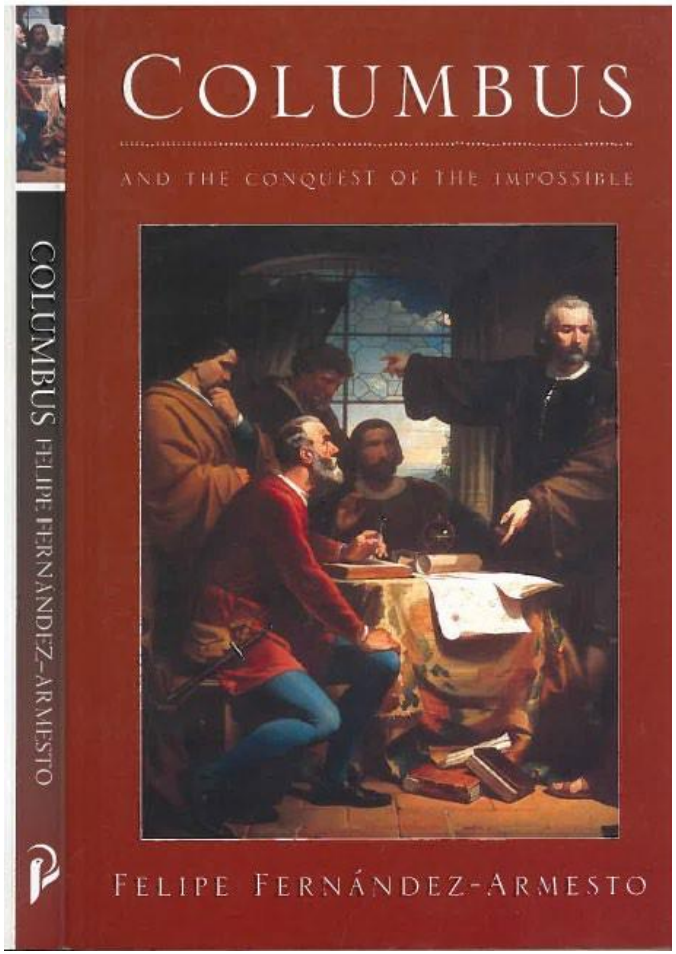
GEOG 220

Development of Columbus to the present day

Christopher Columbus



London: 1974)

Columbus was so influenced by Marco Polo

That he took with him letters of introduction to the Great Khan, Kubilai

That he used Marco Polo's account of his travels to calculate how far China was from Europe

Source of image: Wikipedia Aug 2020

Fra Mauro's 1450 Map of the World built on Polo's work

c. 1450 by the Venetian monk Fra Mauro.

Columbus was so influenced by Marco Polo: example - rhubarb

When he reached what he thought was China, he expected he would find there plants described by Marco

Rhubarb - Although known in Europe (for its medicinal properties), people had only seen it as the dried, mostly black, shredded root. Importantly, no European knew what the growing plant looked like. And no one there knew its source was the Russian-Chinese border Columbus knows from Marco Polo that it was found in China. But Columbus had never seen the growing plant. Nevertheless, when he encounters something he thinks is rhubarb in the Caribbean [likely just roots], he thinks it really is rhubarb – and because it is rhubarb, he must be in China!!

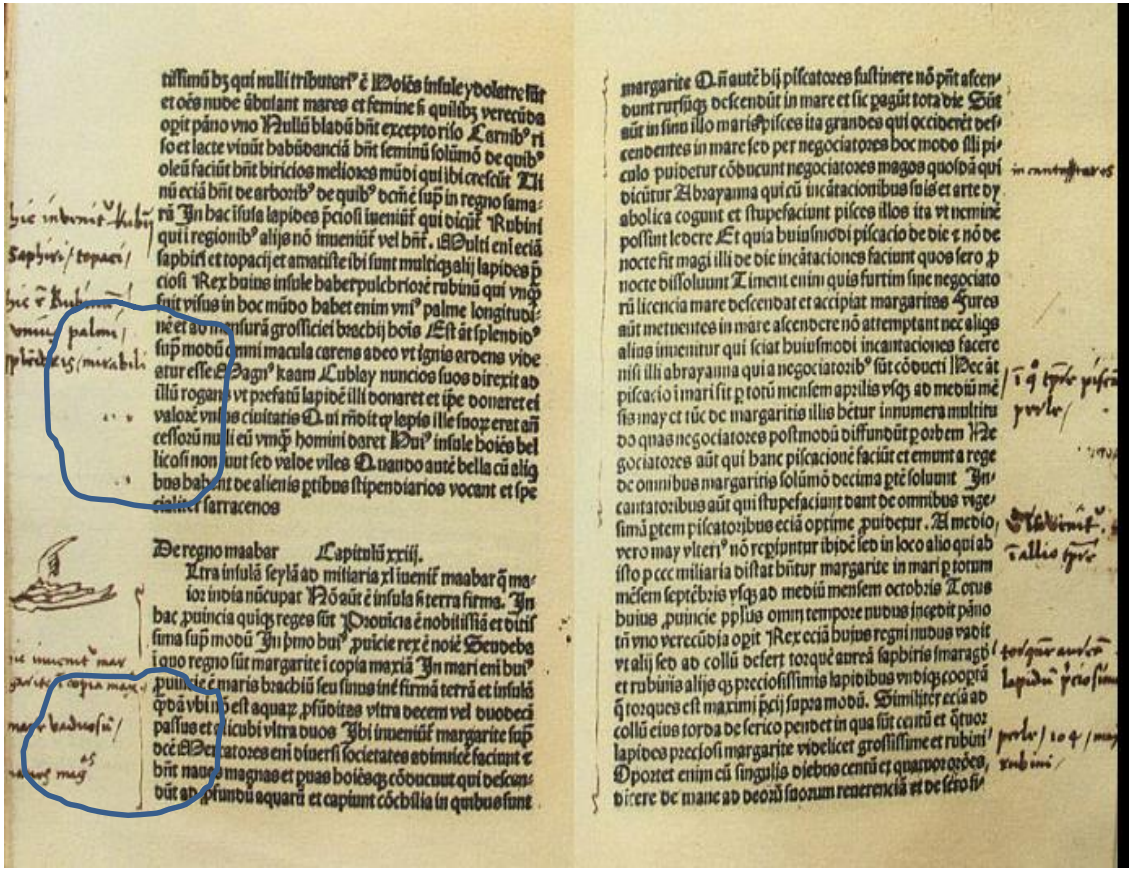
Example: **Rhubarb.** There are two entries in the Travels. The first is Ok as it's near where we'd expect. The second seems too far south, but is discussed at length in Haw 2006

"In all of the mountains of this region [Kan-su in NW China] rhubarb grows in great abundance; it is brought here by merchants who export it far and wide" [Latham 1958: 60}

"In the adjacent mountains [to Sugiu, in Kiang-Su, Southern China] rhubarb and ginger grow in great profusion so that one Venetian groat [a unit of money] would buy forty pounds of fresh ginger of excellent quality" {Latham 1958: 182-3)

See Stephen G. Haw, Marco Polo's China: A Venetian in the realm of Kubilai Khan (Routledge 2006) ebook via Concordia Library – has a whole chapter on rhubarb – also take a look at Spengler 2019.

Here is Christopher Columbus's copy of Marco Polo's Travels – we can see how carefully Columbus read the book from his notes in the margins



De regno maabar Capitulū xxiij.

image source: Wikipedia Aug 2020.

Interesting point: when did Columbus make these annotations? Felipe Fernández-Armesto in his book *Columbus* says before 1492; John Larner in his *Marco Polo and the Discovery of the World* says 1497 or 1498 – what difference do you think this makes??

The pages shown are those translated in Latham pp 231-233 [Ceyon-India}

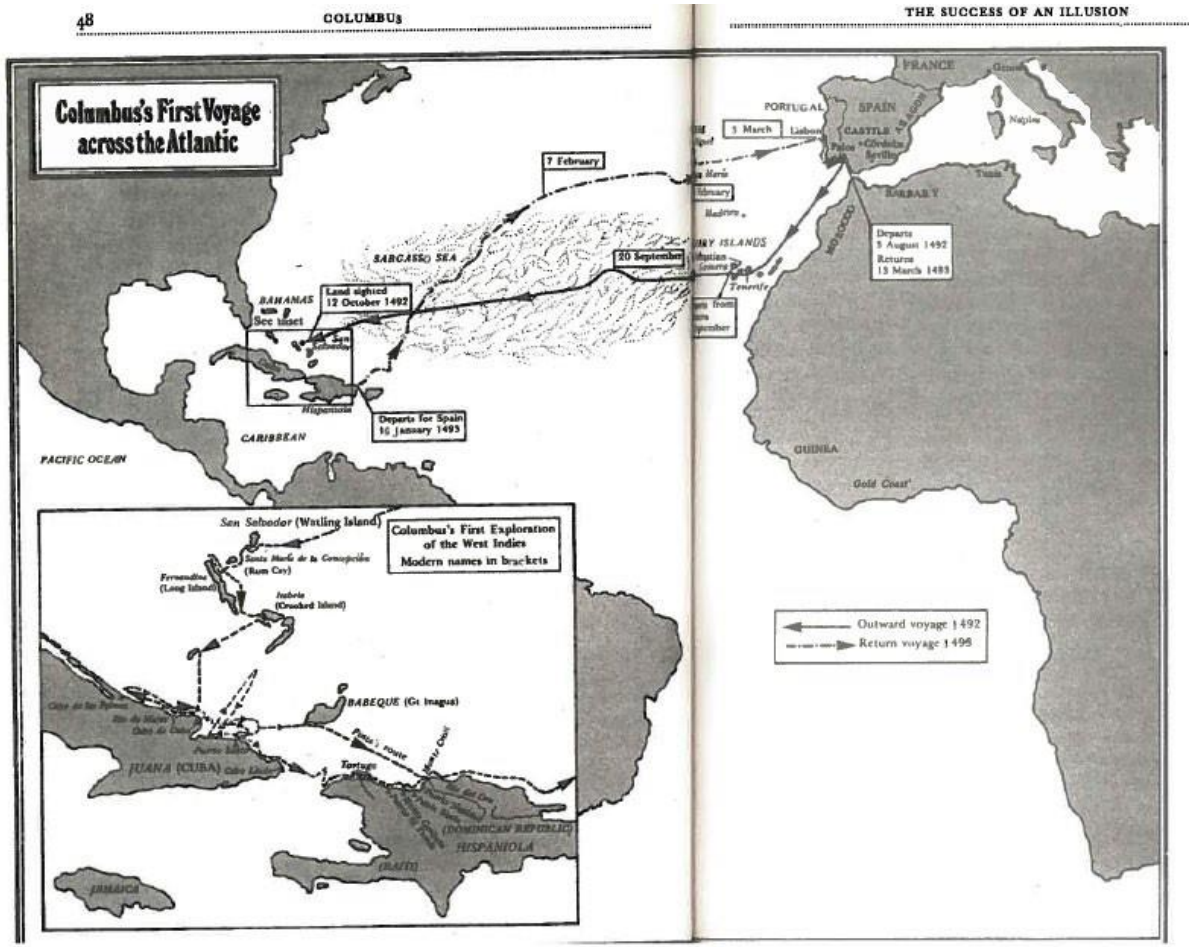
Part of what seems to have caught Columbus's attention are the references to rubies, sapphire and topaz … and pearls

What was Columbus thinking?

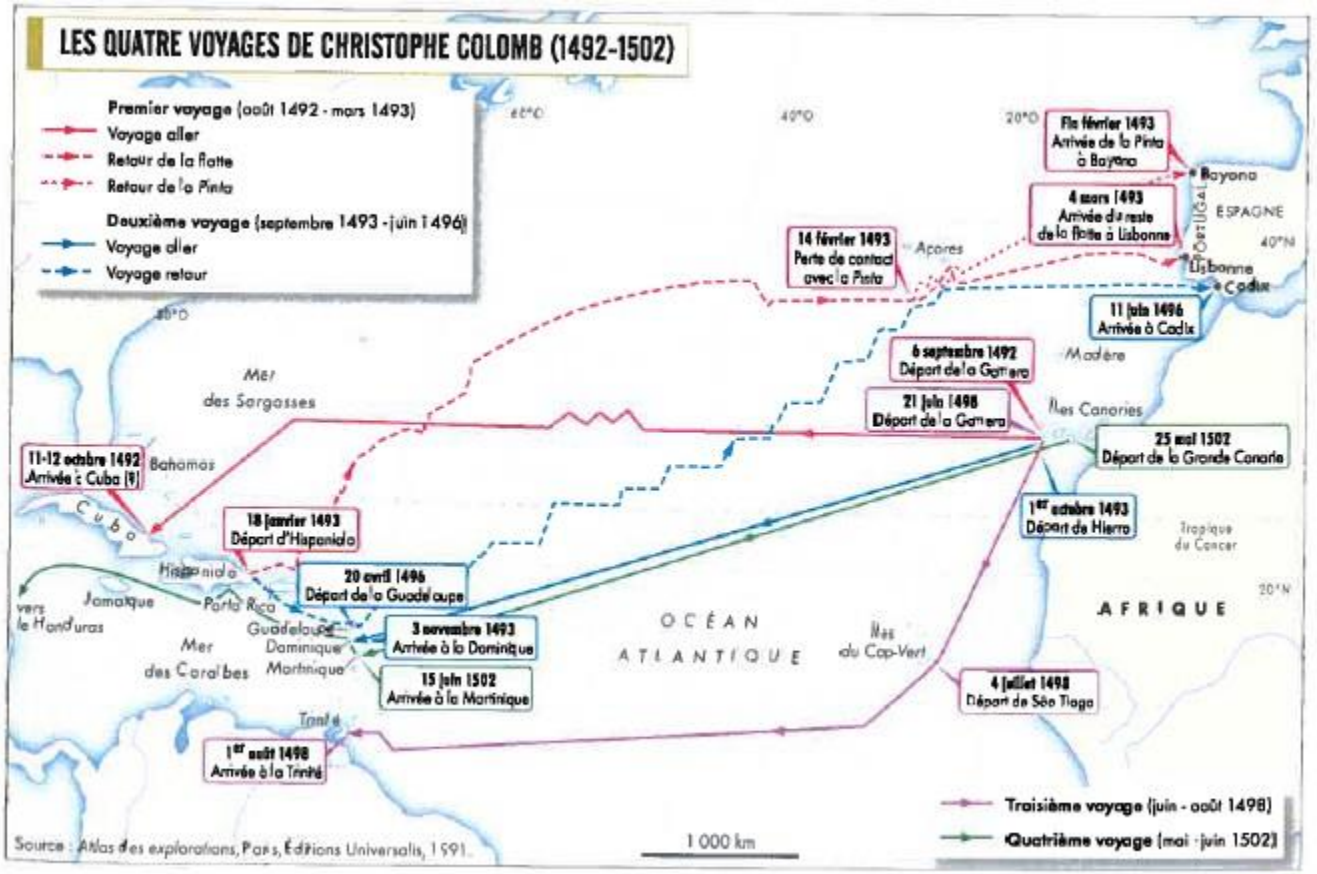
Columbus was also influenced by the work of Eratosthenes and the Ancient Greeks (by Columbus' time these were being "discovered" again") and perhaps the way into his thinking is to realize that

- **he was always trying to reconcile the Greek ideas AND Marco Polo's clear demonstration that the world was bigger than the T-O maps said – that China existed.**
- **His big idea was to go west to reach the east!**

Columbus: First voyage



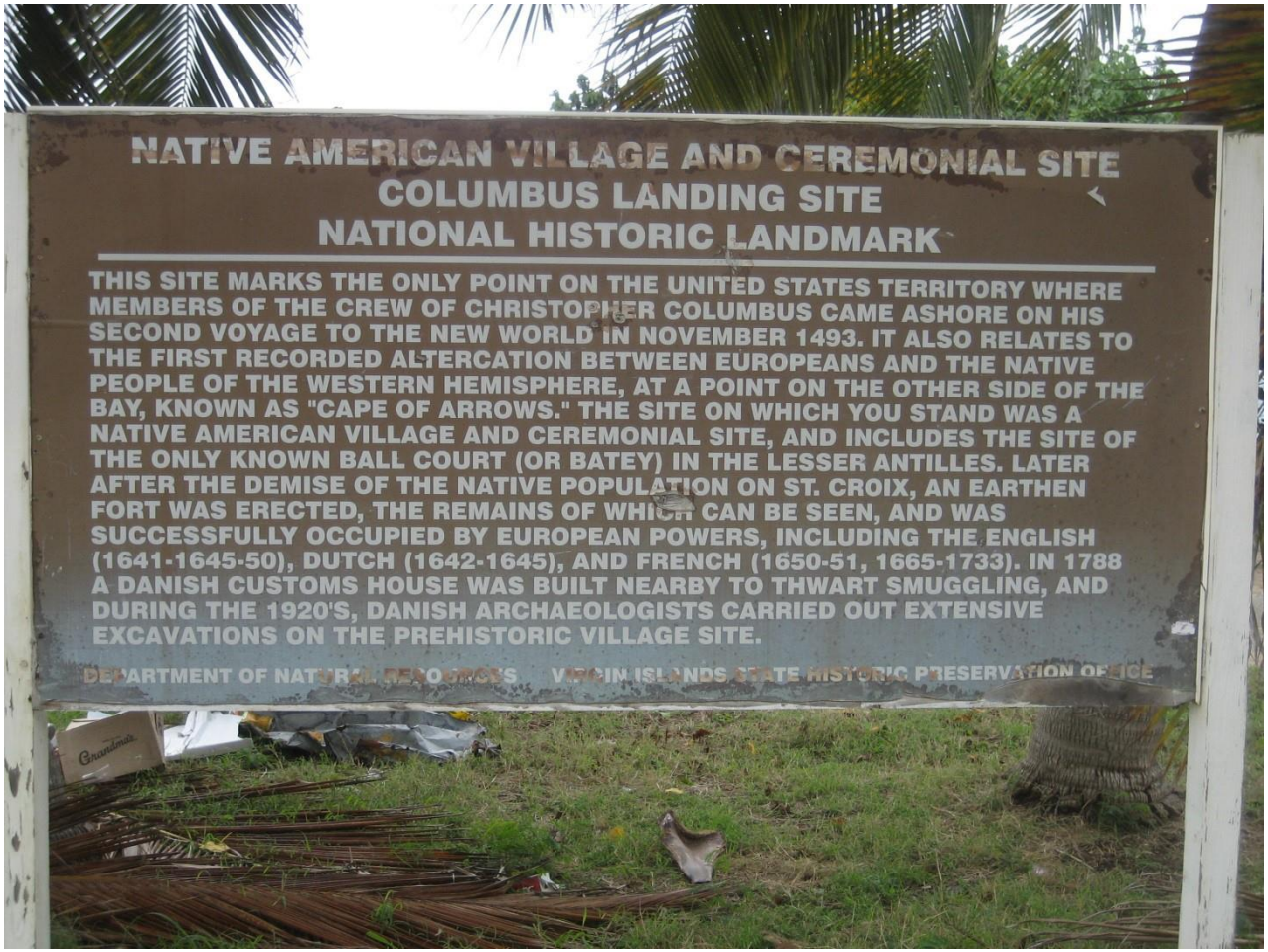
Columbus: 4 voyages



1493 Columbus 2nd voyage lands at St Croix, US Virgin Islands

Note: Columbus also reaches Le Carbet, Martinique June 15 1502

1493 Columbus 2nd voyage lands at St Croix, US Virgin Islands

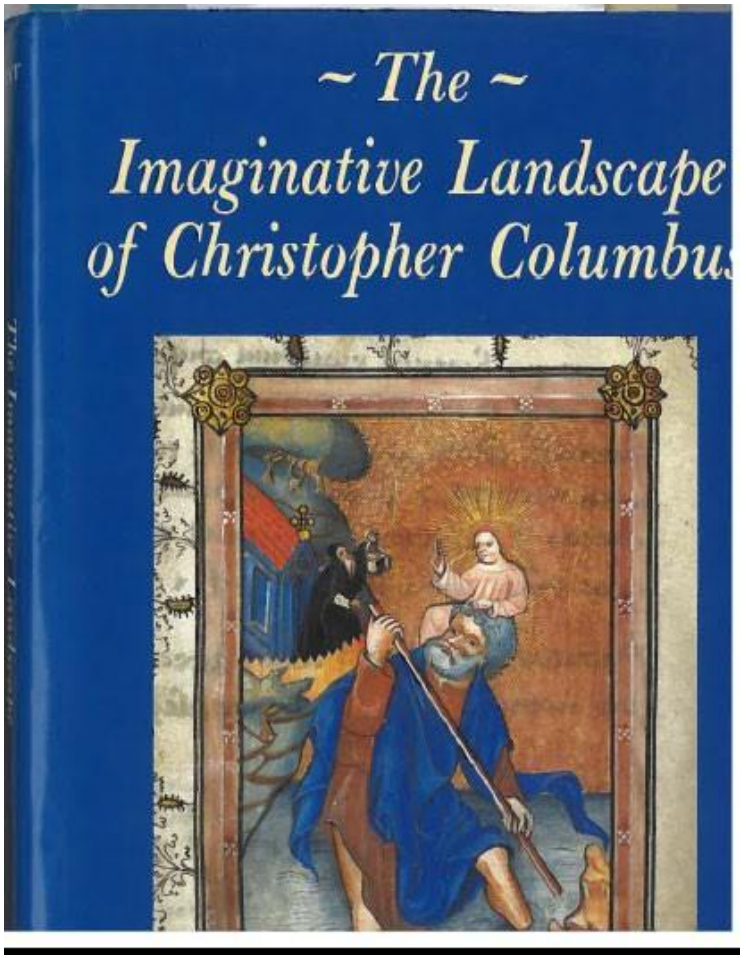


Christopher Columbus 1492: "discovers" America

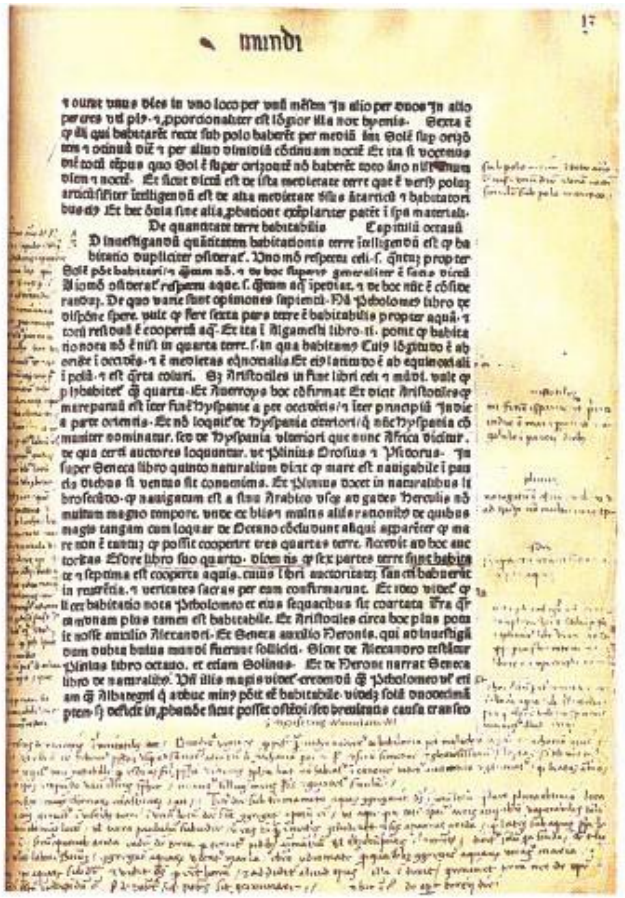
- The period 1400-1500 sees the "rebirth" {*Renaissance*} of Classical knowledge in Europe.
- Important for geography in Europe.
  - i.e. copies of Ptolemy's *Atlas* "re-discovered" in Istanbul, taken to Venice and translated from Arabic into Latin in 1410.
  - It is on calculations made by Ptolemy in his atlas (made 1400 years before) that Columbus bases his view of the world's size.
  - … a world in which he tries to fit the Travels of Marco Polo – China, Japan, Java

One key to Columbus's mind

- He struggles to reconcile the medieval church's view of the world with the teachings of the Ancient Greeks, and with the anecdotal evidence of medieval European travellers and sailors
  - One example – the Ancient Greeks knew the size of the earth and therefore how far it would be to get across the Atlantic to whatever was beyond
  - Columbus took those ideas, but believed that "whatever was beyond" was the coast of China (or the offshore islands such as Japan)



Another example of the state of Columbus' library – or why you should never lend him a book

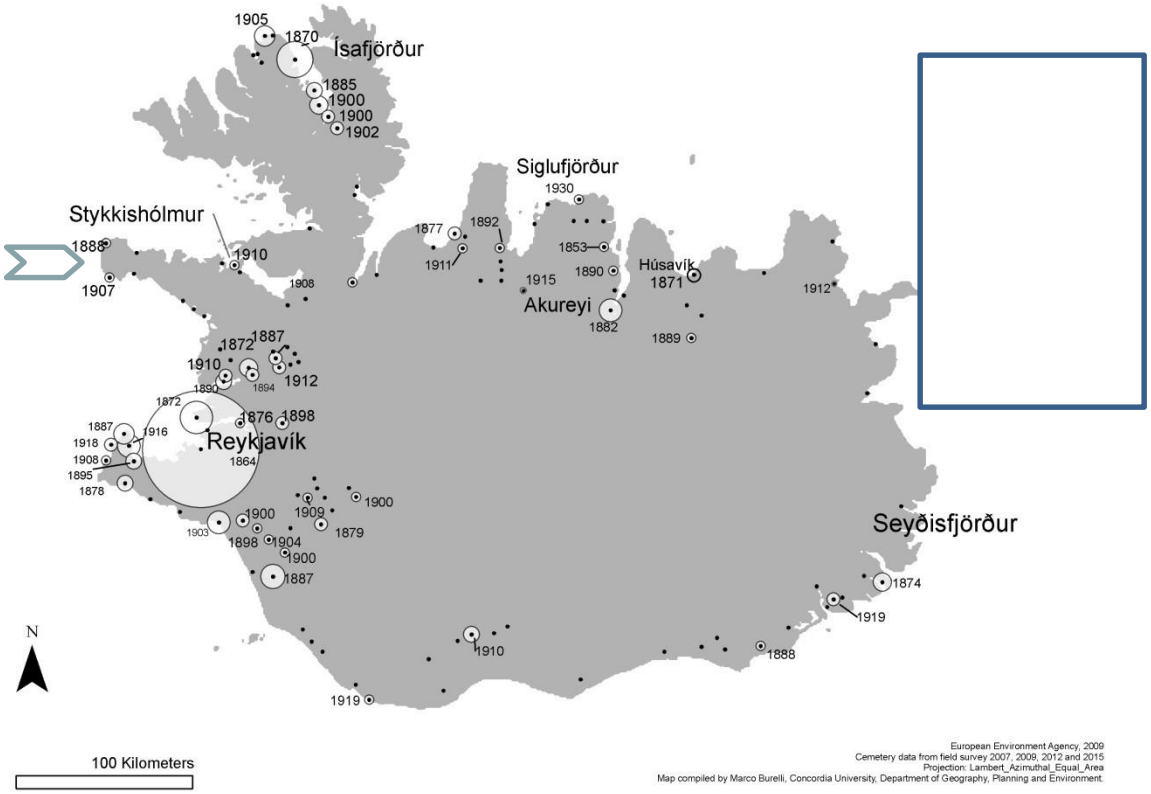

mundi

- Columbus' own notes on D'Ailly's *Imago Mundi* {source Gomez 2000]

Here we see Columbus adding his note to another Medieval work of geography

One fanciful story says Columbus visits Iceland in 1477

Here



One fanciful story says Columbus visits Iceland in 1477

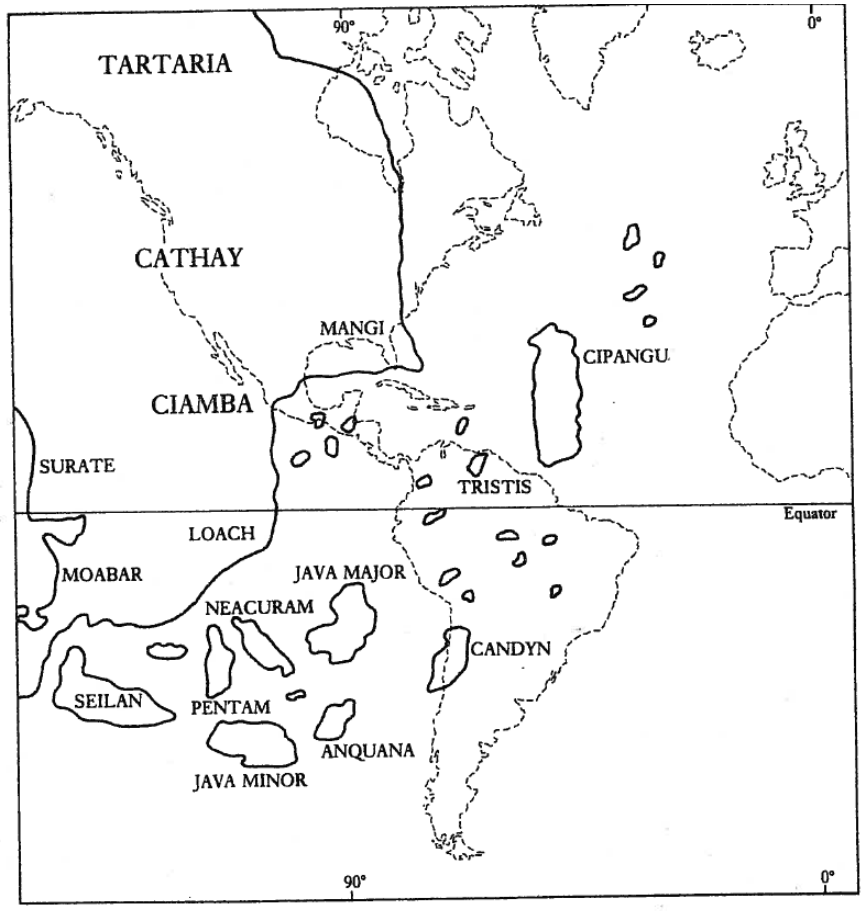
But please note is only a legend, and may really refer to trips to Bristol in England

Martin Behaim's atlas of 1492

The world as Europe saw it – on the eve of Columbus' travels – no Americas or Pacific

Note: Martin Behaim's map converts to a globe – one of the first to try and suggest (as Marco Polo had done) the size of the world by incorporating China and the islands of Indonesia into a European cartography

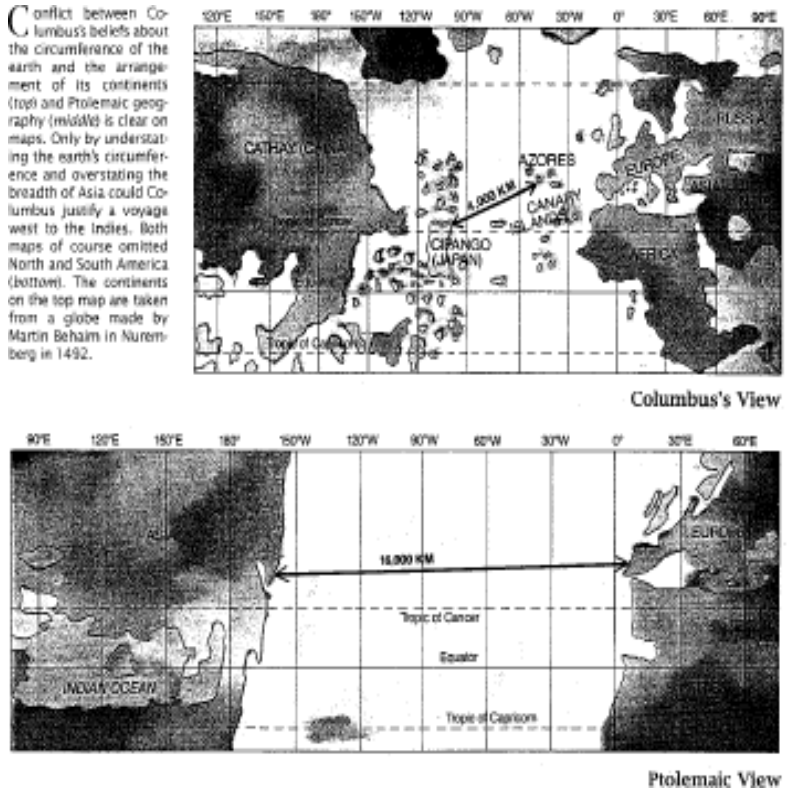
Martin Behaim's 1492 view



Martin Behaim's Conception of the Atlantic

If we take Martin Behaim's view of the world, we can see that by allowing for the great extent of all Marco Polo described in the lands of Cathay, the east coast of China appears to reach almost to the coast of the Eastern USA – i.e. no hint of the Pacific

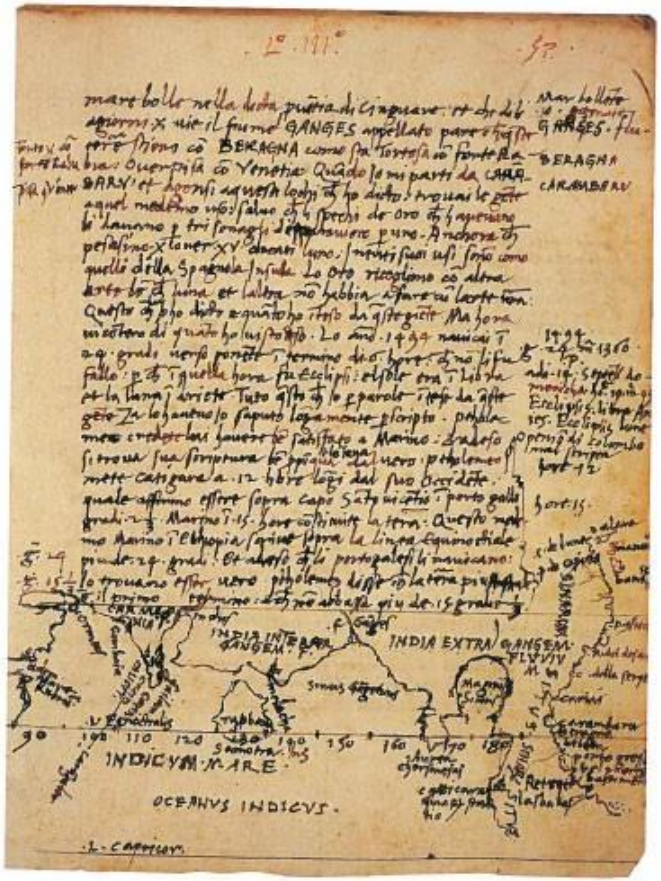
Although Columbus underestimated Ptolemy's calculations (about the size of the globe)...and as we know, does not know the Americas exist!!

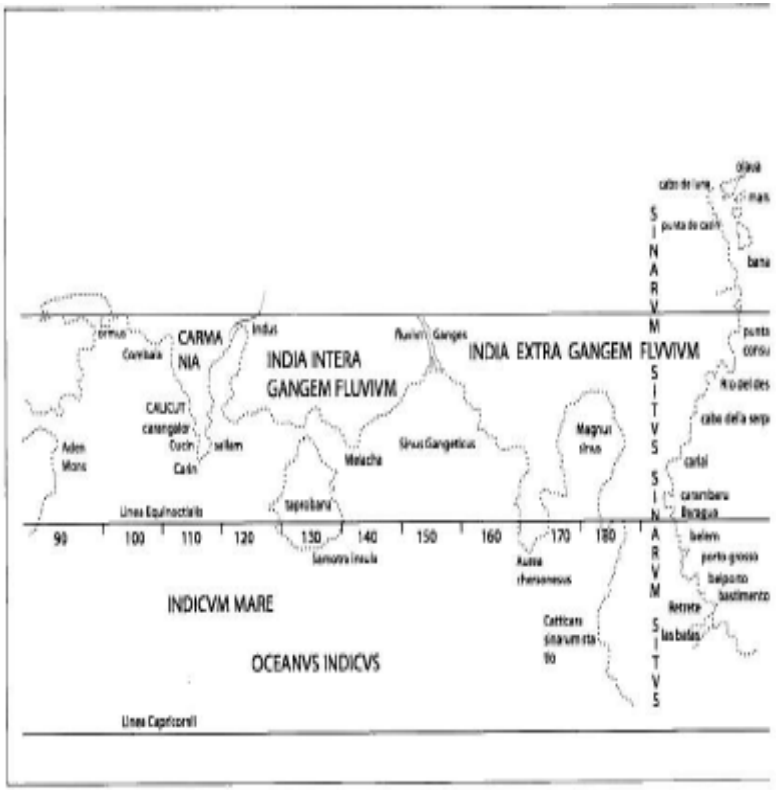


By <u>underestimating</u> the Earth's circumference [perhaps by converting the units of measurements wrongly, And by <u>overestimating</u> the extent of China to the east [like Martin Behaim perhaps in an effort to get all of the thousands of islands that Marco Polo said lay off its coast], Columbus got the size of the Atlantic wrong – importantly he thought he only had 4,000 km to sail, instead of 14,000

Source: Scientific American, 1990s

A sketch by Columbus' son about where they thought they'd gone (Source: Gomez)





Columbus

- An important thing to note about Columbus was that to his dying day he never grasped the fact that he had reached the New World.
- He retains a medieval view of world.
- He continued to believe that he had reached China, Japan, the Far East and source of spices

- "Evidence" he used:
- **Pearls** (only from Asia, he thought) found off Costa Rica
- Types of **rhubarb** (he thought) found on Cuba
- **Magnetic deviations** (off American coast) could be signs of Garden of Eden (off Asian coast in TO maps)

Columbus was only one of a number of European explorers of his time

All of whom opened up Europe's world view

- Examples include:
  - Prince Henry the Navigator (early 1400s)
  - Christopher Columbus (1492),
  - Vasca da Gama (1498),
  - John Cabot to Canada (1497)

Statue of Prince Henry the Navigator (Porto, Portugal)

- End of Middle Ages begins to see Western European voyages of “discovery”
- Prince Henry “the Navigator” (1394-1460) enabled Portugal to become an early leader in exploration – enabled Vasco da Gama to reach India (1497-98); Magellan to go round world 1521-2

Porto, Portugal

birthplace of Prince Henry the Navigator in 1394

Prince Henry the Navigator

John Cabot's home in Venice, where he lived until the age of 11.

Venice: plaque on John Cabot's house (1450-1498)

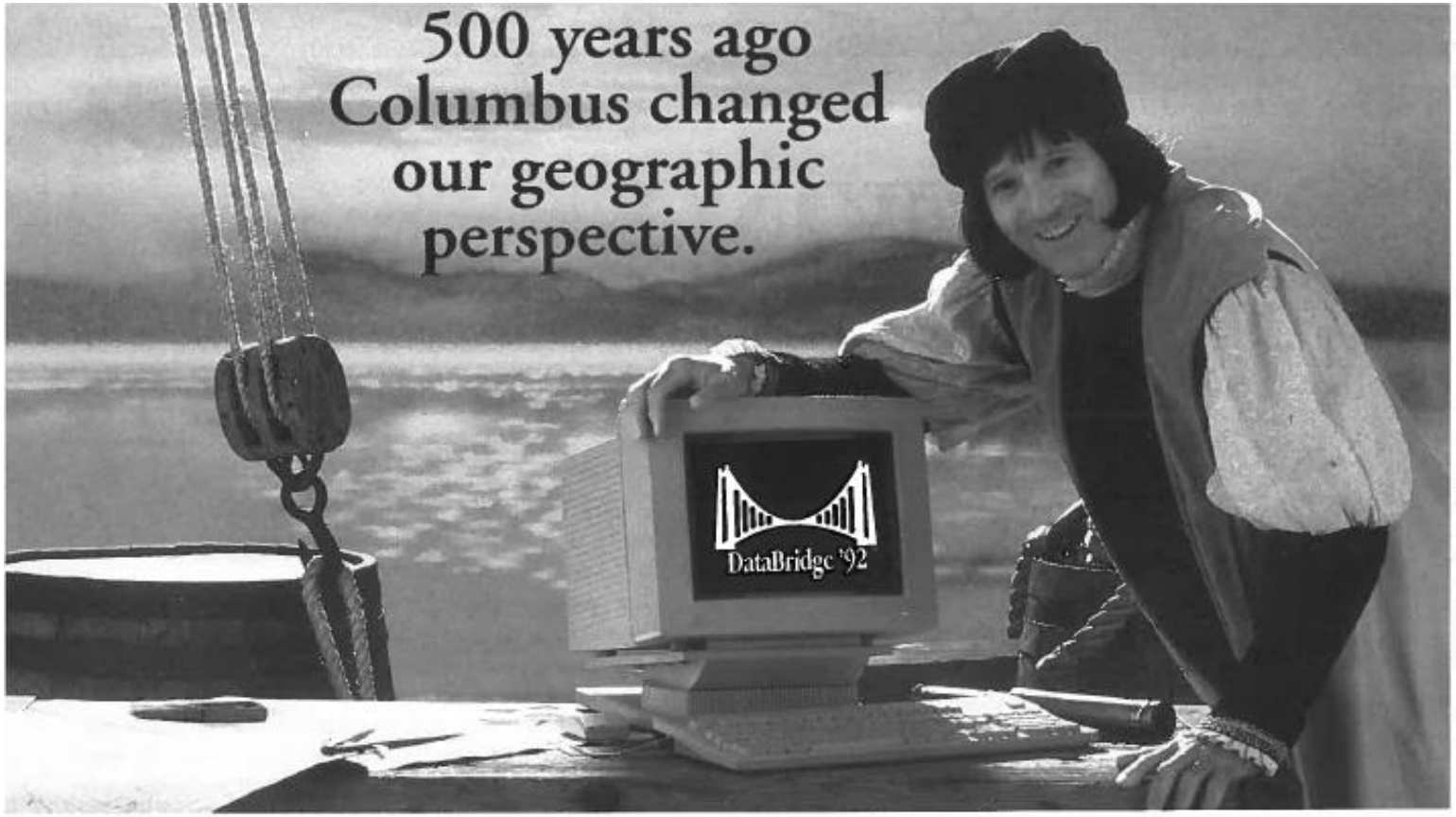
What all of these new explorations meant was that Europe was overwhelmed with information about the world –

- **how could it be better mapped –**
- **how could it be better used (to analyze, rather than just describe)**

These two challenges became the goal of geography for the next few centuries.

Or as the next slide puts it in a more humorous way

Information overload…

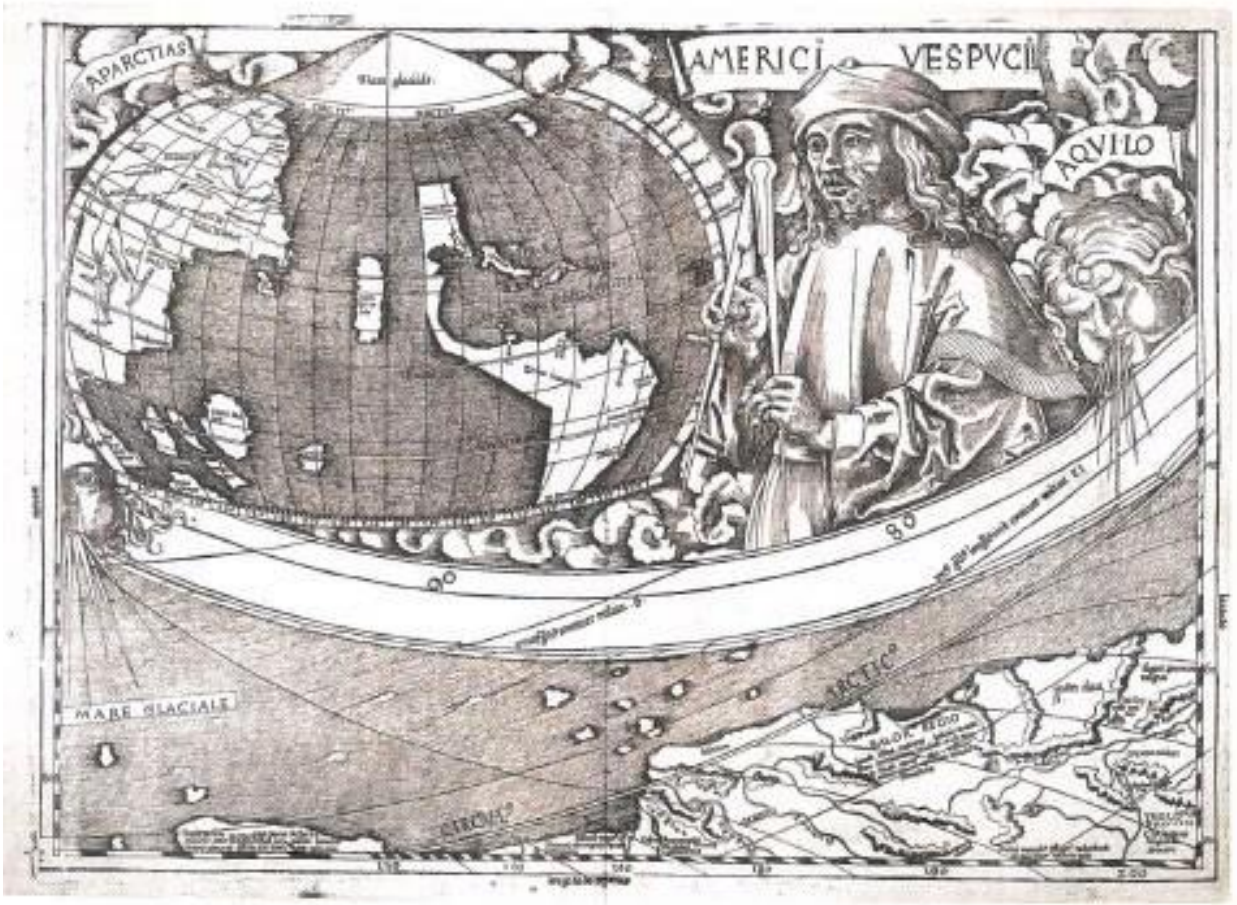


Now, it's changed again.

1507 view of the world: Martin Waldseemüller's world map

Note – the Americas make one of their first appearances on this map

And here is Amerigo Vespucci – can you find him on that last slide?



The need for a new world vision

Eventually, so much information was coming back to Europe from all of the various voyages of exploration, that newer ways of thinking about the world, of being geographers, was needed.

– One answer was supplied by a new world map – that of **Mercator** (1569) –

on a Mercator projection shape is correct; compass directions are true – but what is not?

Mercator's Projection

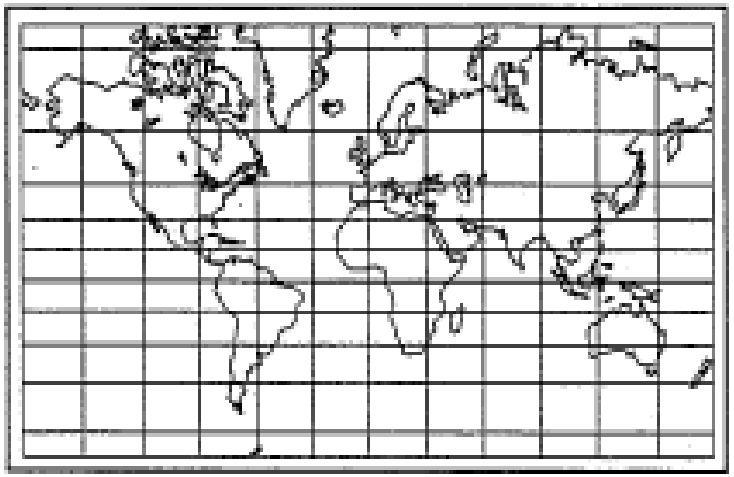


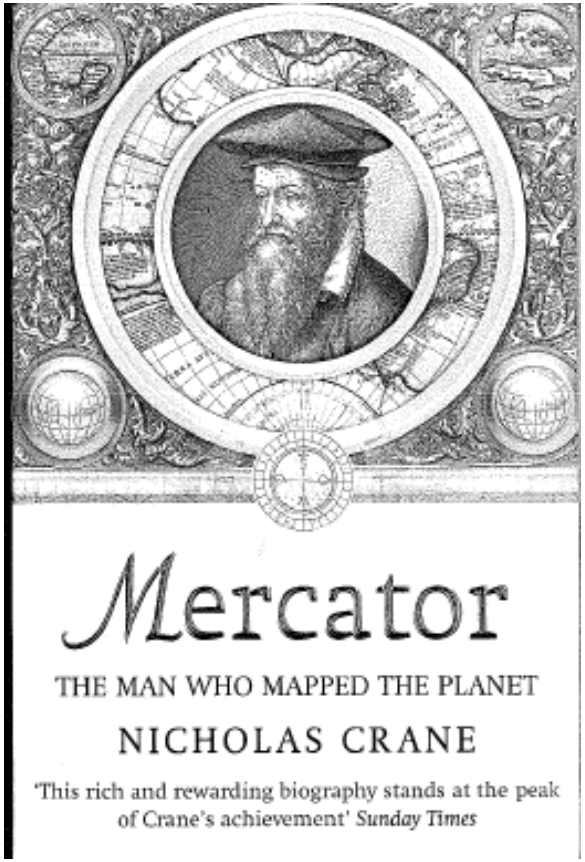
Figure 2.15 Mercator projection.

1569

Mercator's new map projection

- New developments such as Mercator's new world map projection (1569) allowed people to see the world -- with almost all of its newfound lands (not yet, of course, Australia)
- Gerard Mercator's (1512-1594) world map was specifically designed as a navigational chart of the world:
  - it *preserves the correct directional information between places* (and you can use the map to plot the compass bearing between places – these bearings will be straight lines between places)
  - *but distorts area* (especially towards the poles)

The latest on Mercator....

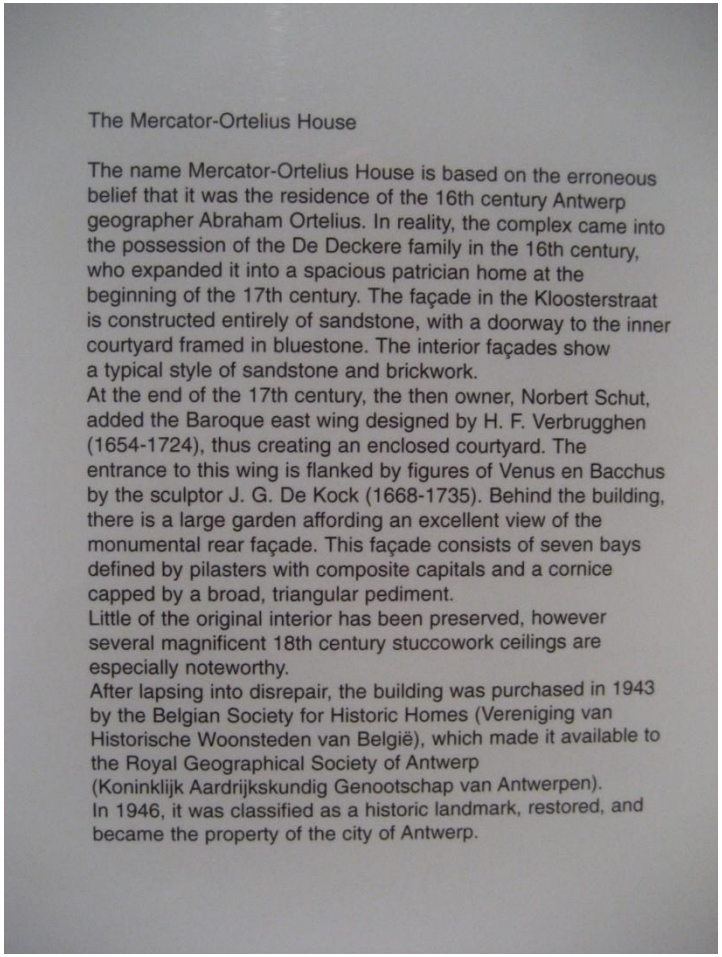


- Latest biography of Mercator published 2002.
- We learn he spent a lot of time in Antwerp
- If you go to Antwerp, there is even an old building called “Mercator’s House”

MERCATOR - ORTELIUSHUIS

15

But, sadly, it is not really Mercator's house …



The Mercator-Ortelius House

The name Mercator-Ortelius House is based on the erroneous belief that it was the residence of the 16th century Antwerp geographer Abraham Ortelius. In reality, the complex came into the possession of the De Deckere family in the 16th century, who expanded it into a spacious patrician home at the beginning of the 17th century. The façade in the Kloosterstraat is constructed entirely of sandstone, with a doorway to the inner courtyard framed in bluestone. The interior façades show a typical style of sandstone and brickwork.

At the end of the 17th century, the then owner, Norbert Schut, added the Baroque east wing designed by H. F. Verbrugghen (1654-1724), thus creating an enclosed courtyard. The entrance to this wing is flanked by figures of Venus en Bacchus by the sculptor J. G. De Kock (1668-1735). Behind the building, there is a large garden affording an excellent view of the monumental rear façade. This façade consists of seven bays defined by pilasters with composite capitals and a cornice capped by a broad, triangular pediment.

Little of the original interior has been preserved, however several magnificent 18th century stuccowork ceilings are especially noteworthy.

After lapsing into disrepair, the building was purchased in 1943 by the Belgian Society for Historic Homes (Vereniging van Historische Woonsteden van België), which made it available to the Royal Geographical Society of Antwerp (Koninklijk Aardrijkskundig Genootschap van Antwerpen).

In 1946, it was classified as a historic landmark, restored, and became the property of the city of Antwerp.

“Enlightenment” attempts to create a new world view

- Eighteenth-century Enlightenment geography:
  - Saw attempts were made by philosophers, such as Immanuel Kant (1724-1804), to provide a new coherent framework for geographical knowledge by dividing all phenomena into their co-ordinates in time (*chronology*) and space (*chorology*)

Baron Alexander von Humboldt (1769-1859)

- Important early nineteenth-century geographer and wealthy explorer of S. America.
- He writes a multi-volume work of world geography called *The Cosmos* (published over 1845-1862)
- He develops an innovative method of organizing all of the material, that uses a *comparative method*, and has sometimes been called the "*ecological framework*" as it stressed the association between phenomena (rock, soil, plants etc) – this was the best way for geographers to organize and analyze data from all over the world.

Baron Alexander von Humboldt (1769-1859)

This painting of Humboldt and Bonpland in a jungle hut was completed in 1856, more than fifty years after their expedition. Humboldt didn't like it because the instruments depicted were inaccurate.

- A good new book is Andrea Wulf, *The Invention of Nature: Alexander Von Humboldt's New World (*New York: Knopf 2015)

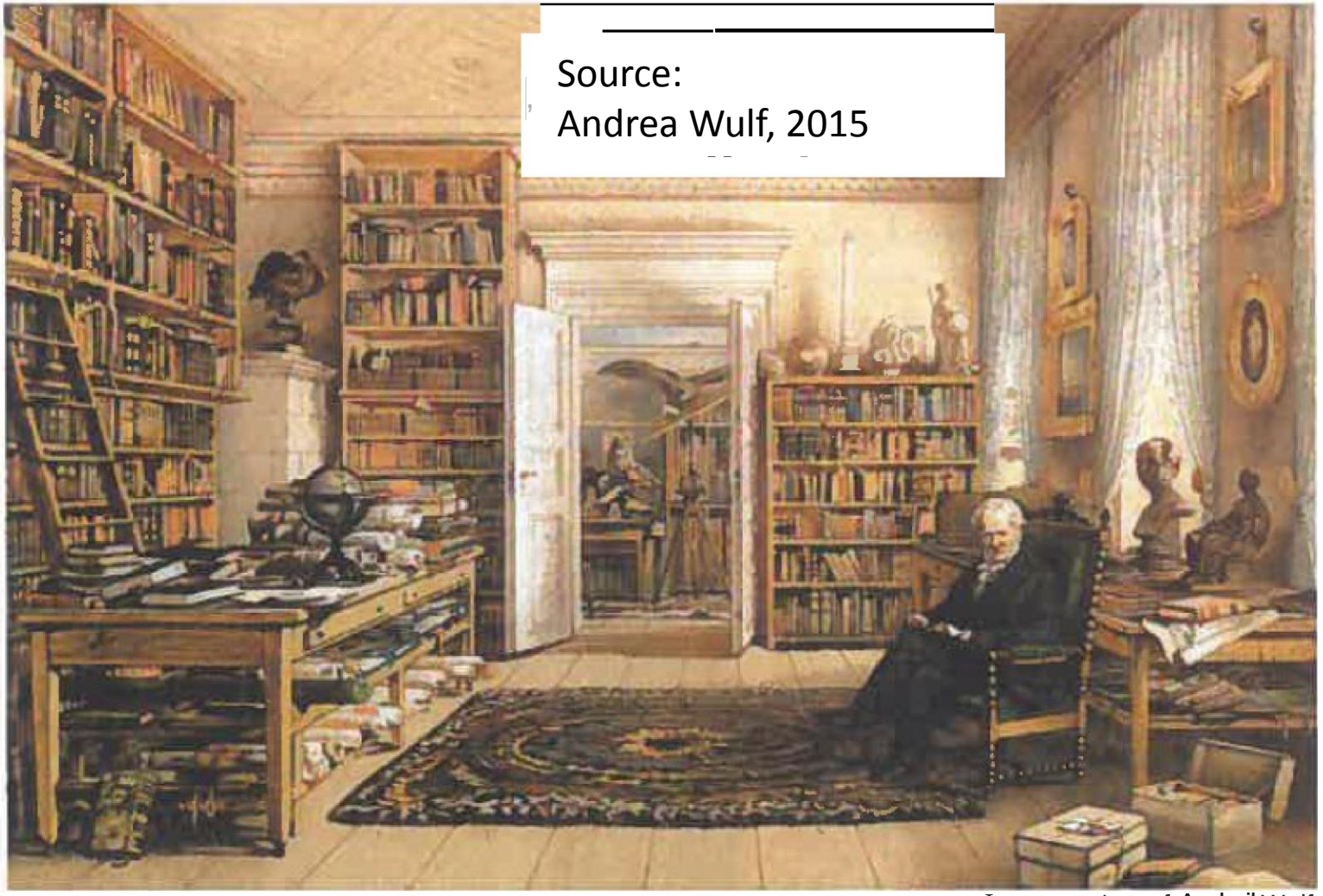
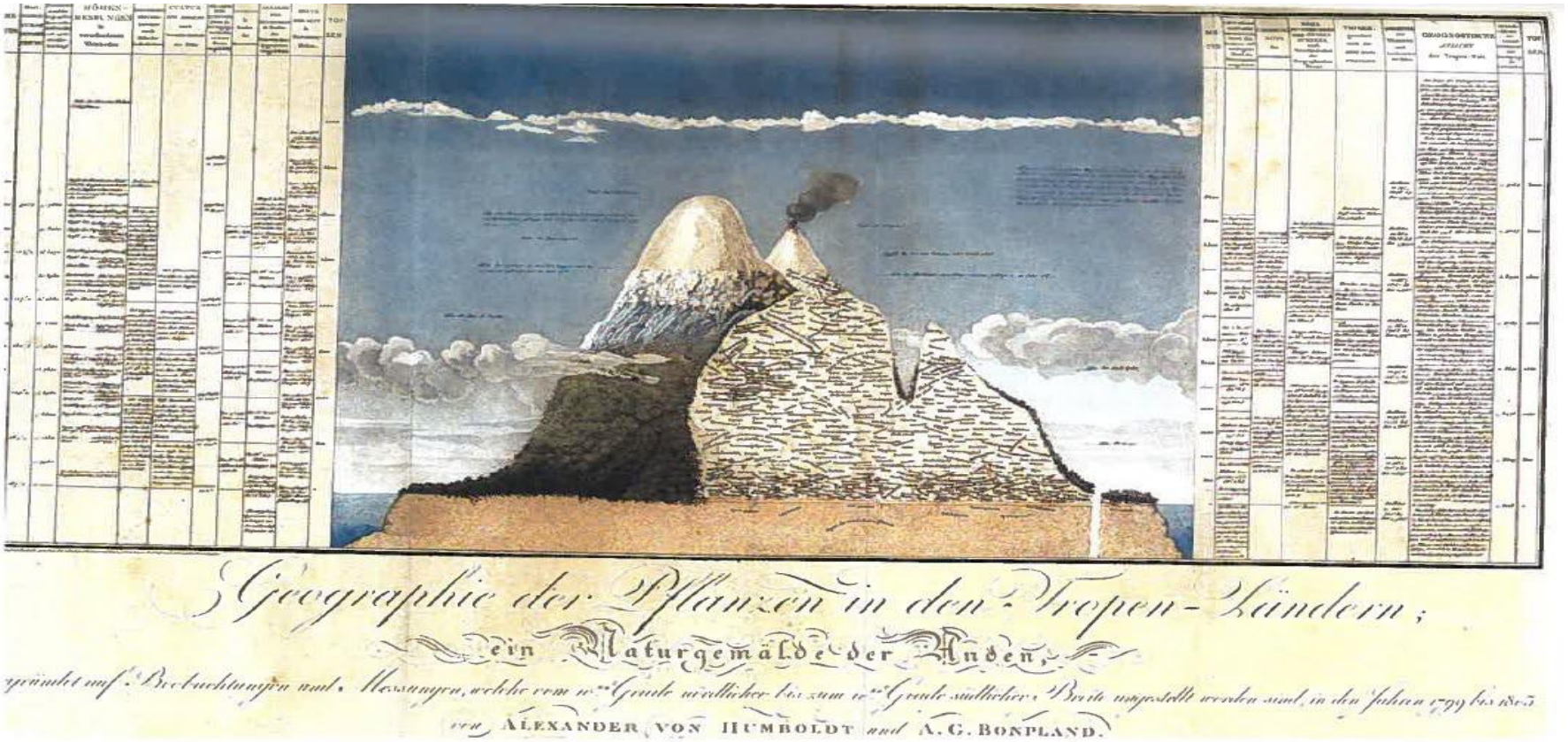


Image cow-h:sy of Andreil Wulf

Humboldt in the library of his Berlin apartment, a familiar sight to his throngs of visitors. In 18&9 he complained to his pul,lisher that he could only get writing done ah1ighL His bell rang in cessantly during the day, he said, as if he lived in a "'liquor store." Humboldt's study, where he also entertained visitors, is visible through the door at center.

Von Humboldt's biogeography of the Andes

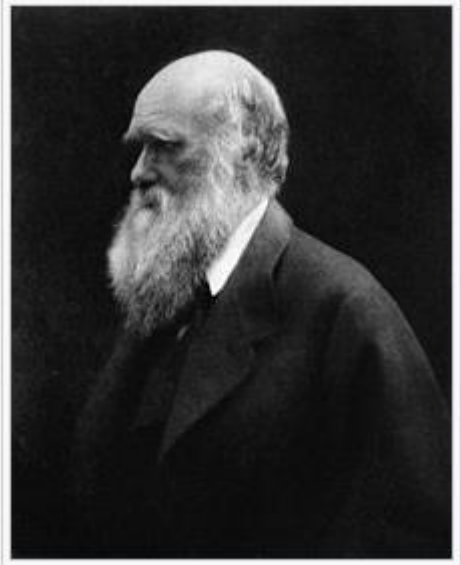


The "ecological view: is shown in the association of particular plants with altitude.

Evolution: Charles Darwin

- Sadly, in many ways, Humboldt's ideas are soon replaced by the much more persuasive ideas of **Charles Darwin** on evolution, presented in his book **On the Origin of Species (1859).**
- **So Humboldt's ecological analysis replaced as the best way to organize geographical data by Darwin's ideas**
- Note: Charles Darwin is NOT a geographer (he is a biologist) but he was an explorer, and his ideas greatly influence 19th Century geography.

Charles Darwin 1809-1882

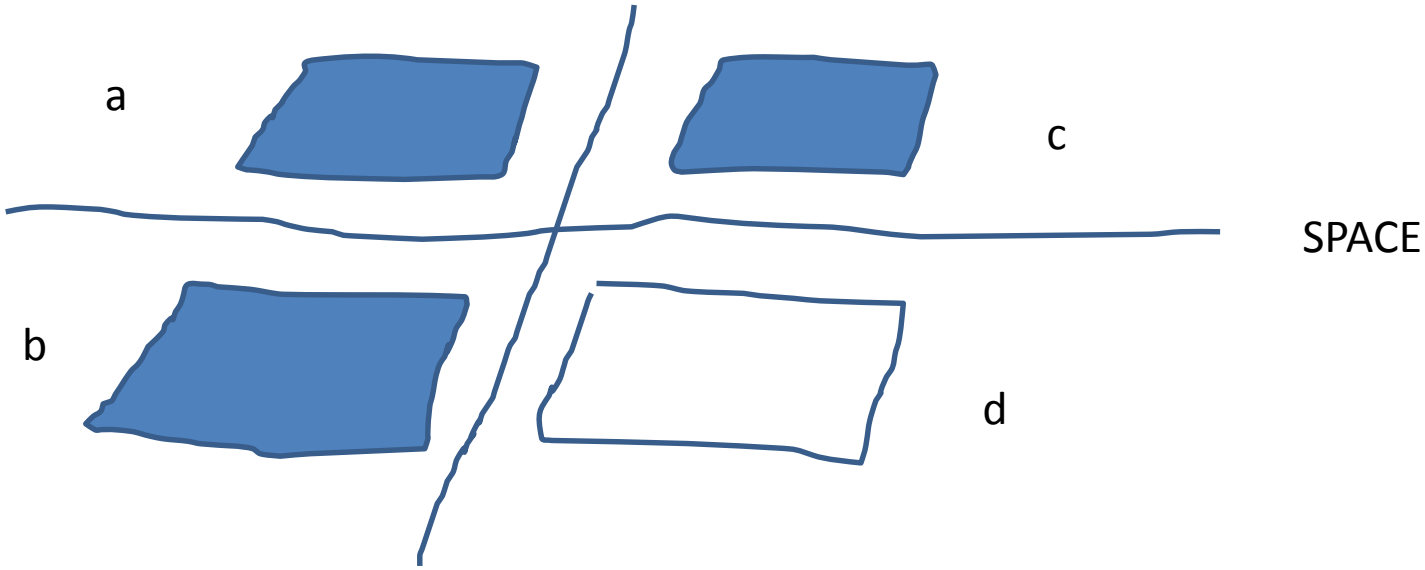


The round-the-world voyage of the *Beagle*, 1831–1836

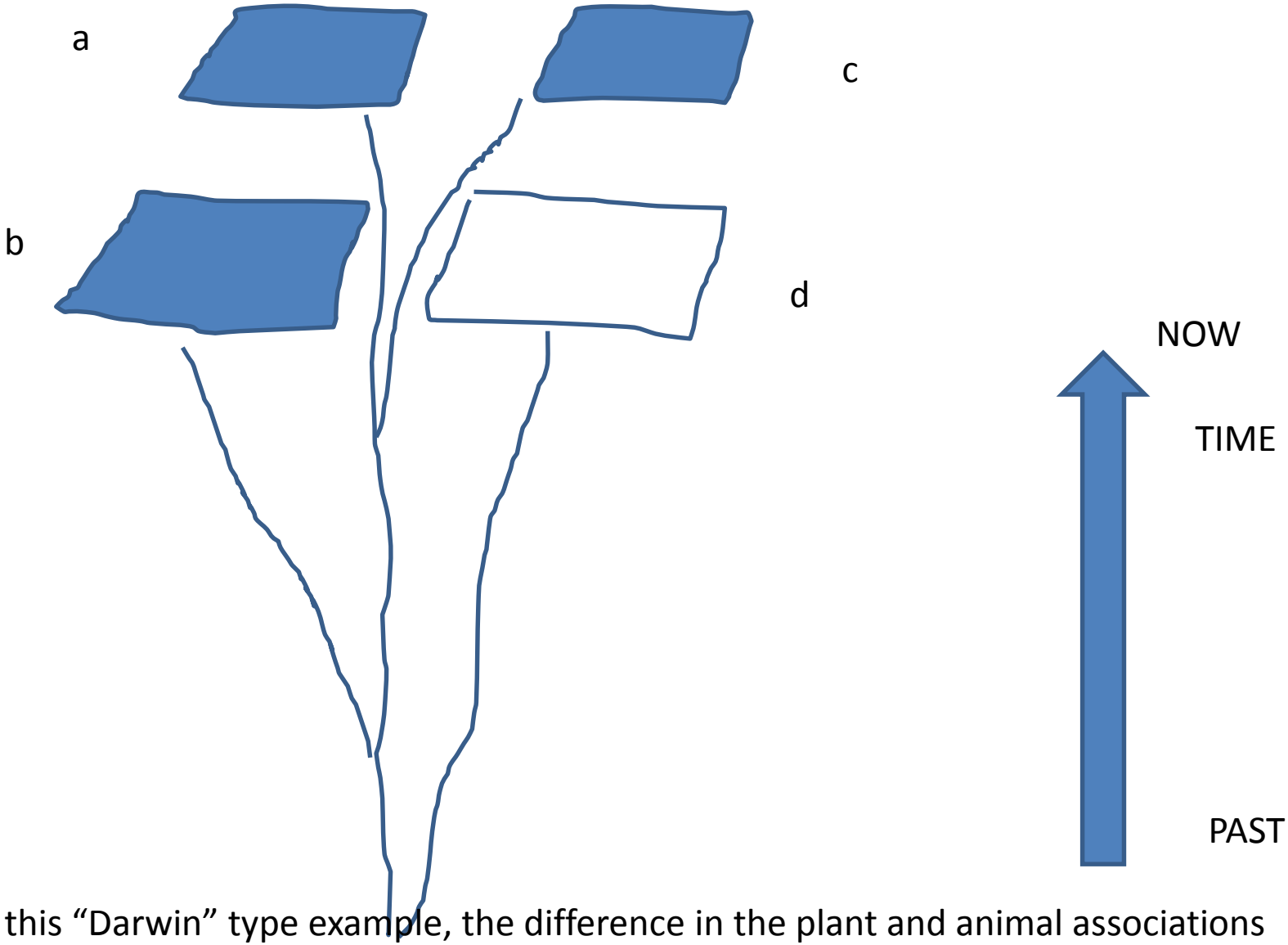
Source of Images: Wikipedia

Importance of Darwin's ideas

- Darwin's ideas were so influential in geography (as in many other branches of knowledge) because:
- they could not only *account for where* things were (the associations of phenomena that Humboldt described)
- And *explain how* they were related -- one type of association (an ecosystem; or, even, a region)
- But also *predict* – how things (species, ecosystems) could change or *evolve* into another.



In this “Humboldt” type example, the difference in the plant and animal associations (ecologies) are explained only by difference in SPACE

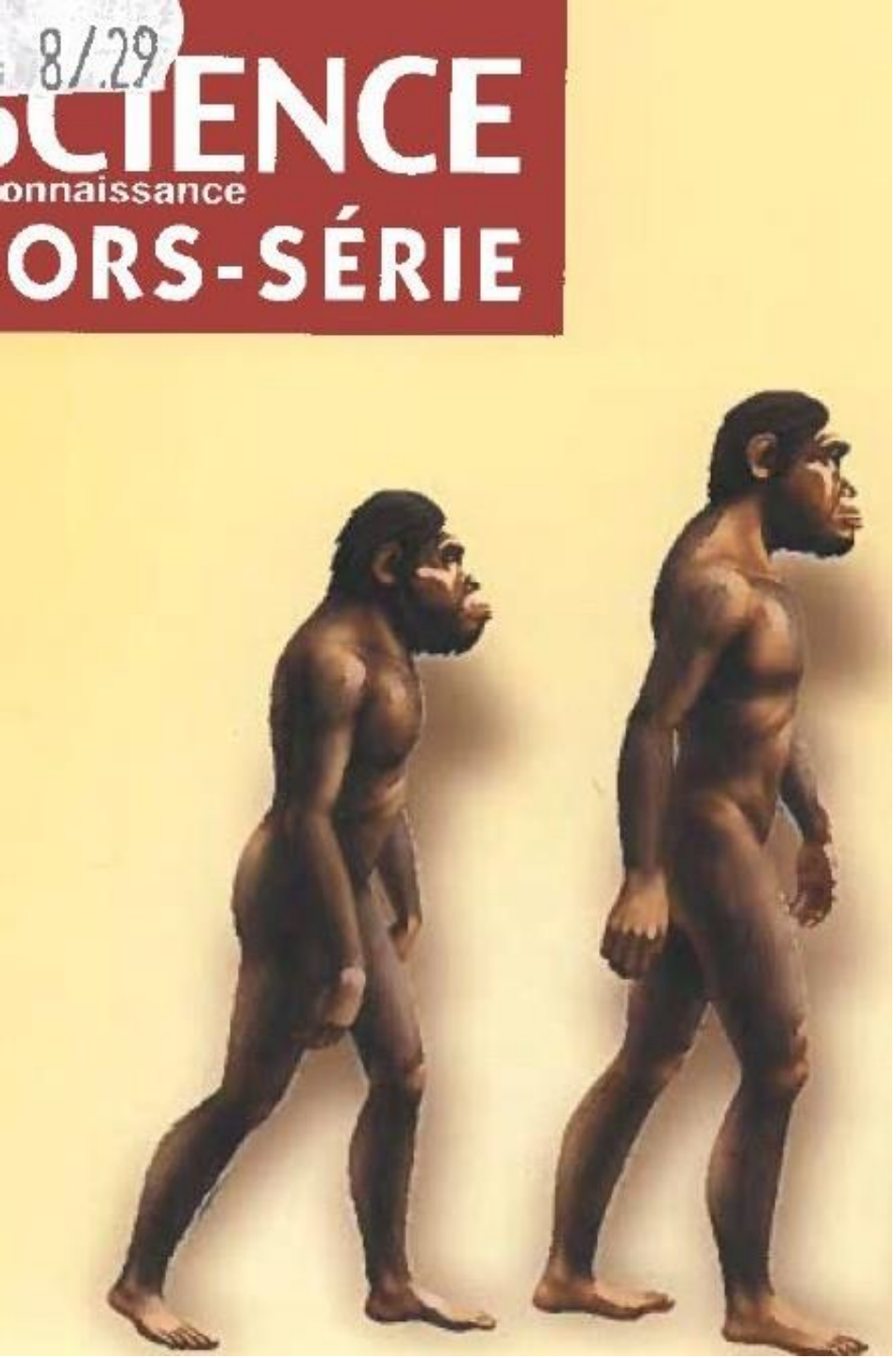


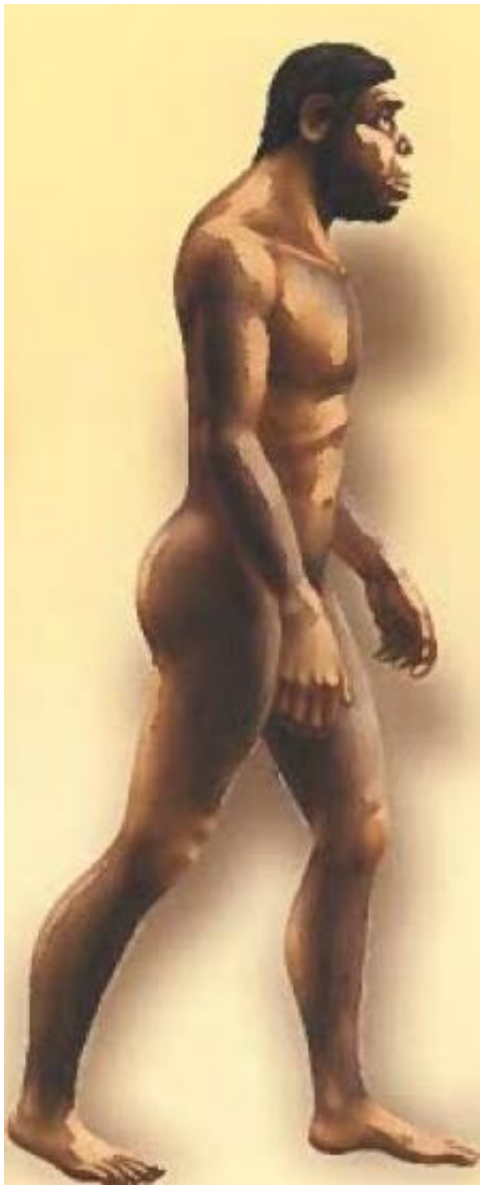
In this “Darwin” type example, the difference in the plant and animal associations (ecologies) are explained by difference in SPACE and TIME – “d” is “older” than others

SCIENCE

connaissance

HORS-SÉRIE





Environmental Determinism 1

- Sadly, These ideas of how space and time could "explain" things led late 19th Century geography into some wild ideas --

The erroneous belief arose that:

- (1) the environment always dictated [determined] what happened
  - Just as in nature, natural selection (the survival of the fittest) -- which drove the process of evolution – was an outcome of an organism's suitability to the environment
  - So, too for humans …..
  - Example – environmental determinists stated that in very productive tropical environments, humans did not have to do much to survive and became lazy (so-called "primitive"). In colder environments, people had to work harder and became more inventive ("advanced').

Environmental Determinism 2

Geographers took Darwin's ideas of

- (2) of natural evolution to mean that human societies {cultures or even regions} also could be seen as evolving,
- and that human societies could be ranked according to their level of development ("primitive", "advanced"); that this justified the dominance of the "advanced" over the "primitive" (they were more evolved), and to predict that the "primitive" could eventually become "advanced" – in the right circumstances, and with the right help.

Environmental Determinism 3

- These dangerous ideas were known as “Environmental Determinism” – because it argued that people’s achievements were only to be explained [*determined]* as the consequences of natural conditions
- It had side effects of imperialism, ethnonocentrism, masculinism
- It is a fallacy known more broadly as a *deterministic* view
- Leading proponents were Friedrich Ratzel (1882); Ellen Churchill Semple (1911); Ellsworth Huntington (1876-1947), Sir Halford Mackinder (1861-1947) and Griffith Taylor (1880-1963).

Example from Ellsworth Huntington: *Civilization and Climate* (Yale: 1915) page 200

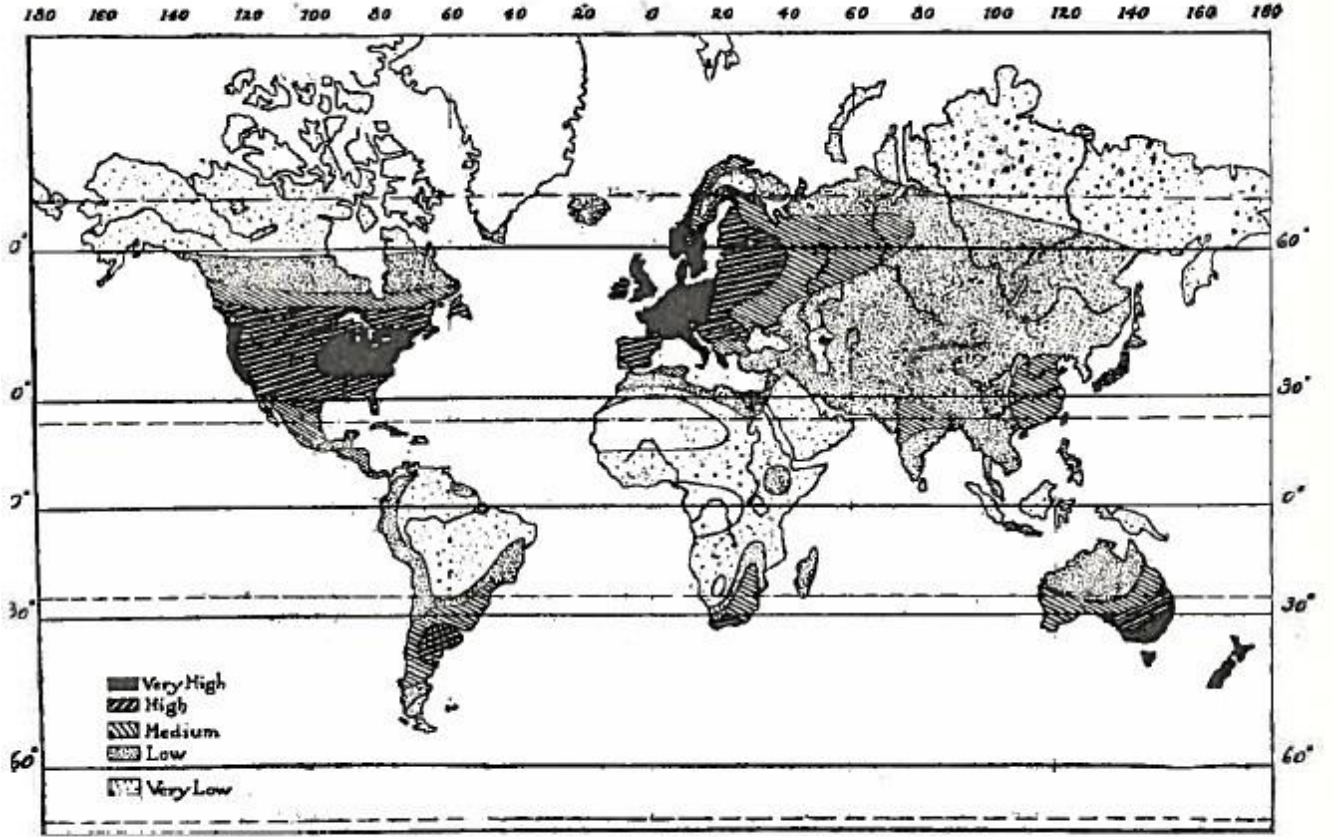


Figure 31. The Distribution of Civilization

Example from Ellsworth Huntington: *Civilization and Climate* (Yale: 1915)

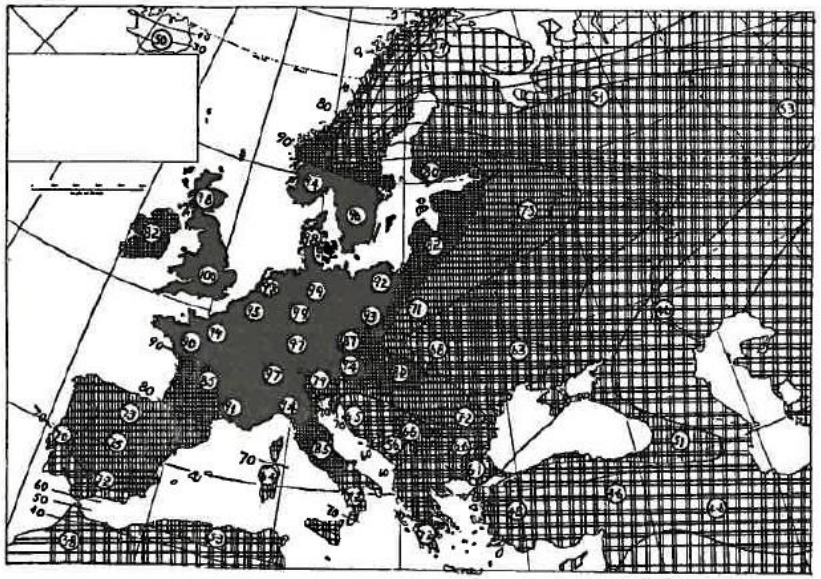
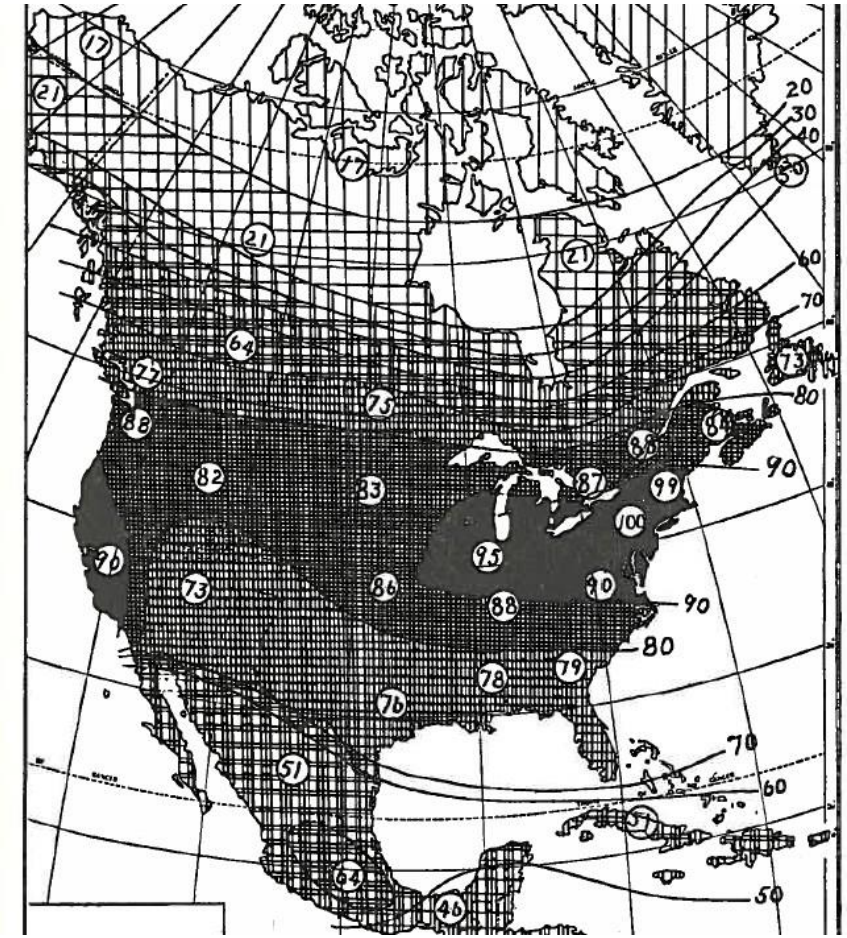


Figure 14. The Distribution of Civilization in Europe



A small example:

Across India – the British built “hill stations” (i.e. Simla) where they could escape the heat and restore themselves.

Another example of this type of thinking is the need for curative spas in the tropics

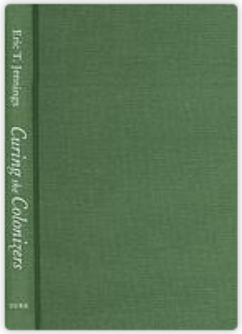
The French develop curative spas in their colonies in the tropics

On Martinique – the Falls of Absalom

On Mauritius

Idea is that you go there to restore yourself – if you can't get to Vichy in France of course

2.



Curing the colonizers : hydrotherapy, climatology, and French colonial spas

by Eric Thomas Jennings

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""Beware! Against the poison that is Africa, there is but one antidote: Vichy." So ran a 1924 advertisement for one of France's main spas. Throughout the French empire, sp... Read More

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Repudiation/Refutation of Environmental Determinism 1

- It is important to note that environmental determinism is just plain wrong. For three reasons:
  - 1. *It is factually wrong*
    - Mayan cities,
    - East Indian architecture,
    - Australian Aboriginal oral culture are all examples of “advanced” activity in what Environmental Determinists saw as “primitive” cultures.

Chichen Itza: The Observatory (El Caracol)

Repudiation/Refutation of Environmental Determinism 2

- 2. *It is logically flawed*
  - Human societies cannot be put on an evolutionary framework if they all exist today
- 3. *Based on a colonial, racist ideology*
  - Uses colonial categories of “race” which are biologically meaningless

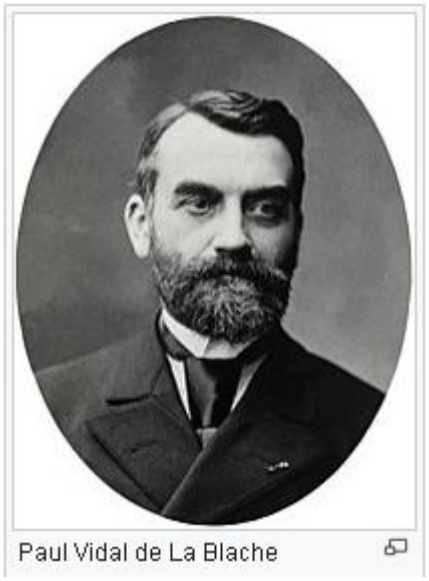
The “regional approach”

- Arises as a reaction and solution to the problems, weaknesses of environmental determinism – and puts emphasis on regional description.
- Main exponents are
  - Carl Ortwin Sauer (American geographer)
    - “The Morphology of landscape” (1925) – “the phenomena that make up an area … are interdependent”
    - Idea of the “cultural landscape”

Paul Vidal de la Blache (1845-1918) (French geog.)

- He said -- Over time, people and nature adapt to each other, like a snail and its shell
- The ideal object for geographical study was the ***Region –*** idea of *genre de vie*
- The regional approach in geography was;
  - Inductive
  - Historical
  - Concerned with the unique
  - Believed that the environment did not dictate but set some boundaries to what was possible (*possibilism)* and recognized the importance of human culture in providing solutions to environmental challenges

Paul Vidal de la Blache



Paul Vidal de La Blache

Gravestone

Paul Vidal de la Blache's gravestone in Paris (22 Jan 1841- 5 April 1918)

Regional geography breaks down in 1950s

- Why?
  - Too descriptive
  - Impossible to teach anyone how to do it
  - No longer “cutting edge” in a post-war era of computers, social science and academic disciplines involved in planning or in prediction of world events/phenomena
  - Somehow geography needed to remake itself (again)

“The New Geography”

- The “new geography” dates from Fred K. Schaefer’s paper “Exceptionalism in geography: a methodological examination” in the Annals of the American Association of Geographers, vol. 43 (1953), pages 226-249.
- His main point was “… geography has to be conceived as the science concerned with the formulation of the laws governing the spatial distribution of certain features on the surface of the earth” (p. 227)
- In other words, the search for the laws of location – and thus the *new geography* also became known as “spatial analysis”, or “locational analysis” and geography saw itself as a *spatial science*

The new geography is described as part of the “Quantitative Revolution”

While others used the term “New Geography: and called what they were doing “Spatial analysis” or “Locational Analysis”

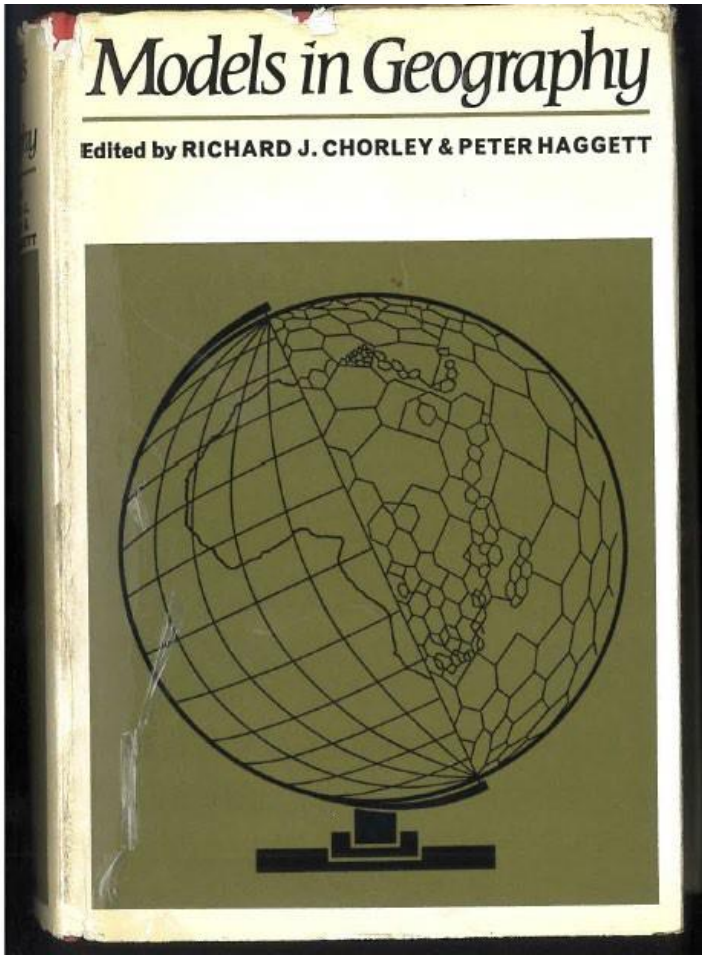
Whatever it was called it, Geography was told this was the way to go (even if only the young rebels of the time believed it!!)

What are the characteristics of “science”?

- Can you name some of the key ones?

- 1…..
- 2…..
- 3…..
- 4….

Some of the key texts



1967

- **Locational Analysis in Human Geography**

  – By Peter Haggett

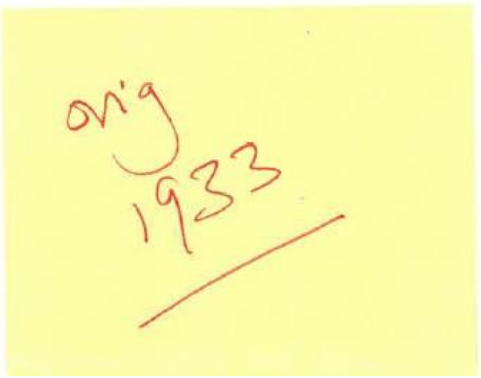
1965

Other key texts were previously neglected works i.e.

CENTRAL PLACES IN SOUTHERN GERMANY

Walter Christaller

Translated from
DIE ZENTRALEN ORTE IN SÜDDEUTSCHLAND
by
Carlisle W. Baskin
Randolph-Macon College



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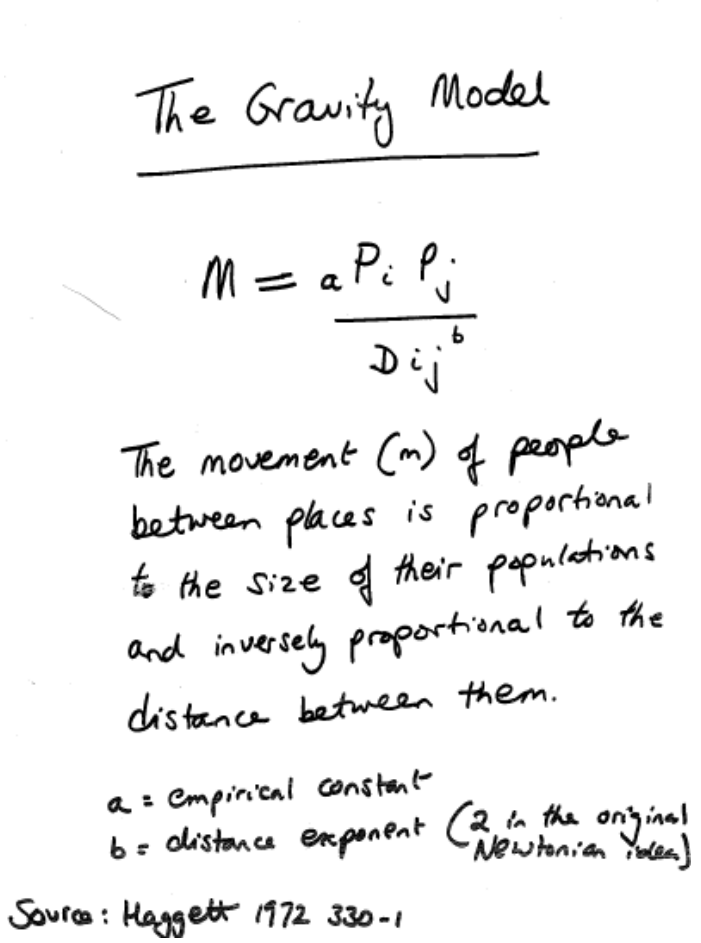
What did these texts teach?

- The “new geography” (sometimes also called “locational analysis”, or even “spatial analysis”)
- used general “models” to explain human behaviour
  - *Model* defined as “simplification of reality”
  - *Model* most often was an equation, but could be a diagram

An example: migration can be modelled by equations of flows of people between places, using the general "gravity" model



Example:
More people travel between 2 big cities than between a big city and a small city

Another example: As Christaller showed, shopping behavior can be generalized into a spatial model

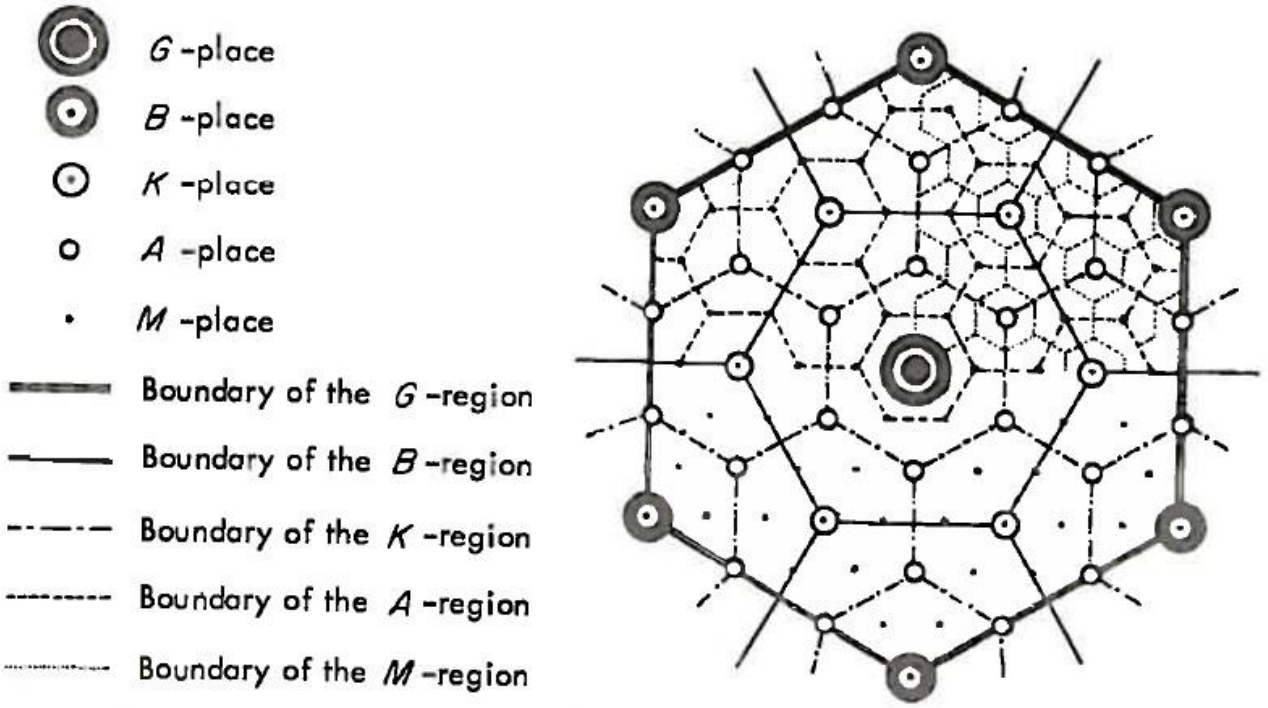
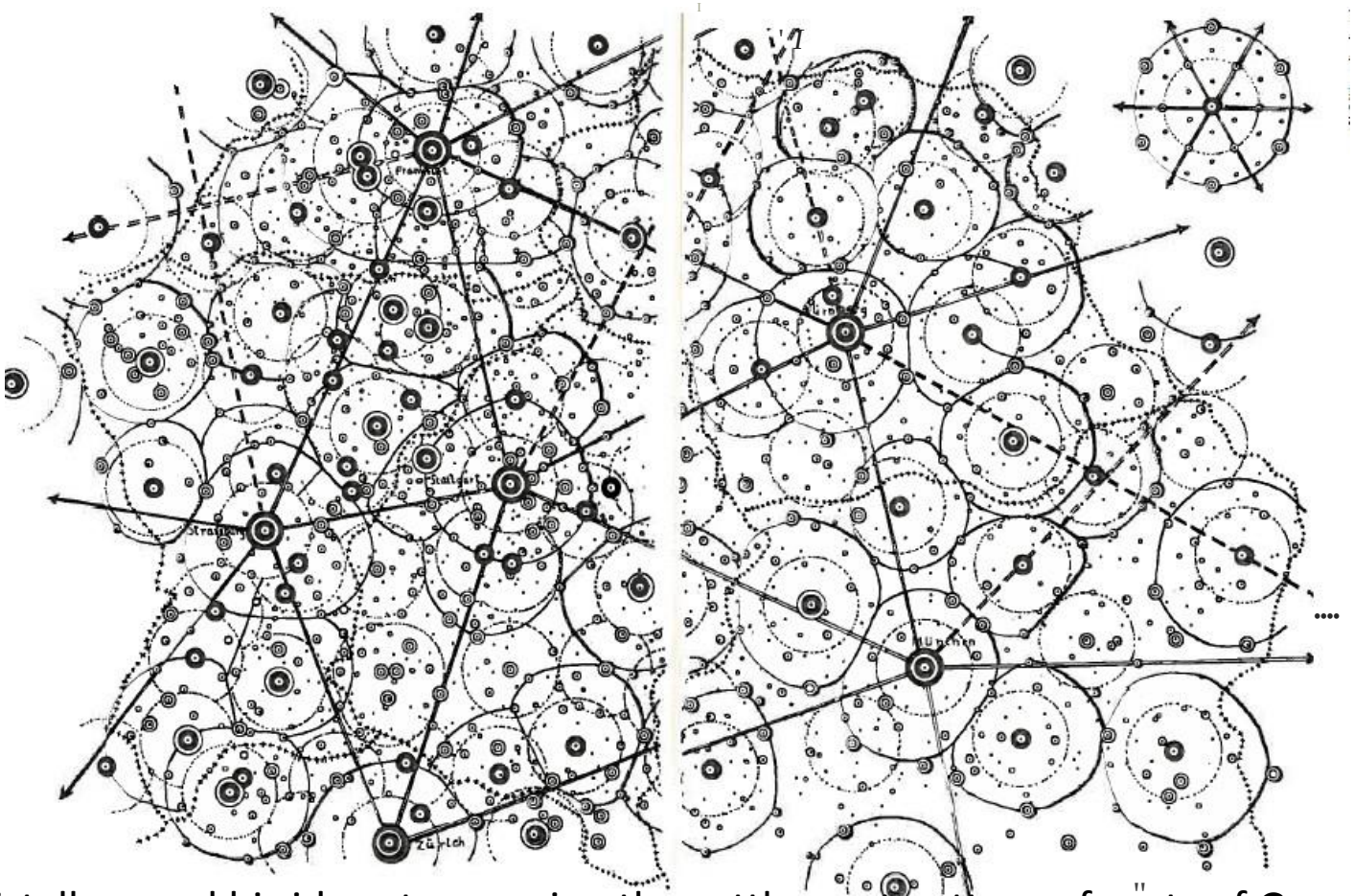


FIGURE 2

The Marketing Regions in a System of Central Places



Christaller used his ideas to examine the settlement pattern of parts of Germany

L • ploce
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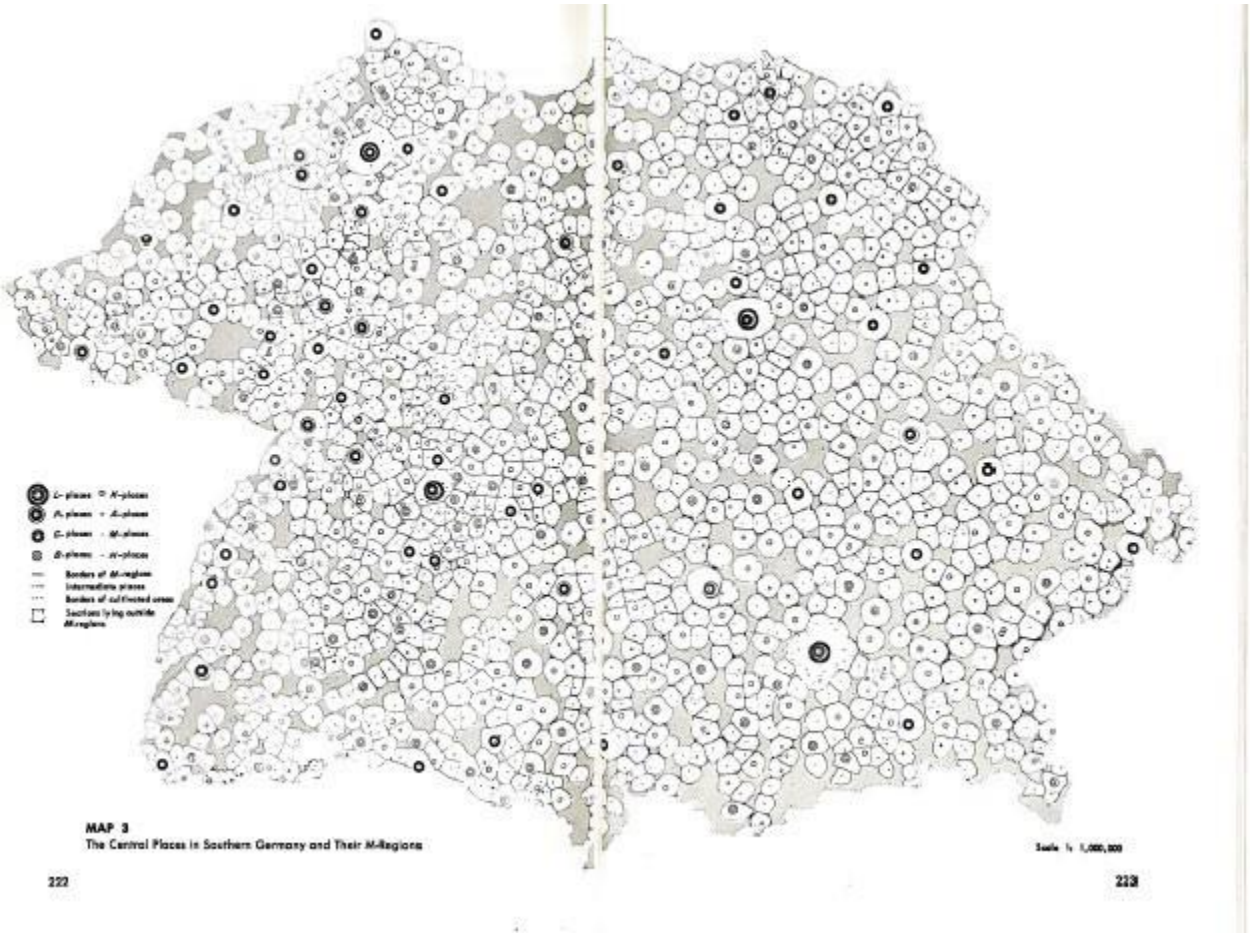
MAP 4

The Distrib ution of Towns as Central Place1 In Southern Germany

Christaller's 1933 view of central places in S. Germany



Crucial to this are ideas of "threshold" and "range"

Threshold=minimum population to support a type of retail activity; **Range** = the max distance people prepared to travel for that activity; **Hierarchy** = the level of retail activity or goods.

Number of Places	*Number of Complementary Regions*	*Range of Region (km.)*	*Area of Region (sq. km.)*	*Number of Types of Goods Offered*	*Typical Population of Places*	*Typical Population of Region*
486	729	4.0	44	40	1,000	3,500
162	243	6.9	133	90	2,000	11,000
54	81	12.0	400	180	4,000	35,000
18	27	20.7	1,200	330	10,000	100,000
6	9	36.0	3,600	600	30,000	350,000
2	3	62.1	10,800	1,000	100,000	1,000,000
1	1	108.0	32,400	2,000	500,000	3,500,000

<u>A Spatial science</u>: Overall, the “New Geography” views examines movement, network, node, hierarchy, surfaces – all aspects of space that can be quantified/measured/seen objectively

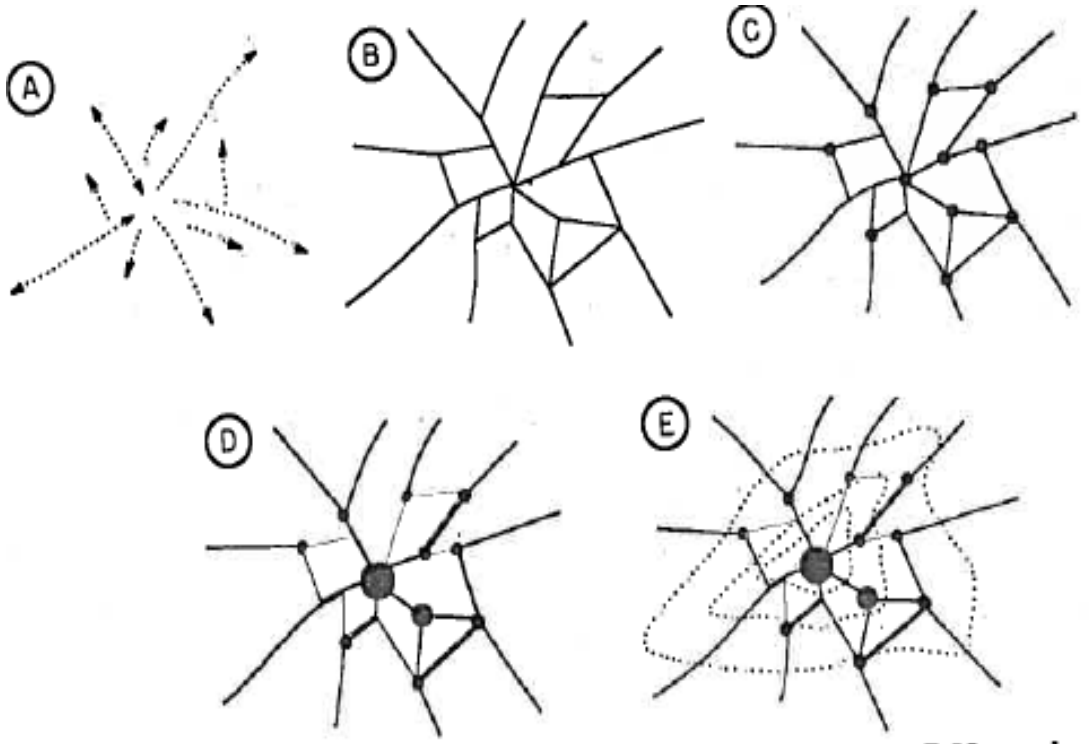


Fig. 1.5. Stages in the analysis of regional systems. *A* Movements. *B* Networks. *C* Nodes. *D* Hierarchies. *E* Surfaces.

But, The “New Geography” breaks up: 1

- In its turn the “new geography” begins to fall apart – from the 1980s onwards – as people find it too unengaged with real-world problems -- and is replaced by:
- A series of more socially-relevant themes, i.e. :
  - The geography of under-development and social inequality (based on world-system theory ideas)
  - The geography of gender (based on ideas about how cultural constructions of gender also structure “space” for people”)

The “New Geography” breaks up: 2

- These new directions become **“Postmodernism”**:
  - Rejects the rationality and science-based approach of spatial geography (arguing it just didn’t work)
  - Rejects all over-arching theory
  - Rejects universalism
  - Favours the study of the unique and the local
    - So, the study of “place” as unique phenomena, and of “space” as subjective constructions, are rekindled in the study of geography.
  - Increasingly (since 2000) has favoured the self-reflexive (one’s own feelings, reactions)

Some of the latest developments

(1) To see more things involved than just us:

- *Actor-Network theory (ANT)* – sees the world as composed of a web of "heterogeneous things" i.e humans, nonhumans, and objects.
- Importantly, nonhumans have just as much "agency" (the ability to make things happen) as humans)

A tree and a gravestone: central Quebec City

August 2018

Actor-Network Theory?

A web of Human, Nature, And stone objects

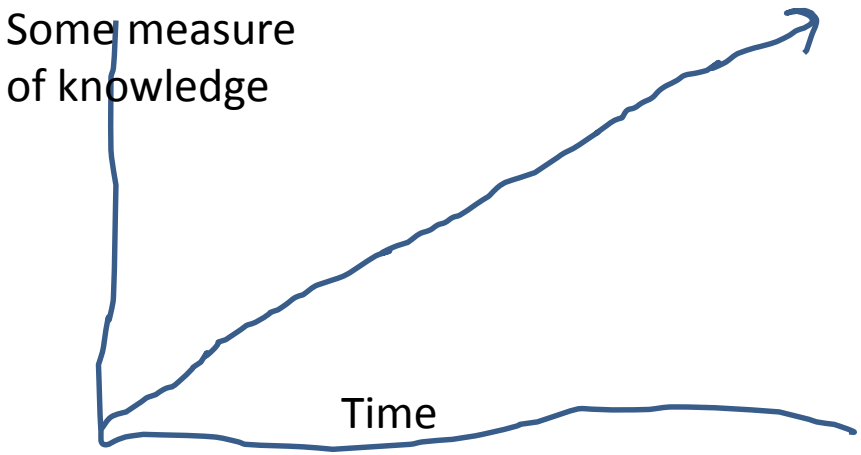
(2) To see more lies below the surface

- Non-representational theory (NRT)
  - This tries to compensate for ANT's neglect of human emotion by looking at what is happening outside of conscious thought, the moments of precognition.
  - Emphasizes affect {defined as "emotions that are embodied reactions to the social or physical environment"}
  - Some good examples have considered role of music or dance

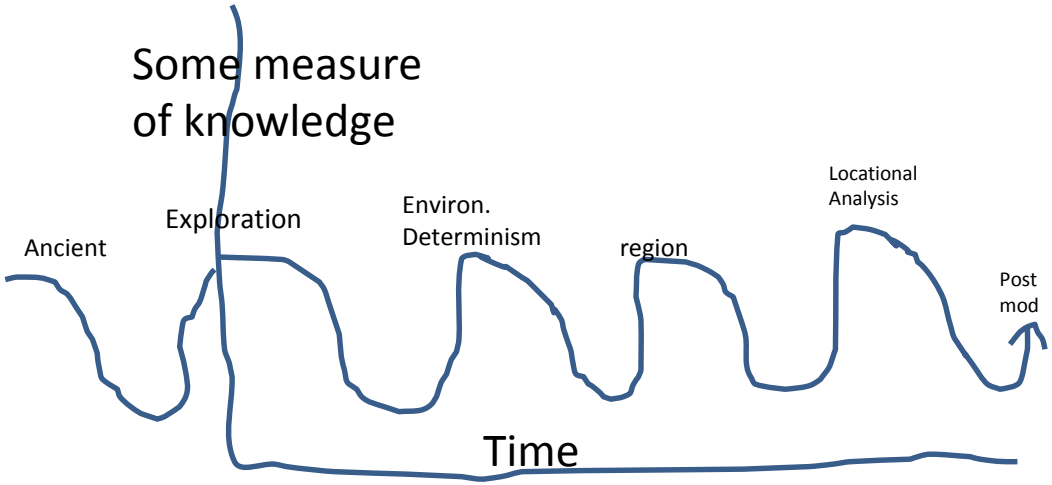
Why did geography go through so many changes in its goals?

The answer lies in a book by Thomas Kuhn
The Structure of Scientific Revolutions
(University Of Chicago Press ,1962)

A simple model of how a discipline develops over time



The never ending expansion of knowledge



The changes in Geography's approach means always a re-interpretation of what we know (and don't know).
No absolute truth ("right" or "wrong").
Knowledge is a cultural construction.

Paradigms

According to Kuhn, knowledge about anything at any particular time is organized around one major super-theory or paradigm (or "worldview" – not the best word for geographers)

Examples would be –

- **global warming**
- **gravity**
- **Continental drift**
- **Extinction of dinosaurs due to comet collision with Earth**

Kuhn tells us that there is usually only one or two major paradigms at any one time

This would be the “ruling paradigm”

The ruling paradigm answers a lot of our questions about something. AND It sets out what are the problems and questions that are legitimate ones for study and research.
At the same time, it sets out what you should not study – because these are “wrong”

Revolution

Every so often – Kuhn reports – the paradigm begin to fail in giving us all of the right answers – the times it is seen to be wrong begins to increase in people's minds

At this point, a new "paradigm" which does better is developed, and a revolution in thinking has occurred.

Kuhn's example here is the old paradigm of Sun going round Earth – replaced by that of Earth going round sun.

The advantage of the paradigm – we all know what is the correct view and what research we should do

The disadvantage is it can become very stiffling and stagnant – you are not allowed to think outside the box

Yet we all know , we need to get outside that box to move on ….. There is the contradiction between needing a framework to help us think, and to move beyond that framework

So –

- **we do need to question our hypotheses and assumptions,**
- **not to take our textbooks**
- **or professors for granted,**
- **be open to new ideas and insights**
- **But always to be critical!**