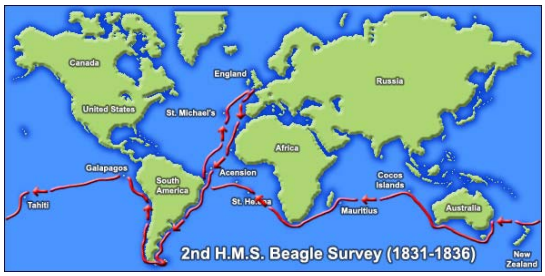
Vice-Admiral Robert FitzRoy (1805 – 1865)

Captain of HMS Beagle

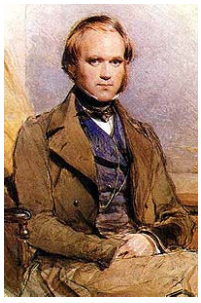
Chile



Mount FitzRoy
Los Glaciares National Park, Argentina

Charles Darwin

(1809-1882)



- **English naturalist famous for his 1859 book *On the Origin of Species*, which argues that life forms evolve from common ancestors by the process of natural selection.**
- **Largely based on data he collected while a naturalist aboard the round-the-world voyage of the H.M.S. Beagle, December 1831 - October 1836.**
- **An account of that journey, commonly called *The Voyage of the Beagle* (1839), had previously established his literary reputation and credentials as a scientist.**

Conrad Martens

(1801 – 1878)

- **English-born (of Austrian parents) artist known mainly for his Australian landscape paintings.**
- **Came aboard H.M.S. Beagle at Montevideo to replace Augustus Earle as chief artist after the latter became too sick to continue on the voyage.**

Evolution and Natural Selection

- **Evolution** is the process of change in species (resulting from adaptation to environment, natural selection, inbreeding and mutation) that may ultimately result in the creation of new species.
- **Natural selection** is one of the factors that drives evolution. It is a process in nature resulting in the survival and perpetuation of only those forms of plants and animals that have certain favorable characteristics that best enable them to adapt to a specific environment.

[Generally, the term "Darwinism" came to refer to the process of evolution by natural selection.]

Alfred Russell Wallace
(1823 – 1913)

British naturalist
"Father of biogeography"

Independent proponent of evolution based on natural selection.

His correspondence with Darwin prompted the latter to publish his theories.

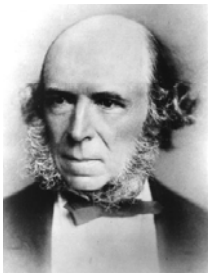
Recent cartoon bemoaning the "forgotten" proponent of natural selection

(Darwin left, Wallace right)

Jean-Baptiste Lamarck
(1744-1829)

- French naturalist and early proponent of evolution.
- Believed that qualities learned or acquired by an individual in its lifetime could be passed on to its offspring.
- Thought hereditary changes resulted from efforts to adapt to changes in environmental conditions.
- Thought human nature could be changed by transforming the physical and social environment – a notion (loosely, Lamarckism) that profoundly influenced geography.

Herbert Spencer
(1820-1903)



- English philosopher and polymath associated with the rise of Social Darwinism – loosely, the application of Darwinian Theory to humans.
- Coined "survival of the fittest."
- Human societies are engaged in a struggle with their environment and each other to survive.
- The fittest people thrive best in an economic system based on free enterprise/laissez faire.
- Saw the endpoint of the evolutionary process as the creation of "the perfect man in the perfect society."

How Darwinism impacted geography

- **Led to "scientific" theories regarding the impact of geographic environment on people, culture, society and civilization.**
- **Led to development of "organic analogies" in several fields of the discipline, as well as the notion of development over time.**
- **Led to theories involving struggle and survival.**
- **Led to ideas that supported colonialism and imposition of European culture on various parts of the world.**

Friedrich Ratzel (1844-1904)

- **German political geographer.**
- **"Organic state theory."**
- **Viewed States as living organisms that need food and resources to grow and prosper.**
- **justified colonialism.**
- **Coined "lebensraum," used by the Nazi Party to justify expansionism.**

Karl Haushofer (1869-1946)

- **German general, geographer and geo-politician.**
- **His interpretation of Ratzel's theories may have influenced Nazi expansionism.**
- **Sometimes called "Hitler's geographer," probably overstated.**
- **Important in forging link with Japan.**

Halford Mackinder (1861-1947)

(1861-1947)

- **Major British advocate for geographic education.**
- **Appointed "Reader in Geography" at Oxford in 1887. School of Geography was formed there in 1899.**
- **Said that geography needed a firm conceptual foundation, and could not simply rely on collecting facts.**
- **Proposed a focus on the causal relations between environment and society ("The geographical experiment" – Livingstone).**

Halford Mackinder (1861-1947)

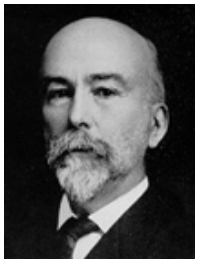
- **British geographer and major father of geopolitics and geo-strategy.**
- **Advocate of land power (as opposed to sea power.**
- **Viewed a strong army and ability to control Eurasia as essential to global domination.**
- **Proposed "The Heartland Theory."**

<u>Geopolitics</u> is the application of geography to strategic planning, policy-making, and actions, including:

- **Projection of military power**
- **Creating and securing lines of communication**
- **Promoting access to and development of resources.**
- **Establishment of trade and military alliances.**
- **Undermining or limiting the military/economic options of real or potential adversaries.**

"Who rules Eastern Europe controls The Heartland. Who rules The Heartland controls the World Island. Who rules the World Island controls the world."

-- Halford Mackinder, 1919



William Morris Davis
(1850 – 1934)

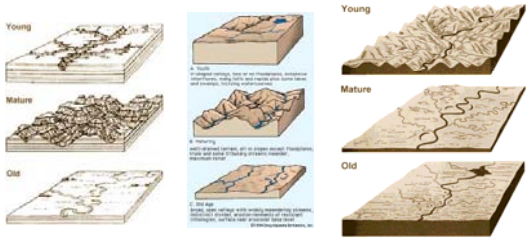
Harvard Professor of Geography
Founder and first president of A.A.G. (1904) and N.C.G.E. (1915)

Strong promoter of geographic education at all levels

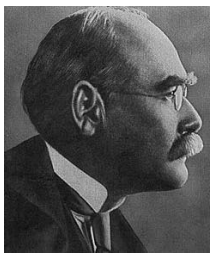
"Father of American Geography"

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

Three perspectives on *The Cycle of Erosion*

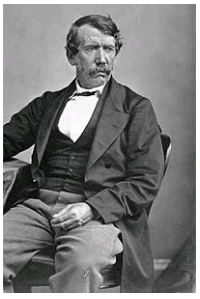


Rudyard Kipling
(1865-1936)



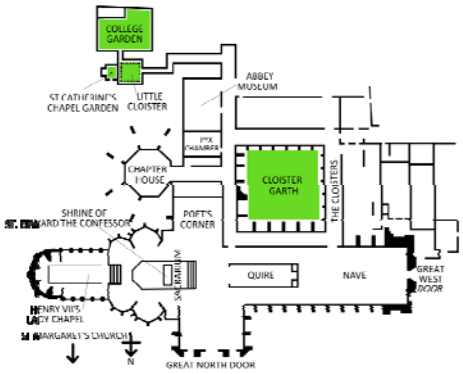
- **Highly popular English poet and novelist whose writings seemingly celebrate British imperialism.**
- **Greatly influenced popular views of "native" peoples and cultures.**
- **Received Nobel Prize for Literature in 1907.**
- **Works include *The Man Who Would Be King* (1888), *Gunga Din* (1890), *The Jungle Book* (1894), *The White Man's Burden* (1899), and *Kim* (1901).**

David Livingstone
(1813-1873)



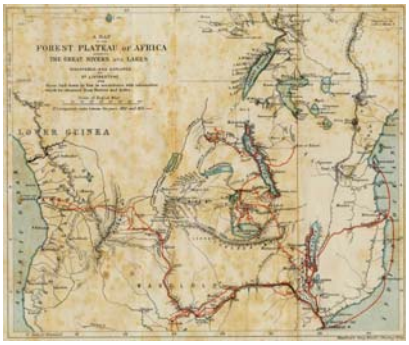
- **Scottish Congregationalist missionary, doctor and explorer whose advocacy of faith, empire and abolition earned him mythical status in his lifetime.**
- **His disappearance in southern Africa in the 1860s sparked one of history's greatest manhunts, ending in his iconic encounter with Henry Morton Stanley.**
- **Obsessed with finding the sources of the Nile and filling in the map of Africa.**
- **As per his instructions, his heart is buried in Africa. The rest is in Westminster Abbey.**

Westminster Abbey:
The Great West Door



Plaque atop Livingstone's tomb, Westminster Abbey

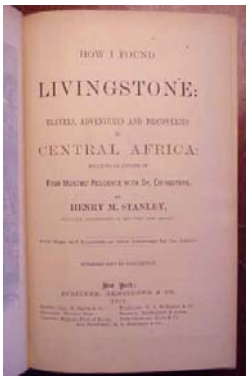
Livingstone's Travels in Africa

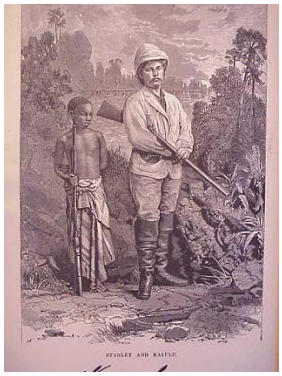


"Doctor Livingstone, I presume?"
November 10, 1871

Henry Morton Stanley (1841-1904)

- Welsh-born explorer and journalist made famous by his successful sponsorship by *The New York Herald* to find David Livingstone.
- Authored a popular book recounting that endeavor, as well as later volumes related to his subsequent journeys in southern Africa.
- Controversial for his self promotion, treatment of Africans, and work on behalf of King Leopold II of Belgium that led to the founding of The Belgian Congo.





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

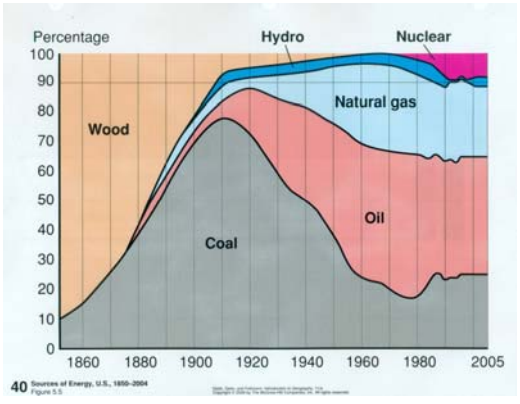
Famous (infamous?) for work on climatic determinism and economic geography

Strong proponent of environmental determinism

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

George Perkins Marsh (1801-1882)

- American diplomat, linguist and naturalist
- Considered by some to be the "Father of Environmental Conservation."
- A Vermonter influenced by deforestation in New England and, thanks to ambassadorial assignments, related observations overseas.
- Deep concern for human impacts on the natural environment.
- Committed his ideas to print in "Man and Nature" (1864) and "The Earth as Modified by Human Action" (1874)



Elisee Reclus
(1830 – 1905)

- Geography's most prolific writer?
- Stressed the importance of field experience in geography.
- Deeply affected by the slavery he witnessed in the Americas.
- Advocated understanding and respect for foreign cultures.
- Critical of the environmental effects of colonialism and of the unequal distribution of wealth.
- French anarchist and geographer whose work foreshadowed modern environmental and socially relevant geography.
- Saw geography as a way to promote planning for the equitable spread of global resources.

"For me, seeing the earth is studying it. The only serious study that I do is geography, and I believe that it is much more worthwhile to observe nature firsthand than to imagine what it is like while sitting in one's study."

-- Elisee Reclus (undated letter to his mother)

Peter Kropotkin
1842-1921

- Russian geographer, scientist and anarchist whose writings are a prototype of modern radical geography.
- While on a survey of Siberia, he was deeply affected by the living conditions of peasants, which led to an interest in marginalized people and social relevance.
- Believed that cooperation was the key to human advancement, and not the competition/struggle central to Social Darwinism.
- Turned down a fellowship from the Royal Geographical Society on moral grounds, believing it supported an imperialist power.

"What Geography Ought to Be":
A statement on geographic education written in 1885 by Peter Kropotkin (while in jail)

- Geography is the science best suited for a child's imagination (and thus for the general development of the mind). No other science can teach children so effectively about the interaction between humans and nature.
- Geography has the potential to foster cooperation between people by emphasizing the similarities between cultures. Geography must teach us that "we are all brethren, whatever our nationalities."
- Geography must dissipate "the prejudices in which we are reared with regard to the so-called 'lower races.'"

Kropotkin's view of geography as an academic discipline

- "[Geography] is not just a descriptive science – not a mere *graph*y – but a *logy*; for it discovers the laws of a certain class of phenomena, after having described and systematized them."
- While the collection of descriptive data is important, it should be viewed as an initial step toward a more complex science.
- [These statements have much is common with perspectives that would revolutionize geography after World War II.]

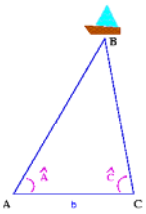
During the 1800s important popular (as opposed to professional) geographical societies came into existence in several countries. Most were populated by men of means who were not professional geographers. They promoted scientific expeditions and commercial interests, sponsored public lectures, and published journals aimed mainly at the general public. Examples include:

- The Société de Géographie de Paris (1821)
- The Royal Geographical Society (London, 1830)
- The American Geographical Society (New York, 1852).
- The National Geographical Society (Washington, DC, 1888).

Radio Navigation Beacon

- Developed in 1897 by the Marconi Company to aid navigation at sea.
- Signal is transmitted on a known frequency from a tower at a known location.
- The received signal provides a bearing (direction) to the transmitter, but not the receiver's location and distance from the transmitter.
- The latter can, however, be determined by triangulation, which requires reception of signals from two transmitters at known locations.

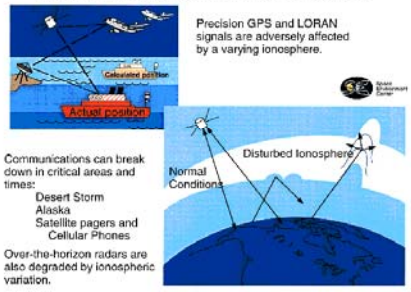
U.S. Commemorative Stamp for the 1901 Panama-Pacific Exposition Highlighting "Fast Ocean Navigation"



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.

Effects on Radio-Navigation and Communications



Radio Triangulation