

Out of Formosa

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Introduction

Most Polynesian scholars along with a growing group of linguists, anthropologists and geneticists, support a theory commonly known the “Out of Taiwan” theory. Based on this theory, the Austronesian of Taiwan left their home island approximately 3,500 years ago in large ships. These ocean-going peoples spread slowly through the Philippines and other islands off the coast of Southeast Asia. They finally arrived at today's New Guinea. Once there, they mixed and mated with the native population. Subsequently, it took another thousand years, for these new breed of people, who today are called the Polynesians, to populate most of the Pacific islands including Hawaii, Tahiti, Easter Island, New Zealand, etc.

Is this “Out of Taiwan” journey the only one the Austronesian of Taiwan ever took? Under what kind of circumstances and reasons would make these earlier Taiwanese natives leave their homes and sail into the vast Pacific Ocean towards uncertain destinations?

The prominent evolutionary geneticist Svante Pääbo said “No other mammal moves around like we do.” In addition, many studies have found that a gene makes human more likely to take risks and embrace movement, change, and adventure. This may only partially answer to the above questions concerning human migration. Human's survival instinct must also play an important role in these migration patterns; especially, if living conditions have been altered by outside forces beyond their control. These notable forces include global climate changes resulting in the shortage of food supplies, inadequate livable spaces, rampant new diseases, volcanic activities, earthquake destruction, and constant massive floods in certain localities. Consequently, humans had to seek out other places for survival.

Therefore, it is reasonable to believe the “Out of Taiwan” journey is not the only one the Taiwanese Natives ever took. Based on the current global climate data, human dental morphological traits and human genetic information, the pre-historical Native Taiwanese may have already taken a treacherous travel course along the “First Island Chain” to reach Americas. Connecting dots based on available archeological, dental and genetic data, we may be able to verify that this migration journey occurred approximately 15,000 years ago or earlier. Evaluation of this journey is the objective of this paper. In order to differentiate with “Out of Taiwan”, this earlier journey is thus called as “Out of Formosa”

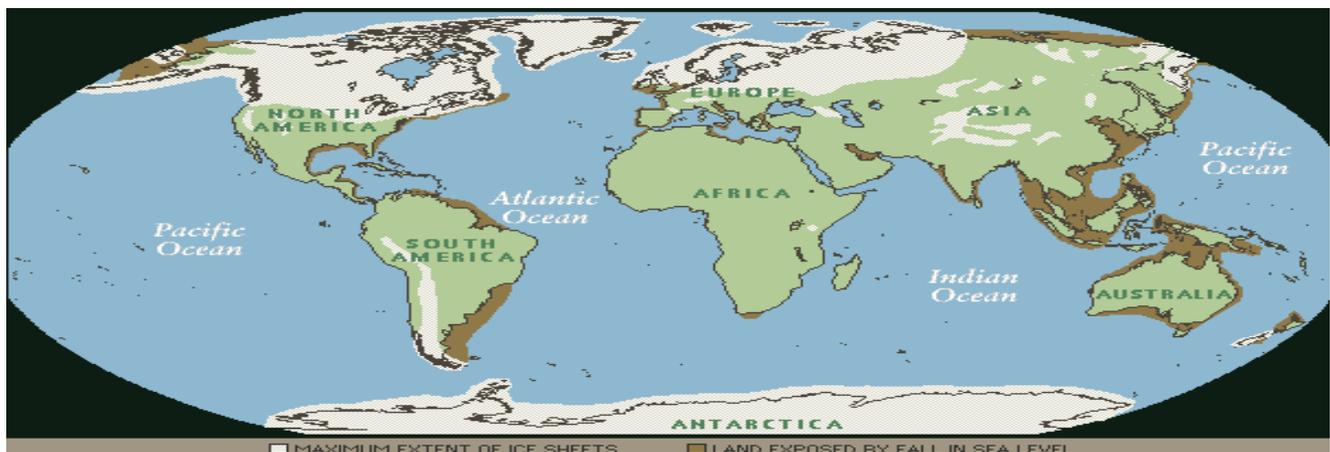


Figure 1. Ice Age Map (trylobyte.wordpress.com)

Global Warming

In accordance with the global warming data collected and provided by the U.S. Environmental Protection Agency¹, “Several times in the history of the earth huge sheets of ice, or glaciers, covered large portions of its continents. The most recent episode of glaciation, the Pleistocene epoch, is commonly referred to as the Ice Age and began approximately 1.6 million years ago.” (Figure 1. Ice Age Map)

The Ice Age is thought to cycle every 100,000 years. The latest one occurred approximately 19,000~20,000 years ago. It is believed that glaciers including ice sheets in North America and Antarctica started to retreat, raising sea levels by more than 250 feet (100 meters.) During this period, a land mass called Doggerland, now the southern North Sea, was submerging and separating the British Isles from continental Europe. (Figure 2) Meanwhile, most of Sundaland², included now Borneo, Java, the Malay Peninsula on the Asian mainland, as well as the large islands of Sumatra and their surrounding islands with the Wallace Line as the eastern boundary, were also plunged under water, separating Taiwan and many southeast islands from continental Asia. (Figure 3)

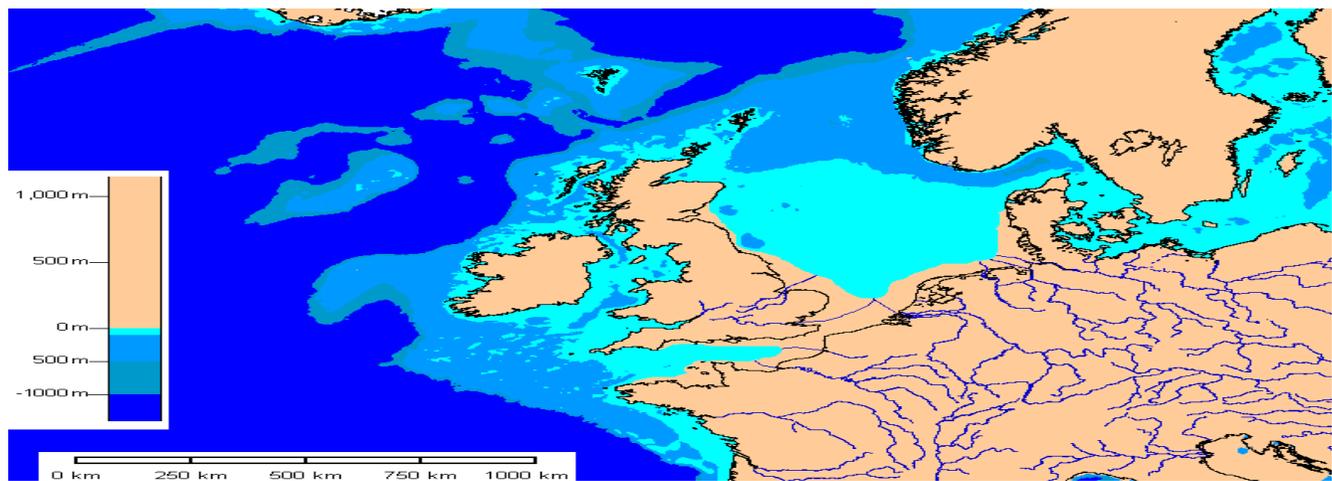


Figure 2. Ice Age Doggerland Map (University of Wisconsin-Green Bay)

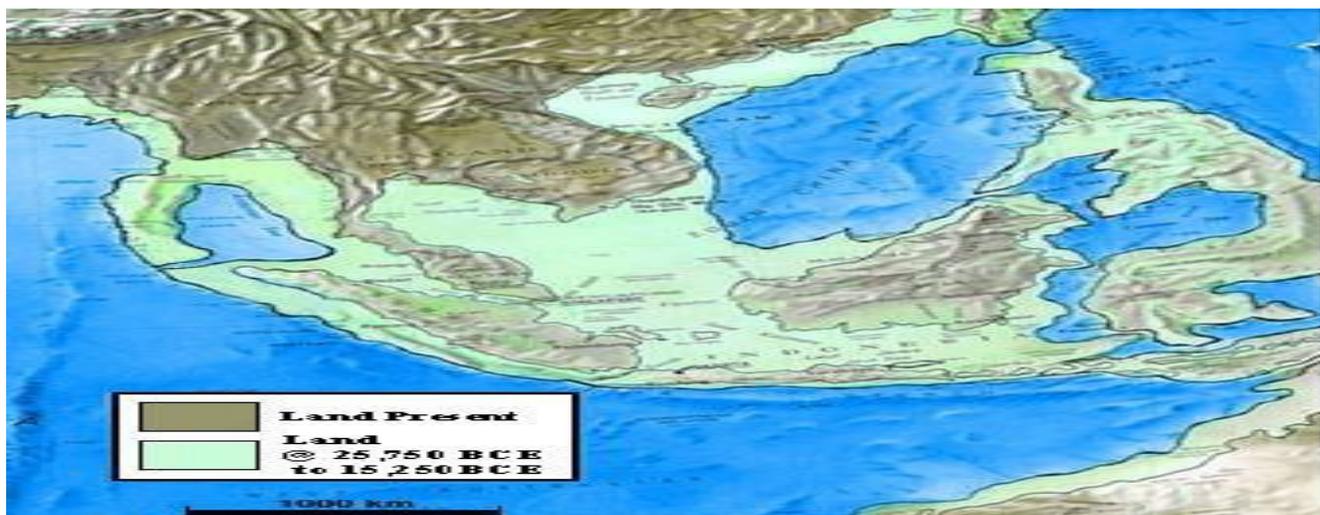


Figure 3. Ice Age Sundaland Map (Lost Civilizations.Net)

At that time, the peoples living in Formosa (Taiwan) along with the southeast Asian subcontinent would have been particularly hard hit by great sea level surge. Professor Martin Richards of Leeds University, UK, a Professor of Archaeogenetics and a leading figure of DNA researcher argues that many populations would have been wiped out as their land disappeared beneath the waves³.

Origin of Native Formosan

According to Dr. Marie Lin M.D., Director of Transfusion Medicine and Molecular Anthropology Laboratory at the Mackay Memorial Hospital of Taipei, Taiwan, conducted research on the gene typology of Taiwan's twelve indigenous people who suggests a close kinship with Southeast Asian islanders, another subgroup of the Austronesian language family. Dr. Lin also deduced that the central mountain tribes and east coast tribes of Taiwan might have different origins due to separate waves of immigration from Africa between 40,000 and 60,000 years ago. "Even before Taiwan became an island, forefathers of Taiwan's indigenous peoples arrived in Taiwan in the late Pleistocene ice age"⁴

Migrations

The massive flood that occurred between 19,000 and 14,000 years ago when the Sundaland gradually submerged into the ocean, the peoples of ancient Formosa were cut off from continental Asia. In addition, floods, tidal waves and earthquakes induced from volcano activities and glaciation became huge and frequent as well as proportional to the catastrophic extent that humans had never experienced. It is comprehensible that the ancient Formosan began their first wave of migration in search of new safer places to live.

Avoiding southwestern tidal waves, the indigenous Formosan from the plains escaped the island by canoe, called a "manka". Sailing on the Kuroshio (black tide) ocean current, they navigated northeastward to Ryukyu island and Japan. Some settled in Japan and developed the so-called "Jōmon" culture (300BC~14,000BC), which has become today's "Ainu" Other indigenous Formosan from the plains, continued their northeastern journey and reached the Aleutian islands and the coastal line of Alaska. Eventually, they arrived at the west coast of Americas and continued to migrate southward. Between 15,000 and 12,000 years ago, they became the first humans to reach Monte Verde (Patagonia), Chile.

Americas Indians

As the glaciers retreated at around 11,000 years ago, humans crossed the Beringia land bridge over the Bering Strait from Siberia to Alaska during the period of lowered sea levels. They then made their way southward through an ice-free corridor east of the Rocky Mountains to present-day Western Canada.

The "Clovis Culture" was found at an archaeological site near the town of Clovis, New Mexico. Known as "Clovis First," the predominant hypothesis among archaeologists in the latter half of the 20th century has been that the people associated with the Clovis Culture were the first inhabitants of the Americas. The primary support for this has been that no solid evidence of pre-Clovis human inhabitation have been found.

Monte Verde, however, is another archaeological site, that was discovered in late 1975 and is

located in southern Chile. The site has been dated to be about 14,800 years old. This dating shows that the human settlement of the Americas pre-dates the Clovis culture by roughly 1,000 years. This contradicts the previously accepted "Clovis First" model which holds that settlement of the Americas began 13,500 years ago. The Monte Verde findings were initially dismissed by most of the scientific community, but in recent years the evidence has become more widely accepted in some archaeological circles; especially, after the discoveries of the ***Kennewick man*** and other archaeological sites along western coasts of Canada and United States, such as Stickman and Arlington Springs Woman at Santa Rosa Island of California. Finally, the Coastal Migration theory becomes widely accepted.

Kennewick Man

The discovery of the Kennewick Man was accidental. His skull was found on the bank of Columbia River in Kennewick, Washington on July 28, 1996. Professor James Chatters⁵ of Central Washington University, an archaeologist, forensic anthropologist, paleontologist, and medical coroner, initially determined the Kennewick Man to be a Caucasoid male. The Kennewick man was radiocarbon dated to be 9,300~9,600 years old at the University of California at Riverside.

Later, using craniometric data obtained by anthropologist William Howells⁶ of Harvard University, anthropologist Joseph Powell of the University of New Mexico, along with anthropologist Tsunehiko Hanihara of Saga University, determined that Kennewick Man was not European but most resembled the Ainu and Polynesian, such as Moriori people of Chatham Islands of New Zealand. Powell stated that the Ainu descend from the Jōmon people who are an East Asian population with "closest biological affinity with southeastern Asians rather than western Eurasian peoples" Furthermore, Powell⁷ said that dental analysis showed the skull to have a 94 percent chance of being a Sundadonts group like the Ainu and Polynesians and only a 48 percent chance of being a Sinodonts group like that of Northern Asians, such as Han Chinese, Korean and modern Japanese (Yayoi culture 300 BC~300AD.)

Dental Morphological Traits - Sundadonty and Sinodonty

Late Anthropologist Christy G. Turner⁸ of Arizona State University, identified two patterns of dental features widely found in different population in East Asia. These two patterns were called "Sundadonty" and "Sinodonty." In the 1990s, Turner's dental morphological traits were frequently mentioned as one of three new tools used for studying origins and migrations of human populations. Others were linguistic and genetic methods.

Turner found the Sundadont pattern in the skeletal remains of the Jōmon people of Japan and in living populations of native Taiwanese, Ryukyuan, Filipinos, Indonesians, Thais, Borneans, Laotians, and Malaysians. By contrast, he also found the Sinodont pattern in the Han Chinese, in the inhabitants of Mongolia, eastern Siberia, Yayoi people of Japan and the Native plain Americans who resided east of the Rocky Mountains.

Sinodonty is a particular pattern of teeth characterized by the following features:

- The upper first two incisors are not aligned with the other teeth, but are rotated a few degrees inward and are shovel-shaped.
- The upper first premolar has one root (whereas the upper first premolar in Caucasians normally has two roots), and the lower first molar in Sinodonty has three roots (whereas it has two roots in Caucasoid teeth).

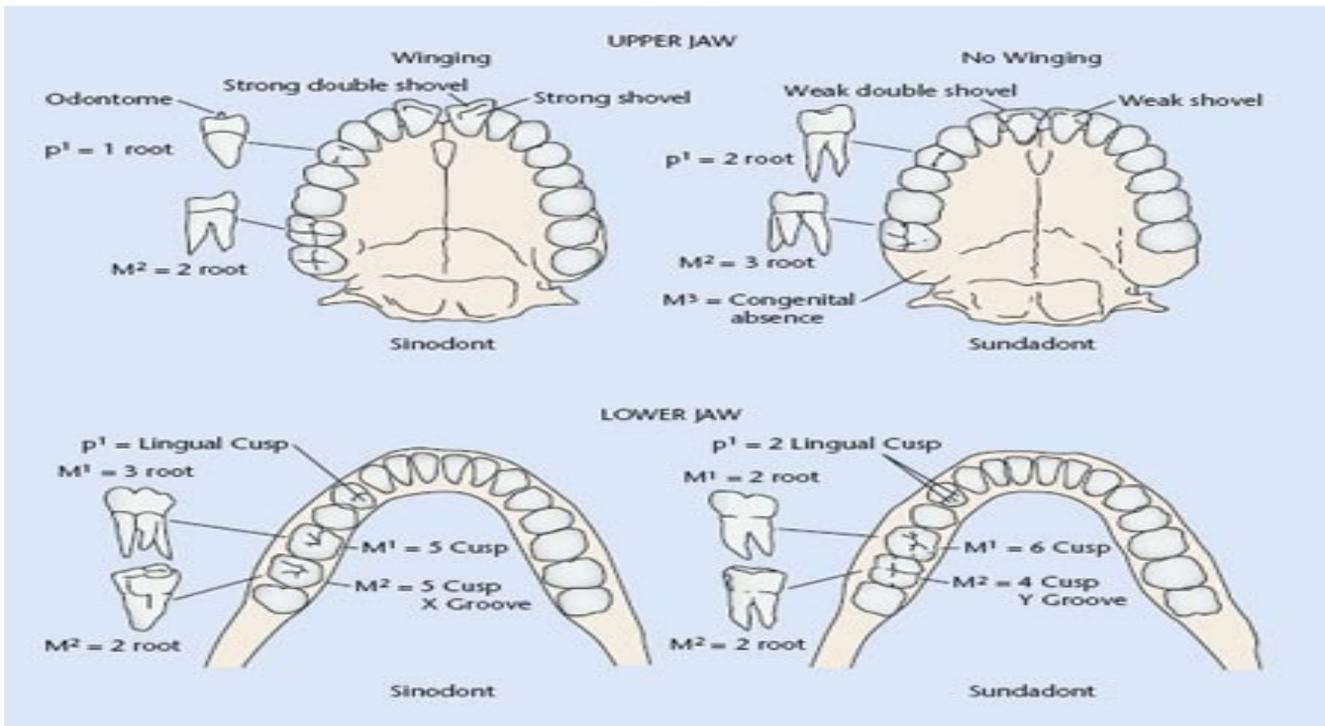


Figure 4. Sinodont and Sundadont

In 1996, Rebecca Haydenblit⁹ of the Hominid Evolutionary Biology Research Group at Cambridge University, UK, did a study on the dentition of four pre-Columbian Mesoamerican populations and compared their data to "other Mongoloid populations". She found that "Tlatilco", "Cuicuilco", "Monte Albán" and "Cholula" populations (Native Mexican Indian) followed an overall "Sundadont" dental pattern "characteristic of Southeast Asia" rather than a "Sinodont" dental pattern "characteristic of Northern Asia".

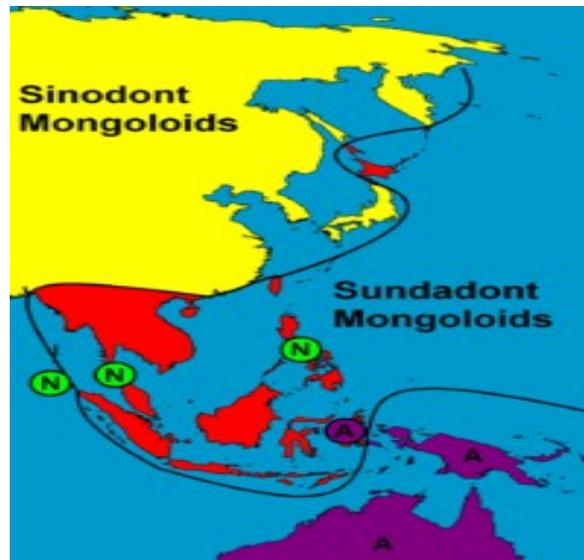


Figure 5. Distribution of Sinodonts and Sundadonts in Asia, shown by yellow and red. (After William Howells of Harvard University)

Genetic Evidences

In human genetics, a **human mitochondrial DNA haplogroup** is defined by differences in human mitochondrial DNA. Haplogroups are used to represent the major branch points on the mitochondrial phylogenetic tree. Based on the **23andMe**, a DNA Ancestry Service Company of Seattle, Washington, Haplogroup D tracks the initial migration of hunter-gatherers into the Americas from eastern Asia and all the way to the present-day Chile. It is especially common along the Pacific coast, a suggestion that maritime people may have been among the earliest inhabitants of the Americas. In addition, the National Geographic Genealogical studies combined with the **Ancestry.Com** have found a particular DNA Genetic marker, haplogroup D-1 present among some Aztec remains. Haplogroup D-1, has been traced to human remains (Ainu) in Hokkaido, Japan.

As matter of the fact, Haplogroup D¹⁰ is also found commonly among Ainu, Jōmon and Ryukyū people of Japan, Aleutian of Alaska, and native Formosan. Dr. Marie Lin's laboratory has identified Haplogroup D presented in the mtDNA of Peng Mng-min, a noted democracy activist¹¹. The other U. S. Genetic Lab has found Haplogroup D commonly presented in Native Formosan mtDNA as well. From the genetic point of view, most of the Native Formosan mtDNA seem more related to the Chumash of California and the Mapuche of Chile than the Han Chinese. Locations of Haplogroup D circa 500 years ago, before the era of international travel are indicated as follows:

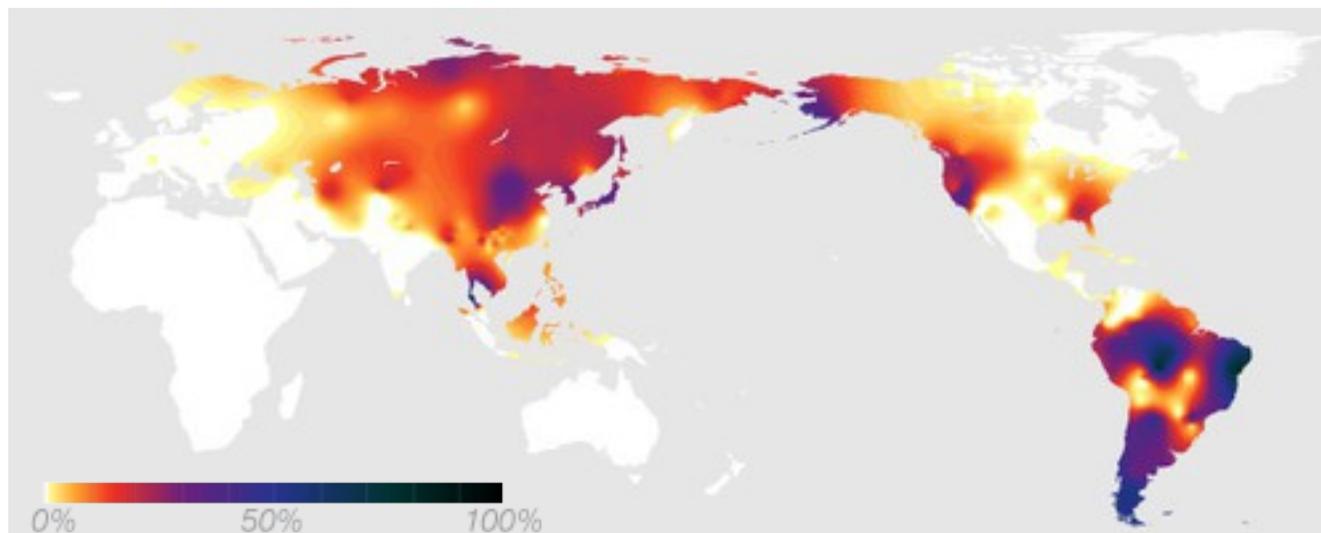


Figure 6. Location of Haplogroup D Circa 500 Years Ago¹²

Summary

The dramatic climate change caused by the global warming is believed to have forced the earlier Formosan to leave their homeland via canoes or other large vessels. They traveled along Ryukyū island and the Japanese archipelago. Some of them might have settled and mated local peoples. The new breed of peoples continued to navigate along the northeastern section of the **First Island Chain** where they finally reached Alaska and migrated along west coast of Americas and

eventually arrived at Monte Verde, Chile. Their descendants invented the written language and built great pyramids and empires, such as Mayan, Aztec, Inca, etc. They planted Maize (corn), Potato (No European industrial revolution would have occurred without it) and others. Their contribution to human civilization can not be ignored.

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