

# Pre-Columbian North America

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Jesús Fernández-Villaverde<sup>1</sup>

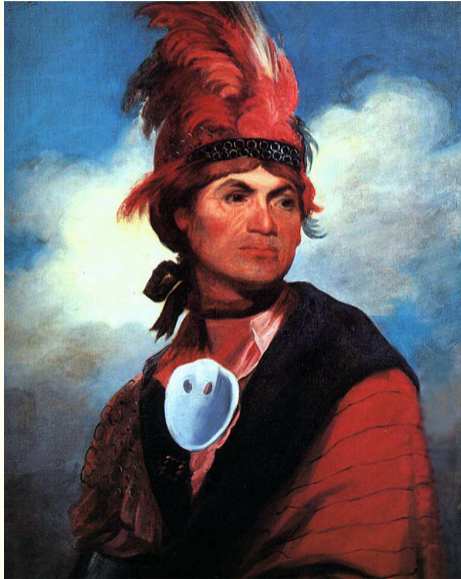
September 14, 2023

<sup>1</sup>University of Pennsylvania

# 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

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# A PREHISTORY OF NORTH AMERICA



MARK Q. SUTTON

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# FIRST PEOPLES IN A NEW WORLD

COLONIZING ICE AGE AMERICA



DAVID J. MELTZER

# 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** and his students at the University of Chicago).
- 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 and likely human footprints in White Sands National Park from 21,000 to 23,000 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







# Meadowcroft Rockshelter





# White Sands National Park



# 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

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## DNA evidence

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**WHO WE ARE  
AND HOW WE  
GOT HERE**

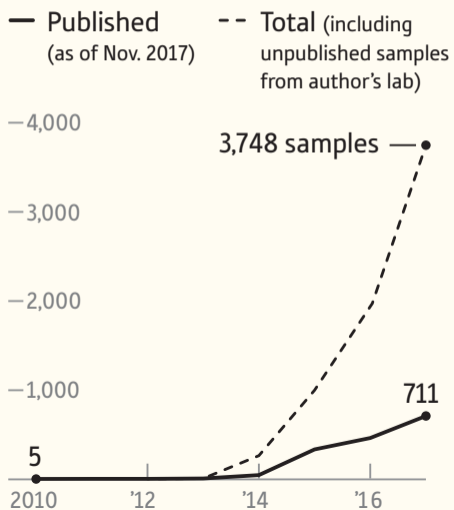
**ANCIENT  
DNA AND THE  
NEW SCIENCE  
OF THE  
HUMAN PAST**

**DAVID  
REICH**

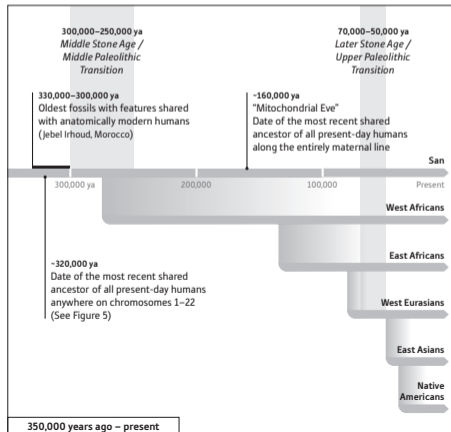
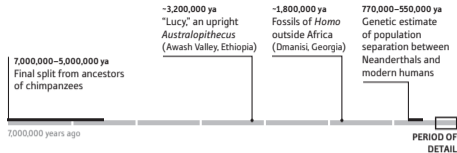
"If you want to understand our origins over the course of the last 100,000 years, this book will be the best up-to-date account for you."

— JARED DIAMOND,  
*THE NEW YORK TIMES BOOK REVIEW*

## Cumulative number of samples with whole-genome data generated since 2010



## The Age of Modern Humans



"Jennifer Raff is incredibly knowledgeable, eloquent, and thoughtful, with a peerless grasp of both the complicated science of this exciting field and its difficult ethics." —Ed Yong, *New York Times*  
bestselling author of *I Contain Multitudes: The Microbes Within Us and a Grand View of Life*

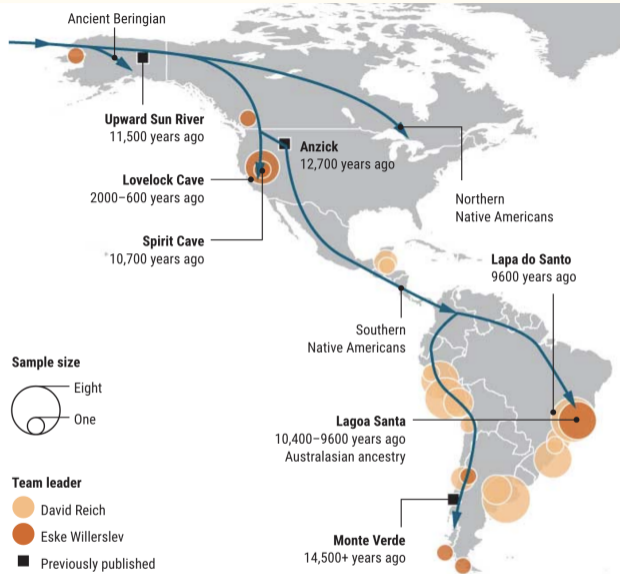
# Origin

A Genetic History  
of the Americas

Jennifer Raff

## 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.



(MAP) C. POSTH ET AL., *CELL*, 175 (2018) ADAPTED BY J. YOU/*SCIENCE*; (DATA) J. MORENO-MAYAR ET AL., *SCIENCE* 10.1126/*SCIENCE*.AAV2621

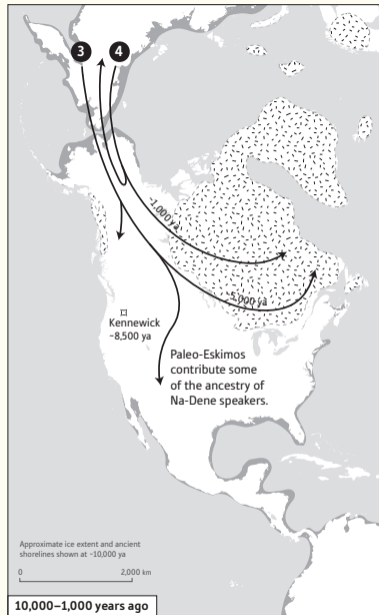


**Figure 19**  
**Genetic Evidence of at Least Four Prehistoric Migrations to America**

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



## Linguistic evidence

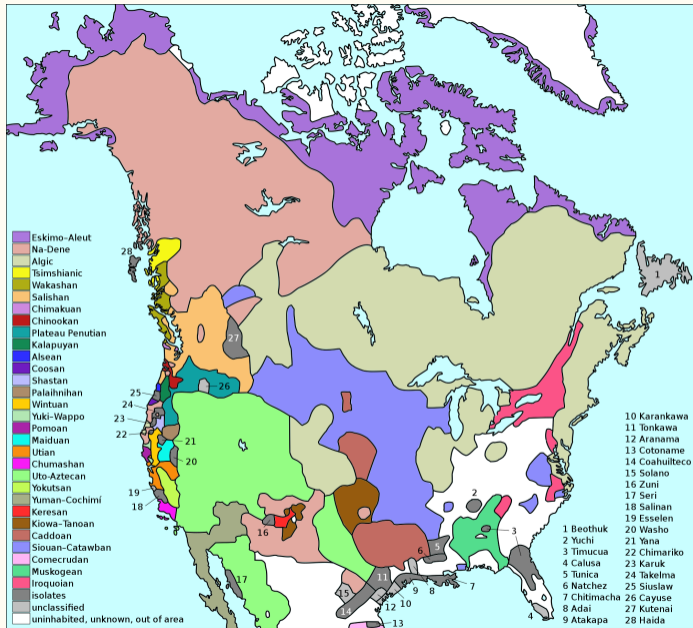
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- Around 296 spoken languages north of Mexico.
  1. Subtle issue: What is a language? Or, more importantly, what are two separate languages? Pluricentric languages; language vs. dialect; dialect continuum.
  2. Example: Are Castilian Spanish and Mexican Spanish two separate languages? Brazilian Portuguese and European Portuguese? Galician and Portuguese? Mutual intelligibility is a tricky concept.
  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?).

Latin	Galician	Portuguese
Pater noster qui es in caelis: sanctificetur nomen tuum	Noso Pai que estás no ceo santificado sexa o teu nome	Nosso Pai que estás no Céu santificado seja o Teu nome

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 likely repeated) settlement.



# How do we know?

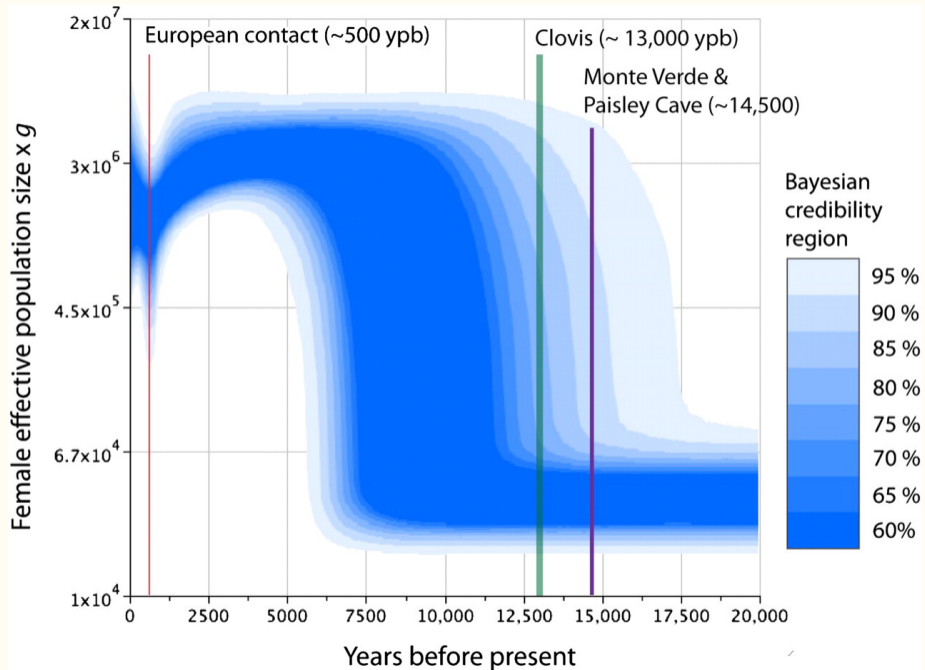
- We can apply glottochronology to language evolution: **Morris Swadesh**.
- Swadesh list of 100 and 215 core terms (“one,” “two,” “three,” “mother,” “father,” “and,” “if,” ...).
  1. Core terms are highly resistant to change (are “one” and “uno” a change?).
  2. Example: More than 50% of English vocabulary 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**

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# North America I

- 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.
  3. Plant selection.
- A prominent example: costal California.

# Euceratherium



# Cultural areas



## Political economy structures I: Mesoamerica

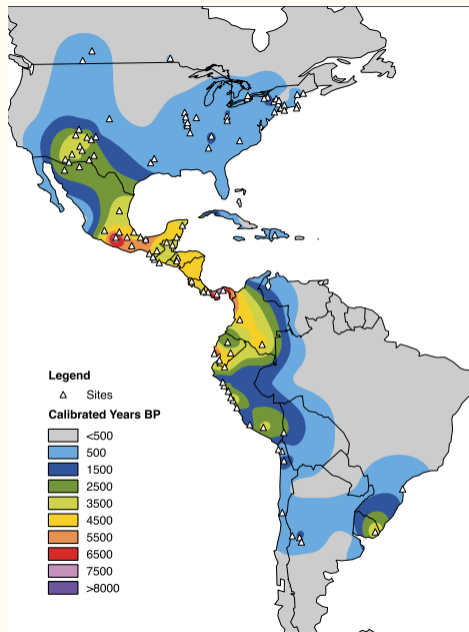
- We need to make a brief detour on Mesoamerica. Why?
- It is the area north of the Isthmus of Panama with the most sophisticated agricultural polities.
- Key development: Adoption of maize (*Zea mays* ssp. *mays* L.) after its domestication around 9,000 ya in the Balsas river region (modern day states of Guerrero and Michoacán, in west-central Mexico).
- Derived from teosinte, a grass plant with sweet kernels.
- High genetic flexibility allows for fast adaption.
- Maize is one of the most successful human crops (third world producer of calories after wheat and rice).
- Also, important source for alcohol (maize beer, bourbon).

## From teosinte to maize









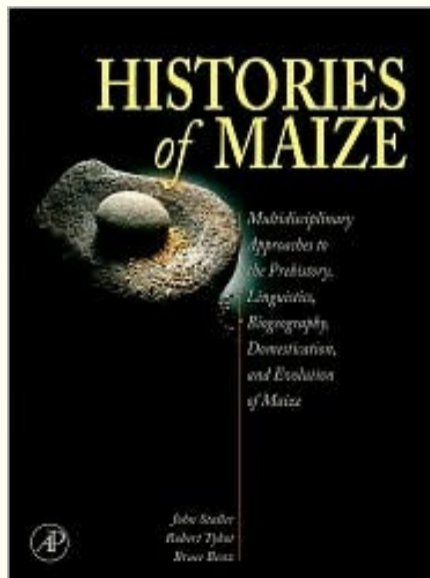


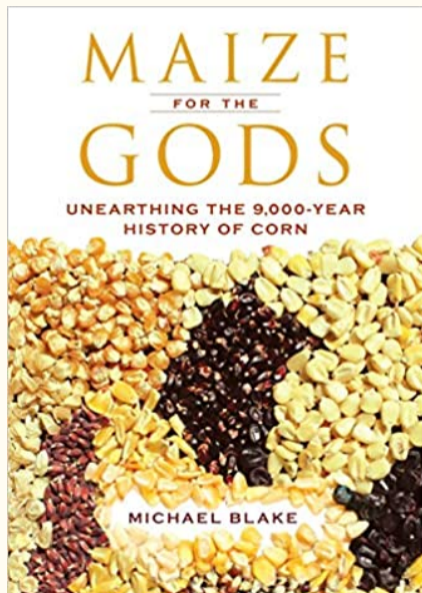
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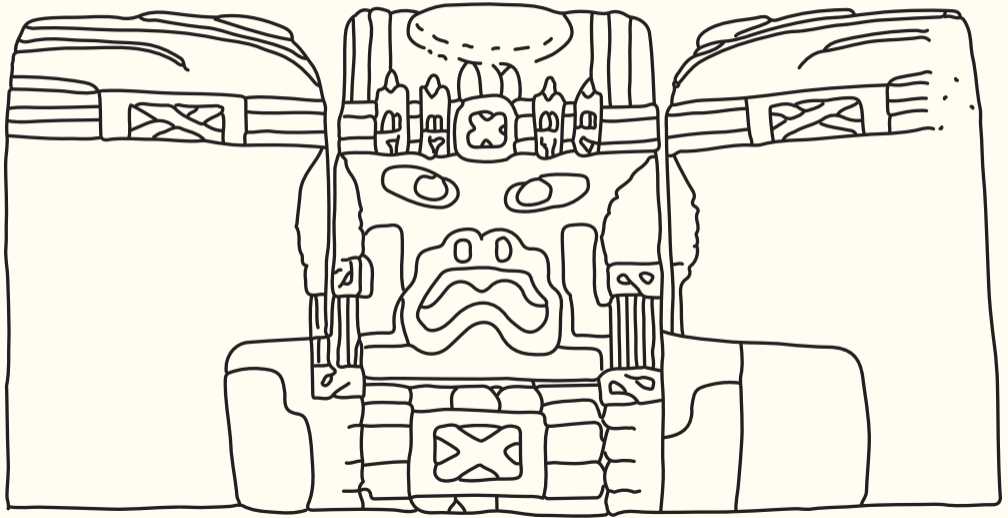
## Political economy structures I: Mesoamerica

- Adoption and diffusion of maize leads to a deep political-economic transformation of the area.
- Aztec Empire (a.k.a. the Triple Alliance ) is perhaps the most famous outcome.
- But there are many previous structures: Olmecs, Toltec, ...
- An impressive site: Teotihuacán with the Avenue of the Dead and the Pyramid of the Moon (although we know surprisingly little about the inhabitants of Teotihuacán!).
- All of these sites show the deep relation of the local peoples with maize.

# Teotihuacán



# The Olmec Maize God



## 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 maize 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  
ECOLOGICAL  
INDIAN

*Myth and History*

SHEPARD KRECH III



# The Mississippian culture, I

- Starts around 800 CE:
  1. Bow and arrow (0 CE, slow diffusion).
  2. Maize cultivation.
- Settlements around platform mounds.
- Beyond maize, cultivation of marsh elder, goosefoot, sunflowers, and gourds.
- Widespread trade networks: copper, pottery, ...



# Monks Mound





# FEEDING CAHOKIA

Early Agriculture in the North American Heartland



GAYLE J. FRITZ

# The Mississippian culture, II

- Sophisticated societies:
  1. Chieftains and social hierarchies.
  2. Settlement hierarchies.
  3. Craft specialization.
  4. Monumental architecture (with human sacrifices).
- Most famous city: Cahokia (1050-1200 CE; IL). Population 10k-15k.
- 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).

# Cahokia





*"Mesmerizing."—Salon*

# CAHOKIA

Ancient America's Great City  
on the Mississippi

TIMOTHY R. PAUKETAT



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# The Southwest culture

- Two periods (Basketmakers, 1500 BCE-750 CE and Pueblo, 750 CE-) and multiple subgroups.
- Two arrivals of maize (2100 BCE and 100 BCE). Only second arrival stuck.
- Arrival of squash and beans. Together with maize, they form the “three sisters”:
  1. Maize 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.









- Rich variety of groups.
- Particularly interesting → Chumash people:
  1. Lived around modern-day San Luis Obispo, Santa Barbara, Ventura and Los Angeles counties.
  2. Sophisticated economy based on boat building, fishing, and trading.
  3. Monetary system based on pierced shells.



THE CHUMASH WORLD  
AT EUROPEAN CONTACT

Power, Trade, and Feasting  
Among Complex Hunter-Gatherers

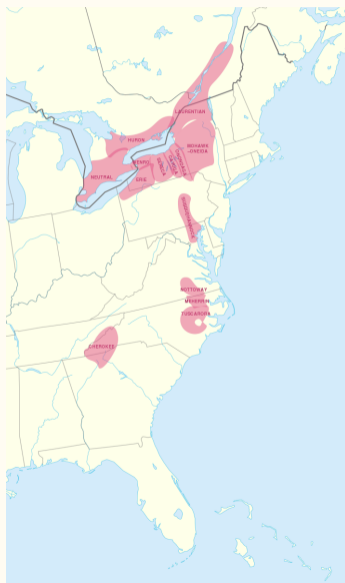
Lynn H. Gamble

- 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

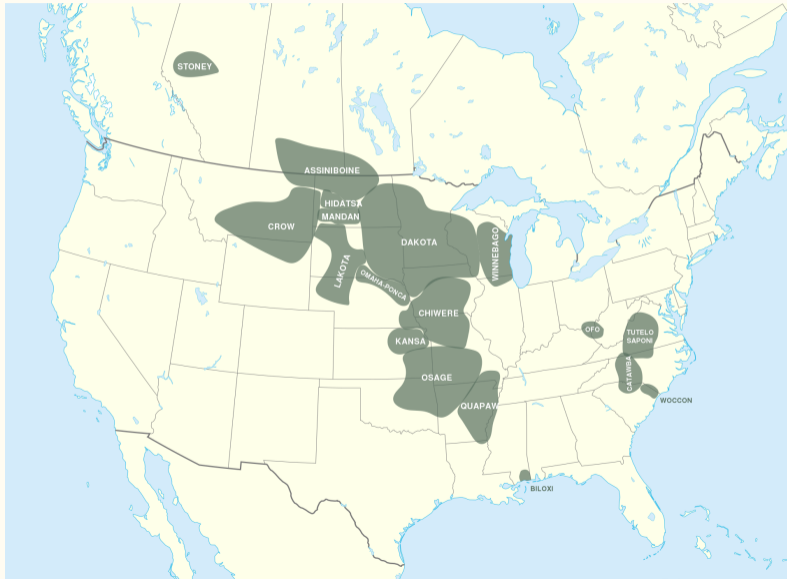


# Iroquoian nations

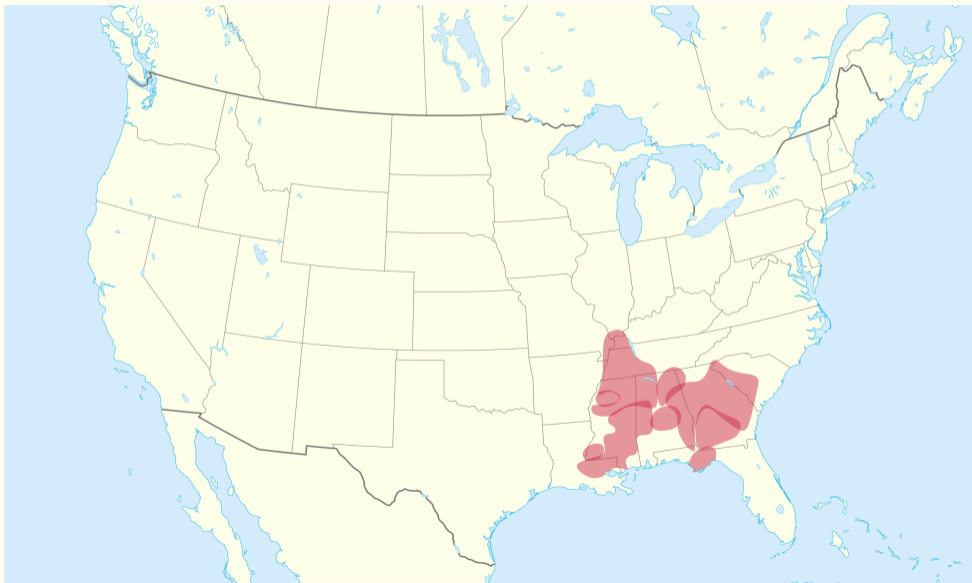




# Siouan nations

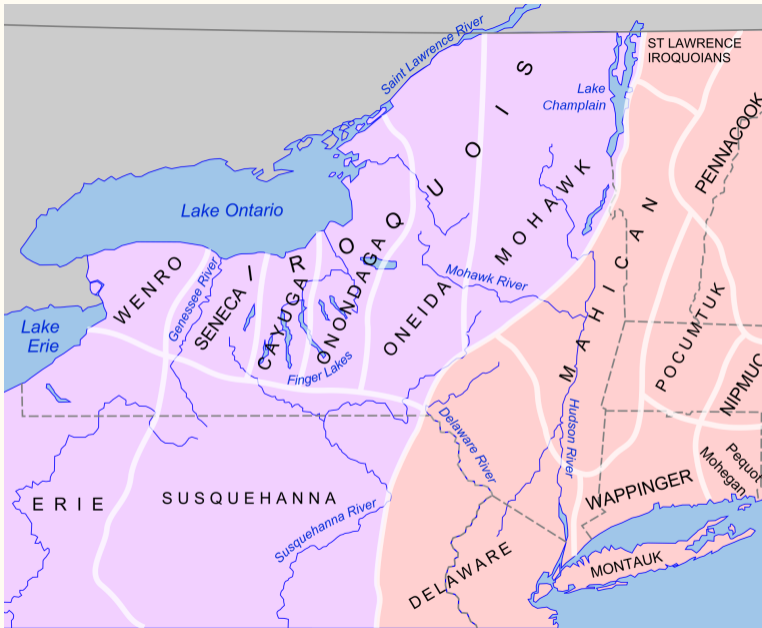


# Muskogean nations



## 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 as 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).



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**IROQUOIS  
DIPLOMACY**  
ON THE  
**EARLY AMERICAN  
FRONTIER**



**TIMOTHY J. SHANNON**





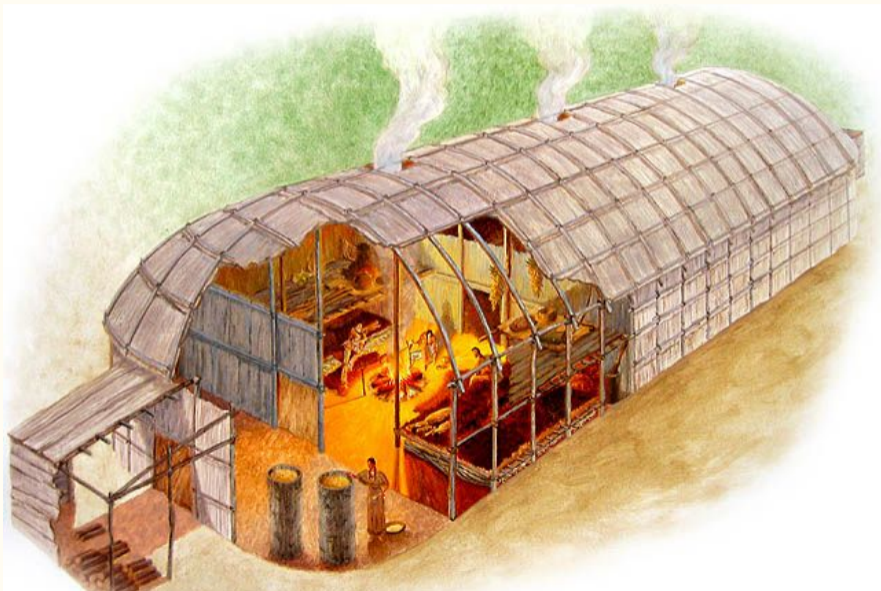
- The Southeast had moved more toward agriculture, Northeast and Mid-Atlantic, in general, less.
- Range of cultivation vs. domestication.
- For example, maize already consumed in the subarctic boreal forest in Canada 500 CE. Systematic cultivation? Occasional cultivation? Trade? Gifts?
- Likely that the frontier of systematic maize cultivation was around the current Canada-U.S. frontier.
- We do not want to think about hunter-gathering vs. agriculture as sharp divisions. Even today, most farmers do some hunter-gathering (hunting, fishing, ...).

## The economy, II

- Persistent differences at least since 300 years before European's arrival.
- Main contrast:
  - Algonquians: seasonal economy with mobile villages.
  - Iroquois: maize only started to be cultivated regularly 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







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FACING EAST *from*  
INDIAN COUNTRY

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A NATIVE HISTORY OF EARLY AMERICA

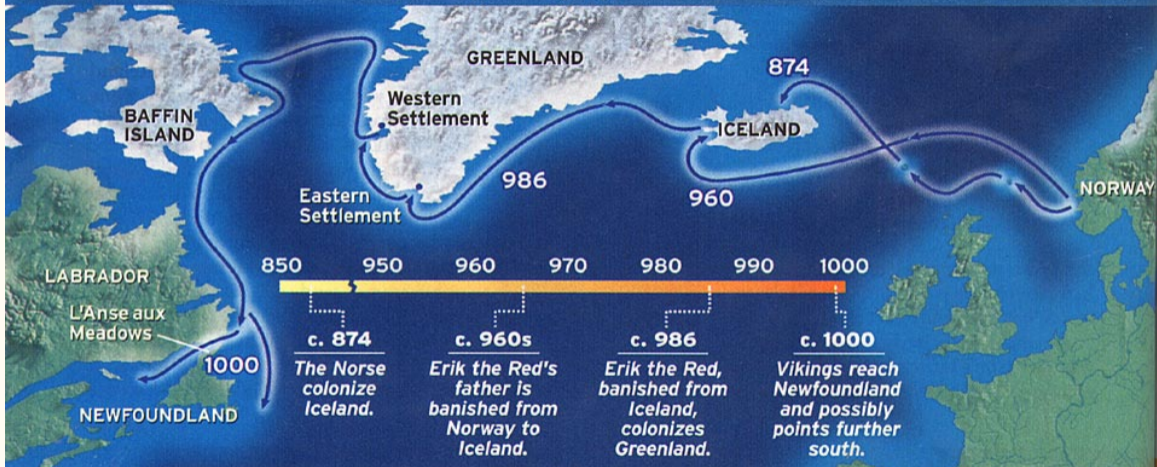
## Early contacts

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## Before 1492 CE

- 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 realized 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.

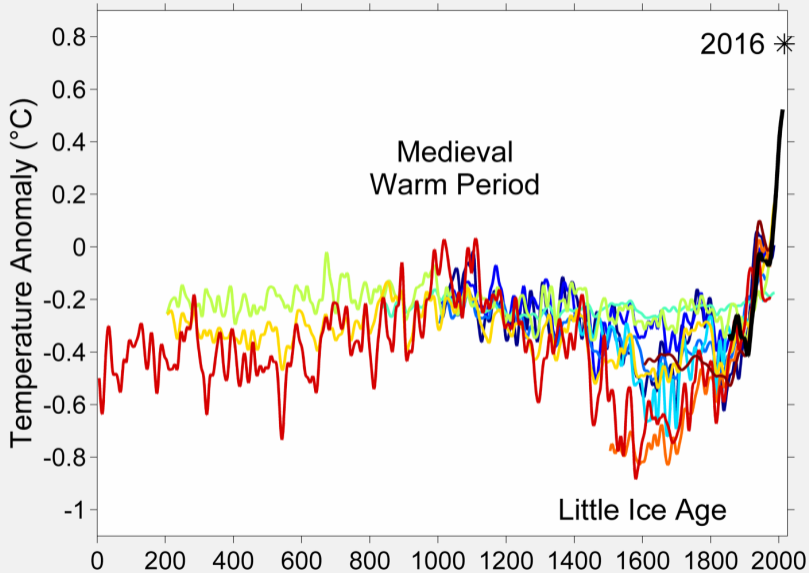
# The Vikings' Voyage to the New World

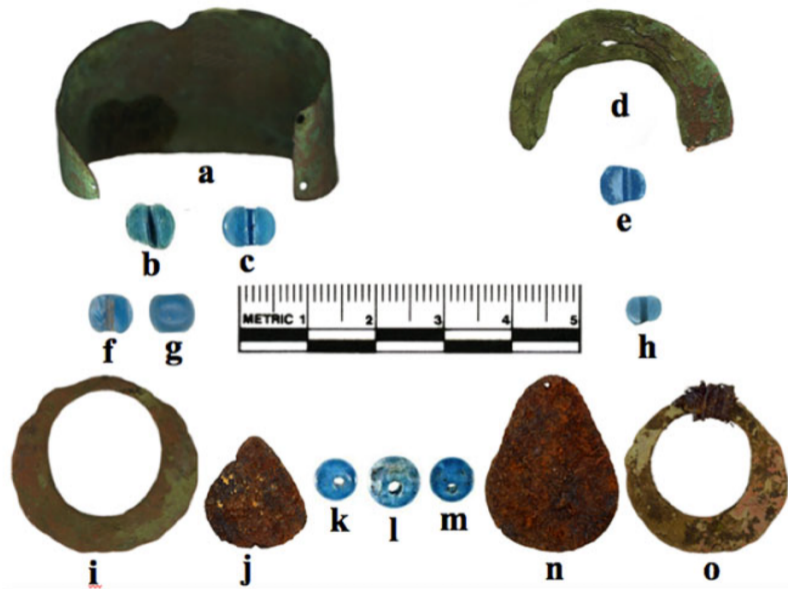






# Reconstructed Temperature





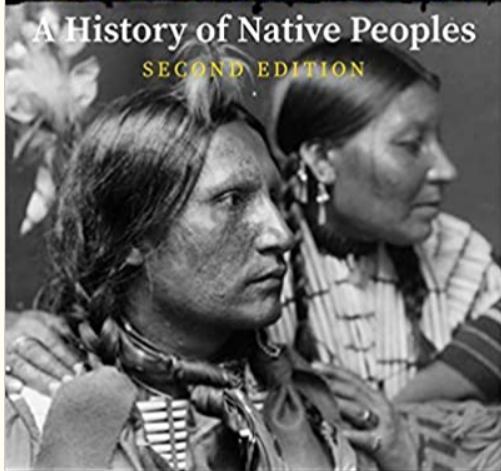
## Some additional references

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# First Americans

A History of Native Peoples

SECOND EDITION



Kenneth W. Townsend



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DAVID J. MELTZER

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# THE GREAT PALEOLITHIC WAR

*How Science Forged  
an Understanding of  
America's Ice Age Past*



NATIONAL BESTSELLER

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—*The New York Times Book Review*

# 1491

NEW REVELATIONS OF THE  
AMERICAS BEFORE COLUMBUS



CHARLES C. MANN

WITH A NEW AFTERWORD