA X2a, and NRY Q-M3, and genetically he is closest to members of the Colville Reservation (Rasmussen et al. 2015). The adolescent female found in a water-filled cistern in Yucatan, and estimated to have lived between 13,000–12,300 years ago, does not look like modern Native Americans, but she too had a Beringian-derived mtDNA: D1 (Chatters et al. 2014, 344). In fact, all of the ancient DNA in skeletons from the Pleistocene/Holocene boundary from Alaska to Yucatan carry typical Beringian mtDNA or NRY variants (Tackney et al. 2015).

## Origin of the First Discoverers: Summary and Reconciliation

This review of the changing history of first discovery of the Americas has shown that José de Acosta's basic deductions about the source of the indigenous peoples of the Americas have stood the test of time. The first discoverers came from the Old World where it is closest to northwestern North America, and they came overland following the animals on which their lives depended. This much was deduced 425 years ago, but several explanatory detours intervened over time that severely hampered progress in understanding who the ancestors were, when they entered the Americas, and how they populated the continents on which their descendants reside. Some problems were inevitable because without valid investigative techniques that could yield evidence to prove or disprove particular hypotheses, conjectures abounded. Many explanations entered public consciousness because they fit particular religious or political views, among them those of 17$^{th}$ century Puritan England, mid19$^{th}$ century United States, and on the brink of the 20$^{th}$ century, those who are "blinded by the achievements of our own Aryan race" (Henshaw 1898, 213). It is a sorry record.

It is only within the last 60 years that evidence-based explanations have displaced those based on speculation. The veracity of the answers to the core questions of "who, where, when and how" rests on the weight of evidence obtained from different fields of inquiry, among them archaeology, genetics, skeletal biology, geology and paleoecology. Where evidence is regarded as insufficient, or does not yet exist, researchers continue to seek data to test hypotheses. More sampling is required to obtain a thorough coverage of the genetic diversity on both American continents. Most especially, patience is needed by scientists and laymen alike, for when a new approach arises, a thousand scientific papers bloom, all testing the new hypothesis, many producing conflicting results, until someone finally puts it all together, and from it all produces a deduction that is likely as close to the truth as the study of prehistoric events can ever produce. There is agreement that the first people in the Americas did not evolve in the western hemisphere (Dillehay 2000). Rather, the first people came from Asia, and were isolated on Beringia for at least 7,500 years where they acquired their unique uniparental genetic traits. As the last ice-age was ending they dispersed, some staying on the Siberian side or on the American side of the Bering Strait, others moving south into the Americas. Their descendants carried their unique traits with them, which also underwent diversification over time, thereby producing differences among the populations of the American continents.

**Reconciliation of Scientific and Indigenous Views on American Indian Origins**

The recent focus on a Beringian standstill has not yet altered the scientific and public perceptions of the ancestors as migrants from Asia. At the same time, indigenous peoples of the Americas continue to assert that, they have always been "here."

The contrasting explanations of origins seem like a typical impasse between those who claim authority for determining truth—scientists versus creationists. I don't believe it is a helpful characterization. In a secular society, scientists should be confident that scientific explanations will prevail, and their taking a more nuanced view about the causes of indigenous resistance would be helpful. The fact is that, governments in our time have used archaeological findings to achieve ends that indigenous peoples consider detrimental to their interests. The statement that, "we are all immigrants from somewhere" (Deloria 1997, 69), for example, persists in the USA and Canada (Bohaker and Iacovetta 2009, 461). Such declarations are typically silent about a fundamental difference between the "new" and the "ancient" immigrants: the time depths of their claimed universal immigrant experience. Without that acknowledgment the statement creates the impression among the dominant cultures that, indigenous peoples "simply *found* North America a little earlier than they had" (Deloria 1997, 70). This has enormous political ramifications.

Should origin narratives be discounted because they differ from scientific understanding? I think not. Origin narratives and traditional stories provide socially relevant explanations for phenomena that a given people believe are important. They have their place. However, to interpret the past, similarities and differences among origin accounts suggest that, their greatest relevance may be local rather than pan-continental. Whether or not such narratives enhance or are irrelevant to archaeological understanding have been debated (see Echo-Hawk 2000 versus Mason 2000). There are great demonstrations of scientists and traditionalists working synergistically (e.g., Fedje and Mathewes 2005), but not many sites and indigenous narratives can be examined similarly. Regarding the first peopling of the Americas, I find it curious that no one emphasizes that anatomically modern humans were immigrants to Europe, whether one looks at the incoming Upper Paleolithic Aurigancians and subsequent cultures, or looks at mtDNA maps of Neolithic dispersions to Europe from western Eurasia, or the Levant. Humanity's origins lie in Africa. With the exception of Africans who originated there, all modern continental groups of people are immigrants, regardless of the route their ancestors took, or the length of time it took for them to arrive where they now reside. Nevertheless, we reserve the immigrant labeling for the humans who entered the Americas. What justifies such a difference in terminology?

I think there are good reasons to cease calling the indigenous peoples of the Americas, "immigrants." It would be consistent with our not using such labels for the peoples who occupied the other continents. It would also be wise to recognize that the ancestors had genetically differentiated from their Asian antecedents before "leaving" Asia and "entering" North America as the continents are geographically defined today. The ancestral hunting bands that occupied Beringia were there for at least 7,500 years before the disappearance of the ice barriers that prevented their movement elsewhere. Though ancient Beringia is now divided by a channel of seawater there is no reason to select Asian Beringia over American Beringia as the place from which the

ancestors came. The most we know is that, the ancestors came from Beringia. With respect to the indigenous peoples of Alaska, Yukon and the western Northwest Territories, the ancestors were not immigrants at all. They were already there when rising sea water separated the continents. As for those who had moved south along the coast as glaciers receded, they cannot be immigrants either to a continent that was connected to the land mass on which their ancestors were present. Abandoning the "immigrant" idea would be a step towards reconciliation of scientific and traditionalist perspectives on the origin of the first peoples of the Americas.

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