Foundations of American Geography

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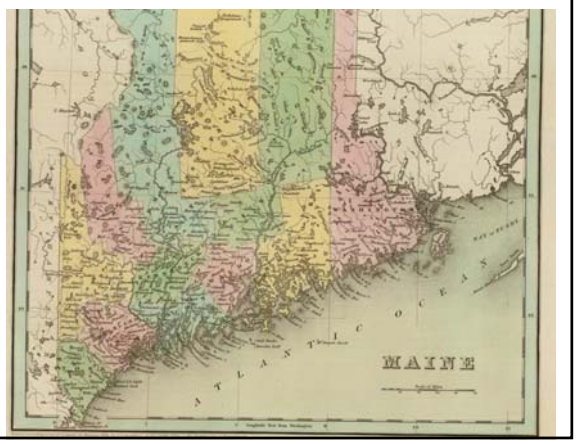
Some introductory story-lines

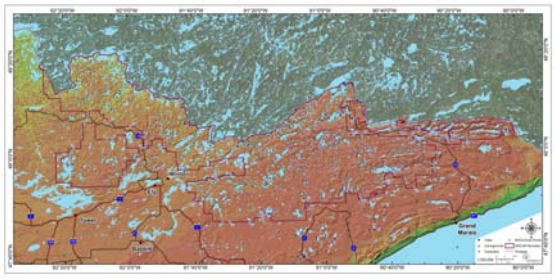
- **Challenging problems in cartography and surveying.**
- **Exploration and empire, American style.**
- **Telling America's geography.**
- **Inherited (and/or transplanted) European practices and perspectives.**
- **Institutionalization.**
- **The development of American academic lineages.**

Mitchell Map, ca. 1755
Used to help draft the Treaty of Paris

The Definitive Treaty of Peace, 1783, defined the boundary between the United States and British North America as consisting of, in part, the St. Croix River (which now separates Maine and New Brunswick) and "the most common water route" from Lake Superior to Lake of the Woods. But . . .

- **Which river was the St. Croix? There were so many, and they had different names.**
- **What was "the most common route" from Lake Superior to Lake of the Woods?**





The Process of Boundary Making

- **<u>Definition</u> – formal agreement (preferably in writing) between the parties concerning where a boundary should be.**
- **<u>Delimitation</u> – plotting the definition on maps (which ideally are detailed, accurate and alike) to facilitate actual location of the boundary.**
- **<u>Demarcation</u> – placing physical marks on the earth to show a boundary's precise location.**
- **<u>Administration</u> – establishment of processes between the parties to maintain the boundary.**

The Mason-Dixon Line

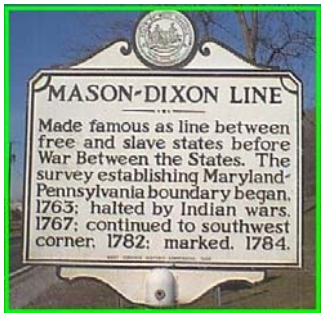
(Latitude 39° 43' North)

<u>The Mason-Dixon Line</u> is the border between Maryland and Pennsylvania (Lat. 39° 43' 20"). Most of it was surveyed between 1763 and 1767 by Charles Mason and Jeremiah Dixon to resolve property disputes between what were then the two colonies.

It later became the unofficial dividing line between "The North" and "The South."

Significant to the history of geography because it was the world's first latitudinal border to be demarcated on the Earth's surface.

Somewhere on the border between Maryland and Pennsylvania



To help mark the Mason-Dixon Line, "crownstone" markers were placed on it every fifth mile.

The markers bore the coat of arms of the Calvert family on the side facing Maryland, and the coat of arms of William Penn on the side facing Pennsylvania.

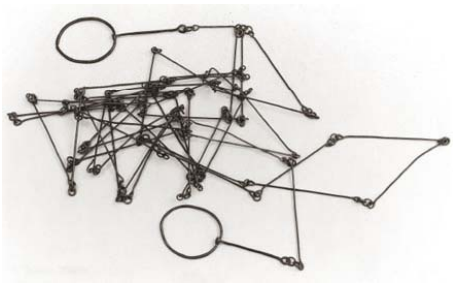
Modern survey crew

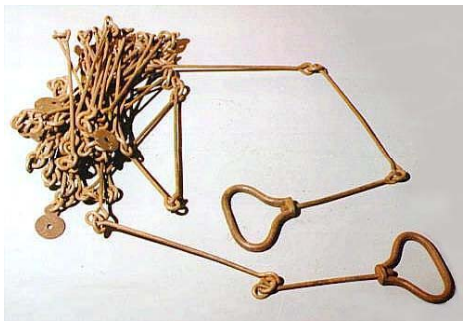
All female survey crew, 1918

Clockwise from right: Compass with eye-sights; Wye level; Transit; Theodolite

U.S. Colonial Era Surveying

Surveyor's chain displayed at Colonial Williamsburg

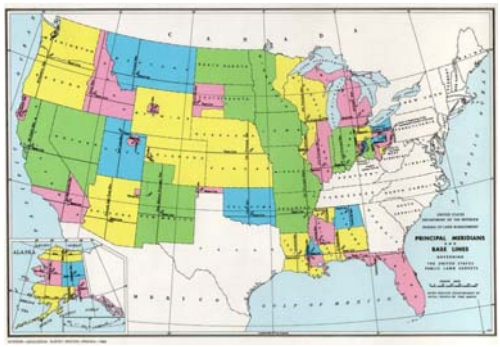


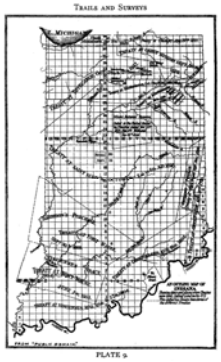


Surveyor's Measuring Wheel

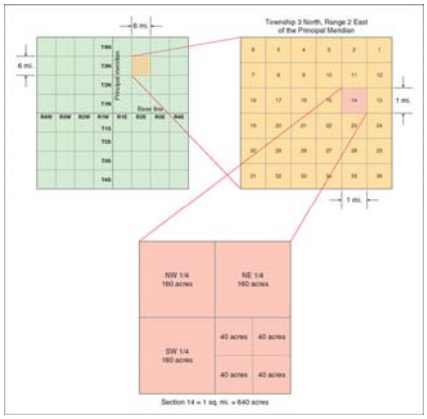
A Zenith Sector

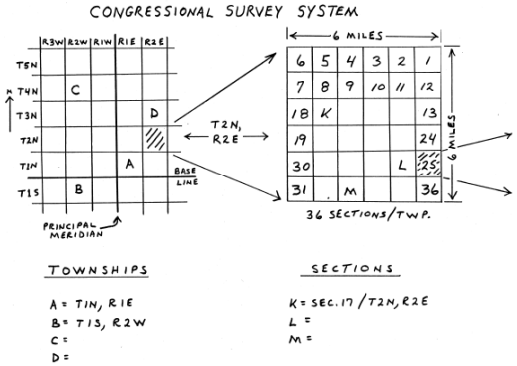
- **Any one of several devices once used by surveyors to determine their latitude by calculating the angular elevation of celestial objects.**
- **The one shown, some 12 feet tall, is the type used by Mason and Dixon.**

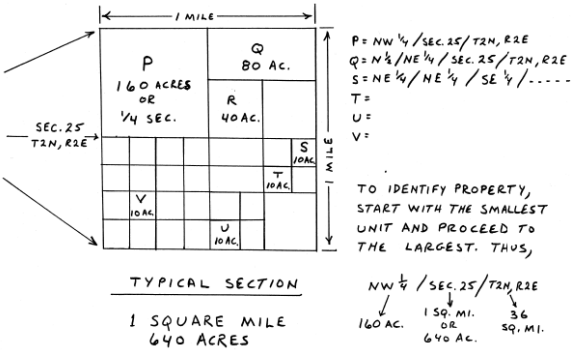


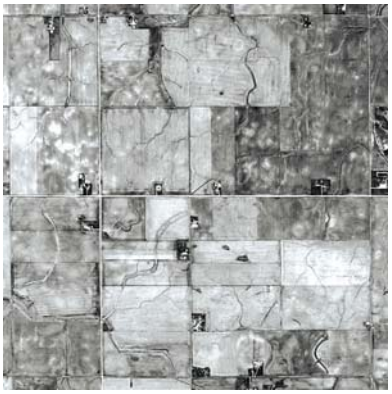


Township boundaries in Indiana









Surveyor and Chainman

about 1870

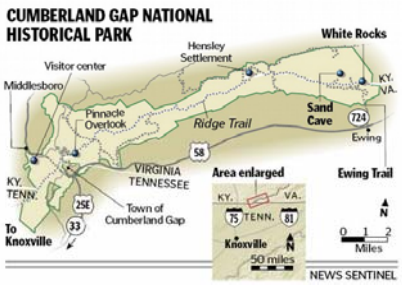
Surveyor's encampment

American Counterparts to European Exploration

- **Daniel Boone (1775+)**
- **Lewis and Clark (1804-06)**
- **John Wesley Powell (1869)**

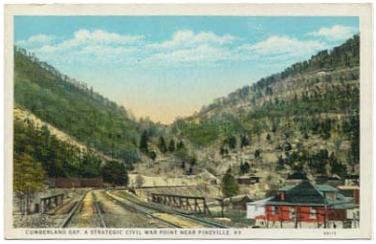
Daniel Boone
(1734-1820

- **American frontiersman and explorer.**
- **Famous for his 1775 trailblazing of the Wilderness Road westward through the Cumberland Gap, the first significant means of crossing the Appalachian Mountains.**
- **Connected the 13 colonies with what is now Kentucky, and beyond.**
- **By the year 1800 an estimated 200,000 people of European ancestry had used the Road to settle west of the mountains, arguably marking the first great expansion of the frontier.**



"Cumberland Gap" (1872)

Undated Cumberland Gap Postcard

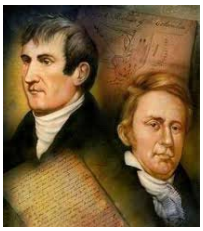


"Daniel Boone Escorting Settlers Through the Cumberland Gap" by George Caleb Bingham, 1851-52

The Lewis and Clark Expedition:
The first transcontinental expedition to the West Coast of North America through what would become the United States.

Commissioned by President Thomas Jefferson

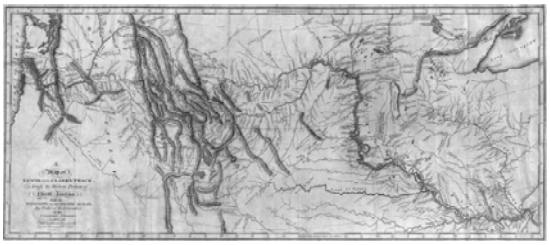
Meriwether Lewis (1744-1809)
and William Clark (1770-1838)
and The Corps of Discovery



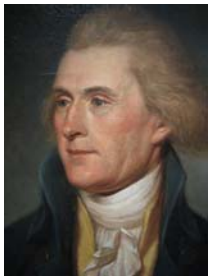
Sacagawea (1788-1812)

with Lewis and Clark

Lewis and Clark's Expedition Map



Thomas Jefferson (1743-1826)



- **President of the United States, 1801-09.**
- **Sponsor of the Lewis and Clark Expedition, and thusly a patron of scientific travel.**
- **Sought to "reduce myth to map." (Livingstone)**
- **"The Father of American Geography"?**

Alexander von Humboldt

(1769-1859)

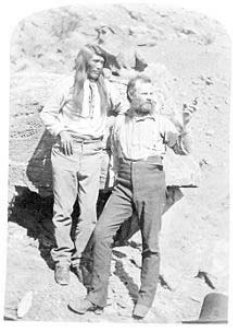
"The greatest scientific traveler who ever lived."

-- Charles Darwin

Portrait by
F.G. Weitsch, 1806

John Wesley Powell
(1834-1902)

- U.S. soldier, geologist and explorer of the American West.
- Lost most of his right arm at the Battle of Shiloh (1861).
- Most famous for his 1869 Powell Geographic Expedition, which explored the Colorado River and some tributaries -- considered the southwestern equivalent of the Lewis & Clark expedition.
- Director of the U.S. Geological Survey, 1881-94.
- Proposed far-sighted policies for the development of the arid southwest.



Powell with Paiute guide, 1870-71

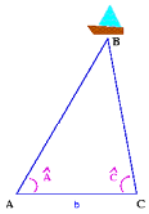
(a very poor copy of) Powell's Map of the Grand Canyon, 1873

The Powell Expedition on the Colorado River, Grand Canyon, 1869

Ten men (on four boats) who had no idea of what they were getting into.

United States Geological Survey

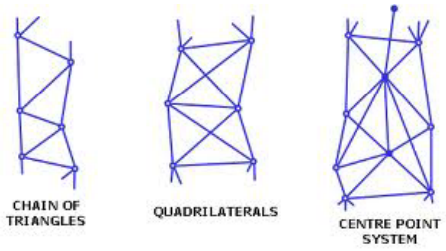
- A scientific agency of the U.S. government created in 1879 to inventory and survey public lands.
- It is today a national fact-finding organization – focusing on geology, geography, hydrology and biology – with no regulatory responsibilities.
- Produces highly accurate maps of the United States at various scales.
- Its work also includes the monitoring of earthquakes, water quality, volcanoes, river levels, wildlife health, climate change, and other Earth-related matters.



Triangulation is the process of determining the location of a point (B) by measuring angles to it from known points (A and C) at either end of a fixed baseline (b) of known length.

The basic geometric principles go back to the time of Thales.

Three types of land survey using triangulation



USGS Seismic Monitoring Equipment

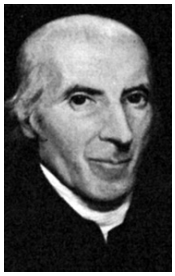
John Bartram
(1699-1777)

- **American botanist, explorer and horticulturalist who travelled extensively throughout the then-colonies and beyond to collect plants.**
- **His activities generally predate and are rather akin to those of the European naturalists who accompanied Capt. Cook and other "scientific voyagers."**
- **By virtue of his writings and contacts with European counterparts, he became known as the "Father of American Botany.'**

From John Bartram's "Travels on the St. John's River, 1765-1766"

(which he did by dugout canoe)

Jedediah Morse
(1761-1826)



- American pastor and educator.
- As a young teacher he became convinced of the need for a grade-school geography textbook focusing on the young nation.
- Authored a thin volume, *Geography Made Easy* (1784), and, later, a weightier and highly successful *American Geography* (1789), which went through several editions.
- Despite having no formal geographic education, being poorly travelled, and publishing books largely based on the works of others, he is often called "the Father of American Geography" by virtue of his publications.
- Father of Samuel F. B. Morse.

Manifest Destiny – the 19th century American belief that the United States was destined by divine Providence to expand across the continent from the Atlantic Ocean to the Pacific.

Coined in 1846 by John L. O'Sullivan, an influential columnist, to justify acquisition of Texas and the Oregon Territory, among other things.

Concept was also used to justify the Mexican War and displacement of Native Americans.

John L. O'Sullivan (1813-1895)
(sketched 1874)

"American Progress"
by John Gast (1872)
Columbia, a personification of the U.S., leads civilization westward, carrying a school book and stringing telegraph wire

Arnold Henry Guyot
(1807-1884)

- Influential Swiss-born American geologist and geographer.
- Received his doctorate in 1835 at the University of Berlin, where he was strongly influenced by the teleological writings and lectures of Karl Ritter.
- Emigrated to the U.S. in 1848; taught geology and physical geography at Princeton University until his death.
- Remained a teleologist who everywhere in nature saw the design of a Creator.

"The Creator has placed the cradle of mankind in the midst of the continents of the North . . . and not at the centre of the tropical regions, whose balmy, but enervating and treacherous, atmosphere would perhaps have lulled him to sleep, the sleep of death in his very cradle."

-- Arnold Guyot

Matthew Fontaine Maury
(1806-1873)

- U.S. naval officer, astronomer, cartographer, meteorologist, oceanographer . . .
- Known for his authoritative publications and charts concerning ocean currents and winds.
- His *Physical Geography of the Sea* (1855) was the first book on oceanography ever published.
- Exhaustive data collection and comparison led him to view the relationship between physical phenomena as evidence of divine providence.

". . . he who undertakes to study [the sea] . . . will begin to perceive the developments of order and evidences of design which make it a most beautiful and interesting subject of contemplation."

-- Matthew Maury

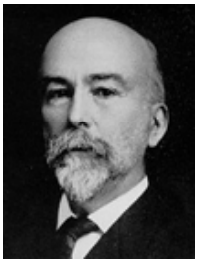
Louis Agassiz
(1807-1873)

- Swiss paleontologist and geologist who became "the father of glaciology."
- A staunch teleologist who rejected Darwinian evolution, but also espoused rigorous techniques of investigation and field work.
- Came to the U.S. (1846, and became a professor at Harvard in 1847.
- Made important contributions to knowledge of the ice age in North America, and to its zoologic history.

An **academic lineage** is a network of teacher-student relationships in which a professor mentors graduate students who, upon becoming professors themselves, mentor their own graduate students, and so forth. A possible result is that the ideas, concepts and methods championed by academic ancestors are passed down over the academic generations, influencing the course of the discipline long after the ancestor retires.

Nathaniel Shaler
(1841-1906)

- American paleontologist and geologist who studied at Harvard under Louis Agassiz.
- Served on the faculty at Harvard for nearly 40 years.
- Originally a creationist out of deference to Agassiz, but became a Darwinist after his own academic position was secure.
- Became a mentor to several important academics, including William Morris Davis.
- Adopted an extreme form of Social Darwinism that led him to be an apologist for slavery and staunch believer in Anglo-Saxon superiority.



William Morris Davis
(1850 – 1934)

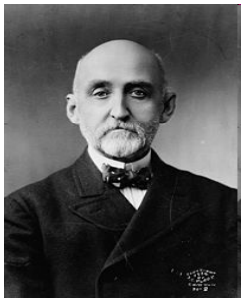
Harvard Professor of Geography
Founder and first president of A.A.G. (1904) and N.C.G.E. (1915)

Strong promoter of geographic education at all levels

"Father of American Geography"

Famous for work in geomorphology, especially the *cycle of erosion*

Alfred Thayer Mahan (1840-1914)



- U.S. naval admiral and geo-strategist.
- Viewed control of the seas as essential to peacetime commerce and wartime success.
- Importance of straits.
- Proposed containment.
- Ideas sharply contrasted with those of Halford Mackinder.

Ellen Churchill Semple (1863-1932)

- Arguably the most famous woman in the history of American geography.
- Proponent of environmental determinism.
- Author of major works, including "American History and Its Geographic Conditions" and "Influences of Geographic Environment"
- Often referred to in her time as "Miss Semple" since she never married or earned a doctorate.

Ellsworth Huntingdon

(1876 – 1947)
Professor of Geography at Yale
A.A.G President, 1923

Famous (infamous?) for work on climatic determinism and economic geography

Strong proponent of environmental determinism

Works include *Civilization and Climate* (1915) and *Mainsprings of Civilization* (1945)

Environmental determinism is the belief the physical environment – especially climate – determines culture.

Probablism is a "watered-down" version of environmental determinism. Like determinism, it views the physical environment as the driving force in human life, but not to the point of being totally deterministic.

Possibilism is the belief that a given physical environment offers a number of possible ways for a culture to develop, and that the ultimate choice will be guided by one or more social factors, particularly cultural heritage.