Pre-Columbian North America

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Motivation

• Most important reason: understanding the human settlement in North America before the contact with Europeans is an important intellectual exercise in itself.

• But it is also key to analyze the political economy of Early America:

1. Knowing how life was before the Europeans arrived helps us to appreciate the possibilities and limits imposed by geography and climate.

2. Native Americans had already changed the environment.

3. Existing settlement shaped the institutions that Europeans created. Example: Spaniards vs. English, organization of British colonies.

4. Intersected with the dynamic of competition between English (British), French, Spanish, and Dutch. Particularly, French and Indian War.

5. Later, vital role in the struggle between the British Crown and the British colonies.
Thayendanegea or Joseph Brant (1743-1807)
Human population of the Americas
First humans in the Americas

• Humans have inhabited North America since at the very least 14,800 ya (or BP; January 1st, 1950, Willard Libby).

• The real date is more likely to be at least 16,000 ya.

• Some recent (but not conclusive) evidence from Mexico’s Chiquihuite cave suggests humans were present as early as 26,500 ya.
  
  • Correct dating?
  
  • Ancestors of modern-day Native Americans or a different “ghost” population?

  • More general point: selection bias in excavations.

  • A few decades ago, researchers believed in much later arrivals.
Willard Libby, 1908-1980
Sources of evidence

• How do we know?

  1. Archeological:
     • Carbon-14 dating (measures the amount of $^{14}\text{C}$ in organic material).
     • Optically stimulated luminescence (measures doses from ionizing radiation).

  2. Genetic: “ancient DNA revolution” (bones, coprolites, ...).

  3. Linguistics.

• However, there is much we do not know. For instance, lack of many human remains.

• Next decade can bring radical changes in our understanding of Pre-Columbian America as we get more newly sequenced ancient DNA samples and new other sources of evidence (ancient protein sequencing).
Archeological evidence
DNA evidence
thousand times more data, and in addition we have access to the rich lode of information contained in ancient DNA, which has become a more definitive source of information about past population movements than the traditional tools of archaeology and linguistics.

The first five ancient human genomes were published in 2010: a few archaic Neanderthal genomes, the archaic Denisova genome, and an approximately four-thousand-year-old individual from Greenland. The next few years saw the publication of genome-wide data from five additional humans, followed by a burst of data from thirty-eight individuals in 2014. But in 2015, whole-genome analysis of ancient DNA went into hyperdrive. Three papers added genome-wide datasets from another sixty-six, then one hundred, and then eighty-three samples. By August 2017, my laboratory alone had generated genome-wide data for more than three thousand ancient samples. We are now producing data so fast that the time lag between data production and publication is longer than the time it takes to double the data in the field.

Much of the technology for the genome-wide ancient DNA revolution was invented by Svante Pääbo and his colleagues at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, who developed it to study extremely old samples such as archaic Neanderthals and Denisovans. My contribution has been to scale up the methods to study large numbers of relatively more recent samples, albeit still many thousands of years old. The traditional length of an apprenticeship is seven years, and I began mine in 2007 when I started working with Pääbo on the Neanderthal and Denisova genome projects. In 2013, Pääbo helped me to establish my own ancient DNA laboratory—the first in the United States focused on studying whole-genome ancient human DNA.

My partner in this effort has been Nadin Rohland, who did her own seven-year, 3,748 samples.
The Age of Modern Humans

70,000–550,000 ya
Genetic estimate of population separation between Neanderthals and modern humans

1.8 million years ago

300,000–250,000 ya
Middle Stone Age / Middle Paleolithic Transition

330,000–300,000 ya
Oldest fossils with features shared with anatomically modern humans (Jebel Irhoud, Morocco)

300,000 ya

70,000–50,000 ya
Later Stone Age / Upper Paleolithic Transition

-160,000 ya
"Mitochondrial Eve" Date of the most recent shared ancestor of all present-day humans along the entirely maternal line

350,000 years ago – present

350,000–250,000 ya
Final split from ancestors of chimpanzees

-1.2 million ya
"Lucy," an upright Australopithecus (Awash Valley, Ethiopia)

-1.8 million ya
Fossils of Homo outside Africa (Omou, Georgia)

300,000–250,000 ya
Middle Stone Age / Middle Paleolithic Transition

-350,000 ya
Date of the most recent shared ancestor of all present-day humans anywhere on chromosomes 1–22 (See Figure 5)

7 million years ago

3.2 million years ago

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70,000–550,000 ya
Genetic estimate of population separation between Neanderthals and modern humans

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Summary of DNA evidence

• The ancestors of modern-day Native Americans split from Siberians and East Asians around 25,000 ya, perhaps when they crossed Beringia.

• In some moment, humans separated into two groups: “Southern Native Americans” (a.k.a. Ancestral A lineage) and “Northern Native Americans” (a.k.a. Ancestral B lineage).

• Most likely, there were at least four pulses of migration and several population replacements.

• Special genetic markers in Amazonian Native Americans.

• Next-to-no evidence supporting the Solutrean hypothesis and none that humans evolved independently in the Americas.
Who We Are and How We Got Here

In Search of Native American Ancestors

There were at least two migrations that left a human legacy as far as South America (left) and at least two whose impact was limited to northern North America (right).

1. Split from closest Eurasians -23,000 ya
2. Source of Population Y Timing of entry unknown
3. Migration out of Asia forms the Paleo-Eskimo lineage. ~5,000 ya
4. A final wave from Asia contributes to the Neo-Eskimos and displaces the Paleo-Eskimos. ~1,000 ya

Figure 19
Genetic Evidence of at Least Four Prehistoric Migrations to America
Linguistic evidence
• Around 296 spoken languages north of Mexico.

1. Subtle issue: What is a language? Or, more importantly, what are two separate languages? Language vs. dialect?


3. Let’s look at the sentence: “Our Father who art in heaven, hallowed be thy name.” (Why do we like to pick a well-settled text such as a prayer?).

<table>
<thead>
<tr>
<th>Latin</th>
<th>Galician</th>
<th>Portuguese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pater noster qui es in caelis: sanctificetur nomen tuum</td>
<td>Nosso Pai que estás no ceo santificado sexa o teu nome</td>
<td>Nosso Pai que estás no Céu santificado seja o Teu nome</td>
</tr>
</tbody>
</table>

4. Often filled with contentious political aspects. Example: Serbo-Croatian.
• Languages in North America belonged to 29 families with 27 isolates.

• Diversity was particularly rich in California and Southeast.

• Compare with the Indo-European family.

• Linguistic diversity suggests early (and possibly repeated) settlement.
How do we know?

• We can apply glottochronology to language evolution: Morris Swadesh.

• Swadesh list of 100 and 215 core terms ("one," "two," "three," "mother," "father," "and," "if," ...).
  1. Core terms are highly resistant to change (are "one" and "uno" a change?).
  2. Example: More than 50% of English vocabulary comes from French (Norman invasion of 1066), Latin, and Greek (technical language). However, 96% of English 215 core terms are Germanic (Anglo-Saxon invaders).

• Historical evidence for languages with well-documented records: 14% change per 1,000 years in the 100 terms list and 19% in the 215 list.

• Examples:
  1. Italian and French have 23% unrelated words in the 215 list: that suggests they separated around 1,200 ya (about right).
  2. Spanish and Portuguese: 15%, suggest they separated around 750 ya (again, about right).

• More sophisticated equations (Sankoff and Embleton).
North America on the eve of contact
Let us now focus on North America before the Europeans’ arrival (Post-Classical stage).

We are skipping a rich history of change and evolution (Clovis, Archaic, Formative, Woodland, and Classical stage).

Around 5 million Native Americans north of Mexico in 1492, although estimates are subject to huge uncertainty bands.

Also, some evidence that the population was falling already before European’s arrival:

1. DNA.

2. Archeological evidence suggests several cultures were in decline (Cahokia, Hohokam, ...).

Ecological stress? Climate change?
Human presence had deeply shaped the environment of North America:

1. Megafauna extinction.
2. Annual fires.

A prominent example: coastal California.
Euceratherium
Cultural areas
We need to make a brief detour on Mesoamerica. Why?

More sophisticated agricultural polities.

1. Adoption of maize after its domestication around 9,000 ya (derived from teosinte in Southern Mexico).

2. Aztec Empire is perhaps the most famous.

3. Many others: Olmecs, Toltec, ...

4. An impressive site: Teotihuacán with the Avenue of the Dead and the Pyramid of the Moon.
Teotihuacán
Political economy structures II: North America

- Intermediate level of transition to agriculture.

- Two main examples of sophisticated political economy structures in current-day U.S.:
  1. Mississippian culture.
  2. Ancestral Pueblo in the Southwest.

- “Complex” hunter-gatherers groups of the Pacific Coast, Great Plain, and Northeast with some degree of cultivation (not always centered around corn such as the Adena culture; early examples of tobacco; Chumash’s fishing).

- Ecological stress in some areas combined with more sustainable situations in others.

- Also, societies were dynamic and changing over time, with some groups growing and some groups shrinking. Think about Cherokee’s expansion in the 17th century.
The Mississippian culture, I

- Starts around 800 CE:
  1. Bow and arrow (0 CE, slow diffusion).
  2. Corn cultivation.
- Settlements around platform mounds.
- Beyond corn, cultivation of marsh elder, goosefoot, sunflowers, and gourds.
- Widespread trade networks: copper, pottery, ...
Monks Mound
The Mississippian culture, II

- Sophisticated societies:
  1. Chieftains and social hierarchies.
  2. Settlement hierarchies.
  3. Craft specialization.
  4. Monumental architecture (with human sacrifices).


- Other examples: Moundville (AL), Etowah (GA), and Spiro (OK).

- Rich iconography, ceremonies, and mythology: Southeastern Ceremonial Complex.

- Despite serious decline, still highly sophisticated when De Soto arrives (1539-1543 CE).
The Southwest Culture

- Two periods (Basketmakers, 1500 BCE-750 CE and Pueblo, 750 CE-) and multiple subgroups.
- Two arrivals of corn (2100 BCE and 100 BCE). Only second arrival stucked.
- Arrival of squash and beans. Together with corn, they form the “three sisters”:
  1. Corn provides calories.
  2. Beans fix nitrogen.
  3. Squash’s shade keeps humidity.
- Highly cooperative societies with sophisticated apartment buildings and irrigation systems.
- For example, you can still see some of the canals built by the Hohokam in Phoenix today.
- Trade networks with the rest of North America.
Area of original English settlement:

1. New England and Mid-Atlantic mainly controlled by Algin (Algonquian-Ritwan) and Iroquoian nations.

2. South: Siouan and Muskogean nations, with some presence of Algin and Iroquoian nations.

Mississippian culture is somewhat more inland.

Recall that Georgia, Florida, and North Carolina were “late” early colonies.
Algic nations
Iroquoian nations
Siouan nations
Iroquois vs. Algonquian

- Iroquois Confederacy (Haudenosaunee) of five nations (Mohawk, Oneida, Onondaga, Cayuga, and Seneca) formed between 1440-1660 CE.

  1. Probably created after migration of several groups from the south. When?
  2. Appreciated by European settlers as a sophisticated political structure: “Great League of Peace.”
  3. Very successful militarily.

- Iroquois Confederacy in constant conflict with Algonquian:

  1. Control of the Saint Lawrence River.
  2. Expansion into Ohio country and fur access.

- Usually, Iroquois allied with Dutch and British, Algonquian with French.

- Beaver Wars (1609-1701).
The economy

• The Southeast had moved more toward agriculture, Northeast and Mid-Atlantic, in general, less.

• Range of cultivation vs. domestication.

• Main contrast:
  • Algonquians: seasonal economy with mobile villages.
  • Iroquois: corn only started to be cultivated around 1000 CE. Change in settlements, pottery, and gender roles (matrilinear).

• Nevertheless, by 1607, it is likely that Native Americas in the East Coast had been already deeply influenced by the arrivals of Europeans in other parts of the Americas.

• Mechanisms: diseases, trade, new animals, dislocations, ....

• Clearest example: Epidemic among Native Americans, New England, 1616-1619, right on the eve of the arrival of English settlers has decimated the Wampanoag.
Longhouses
John White’s painting of Algonquian in North Carolina
Early contacts
As mentioned before, Solutrean hypothesis about the origins of the Clovis culture by Dennis Stanford and Bruce Bradley is minority among archaeologists.

We know, however, that Norsemen had settled in L’Anse aux Meadows (Newfoundland) around 1000 CE.

Perhaps some localized interaction by Atlantic fishermen (who did not realize they might have encountered a new continent).

The effects of climate change were probably considerable.

Contacts through Alaska? Venetian glass beads before 1492?

Other histories of early contacts are fanciful.
The Vikings' Voyage to the New World

- **850**
  - c. 874: The Norse colonize Iceland.

- **950**
  - c. 960s: Erik the Red's father is banished from Norway to Iceland.

- **960**
  - c. 986: Erik the Red, banished from Iceland, colonizes Greenland.

- **970**

- **980**

- **990**

- **1000**
  - c. 1000: Vikings reach Newfoundland and possibly points further south.
Some additional references
THE GREAT PALEOLITHIC WAR

How Science Forged an Understanding of America’s Ice Age Past
1491
NEW REVELATIONS OF THE
AMERICAS BEFORE COLUMBUS

CHARLES C. MANN

WITH A NEW AFTERWORD