



4-1-2016

# Peopling of the Western Hemisphere

Norman C. Rothman

Follow this and additional works at: <https://scholarsarchive.byu.edu/ccr>

### Recommended Citation

Rothman, Norman C. (2016) "Peopling of the Western Hemisphere," *Comparative Civilizations Review*: Vol. 74 : No. 74 , Article 6.  
Available at: <https://scholarsarchive.byu.edu/ccr/vol74/iss74/6>

This Article is brought to you for free and open access by the All Journals at BYU ScholarsArchive. It has been accepted for inclusion in *Comparative Civilizations Review* by an authorized editor of BYU ScholarsArchive. For more information, please contact [scholarsarchive@byu.edu](mailto:scholarsarchive@byu.edu), [ellen\\_amatangelo@byu.edu](mailto:ellen_amatangelo@byu.edu).

## ***Peopling of the Western Hemisphere***

Norman C. Rothman  
Ncrothman@aol.com

### **Introduction**

The issue of the arrival of human beings in the western hemisphere has become a matter of debate and even controversy among anthropologists, historians, biologists, geologists, and scholars from other fields in recent years. The areas of disagreement include dating, routes of migration, sources of migrant population, methods of verification, and reliability of instruments. At this time, there is not complete unanimity in regard to interpretation.

This paper will discuss various theories and hypotheses (theories where there is insufficient verification) and concentrate on four separate interpretations which in turn can include subsets in terms of emphasis. The first is the formerly predominant and still prominent Beringian theory of settlement which posits that the formerly linked areas of Northeast Asia and Northwest North America formed a pathway for migration (actually it is now realized it was two way street).

It is felt that during the last ice age when the glaciers receded beginning about 18,000 B.P. (this is a term for “before present” and includes years formerly identified as B.C.E./B.C. and C.E./A.D.) and concluding about 10,500 B.P. a land mass appeared. Before warming temperatures led to rising seas which submerged this land bridge which is called the Bering Strait, the initial warming temperatures encouraged peoples to cross into North America into what is Alaska.<sup>1</sup> A subset to this interpretation, is the ice-free corridor thesis, which maintains that the migration of the first peoples into the western hemisphere was facilitated after a stay in Beringia (the longevity of the stay is open to differing views) into interior Canada and the United States by an ice-free corridor that appeared between two ice fields that dominated much of eastern and western North America respectively.<sup>2</sup>

It is postulated that these migrants were nomadic hunters who pursued mammoths and other large animals and smaller game in this corridor and settled along the route between 13,000 and 10,500 B.P. The anthropological correlation has termed this the Clovis culture theory as many of the artifacts and tools identified with Beringian sites defined as Northeast Siberia, the current Bering Straits or Seas, and Northwest Alaska are found in this site in New Mexico.<sup>3</sup> The original variant that this was a source of dispersal for North America has since been modified as other sites in areas of Pennsylvania and Virginia have been found of equal or older vintage. Therefore correlation is now delimited into the so-called Clovis and Pre-Clovis theories in regard to original settlement.<sup>4</sup>

During the past two decades, another interpretation has arisen to challenge the Beringia/ice-free corridor/Clovis interpretation. This is the coastal route theory which indicates that the West Coast was free from ice longer and earlier than the interior and therefore it would have been easier to settle and move along the west coast earlier and for longer periods. Earlier nomadic peoples with basic boat technology and fishing skills would have found an easier path at least before the seas rose.<sup>5</sup> A related sub-set of this interpretation is the kelp school. This school maintains that a rich ecological environment of both fish and vegetation including clustered seaweed or kelp made it much easier to maintain a continuous presence in North and South America along the coasts.

The anthropological counterpart to the coastal highway/kelp school is the Monte Verde school after artifacts found at a southern Chile site nearly two decades ago in which carbon-dating indicates an earlier antiquity than Clovis of at least 15,000 B.P.(possible older at an adjacent site called Monte Verde II).<sup>6</sup> Since that time, a series of sites including caves in Oregon, the Channel Islands off California, Central and South America especially coastal Peru have been uncovered which indicate a presence of human beings perhaps dating to 16,000 B.P.<sup>7</sup>

There are a number of theories which emphasize continuous trans-Pacific travel throughout the centuries. Since these theories place such a high priority on maritime technology, the time limit can stretch to as early as 40,000 years ago to 35,000 B.P. and can also involve two way Trans-Pacific travels. The original Papuan population is believed to have arrived in what is now internal New Guinea and aboriginal Australia as long ago as 40,000 years ago via maritime travel. The Austronesian population travelled by sea from South China to Taiwan to a huge geographical area from Madagascar on the west to Easter Island on the east (basically from off the coast of Africa to off the coast of South America).<sup>8</sup>

This theory has three sub-sets of interpretation based on geology and meteorology. The North Pacific variant looks at the narrowing of the north Pacific between northern Japan, especially the formerly Japanese island chain of the Kuril Islands, and northeast Alaska particularly the extensive island chain of the Aleutians and based on photographic evidence maintains that before the seas arose after 10,500 B.P., islands connecting the two were above water. (We should recall that for a brief period of time the Japanese did occupy the two western-most Aleutian Islands of Attu and Kiska in 1942/1943 during World War II).<sup>9</sup>

Another sub-set of Trans-Pacific interpretation which may be more tenuous is the central Pacific theory which advocates that the Jomon culture which dominated Japan before the ancestral Japanese population arrived after 10,000-15,000 B.P., and has links to both the Ryukyu Islands (Okinawa and neighboring islands) and particularly the Ainu culture of Hokkaido may have exported its culture to North America. It is alleged to have done this via ocean currents especially the black or Kurusawa current to the West Coast of Canada and the United States (the Haida Indians of British Columbia and the Alaskan panhandle are said to show some linkage with Jomon artifacts).<sup>10</sup> Historically, there are reports of Japanese ships being washed up on the California coast.<sup>11</sup>

The most famous variant of the Trans-Pacific interpretation is the Polynesia linkage advanced by Thor Heyerdahl is his famous Kon Tiki expedition of 1947 (re-popularized is the recent Icelandic movie) that advances the argument that because of similarity of food products and domesticated animals as well as marine technology, South Americas could have populated Pacific Islands.<sup>12</sup>

However, it can be argued in the other direction that the Polynesian branch of the Austronesian grouping were great seafarers. They populated Malaya, the Philippines, Indonesia, and Pacific islands only being resisted by the interior Papuan/Melanesian population of New Guinea which had advanced beyond the hunting gathering stage and the aboriginals of Australia whose arid environment was not conducive to Austronesian settlement. They populated much of the Pacific from Hawaii in the north to New Zealand in the south between 2,000 and 1,000 years before present.<sup>13</sup> There have even been some studies which show similarity of blood ties between Amazonian Indians and Papuans. However, we should understand that the period before Neolithic times, 100,000 to 20,000 B. P., is often called the Mesolithic period in which the races or divisions of man continued to evolve and some groupings such as the Papuans/Melanesians evolve from a mixture of pre-homo sapiens and homo sapiens groupings).<sup>14</sup>

The fourth and most controversial idea is the Solutrean school of thought which suggests a European connection. A skeleton in Washington State (Kennewick) appeared to have Caucasoid features. Therefore, its supporters suggested that proto-European had migrated across the Atlantic via an ice-free corridor at the end of the last Ice age about 12,000 before present. Anthropologically, the counterpart of this argument is that some sites found in Spain and southwestern France appear similar to some sites in the new world. (Again, it can be argued that races were still evolving as can be deduced by comparing features of Athabascans, Aleuts, and Eskimos in Alaska today).<sup>15</sup>

For the remainder of this paper, each of these theories will be discussed in terms of compatibility with empirical research and points of agreement and disagreement with other interpretations. The conclusion will summarize the current state of investigation in regard to the peopling of the western hemisphere. We turn first to the Beringian/ice-free land corridor/Clovis theory.

### **The Beringian Land Bridge/Ice-Free Interior Corridor/Clovis School**

For centuries, this was the predominant theory especially after the 19<sup>th</sup> century when geologists worked on continent drift. Under this theory, scientists, based on calculations of land contours and similar geological formations and flora and fauna, postulated that the earth's land masses had once been one giant configuration which gradually split into two supercontinents in the northern and southern hemispheres and eventual through various natural gravitational processes drifted apart.

This interpretation which was first proposed in the late sixteenth century maintains that due to the gradual warming that occurred perhaps as early as 30,000 years B.P. or even earlier, sea levels dropped to such an extent during the closing millennia of the retreat of the glaciers that a land bridge had appeared by perhaps 19,000 B.P., if not before, between Northeast Asia and Northwest North America (interior Alaska and the adjoining Yukon region of Alaska and Canada). This warming which culminated between 14,000 to 10,500 B.P. allowed first large mammals such as Bison and Mammoths to enter a dry grassland steppe and forest environment from northeast Asia. They were followed by grassland nomadic hunters. The Beringian land connection was closed off after 10,500 B.P. as warming caused the seas to rise and the current Bering Straits to form.<sup>16</sup>

A sub-set of theory is the Ice-free corridor hypothesis which posits that approximately between 13,000 and 11,500 B.P. an Ice free corridor opened between the Western Cordilleran and eastern Laurentide Ice Sheets which dominated much of interior North America.<sup>17</sup> Linguistic, archaeological, and biological evidence has been used to support this theory as well as the related Clovis site which will be covered before we examine the evidence. In the nineteen thirties, in New Mexico, especially at a site near the town of Clovis, spear points were found that were similar to implements found in parts of Siberia and north central Alaska. Furthermore, radio-carbon dating indicated that some of these sites which also included the remains of woolly mammoths coincide with estimated time period of the Ice-Free Corridor. Soon, the peopling of the western hemisphere was divided into two theories: the Clovis and the pre-Clovis theories. The former favored a major single migration with perhaps some later accretions via an interior route about 14,500 B.P. while the latter posited several prior migrations and migrations via marine routes.<sup>18</sup>

The Clovis/Beringia/Ice free corridor school rests on archaeological, linguistic, and genetic evidence. The use of pointed and speared and fluted stone implements in Alaska, Siberia, and the Southwest in connection with the hunting of large mammals pointed to some connection.<sup>19</sup> In addition, the anthropologist/linguist, Joseph Greenberg who had developed the taxonomy for African languages particularly the classification of Bantu/Niger-Congo languages has studied the multitude of diverse native American languages and grouped them into three categories—Aleut-Eskimo, Amerind, and Na-Dene. People who speak Aleut-Eskimo inhabit the northern fringe from Alaska to Canada to Greenland of the western hemisphere whose language is related to the Ainu of Hokkaido and the people of the Kamchatka peninsula off southeast Siberia.

The bulk of Amerindians, about 900 people, speak an Amerind language with few affinities to the Old World. The Na-Dene or Athabascan group of languages is distantly related to some Asian languages, but barely, which indicates that they came in a second wave and are located in the interior subarctic part of Alaska and northern Canada. They are separated by two other groups of Athabascan speakers—a few in the interior of northern California and Oregon and, more prominently, the Apache a branch spoken in the American southwest by Navajo and Apache.<sup>20</sup> These last languages only separated comparatively recently and correspond with the interior route that includes Clovis and the ice-free corridor around

11,000 B.P. The Athabascans (along with Eskimo-Aleut) exhibit a genomic difference that arise from haplogroup O or Y-DNA mutations which differ from Amerindian populations.<sup>21</sup>

Over the past two decades, the notion of the Clovis-first culture as the end-point of the Beringian, ice-free corridor arrival has become increasingly challenged. The oldest sites at Clovis predate the corridor. In addition, pre-Clovis sites in Pennsylvania, Virginia, and sites in parts of South America especially Monte Verde in southern Chile have challenged both the chronology and single migration theory.<sup>22</sup> Although the Beringia/corridor/Clovis interpretation is still represented in many textbooks, other interpretations have come to the fore.

### **Coastal Migration/Kelp Highway/Watercraft Migration Interpretations**

Of the challengers to the Beringian/corridor/Clovis school, the main challenger has been the Coastal migration with its variants –the kelp highway and the watercraft migration hypothesis. This interpretation suffers as does the other theories in this paper from relative deficiency of archaeological support. The rising of the seas after 10,500 B.P. of perhaps 150 meters has washed away much evidence of early habitation. In addition, the first arrivals may have been nomadic and have left little trace (or died out). Nonetheless, these theories are part of the maritime school which challenges the pre-eminent paradigm of migrations from the central Eurasian landmass or world-island outlook that dominates much of scholarly thought on human migration. There is now a renewed emphasis on the migration of African progenitors of early man via the Indian Ocean eastward, the occupation of island Southeast Asia by the Papuan/Melanesians and then the Austronesian Polynesians of much of the Pacific, and finally the settlement of the Americas by possible carriers of the Jomon and later Polynesian Lapita culture which will be covered by this paper in later sections.

The Coastal Migration theory posits a longer period of human migration. According to this school, glaciers diminished along the North American Pacific coast much earlier than the interior. It maintains that the coastline along both the North American and South American Pacific coasts de-glaciated much earlier and perhaps even before by 18,000/19,000 B.P. but definitely by 16,000 B.P. Sites especially along the coasts of western Venezuela (at Taima –Tama) and southern Chile (Monte Verde) pre-date anything at Clovis and Clovis-like sites by perhaps as long as three thousand years. The Pilimachay Cave recently excavated in Peru may go back as far as 20,000 years. People could emigrate from Northeast Asia (Japan, Korea, Siberia) via the coastline to southern Alaska by means of open seas or through more extensive connections between the Aleutian land chain of islands from the east and the Kurile Islands from the west.<sup>23</sup>

## **Coastal Highway Hypothesis**

The coastal highway hypothesis proposes that coastal peoples from Northeast Asia may have followed the Pacific Rim along a linear route from Southeast Alaska all the way to what is now southern Chile. The interregnum period between the retreat of the last glacier period (21,000 to 18,000 B.P.) and the rising of the seas at 10,500 B.P. would have given plenty of time for settlement. The rapidly rising post-glacial seas would have created numerous estuaries on the mouth of large coastal rivers such as the Fraser in British Columbia, the Columbia on the border of Canada and the United States, the Klamath off what is now Oregon, and the Sacramento in northern California along with various South American rivers such as the Orinoco River in Venezuela. The Paisley Caves in Oregon evidence of habitation in the Channel Islands off central California and various South American sites.

At Panama, there may have been a divergence into the Andean highlands and the Amazon River connection. As will be seen later, there are similarities in tools and genetics in both tools and genomes between the Jomon and Melanesian cultures and South American sites. Overall, these discoveries point to a habitation of at least 15,000 calendar years. The river basins on the coast connect or are near waterways in the interior. The Columbia River is, for example, not far from the headwaters of the Missouri and the Colorado Rivers at the north end of the Gulf of California and leads within a brief distance to the Arkansas, Platte, and Missouri rivers and, through tributaries, to the Rio Grande and Gulf of Mexico. Rivers in South America such as the Orinoco, Amazon, and Rio de La Platte Rivers are connected in a similar way.<sup>24</sup>

## **Kelp Interpretation**

Related to the Coastal Highway hypothesis are the Kelp and Watercraft interpretations. The ecological environment along the coast at the end of the last Glacial Age would have sustained a livable environment. There would have been seals, sea otters, shellfish, and other fish as well as birds, sea mammals, and algae and seaweed clung together to form kelp which would have nourished migrating populations. A nomadic fishing population would have survived and even thrived under these circumstances. The estuary, mangrove, and coral habitats would have facilitated travel.<sup>25</sup>

## **The Marine Watercraft Interpretation**

Another marine theory would posit the use of watercraft. There were boats used in Japan during the Jomon period as early as 20,000 years ago and by the Papuans and Melanesians 40,000 years ago. More recently, the Polynesian branch of the Austronesian group trolled much of the Pacific from just after 2,000 B.C.E. to 1,000 C.E. Watercraft migration could very well have been used by Northeast Asians following the coastline between Northeast Asia and Northwest North America. With these boats, migrants could have avoided or skirted tidewater glaciers off Canada or Alaska. Although the distance was much further

for Papuans and later Polynesians, as will be shown, with the proper wind currents, South America could have been reached. However, it was just as possible that migrants went south via Central and South America all the way to Chile with much less chance of obstruction by glaciers. According to some myths, (backed up by artifacts and some genomic evidence) the Haida nation of Southeast Alaska and the Queen Charlotte Islands may have originated from ancient Asian mariners any time from 25,000 to 12,000 years ago.<sup>26</sup>

As will be shown at the end of this paper, maritime theories lack much archeological support (although there are underwater explorations) as there are often no artifacts to support theories due to coastal submergence. Although archaeological support is not perfect due to the imprecise measurement of carbon-dating and paleontology (which will also be discussed in a later section on methodology), maritime theories must often use indirect means. These include simulations, ethno-botany, serology, cranial measurement of present-day populations and the use of glottochronology in the measurement of change of language over time. These are not exact measurements and therefore lie somewhat in the realm of speculation even if the speculation deals with probability. However, probability is not the same as absolute certainty. The paper will now turn to even more speculative theories which are not without some empirical support—trans-Pacific voyages across the Pacific between Asia and the western hemisphere and the Solutrean hypothesis which purports to show trans-Atlantic connections between Europe and North America.

### **Trans-Pacific Connections**

There has been some speculation about Trans-Pacific contacts dating back perhaps before the warming phase to a period before the last intensive glacier age. There were warming intervals periodically between 50,000 and 22,000 B.P. so an earlier entry is possible but, of course, there is no direct archaeological evidence. However there have been genomic studies. Various analyses of DNA have found similarities between, for example, Pacific West Coast Native Americans and the Ainu who live in Hokkaido and are considered descendants of the Jomon culture which dominated Japan between 14,000 and 700 B.C before the ancestors of the present Japanese arrived. From archaeological evidence, they were master navigators and spread their culture from the Ryukyu Island through the main Islands of Japan to Sakhalin Island and the Kurile Islands to the Siberia peninsulas that abut the Bering Sea. They had a sea-faring economy so it is highly possible that they could cross over via the extended Aleutians and proceed southward given the relative narrowness of the oceans.<sup>27</sup>

Simulated studies have also been done in the Central Pacific to demonstrate that there was a possibility, albeit a very small one, of boats with outrigger apparatus being carried to the Pacific shore of California via ocean and wind currents. In fact, there were reports by the Spanish authorities in the 18<sup>th</sup> century of Japanese sailors washing up on the shores. A recent computer simulation indicated that out of 23 targets in the Pacific, 19% of destinations were hit including 8 with a 2% or higher probability.<sup>28</sup>



There have been unsubstantiated reports of Chinese landings which has a vague reinforcement in a genetic correlation of DNA type between the Han Chinese and modern Native Americans that date back to about 20,000 B.P. with a separation based on the Y-chromosome emphasizing a divergence between 15,000 and 10,000 B.P. Perhaps the most intriguing of the trans-Pacific interpretations are the studies that link Oceania with South America via the South Pacific.

A study of isolated tribes in the Brazilian Amazonian rain forest indicates that at least two had DNA profiles similar to the Papuans/Melanesians of interior New Guinea. The Papuans, as indicated earlier, were a mixture of Southeastern Asian Neanderthals (termed Denisovians) and homo sapiens, who sailed to the Indonesian archipelago by 40,000 B.C.E.<sup>29</sup> This distance was over 1,000 miles in some cases so it is possible, if remote, that a longer voyage might have taken them to South America particularly if it involves much smaller distances among islands all the way up to the Marquesas and Easter Island.

Less speculative have been the high possibility of voyages by Polynesians to South America. As was indicated earlier in this article, the KonTiki expeditions by Thor Heyerdal exhibited the possibility of Trans-Pacific voyages from South America to Polynesia. In fact, it could be a two-process. One should note that there is a high probability that populations crossed back and forth between Asia and North America during the millennia so that cross-pollination – genetic, cultural, linguistic, archeological, technological -- is a constant which makes “evidence” whether speculative or scientific rather problematic.

The voyages of the Polynesian branch of the Austronesian group took place in historic time (ca. 2000 B.C.-1000 C.E.) Recent research indicates that the sweet potato existed in Polynesia as well as the “New World” long before the Spaniards are alleged to have discovered it. The different variations of coconuts/cocoa/cacao were also extant in both areas. Chickens were also found in both places long before the Europeans. It is hardly a stretch of the imagination to postulate that the Polynesians who sailed thousands of miles in their island-hopping sojourn could have navigated the final 1,200 miles between Easter Island and the west coast of South America.<sup>30</sup>

In addition, even though the coastline shifted east, exploration in adjacent areas have found similar lithic traditions including bifaces and stemmed and barbed points all along the Pacific littoral. The geographical distribution for these implements extends from the Jomon related culture extending from Japan to Sakhalin Island to the Kamchatka peninsula to the Pacific Northwest (Paisley Caves in Oregon, Channel Islands off north central California) to the Monte Verde II site adjacent to the first Monte Verde site. Chronological dating estimates that the Jomon sites could be at least 16,000 years old while the Chilean sites may be at least 14,000 years old. The Paisley caves and the Channel Island artifacts date to approximately 13,000 years.<sup>31</sup> These findings in areas adjacent to the coast would appear to give credence to both the coastal migration and Pacific voyages interpretation in terms of routes and dating.

## **Solutrean Hypothesis**

The most recent theory on the settling of the Americas came and went within a few years. Ironically, this Solutrean hypothesis of a connection between Paleolithic Europe and the Americas ended up supporting in one key respect a linkage of the Americas to Ainu or Polynesian culture. In 1998, it was proposed that a similarity in stone tools between the Clovis culture and the earlier Solutrean culture of Western Europe centered in Spain and Southwestern France was the source of the Clovis culture. This hypothesis maintained that people from this culture sailed around the glaciers to cross the Atlantic. The discovery of a skeleton dated to 9,500 years called Kennewick man appeared to support this claim. The skeleton had some resemblance to Caucasian features. Later investigation, however, appeared to indicate that it was closer to Ainu or South Asian/Polynesian features. In addition, there is no known evidence that the Solutrean people had the knowledge or means to cross the ocean. Moreover, although both Clovis and Solutrean cultures used certain tools that have not been replicated elsewhere, there were also significant differences among the stone tools used.<sup>32</sup>

## **Methods of Investigation**

Quite often, the findings that support various interpretations are subject to debate. They are considered dubious, “junk science,” merely circumstantial, highly dubious, or rather ambiguous and open to different readings. Therefore, it is essential that we examine the various tools. We can divide the assorted means of investigation into the following categories: Archaeological, biological, and linguistic. The first category includes technology, paleontology, and carbon-dating. The second includes genetics, serology, and phrenology. The third includes word taxonomies and glottochronology.

The use of archaeology with the supporting tools of technology, paleontology, and carbon-dating with the evidence of physical evidence as exemplified by artifacts has been the most common tool of investigation. Archaeology has been the main support of the Beringia/ice-free corridor/Clovis first interpretation. It has also been used in the location of pre-Clovis sites in both North America and South America. Its main limitation has been its limited use in areas where physical evidence has been lacking such as the coastal highway, kelp, marine watercraft, and trans-Pacific theories where the changing coastlines have washed away physical remains. The Beringia theory held a prominent position among peopling theories due to a lack of extant sites before 13,000 B.P.

There were sites in central Alaska which dated to as much as 14,000 B.P., but also shared similar projectile fluted tools.<sup>33</sup> These sites were not far from where the Ice-free Corridor opened several hundred years later. The people who used these artifacts could have turned southeast to the corridor which ended in what is now Alberta and moved south. They also could have turned southeast to a Pacific corridor down a since flooded coast line. However, there was no evidence of earlier settlement to promote a pre-Clovis timeline. Only in recent years, in places like the Paisley caves in Oregon, Meadowcroft in Pennsylvania, and Cactus

Hill in Virginia as well as the Monte Verde complex in southern Chile have locations been found and verified, which pre-date Clovis, but, with exception of the South American sites, these locations have much variability in the stone tools. It has been suggested that pre-Clovis cultures were nomadic and also used bone and ivory which are unlikely to be preserved. Archaeology depends on geology as well.<sup>34</sup> Various sites reflect the culture of the inhabitants whether artifacts, burial customs, or types of hearths.

There are some variables related to archaeology which may not be controllable. Geologists at these sites examine layers of sediment or strata (the process is called stratigraphy) with the oldest being the deepest. Artifacts found are sometimes dated by age of sediment. However, natural forces can create the appearance of human settlement. Rivers can carry soil downstream including bones, stones, and cultural material which give the impression of human activity where none existed. Erosion can alter the landscape so that in deserts artifacts may be indefinitely preserved and distort the date upward. At the other end the carrying of silt downstream may push remains further down so as to give the impression of a non-existent antiquity. Paleontology, the study of old bones and fossils, can especially be distorted. It has been found that large mammals disappeared between 12,000-11,000 B.P. It has been attributed to a combination of climate change and human predation. The presence of plants or absence of such material are also a marker, but once again the effects of natural forces can distort dating. Many archaeologists have concentrated on caves and caverns as less influenced by natural forces such as landslides, but again occasional forces like earthquakes can also distort remains found in these sites.<sup>35</sup>

The cumulative result has been to cause archaeologists to question pre-Clovis sites dates before the cordon opened shortly after 14,000 B.P. A few have withstood the challenge through carbon-dating. However, carbon-dating which measures the decomposition of organic material can only give a range of years which can be plus or minus several centuries. In addition, non-organic material such as stone cannot be measured.<sup>36</sup>

Therefore, those who believe in an earlier date than Clovis and possibly more than one migration and different routes have turned to other methods—chiefly genomic and linguistic particularly in the cases of coastal settlement which are now submerged. Genomic methods include a wide variety of measurements especially useful in areas in coastal regions which have been subject to erosion. The relative shortage of skeletons before the Holocene (immediate post-Pleistocene or Ice Age (ca. 10,000-9000 B.C.) and during this period make it difficult to assess the origins. Blood types appear to suggest a connection with east central Siberia and Mongolia; however, morphology/phrenology varies. Some remains especially in South America and Kennewick man appear to indicate a long face and narrow head more typical of southern Asian and Australians as opposed to the short faces and rounded faces of Mongoloid populations.

The examination of Asian and Native American (Amerindian including Athabascan) comes from the study of blood or serology which includes both mitochondrial DNA from the

mother and the Y-Chromosome from the father indicates that the common occurrence of the mtDNA Haplogroups (genetic term for a group of people who share a common matrilineal or patrilineal ancestor) A, B, C, D is recognized among both eastern Asian and Native American populations. The greatest frequency of these haplogroups occurs in southern Siberia and adjacent Mongolia. However, the subglades (subgroups of haplogroups) of C and D for Native American populations also occur among Mongolians, Manchurians, Japanese, Korean, and Ainu. Nonetheless, a study of the diversification of MtDNA Haplogroups C and D does suggest that a parent lineage identified as Subhaplogroup D4h3 did emerge for Native Americans around 20,000 B.P. This lineage does not occur in either southern Siberia or eastern Asia.<sup>37</sup>

What can we make of the above findings? One group of geneticists feels that there was a founding population perhaps as early as 30,000 to 40,000 B.P. who stayed in what became Beringia after 18,000 B.P. for a millennium then went south. A second posits a rapid migration first in Beringia then southward. A third supports a migration to Beringian then gradually going south. The question is to what degree do genetics change over a period of time? What degree of influence does intermingling with subsequent migrations including Trans-Pacific ones have on the biological serology profile? Genetic profiles are mutable over time especially if the millennia are long enough as are the effects of genetic selection influenced by adaption to changing physical and climatic changes. We must also be aware that there were periods of both warming and cooling during this period. There was nothing to prevent, even during the period of cooling, for populations which had acclimated to very cold climates after arrival in Siberia from crossing even without Beringia as the Aleuts/Eskimo do at the top of the world. This would be less of a factor for migrations from Melanesia and later Polynesia.

We must also remember that anthropologically speaking this is considered the Mesolithic period (ca. 40,000-10,000 B.C.E. or B.P.) when racial characteristics were still evolving. Therefore, earlier migrations were from an area which was pre-Mongoloid and distinctive Mongoloid features –the eyelid, and rounded face designed to contain heat in a cold climate--had not yet taken place. There are both brachiocephalic and doliocephalic skeletons found among excavations in both continents but somewhat more in South America (Polynesian, Melanesian?) although there are some in North America (the West Coast –Jomon, Ainu?).<sup>38</sup> Therefore, the earlier Amerindian population was not distinctly Mongoloid, but the later Athabaskan, Aleut/Eskimo were more so. As indicated before, some of the earliest arrivals were nomadic and left no imprint of culture, even burials, or simply died out. We also cannot assume that the populations of southern Siberia and eastern Asia are identical to those in 20,000 to 40,000 B.P. Genetic drift is a possibility in both East Asia and the western Hemisphere. The Pacific admixtures which are less Mongoloid would complicate matters. We must also realize that migrations could be two-way streets not just through Beringia but also across the Pacific.

If geneticists seem to favor a longer period of early migration combined with gestation and environmental adjustment based mostly on genetic similarities in DNA combined with

diversity within groups as noted above to support a theory of one single migration at least 20,000 years ago (18,000 B.P.) with later admixtures over a long period of gestation, linguists take another view. As there were originally close to 1000 Native American languages many of them mutually unintelligible, many linguists dissent from Greenberg's early identification of an original migration at around 11,000 B.P. represented by the Clovis culture. He and his supporters group words according to common roots in word classification taxonomies. They maintain that it must have been much earlier to account for the diversity derived from thousands of years of adaption. They have calculated using glottochronology or the study of rate of change of words due to time and distance (an admittedly inexact science).<sup>39</sup> Nonetheless, there is a consensus that different migrations are responsible for Amerindians, Athabascans, and Eskimo-Aleuts although there is some disagreement about whether the Athabascans preceded the Aleuts-Eskimo or vice-versa.

## **Conclusions**

The three major areas of debate about the peopling of the western Hemisphere are time of arrival, origin, and migration routes. Until recently, the Beringia/Corridor/Clovis school maintained it was approximately 13,000 B.P. first in Beringia and later in the Southwest. Validated discoveries in South America at Mount Verde and the Paisley Caves in Oregon have pushed it back to over 14,000. B.P. Some scholars speculate that it may go back further to as early as the first period of warming approximately 31,000 B.P. or even to 40,000 B.P. as the period when man arrived in Siberia. The argument goes that acclimatization in Siberia with clothing acquired from woolly mammoths would not have prevented passage even around glaciers as shown by the Eskimos in later times. However, these latter dates have not been verified.

There is general agreement that the peopling of the Western Hemisphere was from Asia, but there is not a total consensus about the location. The DNA would indicate southern Siberia AND Mongolia (sometimes identified with the Amur/Yenesi region); however there are some genetic markers that point to the Papuan Melanesian, Polynesian, and Ainu from South and East-Central Asia. Geologic surveys and sailing technologies (plus simulations and re-enactments) point to this place of origin as a likely possibility even though the bulk of individuals are believed to have come from Northeast Asia and Siberia. In addition, similar food crops and animals indicate a cross-Pacific connection. The last two decades have found evidence to answer or attempt to answer the third issue. Artifacts from British Columbia down to Chile have pointed to coastal migrations as has the environment which made the coastal route possible. The sailing background of the Jomon, Papuans, and Austronesians also are considered to be highly possible from their homelands of Jomon-era Japan (Hokkaido) and Melanesia/Polynesia. As new methods of inquiry develop and investigative methods are refined, there is little doubt that new light will be shed on these issues. Overall, scholars are still in the initial stages of these questions, but we are moving forward to the point that we may have if not definitive answers at least probable ones.

## Endnotes

<sup>1</sup>C. E. Holmes, “The Beringian and Transition Periods in Alaska: Technology of the East Beringian Period as viewed from Swan Point,” in T Goebel and I Buvitt (eds.), *From the Yensesi to the Yukon...*, (College Station: Texas A&M, 2011), p-pp.179-191.

<sup>2</sup>David Meltzer, *First Peoples in a New World*, (Berkeley: University of California Press, 2009), p. 5.

<sup>3</sup>D. Shane Miller, Vance T. Holiday, and Jordon Bright, “Clovis across the Continent,” in Kelly Graf, Caroline V. Ketron, and Michael W. Waters (eds.), *Paleoamerican Odyssey* (College Station: Texas A& M, 2014), Chapter 12.

<sup>4</sup>*Ibid.*

<sup>5</sup>Meltzer, pp. 130, 196.

<sup>6</sup>Thomas D. Dillehay, *The Settlement of the Americas*, (New York: Perseus, 2000), pp. 160-168; 283.

<sup>7</sup>Jon Erlandson, “After Clovis-First Collapsed: The Reimagining the Peopling of the Americas,” in Graf et.al., chapter 7.

<sup>8</sup>\_\_\_\_\_, et.al. “Life on the Edge: Early Maritime Cultures of the Pacific Coast of North America, *Quaternary Science Reviews*, 27, pp, 2232-45, 2008.

<sup>9</sup>*Ibid*

<sup>10</sup>*Ibid*

<sup>11</sup>[http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file\\_id=9065](http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file_id=9065) (accessed on December 29, 2015) discusses, for example, Japanese sailors washed up on the coast of present-day Washington State in 1834.

<sup>12</sup><http://www.greatdreams.com/thor.htm> (accessed on December 29, 2015) reviews the specific expeditions of Thor Heyerdahl in the Pacific.

<sup>13</sup>R. L. Jantz and D. Owsley, “Circumpacific Populations and Peopling of the New World: evidence from cranial morphometrics,” in R. Bonnichen, et. al.(eds.) *Paleoamerican origins beyond Clovis* (College Station: Center for the Study of the First American, 2006), pp. 267-275.

<sup>14</sup>*Ibid.*

<sup>15</sup>Meltzer, pp. 176-179.

<sup>16</sup>Holmes, p. 192.

<sup>17</sup>Meltzer, pp. 35-37.

<sup>18</sup>J.M. Adovasio and David R. Pedler, “The Ones that Still Won’t Go Away: More Biased Thoughts on the Pre-Clovis Peopling of the New World, in Graf, Chapter 29.

<sup>19</sup>J.F. Cook, “Human Colonization of the Americas: Timing, Technology, and Process,” *Quaternary Science Reviews*, 20, pp. 277-299.

<sup>20</sup>Dillehay, pp. 241; 245-46.

<sup>21</sup>See, for example, Nelson JR. Fagundes.et.al., “Mitochondrial Population Genomics Supports a Single Pre-Clovis Origin with a Coastal Route for the Peopling of the Americas,” *Journal of Human Genetics*, 82, 3, pp. 382-293 which says that the preponderance of evidence suggests that the four main DNA haplogroups were part of the gene pool of a single foundation population. Of course, this population may have migrated at intervals.

<sup>22</sup>Erlandson, “AfterClovisFirst...,” pp.127-130.

<sup>23</sup>Tom Dillehay, “Entangled Knowledge: Old Trends and New Thoughts in First South American Studies,” in Graf, Chapter 22.

<sup>24</sup>Meltzer, pp. 108-123.

<sup>25</sup>*Ibid.*

<sup>26</sup>J.M. Erlandson and T. J. Braje, “From Asia to the Americas by boat? Paleography, paleoecology and stemmed points of the Northwest Pacific,” *Quaternary International* 239, pp. 28-37.

<sup>27</sup>*Ibid.*

<sup>28</sup> See, for instance,

[http://www.academia.edu/3317803/Sailing\\_the\\_simulated\\_seas\\_a\\_new\\_simulation\\_for\\_evaluating\\_prehistoric\\_seafaring](http://www.academia.edu/3317803/Sailing_the_simulated_seas_a_new_simulation_for_evaluating_prehistoric_seafaring) Also consult

<http://archaeology.about.com/od/transportation/a/trans-pacific.htm> (accessed December 30, 2015) which documents the most recent computer stimulation.

<sup>29</sup>Consult, for example, B. M. Kemp and T.J. Schurr, “Ancient and Modern Genetic Variation in the Americas,” in B. Auerbach (ed.), *Human Variation in the Americas: The Integration of Archaeology and Biological Anthropology* (Carbondale: Southern Illinois University, 2010), pp. 12-50. Also see

<http://archaeology.about.com/od/transportation/a/trans-pacific.htm> which covers genetics and ethno-botany.

<sup>30</sup><http://archaeology.about.com/od/transportation/a/trans-pacific.htm> an informative website which details both possible Papuan/Melanesian as well as Polynesian links.

<sup>31</sup>Erlandson, “After Clovis Collapsed...,” pp. 127-128.

<sup>32</sup>Meltzer, pp. 185-190.

<sup>33</sup>Miller et. al., op. cit.

<sup>34</sup>Dillehay, *The Settlement of the Americas*, Chapter 2.

<sup>35</sup>*Ibid.*

<sup>36</sup>*Ibid.*

<sup>37</sup>Meltzer, Chapter 4.

<sup>38</sup>*Ibid.*, Chapter 5.

<sup>39</sup>Dillehay, *The Settlement of the Americas*, pp. 245-246.