

History of Cartography



World's oldest map
Babylonia, 6th century BC

[https://www.gislounge.com/
mapping-through-the-ages/](https://www.gislounge.com/mapping-through-the-ages/)

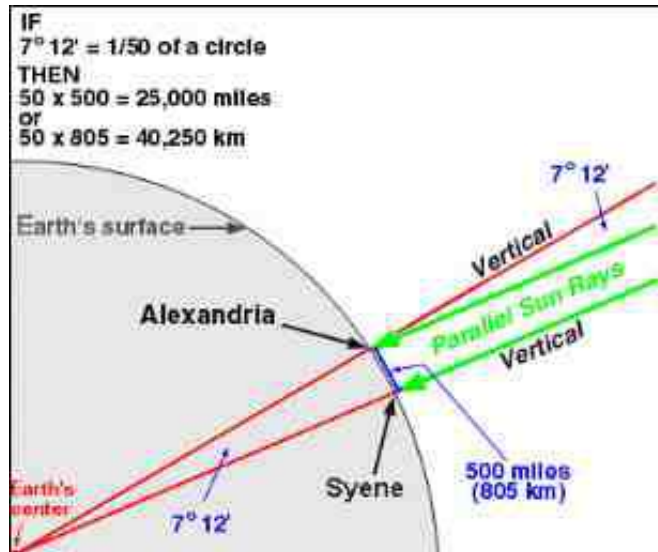
[https://www.thecanadianencyclopedia
.ca/en/article/history-of-cartography](https://www.thecanadianencyclopedia.ca/en/article/history-of-cartography)

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Ancient Greeks

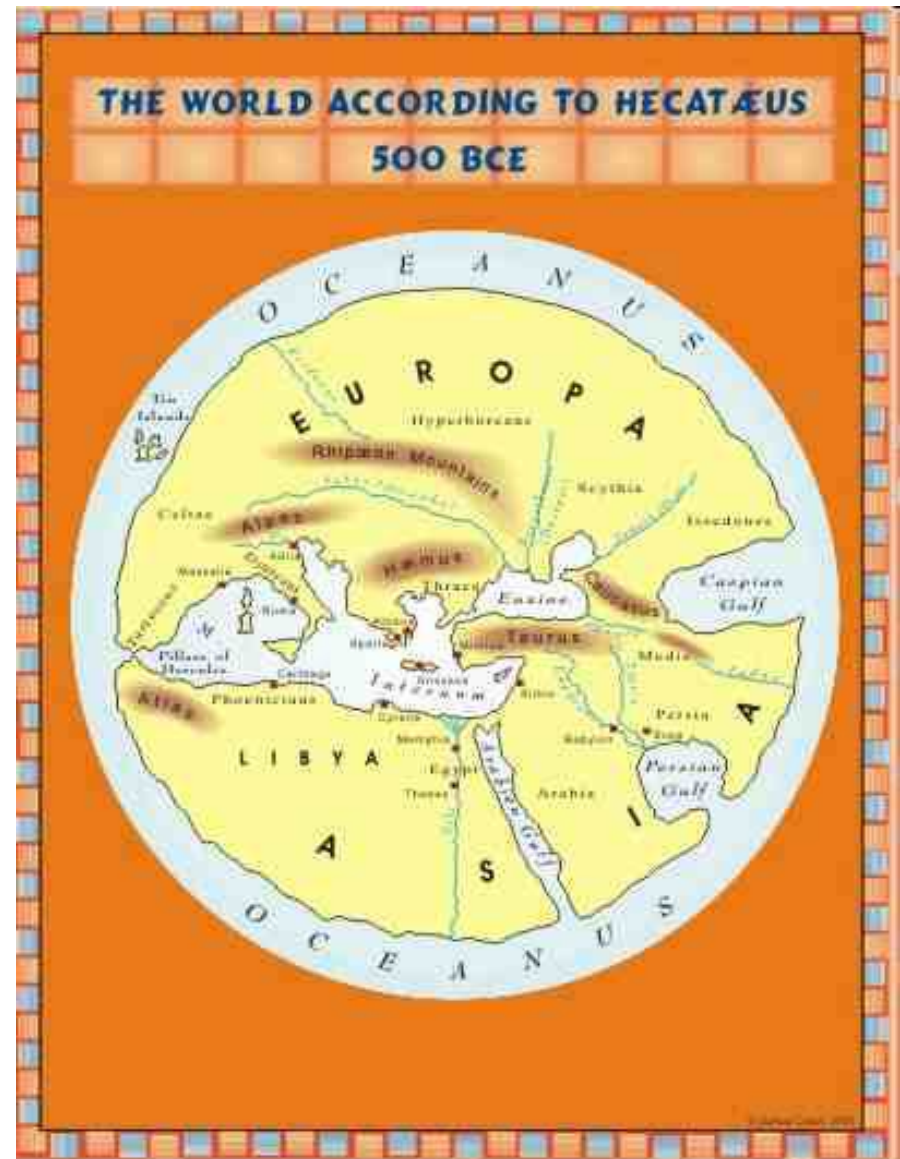
500BC - 500AD

Eratosthenes (275-195BC)
- circumference of earth



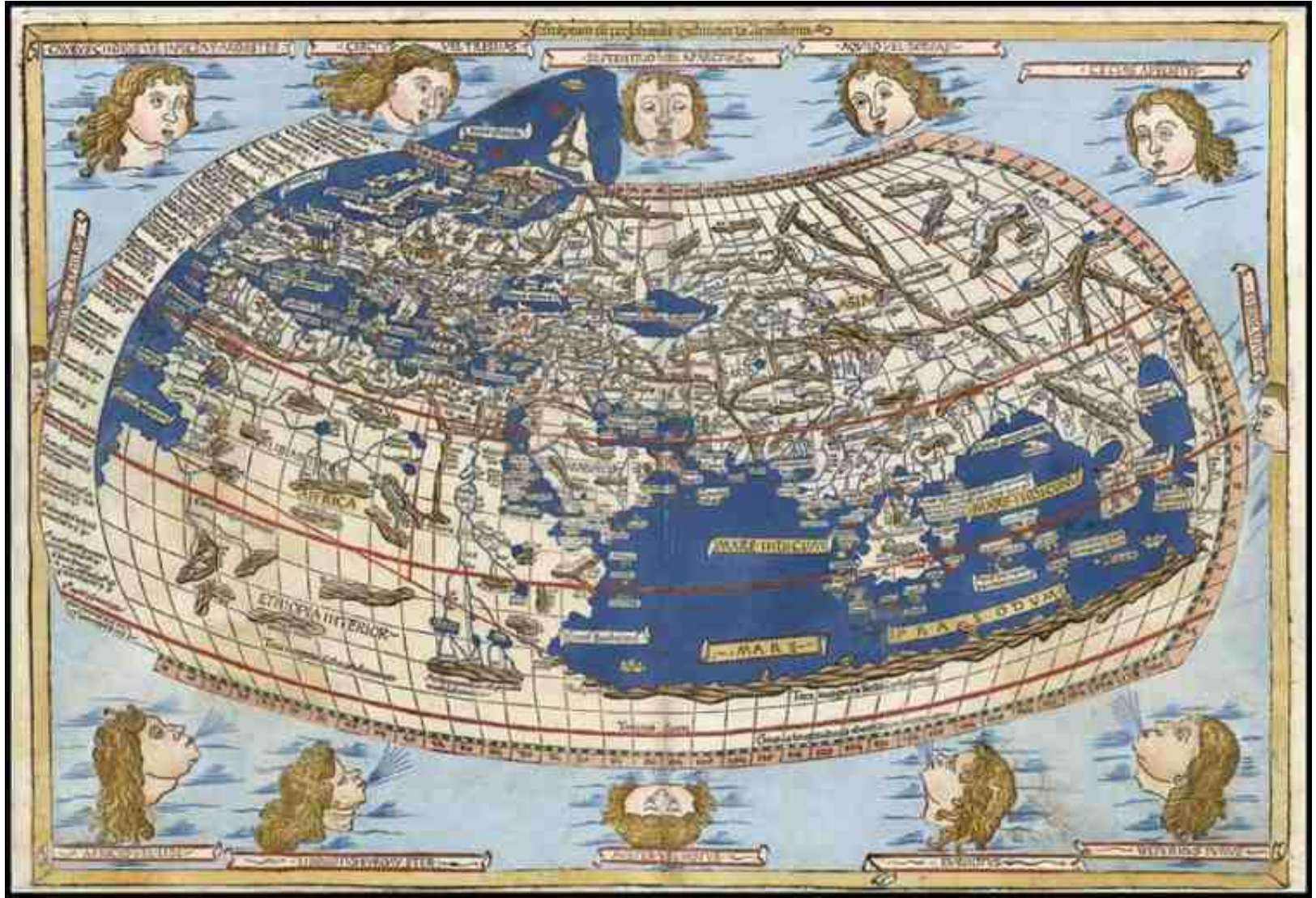
Hipparchus (190-120BC)
- latitude / longitude

First map projections
- azimuthal Thales, etc.)



Ancient Greeks

Claudius Ptolemy, (AD 90-168)



Ptolemy compiled all known world locations

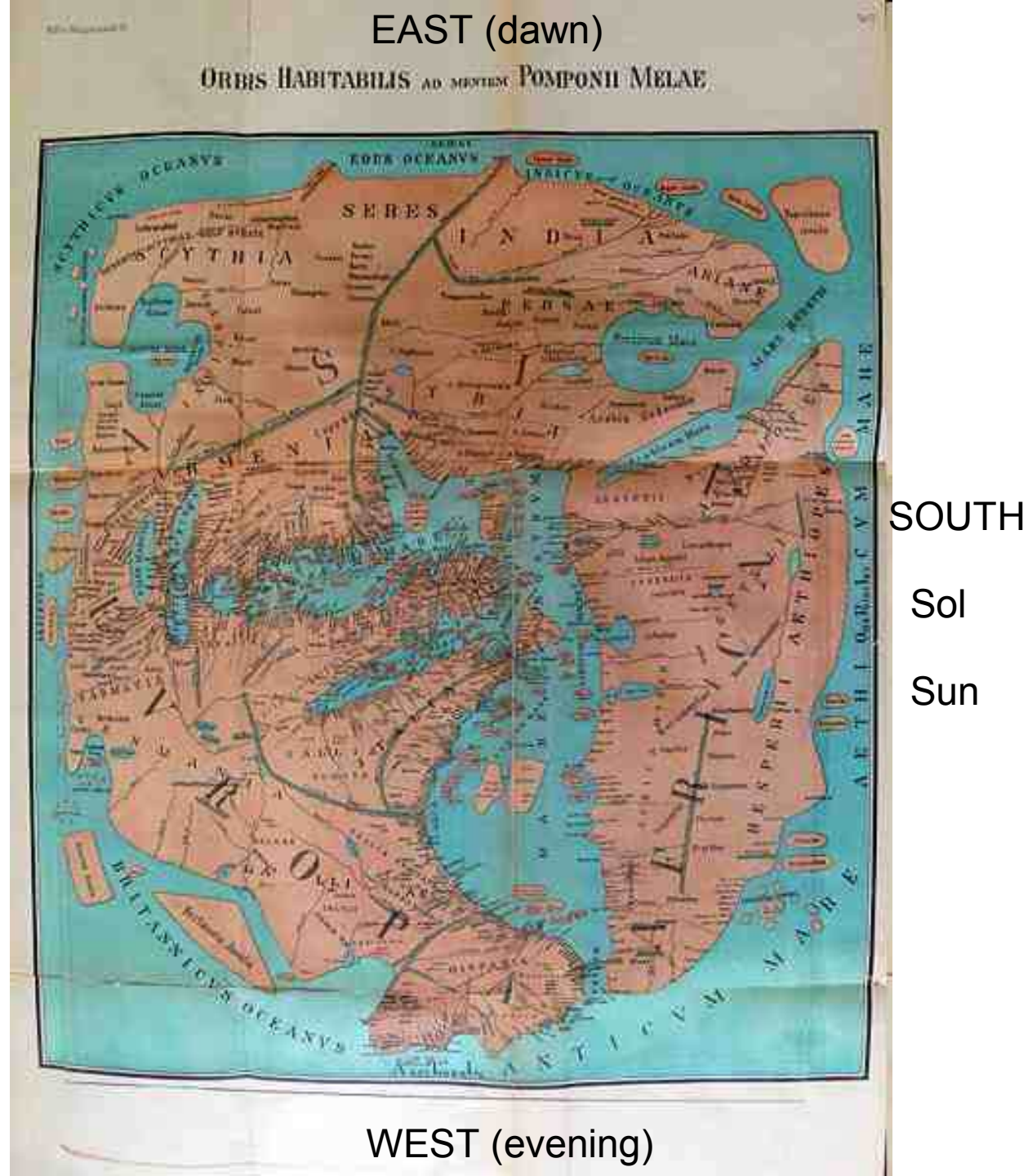
- Overestimation of longitude extent contributed to Columbus 'bumping' into America

Roman world map reconstruction

AD 43

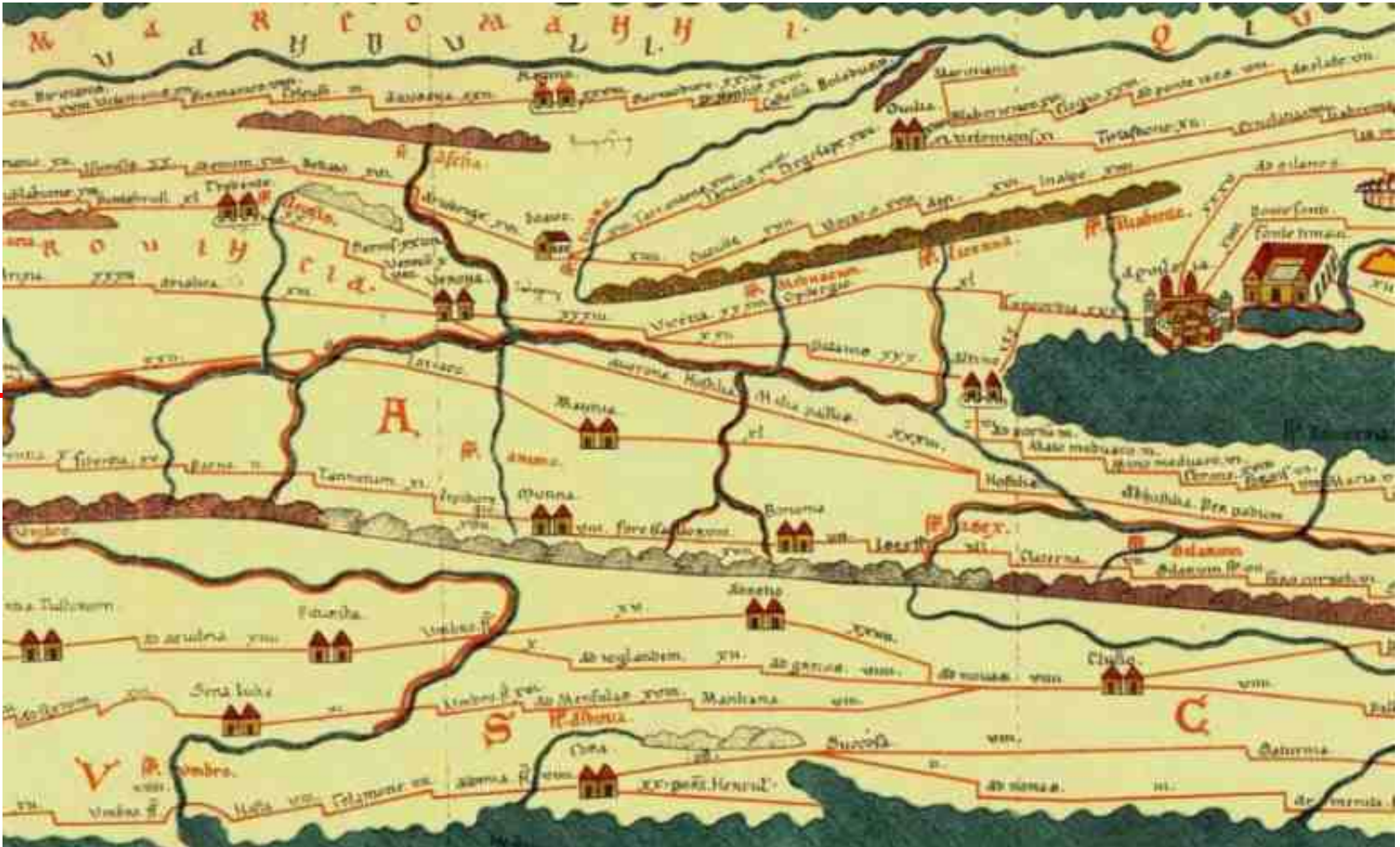
NORTH
(Left)

East (Orient)
to top



Romans: Tabula Peutingeriana (4th century)

The Tabula Peutingeriana (*Peutinger table*) shows the road network in the Roman Empire. It is a 13th-century copy of an original map dating from the 4th century, covering Europe, parts of Asia (India) and North-Africa.

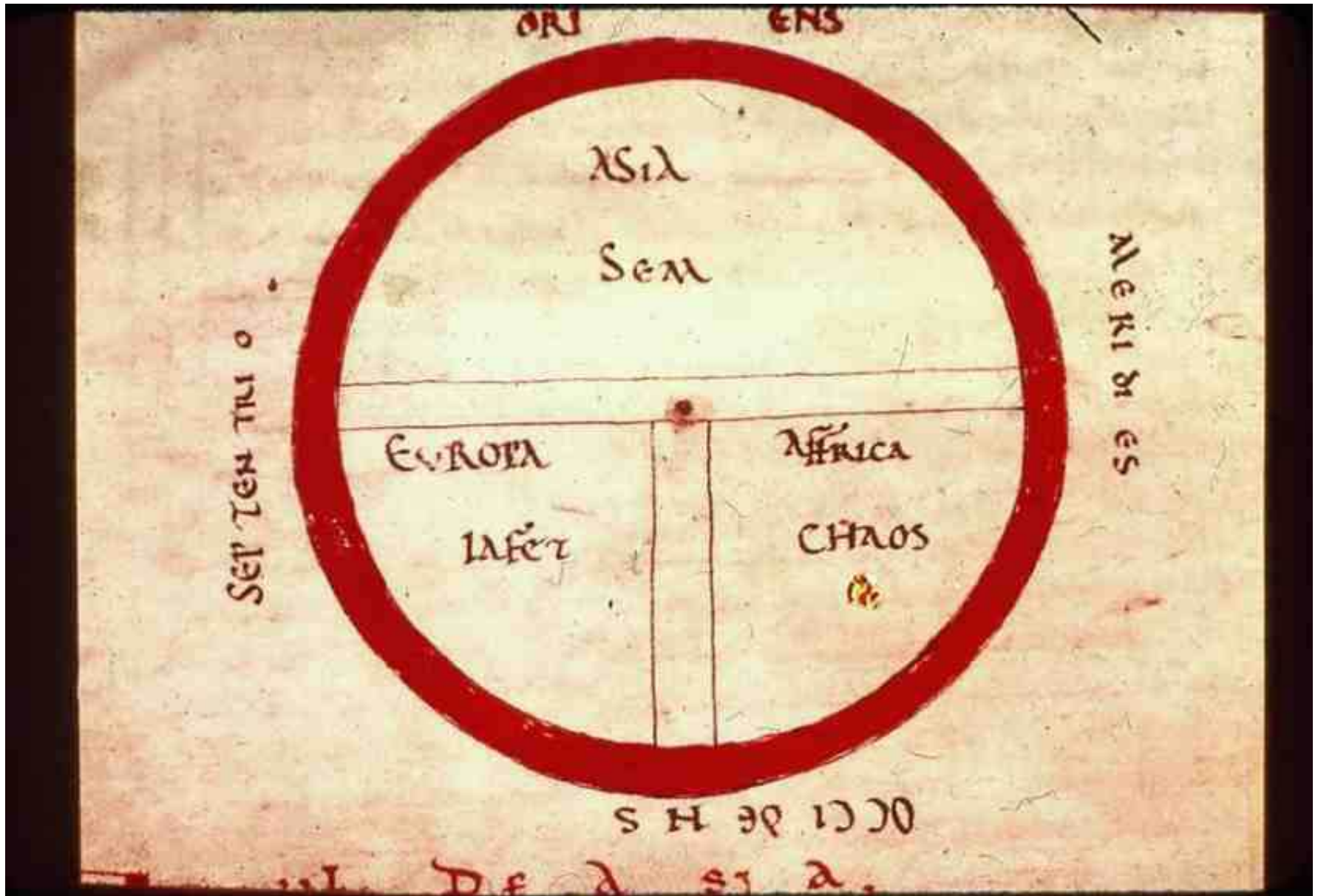


Early car navigation device, like the Peutinger table:



Pre-GPS GPS !

“T-in-O” maps: T is the Mediterranean and Nile/Don Rivers
O is the extent of the known world: One continent for each of Noah's sons



The Medieval Dark Ages: “T-in-O” maps



Hereford Mappa Mundi ~1300

'T in O' map

R. Don



R. Nile

Mediterranean

Viking voyages of 'exploration' : 793-1066AD

Faroes 825 (510: St. Brendan)

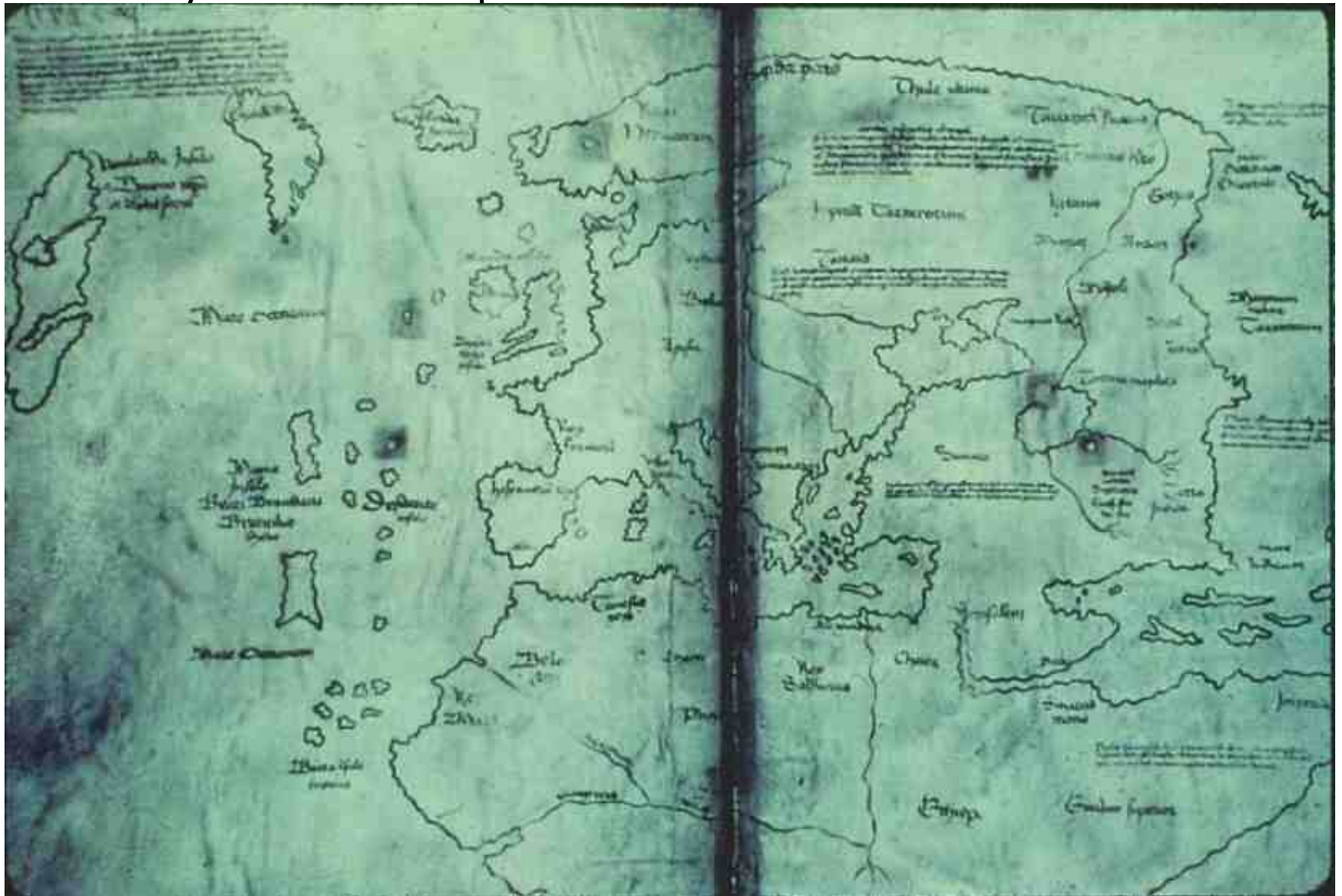
Iceland 874 (Irish monks earlier)

Greenland 980

Newfoundland 986 (proven in the 1960s)



Vinland map: Discovered 1957, dated to ~1440
contained 1920s inks and radioactive elements from 1950s showed it to
be a likely fake - did Europeans know about America before 1492?





Chinese map, 1763 copied from 1418 ?



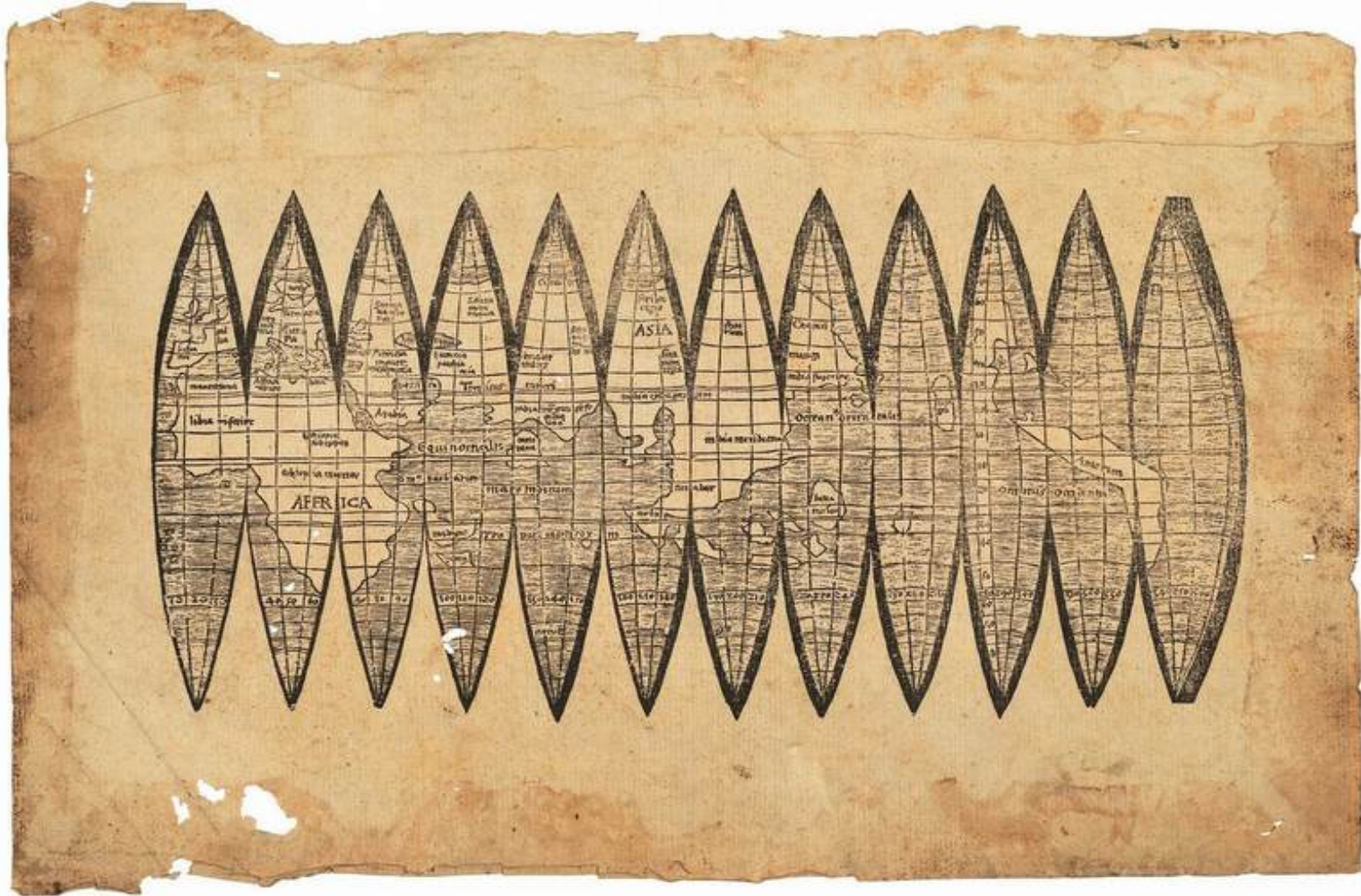
Arabic cartography: Al-Idrisi 12th century



The *Tabula Rogeriana*, by Muhammad al-Idrisi for Roger II of Sicily 1154.

The Renaissance (~1400): Ptolemy's world is 'rediscovered'

First European map showing America, 1507
from voyages of discovery: Martin Waldseemüller,



But the biggest change in the renaissance ... and the 2nd millenium was:

Invention of the printing press by Gutenberg, 1440
(though movable type was developed in China in 1041 by Bi Sheng)

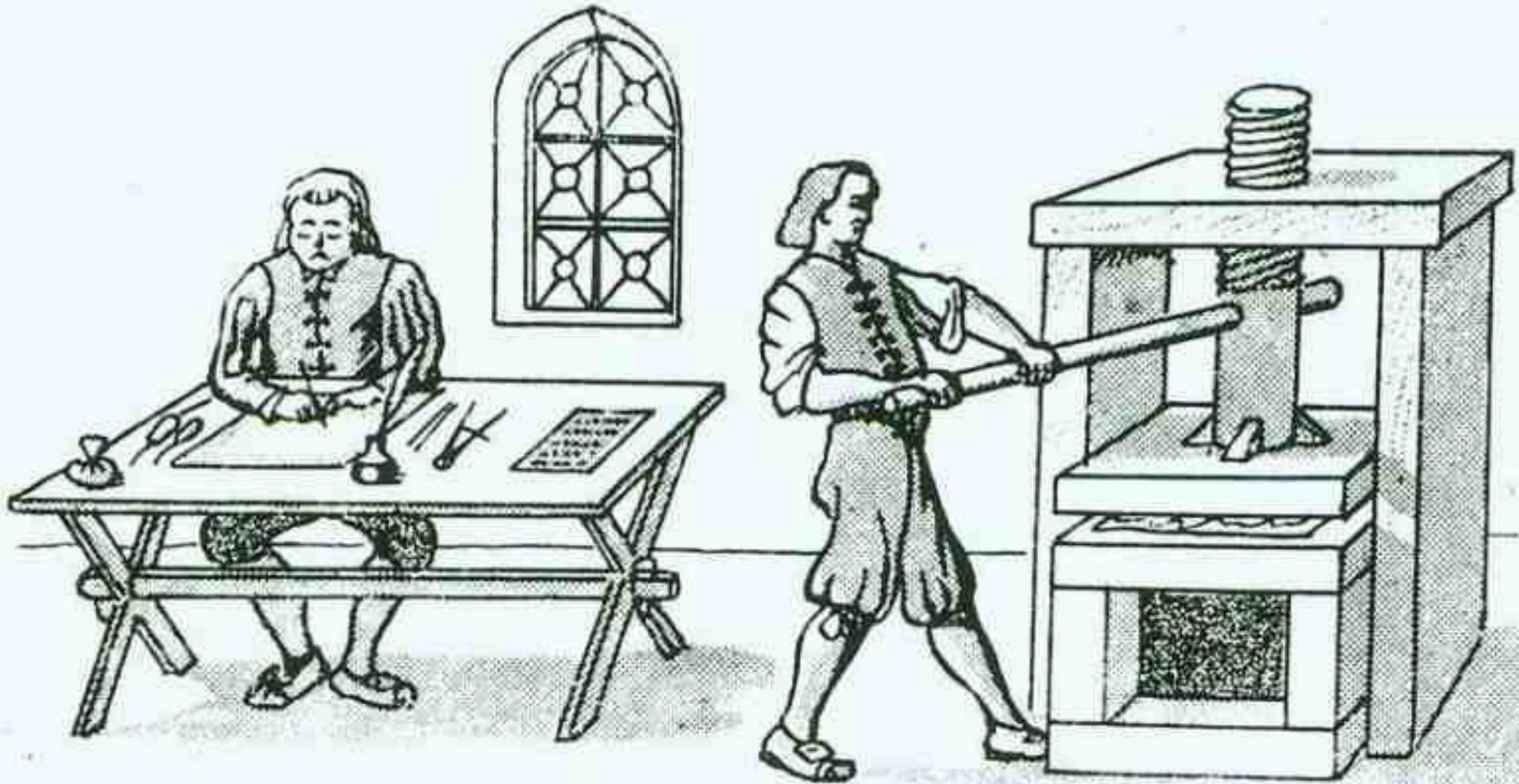
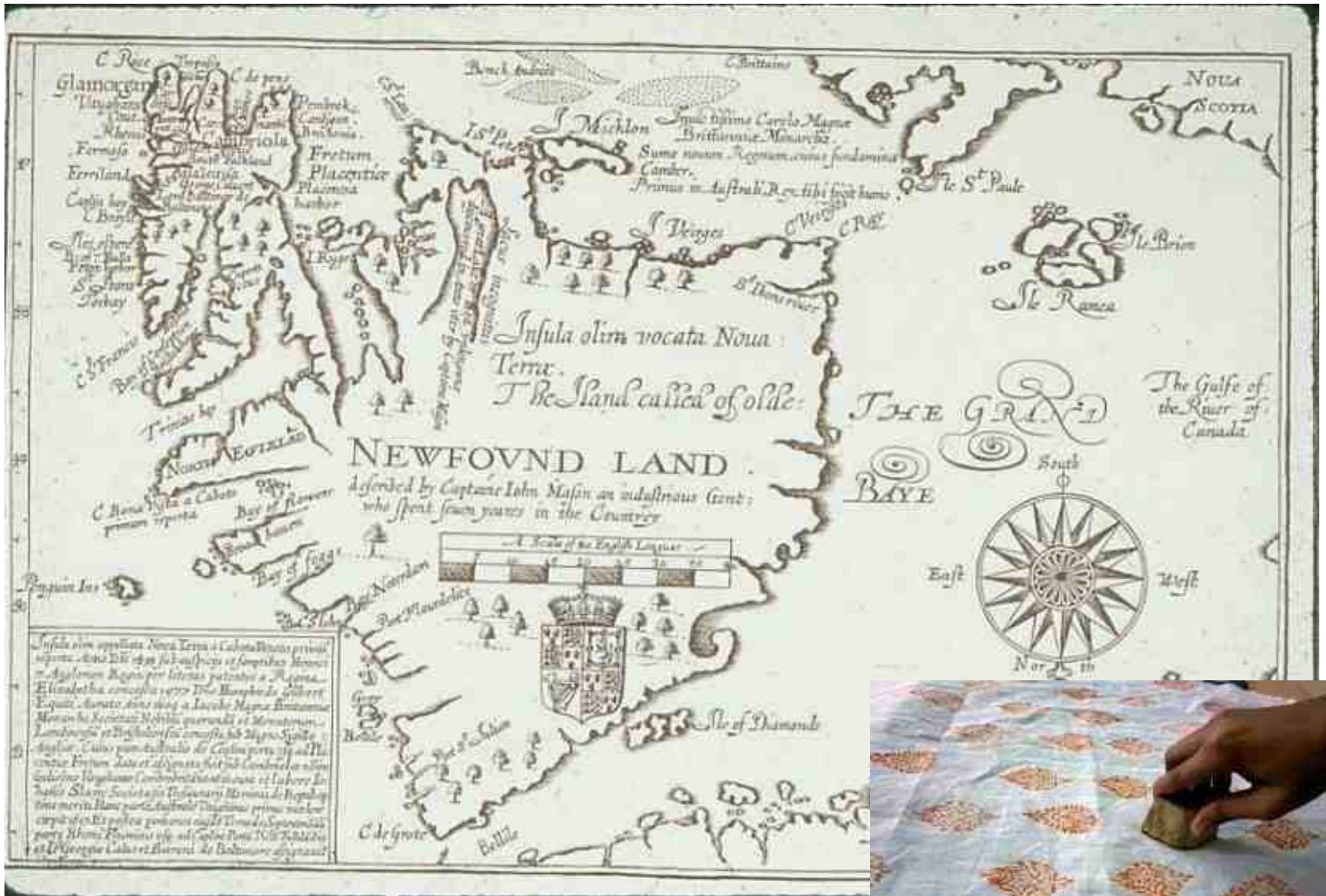


Fig. 20. Map maker and printer of the sixteenth century

Maps (and books) could now be printed in quantity

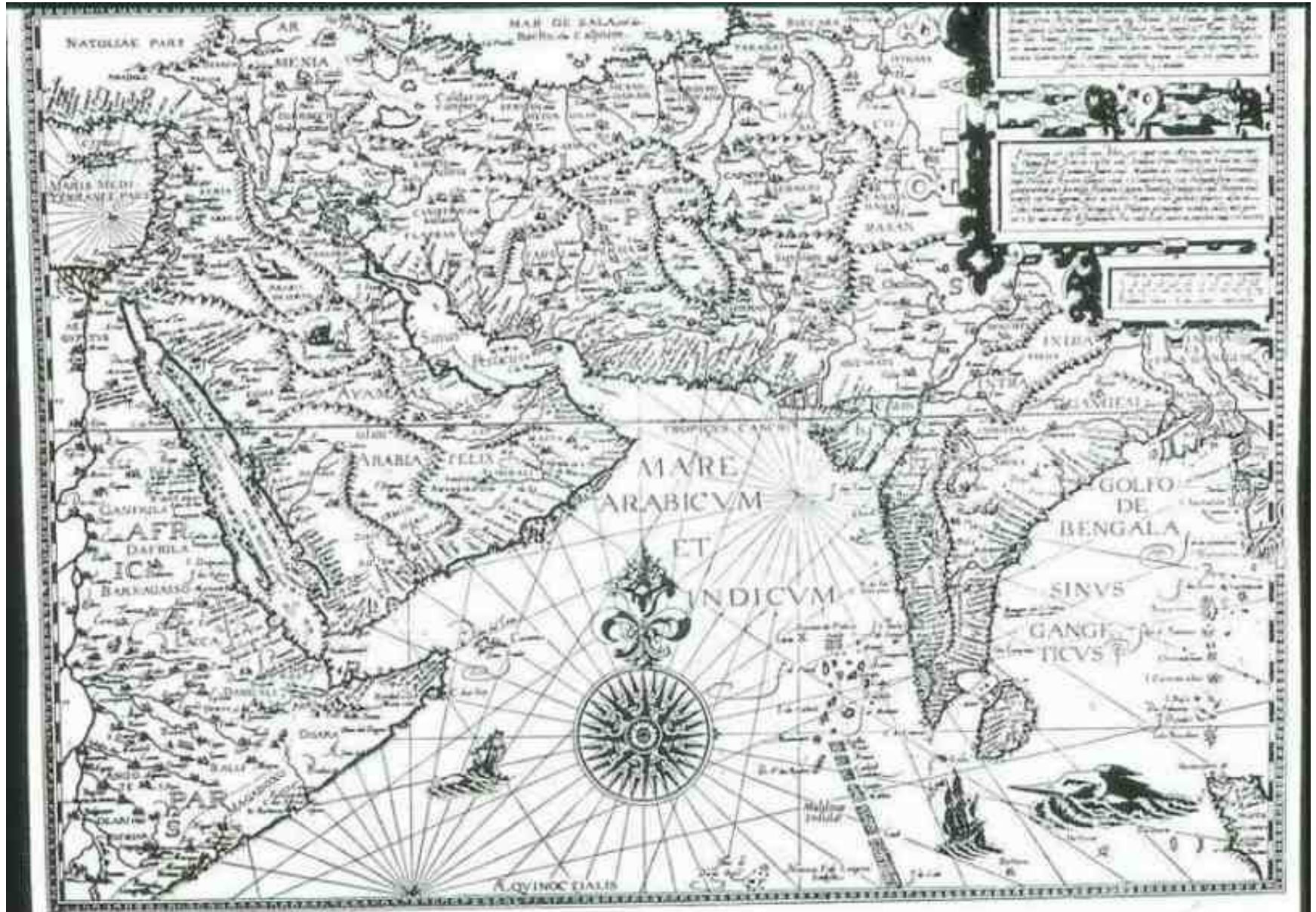
Printing technology: 16th century woodcut



Wrong-reading plate – mirror image

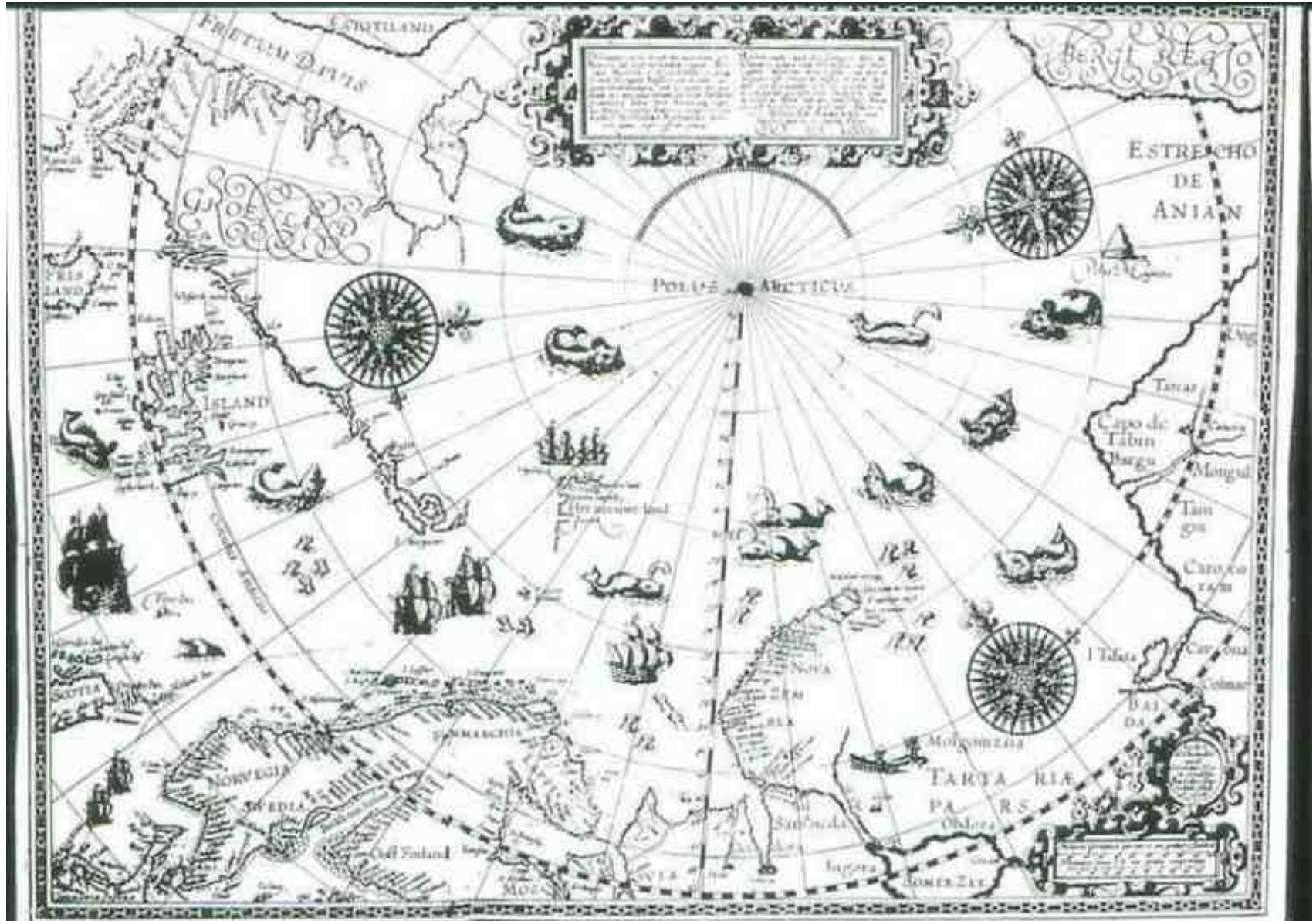


Copper engraving ('intaglio') 1596



The Indian Ocean, engraved by Hendrik van Langeren. In *Linschoten's Itinerario* (Amsterdam, 1596)

16th century map showing 'cartouches' and beasties



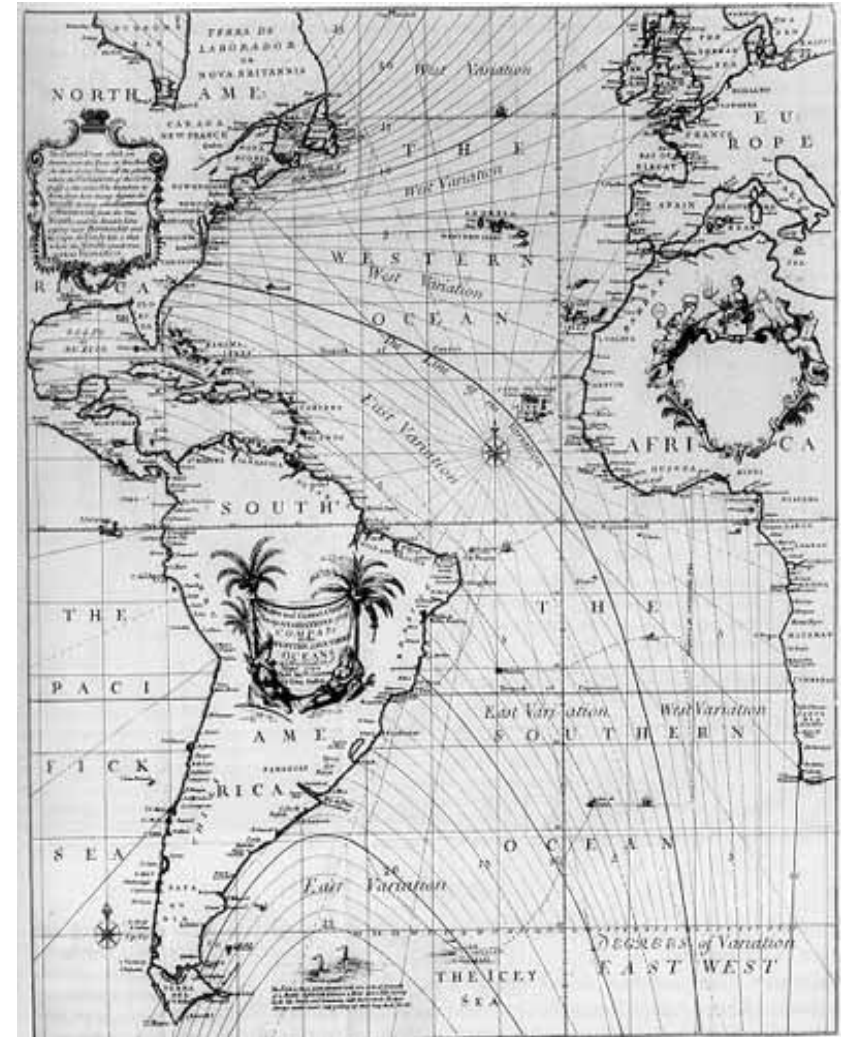
The Arctic Regions, by Willem Blaeuw, engraved by Baptista van Deutecum, 1594.

In Linschoten's *Navigatio ac itinerarium* (The Hague, 1595)

The development of the sciences 1700->

- Division of topographic and thematic mapping
- Development of surveying
- few elevations pre-1800s
- Data collection e.g. census

Halley's 'isogonic' map – lines of equal compass Declination (from true north)



Early 18th century colour map (hand coloured)

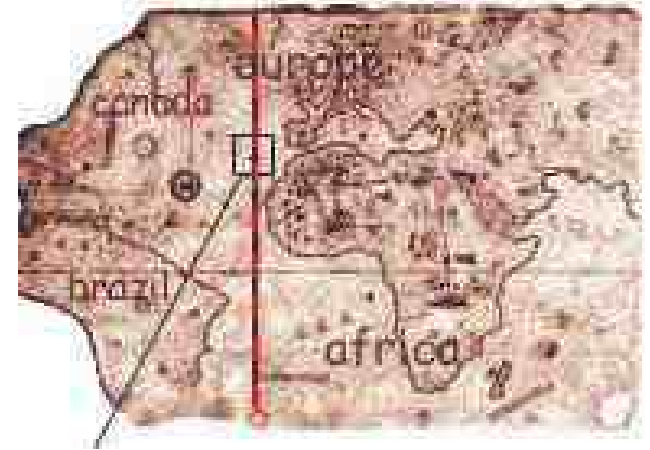


Latitude was easy to measure but Longitude ??



Sir Cloudsley
Shovell and his
grave on the
Scilly Isles 1707

First Prime Meridian
(Longitude)



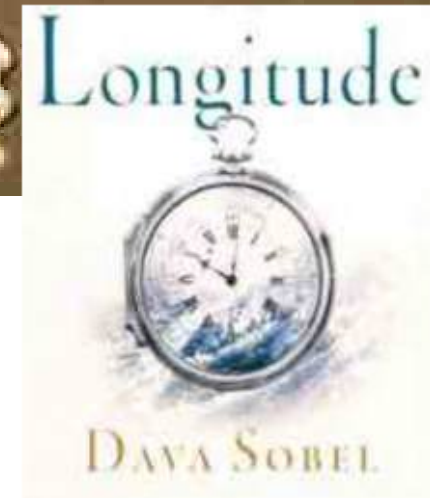
Longitude 1759

John Harrison's chronometer

Accurately measured time to compare with local time and how far east/west compared to starting point

Time zones - Sanford Fleming

1 hour = 15° longitude



Lithographic (stone) printing plate (1796)

Based on water and oil not mixing - Alois Senefelder



Plate is still created 'wrong-reading' = mirror image
'Transfer lithography' came later

Printing methods



- Woodcut: image area is raised and holds ink
- Intaglio engraving: incised cuts hold ink
- Lithography: surface texture (grease) holds ink

These methods could NOT show continuous shading or colour registration (for layers); all were 'wrong reading'

Most
surveying
started in the
19th century
e.g. Ireland
1820-50

‘Triangulation’

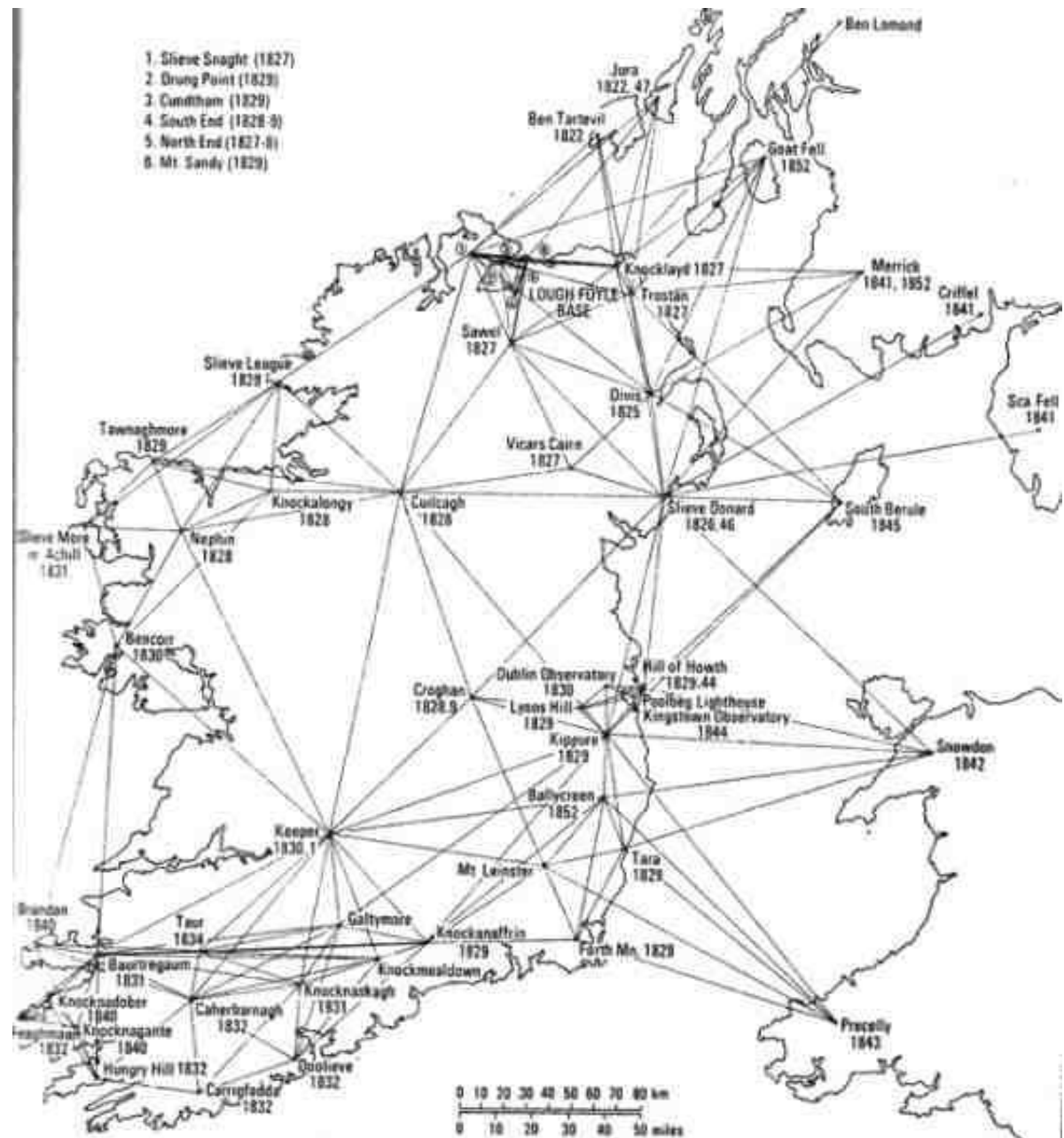
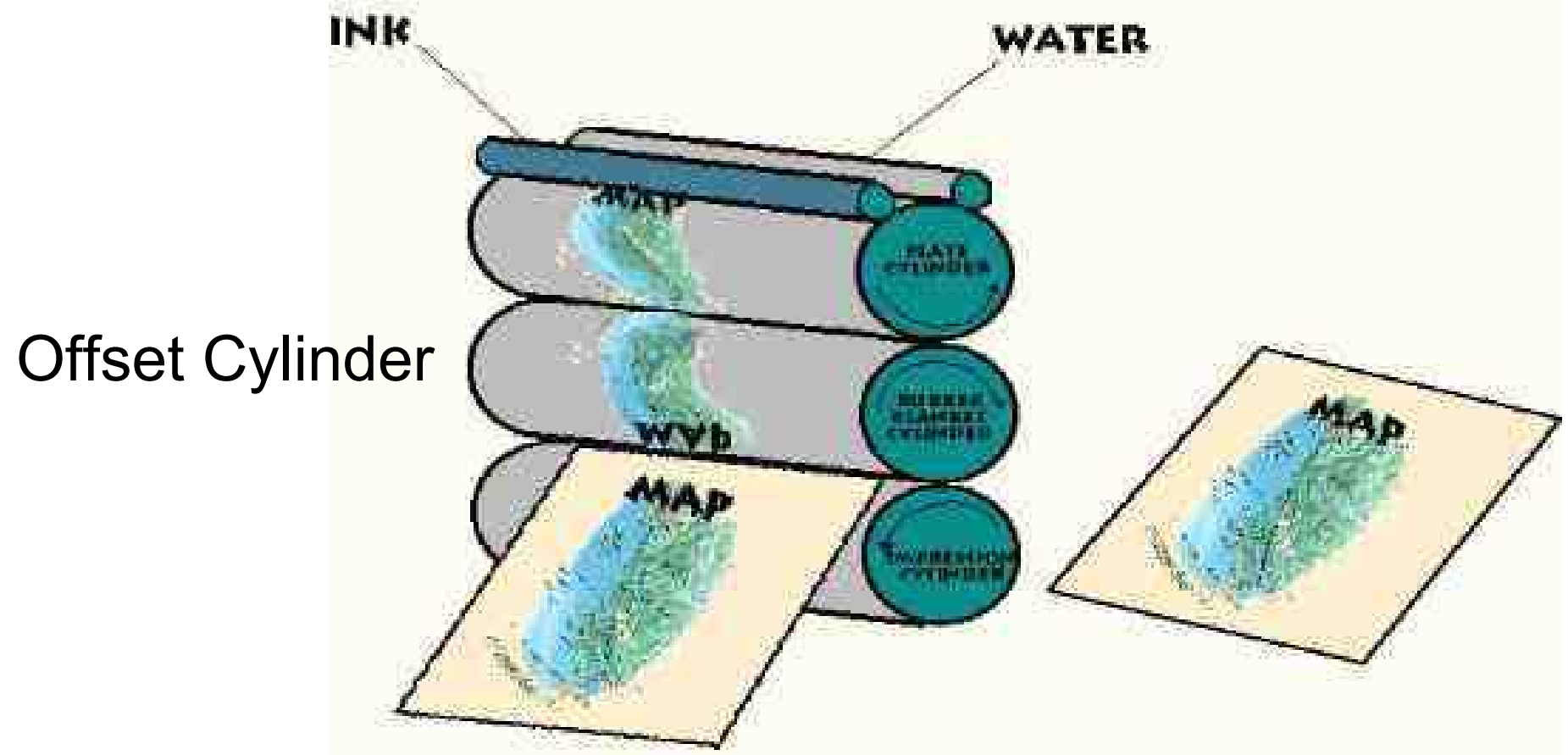


Photo-lithography & offset printing (1875)

With photo-lithography, full colour map prints were possible. Thin copper plates are produced from photo negatives. Plates wrap around drums, therefore printing was continuous. An intermediate drum added ... to avoid a wrong reading plate.



Dufour hachure maps of Switzerland, 1845-65



Bernina Pass, Switzerland 1877



Early full colour map: Canadian Rocky Mountains



Figure 3: Forty-Mile Creek 1890. Topographical Surveys Branch, Department of the Interior, Ottawa. Triangulation by W.S. Drewry, D.L.S. Topography by J.J. McArthur, D.L.S.

1945

20th century

Technology

Aerial photography

Photogrammetry

Post-war (1945)
Mapping of Canada

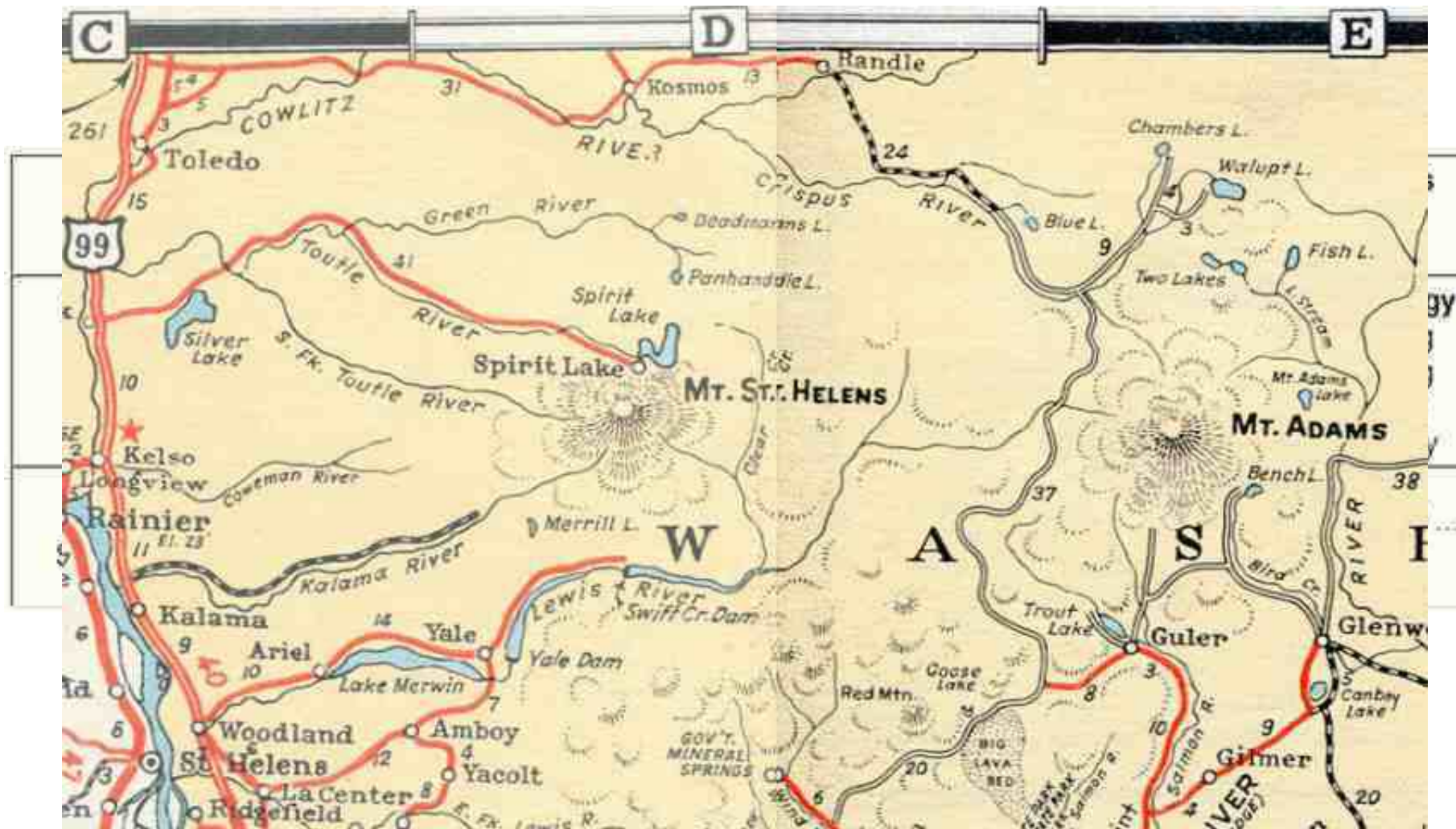
Vancouver - Stanley Park,
downtown, west Vancouver, UBC



Postwar (1950) society changes affecting mapping

- Increased leisure time and travel - road maps, park maps
- Increased attention to non-scientific users
- Addition of hillshading (still costly before computers)
- Maps for new groups, e.g. visually impaired

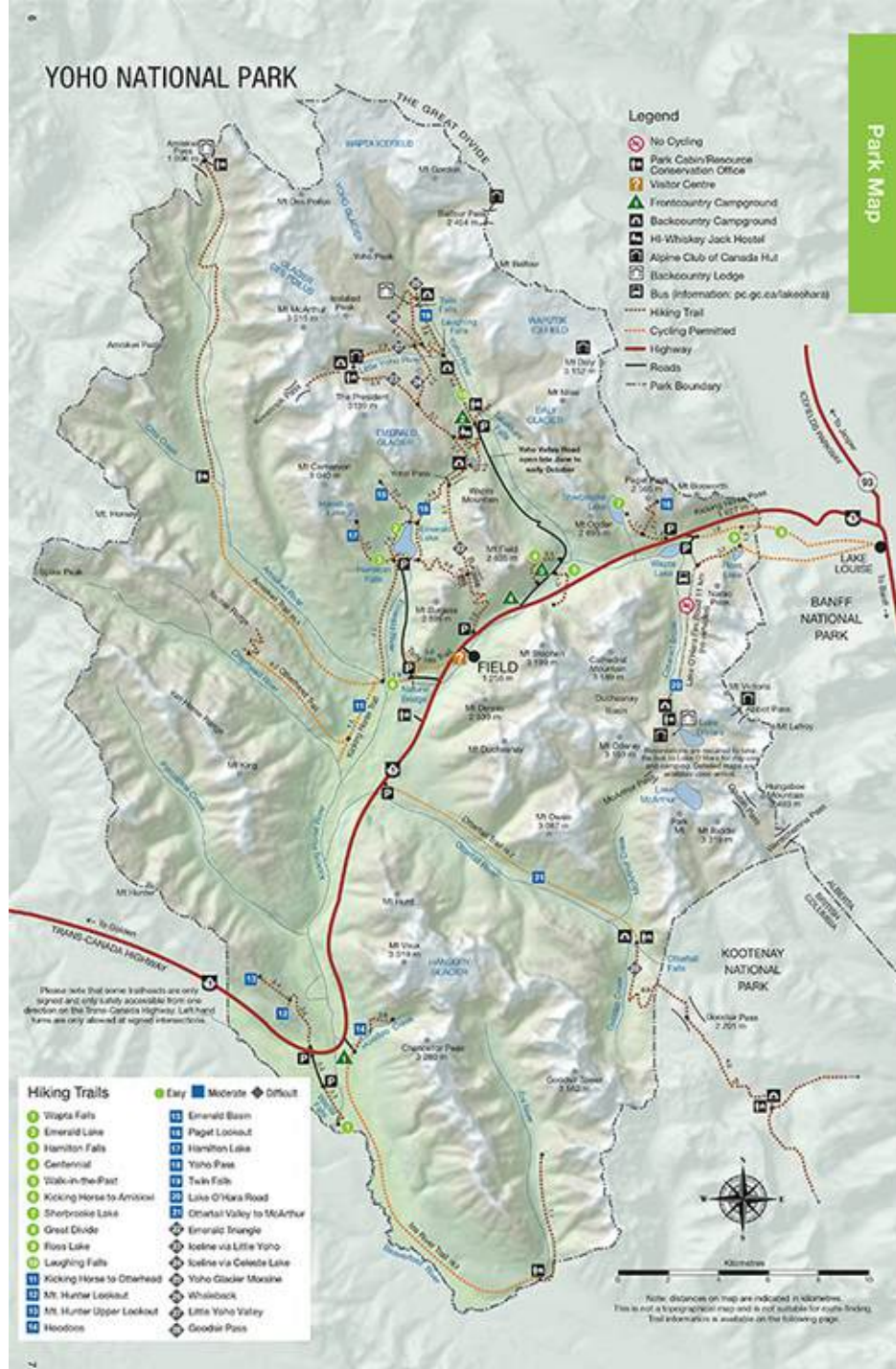
Society changes after ~1950 - road maps



<http://roadsandmaps.zxq.net/images/1959OregonOfficial/oregon-west.png>

Parks maps

~1970s Hill shading



Post 1950: Tactile mapping for the visually impaired



<http://www.terrainmodels.com/tactile.html>



Next - History of mapping II: digital developments